Radio Valve and Semiconductor Data

Tenth Edition

A M Ball

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SYMBOLS AND ABBREVIATIONS

VALVES

a-a	Anode-to-anode
BT	Beam tetrode
C_{ak}	Anode-cathode capacitance
C_{ga}	Grid-anode capacitance
C_{gk}	Grid-cathode capacitance
CT	Centre tap
D	Distortion
DBT	Double beam tetrode
DD	Double diode
DP	Double pentode
F.W.	Full wave
g-g	Grid-to-grid
g_m	Mutual conductance
h-k	Heater-to-cathode
H.W.	Half wave
H	Heptode
H_x	Hexode
O	Octode
P	Pentode
PIV	Peak inverse voltage
r_a	Anode a.c. resistance
R_k	Cathode bias resistance
R_L	Optimum load resistance
SD	Single diode
SQ	Special quality
T	Triode
TD	Triple diode
TH	Triode heptode
TH_x	Triode hexode
TP	Triode pentode
TT	Tetrode
VD	Voltage doubler
VM	Variable mu
VMP	Variable mu pentode

* appended to the 'Heater Volts' column indicates a directly-heated cathode. Valves without the asterisk have indirectly-heated cathodes.

† appended to the 'Heater Amps' column indicates that the valve has a centre-tapped filament or heater. The figures given are invariably for the parallel connection of the two parts; for the series connection the voltage is doubled and the current halved.

SEMICONDUCTOR DEVICES

Note:— All ratings and characteristics referred to in these tables are at 25°C ambient temperature unless otherwise stated.

f_1	Gain-bandwidth product. Product of the small-signal, common-emitter current gain and frequency of measurement, at a frequency where the current gain is decreasing at a rate of 6dB per octave.
f_{ab}	Frequency at which the common-base current gain has fallen to 0.707 times its low-frequency value.
f_T	Frequency at which common-emitter current gain has fallen to unity.
h_{fe}	Small-signal current gain, common emitter.
h_{FE}	Large-signal current gain, common emitter.
I_C	Continuous collector current.
I_{CBO}	Collector leakage current, collector to base junction reverse biased, emitter open circuited.
P_C	Collector dissipation.
P_d	Power dissipation.
t_r	Rise time.
V_{CBO}	Collector to base voltage, emitter open circuited.
V_{CEO}	Collector to emitter voltage, base open circuited.
V_{EBO}	Emitter to base voltage, collector open circuited.
$C_{CE(SUS)}$	Collector to emitter sustaining voltage.
V_{ds}	Drain to source voltage.
V_{gs}	Gate to source voltage.
V_{dg}	Drain to gate voltage.
$V_{(BR)GSS}$	Gate to source breakdown voltage, drain connected to source.

Construction

A	Alloy	NcP	N-Channel Planar
AD	Alloy diffused	NcPE	N-Channel Planar Epitaxial
D	Diffused	P	Planar
DDM	Double diffused Mesa	PcDP	P-Channel diffused Planar
DM	Diffused Mesa	PcP	P-Channel Planar
DP	Diffused Planar	PE	Planar Epitaxial
E	Epitaxial	S	Surface passivated
EM	Epitaxial Mesa	Sy	Symmetrical
GaAsP	Gallium Arsenide Phosphide	tD	Triple Diffused
GaP	Gallium Phosphide	tDM	Triple diffused Mesa
H	Hometaxial	tDP	Triple diffused Planar
J	Junction	μA	Micro Alloy
M	Mesa	μAD	Micro Alloy diffused
NcJ	N-Channel Junction		
NcMOS	N-Channel Metal Oxide Silicon		

EXPLANATION OF TABLES

The information given refers to the main electrical characteristics of valve and semiconductor devices together with their base connections and is classified under main headings according to their type. In each section they are divided into replacement and current types where these terms are used in the following senses:-

Replacement: No longer manufactured in large quantities, but still made in small quantities for replacement purposes.

Current: Includes the latest types and those which are still being produced in quantity.

Obsolete types, i.e. types no longer manufactured and normally unobtainable, are no longer included. Should data be required for these devices reference should be made to earlier editions of this book.

The headings 'replacement' and 'current' refer, in general, to the manufacturer. Although the device may still be in production a particular manufacturer may have discontinued production.

Some manufacturers have stopped producing certain types of valve. Invariably data for these valves can be obtained by referring to other manufacturers.

The tables are largely self-explanatory, but the following notes should be read carefully if the tables are to be fully understood.

VALVE SECTIONS

FREQUENCY CHANGERS

Valves in this section are intended primarily for use as frequency-changers in superheterodynes and the figures given are the normal operating conditions for this application. Some of the valves included are occasionally used for other purposes, however, the voltages and currents may then be very different. Even in their normal application differences may be found in individual receivers, since not all designers adopt the 'normal' conditions; this is particularly so on short-wave bands.

It is noted that some valves which do not include an oscillator section, and which thus apparently require a separate oscillator, can actually be used as a complete frequency-changer by using an oscillator circuit coupled between cathode and another electrode.

SCREENED TETRODES AND PENTODES

The main application of valves in this section is to r.f. and i.f. amplification and the operating conditions are normal ratings for this condition. No distinction is made between tetrodes and pentodes because in most cases the type of valve is immaterial as long as its characteristics are otherwise suitable.

Some of the valves in this section are also listed under Amplifier Triodes. The characteristics given there are obtained with the screen-grid connected to the anode.

OUTPUT VALVES 1

Triodes, beam-tetrodes and pentodes are all included here with normal maximum operating conditions as output valves for single-valve Class-A operation for a.f. application. They are distinguished by the letters (T), (BT) and (P) following the type number and those containing other systems have additional letters (SD), (DD) and (T) for single or double diode and triode, respectively.

In some cases the conditions for a tetrode or pentode operating as a triode with the screen grid joined to the anode are also given. This condition can be distinguished by the letter (T) placed after the type number and, in addition, the absence of a figure for screen-grid voltage. The fact that the electrode structure is that of a tetrode or a pentode is obvious as the valve appears in another row followed by letters (BT) or (P).

Even under Class-A conditions the anode and screen currents rise with the signal input to a small extent. The anode current with full drive is about 2% greater than the quiescent value. With some valves the screen current increases much more and may become as high as three or four times the quiescent value. This increase is usually greatest when the valve is of a type drawing a very low quiescent current.

Since there is no standard method of rating valves, the figures quoted in the tables are sometimes for the no-signal condition and sometimes for full drive. The differences are, in practice, unimportant for they are less than the normal variations between individual specimens of the same type.

OUTPUT VALVES 2

The conditions included here are those for push-pull operation of a.f. output stages. Five modes of push-pull are recognised and distinguished in the 'Class' column; they are A, AB1, AB2, B1 and B2.

In Class-A both valves are conductive over the whole input cycle and the anode current with full drive is substantially the same as that with no drive. In Class-AB the valves are worked individually cut-off over a small part of the input cycle; the anode current for full output is appreciably higher than that with no input. In Class-B each valve is cut-off for about one-half of the input cycle and the anode current at full output is much greater than that with no input signal. The subscripts 1 and 2 show that operation is respectively without and with grid current. The anode and screen currents quoted for Class-A and Class-AB operation are with the maximum input signal voltage; the currents for Class-AB2, Class-B1 and Class-B2 operation, however, are subject to considerable variation with input, so it is more useful here to give figures for the quiescent conditions. With Class-AB and Class-B operation the manufacturer's literature should, in any case, be consulted.

For Classes-AB2 and B2, the minimum grid-to-grid input resistance is given. The figure, together with that of the input voltage, is necessary for the design of the driver stage.

The valves included in this section fall into two groups. One consists of double triodes and double pentodes intended mainly for Class-B1 and Class-B2 operation. They are chiefly battery types which used to be designated as q.p.p. and Class-B stages. There are also a few indirectly-heated cathode types which have other applications; these last will also be found in the appropriate section (usually Amplifier Triodes) with the figures appropriate to one section of the valve as an amplifier.

Figures for anode and screen currents are quoted per valve (or per section in the case of multiple valves) and in some cases several sets of different figures are given for the same valve under different conditions. Apart from double valves, most of the valves in the section appear also in Output Valves 1.

Very few Class-A conditions are given because they are usually obtainable directly from Output Valves 1. For push-pull Class-A the currents and anode-to-anode load are normally twice the figures for single-valve operation. The power output for the same odd-order distortion is usually a little more than double.

The differences between fixed-bias and cathode-bias are considerable under Class-AB and Class-B conditions. Where no value is quoted for a bias resistor it is to be understood that operation with a fixed bias is required; where a bias resistor value is given, the other figures refer to cathode bias operation. With fixed bias, it is usually necessary for the bias source to be of low impedance; with positive drive it is essential.

The value of bias resistor quoted (R_k) is that required per valve, or per section in the case of multiple valves.

OUTPUT VALVES 3

The valves in this section are designed to withstand short-duration high voltage peaks and the figures given are for television line-scan output-stage working.

The amount of information provided in this section is necessarily limited, and operating conditions vary so widely with circuit application that in all cases of doubt the manufacturer's literature should be consulted.

AMPLIFIER TRIODES

The conditions given are those pertaining to operation as transformer-coupled a.f. amplifiers at maximum rating, which is the most suitable condition for comparing valve characteristics. Conditions for R-C coupling depend too much upon the circuit constants to be useful. At the reduced voltages normally applied to the electrodes with R-C coupling, the a.c. resistance and mutual conductance are usually 20 to 50% higher and lower respectively than the figures listed.

SMALL TRANSMITTING VALVES

All categories are included in this section (triodes, pentodes, beam-tetrodes etc.) having up to 50 W anode dissipation. The figures given are for Class-C r.f. amplification on telegraphy. It should be noted that in the case of double valves (identified by letters (DT), (DBT), etc. in the 'Type' column) the figures for anode, screen and grid currents, dissipation and output refer to the pair.

Regarding the operating frequency column, the figures under 'Reduced Rating' can generally be taken to be the maximum frequencies at which the valves will give a useful power output. As the efficiency of the valve decreases at these higher frequencies, it is necessary to make some reduction to the ratings (or power input) in order to ensure that the power dissipated in the valve does not exceed the safe limit. The percentage reduction varies from valve to valve, however, so it is advisable to consult the manufacturer's literature if the reduced ratings are required.

CATHODE RAY TUBES

This section is divided into two dealing with Monochrome (black and white) tubes and Colour tubes. When working with colour tubes, where high final anode voltages are encountered, care should be exercised in case harmful X-Rays are present. Reference should be made to the receiver manufacturer's instructions before operating colour receivers with the back removed.

EFFICIENCY DIODES

The purpose of these diodes, applied to television line-scan circuits, is to provide a section of the

line-scan sawtooth waveform from energy stored in the deflector coils during the flyback, thereby reducing the amount of anode current required in the line-scan output stage.

VALVE RECTIFIERS

Included in this section are types which have simultaneous ratings up to 10kV peak inverse and 500mA rectified current.

Valves designed for the rectification of e.h.t. supplies (i.e. over 1kV at less than 50mA or so) will be found in the E.H.T. Rectifiers section.

The ratings given are the maximum ones and assume a frequency of 50Hz.

E.H.T. RECTIFIERS

Used mainly for the production of the high tension supplies for cathode ray tubes, the thermionic diodes and metal rectifiers listed here are capable of producing supplies of over 1kV at currents of less than 50mA. Rectifiers capable of producing high-voltage, high-current supplies (i.e. for transmitter h.t.) are listed in the Valve Rectifiers section. Three methods of e.h.t. supply production are recognised in the data. First, the 'rectification' of the high voltage-pulse appearing during line-flyback time in a television receiver; here the ratings assume a pulse duration of about 10μS. Secondly, the rectification of the output of an r.f. oscillator (100kHz and upwards) and, thirdly, by rectification of a low-frequency supply (possibly derived from the mains via a step-up transformer). Characteristics for this last case are marked by relatively large values for the reservoir capacitor.

METAL RECTIFIERS

Copper oxide and selenium rectifiers are both made in basic units of low voltage rating and in various sizes for different currents. Different voltages are catered for by stacking together various numbers of the basic units and there are also different methods for units for use as half-wave, full-wave, voltage-doubler and bridge rectifiers. The total number of rectifier assemblies possible with only a few basic units is thus very large. In order to reduce the numbers, therefore, a few examples are listed as guides and from these the other possible ratings can be deduced.

SEMICONDUCTOR DEVICE SECTIONS

TRANSISTORS

Unless otherwise stated, parameters are given for an ambient temperature of 25°C. To facilitate comparisons between various types of transistor they have been arranged (1) in ascending order of collector dissipation (2) in ascending order of cut-off frequency and (3) alpha-numerically in order of type number. Comparisons should only be made at the same temperature; in cases of doubt the manufacturers' fuller data should be consulted, but in general the major effects of elevated temperature are to reduce the permissible dissipation and increase the collector leakage current.

The figures quoted for Absolute Maximum Ratings, should never be exceeded in normal use—these ratings represent the extreme capabilities of a transistor and are not recommended as design conditions.

A brief description of the main purpose for which the transistor has been designed is given in the 'Applications' column; this is intended as a quick guide for determining general suitability, in many cases a much wider range of applications is possible.

Diagrams showing the transistor base connections are given after the data sections.

SEMICONDUCTOR SIGNAL DIODES

This section includes germanium and silicon diodes with ratings generally not exceeding 400 PIV or 300mA maximum rectified current, i.e. the devices listed are intended mainly for use in signal operation, switching and low-power rectifiers. A column giving typical applications for each of the devices listed is included as an aid to determining general suitability.

SEMICONDUCTOR POWER RECTIFIER DIODES

This section includes germanium and silicon devices with rectified current ratings up to 60A, and are intended for use as power rectifiers. This, however, is not their only use and other specific applications include switching, magnetic amplifiers, power supplies etc.

SILICON REFERENCE DIODES

This section includes all diodes which have been categorised as voltage-limiting devices. They are also often referred to as Zener or Avalanche diodes.

These diodes operate in the breakdown region under reverse bias and are characterised by abrupt avalanching as the reference voltage is reached. If the diode is biased beyond the reverse turnover voltage, the current flow in the reverse direction will be limited only by the low slope resistance of the device; it is important to ensure that circuit conditions are adjusted so that the maximum dissipation of the device cannot be exceeded at this point.

INDEXES AND EQUIVALENTS

Two indexes are included, the first covering the valve and metal rectifier sections and the second the semiconductor sections. All items in the in-

dexes are listed in alpha-numerical sequence of their type numbers (figures preceding letters) and against each entry is a page number where it can be found. Some devices have several page numbers listed indicating that more than one manufacturer produces the same item.

The valve index includes, where applicable, a list of equivalent types and the semiconductor section a list of comparable types. The semiconductor comparables are suitable replacements for the indexed types shown. In general the comparable type exhibits characteristics as good as, if not better than, the type to be replaced. Thus a comparable type may be of better quality than the replaced type and the list should not be used in a reverse manner; i.e. the indexed type should not be used to replace a comparable type.

Equivalents and comparables have been taken from literature supplied by the various manufacturers concerned and whilst every care has been taken in the compilation of this data, the Publishers cannot accept any responsibility or liability for the accuracy thereof.

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Frequency Changers

Type			Heater		Volts			Current (mA)		r_g (MΩ)	g_m (mA/V)	Osc. Volts (peak)	Capacitance (pF)			Base	
			Volts	Amps	Anode	Screen	Grid	Anode	Screen				C_{gk}	C_{ak}	C_{ga}	Type	Ref.
BRIMAR																	
Current Types																	
6BE6	(H)		6.3	0.3	250	100	−1.5	3.0	7.1	1.0	0.475	10.0	7.2	8.6	0.3	B7G	13
[illegible]	(H)		6.3	0.3	250	100	−1.5	3.0	7.1	1.0	0.475	10.0	7.2	8.6	0.3	B7G	13
MAZDA																	
Replacement Types																	
10C14	(TH)	mix	19.0	0.1	200	119	−2.6	3.7	8.1	1.0	0.78	14.0	4.8	7.9	0.006	B9A	14
		osc			100	—	—	4.5	—	—	—	—	2.6	2.1	1.0		
UCH81	(TH)	mix	19.0	0.1	200	119	−2.6	3.7	8.1	1.0	0.78	14.0	4.8	7.9	0.006	B9A	14
		osc			100	—	—	4.5	—	—	—	—	2.6	2.1	1.0		
Current Types																	
6C12	(TH)	mix	6.3	0.3	250	103	−2.0	3.25	6.7	1.0	0.775	12.0	4.8	7.9	0.006	B9A	14
		osc			100	—	—	4.5	—	—	—	—	2.6	2.1	1.0		
6C18																	
	(T, VMP)	mix	6.3	0.35	155	135	−3.0	7.8	2.4	0.4	4.7	2.0	6.7	2.7	0.007	B9A	48
		osc			77	—	—	7.8	—	—	—	—	2.4	2.2	2.0		
ECF80	(TP)	mix	6.3	0.43	250	180	−5.8	5.7	1.4	0.87	2.1	5.0	5.2	3.4	0.025	B9A	15
		osc			100	—	—	5.0	—	—	—	—	2.5	1.8	1.5		
ECF82	(TP)	mix	6.3	0.45	170	170	—	6.6	2.5	0.4	1.65	5.0	5.0	3.5	0.006	B9A	15
		osc			100	—	—	7.0	—	—	—	—	2.5	1.0	1.8		
ECF805																	
	(T, VMP)	mix	6.3	0.35	155	135	−3.0	7.8	2.4	0.4	4.7	2.0	6.7	2.7	0.007	B9A	48
		osc			77	—	—	7.8	—	—	—	—	2.4	2.2	2.0		
ECH81	(TH)	mix	6.3	0.3	250	103	−2.0	3.25	6.7	1.0	0.78	12.0	4.8	7.9	0.006	B9A	14
		osc			100	—	—	4.5	—	—	—	—	2.6	2.1	1.0		
30C17																	
	(T, VMP)	mix	7.4	0.3	155	135	−3.0	7.8	2.4	0.4	4.7	2.0	6.7	2.7	0.007	B9A	30
		osc			60	—	—	7.0	—	—	—	—	3.3	2.1	1.9		
30C18																	
	(T, VMP)	mix	7.4	0.3	155	135	−3.0	7.8	2.4	0.4	4.7	2.0	6.7	2.7	0.007	B9A	48
		osc			77	—	—	7.8	—	—	—	—	2.4	2.2	2.0		
PCF87																	
	(T, VMP)	mix	7.4	0.3	155	135	−3.0	7.8	2.4	0.4	4.7	2.0	6.7	2.7	0.007	B9A	30
		osc			60	—	—	7.0	—	—	—	—	3.3	2.1	1.9		
PCF805																	
	(T, VMP)	mix	7.4	0.3	155	135	−3.0	7.8	2.4	0.4	4.7	2.0	6.7	2.7	0.007	B9A	48
		osc			77	—	—	7.8	—	—	—	—	2.4	2.2	2.0		
PCF86	(TP)	mix	8.0	0.3	190	140	−1.5	8.5	2.7	0.35	4.5	3.2	2.4	3.5	0.012	B9A	40
		osc			120	—	—	6.0	—	—	—	—	2.4	1.1	2.0		
PCF806	(TP)	mix	8.0	0.3	170	150	−1.2	10.0	3.3	0.35	12.0	—	—	—	0.012	B9A	49
		osc			100	—	—	14.0	—	—	—	—	2.2	1.2	0.01		
PCF801	(TP)	mix	8.5	0.3	175	120	−1.4	10.0	3.0	0.35	5.0	2.3	6.2	3.7	0.009	B9A	49
		osc			60	—	—	12.0	—	—	—	—	3.3	1.7	1.8		
30C1	(TP)	mix	9.0	0.3	170	145	—	6.8	2.0	0.8	2.0	5.0	6.1	4.9	0.013		
		osc			120	—	—	6.0	—	—	—	—	3.1	2.9	1.7	B9A	15
30C15	(TP)	mix	9.0	0.3	164	138	—	7.6	2.3	0.6	3.3	3.7	6.7	5.0	0.014	B9A	30
		osc			120	—	—	6.0	—	—	—	—	3.2	3.2	1.6		
PCF80	(TP)	mix	9.0	0.3	170	170	—	5.2	1.5	0.87	2.1	5.0	5.5	3.8	0.25	B9A	15
		osc			120	—	—	6.0	—	—	—	—	2.5	1.8	1.5		
PCF82	(TP)	mix	9.5	0.3	170	170	—	6.6	2.5	0.4	1.65	5.0	5.0	3.5	0.006	B9A	15
[illegible]		osc			100	—	—	7.0	—	—	—	—	2.5	1.0	1.8		
MULLARD																	
Replacement Types																	
E80CF																	
	(SQ, TP)	mix	6.3	0.33	170	170	−3.5	8.0	2.5	0.5	2.4	3.5	5.6	3.4	0.025	B9A	15
		osc			100	—	—	14.0	—	0.0036	—	—	2.5	1.5	1.5		

(Continued)

Frequency Changers

Type			Heater		Volts			Current (mA)		r_g (MΩ)	g_m (mA/V)	Osc. Volts (peak)	Capacitance (pF)			Base	
			Volts	Amps	Anode	Screen	Grid	Anode	Screen				C_{gk}	C_{ak}	C_{ga}	Type	Ref.
MULLARD (*Continued*)																	
Replacement Types (*Continued*)																	
ECF80	(TP)	mix	6.3	0.43	250	250	−3.2	7.0	1.2	0.9	2.1	5.0	5.5	3.8	0.025	B9A	15
		osc			100	—	−2.0	14.0	—	—	—	—	2.5	1.8	1.5		
ECH81	(TH)	mix	6.3	0.3	250	103	−2.0	3.25	6.7	1.0	0.775	13.0	4.8	6.0	0.006	B9A	14
		osc			100	—	0	13.5	—	—	—	—	2.6	2.1	1.0		
PCF86	(TP)	mix	8.0	0.3	190	140	—	8.5	2.7	0.6	4.5	3.2	6.0	3.5	0.012	B9A	40
		osc			100	—	−3.0	14.0	—	0.003	—	—	2.4	1.1	2.0		
PCF200	(TP)	mix	8.0	0.3	160	135	−1.7	13.0	5.3	—	14.0	—	—	—	—	B10B	3
		osc			170	—	−1.0	8.5	—	—	5.2	—	—	—	—		
PCF201	(TP)	mix	8.0	0.3	160	110	−1.4	13.0	5.3	—	12.6	—	—	—	—	B10B	3
		osc			100	—	−2.0	14.0	—	—	4.8	—	—	—	—		
PCF806	(TP)	mix	8.0	0.3	190	141	—	8.5	2.7	—	4.5	3.25	6.0	3.3	0.012	B9A	49
		osc			100	—	−3.0	14.0	—	—	—	—	2.2	1.2	2.0		
PCF801	(T, VMP)	mix	8.5	0.3	173	119	−1.4	10.0	3.0	<0.35	5.0	2.3	6.2	3.7	0.009	B9A	49
		osc			100	—	−3.0	15.0	—	—	—	—	3.3	1.7	1.8		
UCH81	(TH)	mix	19.0	0.1	200	120	−2.6	3.7	8.1	1.0	0.78	—	4.8	7.9	0.006	B9A	14
		osc			100	—	0	13.5	—	—	—	—	2.6	2.1	1.0		
Current Types																	
E88CC	(T)		6.3	0.155	160	—	−1.25	12.5	—	0.52	13.5	—	3.8	0.05	1.7	B9A	51
PCF80	(TP)	mix	9.0	0.3	170	170	−5.5	5.2	1.5	0.87	2.1	5.0	5.5	3.8	0.025	B9A	15
		osc			100	—	−2.0	14.0	—	—	—	—	2.3	0.3	1.5		
TUNGSRAM																	
Replacement Types																	
ECF80	(TP)	mix	6.3	0.43	250	180	−5.8	5.7	1.4	1.5	2.1	5.0	5.2	3.8	0.025	B9A	15
		osc			100	—	−2.0	14.0	—	—	—	—	2.5	1.8	1.5		
ECH81	(TH)	mix	6.3	0.3	250	103	−2.0	3.25	6.7	1.0	0.78	12.0	4.8	7.9	0.006	B9A	14
		osc			100	—	—	4.5	—	—	—	—	2.6	2.1	1.0		
PCF86	(TP)	mix	8.0	0.3	190	140	−1.5	8.5	2.7	0.35	4.5	3.2	6.0	3.6	0.025	B9A	40
		osc			120	—	—	6.0	—	—	—	—	2.5	—	2.3		
PCF200	(TP)	mix	8.0	0.3	160	135	−1.7	13.0	5.3	—	14.0	—	—	—	—	B10B	3
		osc			170	—	−1.0	8.5	—	—	5.2	—	—	—	—		
PCF201	(TP)	mix	8.0	0.3	160	110	−1.4	13.0	5.3	—	12.6	—	—	—	—	B10B	3
		osc			100	—	−2.0	14.0	—	—	4.8	—	—	—	—		
PCF806	(TP)	mix	8.0	0.3	190	141	—	8.5	2.7	—	4.5	3.25	6.0	3.3	0.012	B9A	49
		osc			100	—	−3.0	14.0	—	—	—	—	2.2	1.2	2.0		
PCF801	(T, VMP)	mix	8.5	0.3	173	119	−1.4	10.0	3.0	0.35	5.0	2.3	6.2	3.7	0.009	B9A	49
		osc			100	—	−3.0	15.0	—	—	—	—	3.3	1.7	1.8		
UCH81	(TH)	mix	19.0	0.1	200	120	−2.6	3.7	8.1	1.0	0.78	—	4.8	7.9	0.006	B9A	14
		osc			100	—	0	13.5	—	—	—	—	2.6	2.1	1.0		
Current Types																	
PCF80	(TP)	mix	9.0	0.3	170	170	−5.5	5.2	1.5	0.87	2.1	5.0	5.5	3.8	0.025	B9A	15
		osc			100	—	−2.0	14.0	—	—	—	—	2.3	0.3	1.5		
PCF802	(TP)	mix	9.0	0.3	100	100	−1.0	6.0	1.7	0.4	—	—	—	—	—	B9A	15
		osc			200	—	−2.0	3.5	—	2.0	—	—	—	—	—		

Screened Tetrodes and Pentodes

Type	Heater		Volts			Current (mA)		r_a (MΩ)	g_m (mA/V)	Capacitance (pF)			Base	
	Volts	Amps	Anode	Screen	Grid	Anode	Screen			C_{gk}	C_{ak}	C_{ga}	Type	Ref
BRIMAR														
Replacement Types														
8D8	6.3	0.15	250	140	−2.0	3.0	0.6	2.5	1.9	4.0	3.9	1.3	B9A	13
Current Types														
5749(SQ) (VM)	6.3	0.3	250	100	−1.0	11.0	4.2	1.5	4.4	5.5	5.0	0.0035	B7G	4
6059(SQ)	6.3	0.15	250	100	−3.0	2.1	0.6	2.3	1.25	4.0	4.0	0.01	B9A	24
6AK5	6.3	0.175	180	120	−1.8	7.7	2.4	0.5	5.1	4.0	2.1	0.03	B7G	2
6AM6 6064(SQ)	6.3	0.3	250	250	−2.0	10.0	2.6	1.0	7.5	7.5	3.2	0.01	B7G	8
6AU6	6.3	0.3	250	150	−1.0	10.8	4.3	1.0	5.2	5.5	5.0	0.035	B7G	4
6BA6	6.3	0.3	250	100	−1.0	11.0	4.2	1.5	4.4	5.5	5.0	0.035	B7G	4
6BH6	6.3	0.15	250	150	−1.0	7.4	2.9	1.4	4.6	5.4	4.4	0.035	B7G	15
6BJ6	6.3	0.15	250	100	−1.0	9.2	3.3	1.3	3.8	4.5	5.5	0.035	B7G	15
6BR7	6.3	0.15	250	100	−3.0	2.1	0.6	2.3	1.25	4.0	4.0	0.01	B9A	24
6BS7	6.3	0.15	250	100	−3.0	2.1	0.6	2.3	1.25	4.0	4.0	0.01	B9A	12
6BW7	6.3	0.3	180	180	−1.5	9.5	3.5	0.6	9.3	9.5	3.5	0.01	B9A	3
ECF804 (TP)	6.3	0.45	150	150	−2.0	7.0	2.2	0,35	11.0	7.0	3.0	0.02	B9A	15
EF93 (VM)	6.3	0.3	250	100	−1.0	11.0	4.2	1.5	4.4	5.5	5.0	0.0035	B7G	4
EF95	6.3	0.175	180	120	−1.8	7.7	2.4	0.5	5.1	4.0	2.1	0.03	B7G	2
PCE82 (T, BT)	10.0	0.3	180	180	−2.9	10.0	2.5	0.31	12.5	8.1	2.6	0.03	B9A	55
I.T.T.														
Replacement Types														
5A/152M/G	6.3	0.46	250	150	−2.1	10.0	2.0	—	7.5	10.0	5.0	0.018	B8B	1
5B/110M	6.3	0.8	250	150	−6.0	38.0	8.0	—	6.5	11.0	6.0	0.035	B8B	1
5A/102D	7.5	0.85	180	150	−18.0	43.0	7.0	—	2.5	8.5	12.8	1.1	I0	1
Current Types														
5A/180M	6.3	0.45	180	150	−1.0	26.0	6.0	—	32.0	16.0	5.0	0.05	B8B	2
6F17	6.3	0.3	200	250	−6.25	64.0	—	—	8.3	6.6	5.9	0.03	B7G	32
6F33	6.3	0.35	200	200	−4.0	5.75	3.1	—	3.55	7.3	4.5	0.01	B7G	8
S6F17(SQ)	6.3	0.3	200	200	−11.0	17.0	3.0	—	4.0	6.2	5.2	0.03	B7G	32
S6F33(SQ)	6.3	0.35	200	200	−3.3	7.1	4.35	0.1	4.05	7.55	4.55	0.01	B7G	8
MAZDA														
Replacement Types														
6FD12 (VM, DD)	6.3	0.3	250	100	−2.0	9.0	2.7	1.0	3.8	5.0	5.2	0.0025	B9A	5
EBF89 (VM, DD)	6.3	0.3	250	100	−2.0	9.0	2.7	1.0	3.8	5.0	5.2	0.0025	B9A	5
UBF89 (VM, DD)	19.0	0.1	200	100	−1.5	11.0	3.3	0.6	4.5	5.0	5.2	0.0025	B9A	5
Current Types														
6BW7	6.7	0.3	250	250	−8.0	9.5	3.5	0.75	8.5	—	—	0.01	B9A	3
6F23	6.3	0.3	170	170	−1.9	10.0	2.6	—	9.2	8.3	3.3	0.0065	B9A	3
6F26 (VM)	6.3	0.3	250	100	−2.0	10.0	2.5	0.5	6.0	7.2	3.7	0.007	B9A	3
6F28	6.3	0.3	180	180	−2.9	10.0	2.5	0.31	12.5	8.1	2.6	0.03	B9A	56
6F29 (VM)	6.3	0.3	200	90	−2.0	12.0	4.5	0.5	12.5	9.5	3.0	0.0055	B9A	3
6F30	6.3	0.3	170	170	−2.0	10.0	4.1	0.33	15.6	10.0	3.0	0.0055	B9A	3
ECH84 (TH)	6.3	0.3	135	14	0	1.7	0.9	—	2.2	—	—	0.009	B9A	53
EF80	6.3	0.3	170	170	−2.0	10.0	2.5	0.5	7.4	7.5	3.3	0.007	B9A	3
EF85	6.3	0.3	250	100	−2.0	10.0	2.5	0.5	6.0	7.2	3.7	0.007	B9A	3
EF86	6.3	0.2	250	140	−2.0	3.0	0.6	2.5	2.0	3.8	5.4	0.025	B9A	13
EF183	6.3	0.3	200	90	−2.0	12.0	4.5	0.5	12.5	9.5	3.0	0.0055	B9A	3
EF184	6.3	0.3	170	170	−2.0	10.0	4.1	0.33	15.6	10.0	3.0	0.0055	B9A	3
30F5	7.3	0.3	170	170	−1.9	10.0	2.6	—	8.8	9.0	4.4	0.0073	B9A	3
30FL14 (TP)	7.4	0.3	160	160	−1.7	12.0	4.0	0.25	14.5	6.4	2.7	0.008	B9A	54
PCF808 (TP)	7.4	0.3	160	160	−1.7	12.0	4.0	0.25	14.5	6.4	2.7	0.008	B9A	54

(Continued)

Screened Tetrodes and Pentodes

Type	Heater		Volts			Current (mA)		r_a (MΩ)	g_m (mA/V)	Capacitance (pF)			Base	
	Volts	Amps	Anode	Screen	Grid	Anode	Screen			C_{gk}	C_{ak}	C_{gp}	Type	Ref
MAZDA *(Continued)*														
Current Types (Continued)														
PCH200 (TH)	8.5	0.3	14	14	−1.8	20.0	—	—	—	—	—	0.1	B10B	4
PCF802 (TP)	9.0	0.3	100	100	−1.0	6.0	1.7	0.4	5.5	5.4	—	0.06	B9A	15
30FL12 (T,BT)	10.0	0.3	180	180	−2.9	10.0	2.5	0.31	12.5	8.1	2.6	0.03	B9A	55
PCL84 (TP)	15.0	0.3	220	220	−3.4	18.0	3.0	0.15	10.0	8.7	4.2	0.1	B9A	36
PFL200 (DP)	16.5	0.3	150	150	−2.3	10.0	3.0	0.16	8.5	10.0	11.0	0.14	B10B	1
			170	170	−2.6	30.0	6.5	0.04	21.0	12.0	7.0	0.095		
M. O. VALVE CO.														
Current Types														
A3064/CV4041	6.3	0.3	300	300	0	11.0	3.4	—	8.43	7.6	0.01	3.25	B7G	29
E180F	6.3	0.3	210	175	−50	11.5	2.9	0.09	15.9	11.1	0.1	7.5	B9A	31
E280F	6.3	0.315	220	180	−50	15.0	4.5	0.12	23.0	15.5	0.05	9.3	B9A	31
E282F	6.3	0.35	200	150	−50	35.0	11.0	—	26.0	16.0	0.05	10.0	B9A	31
E810F	6.3	0.34	120	150	−1.9	35.0	5.0	0.042	50.0	14.5	0.04	3.5	B9A	62
EF86/Z729	6.3	0.2	250	140	−2.0	3.0	0.6	2.5	1.8	4.0	5.5	0.025	B9A	13
EF91/Z77	6.3	0.3	250	250	−2.0	10.0	2.5	7.5	7.4	7.4	3.0	0.009	B7G	8
Z759	6.3	0.6	250	250	−2.0	20.0	5.25	0.05	15.0	13.0	2.5	0.007	B9A	32
MULLARD														
Replacement Types														
6AS6 M8196(SQ)	6.3	0.175	120	120	−2.0	5.1	3.5	0.15	3.2	—	—	0.02	B7G	15
E80CF(SQ) (TP)	6.3	0.33	170	170	−2.0	10.0	2.8	0.4	6.2	5.6	3.4	0.025	B9A	15
E180F(SQ)	6.3	0.3	190	160	−1.0	13.0	3.3	0.035	16.5	7.9	2.9	0.02	B9A	31
EF80	6.3	0.3	170	170	−2.0	10.0	2.5	0.4	7.4	7.5	3.3	0.007	B9A	3
EF86	6.3	0.2	250	140	−2.0	3.0	0.6	2.5	2.0	3.8	5.1	0.005	B9A	13
EF91 M8083(SQ)	6.3	0.3	250	250	−2.0	10.0	2.5	1.0	7.6	7.0	2.0	0.008	B7G	8
EF92 M8161(SQ)	6.3	0.2	250	150	−0.65	8.0	2.0	0.5	2.5	4.5	7.0	0.004	B7G	8
EF95 M8100(SQ)	6.3	0.175	180	120	−2.0	7.7	2.4	0.69	5.1	4.0	2.8	0.02	B7G	2
EF183 (VM)	6.3	0.3	200	90	−2.0	12.0	4.5	0.5	12.5	9.5	3.0	<0.0055	B9A	3
Current Types														
E810F	6.3	0.34	120	150	−1.9	35.0	5.0	0.042	50	—	0.04	0.032	B9A	64
EF184	6.3	0.3	170	170	−2.0	10.0	4.1	0.33	15.6	10.0	3.0	<0.0055	B9A	3
PCF802 (TP)	9.0	0.3	100	100	−1.0	6.0	1.7	0.4	5.5	5.4	—	0.06	B9A	15
PCL84 (TP)	15.0	0.3	200	200	−2.9	18.0	3.0	0.15	10.4	8.7	4.2	0.1	B9A	36
PFL200 (DP)	16.5	0.3	150	150	−2.3	10.0	3.0	0.16	8.5	10.0	11.0	0.14	B10B	1
TUNGSRAM														
Replacement Types														
ECH84 (TH)	6.3	0.3	135	14	0	1.7	0.9	—	2.2	—	—	0.009	B9A	53
EF80	6.3	0.3	170	170	−2.0	10.0	2.5	0.5	7.4	7.5	3.3	0.007	B9A	3
EF85	6.3	0.3	250	100	−2.0	10.0	2.5	0.5	6.0	7.2	3.7	0.007	B9A	3
EF86	6.3	0.2	250	140	−2.0	3.0	0.6	2.5	2.0	4.0	5.5	0.025	B9A	13
EF89 (VM)	6.3	0.2	250	100	−2.0	9.0	3.0	1.0	3.6	5.5	5.1	0.002	B9A	25
EF183 (VM)	6.3	0.3	200	90	−2.0	12.0	4.5	0.5	12.5	9.5	3.0	0.005	B9A	3
PCH200 (TH)	8.5	0.3	14	14	−1.8	20.0	—	—	—	—	—	0.1	B10B	4
Current Types														
EF184	6.3	0.3	170	170	−2.0	10.0	4.1	0.33	15.6	10.0	3.0	0.005	B9A	3
PCL84 (TP)	15.0	0.3	220	220	−3.4	18.0	3.0	0.15	10.0	8.7	4.2	0.1	B9A	36
PFL200 (DP)	16.5	0.3	170	170	−2.6	30.0	6.5	0.04	21.0	12.0	7.0	0.09	B10B	1

Output Valves 1

(Triodes, tetrodes and pentodes, Class-A operation)

Type		Heater		Volts			Current (mA)		r_a (Ω)	g_m (mA/V)	R_K (Ω)	R_L (Ω)	Power Output (W)	D (%)	Base	
		Volts	Amps	Anode	Screen	Grid	Anode	Screen							Type	Ref
BRIMAR																
Replacement Types																
6CL6	(P)	6.3	0.65	250	150	−3.0	30.0	7.0	150,000	11.0	—	7,500	2.8	8.0	B9A	60
EL506	(P)	6.3	0.8	300	300	−10.0	60.0	8.0	25,000	10.2	—	3,000	10.0	13.0	B9D	2
Current Types																
5763 6062(SQ)	(BT)	6.0	0.75	300	225	−7.4	40.0	2.4	65,000	6.3	175	8,500	4.15	7.6	B9A	4
6061(SQ)	(BT)	6.3	0.45	315	225	−13.0	34.0	2.2	77,000	3.75	360	8,500	5.5	12.0	B9A	11
6132(SQ)	(BT)	6.3	0.75	250	250	−4.5	40.0	6.0	50,000	11.0	100	6,000	3.0	8.5	B9A	11
6AK6	(P)	6.3	0.15	180	180	−9.0	15.0	2.5	200,000	2.3	520	10,000	1.1	10.0	B7G	4
6AQ5	(BT)	6.3	0.45	250	250	−12.5	45.0	4.5	52,000	4.1	240	5,000	4.5	8.0	B7G	11
6BW6	(BT)	6.3	0.45	315	225	−13.0	34.0	2.2	77,000	3.75	360	8,500	5.5	12.0	B9A	11
6CH6	(BT)	6.3	0.75	250	250	−4.5	40.0	6.0	50,000	11.0	100	6,000	3.0	8.5	B9A	11
6L6GA	(BT)	6.3	0.9	350	250	−18.0	54.0	2.5	33,000	5.2	300	4,200	11.0	15.0	I0	4
6V6GT	(BT)	6.3	0.45	315	225	−13.0	34.0	2.2	77,000	3.75	360	8,500	5.5	12.0	I0	4
807	(BT)	6.3	0.9	500	200	−14.5	50.0	1.6	39,000	5.7	280	6,000	11.5	12.0	UX5	1
EL34	(P)	6.3	1.5	250	250	−12.2	100	15.0	15,000	11.0	106	2,000	11.0	10.0	I0	17
EL90	(P)	6.3	0.45	250	250	−12.5	45.0	4.5	52,000	4.1	250	5,000	4.5	8.0	B7G	11
EL821	(P)	6.3	0.75	250	250	−4.5	40.0	6.0	50,000	11.0	—	—	—	—	B9A	11
I.T.T.																
Current Types																
12E1		6.3	1.6	150	150	−10.0	200	10.0	—	14.0	—	—	35	—	I0	5
12E1C		6.3	1.6	150	150	−10.0	200	10.0	—	14.0	—	—	35	—	I0	19
S11E12(SQ)		6.3	1.6	150	150	−8.5	200	12.0	—	13.5	—	—	28	—	I0	19
13E1		13.0	2.6	150	150	−14.0	500	—	130	35.0	—	—	90	—	B7A	2
13E12		13.0	2.6	150	150	−33.0	500	—	110	25.0	—	—	90	—	B7A	2
MAZDA																
Replacement Types																
PL83	(P)	15.0	0.3	170	170	−2.3	36.0	5.0	100,000	10.0	—	—	—	—	B9A	7
30P16	(P)	16.5	0.3	170	170	−10.4	53.0	10.0	20,000	9.0	165	3,000	4.0	10.0	B9A	8
PL82	(P)	16.5	0.3	170	170	−10.4	53.0	10.0	20,000	9.0	165	3,000	4.0	10.0	B9A	8
UCL83	(TP)	38.0	0.1	170	170	−9.5	30.0	5.0	53,000	5.5	—	—	5.4	—	B9A	17
Current Types																
6P15	(P)	6.3	0.76	250	250	−7.3	48.0	5.5	25,000	5.0	680	9,000	3.4	10.0	B9A	26
6PL12	(T,BT)	6.3	0.78	250	250	−22.5	28.0	5.5	150,000	3.3	—	11,000	1.4	10.0	B9A	6
ECL80	(TP)	6.3	0.3	200	200	−8.0	17.5	3.3	25,000	5.0	680	9,000	3.4	10.0	B9A	26
ECL82	(TP)	6.3	0.76	250	250	−22.5	28.0	5.5	48,000	10.0	170	5,900	4.3	10.0	B9A	52
ECL86	(TP)	6.3	0.66	250	250	−7.0	36.0	6.0	38,000	11.3	135	4,000	5.4	10.0	B9A	8
EL84	(P)	6.3	0.76	250	250	−7.3	48.0	5.5	—	6.7	270	5,000	2.25	7.0	B9A	8
30P12	(BT)	12.6	0.3	170	180	−10.3	31.0	7.3	53,000	5.5	—	5,500	2.2	10.0	B9A	17
PCL83	(TP)	12.6	0.3	170	170	−9.5	30.0	5.0	45,000	10.5	125	5,100	4.1	10.0	B9A	52
PCL86	(TP)	13.6	0.3	230	230	−5.7	41.0	10.5	23,000	10.0	170	2,200	5.2	10.0	B9A	8
30P18	(P)	15.0	0.3	160	170	−12.5	70.0	5.0	23,000	10.0	170	2,200	5.2	10.0	B9A	8
PL84	(P)	15.0	0.3	170	170	−12.5	70.0	5.0	20,000	6.4	380	5,600	3.5	10.0	B9A	26
30PL12	(T,BT)	16.0	0.3	200	200	−16.0	35.0	7.0	20,000	6.4	380	5,600	3.5	10.0	B9A	26
PCL82	(TP)	16.0	0.3	200	200	−16.0	35.0	7.0	—	7.5	—	—	—	—	B9A	26
30PL13	(T,BT)	16.0	0.3	170	170	−13.5	45.0	9.0	—	40.0	36	—	6.0	—	B9A	65
PL802	(P)	16.0	0.3	170	170	—	30.0	6.5	—	9.0	—	—	12.0	—	B9D	6
PL508	(P)	17.0	0.3	190	190	−17.0	60.0	5.0	23,000	10.0	—	2,200	5.2	10.0	B9A	8
10P18	(P)	45.0	0.1	160	170	−12.5	70.0	5.0	23,000	10.0	—	2,200	5.2	10.0	B9A	8
UL84	(P)	45.0	0.1	160	170	−12.5	70.0	5.0	20,000	6.4	380	5,600	3.5	10.0	B9A	26
10PL12	(T,BT)	50.0	0.1	200	200	−16.0	35.0	7.0	20,000	6.4	380	5,600	3.5	10.0	B9A	26
UCL82	(TP)	50.0	0.1	200	200	−16.0	35.0	7.0	20,000	6.4	380	5,600	3.5	10.0	B9A	26

Type		Heater		Volts			Current (mA)		r_g (Ω)	g_m (mA/V)	R_A (Ω)	R_L (Ω)	Power Output (W)	D (%)	Base	
		Volts	Amps	Anode	Screen	Grid	Anode	Screen							Type	Ref
M.O. VALVE CO.																
Current Types																
CCS1	(BT)	6.0	2.6	500	250	—	200	—	—	12.0	—	—	250	—	B8F special	
CCS2	(BT)	6.0	2.6	500	250	—	200	—	—	12.0	—	—	250	—	B8F special	
CCS3	(BT)	6.0	2.4	250	250	−45.0	150	20.0	—	10.0	—	—	50	—	B8F special	
A2134	(P)	6.3	0.635	165	165	−9.3	53.0	9.0	23,200	9.5	150	3,000	4.1	10.0	B7G	10
A2426	(BT)	6.3	1.3	150	150	−13.5	50.0	5.0	—	8.0	—	—	15.0	—	I0	21
A3042	(P)	6.3	1.2	150	150	−12.5	50.0	4.0	—	8.5	—	—	12.0	—	B9A	9
KT66	(BT)	6.3	1.27	250	250	−15.0	85.0	6.3	22,500	6.3	160	2,200	7.25	9.0	I0	4
KT88	(BT)	6.3	1.6	300	300	−20.0	130	13.5	—	12.0	11,150	3,500	—	7.0	I0 special	
TT100	(BT)	6.3	3.2	150	150	−70.0	400	—	—	26.0	—	—	100	—	B12F special	
MULLARD																
Replacement Types																
E55L	(P)	6.3	0.6	200	175	−55.0	50.0	5.5	20,000	45.0	270	—	—	—	B9D	4
ECL80	(TP)	6.3	0.3	200	200	−8.0	17.5	3.3	150,000	3.3	—	11,000	1.4	10.0	B9A	6
ECL82	(TP)	6.3	0.78	250	250	−22.5	28.0	5.7	25,000	5.0	680	9,000	3.4	10.0	B9A	26
ECL83	(TP)	6.3	0.6	200	200	−13.0	27.0	4.4	53,000	5.5	—	75,000	2.5	10.5	B9A	17
ECL86	(TP)	6.3	0.7	250	250	−7.0	36.0	6.0	48,000	10.0	170	7,000	4.0	10.0	B9A	52
EL34	(P)	6.3	1.5	250	250	−12.2	100	15.0	15,000	11.0	120	2,000	11.0	11.0	I0	17
EL84	(P)	6.3	0.76	250	250	−7.3	48.0	5.5	38,000	11.3	135	5,200	5.7	10.0	B9A	8
EL95	(P)	6.3	0.2	250	250	−9.0	24.0	4.5	80,000	5.0	320	10,000	3.0	12.0	B7G	23
PCL83	(TP)	12.6	0.3	170	170	−9.5	30.0	5.0	53,000	5.5	—	5,500	2.5	10.5	B9A	17
PCL84	(TP)	15.0	0.3	220	220	−3.4	18.0	3.1	150,000	10.0	—	—	—	—	B9A	36
PL83	(P)	15.0	0.3	170	170	−2.3	36.0	5.0	100,000	10.0	—	—	—	—	B9A	7
PL84	(P)	15.0	0.3	170	170	−12.5	70.0	3.5	26,000	11.0	—	—	—	—	B9A	8
UCL83	(TP)	40.0	0.1	170	170	−9.5	30.0	5.0	53,000	5.5	—	5,500	2.5	10.5	B9A	17
UL84	(P)	45.0	0.1	170	170	−12.5	70.0	5.0	23,000	10.0	170	2,400	5.6	10.0	B9A	8
UCL82	(TP)	50.0	0.1	250	250	−22.5	28.0	5.5	25,000	5.0	—	9,000	3.4	10.0	B9A	36
Current Types																
PCL86	(TP)	13.3	0.3	230	230	−5.7	41.0	10.5	45,000	10.5	125	5,100	4.1	10.0	B9A	52
PCL82	(TP)	16.0	0.3	170	170	−11.5	41.0	9.0	16,000	7.5	—	3,900	3.3	10.0	B9A	26
PFL200	(TP)	16.5	0.3	170	170	−2.6	30.0	6.5	40,000	21.0	—	—	—	—	B10B	1
PCL805	(TP)	17.5	0.3	100	170	−1.0	200	35.0	11,000	5.5	—	—	—	—	B9A	42
PCL85	(TP)	18.0	0.3	170	170	−15.0	41.0	2.7	25,000	7.25	—	—	—	—	B9A	42
TUNGSRAM																
Replacement Types																
ECL80	(TP)	6.3	0.3	200	200	−8.0	17.5	3.3	150,000	3.3	—	11,000	1.4	10.0	B9A	6
ECL82	(TP)	6.3	0.78	200	200	−16.0	35.0	7.0	20,000	6.4	—	5,600	3.5	10.0	B9A	26
ECL86	(TP)	6.3	0.68	250	250	−7.0	36.0	6.0	48,000	10.0	170	5,900	4.3	10.0	B9A	52
EL34	(P)	6.3	1.5	250	250	−12.2	100	15.0	15,000	11.0	106	2,000	11.0	10.0	I0	17
EL84	(P)	6.3	0.76	250	250	−7.3	48.0	5.5	38,000	11.0	135	5,200	5.7	10.0	B9A	8
EL95	(P)	6.3	0.2	250	250	−9.0	24.0	4.5	80,000	5.0	320	10,000	3.0	12.0	B7G	23
PCL83	(TP)	12.6	0.3	200	200	−13.0	27.0	4.4	45,000	5.5	220	6,000	2.5	10.0	B9A	17
PL83	(P)	15.0	0.3	200	200	−3.5	36.0	5.0	41,000	10.0	68	5,000	1.1	7.8	B9A	7
PL84	(P)	15.0	0.3	170	170	−12.5	70.0	3.5	26,000	11.0	—	—	—	—	B9A	8
UCL83	(TP)	40.0	0.1	170	170	−9.5	30.0	5.0	53,000	5.5	—	5,500	2.5	10.5	B9A	17
UL84	(P)	45.0	0.1	170	170	−12.5	70.0	5.0	23,000	10.0	170	2,400	5.6	10.0	B9A	8
UCL82	(TP)	50.0	0.1	250	250	−22.5	28.0	5.5	25,000	5.0	—	9,000	3.4	10.0	B9A	26
Current Types																
PCL86	(TP)	13.6	0.3	230	230	−5.7	41.0	10.5	45,000	10.5	125	5,100	4.1	10.0	B9A	52
PCL82	(TP)	16.0	0.3	200	200	−16.0	35.0	6.5	20,000	6.4	—	5,600	3.5	10.0	B9A	26
PL802	(P)	16.0	0.3	170	170	—	30.0	6.5	—	40.0	36.0	—	6.0	—	B9A	65
PL508	(P)	17.0	0.3	190	190	−17.0	60.0	5.0	—	9.0	—	—	12.0	—	B9D	6
PCL805/85	(TP)	17.5	0.3	100	170	−1.0	200	35.0	11,000	5.5	—	—	—	—	B9A	42

Output Valves 2

(Push-pull operation)

Type	Heater		Volts			Current (mA) (per valve)		Input Volts (peak) g–g	$R_{g/g}$ (Ω)	R_k (per valve) (Ω)	R_{L} a–a (Ω)	Power Output (W)	D (%)	Class	Base	
	Volts	Amps	Anode	Screen	Grid	Anode	Screen								Type	Ref.
BRIMAR																
Replacement Types																
EL506 (P)	6.3	0.8	450	400	−21.0	72.0	15.0	42.0	—	—	6,600	45.0	1.5	AB_1	B9D	2
			450	400	—	47.0	11.0	11.0	—	170§	9,000	28.0	2.0			
Current Types																
5763 (BT)	6.0	0.75	300	225	—	43.0	7.3	13.75	—	68§	11,500	7.5	4.2	A_1	B9A	4
			300	225	—	28.5	7.3	21.0	—	150§	13,500	8.8	4.4	AB_1		
			300	225	−12.5	70.0	9.0	71.0	—	—	4,500	25.0	9.6	AB_2		
6AK6 (P)	6.3	0.15	180	180	—	14.5	3.8	18.0	8	260§	20,000	2.5	5.3	A_1	B7G	4
			225	225	−21.0	15.7	4.0	42.0	8	—	20,000	5.2	4.2	AB_1		
6BW6 (BT)	6.3	0.45	250	250	—	49.0	6.8	26.0	8	120§	10,000	9.0	2.5	A_1	B9A	11
			285	285	—	39.3	5.0	45.0	8	260§	8,000	12.0	1.0	AB_1		
			315	285	−19.0	77.5	8.0	80.0	—	—	5,000	30.0	7.0	AB_2		
6CH6 (BT)	6.3	0.75	250	250	—	40.0	8.8	9.0	8	50§	9,000	8.0	7.5	A_1	B9A	11
(T)			250	—	—	46.0	—	9.0	—	50§	5,000	1.8	1.0			
6L6GA (BT)	6.3	0.9	270	270	—	72.5	8.5	40.0	8	125§	5,000	18.5	4.0	A_1	I0	4
			360	270	—	50.0	9.5	57.0	8	250§	9,000	24.0	4.0	AB_1		
(T)			360	270	−22.5	69.0	8.0	45.0	—	—	6,600	26.5	1.8	AB_2		
			325	—	—	42.0	—	60.0	8	375§	8,000	6.0	0.6	A_1		
6V6GT (BT)	6.3	0.45	285	285	−19.0	35-46	2-6.8	36.0	8	250§	8,000	14.0	3.5	AB_1	I0	4
807 (BT)	6.3	0.9	500	300	—	50-60	1.25-8.3	72.0	8	270§	9,000	32.5	2.7	A_1	UX5	1
			600	300	−29.5	40-75	0.75-8.8	59.0	8	—	10,000	47.5	2.2	A_1		
			600	300	−30.0	30-100	2.5-10.5	78.0	—	—	6,400	80.0	3.5	AB_2		
(T)			400	—	−45.0	30-70	—	90.0	8	—	3,000	15.0	3.0	—		
			325	—	—	40-42	—	60.0	8	375§	8,000	6.0	0.6	A		
EL34 (P)	6.3	1.5	375	—	−33.0	107.5	23.5	65.0	—	—	3,500	48.0	2.8	—	I0	17
			400	—	−36.0	110.5	23.5	70.0	—	—	3,500	54.0	1.6	—		
EL90 (P)	6.3	0.45	250	250	−15.0	35.0	2.5	30.0	—	—	10,000	10.0	3.0	AB_1	B7G	11
EL821 (BT)	6.3	0.75	250	250	—	40.0	8.8	9.0	8	50§	9,000	8.0	7.5	A_1	B9A	11
(T)			—	—	—	46.0	—	9.0	8	50§	5,000	1.8	1.0			

§ Common resistor

MAZDA

Replacement Types

30P16 (P)	16.5	0.3	170	170	—	49.0	16.5	26.0	8	200	4,000	9.0	4.0	AB_1	B9A	8
PL82 (P)	16.5	0.3	170	170	—	49.0	16.5	26.0	8	200	4,000	9.0	4.0	AB_1	B9A	8

Current Types

6P15 (P)	6.3	0.76	250	250	—	37.5	7.5	22.5	8	260	8,000	11.0	3.0	AB_1	B9A	8
6PL12 (TP)	6.3	0.78	200	200	—	39.5	16.5	35.0	—	380	6,000	9.0	4.0	AB_1	B9A	26
ECL82 (TP)	6.3	0.78	200	200	—	39.5	16.5	35.0	—	380	6,000	9.0	4.0	AB_1	B9A	26
ECL86 (TP)	6.3	0.66	250	250	—	35.5	8.9	15.5	—	180	8,200	10.0	5.0	AB	B9A	52
EL84 (P)	6.3	0.76	300	300	—	46.0	11.0	28.0	8	270	8,000	17.0	4.0	AB	B9A	8
PCL83 (TP)	12.6	0.3	200	200	—	29.0	8.5	33.0	—	220§	7,500	7.2	4.2	AB	B9A	17
30PL12 (TP)	16.0	0.3	200	200	—	39.5	16.5	35.0	—	380	6,000	9.8	4.0	AB	B9A	26
PCL82 (TP)	16.0	0.3	200	200	—	39.5	16.5	35.0	—	380	6,000	9.8	4.0	AB	B9A	26
10P18 (P)	45.0	0.1	200	200	—	60.0	15.0	41.0	—	300	3,500	15.0	3.5	AB	B9A	8
UL84 (P)	45.0	0.1	200	200	—	60.0	15.0	41.0	—	300	3,500	15.0	3.5	AB	B9A	8

§ Common resistor

M.O.VALVE CO.

Current Types

A2134 (P)	6.3	0.635	250	165	—	40.0	12.0	30.0	—	300	7,500	13.3	4.5	AB_1	B7G	10
(T)			165	—	−10.5	32.5	—	24.0	—	330	3,000	2.6	1.4			

(Continued)

Type		Heater		Volts			Current (mA) (per valve)		Input Volts (peak) g–g	$R_{g/N}$ (Ω)	R_K (per valve) (Ω)	R_L a–a (Ω)	Power Output (W)	D (%)	Class	Base	
		Volts	Amps	Anode	Screen	Grid	Anode	Screen								Type	Ref.
M.O. VALVE CO. (*Continued*)																	
Current Types (*Continued*)																	
KT88	(BT)	6.3	1.6	425	425	−44.0	83.0	—	110	—	525	6,000	50.0	2.0	UL, AB_1		
				550	550	−80.0	150	—	160	—	—	4,500	100	3.6	UL, AB_1	I0	4
	(T)			425	—	—	90.0	—	100	—	525	4,000	27.0	1.3	A		
TT21		6.3	1.6	1,250	300	−45.0	28-130	71.0	12.0	11.0	—	15,000	200	7.0	AB_1	I0	16
DA41	(T)	7.5	3.1	1,000	—	0	140	—	220	—	—	7,000	175	5.0	B	UX4	3
DA42	(T)	7.5	1.2	1,250	—	−4.0	120	—	200	—	—	13,000	200	6.0	B	4-pin	
TT22		12.6	0.8	1,250	300	−45.0	28-130	71.0	12.0	11.0	—	15,000	200	7.0	AB_1	I0	16
MULLARD																	
Replacement Types																	
ECL82	(TP)	6.3	0.78	250	250	—	27.5	9.2	53.7	—	390	10,000	9.0	5.0	AB	B9A	26
ECL83	(TP)	6.3	0.6	200	200	—	29.0	8.5	33.0	—	220‡	7,500	7.2	4.2	AB	B9A	17
ECL86	(TP)	6.3	0.66	300	300	—	37.0	10.6	23.8	—	260	9,100	13.6	4.0	—	B9A	52
EL34	(P)	6.3	1.5	375	R_{g2} 600Ω‡	−33.0	107.5	23.5	65.0	—	—	3,500	48.0	2.8	—	I0	17
	(P)†			800	400	−39.0	91.0	19.0	66.0	—	—	11,000	100	5.0	—		
	(P)			400	R_{g2} 800Ω‡	−36.0	110.5	23.0	70.0	—	—	3,500	54.0	1.6	—		
	(P)			375	R_{g2} 470Ω‡	—	94.0	19.5	56.0	—	260	3,500	35.0	1.7	—		
	(P)			450	R_{g2} 1kΩ‡	—	71.5	22.0	75.0	—	465	6,500	40.0	5.1	—		
	(P)			430	R_{g2} 1kΩ‡	—	70.0	14.0	70.0	—	470	6,000	34.0	2.5	UL, AB_1		
	(T)			430	—	—	70.0	—	70.0	—	440	5,000	19.0	1.8	—		
EL84	(P)	6.3	0.76	300	300	—	46.0	11.0	28.0	—	270	8,000	17.0	4.0	AB	B9A	8
EL95	(P)	6.3	0.2	250	250	−9.0	24.0	7.5	13.0	—	—	10,000	6.5	3.5	B	B7G	23
PCL83	(TP)	12.6	0.3	200	200	—	29.0	8.5	33.0	—	220	7,500	7.2	4.2	AB	B9A	17
Current Types																	
PCL82	(TP)	16.0	0.3	200	200	—	39.5	16.5	35.4	—	390	6,000	9.8	4.0	AB	B9A	26

† Fixed bias and separate screen grid supply. ‡ Common resistor

Type		Heater		Volts			Current (mA) (per valve)		Input Volts (peak) g–g	$R_{g/N}$ (Ω)	R_K (per valve) (Ω)	R_L a–a (Ω)	Power Output (W)	D (%)	Class	Base	
		Volts	Amps	Anode	Screen	Grid	Anode	Screen								Type	Ref.
L.T.T.																	
Replacement Types																	
5B/254M	(T)	6.3	0.9	400	—	−45.0	140	—	90.0	—	—	3,000	15.0	3.0	AB_1	B8B	9
5B/255																	8

Output Valves 3

For television line scan

Type		Heater		Anode Supply Volts	Screen Volts	Typical R_K (Ω)	Positive Surge Anode Volts (max.)	Negative Surge Grid Volts (max.)	Max. Diss. (W)		Typical Current (mA)		Base	
		Volts	Amps						Anode	Screen	Anode	Screen	Type	Ref.
MAZDA														
Current Types														
PL81A		21.5	0.3	170	170	—	7,000	1,000	7.5	4.5	45.0	2.2	B9A	9
30P19	(BT)	25.0	0.3	230	200	—	7,000	—	11.0	5.0	100	15.0	I0	16
PL36		25.0	0.3	230	200	—	7,000	1,500	11.0	5.0	100	16.0	I0	16
PL302		25.0	0.3	230	200	—	7,000	—	11.0	5.0	100	15.0	I0	16
PL500		27.0	0.3	230	200	—	7,000	—	12.0	5.0	100	10.0	B9D	1
PL504	(P)	27.0	0.3	75	200	—	7,000	—	—	—	440	30.0	B9D	1
PL509	(P)	40.0	0.3	160	160	—	8,000	550	40.0	9.0	1.4A	45.0	B9D	7

Type		Heater		Anode Supply Volts	Screen Volts	Typical R_K (Ω)	Positive Surge Anode Volts (max.)	Negative Surge Grid Volts (max.)	Max. Diss. (W)		Typical Current (mA)		Base	
		Volts	Amps						Anode	Screen	Anode	Screen	Type	Ref.
MULLARD														
Replacement Types														
PD500	(T)	7.3	0.3	25,000	—	—	—	—	30.0	—	1.6	—	B9D	5
PL36		25.0	0.3	170	170	—	7,000	1,000	10.0	5.0	100	8.0	I0	16
Current Types														
PL802	(P)	16.0	0.3	170	170	39	—	—	6.0	3.0	30.0	6.5	B9A	65
PL508	(P)	17.0	0.3	190	190	—	2,500	—	12.0	3.0	60.0	5.0	B9D	6
PL504	(P)	27.0	0.3	75	200	—	7,000	—	—	—	440	30.0	B9D	1
PL509	(P)	40.0	0.3	160	160	—	7,000	550	30.0	7.0	1.4A	45.0	B9D	7
TUNGSRAM														
Replacement Types														
PD500	(T)	7.3	0.3	25,000	—	—	—	—	30.0	—	1.6	—	B9D	5
PL36		25.0	0.3	230	200	—	7,000	1,500	11.0	5.0	100	16.0	I0	16
Current Types														
PL504	(P)	27.0	0.3	75	200	—	7,000	—	—	—	440	30.0	B9D	1
PL509	(P)	40.0	0.3	160	160	—	8,000	550	40.0	9.0	1.4A	45.0	B9D	7

Amplifier Triodes

Type		Heater		Volts		Anode Current (mA)	r_a (Ω)	g_m (mA/V)	Capacitance (pF)			Base	
		Volts	Amps	Anode	Grid				C_{gk}	C_{ak}	C_{ga}	Type	Ref.
BRIMAR													
Replacement Types													
6AM4		6.3	0.225	200	−1.0	10.0	8,700	9.8	4.4	0.16	2.4	B9A	27
Current Types													
6AT6	(DD)	6.3	0.3	250	−3.0	1.0	58,000	1.2	2.3	1.1	2.1	B7G	7
6BQ7A	(DT)	6.3	0.4	150	−2.0	9.0	6,100	6.4	2.85	0.15	1.15	B9A	28
6C4		6.3	0.15	250	−8.5	10.5	7,700	2.2	1.8	1.3	1.6	B7G	3
6SL7GT	(DT)	6.3	0.3	250	−2.0	2.3	44,000	1.6	2.15	0.9	3.5	I0	3
6SN7GT	(DT)	6.3	0.6	250	−8.0	9.0	7,700	2.6	2.6	0.8	4.1	I0	3
12AT7 / 6060(SQ)	(DT)	6.3	0.3†	250	−2.0	10.0	10,000	5.5	2.5	0.4	1.5	B9A	1
12AU7 / 6067(SQ)	(DT)	6.3	0.3†	250	−8.5	10.5	7,700	2.2	1.6	0.5	1.5	B9A	1
12AX7 / 6057(SQ)	(DT)	6.3	0.3†	250	−2.0	1.2	62,500	1.6	1.6	0.46	1.7	B9A	1
12BH7	(DT)	6.3	0.6†	250	−10.5	11.5	5,500	3.1	3.0	0.8	2.4	B9A	1
13D8	(DT)	6.3	0.3†	250	−8.5	10.5	7,700	2.2	1.6	0.5	1.5	B9A	1
5965	(DT)	6.3	0.45	150	—	8.2	7,250	6.5	3.8	0.5	3.0	B9A	1
6080	(DT)	6.3	2.5	100	−30.0	100	300	6.5	5.5	2.5	8.6	I0	22
E88CC(SQ)	(DT)	6.3	0.3	90	−1.2	15.2	2,650	12.5	3.3	0.18	1.4	B9A	28
EC90		6.3	0.15	250	−8.5	10.5	7,700	2.2	1.8	1.3	1.6	B7G	3
ECC83	(DT)	6.3	0.3†	250	−2.0	1.2	62,500	1.6	1.6	0.3	1.7	B9A	1
ECC804	(DT)	6.3	0.3†	200	−7.7	10.0	5,300	3.4	2.5	2.1	2.5	B9A	28
ECC807	(DT)	6.3	0.3†	250	−1.5	1.3	62,500	2.4	2.0	1.35	2.3	B9A	62
ECF804	(TP)	6.3	0.45	150	−1.5	13.5	5,300	7.2	2.5	1.5	1.8	B9A	15
PCE82	(T, BT)	10.0	0.3	150	−4.9	10.0	4,900	3.7	2.2	1.9	2.4	B9A	33
12AT6	(DD)	12.6	0.15	250	−3.0	1.0	58,000	1.2	2.3	1.1	2.1	B7G	7
12SL7GT	(DT)	12.6	0.15	250	−2.0	2.3	44,000	1.6	2.15	0.9	3.5	I0	3

Amplifier Triodes

Type		Heater		Volts		Anode Current (mA)	r_g (Ω)	g_m (mA/V)	Capacitance (pF)			Base	
		Volts	Amps	Anode	Grid				C_{gk}	C_{ak}	C_{ga}	Type	Ref.
MAZDA													
Current Types													
PC86		3.8	0.3	175	−1.5	12.0	4,850	14.0	3.6	0.2	2.0	B9A	50
PC88		3.8	0.3	160	−1.25	12.5	4,800	13.5	3.8	0.055	1.2	B9A	51
PC97		4.5	0.3	135	−1.0	11.0	5,000	13.0	3.2	0.21	0.48	B7G	30
6/30L2	(DT)	6.3	0.3	200	−7.7	10.0	5,300	3.4	2.5	2.1	2.5	B9A	28
6F12	(P)	6.3	0.3	250	−2.0	12.6	8,000	9.4	—	—	—	B7G	8
6F23	(P)	6.3	0.3	170	−1.9	12.6	4,800	11.6	—	—	—	B9A	3
6L12	(DT)	6.3	0.435	250	−2.3	10.0	9,700	5.9	3.0	1.2	1.5	B9A	28
6L13	(DT)	6.3	0.3†	250	−2.0	1.2	62,500	1.6	1.6	0.46	1.7	B9A	1
6PL12	(T, BT)	6.3	0.78	100	0	3.5	28,000	2.5	3.0	4.3	4.2	B9A	26
EBC90	(DD)	6.3	0.3	250	−3.0	1.0	58,000	1.2	2.3	1.1	2.1	B7G	7
ECC81	(DT)	6.3	0.3†	250	−2.0	10.0	10,000	5.5	2.5	0.4	1.5	B9A	1
ECC82	(DT)	6.3	0.3†	250	−8.5	10.5	7,700	2.2	1.6	0.5	1.5	B9A	1
ECC83	(DT)	6.3	0.3†	250	−2.0	1.2	62,500	1.6	1.6	0.3	1.7	B9A	1
ECC85	(DT)	6.3	0.435	250	−2.3	10.0	9,700	5.9	3.0	0.18	1.5	B9A	28
ECC804	(DT)	6.3	0.3	200	−7.7	10.0	5,300	3.4	2.5	2.1	2.5	B9A	28
ECL80	(TP)	6.3	0.3	100	−2.3	4.0	12,500	1.4	2.0	0.3	0.9	B9A	6
ECL82	(TP)	6.3	0.78	100	0	3.5	28,000	2.5	3.0	4.3	4.2	B9A	26
ECL86	(TP)	6.3	0.66	250	−1.9	1.2	62,000	1.6	2.3	2.5	1.4	B9A	52
30L1	(DT)	7.0	0.3	100	−1.5	12.0	4,000	6.0	2.3	0.5	1.1	B9A	18
30L15	(DT)	7.0	0.3	90	−1.2	15.0	3,100	9.0	3.1	—	—	B9A	18
PCC84	(DT)	7.0	0.3	90	−1.5	12.0	4,000	6.0	2.3	0.5	1.1	B9A	18
PCC806	(DT)	7.2	0.3	75	−0.75	15.0	2,400	16.5	4.1, 6.3	1.8, 0.17	1.6, 3.3	B9A	63
30L17	(DT)	7.2	0.3	75	−0.75	15.0	2,400	16.5	4.1, 6.3	1.8, 0.17	1.6, 3.3	B9A	63
30F5	(P)	7.3	0.3	170	−1.85	12.6	—	11.0	—	—	—	B9A	3
30FL14	(TP)	7.4	0.3	100	−3.0	14.0	3,100	5.5	2.4	1.6	2.1	B9A	54
PCF808	(TP)	7.4	0.3	100	−3.0	14.0	3,100	5.5	2.4	1.6	2.1	B9A	54
PCC89	(DT)	7.5	0.3	90	−1.2	15.0	2,900	12.3	3.8, 6.3	2.5, 0.2	1.9, 4.1	B9A	18
PCC189	(DT)	7.6	0.3	90	−1.4	15.0	2,500	12.5	3.5, 6.0	1.7, 0.18	1.9, 1.9	B9A	28
PCF802	(TP)	9.0	0.3	200	−2.0	3.5	20,000	3.5	2.4	—	1.5	B9A	15
30FL1	(T, BT)	9.4	0.3	200	−7.7	10.0	5,300	3.4	3.6	2.6	2.7	B9A	33
30FL12	(T, BT)	10.0	0.3	150	−4.9	10.0	4,900	3.7	2.2	1.9	2.4	B9A	33
PCL83	(TP)	12.6	0.3	250	−8.5	10.5	7,700	2.2	2.0	0.35	1.6	B9A	17
30PL1	(T, BT)	13.0	0.3	200	−7.7	10.0	5,300	3.4	2.6	2.0	2.4	B9A	17
PCL86	(TP)	13.6	0.3	230	−1.7	1.2	62,000	1.6	2.3	2.5	1.4	B9A	52
PCL84	(TP)	15.0	0.3	200	−1.7	3.0	16,200	4.0	3.8	2.3	2.7	B9A	36
30PL12	(T, BT)	16.0	0.3	100	0	3.5	28,000	2.5	2.7	4.0	4.0	B9A	26
30PL13	(T, BT)	16.0	0.3	200	−7.7	10.0	5,300	3.4	2.1	1.9	2.3	B9A	26
30PL14	(T, BT)	16.0	0.3	200	−7.7	10.0	5,300	3.4	2.1	1.9	2.3	B9A	26
30PL15	(T, BT)	16.0	0.3	100	−2.1	10.0	4,200	4.3	2.0	1.8	2.3	B9A	42
PCL82	(TP)	16.0	0.3	100	0	3.5	28,000	2.5	2.7	4.0	4.0	B9A	26
PCL805/85	(TP)	18.0	0.3	100	−0.85	5.0	11,000	5.5	3.0	2.5	1.9	B9A	42
10PL12	(T, BT)	50.0	0.1	100	0	3.5	28,000	2.5	3.0	4.3	4.5	B9A	26
UCL82	(TP)	50.0	0.1	100	0	3.5	28,000	2.5	3.0	4.3	4.5	B9A	26
M.O. VALVE CO.													
Replacement Types													
L63		6.3	0.3	250	−8.0	9.0	7,700	2.6	3.8	3.2	4.1	I0	2
Current Types													
DA100		6.0*	2.7	1,250	−200	100	1,410	3.9	15.8	10.8	15.7	special 4-pin	
A2521		6.3	0.3	250	—	16.0	—	15.0	3.5	0.06	1.6	B9A	46
A2599		6.3	0.3	250	—	16.0	—	15.0	3.5	0.7	1.1	B9A	47
A2688		6.3	0.37	200	—	16.0	—	15.0	2.7	0.2	1.1	B7G	9
A3343		6.3	0.4	250	−1.0	10.0	2,700	6.5	2.1	0.01	1.0	Disc seal	
A3394		6.3	0.3	250	−9.5	10.0	2,000	12.0	7.5	3.5	3.5	B9A	66
EF86/Z729		6.3	0.2	250	−5.0	4.0	16,000	2.0	—	—	—	B9A	13
5842/417A		6.3	0.3	180	—	25.0	—	25.0	6.5	0.35	1.8	B9A	—
DA42		7.5	1.2	1,000	—	40.0	24,000	3.0	5.2	1.0	4.0	4-pin	

Type		Heater		Volts		Anode Current (mA)	r_g (Ω)	g_m (mA/V)	Capacitance (pF)			Base	
		Volts	Amps	Anode	Grid				C_{gk}	C_{ak}	C_{ga}	Type	Ref.
MULLARD													
Replacement Types													
PC86‡	(DT)	3.8	0.3	175	−1.5	12.0	4,850	14.0	3.6	0.2	2.0	B9A	50
PC88‡	(T)	3.8	0.3	160	−1.25	12.5	4,800	13.5	3.8	0.055	1.7	B9A	51
PC900**	(T)	4.0	0.3	200	−0.5	17.0	5,000	14.5	3.3	0.08	0.35	B7G	33
PC97**	(T)	4.5	0.3	135	−1.0	11.0	5,000	13.0	3.2	0.25	0.5	B7G	30
E80CF(SQ)	(TP)	6.3	0.33	100	−1.2	14.0	3,600	5.0	2.5	1.5	1.5	B9A	15
E88C(SQ)	(T)	6.3	0.155	160	−1.25	12.5	4,800	13.5	3.8	0.055	1.7	B9A	51
EC86	(DT)	6.3	0.15	100	−1.25	8.5	4,700	5.8	2.2	0.7	1.45	B8D	5
EC88	(T)	6.3	0.155	160	−1.25	12.5	4,800	13.5	3.8	0.055	1.7	B9A	51
EC91	(T)	6.3	0.3	250	−1.5	10.0	12,000	7.5	5.3	0.2	3.8	B7G	22
ECC81 / M8162	(DT)	6.3	0.3†	170	−1.0	8.5	11,000	5.9	2.3	0.2	1.6	B9A	1
ECC83 / M8137(SQ)	(DT)	6.3	0.3†	250	−2.0	1.2	62,500	1.6	1.6	0.46	1.7	B9A	1
ECC84	(DT)	6.3	0.34	90	−1.5	12.0	4,000	6.0	2.1, 2.3	0.16, 0.45	1.1, 2.3	B9A	18
ECC85	(DT)	6.3	0.435	250	−2.3	10.0	9,700	5.9	3.0	0.18	1.5	B9A	28
ECC88	(DT)	6.3	0.33	90	−1.2	15.0	2,650	12.5	3.3	1.8	1.4	B9A	28
ECC2000(SQ)	(DT)	6.3	0.335	90	−1.2	27.0	—	16.5	6.5	0.18	1.5	B10B	2
ECH84	(TH)	6.3	0.3	50	0	3.0	13,500	3.7	3.0	—	1.1	B9A	53
ECL80	(TP)	6.3	0.3	100	−2.3	4.0	12,500	1.4	2.0	0.3	0.9	B9A	6
ECL82	(TP)	6.3	0.78	100	0	3.5	28,000	2.5	2.7	4.3	4.2	B9A	26
ECL83	(TP)	6.3	0.6	200	−1.5	2.5	34,000	2.5	3.8	0.32	1.6	B9A	17
ECL86	(TP)	6.3	0.66	250	−1.9	1.2	62,000	1.6	2.3	2.5	1.4	B9A	52
PCC84	(DT)	7.0	0.3	90	−1.5	12.0	4,000	6.0	2.1	0.16	1.2	B9A	18
PCC89	(DT)	7.2	0.3	90	−1.2	15.0	2,900	12.3	3.5	2.5	1.9	B9A	18
PCC189‡	(VM, DT)	7.6	0.3	90	−1.4	15.0	2,500	12.5	3.5	1.7	1.9	B9A	28
PCC85	(DT)	9.0	0.3	200	−2.1	10.0	8,300	5.8	0.003	0.18	1.5	B9A	28
PCL83	(TP)	12.6	0.3	250	−8.5	10.5	7,700	2.2	2.0	0.35	1.6	B9A	17
UCL83	(TP)	40.0	0.1	200	−1.5	2.4	34,000	2.5	2.3	0.32	1.6	B9A	17
UCL82	(TP)	50.0	0.1	100	0	3.5	28,000	2.5	2.7	4.3	4.2	B9A	26
Current Types													
E88CC(SQ) / E88CC/01(SQ)	(DT)	6.3	0.3	90	−1.0	15.0	—	12.5	3.3	1.18	1.4	B9A	28
ECC82 / M8136(SQ)	(DT)	6.3	0.3†	250	−8.5	10.5	7,700	2.2	1.6	0.5	1.5	B9A	1
PCF802	(TP)	9.0	0.3	200	−2.0	3.5	20,000	3.5	2.4	—	1.5	B9A	15
PCL86	(TP)	13.0	0.3	230	−1.7	1.2	62,000	1.6	2.3	2.5	1.4	B9A	52
PCL84	(TP)	15.0	0.3	200	−1.7	3.0	16,200	4.0	4.0	2.5	2.7	B9A	36
PCL82	(TP)	16.0	0.3	100	0	3.5	28,000	2.5	2.7	4.0	4.0	B9A	26
PCL85	(TP)	18.0	0.3	100	0	10.0	9,000	5.5	2.8	0.35	1.9	B9A	42

** R.F. triode ‡ Frame grid

I.T.T.													
Replacement Types													
HL23		2.0*	0.05	150	−2.4	1.5	1.2	27,000	2.75	5.25	5.0	M0	1
3A/167M		6.3	0.45	150	−1.5	40.0	47.0	1,000	11.0	2.5	4.0	B8B	6
TUNGSRAM													
Replacement Types													
PC86		3.8	0.3	175	−1.5	12.0	14.0	4,850	3.6	0.2	2.0	B9A	50
PC88		3.8	0.3	160	−1.25	12.5	13.5	4,800	3.8	0.055	1.2	B9A	51
PC900		3.9	0.3	135	−1.0	11.5	14.5	5,250	3.3	0.08	0.35	B7G	35
PC97	(T)	4.5	0.3	135	−1.0	11.0	13.0	5,000	3.2	0.25	0.5	B7G	30
ECC81	(DT)	6.3	0.3	250	−2.0	10.0	5.5	10,000	2.5	0.4	1.5	B9A	1
ECC83	(DT)	6.3	0.3	250	−2.0	1.2	1.6	62,500	1.6	0.3	1.7	B9A	1
ECC84	(DT)	6.3	0.33	90	−1.5	12.0	6.0	4,000	2.1	0.16	1.1	B9A	18
ECC85	(DT)	6.3	0.43	250	−2.3	10.0	5.9	9,600	3.0	0.18	1.5	B9A	28

Continued

Amplifier Triodes

Type		Heater		Volts		Anode Current (mA)	r_g (Ω)	g_m (mA/V)	Capacitance (pF)			Base	
		Volts	Amps	Anode	Grid				C_{gk}	C_{ak}	C_{ga}	Type	Ref.
TUNGSRAM (*Continued*)													
Replacement Types (*Continued*)													
ECC88	(DT)	6.3	0.33	90	−1.2	15.0	12.5	2,650	3.3	1.8	1.4	B9A	28
PCC84	(DT)	7.0	0.3	90	−1.5	12.0	6.0	4,000	2.3	0.45	—	B9A	18
PCC89	(DT)	7.2	0.3	90	−1.2	15.0	12.0	3,000	4.0	0.4	1.7	B9A	18
PCC189	(VM, DT)	7.6	0.3	90	−1,4	15.0	12.5	2,500	3.5	1.7	1.9	B9A	28
PCC85	(DT)	9.5	0.3	170	−1.5	10.0	6.2	8,000	0.003	0.18	1.5	B9A	28
Current Types													
ECC82	(DT)	6.3	0.3	250	−8.5	10.5	2.2	7,700	1.6	0.5	1.5	B9A	1

Small Transmitting Valves

Type		Heater		Volts			Current (mA)			Drive (W)	Max. Diss. (W)	R.F. Output (W)	Frequency (MHz)		Base	
		Volts	Amps	Anode	Screen	Grid	Anode	Screen	Grid				Full Rating	Reduced Rating	Type	Ref.
BRIMAR																
Current Types																
5763	(BT)	6.0	0.75	300	250	−60	50.0	5.0	3.0	0.35	12.0	8.0	50	175	B9A	4
6C4	(T)	6.3	0.15	300	—	−27	25.0	—	7.0	0.35	3.5	5.5	70	150	B7G	3
807	(BT)	6.3	0.9	600	250	−45	100	7.0	3.5	0.2	25.0	40.0	60	120	UX5	1
6146	(BT)	6.3	1.25	600	150	−58	112	9.0	2.8	0.2	20.0	52.0	60	175	I0	18
EC90	(T)	6.3	0.15	300	—	−27	17.7	—	2.9	—	3.5	3.3	100	150	B7G	3
ENGLISH ELECTRIC																
Current Types																
3C24	(T)	6.3	3.0	1,000	—	−70	72	—	9.0	1.3	25.0	47	60	100	UX4	2
4D32	(BT)	6.3	3.75	750	300	−100	250	34.0	12.0	1.5	50.0	140	60	—	B7A	6
C178A/5894	(DBT)	6.3	1.8	600	250	−80	200	18.0	7.0	3.0	40.0	90	250	500	B7A	1
C1134	(DBT)	6.3	1.3	600	250	−60	100	8.0	1.4	1.5	20.0	48	150	600	B7A	1
M.O. VALVE CO.																
Current Types																
DET22	(T)	6.3	0.4	350	—	—	40	—	—	—	10.0	3.0	600	4000	Coaxial	
DET24	(T)	6.3	1.0	400	—	—	120	—	—	—	20.0	14.0	500	2000	Coaxial	
DET29	(T)	6.3	0.5	450	—	—	40	—	6.0	0.5	10.0	3.0	3	1.2	Coaxial	
TT21	(BT)	6.3	1.6	1,250	300	−115	175	20	6.0	1.9	45.0	102	30	—	I0	16
TT22	(BT)	12.6	0.8	1,250	300	−115	175	20	6.0	1.9	45.0	102	30	—	I0	16
TT23/QQV02-6		12.6	0.3	250	200	−50	90	—	6.0	0.2	3.0	5.8	500	—	B9A	19
	(DT)	6.3	0.6													
TT24/QQV03-10		12.6	0.42	300	200	−150	60	—	6.0	0.4	10.0	16.0	225	—	B9A	19
	(DT)	6.3	0.83													
TT25/QQV06-40A		12.6	0.9	600	300	−100	60	—	10.0	0.2	40.0	56.0	500	—	B7G	1
	(DT)	6.3	1.8													
MULLARD																
Replacement Types																
YL1130	(DBT)	1.1*	3.1	275	175	−25	80	14.0	2.6	0.4	8.0	15.0	200	500	B9A	59
YL1190	(DBT)	1.1*	3.8	260	175	−22.5	140	20.0	6.0	2.5	14.0	20.5	200	500	B9D	3
QQZ03-20 YL1020	(DBT)	1.6*	4.25	600	250	−60	100	6.0	2.0	1.5	20.0	45.0	200	500	B7A	5

Continued

Type		Heater		Volts			Current (mA)			Drive (W)	Max. Diss. (W)	R.F. Output (W)	Frequency (MHz)		Base	
		Volts	Amps	Anode	Screen	Grid	Anode	Screen	Grid				Full Rating	Reduced Rating	Type	Ref.
MULLARD (*Continued*)																
Replacement Types (*Continued*)																
QZ06-20	(BT)	1.6*	3.2	600	200	−150	160	15.0	5.0	0.3	25.0	65.0	175	—	I0	23
YL1080	(DBT)	1.6*	2.5	300	170	−40	75	2.4	1.8	1.0	10.0	14.5	200	—	B9A	58
YL1030 / QQZ06-40	(DBT)	2.1*	4.5	600	250	−80	200	18.0	7.0	4.0	40.0	85.0	200	500	B7A	5
QV03-12 / M8096(SQ)	(P)	6.0	0.75	300	250	−60	50	5.0	3.0	0.4	12.0	8.0	30	175	B9A	4
EC157	(T)	6.3	0.375	200	—	—	60	—	—	—	12.5	1.8	4,000	—	Disc seal	
QV06-20		6.3	1.25	600	150	−58	112	10.0	5.0	—	20.0	52.0	60	175	I0	23
QV06-20B		12.6	0.625	600	150	−58	112	10.0	5.0	—	20.0	52.0	60	175	I0	23
QV06-20C		26.5	0.3	600	150	−58	112	10.0	5.0	—	20.0	52.0	60	175	I0	23
Current Types																
QQV02-6	(DBT)	6.3	0.8†	180	180	−2.5	55	11.0	2.0	1.6	6.0	6.0	490	—	B7A	1
QQV03-10	(DBT)	6.3	0.83†	300	175	−40	76	3.0	3.0	0.5	10.0	14.0	225	—	B9A	19
QQV06-40A	(DBT)	6.3	1.8†	600	250	−80	200	18.0	7.0	3.0	40.0	90.0	275	486	B7A	1
QQV07-50	(DBT)	6.3	1.8†	400	250	−50	230	10.0	6.0	12.0	50.0	52.0	180	500	B7A	4
I.T.T.																
Replacement Types																
3B/240M	(T)	6.3	1.1	300	—	−10	90	—	35.0	2.5	15.0	16.0	200	—	B8B	4
5B/254M	(BT)	6.3	0.9	600	250	−45	100	8.0	4.0	0.3	25.0	40.0	60	—	B8B	9
5B/255M	(BT)	6.3	0.9	600	250	−45	100	8.0	4.0	0.3	25.0	40.0	60	—	B8B	8
5B/257M	(BT)	12.0	0.47	600	250	−45	100	8.0	4.0	0.3	25.0	40.0	60	—	B8B	8
3B/241M	(T)	19.0	0.37	300	—	−10	90	—	35.0	2.5	15.0	16.0	200	—	B8B	4
Current Types																
6146	(BT)	6.3	1.25	600	150	−58	112	10.0	5.0	0.2	20.0	52.0	60	175	I0	18

Monochrome Television Cathode-Ray Tubes

Type	Heater		kV (max.)		Final Anode (max.) μA**	Grid Volts (cut-off)	Defl. Angle (deg.)	Volts h−k (max.)	Capacitances (pF to earth)		Screen Diam. (in)	Remarks‡ IT, A, F, M, R, E, RG	Base	
	Volts	Amps	Final Anode	First Anode					g	k			Type	Ref.
BRIMAR														
Current Types														
A31-18W	6.3	0.3	12	0.4	—	−40 to −77	110	—	—	—	12††	A, M, R, E	B8H	1
A31-181W	6.3	0.3	12	0.4	—	−40 to −77	110	—	—	—	12††	A, M, R, E, RG	B8H	1
A31-183W	6.3	0.3	12	0.4	—	−40 to −77	110	—	—	—	12††	A, M, R, E, RG	B8H	1
A40-11W	6.3	0.3	16	0.4	—	−40 to −77	110	—	—	—	16††	A, M, R, E	B8H	1
A40-12W	6.3	0.3	16	0.4	—	−40 to −77	110	—	—	—	16††	A, M, R, E, RG	B8H	1
A44-120W	6.3	0.3	17	0.4	—	−40 to −77	110	—	—	—	17††	A, M, R, E, RG	B8H	1
A47-13W	6.3	0.3	18	0.4	—	−40 to −77	110	250	7	3	19††	A, M, R, E	B8H	1
A47-14W	6.3	0.3	18	0.4	—	−40 to −77	110	250	7	3	19††	A, M, R, E, RG	B8H	1
A47-15W	6.3	0.3	18	0.4	—	−40 to −77	110	—	—	—	19††	A, M, R, E	B8H	1
A47-17W	6.3	0.3	18	0.4	—	−40 to −77	110	—	—	—	19††	A, M, R, E, RG	B8H	1
A47-25W	6.3	0.3	18	0.4	—	−40 to −77	110	250	7	3	19††	A, M, R, E, RG	B8H	1
A47-28W	6.3	0.3	18	0.4	—	−40 to −77	110	—	—	—	19††	A, M, R, E, RG	B8H	1
A50-120W	6.3	0.3	18	0.4	—	−40 to −77	110	—	—	—	20††	A, M, R, E, RG	B8H	1
A59-12W	6.3	0.3	18	0.4	—	−40 to −77	110	250	7	3	23††	A, M, R, E, RG	B8H	1
A59-13W	6.3	0.3	18	0.4	—	−40 to −77	110	250	7	3	23††	A, M, R, E	B8H	1
A59-15W	6.3	0.3	18	0.4	—	−40 to −77	110	—	—	—	23††	A, M, R, E	B8H	1

Continued

Monochrome Television Cathode-Ray Tubes

Type	Heater		kV (max.)		Final Anode (max.) μA**	Grid Volts (cut-off)	Defl. Angle (deg.)	Volts h–k (max.)	Capacitances (pF to earth)		Screen Diam. (in)	Remarks‡ IT, A, F, M, R, E, RG	Base	
	Volts	Amps	Final Anode	First Anode					g	k			Type	Ref.
BRIMAR (*Continued*)														
Current Types (*Continued*)														
A59-23W	6.3	0.3	18	0.4	—	–40 to –77	110	—	—	—	23††	A, M, R, E, RG	B8H	1
A59-23W/R	6.3	0.3	18	0.4	—	–40 to –77	110	250	7	3	23††	A, M, R, E, RG	B8H	1
A61-120W	6.3	0.3	18	0.4	—	–40 to –77	110	—	—	—	24††	A, M, R, E, RG	B8H	1
A65-11W	6.3	0.3	18	0.4	—	–40 to –77	110	—	—	—	25††	A, M, R, E, RG	B8H	1
AW43-88	6.3	0.3	16	0.4	—	–38 to –94	110	—	—	—	17††	A, M, R, E	B8H	1
AW47-90	6.3	0.3	16	0.4	—	–38 to –94	110	200	7	3	19††	A, M, R, E	B8H	1
AW47-91	6.3	0.3	18	0.4	—	–40 to –77	110	250	7	3	19††	A, M, R, E	B8H	1
AW53-88	6.3	0.3	16	0.4	—	–38 to –94	110	—	—	—	21††	A, M, R, E	B8H	1
AW59-90	6.3	0.3	16	0.4	—	–38 to –94	110	—	—	—	23††	A, M, R, E	B8H	1

†† Diagonal ** For highlights
‡ A=Aluminised; E=Electrostatic focusing; M=External conducting coating; R=Rectangular screen; RG=Rimguard protected tube

MAZDA

Replacement Types

CRM121B	2.0	1.3	10	—	—	–79	57	—	5.2	5.4	12	—	M0	2
CRM151	2.0	1.3	13	—	—	–101	51	—	5.2	5.4	15	A	M0	2
CRM152B	2.0	1.3	13	—	—	–101	67	—	5.2	5.4	15	A	B12A	3
CME1101	6.3	0.3	15	0.55	—	–38 to –94	110	200	6	5	11††	A, M, R, E, RG	B8H	1
CME1201	6.3	0.3	13.5	0.55	—	–40 to –77	110	250	7	3	12††	A, M, R, E, RG	B8H	1
CME1601	6.3	0.3	17	0.55	—	–40 to –77	110	250	7	3	16††	A, M, R, E	B8H	1
CME1602	6.3	0.3	17	0.55	—	–40 to –77	110	250	7	3	16††	A, M, R, E, RG	B8H	1
CME1902	6.3	0.3	17	0.5	—	–38 to –94	110	200	7	3	19††	A, M, R, E	B8H	1
CME1906	8.3	0.3	20	0.7	—	–40 to –77	110	250	7	3	19††	A, M, R, E	B8H	1
CME1907	6.3	0.3	20	0.7	—	–40 to –77	110	250	7	3	19††	A, M, R, E, RG	B8H	1
CME2302	6.3	0.3	17	0.5	—	–38 to –94	110	200	7	3	23††	A, M, R, E	B8H	1
CME2312	6.3	0.3	20	0.7	—	–40 to –77	110	250	7	3	23††	A, M, R, E, RG	B8H	1
CME141	12.6	0.3	14	0.4	—	–51	70	180	8.5	6.5	14††	A, M, R, E, IT	B12A	2
CME1702	12.6	0.3	16	0.4	—	–51	90	180	9	6.5	17††	A, M, R, E	B12A	2
CME1703	12.6	0.3	16	0.4	—	–51	110	180	6	4.5	17††	A, M, R, E	B8H	1
CME1705	12.6	0.3	16	0.5	—	–51	110	180	8	4.5	17††	A, M, R, E	B8H	2
CME2101	12.6	0.3	16	0.4	—	–51	110	180	6	4.5	21††	A, M, R, E	B8H	1
CME2104	12.6	0.3	18	0.5	—	–51	110	180	8	4.5	21††	A, M, R, E	B8H	2
CME2301	12.6	0.3	17	0.5	—	–55	110	180	6.5	4.5	23††	A, M, R, E	B8H	1
CRM141	12.6	0.3	14	0.4	—	–51	67	180	8.5	6.5	13.5	A, IT	B12A	1
CRM142	12.6	0.3	14	0.4	—	–51	67	180	8.5	6.5	13.5	A, IT	B12A	1
CRM153	12.6	0.3	15	0.4	—	–51	67	—	8.5	6.5	15	A, M, IT	B12A	1
CRM171	12.6	0.3	16	0.4	—	–51	70	180	8.5	6.5	17††	A, R, IT	B12A	1
CRM172	12.6	0.3	16	0.4	—	–51	70	180	8.5	6.5	17††	A, M, R, IT	B12A	1
CRM173	12.6	0.3	16	0.4	—	–51	90	180	7.5	6.5	17††	A, M, R, IT	B12A	1
CRM174	12.6	0.3	16	0.4	—	–51	70	180	8.5	6.5	17††	A, M, R, IT	B12A	1
CRM211	12.6	0.3	16	0.4	—	–51	70	180	8.5	6.5	21††	A, M, R, IT	B12A	1
CRM212	12.6	0.3	20	0.4	—	–51	90	180	8.5	6.5	21††	A, M, R, IT	B12A	1

Current Types

CME1202R	6.3	0.3	12	0.4	—	–36 to –66	110	—	—	—	12††	A, M, R, E, RG	B8H	1
CME1713R	6.3	0.3	17	0.5	—	45 to 80***	110	—	—	—	17††	A, M, R, RG	B8H	1
CME1903	6.3	0.3	20	0.7	—	–40 to –77	110	250	7	3	19††	A, M, R, E	B8H	1
CME1905	6.3	0.3	20	0.7	—	–40 to –77	110	250	7	3	19††	A, M, R, E, RG	B8H	1
CME1908	6.3	0.3	20	0.7	—	–40 to –77	110	250	7	3	19††	A, M, R, E	B8H	1
CME1913	6.3	0.3	20	0.7	—	–40 to –77	110	250	7	3	19††	A, M, R, E, RG	B8H	1
CME1913R	6.3	0.3	18	0.7	—	–40 to –77	110	250	7	3	17††	A, M, R, E, RG	B8H	1
CME2013R	6.3	0.3	20	0.7	—	–40 to –77	110	250	7	3	20††	A, M, R, E, RG	B8H	1
CME2306	6.3	0.3	20	0.7	—	–40 to –77	110	250	7	3	23††	A, M, R, E	B8H	1
CME2308	6.3	0.3	20	0.7	—	–40 to –77	110	250	7	3	23††	A, M, R, E	B8H	1
CME2313	6.3	0.3	20	0.7	—	–40 to –77	110	250	7	3	23††	A, M, R, E, RG	B8H	1
CME2313R	6.3	0.3	20	0.7	—	–40 to –77	110	250	7	3	23††	A, M, R, E, RG	B8H	1
CME2413R	6.3	0.3	20	0.7	—	–40 to –77	110	250	7	3	24††	A, M, R, E, RG	B8H	1

Continued

Type	Heater		kV (max.)		Final Anode (max.) μA**	Grid Volts (cut-off)	Defl. Angle (deg.)	Volts h–k (max.)	Capacitances (pF to earth)		Screen Diam. (in)	Remarks‡ IT, A, F, M, R, E, RG	Base	
	Volts	Amps	Final Anode	First Anode					g	k			Type	Ref.
MAZDA (*Continued*)														
Current Types (*Continued*)														
CME2501	6.3	0.3	20	0.7	—	−40 to −77	110	250	7	3	25††	A, M, R, E, RG	B8H	1
CME1220	11.0	0.075	12	0.25	—	32 to 58***	110	—	—	—	12††	A, M, R, RG	B7G	36
CME1520	11.0	0.075	14	0.3	—	45 to 80***	110	—	—	—	15††	A, M, R, RG	B7G	36
CME1420	12.0	0.075	12	0.3	—	−33 to −77	110	—	—	—	14††	A, M, R, E	B7G	36

†† Diagonal ** For highlights *** V_k for cut-off
‡ A=Aluminised; E=Electrostatic focusing; M=External conducting coating; R=Rectangular screen; RG=Rimguard protected tube

MULLARD

Replacement Types

A47-11W	6.3	0.3	18	0.7	300	−40 to −77	100	250	6	4	19††	A, M, R, E	B8H	1
A47-14W	6.3	0.3	20	0.4	—	−40 to −77	100	250	6	4	19††	A, M, R, E	B8H	1
A47-18W	6.3	0.3	18	0.7	300	−40 to −77	110	250	6	4	19††	A, M, R, E	B8H	1
A47-26W	6.3	0.3	20	0.4	—	−40 to −77	110	—	—	—	19††	A, M, R, E	B8H	1
A47-26W/R	6.3	0.3	20	0.7	—	−40 to −77	110	250	7	5	19††	A, M, R, E, RT	B8H	1
A59-11W	6.3	0.3	18	0.7	300	−40 to −77	110	250	6	4	23††	A, M, R, E	B8H	1
A59-15W	6.3	0.3	20	0.7	300	−40 to −77	110	250	6	4	23††	A, M, R, E	B8H	1
A59-23W	6.3	0.3	20	0.4	—	−40 to −77	110	—	—	—	23††	A, M, R, E	B8H	1
A59-23W/R	6.3	0.3	20	0.7	—	−40 to −77	110	250	7	5	23††	A, M, R, E, RT	B8H	1
A28-14W	11.0	0.068	12	0.35	—	−35 to −69	90	110	7	3	11††	A, M, R, E	B7G	36

Current Types

A44-120W/R	6.3	0.3	18	0.7	—	−40 to −77	110	250	7	5	17††	A, M, R, E, RT	B8H	1
A50-120W/R	6.3	0.3	20	0.7	—	−40 to −77	110	250	7	5	20††	A, M, R, E, RT	B8H	1
A61-120W/R	6.3	0.3	20	0.4	—	−40 to −77	110	—	—	—	24††	A, M, R, E, RT	B8H	1
A31-410W	11.0	0.14	15	0.25	—	−35 to −69	110	110	7	3	12††	A, M, R, E	B7G	36

†† Diagonal ** For highlights
‡ A=Aluminised; E=Electrostatic focusing; M=External conducting coating; R=Rectangular screen; RT=Ring trap base

Colour Television Cathode-Ray Tubes

Type	Heater		kV (max.)		Final Anode (max.) μA**	Grid Volts (cut-off)	Defl. Angle (deg.)	Volts h–k (max.)	Capacitances (pF to earth)		Screen diagonal (in)	Remarks‡ A, F, M, S, R, E, RG	Base	
	Volts	Amps	Final Anode	First Anode					g	k			Type	Ref.
MAZDA														
Replacement Types														
A49-11X	6.3	0.9	27.5	1.0	750	−65 to −135	90	250	6.5	5.7	19	M, R, E, S, RG	B14G	1
A49-200X	6.3	0.9	27.5	1.0	750	−65 to −135	90	250	6.5	5.7	19	M, R, E, S, RG	B14G	1
A55-141X	6.3	0.9	27.5	1.0	1mA	−65 to −135	90	250	6.0	15.0	22	M, R, E, S, RG	B14G	1
A63-11X	6.3	0.9	27.5	1.0	1mA	−65 to −135	90	250	6.5	5.7	25	M, R, E, S, RG	B14G	1
CTA1950	6.3	0.9	25	0.3	—	−65 to −135	90	—	—	—	19	M, R, E, S, RG	B14G	1
CTA2550	6.3	0.9	25	0.3	—	−65 to −135	90	—	—	—	25	M, R, E, S, RG	B14G	1
Current Types														
A44-271X	6.3	0.9	20	0.39	—	−80 to −150	90	—	—	—	17	M, R, E, S, RG	B14G	1
A49-191X	6.3	0.9	25	0.66	—	−75 to −173	90	—	—	—	19	M, R, E, S, RG	B14G	1
A51-110X	6.3	0.9	25	0.66	—	−76 to −168	90	—	—	—	20	M, R, E, S, RG	B14G	1
A55-14X	6.3	0.9	25	0.66	—	−75 to −173	90	—	—	—	22	M, R, E, S, RG	B14G	1
A56-120X	6.3	0.9	27.5	1.0	1mA	−65 to −135	90	250	6.5	5.7	22	M, R, E, S, RG	B14G	1

Continued

Colour Television Cathode-Ray Tubes

Type	Heater		kV (max.)		Final Anode (max.) μA**	Grid Volts (cut-off)	Defl. Angle (deg.)	Volts h–k (max.)	Capacitances (pF to earth)		Screen diagonal (in)	Remarks‡ A, F, M, S, R, E, RG	Base	
	Volts	Amps	Final Anode	First Anode					g	k			Type	Ref.
MAZDA (*Continued*)														
Current Types (*Continued*)														
A63-200X	6.3	0.9	27.5	1.0	1mA	−65 to −135	90	250	6.5	5.7	25	M, R, E, S, RG	B14G	1
A67-120X	6.3	0.9	25	0.66	—	−75 to −175	90	—	—	—	26	M, R, E, S, RG	B14G	1
MULLARD														
Replacement Types														
A49-11X	6.3	0.9	25	210-495	750	−65 to −135	90	250	7.0	5.0	19	M, R, E, S	B12-244	1
Current Types														
A56-120X	6.3	0.9	25	210-495	1mA	−65 to −135	92	250	7.0	5.0	22	M, R, E, S	B12-244	1
A56-140X	6.3	0.9	27.5	210-495	—	−100 typ.	110	250	7.0	5.0	22	M, R, E, S	B12-246	1
A66-120X	6.3	0.9	27.5	210-495	—	−100 typ.	90	250	7.0	5.0	26	M, R, E, S	B12-246	1
A66-140X	6.3	0.9	27.5	210-495	—	−100 typ.	110	250	7.0	5.0	26	M, R, E, S	B12-246	1
R.C.A.														
Replacement Types														
A49-15X	6.3	0.9	27.5	285-685	1mA	−95 to −190	90	200	6	15	19	M, R, E, S	B14G	1
A49-191X	6.3	0.9	27.5	285-685	1mA	−95 to −190	90	200	6	15	19	M, R, E, S	B14G	1
A55-14X	6.3	0.9	27.5	285-685	1mA	−95 to −190	90	200	6	15	22	M, R, E, S	B14G	1
A63-17X	6.3	0.9	27.5	285-685	1mA	−95 to −190	90	200	6	15	25	M, R, E, S	B14G	1
A63-200X	6.3	0.9	27.5	285-685	1mA	−95 to −190	90	200	6	15	25	M, R, E, S	B14G	1

** For highlights

‡ M=External conducting coating; E=Electrostatic focusing; R=Rectangular screen; S=Shadowmask; RG=Rimguard protected tube

Cathode-Ray Tuning Indicators

Type	Heater		Target Volts	Target Current (mA)	Grid Voltage Change	Base	
	Volts	Amps				Type	Ref.
MULLARD							
Replacement Types							
DM160	1.0*	0.03	50	0.585	0 to −3	Wires	
EM84 (dual sensitivity)	6.3	0.21	250	1.8	22	B9A	38
Current Types							
ZA1004	Cold cathode		83.5 to 90	1.0	—	Wires	

Thyratrons

Type	Heater		Max. Anode Volts	Max. Peak Current (mA)	Control Ratio	Valve Voltage Drop	Max. Frequency (Hz)	Base	
	Volts	Amps						Type	Ref.
ENGLISH ELECTRIC									
Current Types									
AFX203	2.5*	5.0	170	7,700	—	11	—	UX4	3
6D4	6.3	0,25	350	110	—	18	—	B7G	27
AFX234	6.3	0.49	350	1,200	—	16	—	B7G	27
HIVAC									
Current Types									
XC18	Cold cathode		200	1	—	73	—	Wires	
XC23	Cold cathode		200	15	—	68	—	Wires	
I.T.T.									
Replacement Types									
G1/236G	Cold cathode		235	1.5	—	70	—	Wires	
G150/2D	Cold cathode		150	50	—	60	—	I0	20
G240/2D	Cold cathode		240	50	—	90	—	I0	20
G1/237G	Cold cathode		200	1.5	—	70	—	Wires	
G1/371K	Cold cathode		360	15	—	180	—	B7G	—
3D22	6.3	2.6	650	8,000	150	10	—	B7G	28
M.O.VALVE CO.									
Current Types									
GT1C	4.0	1.35	500	1,000	—	—	8,000	B5	1
GT3	6.3	0.85	500	300	—	—	—	I0	13

Efficiency Diodes

(For television line scan)

Type	Heater		Peak Inverse Volts**	Peak Anode Current (mA)	Max. Rect. Current (mA)	Peak Cathode Potential		Capacitance (pF) h-k	Base	
	Volts	Amps				h(-) to k**	h(+) to k		Type	Ref.
MULLARD										
Replacement Types										
EY88	6.3	1.55	6,600	—	220	6,600	—	—	B9A	23
PY800	19.0	0.3	5,250	350	150	5,750	—	—	B9A	23
Current Types										
PY88	30.0	0.3	6,600	550	220	6,600	—	2.0	B9A	23
PY500A	42.0	0.3	5,600	800	440	6,300	—	3.7	B9D	8
** For 10 μsec pulse duration										
TUNGSRAM										
Replacement Types										
PY800	19.0	0.3	5,250	350	150	5,750	—	1.9	B9A	23
Current Types										
PY88	30.0	0.3	6,600	550	220	6,600	—	2.0	B9A	23
PY500A	42.0	0.3	5,600	800	440	6,300	—	3.7	B9D	8
** For 10 μsec pulse duration										

Thermionic Diodes

Type	Heater		Max. Input Volts (r.m.s.)	Max. Rect. Current (ma)	No. of Diodes	Capacitances (pF)			Base	
	Volts	Amps				a'–k	a''–k	a'–a''	Type	Ref.
BRIMAR										
Current Types										
6AL5	6.3	0.3	150	9.0	2	3.2	3.2	0.026	B7G	6
6H6GT	6.3	0.3	150	8.0	2	3.0	4.0	0.1	I0	6
5726(SQ) 6058(SQ)	6.3	0.3	150	9.0	2	3.2	3.2	0.026	B7G	6
MAZDA										
Current Types										
6D2	6.3	0.3	175	9.0	2	3.4	3.4	0.018	B7G	6
EB91	6.3	0.3	150	9.0	2	3.2	3.2	0.026	B7G	6
M.O. VALVE CO.										
Current Types										
A2087**	4.4	0.64	200	20	1	—	—	—	B7G	31
CV2341**	5.0	4.0	400	200	1	—	—	—	Coaxial	
CV2398**	6.0	1.15	200	85	1	—	—	—	B9A	45
		** Noise generators								
MULLARD										
Replacement Types										
6AL5	6.3	0.3	117	9.0	2	3.1	3.1	—	B7G	6
M8212 EB91	6.3	0.3	150	9.0	2	3.2	3.2	0.025	B7G	6
Current Types										
EA52	6.3	0.3	1,000	0.3	1	< 0.5	—	—	Flying leads	

Valve Voltage Stabilisers

Type	Mean Stab. Volts	Striking Volts	Tube Current (mA)		Regulation Volts	Base	
			Min.	Max.		Type	Ref.
BRIMAR							
Replacement Types							
VR75/30	75	100	5	40	6.5	I0	9
VR105/30	105	135	5	40	4.0	I0	9
VR150/30	150	180	5	40	5.5	I0	9
Current Types							
OB2	108	133	5	30	4.0	B7G	12
OA2	150	185	5	30	6.0	B7G	12
ENGLISH ELECTRIC							
Current Types							
OA2/QS1207	150	185	5	30	6.0	B7G	12
OA2WA/QS1210(SQ)	150	165	5	30	5.0	B7G	12
OB2/QS1208	108	133	5	30	3.5	B7G	12

Continued

Type	Mean Stab. Volts	Striking Volts	Tube Current (mA)		Regulation Volts	Base	
			Min.	Max.		Type	Ref.
ENGLISH ELECTRIC (*Continued*)							
Current Types (*Continued*)							
OB2WA/QS1211(SQ)	108	133	5	30	3.0	B7G	12
OC2	75	115	5	30	4.5	B7G	12
QS75/20	75	110	2	20	6.0	B7G	12
QS75/60	75	117	5	60	5.0	B8B	7
QS95/10	95	110	2	10	5.0	B7G	17
QS108/45	108	120	5	45	5.0	B8B	5
QS150/15	150	170	2	15	5.0	B7G	17
QS150/45	150	170	5	45	5.0	B8B	5
QS1200	150	180	5	15	5.0	B7G	21
QS1203(SQ)	150	180	2	15	4.5	B7G/F	12
QS1209/5651	85	115	1	10	4.0	B7G	12
QS1212(SQ)	85	115	1	10	4.0	B7G	12
QS1213(SQ)	85	115	1	10	4.0	B7G/F	12
QS1215	90	115	1	40	12.0	B7G	12
75C1	78	115	2	60	8.0	B7G	21
150C4	150	185	5	30	5.0	B7G	12
HIVAC							
Current Types							
NT2	60	85	0.2	1.0	6	Wires	
NT2T	60	85	0.2	1.0	6	Wires	
V83R2	83	115	0.25	4.0	2	Wires	
V84R2	84	115	0.15	2.0	2	Wires	
V91R2	91	125	0.1	2.0	2	Wires	
V103R2	103	135	0.2	2.0	2	Wires	
V110R4	110	170	0.5	4.0	2	Wires	
V115R4	115	155	0.15	4.0	2	Wires	
V116R2	116	150	0.12	2.0	2	Wires	
V139R1.9	139	190	0.3	1.9	2	Wires	
V143R1.9	143	225	0.3	1.9	2	Wires	
Z82R7	82	110	0.25	7.0	1	Wires	
Z82R10	82	115	0.3	10.0	1	Wires	
Z82R15	82	118	0.5	15.0	1	Wires	
Z83R4	83	110	0.25	4.0	1	Wires	
Z84R2	84	110	0.15	2.0	1	Wires	
Z91R2	91	118	0.1	2.0	1	Wires	
Z91R4	91	120	0.2	4.0	1	Wires	
Z91R7	91	130	0.25	7.0	1	Wires	
Z91R10	91	135	0.25	10.0	1	Wires	
Z100R12	100	150	0.6	12.0	1	Wires	
Z103R2	103	130	0.2	2.0	1	Wires	
Z103R4	103	130	0.2	4.0	1	Wires	
Z110R4	110	165	0.5	4.0	1	Wires	
Z115R4	115	150	0.15	4.0	1	Wires	
Z115R6	115	155	0.5	6.0	1	Wires	
Z116R2	116	145	0.12	2.0	1	Wires	
Z139R19	139	185	0.3	1.9	1	Wires	
Z143R19	143	220	0.3	1.9	1	Wires	
I.T.T.							
Current Types							
G50/2G	50	90	0.3	3	3.5	Wires	
G55/1K	55	90	2	30	5.0	B7G	12
MULLARD							
Replacement Types							
ZZ1000	81	115	2	4	—	Flying leads	

Valve Rectifiers

Type	Heater		Type of Rectification	Input Volts (R.M.S.)	Max. Rect. Current (mA)	Max. Reservoir Capacitance (μF)	Min. Series Resistance (Ω)	Base	
	Volts	Amps						Type	Ref.
BRIMAR									
Replacement Types									
5Y3GT	5.0	2.0	F.W.	350-0-350	125	32	30	I0	7
R17	6,3	0.8	H.W.	500	75	32	50	B9A	20
Current Types									
5R4GY	5.0*	2.0	F.W.	750-0-750	250	4	250	I0	7
5V4G	5.0	2.0	F.W.	375-0-375	175	32	100	I0	8
5Z4G	5.0	2.0	F.W.	350-0-350	125	32	30	I0	8
EZ80	6.3	0.6	F.W.	325-0-325	70	16	525	B7G	14
6X4	6.3	0.6	F.W.	325-0-325	70	40	525	B7G	14
HY90	35.0	0.15	H.W.	250	110	100	100	B7G	16
35W4	35.0	0.15	H.W.	117	100	40	57	B7G	16
MAZDA									
Replacement Types									
PY82	19.0	0.3	H.W.	250	180	60	100	B9A	10
U192	19.0	0.3	H.W.	250	180	60	100	B9A	10
Current Types									
EZ80	6.3	0.6	F.W.	350-0-350	90	50	300	B9A	21
EZ81	6.3	1.0	F.W.	350-0-350	150	50	230	B9A	21
UU12	6.3	1.0	F.W.	350-0-350	150	50	240	B9A	21
PY33	29.0	0.3	H.W.	250	325	200	25	I0	11
U381	38.0	0.1	H.W.	250	110	100	100	B9A	10
UY85	38.0	0.1	H.W.	250	110	100	100	B9A	10
M.O.VALVE CO.									
Replacement Types									
U18/20	4.0*	2.8	F.W.	500-0-500	275	16	180	B4	2
Current Types									
GU12	2.5	5.6	H.W., M.V.	3,500	250	—	—	UX4	1
GXU1	2.5	5.0	H.W., Xenon	3,500	250	—	—	UX4	1
GXU5	2.5	30.0	H.W., Xenon	3,500	3,000	—	—	Special	
GU50	4.0*	3.0	H.W., M.V.	1,750	250	4	—	B4	3
GXU50	4.0	3.0	H.W., Xenon	1,800	250	—	—	B4	2
U19	4.0	3.3	H.W.	2,500	250	4	600	B4	3
GXU2	5.0	7.0	H.W., Xenon	4,500	1,250	—	—	B4F	1
GXU52	5.0	2.3	H.W., Xenon	450	250	—	—	B8B	—
MULLARD									
Replacement Types									
GZ34	5.0	1.9	F.W.	550-0-550	160	60	175	I0	8
EZ80	6.3	0.6	F.W.	350-0-350	90	50	300	B9A	21
EZ81	6.3	1.0	F.W.	350-0-350	150	50	230	B9A	21
M8091(SQ)	6.3	1.15	H.W.	625	125	24	250	B9A	20
PY82	19.0	0.3	H.W.	200	180	60	30	B9A	10
UY85	38.0	0.1	H.W.	250	110	100	100	B9A	10
Current Types									
EY84	6.3	1.0	H.W.	625	125	24	250	B9A	20

Type	Heater		Type of Rectification	Input Volts (R.M.S.)	Max. Rect. Current (mA)	Max. Reservoir Capacitance (μF)	Min. Series Resistance (Ω)	Base	
	Volts	Amps						Type	Ref.
TUNGSRAM									
Replacement Types									
GZ34	5.0	1.9	F.W.	550-0-550	160	60	175	I0	8
EZ80	6.3	0.6	F.W.	350-0-350	90	50	300	B9A	21
EZ81	6.3	1.0	F.W.	350-0-350	150	50	230	B9A	21
UY85	38.0	0.1	H.W.	250	110	100	100	B9A	10

E.H.T. Rectifiers

Rectifiers for inputs over 1,000 V giving rectified currents of less than 50 mA

Type	Heater		Peak Inverse Volts	Input Volts (R.M.S.)	Max. Rect. Current (mA)	Min. Effective Series R (Ω)	Recommended Reservoir Capacitance (μF)	D.C. Output Voltage	Capacitance a-k (pF)	Base		
	Volts	Amps								Type	Ref.	
I.T.T.												
Current Types												
K80/30D	—	—	1,400	500	2.0	—	1.0	500	—			
K80/60D	—	—	2,800	1,000	1.5	—	0.25	1,000	—			
K80/90D	—	—	4,200	1,500	1.0	—	0.1	1,500	—			
K80/120D	—	—	5,600	2,000	1.0	—	0.1	2,000	—			Selenium tubular rectifier. Cathode has red band or + sign.
K80/150D	—	—	7,000	2,500	1.0	—	0.1	2,500	—			
K80/180D	—	—	8,000	2,800	0.8	—	0.05	2,800	—			
K80/200D	—	—	8,400	3,000	0.8	—	0.05	3,000	—			
K80/230D	—	—	10,000	3,500	0.8	—	0.05	3,500	—			
K80/270D	—	—	11,000	4,000	0.8	—	0.05	4,000	—			
X80 series as K80 series but having end-cap termination instead of end-wire termination.												
K83/30D	—	—	1,400	500	4.5	—	2.0	500	—			
K83/60D	—	—	2,800	1,000	4.5	—	1.0	1,000	—			
K83/90D	—	—	4,200	1,500	3.5	—	0.5	1,500	—			
K83/120D	—	—	5,600	2,000	3.5	—	0.5	2,000	—			Selenium tubular rectifier. Cathode has red band or + sign.
K83/150D	—	—	7,000	2,500	3.5	—	0.5	2,500	—			
K83/180D	—	—	8,000	2,800	3.5	—	0.25	2,800	—			
K83/200D	—	—	8,400	3,000	3.5	—	0.25	3,000	—			
K83/230D	—	—	10,000	3,500	3.5	—	0.25	3,500	—			
K83/270D	—	—	11,000	4,000	3.5	—	0.2	4,000	—			
X83 series as K83 series but having end-cap termination instead of end-wire termination.												
K85/30D	—	—	1,400	500	6.0	—	4.0	500	—			
K85/60D	—	—	2,800	1,000	6.0	—	2.0	1,000	—			
K85/90D	—	—	4,200	1,500	5.0	—	1.0	1,500	—			
K85/120D	—	—	5,600	2,000	5.0	—	0.5	2,000	—			Selenium tubular rectifier. Cathode has red band or + sign.
K85/150D	—	—	7,000	2,500	5.0	—	0.5	2,500	—			
K85/180D	—	—	8,000	2,800	5.0	—	0.5	2,800	—			
K85/200D	—	—	8,400	3,000	5.0	—	0.25	3,000	—			
K85/230D	—	—	10,000	3,500	5.0	—	0.25	3,500	—			
K85/270D	—	—	11,000	4,000	5.0	—	0.25	4,000	—			
X85 series as K85 series but having end-cap termination instead of end-wire termination.												
MAZDA												
Replacement Types												
EY51	6.3	0.09	17,000	—	0.35	—	0.005	—	0.8	Wires		
Current Types												
DY86 } DY87 }	1.4	0.55	22,000	—	0.5	—	0.002	—	1.55	B9A	34	

Continued

E.H.T. Rectifiers

Type	Heater		Peak Inverse Volts	Input Volts (R.M.S.)	Max. Rect. Current (mA)	Min. Effective Series R (Ω)	Recommended Reservoir Capacitance (μF)	D.C. Output Voltage	Capacitance a-k (pF)	Base	
	Volts	Amps								Type	Ref.
MAZDA (*Continued*)											
Current Types (*Continued*)											
DY802	1.4	0.6	30,000	20,000	0.5	—	0.003	20,000	1.0	B9A	61
U26	2.0	0.35	23,000	—	0.2	—	0.0003	—	1.3	B9A	34
GY501	3.15	0.4	35,000	—	1.7	—	—	25,000	1.2	B9D	9
EY86 / EY87	6.3	0.09	22,000	—	0.8	—	0.002	—	1.7	B9A	34
MULLARD											
Replacement Types											
DY87	1.4	0.55	22,000	—	0.5	—	0.002	—	1.55	B9A	34
GY501	3.15	0.4	31,000	—	1.5	—	—	—	1.2	B9D	9
EY87	6.3	0.09	27,000	—	0.8	—	—	—	1.55	B9A	34
Current Types											
DY802 (pulsed input)	1.4	0.55	25,000	—	0.5	—	0.002	—	1.1	B9A	61
TUNGSRAM											
Replacement Types											
DY87	1.4	0.55	22,000	—	0.5	—	0.002	—	1.55	B9A	34
GY501	3.15	0.4	35,000	—	1.7	—	—	25,000	1.2	B9D	9
EY87	6.3	0.09	22,000	—	0.8	—	0.002	—	1.7	B9A	34
Current Types											
DY802	1.4	0.6	30,000	20,000	0.5	—	0.003	20,000	1.0	B9A	61
WESTINGHOUSE											
Current Types											
K238EL50	—	—	2,700	1,000	10.0	—	2.0	1,050	—	Tubular metal rectifier	
K238EL100	—	—	5,600	2,000	10.0	—	1.0	2,100	—		
K238EL150	—	—	8,400	3,000	10.0	—	0.5	3,150	—		
K238EL200	—	—	11,200	4,000	10.0	—	0.5	4,200	—		
K238EL250	—	—	14,000	5,000	10.0	—	0.5	5,250	—		
K238EL300	—	—	16,800	6,000	10.0	—	0.5	6,300	—		

Metal Rectifiers

Type	Type of Rectification	Input Volts (R.M.S.)	Max. Rect. Current (mA)	Min. Reservoir Capacitance (μF)	Rectified Volts
INTERNATIONAL RECTIFIER CO.					
Current Types					
A4B1SDBHD	Bridge	125	250	50	115
A7C1SDBHD	C.T.	125-0-125	250	50	115
A7D1SDBHD	V.D.	125	62.5	50	230
A7H1SDBHD	H.W.	125	125	100	115
A8B1SDBHD	Bridge	250	250	100	230
A14C1SDBHD	C.T.	250-0-250	250	100	230
A14D1SDBHD	V.D.	250	62.5	100	460
A14H1SDBHD	H.W.	250	125	200	230

Continued

Type	Type of Rectification	Input Volts (R.M.S.)	Max. Rect. Current (mA)	Min. Reservoir Capacitance (μF)	Rectified Volts
INTERNATIONAL RECTIFIER CO. *(Continued)*					
Current Types (Continued)					
A30H1SDBHD	H.W.	1,000	125	—	—
B4B1SDBHD	Bridge	125	400	50	115
B7C1SDBHD	C.T.	125-0-125	400	50	115
B7D1SDBHD	V.D.	125	100	50	230
B7H1SDBHD	H.W.	125	200	100	115
B8B1SDBHD	Bridge	250	400	100	230
B14C1SDBHD	C.T.	250-0-250	400	100	230
B14D1SDBHD	V.D.	250	100	100	460
B14H1SDBHD	H.W.	250	200	200	230
SALFORD ELECTRICAL INSTRUMENTS					
Current Types					
½A to 5A*	Bridge	18	0.5 to 5A	Resistive	15
½A/24 to 5A/24*	Bridge	36	0.5 to 5A	Resistive	25.6
½AV to 5AV*	Push-pull	9-0-9	0.5 to 5A	Resistive	16
B½ to B6*	Bridge	18	0.5 to 6A	Resistive	15
B½/24 to B6/24*	Bridge	36	0.5 to 6A	Resistive	25.6
B½V to B6V*	Push-pull	9-0-9	0.5 to 6A	Resistive	16
M160	Bridge	18	1.5A	750	18
M161	Bridge	18	2A	1,000	18
M162	Bridge	18	2.5A	1,250	18
M163	Bridge	18	3A	1,500	18
M160H	H.W.	80	750	Resistive	28
M161H	H.W.	80	1A	Resistive	28
M162H	H.W.	80	1.25A	Resistive	28
M163H	H.W.	80	1.5A	Resistive	28
M160V	Push-pull	18-0-18	1.5A	500	36
M161V	Push-pull	18-0-18	2A	500	36
M162V	Push-pull	18-0-18	2.5A	750	36
M163V	Push-pull	18-0-18	3A	750	36
M180	Push-pull	9-0-9	1.5A	750	18
M181	Push-pull	9-0-9	2A	1,000	18
M182	Push-pull	9-0-9	2.5A	1,250	18
M183	Push-pull	9-0-9	3A	1,500	18
M200	Bridge	25	1.5A	500	25
M201	Bridge	25	2A	750	25
M202	Bridge	25	2.5A	1,000	25
M203	Bridge	25	3A	1,250	25
M200H	H.W.	108	750	Resistive	40
M201H	H.W.	108	1A	Resistive	40
M202H	H.W.	108	1.25A	Resistive	40
M203H	H.W.	108	1.5A	Resistive	40
M200V	Push-pull	25-0-25	1.5A	250	50
M201V	Push-pull	25-0-25	2A	500	50
M202V	Push-pull	35-0-25	2.5A	500	50
M203V	Push-pull	25-0-25	3A	500	50
M210	Push-pull	12-0-12	1.5A	500	25
M211	Push-pull	12-0-12	2A	750	25
M212	Push-pull	12-0-12	2.5A	1,000	25
M213	Push-pull	12-0-12	3A	1,000	25
M225	Bridge	18	750	—	12
M337B	Bridge	20	4A	Resistive	16
M350	Bridge	20	1A	Resistive	16
M351	Bridge	20	1.5A	Resistive	16
M352	Bridge	20	2.5A	Resistive	16
M353	Bridge	20	4.5A	Resistive	16
M354	Bridge	20	5A	Resistive	16
M355	Bridge	20	6A	Resistive	16
M356	Bridge	20	8A	Resistive	16
M357	Bridge	20	10A	Resistive	16

Continued

Type	Type of Rectification	Input Volts (R.M.S.)	Max. Rect. Current (mA)	Min. Reservoir Capacitance (μF)	Rectified Volts
SALFORD ELECTRICAL INSTRUMENTS (*Continued*)					
Current Types (*Continued*)					
Z11B1FS	Bridge	18	750	Resistive	14.4
Z11B1X	Bridge	27	150	Resistive	21.5
Z11H9X	H.W.	125	90	20	130
Z11H17X	H.W.	250	90	20	290
Z12B1FS	Bridge	18	1.5A	Resistive	14.4
Z12B1X	Bridge	27	360	Resistive	21.5
Z12H9X	H.W.	125	225	48	130
Z12H17X	H.W.	250	225	48	290
Z13B1FS	Bridge	18	3A	Resistive	14.4
Z13B1X	Bridge	27	720	Resistive	21.5
Z13H9X	H.W.	125	450	100	130
Z13H17X	H.W.	250	450	100	290
Z14B1FS	Bridge	18	6A	Resistive	14.4
Z16B1FS	Bridge	18	18A	Resistive	14.4
Z21B1FS	Bridge	18	1A	Resistive	14.4
Z21B1X	Bridge	27	240	Resistive	21.5
Z21H9X	H.W.	125	150	32	130
Z21H17X	H.W.	250	125	32	290
Z22B1FS	Bridge	18	2A	Resistive	14.4
Z22B1X	Bridge	27	520	Resistive	21.5
Z22H17X	H.W.	250	300	64	290
Z23B1FS	Bridge	18	4A	Resistive	14.4
Z24B1FS	Bridge	18	8A	Resistive	14.4
Z25B1FS	Bridge	18	10A	Resistive	14.4
Z26B1FS	Bridge	18	14A	Resistive	14.4
ZC12H18X	H.W.	250	325	100	290
ZC13H17XE	H.W.	250	300	100	280
46H1 and intermediate types to 46H33	H.W.	28 to 6,120	5	4.5 to 0.02	28 to 6,120
48H1 and intermediate types to 48H33	H.W.	28 to 6,120	12	10 to 0.02	28 to 6,120

* The digits prefixing the type number indicate the value of Maximum Rectified Current (in amps).

Note: Rectified voltage may be considerably reduced by any series resistance in the circuit.

WESTINGHOUSE					
Replacement Types					
4A88	V.D.	150	200	2 × 32	250
4C1017	C.T.	2.5-0-2.5	120	2,000	1.5
4D958	C.T.	2.5-0-2.5	100	2,000	1.5
5D1	H.W.	2	40	240	1.5
14A86	H.W.	240	200	64	280
14A97	F.W.	240	250	64	275
14A100	H.W.	250	200	64	290
14A124	F.W.	250	200	80	300
14A144	F.W.	350	200	64	500
14A163	V.D.	120	120	2 × 50	250
14A342	H.W.	250	300	100	290
14A975	H.W.	250	120	16	260
14B35	H.W.	100	70	32	110
14B130	H.W.	240	200	84	265
14B261	H.W.	210	70	32	240
14B980	H.W.	240	70	50	275
14B986	H.W.	250	70	16	275
15B35	H.W.	240	45	32	270
15B39	C.T.	95-0-95	100	32	95
15C997	H.W.	125	35	36	150

Continued

Type	Type of Rectification	Input Volts (R.M.S.)	Max. Rect. Current (mA)	Min. Reservoir Capacitance (μF)	Rectified Volts
WESTINGHOUSE (*Continued*)					
Replacement Types (Continued)					
15D19	H.W.	125	25	32	150
2 × 15D39	C.T.	120-0-120	45	32	140
16HT12 and intermediate types to 16HT258	H.W.	180 to 3,865	8	4 to 0.2	190 to 4,120
16MB1 and intermediate types to 16MB16	H.W.	15 to 240	8	32 to 2	15 to 240
36EHT10 and intermediate types to 36EHT240	H.W.	270 to 6,480	2	0.5 to 0.05	300 to 7,900
36MB1 and intermediate types to 36MB13	H.W.	30 to 390	2	4 to 0.33	30 to 390
EC1	HW/CT/Bridge	250	120	16 to 32	270
EC2	H.W.	250	60	16	280
	V.D.	125	60	16	260
EC3	HW/CT/Bridge	250	180	32 to 50	280
EC4	H.W.	500	60	8	560
	V.D.	250	60	8	520
EC9	H.W.	250	60	16	280
EC10	H.W.	150	60	24	170
EC11	H.W.	500	75	8	550
	V.D.	250	75	8	550
EC12	H.W.	300	60	8	320
	V.D.	150	60	16	320
EC13	H.W.	400	60	8	440
EC15	Bridge	30	120	120	32
EC16	Bridge	90	120	64	100
EC18	Bridge	60	120	64	65
EC19	Bridge	120	120	32	130
	C.T.	120-0-120	120	32	130
LT113	Bridge	21.5	1.5A	—	12
Current Types					
H31N02B01	Bridge	60	200	100	65
H31N04B01	Bridge	120	200	64	130
H31N08B01	Bridge	250	200	32	270
H31N09B01	Bridge	270	200	32	290
H31N0A01	H.W.	150	100	24	170
H31N16A01	H.W.	250	100	16	280
H31N20A01	H.W.	300	100	16	330
H031PE01B	Bridge	20	175	—	14
H131PE01B	Bridge	30	175	—	20
H029PE01B	Bridge	20	240	—	14
H129PE01B	Bridge	30	240	—	20
H123PP01B	Bridge	20	500	—	14
LT116	Bridge	30	1.25A	—	20
LT119	Bridge	30	2A	—	20
LT120	Bridge	20	1.2A	—	12
LT138	Bridge	30	1.2A	—	20
LT156	Bridge	60	2A	—	40
LT158	Bridge	60	1.2A	—	40
WKA29PM01B	Bridge	30	1.2A	—	20

Germanium PNP Transistors

Type	Construction	P_C Max. (mW)	Typical f_T or *f_1, † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or *h_{fe})	Max I_{CBO} at V_{CB} µA	V	Application	Base Ref.
MULLARD												
Replacement Types												
ASY26	A	150	>4*	−30	—	—	300	100 at 20	3	5		2
ASY27	A	150	>6*	−25	—	—	300	100 at 20	3	5		2
2N1303	AJ	150	4.5†	−30	—	−25	300	50 at 10	—	—		2
2N1305	AJ	150	8†	−30	—	−25	300	70 at 10	—	—	General purpose	2
2N1307	AJ	150	12†	−30	—	−25	300	100 at 10	—	—		2
2N1309	AJ	150	20†	−30	—	−25	300	150 at 10	—	—		2
Current Types												
AC128	AJ	700	—	−32	−32	—	1A	90 at 300	10	10	Class A and B output	4
AC188	AJ	800	1.5	−25	−15	−10	1A	200 at 300	200	25	Audio	4
AD162	AJ	3W	1.5	−32	−32	−20	1A	150 at 500	20	10	Output stages	1
AD149	AJ	22.5W	0.5	−50	−50	−20	3.5A	65 at 1A	350	14	Class B output	1
OC25	AJ	22.5W	—	−40	−40	—	4A	50 at 1A	—	—	Gen. purpose power	1
OC20	AJ	30W	0.25†	−100	−75	—	8A	50 at 1A	—	—	High voltage, high gain	1
OC28	AJ	30W	—	−80	−60	—	10A	38 at 1A	100	0.5		1
OC29	AJ	30W	—	−60	−48	—	10A	88 at 1A	100	0.5	Switching	1
OC35	AJ	30W	—	−60	−48	—	10A	50 at 1A	100	0.5		1
OC36	AJ	30W	—	−80	−60	—	10A	70 at 1A	100	0.5		1
NEWMARKET												
Current Types												
OC65N	A	25	1	−10	−10	−10	10	30 at 4	12	4.5	A.F.	4
OC66N	A	25	1	−10	−10	−10	10	50 at 4	12	4.5		4
NKT11	A	75	—	−18	−10	−12	100	155* at 1	5	6		4
NKT12	A	75	—	−18	−10	−12	100	110* at 1	5	6	R.F. amplifiers	4
NKT72	A	75	—	−15	—	−10	10	130* at 1	5	6		4
NKT73	A	75	—	−15	—	−10	10	75* at 1	5	6		
AC107N	A	80	1	−15	—	−5	—	95 at 0.3	—	—		4
OC70N	A	125	1	−30	−10	−10	10	30 at 0.5	13	4.5		4
OC71N	A	125	1	−30	−10	−10	10	41 at 1	13	4.5		4
OC72N	A	125	1	−32	−16	−10	125	82 at 10	10	10		4
OC73N	A	125	1	−32	−16	−20	10	48 at 0.5	6	4.5	A.F.	4
OC75N	A	125	1	−30	−10	−10	10	95 at 3	14	4.5		4
OC76N	A	125	1	−32	−16	−10	125	45 at 10	10	10		4
OC77N	A	125	1	−60	−15	−10	125	45 at 10	10	10		4
2N1303	AJ	150	—	−30	−25	—	300	20‡ at 10	6	25		2
2N1305	AJ	150	—	−30	−20	—	300	120 at 10	6	25		2
2N1307	AJ	150	—	−30	−15	—	300	180 at 10	6	25	R.F. switching	2
2N1309	AJ	150	—	−30	−15	—	300	80‡ at 10	6	25		2
ACY27	A	200	1	−40	−20	−30	—	32 at 1	12	30		4
ACY28	A	200	1	−40	−15	−30	—	97 at 1	12	30		4
ACY29	A	200	1	−40	−15	−30	—	97 at 1	12	30		4
ACY30	A	200	1	−40	−20	−40	—	130 at 1	12	30		4
ACY31	A	200	1	−40	—	−20	—	53 at 1	5	12		4
ACY34	A	200	1	−30	−10	−10	—	30 at 1	12	30		4
ACY35	A	200	1	−30	−10	−10	—	52 at 1	12	30		4
ACY36	A	200	1	−32	−16	−10	—	60 at 80	12	30		4
ACY50	A	200	1	−20	−10	−20	—	47 at 5	12	20		4
NKT210	A	200	1	−45	−30	−10	500	100 at 25	10	10		4
NKT211	J	200	1†	−32	—	−10	500	50‡ at 300	10	10	A.F.	4
NKT212	J	200	1†	−32	—	−10	125	50‡ at 25	10	10		4
NKT213	J	200	1†	−32	—	−10	125	50‡ at 1	10	10		4
NKT214	J	200	1†	−32	—	−10	125	30‡ at 1	10	10		4
NKT215	J	200	1†	−32	—	−10	125	15‡* at 1	10	10		4
NKT216	J	200	1†	−60	—	−10	125	50‡ at 1	10	10		4
NKT217	J	200	1†	−60	—	−10	125	50‡ at 25	10	10		4
NKT218	J	200	1†	−60	—	−10	500	50‡ at 300	10	10		4
NKT219	J	200	1†	−32	—	−10	125	85‡ at 1	10	10		4
NKT271	J	200	1†	−15	—	−5	500	50‡ at 200	10	10		4

Continued

Type	Construction	P_C Max. (mW)	Typical f_T or *f_1 † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or *h_{fe})	Max I_{CBO} at V_{CB} µA	V	Application	Base Ref.
NEWMARKET (*Continued*)												
Current Types (*Continued*)												
NKT272	J	200	1†	−15	—	−5	125	35‡* at 1	10	10		4
NKT273	J	200	1†	−15	—	−5	500	25‡ at 200	10	10		4
NKT274	J	200	1†	−15	—	−5	125	85‡* at 1	10	10		4
NKT275	J	200	1†	−15	—	−5	125	25‡* at 1	10	10		4
OC78N	A	200	1	−20	—	−10	200	20 at 125	10	10		4
OC81DN	A	200	1	−32	—	−10	250	20 at 2	10	10		4
OC81N	A	200	1	−32	—	−10	500	150 at 50	10	10		4
OC74N	A	220	1	−20	—	−5	300	105 at 50	20	9		4
OC83N	A	220	1	−32	−20	−10	1A	120 at 300	10	10		4
OC84N	A	220	1	−32	−20	−10	1A	105 at 300	10	10		4
NKT281	A	220	1.5	−32	−16	−10	1A	115 at 50	10	10		4
ACY17	A	300	—	−70	−32	−12	1A	125 at 50	10	6		2
ACY18	A	300	—	−50	−30	−12	1A	100 at 50	10	6		2
ACY19	A	300	—	−50	−30	−12	1A	215 at 50	10	6		2
ACY20	A	300	—	−40	−20	−12	1A	100 at 50	10	6	A. F.	2
ACY21	A	300	—	−40	−20	−12	1A	170 at 50	10	6		2
ACY22	A	300	—	−20	−15	−12	1A	190 at 50	10	6		2
ACY23	A	300	—	−110	−40	−12	1A	130 at 50	10	6		2
ACY40	A	300	—	−32	−18	−12	1A	55 at 50	10	6		2
NKT229	A	300	—	−30	—	−10	500	80‡ at 50	10	10		2
NKT245	A	300	—	−32	−18	−12	1A	180 at 50	10	6		2
NKT221	J	300	1†	−30	—	−10	500	50‡ at 500	10	10		2
NKT222	J	300	1†	−30	—	−10	125	50‡ at 25	10	10		2
NKT223	J	300	1†	−30	—	−10	125	50‡* at 1	10	10		2
NKT224	J	300	1†	−30	—	−10	125	30‡* at 1	10	10		2
NKT225	J	300	1†	−30	—	−10	125	15‡* at 1	10	10		2
NKT226	J	300	1†	−30	—	−10	125	50‡* at 1	10	10		2
NKT227	J	300	1†	−60	—	−10	125	50‡ at 25	10	10		2
NKT228	J	300	1†	−30	—	−10	500	30‡ at 500	10	10		2
NKT420	A	1.3W	—	−120	—	−50	5A	60 at 1A	150	30		1
NKT406	A	1.3W	0.35	−60	−32	−20	10A	40 at 1A	150	30		1
NKT401	J	1.3W	0.6†	−80	−30	−20	8A	15‡ at 6A	100	1.5		1
NKT402	J	1.3W	0.6†	−80	−20	−20	8A	30‡ at 6A	100	1.5		1
NKT403	J	1.3W	0.6†	−80	−30	−20	8A	50‡ at 1A	100	1.5		1
NKT404	J	1.3W	0.6†	−60	−20	−20	8A	50‡ at 1A	100	1.5		1
NKT405	J	1.3W	0.9†	−60	—	−20	8A	100‡ at 1A	100	1.5		1
NKT451	J	1.3W	0.9†	−36	—	−10	8A	50‡ at 1A	100	1.5		1
NKT452	J	1.3W	0.9†	−36	—	−10	8A	30‡ at 1A	100	1.5	A. F. power	1
NKT453	J	1.3W	0.9†	−36	—	−10	8A	15‡ at 1A	100	1.5		1
OC25	A	32.5W	—	−40	−40	−10	4A	48 at 1A	100	0.5		1
NKT450	A	43W	—	−36	−36	−10	3A	30‡* at 1A	100	1.5		1
OC20	A	43W	—	−100	−75	−40	10A	50 at 1A	—	—		1
OC19	A	50W	—	−32	−16	−10	3A	33 at 2A	100	1.4		1
OC28	A	50W	—	−80	−60	−40	10A	38 at 1A	100	0.5		1
OC29	A	50W	—	−60	−32	−20	10A	87 at 1A	100	0.5		1
OC35	A	50W	—	−60	−32	−20	10A	50 at 1A	100	0.5		1
OC36	A	50W	—	−80	−32	−40	10A	70 at 1A	100	0.5		1

‡ Minimum value

SGS-ATES												
Current Types												
AF109R	—	60	—	—	−15	−0.3	2	55 at 2	—	—	V.H.F. preamps.	9
AF106	—	60	220	—	−18	−0.3	2	70 at 2	—	—	V.H.F. mixer/osc.	9
AF139	—	60	550	—	−15	−0.3	1.5	50 at 1.5	—	—	U.H.F. mixer/preamps.	9
AF239	—	60	700	—	−15	−0.3	5	30 at 5	—	—	U.H.F. preamps.	9
AF239S	—	60	780	—	−15	−0.3	5	30 at 5	—	—		9
AU113	—	5W	—	−250	—	—	10A	47 at 6A	—	—	TV line output	1
AU106	—	5W	2	−320	—	—	10A	47 at 6A	—	—		1
AU111	—	5W	2	−320	—	—	10A	47 at 6A	—	—		1
AU112	—	5W	2	−320	—	—	10A	27 at 6A	—	—		1

Continued

Germanium PNP Transistors

Type	Construction	P_C Max. (mW)	Typical f_T or *f_1 † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or *h_{fe})	Max I_{CBO} at V_{CB} µA	V	Application	Base Ref.
SGS-ATES (*Continued*)												
Current Types (*Continued*)												
AD262	A	10W	—	−35	−20	—	4A	110 at 500	—	—		1
AD263	A	10W	—	−60	−40	—	4A	102 at 500	—	—		1
AD142	A	30W	—	−80	—	—	10A	115 at 1A	—	—	Audio amps.	1
AD143	A	30W	—	−40	—	—	10A	115 at 1A	—	—		1
AD143R	A	30W	—	−35	−25	—	10A	115 at 1A	—	—		1
AU108	—	30W	—	−100	—	—	10A	117 at 700	—	—		1
AU108F	—	30W	—	−100	—	—	10A	185 at 1A	—	—	TV line outputs	1
AU110	—	30W	—	−160	—	—	10A	55 at 1A	—	—		1
AU107	—	30W	2	−200	—	—	10A	77 at 700	—	—	TV frame outputs	1
TUNGSRAM												
Current Types												
AC128	AJ	700	1.5*	−32	−32	−10	1A	90 at 300	10	10	Class A output	4
AC188	AJ	800	1.5	−25	−15	−10	1A	200 at 300	200	25	A. F. output	4
AD162	AJ	3W	1.5	−32	−20	−10	1A	150 at 500	20	10		1
AD149	AJ	22.5W	0.5	−50	−50	−20	3.5A	65 at 1A	350	14	Class B output	1

Germanium NPN Transistors

Type	Construction	P_C Max. (mW)	Typical f_T or *f_1 † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or *h_{fe})	Max I_{CBO} at V_{CB} µA	V	Application	Base Ref.
MULLARD												
Replacement Types												
ASY28	A	125	4*	30	—	—	100	55 at 20	3	5	General purpose	2
ASY29	A	125	6*	25	—	—	100	100 at 20	3	5		2
2N1302	A	150	4	25	—	—	300	105 at 1	6	25		2
2N1304	A	150	6	25	—	—	300	120 at 1	6	25	Medium speed logic and	2
2N1306	A	150	9	25	—	—	300	135 at 1	6	25	general purpose	2
2N1308	A	150	16	25	—	—	300	170 at 1	6	25		2
Current Types												
ASY74	AJ	140	6‡	30	15	—	400	35‡ at 200	—	—	Switching	2
AC127	AJ	340	2.5	32	12	—	500	100 at 20	—	—	General purpose	4
AC176	AJ	700	—	32	32	—	1A	100 at 500	30	10		4
AC187	AJ	800	—	25	15	10	1A	200 at 300	100	25	Audio amplifiers	4
AD161	AJ	4W	3	32	20	10	3A	150 at 500	25	10		1

‡ Minimum value

NEWMARKET												
Current Types												
ASY28	A	150	>4	30	15	20	300	715 at 20	3	5	R. F. amplifiers	2
ASY29	A	150	1	25	15	20	300	100 at 20	3	5		2
2N1302	—	150	—	—	25	—	300	20‡ at 10	6	25		2
2N1304	—	150	—	—	20	—	300	120 at 10	6	25	R. F. switching	2
2N1306	—	150	—	—	15	—	300	180 at 10	6	25		2
2N1308	—	150	—	—	15	—	300	80‡ at 10	6	25		2
AC176	A	215	1	32	20	5	1A	120 at 500	30	10	A. F. amplifiers	4

‡ Minimum value

Type	Construction	P_C Max. (mW)	Typical f_T or *f_1 † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or *h_{fe})	Max I_{CBO} at V_{CB} µA	V	Application	Base Ref.
TUNGSRAM												
Current Types												
AC127	A	340	0.001	32	32	—	500	50 at 500	—	—	Class B output	4
AC176	AJ	700	—	32	32	—	1A	100 at 500	30	10	A.F.amplifiers	4
AC187	AJ	800	—	25	15	10	1A	200 at 300	100	25	A.F.amplifiers	4
AD161	AJ	4W	3	32	20	10	3A	150 at 500	25	10	A.F.amplifiers	1

Silicon PNP Transistors

Type	Construction	P_C Max. (mW)	Typical f_T or *f_1 † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or *h_{fe})	Max I_{CBO} at V_{CB} µA	V	Application	Base Ref.
FERRANTI												
Current Types												
BF406	P	220	150	—	−35	—	500	50‡ at 10	—	—	General purpose	53
BF404	P	240	150	—	−20	—	50	110‡ at 2	—	—	Amplifiers	53
ZTX541	PE	300	—	−100	—	—	100	30‡ at 2	—	—	Numerical indicator driver	67
ZTX542	PE	300	—	−120	—	—	100	30‡ at 2	—	—	Numerical indicator driver	67
ZT152	PE	300	30‡	−20	−20	−15	500	35 at 100	0.1	20		2
ZTX530	PE	300	30‡	−30	−30	−5	500	100‡ at 0.1	0.2	30		67
ZTX531	PE	300	30‡	−45	−45	−5	500	40‡ at 0.1	0.2	45		67
ZT180	P	300	150	−25	−25	−4	500	38‡ at 10	0.5	25		2
ZT181	P	300	150	−45	−35	−4	500	38‡ at 10	0.5	45		2
ZT182	P	300	150	−45	−35	−4	500	75‡ at 10	0,5	45		2
ZT183	P	300	150	−45	−45	−4	500	38‡ at 10	0.05	45		2
ZT184	P	300	150	−45	−45	−4	500	75‡ at 10	0.05	45		2
ZT187	P	300	150	−25	−25	−4	500	75‡ at 10	0.5	25		2
ZT280	P	300	150	−25	−25	−4	500	38‡ at 10	0.5	25	General purpose	2
ZT281	P	300	150	−45	−35	−4	500	38‡ at 10	0.5	45	General purpose	2
ZT282	P	300	150	−45	−35	−4	500	75‡ at 10	0.5	45	General purpose	2
ZT283	P	300	150	−45	−45	−4	500	38‡ at 10	0.05	45	General purpose	2
ZT284	P	300	150	−45	−45	−4	500	75‡ at 10	0.05	45	General purpose	2
ZT287	P	300	150	−25	−25	−4	500	75‡ at 10	0.5	25	General purpose	2
ZTX500	PE	300	150‡	−25	−25	−5	500	50‡ at 10	0.2	25	General purpose	67
ZTX501	PE	300	150‡	−35	−35	−5	500	50‡ at 10	0.2	35	General purpose	67
ZTX502	PE	300	150‡	−35	−35	−5	500	100‡ at 10	0.2	35	General purpose	67
ZTX503	PE	300	150‡	−45	−45	−5	500	50‡ at 10	0.2	45	General purpose	67
ZTX504	PE	300	150‡	−70	−70	−5	500	50‡ at 10	0.2	70	General purpose	67
ZTX510	PE	300	400	—	−12	—	30	40‡ at 30	—	—	High speed switching	67
BFS37	P	350	30	−45	−45	—	500	200 at 0.01	—	—	Amplifiers	53
BFS37A	P	350	30	−30	−30	—	500	250 at 0.1	—	—	Amplifiers	53
BFS44	P	350	60	−60	−30	—	1A	80 at 150	—	—		53
BFS45	P	350	60	−60	−60	—	1A	130 at 150	—	—		53
BFS40	P	350	150	−45	−35	—	500	200 at 10	—	—	General purpose	53
BFS40A	P	350	150	−25	−25	—	500	175 at 10	—	—	General purpose	53
BFS41	P	350	150	−45	−45	—	500	80 at 10	—	—		53
BSV37	P	350	400	−12	−12	—	500	95 at 30	—	—	H.F.amplifiers	53
2N2894	PE	360	400‡	−12	−12	−4	200	40‡ at 30	0.08	12	Medium power	2
ZTX3702	PE	500	100	—	−25	—	50	180 at 50	—	—		67
ZTX3703	PE	500	100	—	−30	—	500	90 at 50	—	—		67
BFS96	PE	500	150	—	−30	—	1A	170 at 150	—	—		67
BFS97	PE	500	150	—	−40	—	1A	200 at 150	—	—		67
BFS98	PE	500	150	—	−60	—	1A	100 at 150	—	—		67
ZTX4402	PE	500	150	—	−40	—	600	100 at 150	—	—	General purpose	67
ZTX212	PE	500	200	—	−50	—	200	230 at 2	—	—		67
ZTX213	PE	500	200	—	−30	—	200	315 at 2	—	—		67
ZTX214	PE	500	200	—	−30	—	200	345 at 2	—	—		67
ZTX3905	PE	500	200	—	−40	—	200	100 at 10	—	—		67

Continued

Silicon PNP Transistors

Type	Construction	P_C Max. (mW)	Typical f_T or $^*f_1$ † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or $^*h_{fe}$)	Max I_{CBO} at V_{CB} µA	V	Application	Base Ref.
FERRANTI (*Continued*)												
Current Types (*Continued*)												
ZTX4403	PE	500	200	—	−40	—	150	200 at 150	—	—	General purpose	67
ZTX3906	PE	500	250	—	−40	—	200	200 at 10	—	—	General purpose	67
2N1131	PE	600	50‡	−50	−35	−5	—	20‡ at 150	1	50	High speed switching	2
2N1132	PE	600	60‡	−50	−35	−5	—	30‡ at 150	1	50	High speed switching	2
ZTX537	PE	750	100	—	−45	—	100	350 at 100	—	—	General purpose	67
ZTX538	PE	750	100	—	−25	—	100	350 at 100	—	—	General purpose	67
ZTX550	PE	1W	150	—	−45	—	150	200 at 150	—	—	General purpose	67
ZTX551	PE	1W	150	—	−60	—	1A	100 at 150	—	—	General purpose	67
ZT210	PE	5W	—	−60	−40	−5	1A	20‡ at 150	0.5	60	General purpose	2
ZT211	PE	5W	—	−90	−65	−5	1A	40‡ at 150	0.5	60	General purpose	2
BUY90	PE	20W	50	−120	−60	—	3A	60 at 0.5	—	—	Drivers, amplifiers	2
BUY91	PE	24W	50	−120	−60	—	6A	58 at 0.5	—	—	Drivers, amplifiers	2
BUY92	PE	30W	50	−120	−60	—	9A	57 at 0.5	—	—	Drivers, amplifiers	2
				‡ Minimum value								
I.T.T.												
Current Types												
BF450	P	150	325	—	−40	—	25	60 at 1	—	—	A.M./F.M. I.F. amplifiers	49
BF451	P	150	325	—	−40	—	25	30 at 1	—	—	A.M./F.M. I.F. amplifiers	49
2N3962	PE	200	270	−60	−60	−5	200	275 at 2	0.01	50	Amplifiers	2
BCY70	PE	200	275	−50	−50	−5	200	50 at 2	0.01	50	Amplifiers	2
2N3964	PE	200	320	−45	−45	−5	200	425 at 2	0.01	40	Amplifiers	2
BCY71A	PE	200	330	−45	−45	−5	200	350 at 2	0.01	45	Amplifiers	2
BF324	P	250	350	—	−30	—	25	45 at 1	—	—	F.M. tuners	64
BC250A BC260A	PE	300	180	−20	−20	−5	200	70 at 2	0.1	15	Amplifiers	64 2
BC250B BC260B	PE	300	180	−20	−20	−5	200	150 at 2	0.1	15	Amplifiers	64 2
BC250C BC260C	PE	300	180	−20	−20	−5	200	350 at 2	0.1	15	Amplifiers	64 2
BC251A BC261A BC307A	PE	300	200	−50	−45	−5	200	170 at 2	0.015	45	Amplifiers	64 2 64
BC251B BC261B BC307B	PE	300	200	−50	−45	−5	200	290 at 2	0.015	45	Amplifiers	64 2 64
BC251C BC261C BC307C	PE	300	200	−50	−45	−5	200	500 at 2	0.015	45	Amplifiers	64 2 64
BC252A BC262A BC308A	PE	300	200	−30	−25	−5	200	170 at 2	0.015	25	Amplifiers	64 2 64
BC252B BC262B BC308B	PE	300	200	−30	−25	−5	200	290 at 2	0.015	25	Amplifiers	64 2 64
BC252C BC262C BC308C	PE	300	200	−30	−25	−5	200	500 at 2	0.015	25	Amplifiers	64 2 64
BC253A BC263A BC309A	PE	300	200	−30	−25	−5	200	90 at 2	0.015	25	Amplifiers	64 2 64
BC253B BC263B BC309B	PE	300	200	−30	−25	−5	200	150 at 2	0.015	25	Amplifiers	64 2 64
BC253C BC263C BC309C	PE	300	200	−30	−25	−5	200	270 at 2	0.015	25	Amplifiers	64 2 64
BC256A BC266A	PE	300	200	−64	−64	−5	200	170 at 2	0.015	64	Amplifiers	64 2
BC256B BC266B	PE	300	200	−64	−64	−5	200	290 at 2	0.015	64	Amplifiers	64 2

Continued

Type	Construction	P_C Max. (mW)	Typical f_T or *f_1 † fab (MHz)	Absolute Max. Ratings				Typical h_{FE} at (mA) (or *h_{fe})	Max I_{CBO} at V_{CB}		Application	Base Ref.
				V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)		μA	V		
I. T. T. (*Continued*)												
Current Types (*Continued*)												
BCY78A	PE	300	200	−32	−32	−5	200	180 at 2	0.02	25		2
BCY78B	PE	300	200	−32	−32	−5	200	260 at 2	0.02	25		2
BCY78C	PE	300	200	−32	−32	−5	200	360 at 2	0.02	25		2
BCY78D	PE	300	200	−32	−32	−5	200	500 at 2	0.02	25	Amplifiers	2
BCY79A	PE	300	200	−45	−45	−5	200	180 at 2	0.02	35		2
BCY79B	PE	300	200	−45	−45	−5	200	260 at 2	0.02	35		2
BCY79C	PE	300	200	−45	−45	−5	200	360 at 2	0.02	35		2
2N3963	PE	300	220	−80	−80	−5	200	275 at 2	0.01	70		2
BCY71	PE	300	250	−45	−45	−5	200	50 at 2	0.01	50	Switching	2
BCY72	PE	300	250	−25	−25	−5	200	50 at 2	0.01	25		2
2N3965	PE	300	250	−60	−60	−5	200	425 at 2	0.01	50	Amplifiers	2
2N2894	PE	360	400	−12	−12	−4	200	25 at 100	0.08	6		2
2N3209	PE	360	400	−20	−20	−4	200	15 at 100	0.08	6	High speed switching	2
BC192	PE	400	100	−25	−25	−5	500	90 at 50	0.1	20		2
BSV46	PE	400	200	−70	−70	−5	500	35 at 10	0.02	50		2
BSV47A	PE	400	200	−60	−60	−5	500	40 at 10	0.02	50		2
BSV47B	PE	400	200	−60	−60	−5	500	100 at 10	0.02	50		2
BSV48A	PE	400	200	−60	−40	−5	500	35 at 10	0.02	50	Switching	2
BSV48B	PE	400	200	−60	−40	−5	500	75 at 10	0.02	50		2
BSV49A	PE	400	200	−30	−30	−5	500	35 at 10	0.025	20		2
BSV49B	PE	400	200	−30	−30	−5	500	75 at 10	0.025	20		2
BSW72	PE	400	200	−40	−25	−5	500	30 at 10	0.1	30		2
BSW73	PE	400	200	−40	−25	−5	500	70 at 10	0.1	30		2
BSW74	PE	400	200	−75	−40	−5	500	35 at 10	0.01	50		2
BSW75	PE	400	200	−75	−40	−5	500	75 at 10	0.01	50		2
2N2906	PE	400	200	−60	−40	−5	500	35 at 10	0.02	50	High speed switching	2
2N2906A	PE	400	200	−60	−60	−5	500	40 at 10	0.01	50		2
2N2907	PE	400	200	−60	−40	−5	500	75 at 10	0.02	50		2
2N2907A	PE	400	200	−60	−60	−5	500	100 at 10	0.01	50		2
BSV42	PE	600	200	−70	−70	−5	500	35 at 10	0.02	50		64
BSV43A	PE	600	200	−60	−60	−5	500	40 at 10	0.02	50		64
BSV43B	PE	600	200	−60	−60	−5	500	100 at 10	0.02	50		64
BSV44A	PE	600	200	−60	−40	−5	500	35 at 10	0.02	50	Switching	64
BSV44B	PE	600	200	−60	−40	−5	500	75 at 10	0.02	50		64
BSV45A	PE	600	200	−30	−30	−5	500	35 at 10	0.025	20		64
BSV45B	PE	600	200	−30	−30	−5	500	75 at 10	0.025	20		64
BC327	PE	625	—	—	−45	−5	800	350 at 1	—	—		64
BC328	PE	625	—	—	−25	−5	800	350 at 1	—	—		64
BC160-6	PE	750	—	—	−40	−5	1A	70 at 1	—	—		2
BC160-10	PE	750	—	—	−40	−5	1A	110 at 1	—	—		2
BC160-16	PE	750	—	—	−40	−5	1A	175 at 1	—	—		2
BC161-6	PE	750	—	—	−60	−5	1A	70 at 1	—	—		2
BC161-10	PE	750	—	—	−60	−5	1A	110 at 1	—	—	Amplifiers	2
BC161-16	PE	750	—	—	−60	−5	1A	175 at 1	—	—		2
BC360-6	PE	800	—	—	−40	−5	500	70 at 5	—	—		2
BC360-10	PE	800	—	—	−40	−5	500	110 at 5	—	—		2
BC360-16	PE	800	—	—	−40	−5	500	175 at 5	—	—		2
BC361-6	PE	800	—	—	−60	−5	500	70 at 5	—	—		2
BC361-10	PE	800	—	—	−60	−5	500	110 at 5	—	—		2
BSX40	PE	800	100	−30	−30	−5	500	35 at 10	0.025	25		2
2N4030	PE	800	100	−60	−60	−5	1A	30 at 5	0.05	50		2
2N4031	PE	800	100	−80	−80	−5	1A	30 at 5	0.05	60		2
BSX41	PE	800	150	−30	−30	−5	500	75 at 10	0.025	25		2
2N4032	PE	800	150	−60	−60	−5	1A	75 at 5	0.05	50	High speed switching	2
2N4033	PE	800	150	−80	−80	−5	1A	75 at 5	0.05	60		2
2N2904	PE	800	150	−60	−40	−5	600	75 at 10	0.025	25		2
2N2904A	PE	800	200	−60	−60	−5	600	40 at 10	0.01	50		2
2N2905	PE	800	200	−60	−40	−5	600	75 at 10	0.02	50		2
2N2905A	PE	800	200	−60	−60	−5	600	100 at 10	0.01	50		2

Silicon PNP Transistors

Type	Construction	P_C Max. (mW)	Typical f_T or $^{\alpha}f_1$ † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or $^{\alpha}h_{fe}$)	Max I_{CBO} at V_{CB} μA	V	Application	Base Ref.
MULLARD												
Replacement Types												
BCY49	AJ	250	—	−15	−15	−15	20	—	—	—	Low-level chopper	2
BFW87	PE	300	100	−60	−60	−5	500	110 at 10	0.1	50		43
BFW88	PE	300	100	−60	−60	−5	500	55 at 10	0.1	50		43
BFW89	PE	300	100	−40	−40	−5	500	110 at 10	0.1	30	General purpose	43
BFW90	PE	300	100	−40	−40	−5	500	55 at 10	0.1	30		43
BFW91	PE	300	100	−20	−20	−5	500	55 at 50	0.1	15		43
2N1131	PE	600	60	−50	−35	−5	600	45 at 10	1	30		2
2N1132	PE	600	60	−50	−35	−5	600	90 at 10	1	30	Switching	2
2N3133	PE	600	200	−50	−35	−4	600	120 at 150	0.05	30		2
2N3134	PE	600	200	−50	−35	−4	600	300 at 150	0.05	30		2
Current Types												
BCW29R	PE	200	150	−30	−20	—	100	120‡ at 2	—	—		53
BCW30R	PE	200	150	−30	−20	—	100	215‡ at 2	—	—		53
BCW69R	PE	200	150	−50	−45	—	100	120‡ at 2	—	—	Micro-miniature	53
BCW70R	PE	200	150	−50	−45	—	100	215‡ at 2	—	—		53
BC157	PE	220	130	−50	−45	−5	100	140 at 2	0.1	20	A.F. driver	43
BC158	PE	220	130	−30	−25	−5	100	140 at 2	0.1	20	General purpose	43
BC159	PE	220	130	−25	−20	−5	100	230 at 2	0.1	20	A.F. input	43
BCY30	AJ	250	1.2	−64	−64	−45	50	25* at 1	0.05	6		2
BCY33	AJ	250	1.5	−32	−32	−16	50	25* at 1	0.05	6		2
BCY31	AJ	250	1.7	−64	−64	−45	50	35* at 1	0.05	6	General purpose	2
BCY34	AJ	250	2.4	−32	−32	−16	50	35* at 1	0.05	6		2
BCY32	AJ	250	2.5	−64	−64	−32	50	35* at 1	0.05	6		2
BSV68	PE	250	50‡	−110	−100	—	100	30‡ at 25	—	—	Switching	2
BF450	PE	250	325	−40	−40	—	25	60‡ at 1	—	—		49
BF451	PE	250	325	−40	−40	—	25	30‡ at 1	—	—	R.F. amplifiers	49
BF324	PE	250	550	−30	−30	—	25	25‡ at 4	—	—		50
BSS68	PE	300	50	−110	−100	—	100	30‡ at 25	—	—	Switching	50
BC557	PE	300	150	−50	−45	—	200	75* at 2	—	—		50
BC558	PE	300	150	−30	−25	—	200	75‡ at 2	—	—	General purpose	50
BC559	PE	300	150	−25	−20	—	200	125* at 2	—	—		50
BCX17	PE	310	100	−50	−30	—	500	100‡ at 100	—	—		54
BCX18	PE	310	100	−45	−25	—	500	100‡ at 100	—	—	Micro-miniature	54
BCY71	PE	350	200	−45	−45	—	200	100‡ at 10	—	—		2
BCY72	PE	350	200	−25	−25	—	200	50‡ at 10	—	—	General purpose	2
BCY70	PE	350	250	−50	−40	—	200	50‡ at 10	—	—		2
BFX37	PE	360	0.01	−60	−60	−6	50	200 at 1	—	—	Amplifiers	2
2N2906	PE	400	200	−60	−40	−5	600	80 at 150	0.02	50		2
2N2906A	PE	400	200	−60	−60	−5	600	80 at 150	0.01	50		2
2N2907	PE	400	200	−60	−40	−5	600	200 at 150	0.02	50	High speed switching	2
2N2907A	PE	400	200	−60	−60	−5	600	200 at 150	0.01	50		2
BCY38	AJ	410	1.5*	−32	−32	−12	250	20 at 150	0.1	6		2
BCY39	AJ	410	1.5*	−64	−64	−12	250	30 at 150	0.1	6		2
BCY54	AJ	410	2*	−50	−50	−12	250	40 at 150	0.1	6		2
BCY40	AJ	410	2.5*	−32	−32	−12	250	67 at 150	0.1	6		2
BFX30	PE	600	—	−65	−65	−5	600	90 at 10	0.05	50	General purpose	2
BFX29	PE	600	100	−60	−60	—	600	50‡ at 10	—	—		2
BFX87	PE	600	100	−50	−50	−4	600	90 at 150	0.5	1		2
BFX88	PE	600	100	−40	−40	−4	600	90 at 150	0.5	1		2
2N2904	PE	600	200	−60	−40	−5	600	120 at 150	0.02	50		2
2N2904A	PE	600	200	−60	−60	−5	600	120 at 150	0.01	50		2
2N2905	PE	600	200	−60	−40	−5	600	300 at 150	0.02	50	High speed switching	2
2N2905A	PE	600	200	−60	−60	−5	600	300 at 150	0.01	50		2
BC327	PE	625	100	−50	−45	—	1A	100‡ at 100	—	—		50
BC328	PE	625	100	−30	−25	—	1A	100‡ at 100	—	—		50
BCX35	PE	880	100	−80	−80	—	600	90 at 150	—	—	General purpose	43
BCX36	PE	880	100	−60	−60	—	600	90 at 150	—	—		43
BCX37	PE	880	100	−40	−40	—	600	90 at 150	—	—		43

Continued

Type	Construction	P_C Max. (mW)	Typical f_T or $^{\circ}f_1$ † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or $^{\circ}h_{fe}$)	Max I_{CBO} at V_{CB} μA	V	Application	Base Ref.
MULLARD (*Continued*)												
Current Types (*Continued*)												
BD136	PE	2W	75	−45	−45	−5	350	100 at 150	0.01	30	A.F. amplifiers	51
BD138	PE	2W	75	−60	−60	−5	350	100 at 150	0.01	30		51
BD140	PE	2W	75	−80	−80	−5	350	100 at 150	0.01	30		51
BFT44	PE	5W	60	−300	−300	—	500	50‡ at 10	—	—	General purpose	2
BFT45	PE	5W	60	−250	−250	—	500	50‡ at 10	—	—		2
BD132	PE	15W	60	−45	−45	—	6A	40‡ at 500	—	—		51
BD234	E	25W	3	−45	−45	—	6A	25‡ at 1A	—	—		51
BD236	E	25W	3	−60	−60	—	6A	25‡ at 1A	—	—		51
BD238	E	25W	3	−100	−80	—	6A	25‡ at 1A	—	—		51
BD438	E	36W	3	−45	−45	—	7A	40‡ at 2A	—	—		51
BD434	E	36W	3	−22	−22	—	7A	50‡ at 2A	—	—		51
BD436	E	36W	3	−32	−32	—	7A	50‡ at 2A	—	—		51
BDX78	E	55W	3	−80	−80	—	12A	30‡ at 2A	—	—		52
BD202	E	60W	3	−60	−45	—	8A	30‡ at 3A	—	—		52
BD204	E	60W	3	−60	−60	—	8A	30‡ at 2A	—	—		52
‡ Minimum value												
NEWMARKET												
Current Types												
NKT20329	—	300	100	−30	−40	−5	10	125 at 1	0.01	10	A.F. amplifiers	2
BCY70	PE	350	250	−50	−40	−5	200	50‡ at 10	0.01	20		2
BCY71	PE	350	300	−45	−45	−5	200	100‡ at 10	0.01	20		2
BCY72	PE	350	200	−25	−25	−5	200	50‡ at 10	0.1	20		2
2N2906	PE	400	200	−60	−40	−5	600	80 at 150	0.02	50	A.F. drivers	2
2N2906A	PE	400	200	−60	−60	−5	600	80 at 150	0.01	50		2
2N2907	PE	400	200	−60	−40	−5	600	200 at 150	0.02	50		2
2N2907A	PE	400	200	−60	−60	−5	600	200 at 150	0.01	50		2
NKT20339	—	400	100	−45	−40	−5	500	100 at 10	0.01	10		2
BFX29	—	500	100	−60	−60	—	600	125 at 50	—	—		2
BFX30	—	500	100	−65	−65	—	600	20‡ at 50	—	—		2
2N1131	P	600	50	−50	−35	−5	600	30 at 150	1	30	A.F. switching	2
2N1132	P	600	60	−50	−35	−5	600	60 at 150	1	20		2
2N2904	PE	600	200	−60	−40	−5	600	80 at 150	0.02	50	A.F. drivers	2
2N2904A	PE	600	200	−60	−60	−5	600	80 at 150	0.01	50		2
2N2905	PE	600	200	−60	−40	−5	600	200 at 150	0.02	50		2
2N2905A	PE	600	200	−60	−60	−5	600	200 at 150	0.01	50		2
BFX88	—	600	60	−40	−40	—	600	40‡ at 150	—	—		2
BFX87	—	600	100	−50	−50	—	600	40‡ at 150	—	—		2
‡ Minimum value												
R.C.A.												
Current Types												
40319	P	—	60	—	−40	—	1A	127 at 50	0.25	15	Driver	2
40362	P	—	60	—	−70	—	1A	127 at 50	—	—		2
40406	P	—	60	—	−50	—	1A	115 at 100	—	—	Amplifier inputs	2
40634	P	—	60	—	−75	—	1A	150 at 150	—	—	Driver	2
40815	P	—	60	—	−45	—	1A	160 at 150	—	—		2
40537	P	1W	60	—	−55	—	1A	175 at 50	—	—		2
2N4036	P	5W	60	—	−65	—	1A	90 at 150	0.02	60	General purpose	2
2N4037	P	5W	60	—	−40	—	1A	150 at 150	0.25	60		2
40391	P	5W	60	—	−40	—	1A	150 at 150	0.25	60		2
40394	P	5W	60	—	−40	—	1A	150 at 150	0.25	60		2
2N4314	P	7W	60	—	−65	—	1A	150 at 150	0.25	60		2
2N5781	PE	10W	8	—	−65	—	3A	110 at 1A	—	—		2
2N5782	PE	10W	8	—	−50	—	3A	110 at 1.2A	—	—		2
2N5783	PE	10W	8	—	−40	—	3A	110 at 1.6A	—	—		2
40609	PE	10W	8	—	−25	—	3A	110 at 1A	—	—		2

Continued

Silicon PNP Transistors

Type	Construction	P_C Max. (mW)	Typical f_T or $^{\alpha}f_1$ † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or $^{\alpha}h_{fe}$)	Max I_{CBO} at V_{CB} μA	V	Application	Base Ref.
R.C.A. (*Continued*)												
Current Types (*Continued*)												
40614	PE	10W	8	—	−30	—	3A	110 at 1.2A	—	—	Audio amplifiers	2
40619	PE	10W	8	—	−32	—	3A	110 at 1.5A	—	—		2
BFT19	P	10W	15	—	−150	—	2A	25 at 30	—	—		2
BFT19A	P	10W	15	—	−250	—	2A	25 at 30	—	—		2
BFT19B	P	10W	15	—	−350	—	2A	25 at 30	—	—		2
BFT28	P	10W	15	—	−100	—	2A	20‡ at 10	—	—	High voltage	2
BFT28A	P	10W	15	—	−150	—	2A	20‡ at 10	—	—		2
BFT28B	P	10W	15	—	−200	—	2A	20‡ at 10	—	—		2
BFT28C	P	10W	15	—	−250	—	2A	20‡ at 10	—	—		2
2N5415	P	10W	15	—	−200	—	2A	90 at 50	—	—		2
2N5416	P	10W	15	—	−300	—	2A	75 at 50	—	—		2
40987	P	10W	15	—	−175	—	2A	145 at 10	10	120	Class A pre-driver	2
40999	P	10W	15	—	−100	—	2A	145 at 10	10	90		2
2N5322	P	10W	50	—	−50	—	1.5A	145 at 500	5	80	General purpose	2
2N5323	P	10W	50	—	−75	—	1.5A	80 at 500	0.5	60		2
40538	P	10W	50	—	−55	—	1.5A	47 at 500	—	—	Audio amplifier	2
40595	P	10W	50	—	−95	—	1.5A	210 at 300	—	—	Audio driver	2
2N6180	P	25W	50	—	−75	—	1.5A	80 at 500	0.1	60	General purpose	51
2N6181	P	25W	50	—	−50	—	1.5A	95 at 500	0.1	45		51
2N6211	—	35W	20	—	−225	—	2A	55 at 1A	—	—		1
2N6212	—	35W	20	—	−300	—	2A	55 at 1A	—	—	Fast switching	1
2N6213	—	35W	20	—	−350	—	2A	55 at 1A	—	—		1
2N6214	—	35W	20	—	−400	—	2A	55 at 1A	—	—		1
40992	—	35W	20	—	−175	—	2A	90 at 300	—	—	Class B pre-driver	1
2N5954	PE	40W	5	—	−80	—	5.5A	60 at 2A	—	—		1
2N5955	PE	40W	5	—	−60	—	5.5A	60 at 2.5A	—	—		1
2N5956	PE	40W	5	—	−40	—	5.5A	60 at 3A	—	—		1
BD240	PE	40W	10	—	−45	—	6A	45 at 1A	—	—		52
BD240A	PE	40W	10	—	−60	—	6A	45 at 1A	—	—		52
BD240B	PE	40W	10	—	−80	—	6A	45 at 1A	—	—		52
BD240C	PE	40W	10	—	−100	—	6A	45 at 1A	—	—		52
BD242	PE	40W	10	—	−45	—	6A	50 at 3A	—	—		52
BD242A	PE	40W	10	—	−60	—	6A	50 at 3A	—	—		52
BD242B	PE	40W	10	—	−80	—	6A	50 at 3A	—	—		52
BD242C	PE	40W	10	—	−100	—	6A	50 at 3A	—	—		52
BD244	PE	40W	10	—	−45	—	6A	45 at 3A	—	—	General purpose	52
BD244A	PE	40W	10	—	−60	—	6A	45 at 3A	—	—		52
BD244B	PE	40W	10	—	−80	—	6A	45 at 3A	—	—		52
BD244C	PE	40W	10	—	−100	—	6A	45 at 3A	—	—		52
BD277	PE	40W	10	—	−45	—	6A	90 at 1.75A	—	—		52
2N6106	PE	40W	10	—	−70	—	6A	90 at 2A	—	—		52
2N6107	PE	40W	10	—	−70	—	6A	90 at 2A	—	—		52
2N6108	PE	40W	10	—	−50	—	6A	90 at 2.5A	—	—		52
2N6109	PE	40W	10	—	−50	—	6A	90 at 2.5A	—	—		52
2N6110	PE	40W	10	—	−30	—	6A	60 at 3A	—	—		52
2N6111	PE	40W	10	—	−30	—	6A	60 at 3A	—	—		52
40817	PE	40W	10	—	−45	—	6A	92 at 2A	—	—	Audio amplifiers	52
40874	PE	40W	10	—	−70	—	6A	90 at 2A	—	—		52
40876	PE	40W	10	—	−50	—	6A	70 at 3A	—	—		52
BUX18	PE	125W	10	—	−200	—	15A	7 at 6A	—	—		1
BUX18A	PE	125W	10	—	−275	—	15A	7 at 5A	—	—		1
BUX18B	PE	125W	10	—	−325	—	15A	10 at 4A	—	—		1
BUX18C	PE	125W	10	—	−375	—	15A	10 at 4A	—	—	General purpose	1
2N6246	PE	125W	10	—	−60	—	15A	60 at 7A	—	—		1
2N6247	PE	125W	10	—	−80	—	15A	60 at 6A	—	—		1
2N6248	PE	125W	10	—	−100	—	15A	60 at 5A	—	—		1
2N6469	PE	125W	10	—	−40	—	15A	85 at 5A	—	—		1

‡ Minimum value

Type	Construction	P_C Max. (mW)	Typical f_T or $^{\circ}f_1$ † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or $^{\circ}h_{fe}$)	Max I_{CBO} at V_{CB} µA	V	Application	Base Ref.
SGS-ATES												
Current Types												
BSS17 2N5322	—	—	—	—	—75	—	2A	55 at 500	—	—	General purpose switching	2
BSS18 2N5323	—	—	—	—	—50	—	2A	92 at 500	—	—	General purpose switching	2
BSX29	—	—	—	—	—12	—	100	30 at 100	—	—	Fast switching	2
BSX36	—	—	—	—	—40	—	500	57 at 150	—	—	Fast switching	2
2N3962	—	—	—	—	—60	—	—	200 at 0.01	—	—	Low level amplifiers	2
2N3963	—	—	—	—	—80	—	—	200 at 0.01	—	—	Low level amplifiers	2
2N3964	—	—	—	—	—45	—	—	375 at 0.01	—	—	Low level amplifiers	2
BFW43	—	—	50	—	—150	—	50	100 at 10	—	—	General purpose amplifiers	2
BFW44	—	—	50	—	—150	—	50	100 at 10	—	—	General purpose amplifiers	2
BFX90	—	—	60	—	—180	—	10	200 at 10	—	—	General purpose amplifiers	2
BFX91	—	—	60	—	—180	—	10	200 at 10	—	—	General purpose amplifiers	2
BFX37	—	—	70	—	—80	—	10	200 at 10	—	—	Low level amplifiers	2
BFX74	—	—	90	—	—35	—	500	45 at 150	—	—		2
BFX38	—	—	150	—	—55	—	1A	120 at 500	—	—	General purpose amplifiers	2
BFX39	—	—	150	—	—55	—	1A	65 at 500	—	—	General purpose amplifiers	2
BFX40	—	—	150	—	—75	—	1A	120 at 500	—	—	General purpose amplifiers	2
BFX41	—	—	150	—	—75	—	1A	65 at 500	—	—	General purpose amplifiers	2
BFY64	—	—	250	—	—40	—	500	130 at 150	—	—	General purpose amplifiers	2
BFX48	—	—	550	—	—30	—	—	160 at 10	—	—		2
BFR38	—	—	850	—	—35	—	—	50 at 3	0.05	35	High frequency amplifiers	9
BFR99	—	—	2,300	—	—25	—	—	80 at 10	0.05	25	High frequency amplifiers	9
BF516	—	150	850	—	—35	—3	—	50 at 3	—	—	R.F. amps./osc.	9
BF680	—	170	650	—	—35	—3	—	50 at 3	—	—	U.H.F. mixer/osc.	59
BF679	—	170	850	—	—35	—3	—	60 at 3	—	—	U.H.F./V.H.F. a.g.c. amplifiers	59
BF479	—	170	1,600	—	—25	—3	—	50 at 10	—	—	Low noise V.H.F./U.H.F. amps.	59
BC153	—	200	—	—40	—	—	100	115 at 0.01	—	—	Pre-amp audio driver	64
BC154	—	200	—	—40	—	—	100	190 at 0.01	—	—	Low noise pre-amp.	64
BC204	—	200	—	—50	—	—	100	250 at 2	—	—	Low level, high voltage	64
BC205	—	200	—	—25	—	—	100	280 at 2	—	—	Low level	64
BC206	—	200	—	—25	—	—	100	325 at 2	—	—	Low level, low noise	64
BF500	—	200	400	—	—30	—4		50 at 4	—	—	V.H.F. mixer/osc.	64
BF316A	—	200	600	—	—35	—3	—	50 at 3	—	—	U.H.F. mixer/osc.	9
BF272A	—	200	850	—	—35	—3	—	50 at 3	—	—	U.H.F./V.H.F. a.g.c. amps.	9
BF506	—	250	—	—	—30	—3	—	50 at 3	—	—	V.H.F. mixer/amp.	64
BF509	—	250	—	—	—30	—3	—	50 at 3	—	—	V.H.F. a.g.c. amp.	64
BC116A	—	300	—	—45	—	—	600	105 at 50	—	—	General purpose	64
BC126	—	300	—	—35	—	—	300	75 at 150	—	—	Audio driver	64
BC177	—	300	—	—50	—	—	100	30‡ at 0.01	—	—	General purpose	2
BC178	—	300	—	—30	—	—	100	30‡ at 0.01	—	—	General purpose	2
BC179	—	300	—	—25	—	—	100	30‡ at 0.01	—	—	Low noise	2
BC477	—	360	—	—90	—	—	150	135 at 2	—	—	High voltage	2
BC478	—	360	—	—40	—	—	150	280 at 2	—	—	Low level, low noise	2
BC479	—	360	—	—40	—	—	150	325 at 2	—	—	Low level, low noise	2
2N3963	—	360	40	—	—80	—	—	100 at 10	—	—	General purpose	2
2N2894	—	360	50	—	—12	—	—	— —	—	—	R.F.—I.F. amplifiers	2
2N3209	—	360	50	—	—20	—	—	— —	—	—	R.F.—I.F. amplifiers	2
2N3964	—	360	50	—	—45	—	—	250 —	—	—	General purpose	2
2N869	—	360	100	—	—18	—	—	20‡ at 10	—	—	General purpose	2
2N995	—	360	100	—	—15	—	—	87 at 20	—	—		2
2N3073	—	360	130	—	—60	—	—	80 at 50	—	—		2
2N3121	—	360	130	—	—45	—	—	80 at 50	—	—		2
2N3250	—	360	250	—	—40	—	—	100 at 10	—	—	High speed, saturated switching	2
2N3251	—	360	300	—	—40	—	—	200 at 10	—	—	High speed, saturated switching	2
2N869A	—	360	400	—	—18	—	—	80 at 30	—	—	High speed, saturated switching	2
2N2894	—	360	400	—	—12	—	—	90 at 30	—	—	High speed, saturated switching	2
2N3209	—	360	400	—	—20	—	—	75 at 30	—	—	High speed, saturated switching	2
2N4034	—	360	400	—	—40	—	—	135 at 10	—	—	High speed, saturated switching	2

Continued

Silicon PNP Transistors

Type	Construction	P_C Max. (mW)	Typical f_T or $^*f_1$ † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or $^*h_{fe}$)	Max I_{CBO} at V_{CB} μA	V	Application	Base Ref.
SGS-ATES (*Continued*)												
Current Types (Continued)												
2N4035	—	360	450	—	−40	—	—	225 at 10	—	—	General purpose	2
BC297	—	375	—	−50	—	—	1A	167 at 100	—	—	Audio driver	2
BC298	—	375	—	−30	—	—	1A	287 at 100	—	—	Audio driver	2
2N978	—	380	40	—	−25	—	—	37 at 150	—	—	General purpose	2
BC393	—	400	—	−180	−180	—	100	150 at 10	—	—	Video amplifiers	2
2N3930	—	400	40	—	−180	—	50	190 at 10	—	—	High voltage amplifiers	2
2N722	—	400	60	—	−50	—	—	60 at 150	—	—		2
2N2906	—	400	200	—	−40	—	—	80 at 150	—	—		2
2N2906A	—	400	200	—	−60	—	—	80 at 150	—	—		2
2N2907	—	400	200	—	−40	—	—	200 at 150	—	—		2
2N2907A	—	400	200	—	−60	—	—	200 at 150	—	—		2
2N3504	—	400	200	—	−45	—	—	207 at 50	—	—		2
2N3505	—	400	200	—	−60	—	—	207 at 50	—	—	High voltage switching	2
2N1132	—	600	60	—	−50	—	—	60 at 150	—	—		2
2N1132A	—	600	60	—	−50	—	—	60 at 150	—	—		2
2N2904	—	600	200	—	−40	—	—	80 at 150	—	—		2
2N2904A	—	600	200	—	−60	—	—	80 at 150	—	—		2
2N2905	—	600	200	—	−40	—	—	200 at 150	—	—		2
2N2905A	—	600	200	—	−60	—	—	200 at 150	—	—		2
2N3931	—	700	40	—	−180	—	50	190 at 10	—	—	High voltage amplifiers	2
2N3502	—	700	200	—	−45	—	—	257 at 50	—	—	General purpose amplifiers	2
2N3503	—	700	200	—	−60	—	—	257 at 50	—	—	General purpose amplifiers	2
2N4358	—	700	400	—	−240	—	50	190 at 10	—	—	High voltage amplifiers	2
2N4030	—	800	100	—	−60	—	—	80 at 100	—	—		2
2N4031	—	800	100	—	−80	—	—	80 at 100	—	—	General purpose amplifiers	2
2N4032	—	800	150	—	−60	—	—	200 at 100	—	—	General purpose amplifiers	2
2N4033	—	800	150	—	−80	—	—	200 at 100	—	—		2
BC303	—	850	—	−85	—	—	1A	140 at 150	—	—	Audio driver	2
BC304	—	850	—	−60	—	—	1A	140 at 150	—	—	Audio driver	2
BC460	—	1W	—	−50	—	—	2A	145 at 500	—	—	General purpose	2
BC461	—	1W	—	−75	—	—	2A	145 at 500	—	—	General purpose	2
BD376	—	25W	—	−50	−45	—	2A	90 at 1A	—	—		51
BD378	—	25W	—	−75	−60	—	2A	90 at 1A	—	—	Medium power switch	51
BD380	—	25W	—	−100	−80	—	2A	100 at 500	—	—		51
BD282	—	36W	—	−22	−22	—	4A	40‡ at 3A	—	—		51
BD284	—	36W	—	−32	−32	—	4A	30‡ at 3A	—	—	Audio amplifiers	51
BD286	—	36W	—	−45	−45	—	4A	20‡ at 3A	—	—	Audio amplifiers	51
BD434	—	36W	—	−22	−22	—	4A	40‡ at 3A	—	—		51

‡ Minimum value

TEXAS

Current Types

2N3634	—	—	—	−140	−140	−5	1A	100 at 50	—	—		2
2N3635	—	—	—	−140	−140	−5	1A	200 at 50	—	—	High voltage amplifiers	2
2N3636	—	—	—	−175	−175	−5	1A	100 at 50	—	—	High voltage amplifiers	2
2N3637	—	—	—	−175	−175	−5	1A	200 at 50	—	—		2
BCY30	AJ	—	0.25	−64	−64	−45	—	25* at 1	—	—		2
BCY31	AJ	—	0.25	−64	−64	−45	—	42* at 1	—	—		2
BCY32	AJ	—	0.25	−64	−64	−32	—	57* at 1	—	—		2
BCY33	AJ	—	0.4	−32	−32	−16	—	25* at 1	—	—		2
BCY34	AJ	—	0.6	−32	−32	−16	—	42* at 1	—	—		2
OC203	AJ	—	0.9	−60	−60	−30	—	35* at 1	—	—	General purpose	3
OC200	AJ	—	1.2	−30	−30	−20	—	37* at 1	—	—		3
BCZ11	AJ	—	1.5	−30	−25	−20	—	42* at 1	—	—		3
OC201	AJ	—	3.2	−25	−25	−20	—	50* at 1	—	—		3
OC202	AJ	—	3.2	−15	−15	−10	—	82* at 1	—	—		3
BC143	—	—	40	−60	−60	−5	800	20‡ at 200	—	—		2
BFT21	—	—	50	−60	−30	−6	1A	40‡ at 150	—	—	High current amplifiers	2
BFT22	—	—	50	−40	−20	−6	1A	60‡ at 150	—	—	High current amplifiers	2

Continued

Type	Construction	P_C Max. (mW)	Typical f_T or *f_1 † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or *h_{fe})	Max I_{CBO} at V_{CB} µA	V	Application	Base Ref.
TEXAS (*Continued*)												
Current Types (*Continued*)												
BFT61	—	—	50	−60	−30	−6	1A	40‡ at 150	—	—	High current amplifiers	2
BFT62	—	—	50	−40	−20	−6	1A	60‡ at 150	—	—	High current amplifiers	2
BC325	—	—	60	−60	−60	−6	50	175‡ at 1	—	—	General purpose amplifiers	2
BC326	—	—	60	−60	−60	−6	50	250‡ at 1	—	—	General purpose amplifiers	2
BFT20	—	—	60	−80	−35	−6	1A	30‡ at 150	—	—	High current amplifiers	2
BFT60	—	—	60	−80	−35	−6	1A	30‡ at 150	—	—	High current amplifiers	2
BFT35	—		100	−80	−60	−5	3A	175 at 150	—	—	High current amps, and switches	2
BFT36	—	—	100	−100	−80	−5	3A	150 at 150	—	—	High current amps, and switches	2
BFT37	—	—	100	−120	−100	−5	3A	125 at 150	—	—	High current amps, and switches	2
BFT69	—	—	100	−90	−80	−5	1A	150 at 100	—	—	High current amplifiers	2
BFT70	—	—	100	−70	−60	−5	1A	162 at 100	—	—	High current amplifiers	2
BFT71	—	—	100	−60	−50	−5	1A	200 at 100	—	—	High current amplifiers	2
BFT79	—	—	100	−90	−80	−5	1A	150 at 100	—	—	High current amplifiers	2
BFT80	—	—	100	−70	−60	−5	1A	162 at 100	—	—	High current amplifiers	2
BFT81	—	—	100	−60	−50	−5	1A	200 at 100	—	—	High current amplifiers	2
BC303	—	—	120	−85	−60	−7	1A	160 at 150	—	—	High current amplifiers	2
BC304	—	—	120	−60	−45	−7	1A	160 at 150	—	—	High current amplifiers	2
BC177	—	—	150	−50	−45	−6	300	180 at 2	—	—	General purpose amplifiers	2
BC178	—	—	150	−35	−25	−6	300	240 at 2	—	—	General purpose amplifiers	2
BC179	—	—	150	−35	−25	−6	300	520 at 2	—	—	General purpose amplifiers	2
BCW35	—	—	150	−60	−45	−5	600	100‡ at 10	—	—	General purpose amplifiers	2
BCY70	—	—	200	−50	−40	−5	600	50‡ at 10	—	—	General purpose amplifiers	2
BCY71	—	—	200	−45	−45	−5	250	350 at 10	—	—	General purpose amplifiers	2
BCY72	—	—	200	−25	−25	−5	360	50‡ at 10	—	—	General purpose amplifiers	2
2S306	AJ	50	1.5	−6	−6	−6	10	30‡ at 1	—	—	Choppers	2
2S307	AJ	50	1.5	−15	−15	−15	10	30‡ at 1	—	—	Choppers	2
2S326	AJ	50	1.5	−6	−6	−6	10	30‡ at 1	—	—	Choppers	3
2S327	AJ	50	1.5	−15	−15	−15	10	30‡ at 1	—	—	Choppers	3
TIS37	PE	200	—	−35	−32	−6	50	45‡ at 1	0.1	10	A.M. receivers	24
TIS38	PE	200	—	−35	−32	−6	50	25‡ at 1	0.1	10	A.M. receivers	24
BFX243	PE	200	80	−35	−32	−5	50	30‡ at 9	0.1	10	A.M. receivers	2
TIS50	PE	250	—	−12	−12	−4	200	95 at 30	1	6	Fast switching	24
TIS53	PE	250	—	−6	−6	−4	80	75 at 10	—	—	Fast switching	24
TIS54	PE	250	—	−12	−12	−4	80	75 at 10	—	—	Fast switching	24
2N4058	PE	250	—	−30	−30	−6	30	250 at 0.1	0.1	20	General purpose	24
2N4059	PE	250	—	−30	−30	−6	30	352 at 1	0.1	20	General purpose	24
2N4060	PE	250	—	−30	−30	−6	30	105 at 1	0.1	20	General purpose	24
2N4061	PE	250	—	−30	−30	−6	30	210 at 1	0.1	20	General purpose	24
2N4062	PE	250	—	−30	−30	−6	30	420 at 1	0.1	20	General purpose	24
BC181	PE	300	—	−40	−25	−5	200	60‡ at 2.5	0.1	20	A,F. amplifiers	2
BC181A	PE	300	—	−40	−25	−5	200	100‡ at 2.5	0.1	20	A,F. amplifiers	2
BFX12	PE	300	—	−20	−15	−5	100	40 at 10	0.01	15	General purpose	2
BFX13	PE	300	—	−20	−15	−5	100	120 at 10	0.01	15	General purpose	2
2S301	AJ	300	0.25	−80	−80	−30	100	10*‡ at 1	—	—	General purpose	2
2S321	AJ	300	0.25	−80	−80	−30	50	10*‡ at 1	—	—	General purpose	3
2S302	AJ	300	0.35	−40	−40	−20	100	15*‡ at 1	—	—	General purpose	2
2S322	AJ	300	0.35	−40	−40	−20	50	15*‡ at 1	—	—	General purpose	3
2S305	AJ	300	0.45	−125	−125	−50	100	10*‡ at 1	—	—	General purpose	2
2S325	AJ	300	0.45	−125	−125	−50	50	10*‡ at 1	—	—	General purpose	3
2S303	AJ	300	0.65	−25	−25	−20	100	25*‡ at 1	—	—	General purpose	2
2S323	AJ	300	0.65	−25	−25	−20	50	25*‡ at 1	—	—	General purpose	3
2S3010	AJ	300	0.7	−40	−40	−20	100	28 at 10	0.5	10	General purpose	2
2S3210	AJ	300	0.7	−40	−40	−20	100	28 at 10	0.5	10	General purpose	3
2S3020	AJ	300	0.8	−40	−40	−20	100	38 at 10	0.5	10	General purpose	2
2S3021	AJ	300	0.8	−15	−15	−10	100	15‡ at 10	0.5	10	General purpose	2
2S3021A	AJ	300	0.8	−25	−25	−10	100	38 at 10	0.1	10	General purpose	2
2S3220	AJ	300	0.8	−40	−40	−20	100	38 at 10	0.5	10	General purpose	3
2S3221	AJ	300	0.8	−15	−15	−10	100	15‡ at 10	0.5	10	General purpose	3
2S3221A	AJ	300	0.8	−25	−25	−10	100	38 at 10	0.1	10	General purpose	3
2S304	AJ	300	1	−15	−15	−15	100	45*‡ at 1	—	—	General purpose	2
2S324	AJ	300	1	−15	−15	−15	50	45*† at 1	—	—	General purpose	3

Continued

Silicon PNP Transistors

Type	Construction	P_C Max. (mW)	Typical f_T or $^*f_t$ † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or $^*h_{fe}$)	Max I_{CBO} at V_{CB} μA	V	Application	Base Ref.
TEXAS (*Continued*)												
Current Types (*Continued*)												
2S3030	AJ	300	1.25	−25	−25	−10	100	55 at 10	0.5	10		2
2S3230	AJ	300	1.25	−25	−25	−10	100	55 at 10	0.5	10		3
2S3040	AJ	300	3.5	−15	−15	−10	100	40‡ at 10	0.5	10	General purpose	2
2S3240	AJ	300	3.5	−15	−15	−10	100	40‡ at 10	0.5	10		3
TIS61	PE	300	100	−40	−25	−5	400	160 at 50	0.1	20		24
TIS61M	PE	300	100	−40	−25	−5	400	160 at 50	0.1	20		24
2N3702	PE	300	100	−40	−25	−5	200	180 at 50	0.1	20	Audio amplifiers	24
2N3703	PE	300	100	−50	−30	−5	200	90 at 50	0.1	20		2
2N726	PE	300	140	−25	−20	−5	50	15‡ at 10	—	—		2
2N727	PE	300	140	−25	−20	−5	50	30‡ at 10	—	—	Fast switching	2
2N2411	PE	300	140	−25	−20	−5	100	20‡ at 10	—	—		2
2N2412	PE	300	140	−25	−20	−5	100	40‡ at 10	—	—		2
BC212	PE	300	200	−60	−50	−5	200	180 at 2	0.015	30		24
BC212L	PE	300	200	−60	−50	−5	200	180 at 2	0.015	30		2
BC212LT05	PE	300	200	−60	−50	—	200	180 at 2	0.015	60		2
BC213	PE	300	200	−45	−30	−5	200	240 at 2	0.015	30		24
BC213L	PE	300	200	−45	−30	−5	200	240 at 2	0.015	30	Low level amplifiers	2
BC213LT05	PE	300	200	−45	−30	—	200	240 at 2	0.015	45		2
BC214	PE	300	200	−45	−30	−5	200	270 at 2	0.015	30		24
BC214L	PE	300	200	−45	−30	−5	200	270 at 2	0.015	30		2
BC214LT05	PE	300	200	−45	−30	—	200	520 at 2	0.015	45		2
2N3304	PE	300	500	−6	−6	−4	—	75 at 10	—	—	Fast switching	2
SX4058	—	360	—	−30	−30	—	200	250 at 0.1	0.1	30		2
SX4059	—	360	—	−30	−30	—	200	352 at 1	0.1	30		2
SX4060	—	360	—	−30	−30	—	200	105 at 1	0.1	30	General purpose	2
SX4061	—	360	—	−30	−30	—	200	210 at 1	0.1	30		2
SX4062	—	360	—	−30	−30	—	200	420 at 1	0.1	30		2
2N3798	PE	360	—	−60	−60	−5	50	300 at 0.5	0.01	50		2
2N3799	PE	360	—	−60	−60	−5	50	600 at 0.5	0.01	50		2
2N3962	P	360	—	−60	−60	−6	200	275 at 1	0.01	50		2
2N3963	P	360	—	−80	−80	−6	200	275 at 1	0.01	70	Low noise amplifiers	2
2N3964	P	360	—	−45	−45	−6	200	425 at 1	0.01	40		2
2N3965	P	360	—	−60	−60	−6	200	425 at 1	0.01	50		2
2N4058	—	360	—	−30	−30	—	200	250 at 0.1	0.1	30		24
2N4059	—	360	—	−30	−30	—	200	352 at 1	0.1	30		24
2N4060	—	360	—	−30	−30	—	200	105 at 1	0.1	30		24
2N4061	—	360	—	−30	−30	—	200	210 at 1	0.1	30	General purpose	24
2N4062	—	360	—	−30	−30	—	200	420 at 1	0.1	30		24
2N3702	—	360	100	−40	−25	—	800	60‡ at 50	—	—		24
2N3703	—	360	100	−50	−30	—	800	30‡ at 50	—	—		24
2N2696	PE	360	100	−25	−25	−5	500	30‡ at 50	—	—		2
2N3829	PE	360	350	−35	−20	−5	200	75 at 30	—	—		2
2N3894	PE	360	400	−12	−12	−4	200	95 at 30	—	—	High speed switching	2
2N3012	PE	360	400	−12	−12	−4	200	75 at 30	—	—		2
2N3576	PE	360	400	−20	−15	−5	200	80 at 10	—	—		2
2N327A	AJ	386	—	−50	−45	−20	50	15 at 0.1	0.1	30		2
2N328A	AJ	386	—	−50	−35	−20	50	31 at 0.1	0.1	30	General purpose	2
2N329A	AJ	386	—	−50	−30	−20	50	62 at 0.1	0.1	30	amplifiers	2
2N2604	PE	400	—	−60	−45	−6	30	80 at 0.01	0.01	45	Low noise amplifiers	2
2N2605	PE	400	—	−60	−45	−6	30	200 at 0.01	0.01	45		2
2N2906	PE	400	—	−40	−40	−5	600	200 at 150	0.02	50		2
2N2906A	PE	400	—	−60	−60	−5	600	200 at 150	0.01	50	General purpose	2
2N2907	PE	400	—	−40	−40	−5	600	200 at 150	0.02	50		2
2N2907A	PE	400	—	−60	−60	−5	600	200 at 150	0.01	50		2
2N2944	PE	400	—	−15	−10	−15	100	450 at 1	0.1nA	15		2
2N2945	PE	400	—	−25	−20	−25	100	145 at 1	0.2nA	25	Low level, high speed	2
2N2946	PE	400	—	−40	−35	−40	100	90 at 1	0.5nA	40	choppers	2
2N3496	PE	400	—	−80	−80	−4.5	100	40‡ at 50	0.1	50		2
2N3497	PE	400	—	−120	−120	−4.5	100	40‡ at 50	0.1	90		2
2N3504	PE	400	—	−45	−45	−5	600	200 at 150	—	—	General purpose amplifiers	2
2N3505	PE	400	—	−60	−60	−5	600	200 at 150	—	—		2

Continued

Type	Construction	P_C Max. (mW)	Typical f_T or $^{\circ}f_t$, † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or $^{\circ}h_{fe}$)	Max I_{CBO} at V_{CB} μA	V	Application	Base Ref.
TEXAS (*Continued*)												
Current Types (*Continued*)												
BFW32	PE	500	—	−50	−30	−5	700	270 at 10	0.5	30	Amplifiers	2
2N2904	PE	600	—	−60	−60	−5	600	80 at 150	0.02	50		2
2N2904A	PE	600	—	−60	−60	−5	600	80 at 150	0.01	50	High speed switching	2
2N2905	PE	600	—	−60	−60	−5	600	80 at 150	0.02	50		2
2N2905A	PE	600	—	−60	−60	−5	600	80 at 150	0.01	50		2
2N3494	PE	600	—	−80	−80	−4.5	100	40‡ at 50	0.1	50	General purpose	2
2N3495	PE	600	—	−120	−120	−4.5	100	40‡ at 50	0.1	90	amplifiers	2
2N1131	P	600	50	−50	−35	−5	600	20‡ at 150	—	—	General purpose	2
2N1132	P	600	60	−50	−35	−5	600	30‡ at 150	—	—		2
TIS91	PE	625	—	−40	−40	−5	400	160 at 50	0.1	20		24
TIS91M	PE	625	—	−40	−40	−5	400	160 at 50	0.1	20		24
TIS93	PE	625	—	−40	−40	−5	400	160 at 50	0.1	20	General purpose	24
TIS93M	PE	625	—	−40	−40	−5	400	160 at 50	0.1	20	amplifiers	24
2N3902	PE	700	—	−45	−45	−5	600	200 at 150	—	—		2
2N3503	PE	700	—	−45	−45	−5	600	20 at 150	—	—		2
BFR61	—	800	50	−60	−30	—	1A	40‡ at 150	—	—		24
BFR62	—	800	50	−40	−20	—	1A	60‡ at 150	—	—		24
BFR60	—	800	60	−80	−35	—	1A	30‡ at 150	—	—	General purpose	24
BFR79	—	800	100	−90	−80	—	1A	50‡ at 100	—	—		24
BFR80	—	800	100	−70	−50	—	1A	75‡ at 100	—	—		24
BFR81	—	800	100	−60	−50	—	1A	100‡ at 100	—	—		24
2N3245	PE	1W	150	−50	−50	−5	1A	60 at 500	0.05	50	High speed core drivers	2
2N3244	PE	1W	175	−40	−40	−5	1A	75 at 500	0.05	30		2
2N5533	PE	1W	—	−100	−80	−6	2A	75 at 1A	—	—		2
2N5384	PE	2W	—	−100	−80	−6	5A	50 at 2A	—	—	Power amplifiers	26
2N5385	PE	2W	—	−100	−80	−6	5A	50 at 2A	—	—		25
TIP30	D	2W	3	−40	−40	−5	1A	120 at 200	—	—		51
TIP30A	D	2W	3	−60	−60	−5	1A	120 at 200	—	—		51
TIP32	D	2W	3	−40	−40	−5	3A	120 at 200	—	—	General purpose	51
TIP32A	D	2W	3	−60	−60	−5	3A	120 at 200	—	—		51
2N5386	PE	3.5W	—	−100	−80	−6	12A	50 at 6A	—	—	Power amplifiers	27
TIP34	D	3.5W	3	−40	−40	−5	10A	75 at 1A	—	—		51
TIP34A	D	3.5W	3	−60	−60	−5	10A	75 at 1A	—	—		51
TIP36	D	3.5W	3	−40	−40	−5	25A	60 at 5A	—	—	General purpose	51
TIP36A	D	3.5W	3	−60	−60	−5	25A	60 at 5A	—	—		51
TIP508	—	4W	—	—	−150	—	2A	75 at 1A	—	—		2
TIP522	—	4W	—	—	−200	—	2A	60 at 1A	—	—		2
2N3789	D	4W	—	−60	−60	−7	10A	58 at 1A	—	—		1
2N3790	D	4W	—	−80	−80	−7	10A	58 at 1A	—	—		1
2N3791	D	4W	—	−60	−60	−7	10A	115 at 1A	—	—		1
2N3792	D	4W	—	−80	−80	−7	10A	115 at 1A	—	—	Power amplifiers	1
2N4901	D	4W	—	−40	−40	−5	5A	50 at 1A	—	—		1
2N4902	D	4W	—	−60	−60	−5	5A	50 at 1A	—	—		1
2N4903	D	4W	—	−80	−80	−5	5A	50 at 1A	—	—		1
TIP524	—	6W	—	—	−200	—	5A	60 at 2.5A	—	—		2
2N3719	—	6W	—	—	−40	—	3A	102 at 1A	—	—		1
2N3720	—	6W	—	—	−60	—	3A	102 at 1A	—	—		2
BC430	—	6W	100	−45	−45	−5	1A	105 at 150	—	—	General purpose	65
BC430A	—	6W	100	−60	−60	−5	1A	105 at 150	—	—		65
BD136	—	6.5W	50	−45	−45	−5	1.5A	145 at 150	—	—		65
BD138	—	6.5W	50	−60	−60	−5	1.5A	100 at 150	—	—		65
BD140	—	6.5W	50	−80	−80	−5	1.5A	100 at 150	—	—		65
2N5147	—	7W	—	—	−80	—	2A	60 at 1A	—	—		2
2N5149	—	7W	—	—	−80	—	2A	135 at 1A	—	—		2
2N5151	—	11.7W	—	—	−80	—	5A	60 at 2.5A	—	—	General purpose	2
2N5153	—	11.7W	—	—	−80	—	5A	135 at 2.5A	—	—		2
2N5333	—	15W	—	—	−80	—	2A	75 at 1A	—	—		2
BDY70	PE	15W	30	−100	−80	—	2A	115 at 1A	—	—	Medium power	2
TIP507	—	20W	—	—	−150	—	2A	75 at 1A	—	—		25
TIP514	—	20W	—	—	−150	—	5A	90 at 2.5A	—	—	General purpose	1
TIP521	—	20W	—	—	−200	—	2A	60 at 1A	—	—		25

Continued

Silicon PNP Transistors

Type	Construction	P_C Max. (mW)	Typical f_T or $^{\circ}f_t$ † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or $^{\circ}h_{fe}$)	Max I_{CBO} at V_{CB} µA	V	Application	Base Ref.
TEXAS (*Continued*)												
Current Types (*Continued*)												
2N3021	—	25W	—	—	−30	—	3A	40 at 1A	—	—		1
2N3022	—	25W	—	—	−45	—	3A	40 at 1A	—	—		1
2N3023	—	25W	—	—	−60	—	3A	40 at 1A	—	—		1
2N3024	—	25W	—	—	−30	—	3A	115 at 1A	—	—		1
2N3025	—	25W	—	—	−45	—	3A	115 at 1A	—	—		1
2N3026	—	25W	—	—	−60	—	3A	115 at 1A	—	—		1
TIP513	—	30W	—	—	−150	—	5A	90 at 2.5A	—	—		25
TIP523	—	30W	—	—	−200	—	5A	60 at 2.5A	—	—		25
TIP30B	—	30W	3	−80	−80	−5	1A	40‡ at 200	—	—		99
TIP30C	—	30W	3	−100	−100	−5	1A	40‡ at 200	—	—		99
BDY67	PE	30W	30	−100	−80	—	12A	50 at 2A	—	—		25
BDY68	PE	30W	30	−100	−80	—	12A	50 at 2A	—	—		25
BDY69	PE	30W	30	−100	−80	—	25A	50 at 6A	—	—		27
BD462	—	30W	50	−35	−30	−6	4A	40‡ at 2A	—	—		65
BD464	—	30W	50	−35	−30	−6	4A	30‡ at 2A	—	—		65
2N4999	—	35W	—	—	−80	—	2A	60 at 1A	—	—		25
2N5001	—	35W	—	—	−80	—	2A	135 at 1A	—	—		25
TIP32B	—	40W	3	−80	−80	−5	3A	25‡ at 1A	—	—		99
TIP32C	—	40W	3	−100	−100	−5	3A	25‡ at 1A	—	—		99
TIP519	—	50W	—	—	−150	—	8A	90 at 4A	—	—		1
TIP520	—	50W	—	—	−150	—	8A	90 at 4A	—	—		27
2N1064	AD	50W	—	−100	−50	−2	12A	130 at 5A	2mA	75		1
2N5003	—	58W	—	—	−80	—	5A	60 at 2.5A	—	—		25
2N5005	—	58W	—	—	−80	—	5A	135 at 2.5A	—	—		25
TIP527	—	60W	—	—	−200	—	8A	60 at 4A	—	—		1
TIP528	—	60W	—	—	−200	—	8A	60 at 4A	—	—	General purpose	27
2N1907	AD	60W	—	−100	−40	−2	20A	100 at 10A	2mA	75		1
2N1908	AD	60W	—	−130	−50	−2	20A	100 at 10A	2mA	100		1
TIP42	—	65W	3	−40	−40	−5	6A	15‡ at 3A	—	—		99
TIP42A	—	65W	3	−60	−60	−5	6A	15‡ at 3A	—	—		99
TIP42B	—	65W	3	−80	−80	−5	6A	15‡ at 3A	—	—		99
TIP42C	—	65W	3	−100	−100	−5	6A	15‡ at 3A	—	—		99
TIP34B	—	80W	3	−80	−80	−5	10A	20‡ at 3A	—	—		52
TIP34C	—	80W	3	−100	−100	−5	10A	20‡ at 3A	—	—		52
TIP2955	—	90W	3	−100	−60	−7	15A	20‡ at 4A	—	—		52
2N6127	—	100W	—	—	−80	—	10A	75 at 5A	—	—		27
TIP36B	—	125W	3	−80	−80	−5	25A	15‡ at 10A	—	—		52
TIP36C	—	125W	3	−100	−100	−5	25A	15‡ at 10A	—	—		52
TI3029	AJ	150W	—	−80	−55	−20	7A	145 at 3A	1mA	50		1
TI3030	AJ	150W	—	−100	−60	−20	7A	145 at 3A	1mA	60		1
TI3031	AJ	150W	—	−120	−65	−20	7A	145 at 3A	1mA	70		1
TIP544	—	150W	—	—	−100	—	6A	62 at 3A	—	—		1
TIP545	—	150W	—	—	−120	—	6A	50 at 3A	—	—		1
TIP546	—	150W	—	—	−140	—	6A	37 at 3A	—	—		1
2N4398	—	200W	—	—	−40	—	30A	37 at 15A	—	—		1
2N4399	—	200W	—	—	−60	—	30A	37 at 15A	—	—		1
2N5683	—	300W	—	—	−60	—	50A	37 at 25A	—	—		1
2N5684	—	300W	—	—	−80	—	50A	37 at 25A	—	—		1

‡ Minimum value

TUNGSRAM												
Current Types												
BC157	PE	220	130	−50	−45	−5	100	140 at 2	0.1	20	A.F. driver	43
BC158	PE	220	130	−30	−25	−5	100	140 at 2	0.1	20	General purpose	43
BC159	PE	220	130	−25	−20	−5	100	230 at 2	0.1	20	A.F. input	43
BFX29	PE	600	100	−60	−60	−5	600	90 at 150	0.5	1	General purpose	2
BFX88	PE	600	100	−40	−40	−4	600	90 at 150	0.5	1	General purpose	2
BD136	PE	2W	75	−45	−45	−5	350	100 at 150	0.01	30	A.F. amplifiers	51
BD138	PE	2W	75	−60	−60	−5	350	100 at 150	0.01	30	A.F. amplifiers	51
BD140	PE	2W	75	−80	−80	−5	350	100 at 150	0.01	30	A.F. amplifiers	51

Continued

Type	Construction	P_C Max. (mW)	Typical f_T or $^*f_1$ † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or $^*h_{fe}$)	Max I_{CBO} at V_{CB} µA	V	Application	Base Ref.
TUNGSRAM (*Continued*)												
Current Types (Continued)												
BD132	PE	15W	60	−45	−45	—	6A	40 at 500	—	—		51
BD234	E	25W	3	−45	−45	—	6A	25 at 1A	—	—		51
BD236	E	25W	3	−60	−60	—	6A	25 at 1A	—	—	General purpose	51
BD238	E	25W	3	−100	−80	—	6A	25 at 1A	—	—		51
BD202	E	60W	3	−60	−45	—	8A	30 at 3A	—	—		52
BD204	E	60W	3	−60	−60	—	8A	30 at 2A	—	—		52

Silicon NPN Transistors

Type	Construction	P_C Max. (mW)	Typical f_T or $^*f_1$ † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or $^*h_{fe}$)	Max I_{CBO} at V_{CB} µA	V	Application	Base Ref.
FERRANTI												
Replacement Types												
ZT202	S	300	70‡	30	20	5	50	30* at 1	1	30		2
ZT203	S	300	70‡	30	20	5	50	50* at 1	1	30	General purpose	2
ZT204	S	300	70‡	30	20	5	50	100* at 1	1	30		2
ZT402	S	300	70‡	30	20	5	50	30* at 1	1	30		2
ZT1708	PE	300	200‡	25	20	3	200	20‡ at 10	0.025	25	High speed logic	2
Current Types												
ZDT30 (double emitter)	P	150	100	10	—	6	50	— —	0.01	10	D.C. amp. choppers	11
BS110	P	150	400	—	12	—	200	40‡ at 10	—	—	Switching	53
ZTX325	P	200	500	—	15	172mW out, 25mW in at 500MHz					V.H.F./U.H.F.	67
ZTX326	P	200	500	—	12	175mW out, 25mW in at 500MHz					amplifiers	67
2N918	PE	200	600‡	30	15	3	—	20‡ —	0.01	30	General purpose	6
ZT2708 / 2N2708	PE	200	700‡	35	20	3	50	30*‡ at 2	0.01	35	U.H.F.	11
2N3600	PE	200	850‡	30	15	3	—	20‡ —	0.01	—		20
ZT2857 / 2N2857	PE	200	1,000‡	30	15	2.5	—	50*‡ at 2	0.01	15	U.H.F. low noise	11
BF405	P	220	150	—	35	—	500	50‡ at 10	—	—	General purpose	53
BF403	P	240	300	—	20	—	50	110‡ at 2	—	—	Amplifiers	53
ZTX320	PE	250	600‡	30	15	3	—	20‡ —	0.2	30	V.H.F./U.H.F.	67
ZTX197	P	300	—	—	25	—	—	— —	—	—	TV I.F. amplifiers	68
ZTX341	P	300	—	100	—	—	100	30‡ at 2	—	—	Numerical indicator	67
ZTX342	P	300	—	120	—	—	100	30‡ at 2	—	—	driver	67
ZTX3708	P	300	—	—	30	—	30	310 at 1	—	—	General purpose	67
ZTX330	PE	300	30‡	30	30	5	500	250 at 0.1	0.2	30		67
ZTX331	PE	300	30‡	45	45	5	500	80 at 0.01	0.2	45	Low noise pre-	67
2N929	PE	300	30‡	45	45	5	30	40‡ —	0.01	45	amplifiers	2
2N930	PE	300	30‡	45	45	5	30	100‡ —	0.01	45		2
ZT196	P	300	35	—	30	—	—	— —	—	—	TV I.F. amplifiers	68
ZT40	S	300	70‡	20	20	6	50	30* at 1	0.5	20		2
ZT41	S	300	70‡	20	20	6	50	60* at 1	0.5	20		2
ZT42	S	300	70‡	45	45	6	50	30* at 1	0.5	45	Amplifiers	2
ZT43	S	300	70‡	45	45	6	50	60* at 1	0.5	45		2
ZT44	S	300	70‡	45	45	6	50	120* at 1	0.5	45		2
BCY42	PE	300	100‡	40	25	5	200	45‡ —	0.025	45	Low leakage	2
BCY43	PE	300	100‡	40	25	5	200	75‡ —	0.025	45		2
ZDT10 / ZDT11	P	300	150	10	10	5	50	— —	0.01	10	D.C. amp. choppers	12

Continued

Silicon NPN Transistors

Type	Construction	P_C Max. (mW)	Typical f_T or $^{\circ}f_1$ † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or $^{\circ}h_{fe}$)	Max I_{CBO} at V_{CB} µA	V	Application	Base Ref.
FERRANTI (*Continued*)												
Current Types (*Continued*)												
ZT80	PE	300	150‡	25	25	4	500	55* at 1	0.5	25		2
ZT81	PE	300	150‡	45	35	4	500	55* at 1	0.5	45		2
ZT82	PE	300	150‡	45	35	4	500	90* at 1	0.5	45		2
ZT83	PE	300	150‡	60	45	5	500	55* at 1	0.05	60		2
ZT84	PE	300	150‡	60	45	5	500	90* at 1	0.05	60		2
ZT86	PE	300	150‡	100	80	5	500	55* at 1	0.05	100		2
ZT87	PE	300	150‡	25	25	4	500	90* at 1	0.5	25		2
ZT88	PE	300	150‡	100	80	5	500	90* at 1	0.05	100		2
ZT89	PE	300	150‡	70	70	5	500	90* at 1	0.5	70		2
ZT110	PE	300	150‡	25	25	4	500	55* at 1	0.5	25	General purpose	2
ZT111	PE	300	150‡	45	35	4	500	55* at 1	0.5	45		2
ZT112	PE	300	150‡	45	35	4	500	90* at 1	0.5	45		2
ZT113	PE	300	150‡	60	45	5	500	55* at 1	0.05	60		2
ZT114	PE	300	150‡	60	45	5	500	90* at 1	0.05	60		2
ZT116	PE	300	150‡	100	80	5	500	55* at 1	0.05	100		2
ZT117	PE	300	150‡	25	25	4	500	90* at 1	0.5	25		2
ZT118	PE	300	150‡	100	80	5	500	90* at 1	0.05	100		2
ZT119	PE	300	150‡	70	70	5	500	90* at 1	0.5	70		2
ZTX300	PE	300	150‡	25	25	5	500	50‡ at 10	0.2	25		67
ZTX301	PE	300	150‡	35	35	5	500	50‡ at 10	0.2	35		67
ZTX302	PE	300	150‡	35	35	5	500	100‡ at 10	0.2	35	Amplifiers	67
ZTX303	PE	300	150‡	45	45	5	500	50‡ at 10	0.2	45		67
ZTX304	PE	300	150‡	70	70	5	500	50‡ at 10	0.2	70		67
ZT706 / 2N706	P	300	200‡	25	20	3	—	20‡ at 10	0.5	25		2
ZT706A / 2N706A	P	300	200‡	25	20	3	—	20‡ at 10	0.5	25	High speed switching	2
ZT2205 / 2N2205	PE	300	200‡	25	20	3	200	20‡ at 10	0.025	25		2
ZT2206 / 2N2206	PE	300	200‡	25	20	3	200	40‡ at 10	0.025	25	High speed logic	2
ZTX310	PE	300	200‡	25	20	3	500	20‡ at 10	0.2	25		67
ZTX311	PE	300	200‡	20	15	5	500	50‡ at 10	0.2	20	High speed switching	67
ZTX321	P	300	200	—	30	—	—	15dB power gain at 200 MHz			V.H.F./U.H.F. amplifiers	67
ZTX107	PE	300	350‡	45	45	5	100	100‡ at 2	0.2	45		67
ZTX108	PE	300	350‡	20	20	5	100	100‡ at 2	0.2	20	General purpose	67
ZTX109	PE	300	350‡	20	20	5	100	210‡ at 2	0.2	20		67
ZTX114	P	300	350	—	25	—	2	200‡ at 2	—	—	Low noise amplifiers	67
ZTX312	PE	300	400‡	30	12	5	500	40‡ at 10	30	30		67
ZTX313	PE	300	500‡	40	15	5	500	40‡ at 10	30	40		67
ZTX314	PE	300	500‡	40	15	5	500	40‡ at 10	30	40	High speed switching	67
ZT2938 / 2N2938	PE	300	500‡	25	13	5	500	60 at 200	0.025	25		2
ZT709 / 2N709	PE	300	600‡	15	6	4	—	50 at 10	0.05	15		2
ZT2369A	PE	300	600‡	40	15	4.5	—	50 at 10	0.4	40	High speed logic	2
ZT2475 / 2N2475	PE	300	600‡	15	6	4	—	50 at 10	0.05	15		2
BSS47	P	350	—	120	120	—	500	30‡ at 2	—	—	Numerical indicator	53
BSS56	P	350	—	100	100	—	500	30‡ at 2	—	—	driver	53
BFS36	P	350	30	45	45	—	500	200 at 0.01	—	—		53
BFS36A	P	350	30	30	30	—	500	250 at 0.01	—	—	Low noise pre-amplifiers	53
BFT27	P	350	30	60	60	—	500	300 at 0.01	—	—		53
BFS42	P	350	60	60	30	—	1A	80 at 150	—	—	General purpose	53
BFS43	P	350	60	60	60	—	1A	130 at 150	—	—		53
ZT20	S	350	70‡	20	20	6	50	35* at 1	0.5	20		2
ZT21	S	350	70‡	20	20	6	50	50* at 1	0.5	20		2
ZT22	S	350	70‡	45	45	6	50	30* at 1	0.5	45	Switching	2
ZT23	S	350	70‡	45	45	6	50	50* at 1	0.5	45		2
ZT24	S	350	70‡	45	45	6	50	65* at 1	0.5	45		2

Continued

Type	Construction	P_C Max. (mW)	Typical f_T or *f_t † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or *h_{fe})	Max I_{CBO} at V_{CB} μA	V	Application	Base Ref.
FERRANTI (*Continued*)												
Current Types (Continued)												
BFS38	P	350	150	45	35	—	500	200 at 10	—	—		53
BFS38A	P	350	150	25	25	—	500	175 at 10	—	—		53
BFS39	P	350	150	60	45	—	500	80 at 10	—	—	General purpose	53
ZTX237	P	350	150	—	45	—	200	330 at 2	—	—		67
ZTX238	P	350	150	—	30	—	200	490 at 2	—	—		67
ZTX239	P	350	150	—	30	—	200	590 at 2	—	—		67
BSV35A	P	350	300	25	12	—	500	20‡ at 10	—	—		53
BSV35	P	350	500	40	15	—	500	80 at 10	—	—	High speed switching	53
BSV36	P	350	600	15	6	—	500	90 at 20	—	—		53
BSV46	P	350	600	30	15	—	500	20‡ at 3	—	—		53
BSV46A	P	350	600	30	15	—	500	20‡ at 3	—	—		53
BFS85	P	350	1,000	25	12	—	50	87 at 2	—	—	H.F. amplifiers	53
BFS88	P	350	1,300	30	12	—	50	87 at 2	—	—		53
ZT708 / 2N708	PE	360	300‡	40	20	5	500	30‡ at 10	0.025	40	High speed switching	2
ZTX3707	P	500	—	—	30	—	—	250 at 0.1	—	—	Low noise amplifiers	67
ZTX3709	P	500	—	—	30	—	30	105 at 1	—	—		67
ZTX3710	P	500	—	—	30	—	30	160 at 1	—	—	General purpose	67
ZTX3711	P	500	—	—	30	—	30	420 at 1	—	—		67
ZTX223	P	500	100	—	30	—	800	250 at 50	—	—		67
ZTX3704	P	500	100	—	30	—	800	200 at 50	—	—		67
ZTX3705	P	500	100	—	30	—	800	100 at 50	—	—		67
ZTX3706	P	500	100	—	20	—	800	315 at 50	—	—		67
BFS59	P	500	150	—	30	—	1A	170 at 150	—	—		67
BFS60	P	500	150	—	40	—	1A	200 at 150	—	—		67
BFS61	P	500	150	—	60	—	1A	100 at 150	—	—		67
ZTX382	P	500	150	—	45	—	100	545 at 2	—	—	General purpose	67
ZTX383	P	500	150	—	30	—	100	545 at 2	—	—		67
ZTX384	P	500	150	—	30	—	100	545 at 2	—	—		67
ZTX4400	P	500	200	—	40	—	600	100 at 150	—	—		67
ZTX3903	P	500	250	—	40	—	200	100 at 10	—	—		67
ZTX4401	P	500	250	—	40	—	600	200 at 150	—	—		67
ZTX3904	P	500	300	—	40	—	200	200 at 10	—	—		67
ZTX327	P	500	400	—	30	—	—	350 mW out, 80mW in at 400MHz			H.F. amplifiers	67
ZT2476 / 2N2476	PE	600	250‡	60	20	5	—	40‡ at 150	0.2	60	High speed switching	2
ZT2477 / 2N2477	PE	600	250‡	60	20	5	—	40 at 150	0.2	60		2
ZTX337	P	750	100	—	45	—	800	350 at 100	—	—		67
ZTX338	P	750	100	—	25	—	800	350 at 100	—	—		67
BFX84	PE	800	50‡	100	60	6	1A	20‡ at 10	0.05	100		2
BFX85	PE	800	50‡	100	60	6	1A	50‡ at 150	0.05	100	General purpose	2
BFY50	PE	800	50‡	80	60	6	1A	30‡ at 150	0.05	80		2
BFY51	PE	800	50‡	60	60	6	1A	40‡ at 150	0.05	60		2
BFY52	PE	800	50‡	40	40	6	1A	60‡ at 150	0.05	40		2
2N3053	PE	1W	100‡	60	50	5	700	50‡ at 150	0.25	60	Low noise amplifiers	2
ZTX450	P	1W	150	—	45	—	1A	200 at 150	—	—	A.F. drivers	67
ZTX451	P	1W	150	—	60	—	1A	100 at 150	—	—		67
ZT1613 / 2N1613	PE	3W†	60‡	75	50	7	1A	40‡ at 150	0.01	75	General purpose	2
ZT1711 / 2N1711	PE	3W†	70‡	75	50	7	1A	100‡ at 150	0.01	75		2
2N4428	PE	3.5W†	500‡	55	35	3.5	425	74mW out, 70mW in at 500MHz				2
2N3866	PE	5W†	100‡	55	30	3.5	400	1.8W out, 0.5W in at 100MHz			A.M., F.M., C.W.	2
2N4429	PE	5W†	1,000‡	55	35	3.5	425	1W out, 0.3W in at 1GHz				2
ZT1700 / 2N1700	DJ	5W†	1.2†‡	60	40	6	1A	20‡ at 100	75	60	General purpose	2
ZT1479 / 2N1479	DJ	5W†	1.5†‡	60	40	12	1.5A	20‡ at 200	10	60	Switching	2
ZT1480 / 2N1480	DJ	5W†	1.5†‡	100	55	12	1.5A	20‡ at 200	10	100		2

Continued

Silicon NPN Transistors

Type	Construction	P_C Max. (mW)	Typical f_T or *f_t † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or *h_{fe})	Max I_{CBO} at V_{CB} µA	V	Application	Base Ref.
FERRANTI (*Continued*)												
Current Types (*Continued*)												
ZT1481 / 2N1481	DJ	5W†	1.5†‡	60	40	12	1.5A	35‡ at 200	10	60	Switching	2
ZT1482 / 2N1482	DJ	5W†	1.5†‡	100	55	12	1.5A	35‡ at 200	10	100	Switching	2
2N3439	DJ	5W	20	450	350	10	1A	100 at 0.02	—	—	General purpose	2
2N3440	DJ	5W	20	300	250	10	1A	100 at 0.02	—	—	General purpose	2
BSV64	PE	5W	60	100	60	—	5A	20 at 5	—	—	General purpose	2
ZT90	PE	5W†	60‡	60	60	6	1A	100‡ at 200	0.1	60	Power amplifiers	2
ZT91	PE	5W†	60‡	120	100	6	1A	40‡ at 200	1	120	Power amplifiers	2
ZT92	PE	5W†	60‡	120	100	6	1A	65‡ at 200	1	120	Power amplifiers	2
ZT93	PE	5W†	60‡	120	80	6	1A	40‡ at 150	1	120	Power amplifiers	2
ZT94	PE	5W†	60‡	60	45	7	1A	30‡ at 200	1	60	Power amplifiers	2
ZT95	PE	5W†	60‡	60	60	6	1A	30‡ at 350	0.1	60	Power amplifiers	2
ZT2120 / 2N2120	PE	5W†	60‡	120	65	6	1A	40‡ at 150	1	120	High performance amplifiers	2
ZT2270 / 2N2270	PE	5W†	60‡	60	60	7	1A	50‡ at 150	0.1	60	Low noise amplifiers	2
BFX34	PE	5W†	80	120	60	—	5A	60 at 500	—	—	General purpose	2
2N3553	PE	7W†	500‡	65	40	4	1A	2.5W out, 0.25W in at 175MHz				2
ZT2876 / 2N2876	P	7.5W†	200	80	60	4	2.5A	10W out, at 50MHz	0.1	80	A.M., F.M., C.W.	16
2N4041	PE	7.5W†	—	60	40	4	500	3.3W out, 1W in at 400MHz			A.M., F.M., C.W.	41
2N4430	PE	10W†	—	55	40	3.5	1A	2.5W out, 75mW in at 1GHz			A.M., F.M., C.W.	41
ZT3375	PE	11.6W†	500‡	65	40	4	1.5A	7.5W out, 1W in at 50MHz			V.H.F. power amplifiers	41
2N4040	PE	17.5W†	—	60	40	4	1A	8W out, 3W in at 400MHz			A.M., F.M., C.W.	41
2N4431	PE	18W†	—	55	40	3.5	2A	5W out, 1.6W in at 1GHz			A.M., F.M., C.W.	41
2N4127	PE	20W†	—	60	40	4	1.5A	12W out, 1.9W in at 150MHz			A.M., F.M., C.W.	41
BUY80	PE	20W†	60	150	60	—	5A	60 at 500	—	—	General purpose	2
2N4000	PE	20W†	60	100	80	—	3A	80 at 500	—	—	General purpose	2
2N4001	PE	20W†	60	120	100	—	3A	80 at 500	—	—	General purpose	2
BUX34	PE	20W†	80	120	60	—	5A	60 at 500	—	—	General purpose	2
2N3632	PE	23W†	—	65	40	4	3A	13.5W out, 3.5W in at 175MHz			A.M., F.M., C.W.	38
2N3733	PE	23W†	—	65	40	4	3A	14.5W out, 4W in at 260MHz			A.M., F.M., C.W.	38
BUY81	PE	24W†	60	150	60	—	7.5A	60 at 1A	—	—	General purpose	2
2N3441	DJ	25W†	0.65	160	140	4	3A	50 at 500	—	—	General purpose	1
ZT1701 / 2N1701	DJ	25W†	1†‡	60	40	6	2.5A	20‡ at 300	100	60	General purpose	3
ZT1483 / 2N1483	DJ	25W†	1.25†‡	60	40	12	3A	20‡ at 750	15	60	High power switching	3
ZT1484 / 2N1484	DJ	25W†	1.25†‡	100	55	12	3A	20‡ at 750	15	100	High power switching	3
ZT1485 / 2N1485	DJ	25W†	1.25†‡	60	40	12	3A	35‡ at 750	15	60	High power switching	3
ZT1486 / 2N1486	DJ	25W†	1.25†‡	100	55	12	3A	35‡ at 750	15	100	High power switching	3
BUY82	PE	30W†	60	150	60	—	10A	60 at 1.5A	—	—	General purpose	2
2N3418	PE	30W†	60	85	60	—	5A	40 at 500	—	—	General purpose	2
2N3419	PE	30W†	60	125	80	—	5A	40 at 500	—	—	General purpose	2
2N3420	PE	30W†	60	85	60	—	5A	80 at 500	—	—	General purpose	2
2N3421	PE	30W†	60	125	80	—	5A	80 at 500	—	—	General purpose	2
2N4128	PE	35W†	—	60	40	4	3A	35‡ at 750	15	—	Switching	41
2N3583	DJ	35W†	10	250	175	10	2A	10‡ at 1A	—	—	General purpose	1
2N3584	DJ	35W†	10	375	250	10	2A	62 at 1A	—	—	General purpose	1
2N3585	DJ	35W†	10	500	300	10	2A	62 at 1A	—	—	General purpose	1
BU217	PE	60W†	60	150	60	—	10A	60 at 500	—	—	General purpose	1
ZT1487 / 2N1487	DJ	75W†	1†‡	60	40	10	6A	15 at 1.5A	25	60	High power switching	1
ZT1488 / 2N1488	DJ	75W†	1†‡	100	55	10	6A	15 at 1.5A	25	100	High power switching	1

Continued

Type	Construction	P_c Max. (mW)	Typical f_T or $^*f_i$ † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or $^*h_{fe}$)	Max I_{CBO} at V_{CB} µA	V	Application	Base Ref.
FERRANTI (*Continued*)												
Current Types (*Continued*)												
ZT1489 / 2N1489	DJ	75W†	1†‡	60	40	10	6A	25 at 1.5A	25	60	High power switching	1
ZT1490 / 2N1490	DJ	75W†	1†‡	100	55	10	6A	25 at 1.5A	25	100	High power switching	1
ZT1702	DJ	75W†	1	60	40	4	5A	37 at 800	—	—	General purpose	1
BU218	PE	115W†	60	150	60	—	20A	70 at 500	—	—	General purpose	1
2N3055	PE	115W†	0.7†‡	100	60	7	15A	20‡ at 4A	—	—	Power switching	1
2N3442	DJ	117W†	0.8	160	140	4	10A	45 at 3A	—	—	General purpose	1
			‡ Minimum value					† T_{case} = 25°C				
I.T.T.												
Current Types												
BF254	PE	220	10.7	—	20	—	30	— —	—	—	Radio & TV R.F. amplifiers	49
BF255	PE	220	10.7	—	20	—	30	— —	—	—	Radio & TV R.F. amplifiers	49
BF198	PE	250	35	—	30	—	25	— —	—	—	Radio & TV R.F. amplifiers	49
BF199	PE	250	35	—	25	—	25	— —	—	—	Radio & TV R.F. amplifiers	49
BF240	PE	255	10.7	—	40	—	25	— —	—	—	Radio & TV R.F. amplifiers	49
BF241	PE	255	10.7	—	40	—	25	— —	—	—	Radio & TV R.F. amplifiers	49
BSY79	PE	300	—	120	120	5	30	30 at 10	0.05	90	Numerical indicator driver	2
BC170A	PE	300	100	20	20	5	200	70 at 1	0.1	15	Amplifiers	64
BC170B	PE	300	100	20	20	5	200	150 at 1	0.1	15	Amplifiers	64
BC170C	PE	300	100	20	20	5	200	350 at 1	0.1	15	Amplifiers	64
BCY43	PE	300	100	40	20	5	200	120 at 1	0.025	30	Amplifiers	2
2N929	PE	300	150	45	45	5	200	80 at 0.01	0.01	45	Amplifiers	2
2N930	PE	300	150	45	45	5	200	200 at 0.01	0.01	45	Amplifiers	2
BC190A / BC174A	PE	300	200	70	64	5	200	170 at 2	0.015	60	Amplifiers	2, 64
BC190B / BC174B	PE	300	200	70	64	5	200	290 at 2	0.015	60	Amplifiers	2, 64
BSY27	PE	300	200	20	15	5	100	80 at 10	0.025	9	Switching	2
BSY95A	PE	300	200	20	15	5	100	50 at 10	0.05	16	Switching	2
2N706	PE	300	200	25	—	5	—	20 at 10	0.05	15	Switching	2
2N706A	PE	300	200	25	15	5	50	40 at 1	0.5	15	Switching	2
2N753	PE	300	200	25	15	5	50	80 at 1	0.5	15	Switching	2
BSY80	PE	300	210	25	18	5	100	200 at 10	0.1	20	Switching	2
BC107A / BC171A / BC237A	PE	300	250	50	45	5	200	170 at 2	0.015	50	Low level amplifiers	2, 64, 64
BC107B / BC171B / BC237B	PE	300	250	50	45	5	200	290 at 2	0.015	50	Low level amplifiers	2, 64, 64
BC108A / BC172A / BC238A	PE	300	250	30	25	5	200	170 at 2	0.015	30	Low level amplifiers	2, 64, 64
BC108B / BC172B / BC238B	PE	300	250	30	25	5	200	290 at 2	0.015	30	Low level amplifiers	2, 64, 64
BC108C / BC172C / BC238C	PE	300	250	30	25	5	200	500 at 2	0.015	30	Low level amplifiers	2, 64, 64
BC109B / BC173B / BC239B	PE	300	250	30	25	5	200	150 at 0.01	0.015	30	Low level amplifiers	2, 64, 64
BC109C / BC173C / BC239C	PE	300	250	30	25	5	200	270 at 0.01	0.015	30	Low level amplifiers	2, 64, 64
BCY58A	PE	300	300	32	32	5	200	170 at 2	0.01	32	Low level amplifiers	2
BCY58B	PE	300	300	32	32	5	200	250 at 2	0.01	32	Low level amplifiers	2

Continued

Silicon NPN Transistors

Type	Construction	P_c Max. (mW)	Typical f_T or $^{\circ}f_t$, † f_{ab} (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or $^{\circ}h_{fe}$)	Max I_{CBO} at V_{CB} µA	V	Application	Base Ref.
L.T.T. *(Continued)*												
Current Types (Continued)												
BCY58C	PE	300	300	32	32	5	200	350 at 2	0.01	32		2
BCY58D	PE	300	300	32	32	5	200	500 at 2	0.01	32		2
BCY59A	PE	300	300	45	45	5	200	170 at 2	0.01	45	Low level amplifiers	2
BCY59B	PE	300	300	45	45	5	200	250 at 2	0.01	45		2
BCY59C	PE	300	300	45	45	5	200	350 at 2	0.01	45		2
BCY59D	PE	300	300	45	45	5	200	500 at 2	0.01	45		2
BSY19 / 2N708	PE	300	300	40	15	5	200	30 at 10	0.025	20		2
BSY21 / 2N914	PE	300	300	40	15	5	500	30 at 10	0.025	20	Low level switching	2
2N743	PE	300	300	20	12	5	200	10 at 100	1	20		2
2N744	PE	300	300	20	12	5	200	20 at 100	1	20		2
BF121	P	330	350	40	30	4	25	75 at 4	0.05	25		37
BF127	P	330	350	40	30	4	25	60 at 4	0.05	20	H.F. amplifiers &	37
BF125	PE	330	450	40	35	4	25	90 at 7	0.05	20	oscillators	37
BF123	PE	330	550	40	25	4	25	90 at 7	0.05	20		37
2N3301	PE	360	250	60	30	5	500	35 at 10	0.01	50	High speed switching	2
2N3302	PE	360	250	60	30	5	500	75 at 10	0.01	50		2
2N2368	PE	360	400	40	15	4.5	500	40 at 10	0.4	20		2
2N2369	PE	360	500	40	15	4.5	500	80 at 10	0.4	20	H.S. saturated switching	2
2N2369A	PE	360	500	40	15	4.5	500	80 at 10	0.4	20		2
BSW82	PE	500	200	40	25	5	500	30 at 10	0.1	30		2
BSW83	PE	500	200	40	25	5	500	70 at 10	0.1	30		2
BSW84	PE	500	200	75	40	5	500	35 at 10	0.01	50		2
BSW85	PE	500	200	75	40	5	500	75 at 10	0.01	50	High speed switching	2
2N2221	PE	500	250	60	30	5	800	35 at 10	0.01	50		2
2N2221A	PE	500	250	75	40	6	800	35 at 10	0.01	60		2
2N2222	PE	500	250	60	30	5	800	75 at 10	0.01	50		2
2N2222A	PE	500	300	75	40	6	800	75 at 10	0.01	60		2
BC337	PE	625	—	—	45	5	800	350 at 100	0.1	45	Medium level	64
BC338	PE	625	—	—	25	5	800	350 at 100	0.1	45	amplifiers	64
BC140-6	PE	750	—	—	40	7	1A	70 at 100	0.1	40		2
BC140-10	PE	750	—	—	40	7	1A	110 at 100	0.1	40		2
BC140-16	PE	750	—	—	40	7	1A	175 at 100	0.1	40	High level amplifiers	2
BC141-6	PE	750	—	—	60	7	1A	70 at 100	0.1	60		2
BC141-10	PE	750	—	—	60	7	1A	110 at 100	0.1	60		2
BC141-16	PE	750	—	—	60	7	1A	175 at 100	0.1	60		2
BC340-6	PE	800	—	—	40	5	500	70 at 50	0.1	40		2
BC340-10	PE	800	—	—	40	5	500	110 at 50	0.1	40	Medium level	2
BC340-16	PE	800	—	—	40	5	500	175 at 50	0.1	40	amplifiers	2
BC341-6	PE	800	—	—	60	5	500	70 at 50	0.1	60		2
BC341-10	PE	800	—	—	60	5	500	110 at 50	0.1	60		2
BSY51 / 2N697	PE	800	100	60	25	5	500	80 at 150	0.1	30		2
BSY52 / 2N1420	PE	800	100	60	25	5	500	200 at 150	0.1	30		2
BSY53 / 2N1613	PE	800	100	75	30	7	750	80 at 150	0.01	60		2
BSY54 / 2N1711	PE	800	100	75	30	7	750	200 at 150	0.01	60	Medium level	2
BSY55 / 2N1893	PE	800	100	120	80	7	500	80 at 150	0.01	90	switching	2
BSY56	PE	800	100	120	80	7	500	200 at 150	0.01	90		2
BSY87 / 2N1889	PE	800	100	100	60	7	500	80 at 150	0.01	75		2
BSY88 / 2N1890	PE	800	100	100	60	7	500	200 at 150	0.01	75		2
2N1613	PE	800	100	75	50	7	500	80 at 150	0.01	60		2
2N1711	PE	800	100	75	50	7	500	200 at 150	0.01	60	Switching	2
2N1893	PE	800	100	120	80	7	500	80 at 150	0.01	90		2

Continued

Type	Construction	P_C Max. (mW)	Typical f_T or *f_β † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or *h_{fe})	Max I_{CBO} at V_{CB} µA	V	Application	Base Ref.
L.T.T. (*Continued*)												
Current Types (*Continued*)												
BFY50	PE	800	100	80	35	6	1A	30 at 150	0.05	60		2
BFY51	PE	800	110	60	30	6	1A	40 at 150	0.05	40	High level amplifiers	2
BFY52	PE	800	120	40	20	6	1A	60 at 150	0.05	30		2
2N2218	PE	800	250	60	30	5	800	40 at 150	0.01	50		2
2N2218A	PE	800	250	75	40	6	800	40 at 150	0.01	60	High speed switching	2
2N2219	PE	800	250	60	30	5	800	200 at 150	0.01	50		2
2N2219A	PE	800	250	75	40	6	800	200 at 150	0.01	60		2
2N3724	PE	800	250	50	30	6	1A	95 at 150	1.7	40		2
2N3725	PE	800	250	80	50	6	1A	95 at 150	1.7	60	Fast switching	2
2N4046	PE	800	250	50	30	6	500	95 at 150	1.7	40		2
2N4047	PE	800	250	80	50	6	500	95 at 150	1.7	60		2
BSY81	PE	900	100	40	18	5	1A	80 at 150	0.1	30		2
BSY83 / 2N2297	PE	900	100	80	35	7	1A	80 at 150	0.01	60		2
BSY85 / 2N2193A	PE	900	110	120	64	7	1A	80 at 150	0.01	90	High level switching	2
BSY82	PE	900	120	40	18	5	1A	200 at 150	0.1	30		2
BSY84	PE	900	120	80	35	7	1A	200 at 150	0.01	60		2
BSY86	PE	900	130	120	64	7	1A	200 at 150	0.01	90		2
BF257	PE	5W	90	160	160	5	100	25 at 30	0.05	100		2
BF258	PE	5W	90	250	250	5	100	25 at 30	0.05	200		2
BF259	PE	5W	90	300	300	5	100	25 at 30	0.05	250	Video output stages	2
BF457	PE	10W	90	160	160	5	100	25 at 30	0.05	100		65
BF458	PE	10W	90	250	250	5	100	25 at 30	0.05	200		65
BF459	PE	10W	90	300	300	5	100	25 at 30	0.05	250		65
JOSEPH LUCAS (ELECTRICAL) Ltd.												
Replacement Types												
DT1602	DJ	100	—	75	75	1	25	5‡ at 3	100	75		2
DT1603	DJ	100	—	150	150	1	25	5‡ at 3	100	150	Drivers for cold	2
DT1612	DJ	100	—	75	75	1	25	20‡ at 3	100	75	cathode counters	2
DT1613	DJ	100	—	150	150	1	25	20‡ at 3	100	150		2
DT1510	DJ	800	1†	30	20	8	1A	25 at 300	4	30		2
DT1511	DJ	800	1†	60	40	8	1A	25 at 300	4	60		2
DT1512	DJ	800	1†	100	70	8	1A	25 at 300	4	100		2
DT1520	DJ	800	2†	30	20	8	1A	120 at 300	4	30		2
DT1521	DJ	800	2†	60	40	8	1A	120 at 300	4	60		2
DT1522	DJ	800	2†	100	70	8	1A	120 at 300	4	100		2
DT1110	DJ	1W	1.5†	30	30	10	1A	45 at 300	2	30		2
DT1111	DJ	1W	1.5†	60	60	10	1A	45 at 300	2	60	General purpose	2
DT1112	DJ	1W	1.5†	100	100	10	1A	45 at 300	2	100		2
DT1120	DJ	1W	2.5†	30	30	10	1A	60 at 300	2	30		2
DT1121	DJ	1W	2.5†	60	60	10	1A	60 at 300	2	60		2
DT1122	DJ	1W	2.5†	100	100	10	1A	60 at 300	2	100		2
DT1621	DJ	2W	2.5	60	40	8	1A	125 at 250	10	60		2
DT3200	DJ	15W	0.5	45	30	8	5A	30 at 3A	25	45		3
DT3201	DJ	15W	0.5	80	60	8	5A	30 at 3A	25	80		3
Current Types												
DT1003	DJ	4W	1	200	200	5	300	24 at 200	—	—		2
DT1013	DJ	4W	1	200	200	5	300	60 at 200	—	—		2
DT1311	DJ	5W	1.5	60	40	12	1.5A	40 at 200	—	—		2
DT1312	DJ	5W	1.5	100	60	12	1.5A	40 at 200	—	—		2
2N1479	DJ	5W	1.5	60	40	12	1.5A	40 at 200	—	—	General purpose	2
2N1480	DJ	5W	1.5	100	55	12	1.5A	40 at 200	—	—		2
2N1481	DJ	5W	1.5	60	40	12	1.5A	67 at 200	—	—		2
2N1482	DJ	5W	1.5	100	55	12	1.5A	67 at 200	—	—		2
DT1321	DJ	5W	2.5	60	40	12	1.5A	80 at 200	—	—		2

Continued

Silicon NPN Transistors

Type	Construction	P_C Max. (mW)	Typical f_T or $^{\circ}f_t$ † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or $^{\circ}h_{fe}$)	Max I_{CBO} at V_{CB} μA	V	Application	Base Ref.
JOSEPH LUCAS (ELECTRICAL) Ltd (*Continued*)												
Current Types (*Continued*)												
DT1322	DJ	5W	2.5	100	60	12	1.5A	80 at 200	—	—		2
2N6263	DJ	20W	0.8	140	120	7	3A	60 at 500	—	—		51
DT3312	DJ	25W	0.8	90	55	7	4A	62 at 500	—	—		51
DT3313	DJ	25W	0.8	160	140	7	3A	62 at 500	—	—		51
2N3054	DJ	25W	0.8	90	55	7	4A	63 at 500	—	—		51
2N3441	DJ	25W	0.8	160	140	7	3A	63 at 500	—	—		51
2N6260	DJ	29W	—	50	40	5	3A	60 at 1.5A	—	—		51
DT4305	DJ	30W	3	400	300	5	5A	30 at 3A	—	—		1
DT4306	DJ	30W	3	500	375	5	5A	30 at 3A	—	—		1
DT6105	DJ	50W	5	400	300	5	10A	30 at 3A	—	—		5
DT6106	DJ	50W	5	500	375	5	10A	30 at 3A	—	—		5
DT4613	DJ	100W	—	160	140	7	10A	45 at 3A	—	—		1
DT4643	DJ	100W	—	160	140	7	16A	37 at 8A	—	—		1
DT4652	DJ	100W	—	100	60	7	20A	37 at 10A	—	—		1
DT4660	DJ	100W	—	50	40	5	30A	37 at 15A	—	—		1
2N4347	DJ	100W	—	140	120	7	5A	37 at 2A	—	—		1
2N5157	DJ	100W	—	700	500	6	3.5A	60 at 1A	—	—		1
DT4612	DJ	100W	0.8	100	60	7	15A	45 at 4A	—	—		1
DT4424	DJ	100W	2.5	—	500	6	3.5A	60 at 1A	—	—		1
DT4425	DJ	100W	2.5	—	500	6	3.5A	60 at 1A	—	—	General purpose	1
DT4423	DJ	100W	4	400	400	5	3.5A	60 at 1A	—	—		1
2N3902	DJ	100W	4	—	400	5	3.5A	60 at 1A	—	—		1
2N6253	DJ	115W	—	55	45	5	15A	45 at 3A	—	—		1
2N3055	DJ	115W	0.8	100	60	7	15A	45 at 4A	—	—		1
2N3442	DJ	117W	—	160	140	7	10A	45 at 3A	—	—		1
2N4348	DJ	120W	—	140	120	7	10A	37 at 5A	—	—		1
2N5241	DJ	125W	—	400	400	5	5A	25 at 2.5A	—	—		1
DT4430	DJ	125W	4	400	400	5	5A	30 at 2.5A	—	—		1
DT4431	DJ	125W	4	400	400	5	5A	25 at 2.5A	—	—		1
2N3771	DJ	150W	—	50	40	5	30A	37 at 15A	—	—		1
2N3772	DJ	150W	—	100	60	7	20A	37 at 10A	—	—		1
2N3773	DJ	150W	—	160	140	7	16A	37 at 8A	—	—		1
2N6257	DJ	150W	—	50	40	5	20A	40 at 8A	—	—		1
2N2580	DJ	150W	—	400	400	5	10A	25 at 5A	—	—		5
2N2581	DJ	150W	—	400	400	5	10A	45 at 10A	—	—		5
2N2582	DJ	150W	—	500	500	5	10A	25 at 5A	—	—		5
2N2583	DJ	150W	—	500	500	5	10A	45 at 10A	—	—		5
2N3079	DJ	150W	—	200	200	5	5A	30 at 5A	—	—		5
2N3080	DJ	150W	—	300	300	5	5A	30 at 5A	—	—		5

† Minimum value

MULLARD

Replacement Types

BF167	PE	130	350	40	30	—	25	— —	—	—	TV video I.F. stages	2
2N918	PE	200	900	30	15	3	50	20 at 3	0.01	15	U.H.F. amps/osc.	20
BF173	PE	260	550	40	25	4	—	— —	—	—	TV video I.F. output	2
2N929	PE	300	50	45	45	5	30	225 at 10	0.01	45	Low noise amplifiers	2
2N930	PE	300	80	45	45	5	30	400 at 10	0.01	45	Amplifiers	2
BFW57	PE	300	80	80	60	6	500	115 at 100	0.5	80		43
BFW58	PE	300	80	80	60	6	500	70 at 100	0.5	80	General purpose	43
BFW59	PE	300	80	40	35	6	500	115 at 100	0.5	40		43
BFW60	PE	300	80	40	35	6	500	70 at 100	0.5	40		43
BLY55	—	4W	250	40	20	4	1A	60 at 200	—	—	V.H.F. amplifiers	38
BU105	—	7W	—	1,500	—	6	2A	— —	—	—	TV line deflection	1
BLY35	—	12W	250	66	33	4	7.5A	— —	—	—	A.M.Class B	38
BLY36	—	12W	250	40	20	4	7.5A	— —	—	—	F.M. Class B	38
BDY10	AD	130W	1	50	40	4	2A	30 at 2A	30	50	A.F. amplifiers	1
BDY11	AD	130W	1	100	70	4	2A	30 at 2A	30	100		1

Continued

Type	Construction	P_C Max. (mW)	Typical f_T or $^{\circ}f_1$ † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or $^{\circ}h_{fe}$)	Max I_{CBO} at V_{CB} μA	V	Application	Base Ref.
MULLARD (*Continued*)												
Current Types												
BFT24	PE	30	1,200	8	5	—	5	40 at 1	—	—	R.F. amplifiers	60
BFT25	PE	30	1,200	8	5	—	2.5	40 at 1	—	—	Micro-miniature	54
BF363	P	120	600	30	20	—	20	20‡ at 3	—	—	R.F. amplifiers	59
BF362	P	120	800	30	20	—	20	20‡ at 3	—	—		59
BF115	PE	145	230	50	30	5	30	— —	—	—	A.M./F.M.	20
BF200	PE	150	550	30	20	3	2	— —	—	—	V.H.F. tuners	20
BF181	PE	150	600	30	20	3	20	— —	—	—	TV mixers	20
BF180	PE	150	675	30	20	3	20	— —	—	—	TV tuners	20
BFR90	PE	180	5,000	20	15	—	25	50 at 14	—	—	R.F. amplifiers	60
BFR91	PE	180	5,000	20	15	—	35	50 at 30	—	—		60
BFR92	PE	180	5,000	20	15	—	25	25‡ at 14	—	—	Micro-miniature circuits	54
BFR93	PE	180	5,000	15	12	—	35	25‡ at 30	—	—		54
BFS20R	PE	200	275	30	20	—	25	40‡ at 7	—	—		53
BCW31R	PE	200	300	30	20	—	100	110‡ at 2	—	—		53
BCW32R	PE	200	300	30	20	—	100	200‡ at 2	—	—		53
BCW33R	PE	200	300	30	20	—	100	420‡ at 2	—	—		53
BCW71R	PE	200	300	50	45	—	100	110‡ at 2	—	—	Micro-miniature circuits	53
BCW72R	PE	200	300	50	45	—	100	200‡ at 2	—	—		53
BSV52R	PE	200	400	20	12	—	100	40‡ at 10	—	—		53
BFX89	PE	200	1,200	30	15	2.5	25	87 at 2	0.01	15	U.H.F. amplifiers	20
BFS17R	PE	200	1,300	25	15	—	25	25‡ at 2	—	—	Micro-miniature	53
BFY90	PE	200	1,300	30	15	2.5	50	87 at 2	0.01	15	U.H.F. amplifiers	20
BF195	PE	220	200	30	20	5	30	— —	—	—	A.M./F.M. inputs	63
BF194	PE	220	260	30	20	5	30	— —	—	—		63
BC147	PE	220	300	50	45	6	100	240 at 2	5	20	A.F. driver	43
BC148	PE	220	300	30	20	5	100	240 at 2	5	20	General purpose A.F. inputs	43
BC149	PE	220	300	30	20	5	100	410 at 2	5	20		43
BF196	PE	250	400	40	30	4	25	— —	—	—	TV I.F. amplifiers	63
BF197	PE	250	550	40	25	4	25	— —	—	—		63
BFW30	PE	250	1,600	20	10	2.5	50	25 at 50	0.05	10	Amplifiers	20
BSS38	PE	300	60	120	80	—	250	20‡ at 1	—	—	Switching	50
BSX21	PE	300	60	120	80	5	50	40 at 4	40	5	Driver	2
BSY95A	PE	300	200	20	15	5	100	125 at 10	0.05	16	D.C. amplifiers	2
BC107	PE	300	300	50	45	6	100	240 at 2	0.015	20	A.F. driver	2
BC108	PE	300	300	30	20	5	100	240 at 2	0.015	20	General purpose	2
BC109	PE	300	300	30	20	5	100	410 at 2	0.015	20	Low noise A.F.	2
BC547	PE	300	300	50	45	—	200	110‡ at 2	—	—	General purpose	50
BC548	PE	300	300	30	20	—	200	110‡ at 2	—	—		50
BC549	PE	300	300	30	20	—	200	200‡ at 2	—	—		50
BSY38	PE	300	350	20	—	5	100	45 at 10	—	—	High speed logic	2
BSY39	PE	300	350	20	—	5	100	80 at 10	—	—		2
BCX19	PE	310	200	50	45	—	500	100‡ at 100	—	—	Micro-miniature	54
BCX20	PE	310	200	30	25	—	500	100‡ at 100	—	—		54
BSX19	PE	360	400	40	15	4.5	500	40 at 10	0.2	20	H.S. saturated switching	2
BSX20	PE	360	500	40	15	4.5	500	80 at 10	0.4	20		2
2N2369	PE	360	500	40	15	4.5	500	80 at 10	0.4	20		2
2N2369A	PE	360	500	40	15	4.5	200	80 at 10	—	—		2
BC337	PE	625	200	50	45	—	1A	100‡ at 100	—	—	General purpose	50
BC338	PE	625	200	30	25	—	1A	100‡ at 100	—	—		50
BSX59	PE	800	—	70	45	5	1A	70 at 150	0.5	150	H.S. core driver	2
BSX60	PE	800	—	70	30	5	1A	100 at 150	0.5	40		2
BSX61	PE	800	—	70	45	5	1A	110 at 150	0.5	40		2
2N1711	PE	800	—	75	30	7	1A	200 at 150	0.01	60	D.C. amplifier	2
BFX84	PE	800	50	100	60	6	1A	30 at 150	0.05	80	General purpose	2
BFX85	PE	800	50	100	60	6	1A	70 at 150	0.05	80		2
BFX86	PE	800	50	40	35	6	1A	70 at 150	0.05	30		2
BFY51	PE	800	50	60	30	6	1A	70 at 150	0.05	40		2
BFY52	PE	800	50	40	20	6	1A	130 at 150	0.05	30		2
BFY53	PE	800	50	30	20	6	1A	30 at 150	0.05	20		2
BFY50	PE	800	60	80	35	6	1A	55 at 150	0.05	60		2
2N1613	PE	800	60	75	30	—	500	80 at 150	—	—		2

Continued

Silicon NPN Transistors

Type	Construction	P_C Max. (mW)	Typical f_T or *f_1 † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or *h_{fe})	Max I_{CBO} at V_{CB} µA	V	Application	Base Ref.
MULLARD (*Continued*)												
Current Types (*Continued*)												
2N2297	PE	800	60	80	35	7	1A	80 at 150	—	—	General purpose	2
BSW66	PE	800	80	100	100	6	1A	30 at 500	0.01	50		2
BSW67	PE	800	80	120	120	6	1A	30 at 500	0.01	60	High inductive load	2
BSW68	PE	800	80	150	150	6	1A	30 at 500	0.01	75	switching	2
2N2410	PE	800	200	60	30	5	800	75 at 150	0.3	30	High speed switching	2
BSV64	PE	870	100	100	60	—	5A	40‡ at 2A	—	—	Switching	2
BCX31	PE	880	80	100	80	—	2A	100 at 150	—	—		43
BCX32	PE	880	80	80	60	—	2A	110 at 150	—	—	General purpose	43
BCX33	PE	880	80	60	40	—	2A	120 at 150	—	—		43
BCX34	PE	880	80	40	20	—	2A	140 at 150	—	—		43
BFW17A	PE	1.5W	1,100	40	25	—	300	25‡ at 150	—	—	R.F.	2
BFW16A	PE	1.5W	1,200	40	25	—	300	25‡ at 150	—	—		2
2N696	PE	2W	—	60	40	5	500	40 at 150	1	30	General purpose	2
2N697	PE	2W	—	60	40	5	500	75 at 150	1	30		2
BD135	PE	2W	250	45	45	5	350	100 at 150	0.01	30		51
BD137	PE	2W	250	60	60	5	350	100 at 150	0.01	30	A.F. amplifier driver	51
BD139	PE	2W	250	80	80	5	350	100 at 150	0.01	30		51
BLY33	PE	2W	250	66	33	4	500	60 at 200	—	—	V.H.F. amplifiers	2
BLY34	PE	2W	250	40	20	4	500	60 at 200	—	—	Class B amplifiers	2
BF355	P	3W	—	300	225	—	160	— —	—	—	TV line driver	2
BF336	P	3W	80	185	180	—	100	20‡ at 30	—	—		2
BF337	P	3W	80	250	200	—	100	20‡ at 30	—	—	General purpose	2
BF338	P	3W	80	300	225	—	100	20‡ at 30	—	—		2
BLX65	PE	3W	1,400	36	18	—	2A	10‡ at 100	—	—	R.F.	2
2N4427	PE	3.5W	700	40	20	2	400	105 at 100	—	—	U.H.F. amplifiers	2
BFR94	PE	3.5W	3,500	30	25	—	300	40‡ at 150	—	—		41
BLX91	PE	4W	1,200	65	33	—	800	10‡ at 100	—	—	R.F.	41
BLX66	PE	4W	1,400	36	18	—	2A	10‡ at 100	—	—		41
BLX67	PE	4.5W	1,400	36	18	—	2A	10‡ at 100	—	—		41
2N3053	PE	5W	100	60	40	5	700	150 at 150	—	—	Switching	2
2N3866	PE	5W	700	55	30	3.5	400	105 at 50	—	—	U.H.F. amplifiers	2
BLX92	PE	6W	1,200	65	33	—	2A	10‡ at 100	—	—	R.F.	41
BD232	D	7W	20	500	300	—	1A	25‡ at 50	—	—	TV driver	51
2N3553	—	7W	500	65	40	4	350	55 at 250	—	—	U.H.F. tuners	2
BLY98	PE	8W	800	60	33	—	3A	10‡ at 500	—	—	R.F.	41
BLY53A	PE	8W	1,300	36	18	—	4A	10‡ at 500	—	—		41
BD160	D	10W	—	250	—	—	7A	— —	—	—	Line deflection	1
BLY85	PE	10W	250	40	20	—	3A	10‡ at 200	—	—	R.F.	41
BLY97	PE	10W	250	66	33	—	3A	10‡ at 200	—	—		41
BU204	D	10W	7.5	1,300	600	—	3A	2‡ at 2A	—	—	TV line deflection	1
BU205	D	10W	7.5	1,500	700	—	3A	2‡ at 2A	—	—		1
BU206	D	10W	7.5	1,700	800	—	3A	1.8‡ at 2A	—	—		1
BD131	PE	11W	60	45	45	6	2A	165 at 500	5	40	A.F. output	51
2N3375	—	11.6W	500	65	40	4	500	55 at 250	—	—	U.H.F. tuners	38
BLY83	PE	12W	250	66	33	—	2.5A	10‡ at 1A	—	—	R.F.	41
BLY84	PE	12W	250	40	20	—	2.5A	10‡ at 1A	—	—		41
BU209	D	12.5W	7	1,700	800	—	4A	2.25‡ at 7A	—	—		1
BU207	D	12.5W	7	1,300	600	—	5A	2.25‡ at 7A	—	—	Colour TV line	1
BU208	D	12.5W	7	1,500	700	—	5A	2.25‡ at 7A	—	—	deflection	1
BLX93	PE	12.5W	1,200	65	33	—	3A	10‡ at 100	—	—	R.F.	41
BD124	PE	15W	60	70	45	6	2A	75 at 500	2	60	TV frame deflection	1
BD133	PE	15W	60	90	60	—	6A	40‡ at 500	—	—	General purpose	51
BDX35	PE	15W	100	100	60	—	10A	45‡ at 500	—	—		51
BDX36	PE	15W	100	120	60	—	10A	45‡ at 500	—	—	Switching	51
BDX37	PE	15W	100	120	80	—	10A	45‡ at 500	—	—		51
BLX98	PE	21.5W	2,000	40	27	—	4A	20‡ at 1A	—	—	R.F.	61
810BLY/A	PE	22.5W	300	55	35	—	9A	20‡ at 1A	—	—		38
2N3632	—	23W	400	65	40	4	1A	— —	—	—	V.H.F. transmitters	38
BD233	E	25W	3	45	45	—	6A	25‡ at 1A	—	—		51
BD235	E	25W	3	60	80	—	6A	25‡ at 1A	—	—	General purpose	51
BD237	E	25W	3	100	80	—	6A	25‡ at 1A	—	—		51

Continued

Type	Construction	P_C Max. (mW)	Typical f_T or *f_t † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or *h_{fe})	Max I_{CBO} at V_{CB} μA	V	Application	Base Ref.
MULLARD (*Continued*)												
Current Types (*Continued*)												
BU126	D	30W	8	750	300	—	6A	15‡ at 1A	—	—	Colour TV switching	1
BU133	D	30W	8	750	250	—	6A	15‡ at 1A	—	—		1
BDY93	D	30W	12	750	350	—	6A	15‡ at 1A	—	—	Switching and control	1
BDY94	D	30W	12	750	300	—	6A	15‡ at 1A	—	—		1
BDY95	D	30W	12	600	250	—	6A	15‡ at 1A	—	—		1
BD433	E	36W	3	22	22	—	7A	50‡ at 2A	—	—		51
BD435	E	36W	3	32	32	—	7A	50‡ at 2A	—	—	General purpose	51
BD437	E	36W	3	45	45	—	7A	40‡ at 2A	—	—		51
BDY96	D	40W	10	750	350	—	15A	15‡ at 2A	—	—		1
BDY97	D	40W	10	750	300	—	15A	15‡ at 2A	—	—	Switching and control	1
BDY98	D	40W	10	600	250	—	15A	15‡ at 2A	—	—		1
BDY90	D	40W	70	120	100	—	15A	30‡ at 5A	—	—		1
BDY91	D	40W	70	100	80	—	15A	30‡ at 5A	—	—	General purpose	1
BDY92	D	40W	70	80	60	—	15A	30‡ at 5A	—	—		1
BLW64	PE	40W	900	60	30	—	12A	25‡ at 1A	—	—	R.F.	61
BUY86	PE	50W	100	200	100	—	10A	50‡ at 1A	—	—	Switching	1
BUY87	PE	50W	100	300	150	—	7A	30‡ at 2A	—	—		1
BLX69	PE	50W	1,000	36	18	—	10A	30 at 1A	—	—	R.F.	61
BLX94	PE	50W	1,000	65	33	—	6A	15‡ at 1A	—	—		61
BDX77	E	55W	3	80	80	—	12A	30‡ at 2A	—	—		52
BD201	E	60W	3	60	45	—	12A	30‡ at 3A	—	—	General purpose	52
BD203	E	60W	3	60	60	—	12A	30‡ at 2A	—	—		52
BLX13	PE	70W	500	65	36	—	6A	10‡ at 1A	—	—		61
BLY93A	PE	70W	500	65	36	—	9A	10‡ at 1A	—	—	R.F.	61
BLY89A	PE	70W	650	36	18	—	10A	10‡ at 1A	—	—		61
BD181	D	78W	—	55	45	—	15A	20‡ at 3A	—	—	General purpose	1
BLX95	PE	87.5W	1,000	65	33	—	12A	15‡ at 1.4A	—	—	R.F.	61
BLX14	PE	88W	250	85	36	—	12A	15‡ at 1.4A	—	—		62
2N4347	D	100W	1	140	120	—	10A	20‡ at 4A	—	—	General purpose	1
BLW60	PE	103W	550	36	18	—	20A	50 at 1A	—	—	R.F.	61
2N3055	D	115W	0.8	100	—	7	15A	45 at 4A	—	—		1
BDY20	D	115W	1	100	60	7	15A	45 at 4A	5mA	100		1
BDY38	D	115W	1	50	40	7	6A	30 at 2A	1mA	50	A.F. amplifiers	1
BD182	D	117W	—	70	60	—	15A	20‡ at 4A	—	—		1
BD183	D	117W	—	85	80	—	15A	20‡ at 3A	—	—		1
BD184	D	117W	—	95	90	—	15A	20‡ at 4A	—	—		1
2N3442	D	117W	1	160	140	—	15A	20‡ at 3A	—	—	General purpose	1
BLY94	PE	130W	500	65	36	—	12A	10‡ at 1A	—	—		62
BLY90	PE	130W	550	36	18	—	20A	10‡ at 1A	—	—	R.F.	62
BLX15	PE	195W	275	110	55	—	20A	10‡ at 1.4A	—	—		62

‡ Minimum value

NEWMARKET

Current Types

NKT10419	—	300	100	25	25	5	10	200 at 0.1	0.01	10	A.F. amplifiers	2
NKT10519	—	300	100	25	25	5	10	400 at 0.1	0.01	10		2
BSY95A	—	300	200	20	15	5	200	125 at 10	0.05	10	R.F. switching	2
BC107	—	300	250	50	45	5	100	310 at 2	—	—	A.F. amplifiers	2
BC108	—	300	250	30	20	5	100	310 at 2	—	—		2
BC109	—	300	250	30	20	5	100	570 at 2	—	—	A.F. pre-amplifiers	2
2N2368	—	360	—	40	15	4.5	500	40 at 10	0.4	20		2
2N2369	—	360	—	40	15	4.5	500	80 at 10	0.4	20	R.F. switching	2
2N2369A	—	360	—	40	15	4.5	500	80 at 10	0.4	20		2
2N2483	—	360	—	60	60	6	50	265 at 1	—	—	A.F. pre-amplifiers	2
2N2484	—	360	—	60	60	6	50	525 at 1	0.01	45		2
NKT13329	—	360	300	30	20	4	500	200 at 10	0.01	10		2
NKT13429	—	360	300	30	15	5	500	200 at 10	0.01	10	R.F. switching	2
BSX19	—	360	400	40	15	4.5	500	40 at 10	0.4	20		2
BSX20	—	360	500	40	15	4.5	500	80 at 10	0.4	20		2

Continued

Silicon NPN Transistors

Type	Construction	P_C Max. (mW)	Typical f_T or *f_1 † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or *h_{fe})	Max I_{CBO} at V_{CB} μA	V	Application	Base Ref.
NEWMARKET (*Continued*)												
Current Types (*Continued*)												
2N2220	—	500	—	60	30	5	800	40 at 150	0.01	50	R.F. switching	2
2N2220A	—	500	—	75	40	6	800	40 at 150	0.01	60		2
2N2221	—	500	—	60	30	5	800	80 at 150	0.01	50	R.F. amplifiers	2
2N2221A	—	500	—	75	40	6	800	80 at 150	0.01	60		2
2N2222	—	500	—	60	30	5	800	200 at 150	0.01	50		2
2N2222A	—	500	—	75	40	6	800	200 at 150	0.01	60		2
NKT10339	—	500	100	45	30	5	500	100 at 100	0.01	10	A.F. drivers	2
NKT10439	—	500	100	45	30	5	500	100 at 100	0.01	10		2
NKT12329	—	500	200	30	20	4	500	80 at 10	0.01	10	R.F. amplifiers	2
NKT12429	—	500	200	30	20	4	500	195 at 10	0.01	10		2
2N1613	—	800	—	75	—	7	—	65 at 1	0.01	60	A.F. switching	2
2N1711	—	800	—	75	—	7	—	125 at 1	0.01	60		2
2N1893	—	800	—	120	80	7	1A	80 at 150	0.01	90		2
2N2217	—	800	—	60	30	5	800	40 at 150	0.01	50	R.F. amplifiers	2
2N2217A	—	800	—	75	40	6	800	40 at 150	0.01	60		2
2N2218	—	800	—	60	30	5	800	80 at 150	0.01	50		2
2N2218A	—	800	—	75	40	6	800	80 at 150	0.01	60		2
2N2219	—	800	—	60	30	5	800	200 at 150	0.01	50		2
2N2219A	—	800	—	75	40	6	800	200 at 150	0.01	60		2
BFX84	—	800	50	100	60	6	1A	30‡ at 150	0.05	80		2
BFX85	—	800	50	100	60	6	1A	70‡ at 150	0.05	80		2
BFX86	—	800	50	40	35	6	1A	70‡ at 150	0.05	30	A.F. driver	2
BFY51	—	800	50	60	30	6	1A	40‡ at 150	0.05	40	A.F. switching	2
BFY52	—	800	50	40	20	6	1A	60‡ at 150	0.05	40		2
BFY53	—	800	50	30	20	6	1A	30‡ at 150	—	—		2
BFY50	—	800	60	80	35	6	1A	30‡ at 150	0.05	60		2
2N2297	—	800	60	80	35	7	—	80 at 150	0.01	60	A.F. drivers	2
BSX60	—	800	250	70	30	—	1A	60 at 500	—	—	R.F. switching	2
BSX61	—	800	250	70	45	—	1A	30‡ at 500	—	—		2
2N3053	—	1W	—	60	40	5	700	150‡ at 150	0.25	30	A.F. amplifiers	2
2N3055	—	115W	—	100	60	5	15A	45 at 4A	—	—	Power switching	1
BDY20	—	115W	1	100	60	5	15A	60 at 4A	—	—	Power amplifiers	1

‡ Minimum value

R.C.A.

Current Types

BDY71	H	—	0.8	—	55	—	3A	137 —	—	—	General purpose	1
2N718A	P	1.8W	100	—	32	—	900	80 at 150	0.01	60		2
2N720A	P	1.8W	100	—	80	—	900	80 at 150	0.01	90		2
2N2895	—	1.8W	100	—	65	—	900	80 at 150	0.002	60	Audio amplifiers	2
2N2896	—	1.8W	100	—	90	—	900	130 at 150	0.01	90		2
2N2897	—	1.8W	100	—	45	—	900	125 at 150	0.02	60		2
40084	—	1.8W	100	—	40	—	900	150 at 150	0.25	30		2
40310	H	2W	0.8	—	35	—	3A	70 at 1A	10	15	Audio amplifiers	1
40312	H	5W	0.8	—	60	—	3A	70 at 1A	10	15		1
2N697	PE	5W	120	—	40	—	900	80 at 150	1	30	General purpose	2
2N699	PE	5W	120	—	80	—	900	80 at 150	2	60		2
2N1613	PE	5W	120	—	50	—	900	80 at 150	0.01	60		2
2N1711	PE	5W	120	—	50	—	900	200 at 150	0.01	60		2
2N1893	PE	5W	120	—	80	—	900	80 at 150	0.01	90		2
2N2102	PE	5W	120	—	65	—	900	80 at 150	0.002	60		2
2N2270	PE	5W	120	—	45	—	900	125 at 150	0.1	60		2
2N2405	PE	5W	120	—	90	—	900	130 at 150	0.01	90		2
2N3053	PE	5W	120	—	40	—	900	150 at 150	0.25	30		2
40309	PE	5W	120	—	18	—	900	210 at 50	0.25	15	Driver	2
40311	PE	5W	120	—	30	—	900	210 at 50	0.25	15		2
40314	PE	5W	120	—	40	—	900	210 at 50	0.25	15		2
40315	PE	5W	120	—	35	—	900	210 at 50	0.25	15		2
40317	PE	5W	120	—	40	—	900	120 at 10	0.25	15		2
40320	PE	5W	120	—	40	—	900	120 at 10	0.25	15		2

Continued

Type	Construction	P_C Max. (mW)	Typical f_T or $^{\circ}f_1$ † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or $^{\circ}h_{fe}$)	Max I_{CBO} at V_{CB} µA	V	Application	Base Ref.
R.C.A. (*Continued*)												
Current Types (*Continued*)												
40323	PE	5W	120	—	18	—	900	210 at 50	0.25	15		2
40326	PE	5W	120	—	40	—	900	120 at 10	0.25	15	Pre-driver	2
40360	PE	5W	120	—	70	—	900	120 at 10	—	—		2
40361	PE	5W	120	—	70	—	900	210 at 50	—	—	Driver	2
40366	PE	5W	120	—	65	—	900	80 at 150	0.002	60		2
40389	PE	5W	120	—	40	—	900	150 at 150	0.25	30	General purpose	2
40392	PE	5W	120	—	40	—	900	150 at 150	0.25	30		2
40407	PE	5W	120	—	50	—	900	120 at 1	0.25	10		2
40408	PE	5W	120	—	90	—	900	120 at 10	—	—	Pre-driver	2
40409	PE	5W	120	—	90	—	900	150 at 150	—	—		2
40544	PE	5W	120	—	50	—	900	117 at 50	10	40	Driver	2
40611	PE	5W	120	—	25	—	900	285 at 50	0.5	15		2
40616	PE	5W	120	—	32	—	900	285 at 50	0.5	15		2
40625	PE	5W	120	—	45	—	900	200 at 150	0.25	60	Driver	2
40628	PE	5W	120	—	55	—	900	200 at 150	0.25	60		2
40635	PE	5W	120	—	70	—	900	150 at 150	—	—		2
40814	PE	5W	120	—	45	—	900	150 at 10	—	—	Pre-driver	2
2N1479	H	8.75W	1.4	—	40	—	900	40 at 200	10	30	D.C./D.C. converter	2
2N1480	H	8.75W	1.4	—	55	—	900	40 at 200	10	30	Chopper	2
2N1481	H	8.75W	1.4	—	40	—	900	67 at 200	10	30	Amplifiers	2
2N1482	H	8.75W	1.4	—	55	—	900	67 at 200	10	30	Actuators	2
40347	H	8.75W	1.4	—	40	—	900	62 at 450	1	30	Audio drivers	2
40348	H	8.75W	1.4	—	65	—	900	77 at 300	1	60	Relay driver	2
40367	H	8.75W	1.4	—	55	—	900	67 at 200	4	30	Actuators	2
40349	H	8.75W	1.5	—	140	—	900	72 at 150	1	90	General purpose	2
40316	H	10W	0.8	—	40	—	3A	70 at 1A	10	15		1
40610	H	10W	1	—	25	—	2.5A	60 at 1.2A	—	—		2
40615	H	10W	1	—	30	—	2.5A	60 at 1.2A	—	—	Audio amplifiers	2
40620	H	10W	1	—	32	—	2.5A	60 at 1.5A	—	—		2
BF257	PE	10W	15	—	160	—	2A	25‡ at 30	0.05	100		2
BF258	PE	10W	15	—	250	—	2A	25‡ at 30	0.05	200	High speed	2
BF259	PE	10W	15	—	300	—	2A	25‡ at 30	0.05	300	High power	2
2N3440	PE	10W	15	—	250	—	2A	100 at 20	—	—		2
2N3439	PE	10W	15	—	350	—	2A	100 at 20	—	—		2
2N4063	PE	10W	15	—	350	—	2A	100 at 20	—	—	Fast switching	2
2N4064	PE	10W	15	—	250	—	2A	100 at 20	—	—		2
40321	PE	10W	15	—	300	—	2A	112 at 20	—	—		2
40327	PE	10W	15	—	300	—	2A	145 at 20	—	—	Audio drivers	2
40346	PE	10W	15	—	175	—	2A	25‡ at 10	—	—	'Nixie' driver	2
40385	PE	10W	15	—	350	—	2A	100 at 20	—	—		2
40390	PE	10W	15	—	250	—	2A	100 at 20	—	—	Fast switching	2
40412	PE	10W	15	—	250	—	2A	40‡ at 30	—	—	Audio amplifiers	2
40986	PE	10W	15	—	175	—	2A	60 at 10	—	—	Pre-driver	2
40990	PE	10W	15	—	175	—	2A	145 at 1	—	—	Amplifier input	2
40998	PE	10W	15	—	100	—	2A	60 at 10	—	—	Pre-driver	2
2N5320	P	10W	50	—	75	—	1.5A	80 at 500	—	—		2
2N5321	P	10W	50	—	50	—	1.5A	145 at 500	—	—	General purpose	2
40539	P	10W	50	—	55	—	1.5A	102 at 500	—	—	Audio amplifiers	2
40594	P	10W	50	—	95	—	1.5A	210 at 300	—	—	Drivers	2
2N6175	—	20W	20	—	250	—	2A	110 at 20	—	—		51
2N6176	—	20W	20	—	300	—	2A	90 at 20	—	—	Fast switching	51
2N6177	—	20W	20	—	350	—	2A	90 at 20	—	—		51
2N3054	H	25W	0.8	—	55	—	3A	62 at 500	—	—		1
40250	H	25W	0.8	—	40	—	3A	62 at 1.5A	1	30	General purpose	1
40372	H	25W	0.8	—	55	—	3A	62 at 500	—	—		1
2N1483	H	25W	1.2	—	40	—	2A	40 at 750	15	30	D.C./D.C. converter	3
2N1484	H	25W	1.2	—	55	—	2A	40 at 750	15	30	Chopper	3
2N1485	H	25W	1.2	—	40	—	2A	67 at 750	15	30	Servo amplifiers	3
2N1486	H	25W	1.2	—	55	—	2A	67 at 750	15	30		3
40368	H	25W	1.2	—	55	—	2A	67 at 750	9	30	Actuators	3
2N6178	—	25W	50	—	75	—	1.5A	80 at 500	—	—	General purpose	51

Continued

Silicon NPN Transistors

Type	Construction	P_C Max. (mW)	Typical f_T or $^{\bullet}f_t$ † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or $^{\bullet}h_{fe}$)	Max I_{CBO} at V_{CB} μA	V	Application	Basc Ref.
R.C.A. (*Continued*)												
Current Types (Continued)												
2N6179	—	25W	50	—	50	—	1.5A	145 at 500	—	—		51
2N6260	H	29W	0.8	—	40	—	3A	60 at 1.5A	—	—	General purpose	1
40910	H	29W	0.8	—	40	—	3A	60 at 1.5A	1	30		1
40363	H	35W	0.8	—	70	—	9A	45 at 4A	—	—	Audio output	1
2N3583	—	35W	15	—	175	—	2A	40‡ at 100	—	—		1
2N3584	—	35W	15	—	250	—	2A	40‡ at 100	—	—	Fast switching	1
2N3585	—	35W	15	—	300	—	2A	40‡ at 100	—	—		1
2N4240	—	35W	15	—	300	—	2A	90 at 750	—	—		1
40313	—	35W	15	—	300	—	2A	145 at 100	—	—		1
40318	—	35W	15	—	300	—	2A	40‡ at 20	—	—		1
40322	—	35W	15	—	300	—	2A	40‡ at 20	—	—	Audio output	1
40328	—	35W	15	—	300	—	2A	40‡ at 20	—	—		1
40374	—	35W	15	—	175	—	2A	40‡ at 100	—	—		1
40850	—	35W	15	—	300	—	2A	25‡ at 750	—	—	Regulators	1
40991	—	35W	15	—	175	—	2A	90 at 300	—	—	Class B pre-driver	1
2N3878	—	35W	60	—	50	—	6A	125 at 500	—	—	Amplifiers	1
2N3879	—	35W	60	—	75	—	6A	50 at 4A	—	—		1
2N5202	—	35W	60	—	75	—	6A	55 at 4A	—	—	High speed switching	1
2N6500	—	35W	60	—	90	—	6A	37 at 3A	—	—		1
40364	—	35W	60	—	60	—	6A	105 at 500	—	—	Class AB amplifier output	1
40375	—	35W	60	—	50	—	6A	125 at 500	—	—	Audio amplifiers	1
2N5293	H	36W	0.8	—	70	—	2A	75 at 500	—	—		52
2N5294	H	36W	0.8	—	70	—	2A	75 at 500	—	—		52
2N5295	H	36W	0.8	—	40	—	2A	75 at 1A	—	—	General purpose	52
2N5296	H	36W	0.8	—	40	—	2A	75 at 1A	—	—		52
2N5297	H	36W	0.8	—	60	—	2A	50 at 1.5A	—	—		52
2N5298	H	36W	0.8	—	60	—	2A	50 at 1.5A	—	—		52
40613	H	36W	0.8	—	25	—	2A	75 at 1A	—	—		52
40618	H	36W	0.8	—	30	—	2A	75 at 1A	—	—	Audio output	52
40621	H	36W	0.8	—	32	—	2A	57 at 1.5A	—	—		52
40622	H	36W	0.8	—	40	—	2A	57 at 1.5A	—	—		52
40629	H	36W	0.8	—	35	—	2A	45 at 1A	—	—		52
40630	H	36W	0.8	—	40	—	2A	45 at 1.5A	—	—		52
40631	H	36W	0.8	—	45	—	2A	45 at 2A	—	—		52
BD239	PE	40W	4	—	45	—	6A	45 at 1A	—	—		52
BD239A	PE	40W	4	—	60	—	6A	45 at 1A	—	—		52
BD239B	PE	40W	4	—	80	—	6A	45 at 1A	—	—		52
BD239C	PE	40W	4	—	100	—	6A	45 at 1A	—	—		52
BD241	PE	40W	4	—	45	—	6A	30 at 3A	—	—		52
BD241A	PE	40W	4	—	60	—	6A	30 at 3A	—	—		52
BD241B	PE	40W	4	—	80	—	6A	30 at 3A	—	—	Audio amplifiers	52
BD241C	PE	40W	4	—	100	—	6A	30 at 3A	—	—		52
BD243	PE	40W	4	—	45	—	6A	45 at 3A	—	—		52
BD243A	PE	40W	4	—	60	—	6A	45 at 3A	—	—		52
BD243B	PE	40W	4	—	80	—	6A	45 at 3A	—	—		52
BD243C	PE	40W	4	—	100	—	6A	45 at 3A	—	—		52
2N6288	PE	40W	4	—	30	—	6A	90 at 3A	—	—		52
2N6289	PE	40W	4	—	30	—	6A	90 at 3A	—	—		52
2N6290	PE	40W	4	—	50	—	6A	90 at 2.5A	—	—		52
2N6291	PE	40W	4	—	50	—	6A	90 at 2.5A	—	—		52
2N6292	PE	40W	4	—	70	—	6A	90 at 2A	—	—		52
2N6372	PE	40W	4	—	80	—	5.5A	60 at 2A	—	—		1
2N6273	PE	40W	4	—	60	—	5.5A	60 at 2.5A	—	—	General purpose	52
2N6374	PE	40W	4	—	40	—	5.5A	60 at 3A	—	—		52
40871	PE	40W	4	—	100	—	6A	150 at 1A	—	—	Audio driver	52
40873	PE	40W	4	—	70	—	6A	90 at 2A	—	—	General purpose	52
40875	PE	40W	4	—	50	—	6A	70 at 3A	—	—		52
40979	PE	40W	4	—	40	—	6A	150 at 1.5A	—	—	Audio output	52
2N6077	—	45W	1	—	250	—	3A	41 at 1.2A	—	—		1
2N6078	—	45W	1	—	275	—	3A	41 at 1.2A	—	—	Fast switching	1
2N6079	—	45W	1	—	350	—	3A	31 at 1.2A	—	—		1

Continued

Type	Construction	P_C Max. (mW)	Typical f_η or $^*f_t$ † fab (MHz)	Absolute Max. Ratings				Typical h_{FE} at (mA) (or $^*h_{fe}$)	Max I_{CBO} at V_{CB}		Application	Base Ref.
				V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)		μA	V		
R.C.A. (*Continued*)												
Current Types (*Continued*)												
40851	—	45W	1	—	350	—	3A	12‡ at 1.2A	—	—	Regulators	1
2N5490	H	50W	0.8	—	40	—	7A	60 at 2A	—	—		52
2N5491	H	50W	0.8	—	40	—	7A	60 at 2A	—	—		52
2N5492	H	50W	0.8	—	55	—	7A	60 at 2.5A	—	—		52
2N5493	H	50W	0.8	—	55	—	7A	60 at 2.5A	—	—		52
2N5494	H	50W	0.8	—	40	—	7A	60 at 3A	—	—	General purpose	52
2N5495	H	50W	0.8	—	40	—	7A	60 at 3A	—	—		52
2N5496	H	50W	0.8	—	70	—	7A	60 at 3.5A	—	—		52
2N5497	H	50W	0.8	—	70	—	7A	60 at 3.5A	—	—		52
2N6261	H	50W	0.8	—	80	—	3A	62 at 1.5A	—	—		1
40324	H	50W	0.8	—	35	—	3A	70 at 1A	10	15	Driver	1
40325	H	50W	0.8	—	35	—	9A	36 at 8A	—	—	Class B audio output	1
40624	H	50W	0.8	—	45	—	6.5A	60 at 2.5A	—	—		52
40627	H	50W	0.8	—	55	—	6.5A	60 at 2.5A	—	—	Audio output	52
60632	H	50W	0.8	—	60	—	6.5A	60 at 3A	—	—		52
40816	H	50W	0.8	—	45	—	6.5A	92 at 2A	—	—		52
40911	H	50W	0.8	—	80	—	3A	62 at 1.5A	0.5	80		1
2N3441	H	50W	1.2	—	140	—	2A	62 at 500	—	—		1
2N6263	H	50W	1.2	—	120	—	2A	60 at 500	—	—		1
2N6264	H	50W	1.2	—	150	—	2A	40 at 1A	—	—	General purpose	1
40373	H	50W	1.2	—	140	—	2A	62 at 500	—	—		1
40912	H	50W	1.2	—	120	—	2A	60 at 500	—	—		1
40913	H	50W	1.2	—	150	—	2A	40 at 1A	—	—		1
40411	H	70W	0.8	—	90	—	3A	67 at 4A	—	—	Audio output	1
40636	H	70W	0.8	—	95	—	9A	45 at 4A	—	—	Amplifiers	1
BD278	H	75W	0.8	—	45	—	8A	45 at 4A	—	—	General purpose	52
2N1487	H	75W	0.8	—	40	—	4A	30 at 1.5A	25	30	D.C./D.C. converter	1
2N1488	H	75W	0.8	—	55	—	4A	30 at 1.5A	25	30	Regulators	1
2N1489	H	75W	0.8	—	40	—	4A	50 at 1.5A	25	30	Amplifiers	1
2N1490	H	75W	0.8	—	55	—	4A	50 at 1.5A	25	30	Actuators	1
2N6098	H	75W	0.8	—	60	—	8A	50 at 4A	—	—		52
2N6099	H	75W	0.8	—	60	—	8A	50 at 4A	—	—		52
2N6100	H	75W	0.8	—	70	—	8A	50 at 5A	—	—	General purpose	52
2N6101	H	75W	0.8	—	70	—	8A	50 at 5A	—	—		52
2N6102	H	75W	0.8	—	40	—	8A	37 at 8A	—	—		52
2N6103	H	75W	0.8	—	40	—	8A	37 at 8A	—	—		52
40369	H	75W	0.8	—	55	—	4A	50 at 1.5A	10	30	Actuator	1
40884	H	75W	0.8	—	65	—	8A	70 at 4A	—	—	Audio output	52
BU106	—	75W	3	—	140	—	10A	8‡ at 4A	—	—	TV frame output	1
2N3263	—	84W	20	—	90	—	25A	50 at 15A	—	—	High current	—
2N3264	—	84W	20	—	60	—	25A	50 at 15A	—	—		—
BUX16	PE	100W	5	—	200	—	4A	50 at 400	—	—		1
BUX16A	PE	100W	5	—	250	—	4A	50 at 400	—	—		1
BUX16B	PE	100W	5	—	300	—	4A	50 at 400	—	—	General purpose	1
BUX16C	PE	100W	5	—	350	—	4A	50 at 400	—	—		1
2N5239	PE	100W	5	—	225	—	4A	50 at 2A	—	—		1
2N5240	PE	100W	5	—	300	—	4A	50 at 2A	—	—		1
2N5838	—	100W	5	—	250	—	4A	24 at 3A	—	—		1
2N5839	—	100W	5	—	275	—	4A	30 at 2A	—	—	Fast switching	1
2N5840	—	100W	5	—	350	—	4A	30 at 2A	—	—		1
410	—	100W	5	—	200	—	4A	60 at 1A	—	—		1
411	—	100W	5	—	300	—	4A	60 at 1A	—	—		1
413	—	100W	5	—	325	—	4A	50 at 500	—	—	Inverter	1
423	—	100W	5	—	325	—	4A	60 at 1A	—	—		1
431	—	100W	5	—	325	—	4A	25 at 2.5A	—	—		1
40852	—	100W	5	—	350	—	4A	12‡ at 1.2A	—	—	Regulators	1
BU120	—	100W	6	—	200	—	10A	65 at 1A	—	—		1
2N5804	—	110W	15	—	225	—	7A	55 at 5A	—	—	Fast switching	1
2N5805	—	110W	15	—	300	—	7A	55 at 5A	—	—		1
40840	—	110W	15	—	300	—	7A	55 at 4A	—	—		1
40853	—	110W	15	—	300	—	7A	10‡ at 5A	—	—	Regulators	1

Continued

Silicon NPN Transistors

Type	Construction	P_C Max. (mW)	Typical f_T or $^{\circ}f_t$, † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or $^{\circ}h_{fe}$)	Max I_{CBO} at V_{CB} µA	V	Application	Base Ref.
R.C.A. (*Continued*)												
Current Types (*Continued*)												
2N3055	H	115W	0.8	—	60	—	9A	45 at 4A	—	—		1
2N6253	H	115W	0.8	—	45	—	9A	45 at 3A	—	—	General purpose	1
2N6371	H	117W	0.8	—	40	—	9A	37 at 8A	—	—		1
40893	PE	120W	5	—	200	—	4A	45 at 2A	—	—	Audio amplifiers	1
2N3265	—	125W	20	—	90	—	20A	50 at 15A	—	—		27
2N3266	—	125W	20	—	60	—	20A	50 at 15A	—	—	High current	27
2N5038	—	140W	60	—	90	—	20A	60 at 12A	—	—		1
2N5039	—	140W	60	—	75	—	20A	60 at 10A	—	—		1
2N5671	—	140W	50	—	90	—	25A	60 at 15A	—	—		1
2N5672	—	140W	50	—	120	—	25A	60 at 15A	—	—		1
2N6032	—	140W	50	—	90	—	50A	30 at 50A	—	—	High speed switching	1
2N6033	—	140W	50	—	120	—	50A	30 at 40A	—	—		1
2N6354	—	140W	60	—	120	—	20A	55 at 10A	—	—		1
2N6496	—	140W	60	—	110	—	20A	56 at 8A	—	—		1
2N2015	H	150W	0.8	—	50	—	9A	32 at 5A	50	30	D.C./D.C. converter	5
2N2016	H	150W	0.8	—	65	—	9A	32 at 5A	50	30	Choppers	5
2N2338	H	150W	0.8	—	40	—	9A	37 at 3A	200	30		5
2N3442	H	150W	0.8	—	140	—	9A	45 at 3A	—	—		1
2N4347	H	150W	0.8	—	120	—	9A	37 at 2A	—	—		1
2N6254	H	150W	0.8	—	80	—	9A	45 at 5A	—	—		1
2N6262	H	150W	0.8	—	150	—	9A	45 at 3A	—	—		1
BUX17	—	175W	2.5	—	150	—	9A	20‡ at 4A	—	—	General purpose	1
BUX17A	—	175W	2.5	—	250	—	9A	20‡ at 4A	—	—		1
BUX17B	—	175W	2.5	—	300	—	9A	15‡ at 4A	—	—		1
BUX17C	—	175W	2.5	—	350	—	9A	15‡ at 4A	—	—		1
2N6249	—	175W	2.5	—	200	—	9A	30 at 10A	—	—		1
2N6250	—	175W	2.5	—	275	—	9A	29 at 10A	—	—	Switching	1
2N6251	—	175W	2.5	—	350	—	9A	28 at 10A	—	—		1
40854	—	175W	2.5	—	300	—	9A	8‡ at 10A	—	—	Regulators	1
41012	—	175W	60	—	85	—	20A	37 at 10A	—	—		1
41013	—	175W	60	—	130	—	20A	37 at 10A	—	—	High speed switching	1
40988	PE	200W	5	—	250	—	4A	45 at 2A	—	—	Audio amplifiers	1
2N3773	H	250W	0.7	—	140	—	20A	37 at 8A	—	—		1
2N4348	H	250W	0.7	—	120	—	20A	37 at 5A	—	—		1
2N6259	H	250W	0.7	—	150	—	20A	37 at 8A	—	—		1
2N3771	H	250W	0.8	—	40	—	30A	37 at 15A	—	—		1
2N3772	H	250W	0.8	—	60	—	30A	37 at 10A	—	—	General purpose	1
2N6257	H	250W	0.8	—	40	—	30A	45 at 8A	—	—		1
2N5575	H	300W	0.4	—	50	—	60A	25 at 60A	—	—		1
2N5578	H	300W	0.4	—	70	—	60A	25 at 40A	—	—		1
				‡ Minimum value								
SGS-ATES												
Current Types												
BF457	—	—	—	160	160	—	200	25‡ at 30	—	—		51
BF458	—	—	—	250	250	—	200	25‡ at 30	—	—	Video output	51
BF459	—	—	—	300	300	—	200	25‡ at 30	—	—		51
BFR10	—	—	—	—	40	—	500	65 at 500	—	—		2
BFR11	—	—	—	—	40	—	500	65 at 500	—	—	Fast switching	2
BFR20	—	—	—	—	35	—	500	250 at 150	—	—		2
BFR21	—	—	—	—	70	—	500	70 at 150	—	—	General purpose	2
BFW68	—	—	—	—	40	—	50	120 at 10	—	—	switching	2
BFX34	—	—	—	—	60	—	2A	80 at 2A	—	—		2
BFX94A	—	—	—	—	30	—	500	62 at 500	—	—		2
BFX95A	—	—	—	—	30	—	500	125 at 500	—	—	Fast switching	2
BFX96A	—	—	—	—	30	—	500	62 at 500	—	—		2
BFX97A	—	—	—	—	30	—	500	125 at 500	—	—		2
BFY56	—	—	—	—	45	—	500	70 at 150	—	—	General purpose	2
BFY56A	—	—	—	—	55	—	500	80 at 150	—	—	switching	2

Continued

Type	Construction	P_C Max. (mW)	Typical f_T or $^{\circ}f_1$ † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or $^{\circ}h_{fe}$)	Max I_{CBO} at V_{CB} μA	V	Application	Basc Ref.
SGS-ATES (*Continued*)												
***Current Types* (*Continued*)**												
BFY72	—	—	—	—	28	—	500	90 at 500	—	—	General purpose switching	2
BSS15 / 2N5320	—	—	—	—	75	—	2A	80 at 500	—	—		2
BSS16 / 2N5321	—	—	—	—	50	—	2A	145 at 500	—	—		2
BSS26	—	—	—	—	40	—	1A	45 at 500	—	—	Fast switching	2
BSV59	—	—	—	—	30	—	500	50 at 500	—	—		2
BSV77	—	—	—	—	40	—	1A	50 at 500	—	—		2
BSV89	—	—	—	—	10	—	100	45 at 100	—	—		2
BSV90	—	—	—	—	13.5	—	100	55 at 100	—	—		2
BSV91	—	—	—	—	15	—	100	45 at 100	—	—		2
BSV92	—	—	—	—	15	—	100	60 at 100	—	—		2
BSV95	—	—	—	—	50	—	800	50 at 500	—	—		2
BSX12	—	—	—	—	12	—	1A	60 at 300	—	—	Fast switching	2
BSX26	—	—	—	—	15	—	300	55 at 100	—	—		2
BSX27	—	—	—	—	6	—	30	80 at 10	—	—		2
BSX28	—	—	—	—	12	—	100	50 at 100	—	—		2
BSX30	—	—	—	—	30	—	300	63 at 150	—	—		2
BSX32	—	—	—	—	40	—	500	60 at 1A	—	—		2
BSX33	—	—	—	—	55	—	500	80 at 150	—	—	General purpose switching	2
												2
BSX39	—	—	—	—	20	—	300	40 at 300	—	—		2
BSX87	—	—	—	—	15	—	500	55 at 10	—	—	Fast switching	2
BSX87A	—	—	—	—	15	—	500	65 at 30	—	—		2
BSX88	—	—	—	—	15	—	100	45 at 10	—	—	General purpose switching	2
BSX88A	—	—	—	—	20	—	100	55 at 100	—	—		2
BSX93	—	—	—	—	15	—	200	80 at 10	—	—	Fast switching	2
2N760A	—	—	—	—	60	—	—	76‡ at 1	—	—		2
2N929	—	—	—	—	45	—	—	350‡ at 10	—	—		2
2N930	—	—	—	—	45	—	—	600‡ at 10	—	—		2
2N2483	—	—	—	—	60	—	—	175‡ at 1	—	—	Low level amplifiers	2
2N2484	—	—	—	—	60	—	—	250‡ at 1	—	—		2
2N2586	—	—	—	—	45	—	—	600‡ at 1	—	—		2
2N3117	—	—	—	—	60	—	—	400‡ at 1	—	—		2
BFX69	—	—	80	—	30	—	500	80 at 150	—	—	General purpose amplifiers	2
BFX69A	—	—	84	—	40	—	500	90 at 150	—	—		2
BFR18	—	—	90	—	55	—	500	90 at 150	—	—		2
BFS89	—	—	90	—	300	—	100	80 at 50	0.05	300	High voltage	2
BF252	—	—	100	—	30	4	—	30 at 2	—	—	R.F. amps./osc.	21
BFR16	—	—	100	—	60	—	10	350 at 1	—	—	Low level, low noise amps.	2
BFR17	—	—	100	—	60	—	10	530 at 1	—	—		2
BFR19	—	—	100	—	35	—	500	80 at 150	—	—	General purpose amplifiers	2
BFX68	—	—	100	—	50	—	500	130 at 150	—	—		2
BFY50	—	—	100	—	35	—	1A	55 at 150	—	—		2
BFY76	—	—	100	—	60	—	5	190 at 1	—	—	Low noise amplifiers	2
2N3053	—	—	100	—	50	—	—	150 at 150	—	—	High speed switching	2
BFY51	—	—	110	—	30	—	1A	70 at 150	—	—	General purpose amplifiers	2
BFY52	—	—	120	—	20	—	1A	130 at 150	—	—		2
2N3444	—	—	150	—	50	—	—	40 at 500	—	—	High speed switching	2
BCY58	—	—	200	—	32	—	100	520 at 10	—	—	Low level, low noise amps.	2
BCY59	—	—	200	—	45	—	100	520 at 10	—	—		2
BFX94	—	—	250	—	30	—	—	75 at 150	0.01	30	H.F. amplifiers	2
BFX95	—	—	250	—	30	—	—	220 at 150	0.01	30		2
BFX96	—	—	250	—	30	—	—	75 at 150	0.01	30		2
BFX97	—	—	250	—	30	—	—	220 at 150	0.01	30		2
BFY74	—	—	360	—	45	—	—	75 at 10	0.01	45		2
BFY75	—	—	360	—	45	—	—	114 at 10	0.01	45		2
BFX17	—	—	400	—	40	—	—	50 at 500	—	—		2
BFR97 / 2N3866	—	—	500	—	30	—	—	100 at 50	—	—		2

Continued

Silicon NPN Transistors

Type	Construction	P_C Max. (mW)	Typical f_T or $^*f_t$, † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or $^*h_{fe}$)	Max I_{CBO} at V_{CB} μA	V	Application	Basc Ref.
SGS-ATES (*Continued*)												
Current Types (*Continued*)												
BFR98	—	—	500	—	20	—	—	100 at 100	—	—		2
2N4427												
BFX31	—	—	500	—	30	—	—	80 at 4	0.05	30		9
BFX18	—	—	550	—	30	—	—	80 at 4	0.05	30		9
BFX19	—	—	550	—	30	—	—	75 at 2.5	0.05	30		9
BFX20	—	—	550	—	30	—	—	75 at 2.5	0.05	30		9
BFX21	—	—	550	—	30	—	—	70 at 2.5	0.05	30	H.F. amplifiers	9
BFW63	—	—	600	—	30	—	—	70 at 4	—	—		21
BFW64	—	—	650	—	30	—	—	70 at 4	—	—		21
BFW70	—	—	900	—	30	—	—	75 at 10	—	—		21
BFX73	—	—	900	—	15	—	—	50 at 3	0.01	15		9
BFR36	—	—	1,300	—	30	—	—	95 at 150	—	—		2
BFR37	—	—	1,400	—	30	—	—	150 at 10	—	—		21
BF167	—	150	600	—	30	4	—	45 at 4	—	—	A.G.C. I.F. amplifiers	21
BF251	—	150	600	—	30	4	—	80 at 4	—	—		21
BF222	—	175	400	—	40	4	—	60 at 2	—	—	F.M. tuners	9
BF166	—	175	500	—	40	3	—	50 at 2.5	—	—	V.H.F. a.g.c. amplifiers	9
BF161	—	175	550	—	50	4	—	60 at 3	—	—	U.H.F. mixer/osc.	9
BF173	—	175	1,000	—	25	4	—	115 at 7	—	—	I.F. vision output	21
BC113	—	200	—	30	—	—	50	600 at 1	—	—	Pre-amplifiers	64
BC114	—	200	—	30	—	—	50	600 at 1	—	—	Low noise pre-amplifiers	64
BC207	—	200	—	50	—	—	100	280 at 2	—	—	Audio drivers	64
BC208	—	200	—	25	—	—	100	455 at 2	—	—	Low voltage	64
BC209	—	200	—	25	—	—	100	500 at 2	—	—	Low noise hi-fi	64
2N918	—	200	60	—	15	—	—	— —	—	—	R.F. I.F. amps./osc.	9
2N4135	—	200	60	—	30	—	—	— —	—	—		9
BF454	—	200	400	—	25	4	—	90 at 1	—	—	A.M./F.M. I.F. amplifiers	49
BF455	—	200	400	—	25	4	—	65 at 1	—	—	A.M./F.M. I.F. pre-amplifiers	49
2N4134	—	200	450	—	30	—	—	— —	—	—	R.F. I.F. amps./osc.	9
BF233	—	200	500	—	30	4	—	— —	—	—	A.M./F.M. amplifiers	49
BF155	—	200	600	—	40	3	—	70 at 2.5	—	—	U.H.F. amps./osc.	9
BF160	—	200	600	—	12	2	—	50 at 3	—	—	A.M./F.M. I.F. amplifiers	64
BF273	—	200	600	—	20	4	—	95 at 1	—	—	A.M./F.M. amplifiers	49
BF274	—	200	700	—	20	4	—	170 at 1	—	—	A.M./F.M. I.F. amplifiers	49
BF158	—	200	800	—	12	2	—	50 at 5	—	—	TV I.F. amplifiers	64
BF288	—	250	500	—	40	4	—	90 at 1	—	—	A.M./F.M. I.F. amplifiers	21
BF287	—	250	700	—	40	4	—	60 at 2	—	—	A.M./F.M. amplifiers	21
BF271	—	250	900	—	25	4	—	75 at 10	—	—	I.F. vision output	21
BC107	—	300	—	50	—	—	100	280 at 2	—	—	Audio driver	2
BC108	—	300	—	30	—	—	100	455 at 2	—	—	Low voltage	2
BC109	—	300	—	30	—	—	100	500 at 2	—	—	Low noise hi-fi	2
BC115	—	300	—	40	—	—	200	250 at 10	—	—	Audio driver	64
BC125	—	300	—	50	—	—	500	60 at 150	—	—		64
2N707	—	300	—	—	25	—	—	— —	—	—	R.F. I.F. amps./osc.	2
2N706	—	300	200	—	20	—	—	20‡ at 10	—	—		2
2N2205	—	300	200	—	12	—	—	20‡ at 10	—	—		2
2N743	—	300	280	—	12	—	—	40 at 10	—	—		2
2N744	—	300	280	—	12	—	—	80 at 10	—	—	H.S. saturated switching	2
2N708	—	300	300	—	15	—	—	75 at 10	—	—		2
2N834	—	300	350	—	10	—	—	25‡ at 10	—	—		2
2N709	—	300	600	—	6	—	—	70 at 10	—	—		2
2N915	—	360	250	—	50	—	—	125 at 10	—	—	General purpose amplifiers	2
2N3301	—	360	250	—	30	—	—	80 at 150	—	—		2
2N3302	—	360	250	—	30	—	—	200 at 150	—	—		2

Continued

Type	Construction	P_C Max. (mW)	Typical f_T or $^{\circ}f_t$ † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or $^{\circ}h_{fe}$)	Max I_{CBO} at V_{CB} μA	V	Application	Base Ref.
SGS-ATES (*Continued*)												
Current Types (Continued)												
2N914	—	360	300	—	15	—	—	75 at 10	—	—	High speed switching	2
2N916	—	360	300	—	25	—	—	150 at 10	—	—	General purpose amplifiers	2
2N4013	—	360	300	—	30	—	—	105 at 100	—	—		2
2N4014	—	360	300	—	50	—	—	105 at 100	—	—		2
2N3013	—	360	350	—	40	—	—	75 at 30	—	—		2
2N2368	—	360	400	—	15	—	—	40 at 10	—	—	High speed saturated switching	2
2N834A	—	360	500	—	15	—	—	25‡ at 10	—	—		2
2N2369	—	360	500	—	15	—	—	80 at 10	—	—		2
2N2369A	—	360	500	—	15	—	—	80 at 10	—	—		2
2N709A	—	360	800	—	6	—	—	60 at 10	—	—		2
BC377	—	375	—	50	—	—	1A	172 at 100	—	—	Audio driver	2
BC378	—	375	—	30	—	—	1A	172 at 100	—	—		2
BC394	—	400	—	120	120	—	200	90 at 10	—	—	Video amplifiers	2
2N718	—	400	50	—	28	—	—	80 at 150	—	—		2
2N718A	—	500	60	—	50	—	—	80 at 150	—	—		2
2N956	—	500	70	—	32	—	—	200 at 150	—	—		2
2N2221	—	500	250	—	30	—	—	80 at 150	—	—	General purpose amplifiers	2
2N2221A	—	500	250	—	40	—	—	80 at 150	—	—		2
2N2222	—	500	250	—	30	—	—	200 at 150	—	—		2
2N2222A	—	500	300	—	40	—	—	200 at 150	—	—		2
2N2475	—	500	600	—	6	—	—	90 at 20	—	—	High speed switching	2
2N1990	—	600	—	—	60	—	—	20‡ at 30	—	—		2
2N696	—	600	40	—	40	—	—	40 at 150	—	—		2
2N1986	—	600	40	—	25	—	—	150 at 150	—	—		2
2N1987	—	600	40	—	25	—	—	50 at 150	—	—	General purpose amplifiers	2
2N697	—	600	50	—	40	—	—	80 at 150	—	—		2
2N699	—	600	50	—	80	—	—	80 at 150	—	—		2
2N1420	—	600	50	—	28	—	—	200 at 150	—	—		2
2N3303	—	600	450	—	12	—	—	75 at 300	—	—	High speed saturated switching	2
2N3426	—	600	450	—	12	—	—	75 at 300	—	—		2
BC119	—	800	—	60	—	—	1A	80 at 150	—	—	Audio output	2
BC120	—	800	—	60	—	—	1A	20‡ at 150	—	—		2
BC140	—	800	—	80	—	—	1A	140 at 100	—	—	General purpose	2
BC141	—	800	—	100	—	—	1A	140 at 100	—	—		2
BC288	—	800	—	80	—	—	2A	115 at 2A	—	—	Audio output	2
BC323	—	800	—	100	60	—	5A	160 at 500	—	—	TV frame output	2
2N698	—	800	40	—	60	—	—	40 at 150	—	—		2
2N1893	—	800	50	—	80	—	—	80 at 150	—	—		2
2N2049	—	800	50	—	50	—	—	200 at 150	—	—		2
2N1890	—	800	60	—	60	—	—	200 at 150	—	—		2
2N2297	—	800	60	—	35	—	—	80 at 150	—	—		2
2N3108	—	800	60	—	60	—	—	80 at 150	—	—		2
2N3110	—	800	60	—	40	—	—	80 at 150	—	—		2
2N657	—	800	70	—	100	—	—	80 at 200	—	—		2
2N1711	—	800	70	—	50	—	—	200 at 150	—	—		2
2N1889	—	800	70	—	60	—	—	80 at 150	—	—	General purpose amplifiers	2
2N3107	—	800	70	—	60	—	—	200 at 150	—	—		2
2N3109	—	800	70	—	40	—	—	200 at 150	—	—		2
2N1613	—	800	80	—	50	—	—	80 at 150	—	—		2
2N3020	—	800	80	—	80	—	—	80 at 150	—	—		2
2N3019	—	800	100	—	80	—	—	200 at 150	—	—		2
2N2218	—	800	250	—	30	—	—	80 at 150	—	—		2
2N2218A	—	800	250	—	40	—	—	80 at 150	—	—		2
2N2219	—	800	250	—	30	—	—	200 at 150	—	—		2
2N3299	—	800	250	—	30	—	—	80 at 150	—	—		2
2N3300	—	800	250	—	30	—	—	200 at 150	—	—		2
2N4046	—	800	250	—	30	—	—	95 at 100	—	—	High speed saturated switching	2
2N4047	—	800	250	—	50	—	—	95 at 100	—	—		2
2N2219A	—	800	300	—	40	—	—	200 at 150	—	—	General purpose	2

Continued

Silicon NPN Transistors

Type	Construction	P_C Max. (mW)	Typical f_T or *f_1 † f_{ab} (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or *h_{fe})	Max I_{CBO} at V_{CB} µA	V	Application	Base Ref.
SGS-ATES *(Continued)*												
Current Types (Continued)												
2N3724	—	800	300	—	30	—	—	105 at 100	—	—	High speed saturated switching	2
2N3725	—	800	300	—	50	—	—	105 at 100	—	—		2
BC300	—	850	—	120	—	—	1A	140 at 150	—	—	Audio driver	2
BC301	—	850	—	90	—	—	1A	140 at 150	—	—		2
BC302	—	850	—	60	—	—	1A	140 at 150	—	—		2
2N699B	—	870	60	—	80	—	—	80 at 150	—	—	General purpose	2
BC440	—	1W	—	50	—	—	2A	145 at 500	—	—		2
BC441	—	1W	—	75	—	—	2A	145 at 500	—	—		2
BF257	—	1W	—	160	160	—	200	83 at 30	—	—	Video output	2
BF258	—	1W	—	250	250	—	200	83 at 30	—	—		2
BF259	—	1W	—	300	300	—	200	83 at 30	—	—		2
2N3253	—	1W	175	—	40	—	—	25‡ at 150	—	—	High speed switching	2
2N5109	—	2.5W	200	—	20	—	—	— —	—	—	R.F. amps./osc.	2
BUY47	P	7W	90	150	120	—	10A	130 at 2A	—	—	High voltage switching	2
BUY48	P	7W	90	200	170	—	10A	130 at 2A	—	—		2
BU125	P	7W	100	130	60	—	5A	70 at 5A	—	—	TV line output	2
BUY68	P	7W	100	100	60	—	5A	70 at 5A	—	—	General purpose	2
BUY24	P	15W	100	120	60	—	5A	40 at 5A	—	—	Power switching	1
BD215	tDM	21.5W	—	500	300	—	500	150 at 500	—	—	Audio amplifiers	1
BD216	tDM	21.5W	—	300	200*	—	1A	95 at 100	—	—		1
BD162	H	23W	—	40	20	—	4A	110 at 500	—	—		1
BD163	H	23W	—	60	50	—	4A	102 at 500	—	—		1
BUY46	H	24W	—	90	55	—	4A	62 at 500	—	—		1
BD375	P	25W	—	50	45	—	2A	90 at 1A	—	—	Switching	51
BD377	P	25W	—	75	60	—	2A	90 at 1A	—	—		51
BD379	P	25W	—	100	80	—	2A	100 at 500	—	—		51
BD117	P	30W	50	100	60	—	5A	70 at 5A	—	—		1
BD281	E	36W	—	22	22	—	4A	40‡ at 3A	—	—	Audio amplifiers	51
BD283	E	36W	—	32	32	—	4A	30‡ at 3A	—	—		51
BD285	E	36W	—	45	45	—	4A	20‡ at 3A	—	—		51
BD433	E	36W	—	22	22	—	4A	40‡ at 3A	—	—		51
BUY18	P	62W	50	300	150	—	10A	30‡ at 1A	—	—	Switching	1
BU127	P	62W	70	200	120	—	10A	25 at 7A	—	—	General purpose	1
BU102	P	62W	80	400	150	—	7A	25 at 7A	—	—	TV line	1
BU128	P	62W	80	300	200	—	10A	25 at 7A	—	—	General purpose	1
BD111A	P	62W	100	60	60	—	10A	40 at 5A	—	—	TV frame	1
BU100A	P	62W	100	150	100	—	10A	40 at 5A	—	—	TV line	1
BD663A	H	75W	—	—	40	—	10A	10‡ at 4A	—	—	General purpose	52
BD663B	H	75W	—	—	40	—	10A	10‡ at 4A	—	—		52
BDX70 / 2N6098	H	75W	—	70	60	—	10A	50 at 4A	—	—		52
BDX71 / 2N6099	H	75W	—	70	60	—	10A	50 at 4A	—	—		52
BDX72 / 2N6100	H	75W	—	80	70	—	10A	50 at 5A	—	—		52
BDX73 / 2N6101	H	75W	—	80	70	—	10A	50 at 5A	—	—		52
BD120	tDM	100W	—	400	200	—	15A	65 at 1A	—	—	Choppers	1
BD121	tDM	100W	—	400	—	—	15A	60 at 1A	—	—	TV line	1
BD122	tDM	100W	—	330	—	—	10A	— —	—	—		1
BDX12 / 2N4347	H	100W	—	140	120	—	5A	45 at 2A	—	—	Switching	1
BD141	H	117W	—	140	120	—	8A	45 at 2A	—	—	Audio amplifiers	1
BD142	H	117W	—	50	45	—	15A	86 at 4A	—	—		1
BDX10 / 2N3055	H	117W	—	100	60	—	15A	45 at 4A	—	—	General purpose	1
BDX11 / 2N3442	H	117W	—	160	140	—	10A	45 at 3A	—	—	Switching	1
BDX13 / 40251	H	117W	—	50	40	—	15A	37 at 8A	—	—	Audio amplifiers	1

Continued

Type	Construction	P_C Max. (mW)	Typical f_T or $^{\circ}f_1$ † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or $^{\circ}h_{fe}$)	Max I_{CBO} at V_{CB} μA	V	Application	Base Ref.
SGS-ATES (*Continued*)												
Current Types (Continued)												
BDX23 / 40636	H	117W	—	—	95	—	15A	135 at 500	—	—	Audio amplifiers	1
2N3055C	H	117W	—	80	60	—	15A	86 at 4A	—	—		1
BDX60 / 2N3055U	H	150W	—	100	80	—	15A	45 at 4A	—	—	General purpose	1
BDX61 / 2N3055V	H	150W	—	80	60	—	20A	45 at 4A	—	—		1
			‡ Minimum value									
TEXAS												
Current Types												
BD150A	—	—	—	300	220	6	500	20‡ at 40	—	—		2
BD150B	—	—	—	250	150	6	500	20‡ at 40	—	—	Line drivers	2
BD150C	—	—	—	200	150	6	500	20‡ at 40	—	—		2
2N3634	—	—	—	140	140	5	1A	100 at 50	—	—		2
2N3635	—	—	—	140	140	5	1A	200 at 300	—	—		2
2N3636	—	—	—	175	175	5	1A	100 at 50	—	—	High voltage amplifiers	2
2N3637	—	—	—	175	175	5	1A	200 at 300	—	—		2
BC142	—	—	40	80	60	5	800	20‡ at 200	—	—		2
BFT54	—	—	50	60	30	6	1A	40‡ at 150	—	—		2
BFT55	—	—	50	40	20	6	1A	60‡ at 150	—	—	High current amplifiers	2
BFT53	—	—	60	80	35	6	1A	30‡ at 150	—	—		2
BF336	—	—	80	185	180	5	100	20‡ at 30	—	—		2
BF337	—	—	80	250	200	5	100	20‡ at 30	—	—	High voltage amplifiers	2
BF338	—	—	80	300	225	5	100	20‡ at 30	—	—		2
2N4107	—	—	90	60	60	10	50	500‡ at 1	—	—	General purpose	2
BC312	—	—	100	100	100	5	150	40‡ at 1	—	—	High voltage amplifiers	2
BFT29	—	—	100	90	80	5	1A	150 at 100	—	—		2
BFT30	—	—	100	70	60	5	1A	162 at 100	—	—	High current amplifiers	2
BFT31	—	—	100	60	50	5	1A	200 at 100	—	—		2
BFT32	—	—	100	80	60	5	3A	175 at 150	—	—		2
BFT33	—	—	100	100	80	5	3A	150 at 150	—	—	High current amps. &	2
BFT34	—	—	100	120	100	5	3A	125 at 150	—	—	switches	2
BFT39	—	—	100	90	80	5	1A	150 at 100	—	—		2
BFT40	—	—	100	70	60	5	1A	162 at 100	—	—	High current amplifiers	2
BFT41	—	—	100	60	50	5	1A	200 at 100	—	—		2
BFT57	—	—	110	160	160	5	200	25‡ at 30	—	—		2
BFT58	—	—	110	250	250	5	200	25‡ at 30	—	—	High voltage amplifiers	2
BFT59	—	—	110	300	300	5	200	25‡ at 30	—	—		2
BC300	—	—	120	120	80	7	1A	140 at 150	—	—		2
BC301	—	—	120	90	60	7	1A	140 at 150	—	—	High current amplifiers	2
BC302	—	—	120	60	45	7	1A	140 at 150	—	—		2
BF177	—	—	120	115	60	5	100	20‡ at 15	—	—		2
BF178	—	—	120	160	115	5	100	20‡ at 20	—	—	High voltage amplifiers	2
BF179	—	—	120	250	115	5	100	20‡ at 20	—	—		2
BCW34	—	—	150	60	45	5	600	100‡ at 10	—	—	Low level amplifiers	2
2N4252	—	—	600	30	18	4	50	50‡ at 2	—	—	H.F.	9
2N5253	—	—	600	30	18	4	50	90 at 2	—	—		9
TIS62	P	200	—	30	12	3	30	20‡ at 4	0.1	10		24
TIS63	P	200	—	30	12	3	30	20‡ at 4	0.1	10	A.M./F.M. receivers	24
TIS64	P	200	—	30	12	3	30	20‡ at 4	0.1	10		24
2N3114	P	200	—	150	150	5	200	75 at 30	0.01	100	V.H.F. amplifiers	2
2N3570	PE	200	—	30	15	3	50	85 at 5	0.01	6		20
2N3571	PE	200	—	25	15	3	50	110 at 5	0.01	6	U.H.F./V.H.F.	20
2N3572	PE	200	—	25	13	3	50	160 at 5	0.01	6		20
2N3826	P	200	—	60	45	4	30	100 at 10	0.1	30		24
2N3827	P	200	—	60	45	4	30	250 at 30	0.1	30	A.M./F.M.	24
2N3832	PE	200	—	15	6	4	35	75 at 2	—	—	High speed switching	20
2N918	PE	200	600	30	15	3	50	20‡ at 3	—	—	H.F. amplifiers	20

Continued

Silicon NPN Transistors

Type	Construction	P_C Max. (mW)	Typical f_T or $^{\circ}f_t$ + fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or $^{\circ}h_{fe}$)	Max I_{CBO} at V_{CB} μA	V	Application	Base Ref.
TEXAS (*Continued*)												
Current Types (*Continued*)												
2N2865	PE	200	600	25	3	3	50	20‡ at 4	—	—	H.F. amplifiers	2
TIS84	P	250	—	40	30	4	50	30‡ at 4	0.05	10	Tuner R.F. amplifiers	24
TIS85	P	250	—	40	30	4	50	25‡ at 4	0.05	10	I.F. amplifiers	24
2N3707	P	250	—	30	30	6	30	250 at 0.1	0.1	20	Low noise amplifiers	24
2N3708	P	250	—	30	30	6	30	358 at 1	0.1	20	General purpose	24
2N3709	P	250	—	30	30	6	30	105 at 1	0.1	20		24
2N3710	P	250	—	30	30	6	30	210 at 1	0.1	20		24
2N3711	P	250	—	30	30	6	30	420 at 1	0.1	20		24
BF595	—	250	200	30	20	—	30	80 at 1	—	—	I.F. amplifiers	24
2N3825	PE	250	200	30	15	4	100	20‡ at 2	0.1	15	A.M. receivers	24
BF594	—	250	260	30	20	—	30	142 at 1	—	—	I.F. amplifiers	24
TIS60	PE	300	—	40	25	5	400	160 at 50	0.1	20	General purpose	24
TIS60M	PE	300	—	40	25	5	400	160 at 50	0.1	20		24
2N4010	P	300	—	60	60	10	50	500‡ at 1	0.01	45		2
2N2432	PE	300	20	30	30	15	100	50‡ at 1	—	—	Choppers	2
2N929	P	300	30	45	45	5	30	40‡ at 0.01	—	—	Low level, low noise amps.	2
2N930	P	300	30	45	45	5	30	100‡ at 0.01	—	—		2
2S501	P	300	30	25	25	5	30	40‡ at 0.01	—	—		2
2S502	P	300	30	25	25	5	30	100‡ at 0.01	—	—		2
2S503	P	300	30	25	25	5	30	180‡ at 0.01	—	—		2
BC182	PE	300	150	60	50	5	200	290 at 2	0.015	50		2
BC183	PE	300	150	45	30	5	200	475 at 2	0.015	30		2
BC184	PE	300	150	45	30	5	200	250‡ at 2	0.015	30		2
BC107	PE	300	225	45	45	5	100	310 at 2	0.015	45		2
BC108	PE	300	225	20	20	5	100	310 at 2	0.015	20		2
BC109	PE	300	225	20	20	5	100	570 at 2	0.015	20		2
2N3117	P	360	—	60	60	6	50	400‡ at 1	0.01	45	Low level amplifiers	2
2N2483	P	360	—	60	60	6	50	175‡ at 1	0.01	45	Low level, low noise amps.	2
2N2484	P	360	—	60	60	6	50	250‡ at 1	0.01	45		2
2N5399	PE	360	—	25	15	2	100	60 at 15	0.01	15	V.H.F./U.H.F. amplifiers	2
BF237	PE	360	80	45	30	4	30	30‡ at 1	0.1	20	General purpose	24
BF238	PE	360	80	45	30	4	30	70‡ at 1	0.1	20		24
2N3704	PE	360	100	50	30	5	800	200 at 50	0.1	20	Audio amplifiers	24
2N3705	PE	360	100	50	30	5	800	100 at 50	0.1	20		24
2N3706	PE	360	100	40	20	5	800	315 at 50	0.1	20		24
BF596	—	360	400	40	30	—	30	26‡ at 4	—	—	Video I.F. amplifiers	24
BF597	—	360	550	40	25	—	30	38‡ at 7	—	—		24
TIS86	PE	400	—	30	30	4	50	120 at 4	0.1	15	Mixer	24
TIS87	PE	400	—	45	45	4	50	90 at 12	0.1	15	I.F. amplifier	24
2N717	DDP	400	30	60	40	5	—	40 at 150	1	30	Amps./osc.	2
2N718	DDP	400	30	60	40	5	—	80 at 150	1	30		2
2N719	DDP	400	30	120	80	5	—	40 at 150	2	60		2
2N720	DDP	400	30	120	80	5	—	80 at 150	2	60		2
2S731	P	400	30	30	30	3	50	20*‡ at 5	—	—	H.F. amplifiers	2
2S732	P	400	30	30	30	3	50	40*‡ at 5	—	—		2
2S733	P	400	30	30	30	3	50	80*‡ at 5	—	—		2
2S102	P	400	150	60	60	4.5	50	20*‡ at 5	—	—		2
2S103	P	400	150	60	60	4.5	50	40*‡ at 5	—	—		2
2S104	P	400	150	60	60	4.5	50	80*‡ at 5	—	—		2
BFW31	PE	500	—	50	30	5	700	270* at 10	0.5	30	General purpose	2
2N720A	DDP	500	30	120	100	7	—	80 at 150	0.01	90	Amps./osc.	2
2N731	DDP	500	30	60	40	5	1A	80 at 150	1	30		2
2N870	DDP	500	30	100	80	7	—	80 at 150	0.01	75		2
2N871	DDP	500	30	100	80	7	—	200 at 150	0.01	75		2
2N956	DDP	500	30	75	50	7	—	200 at 150	0.01	60		2
2N2220	PE	500	250	60	30	5	800	20‡ at 150	—	—	H.F. medium power	2
2N2221A	PE	500	250	60	30	5	800	40‡ at 150	—	—		2
2N2222	PE	500	250	60	30	5	800	100‡ at 150	—	—		2
2N2539	PE	500	250	60	30	5	800	50*‡ at 150	—	—		2
2N2540	PE	500	250	60	30	5	800	100*‡ at 150	—	—		2

Continued

Type	Construction	P_C Max. (mW)	Typical f_T or *f_1 † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or *h_{fe})	Max I_{CBO} at V_{CB} μA	V	Application	Base Ref.
TEXAS (*Continued*)												
Current Types (*Continued*)												
2N2222A	PE	500	300	75	40	6	800	200 at 150	0.01	60	General purpose	2
2N3303	PE	600	—	25	12	4	1A	75 at 300	—	—	Fast switching	2
2N699	DDP	600	30	120	80	5	—	80 at 150	2	60	Amps./osc.	2
2N1420	DDP	600	30	60	30	5	1A	200 at 150	1	30		2
2N696	P	600	40	60	40	5	500	20‡ at 150	—	—	Medium power	2
2N697	P	600	50	60	40	5	500	40 at 150	—	—		2
TIS90	PE	625	—	40	40	5	400	160 at 50	0.1	20	General purpose	24
TIS90M	PE	625	—	40	40	5	400	160 at 50	0.1	20		24
TIS92	PE	625	—	40	40	5	400	160 at 50	0.1	20		24
TIS92M	PE	625	—	40	40	5	400	160 at 50	0.1	20		24
BSS34	—	625	90	100	80	—	200	50‡ at 10	—	—	Indicator tube driver	24
BSS35	—	625	90	120	100	—	200	40‡ at 10	—	—		24
BFY50	PE	800	—	80	80	6	1A	— —	0.05	60	General purpose	2
BFY51	PE	800	—	60	60	6	1A	— —	0.05	40		2
BFY52	PE	800	—	40	40	6	1A	— —	0.05	30		2
2N3036	PE	800	—	120	80	7	1.2A	100 at 150	0.01	60		2
2N3418	PE	800	—	85	60	8	3A	40 at 1A	—	—		2
2N3419	PE	800	—	125	80	8	3A	40 at 1A	—	—	General purpose	2
2N3420	PE	800	—	85	60	8	3A	80 at 1A	—	—		2
2N3421	PE	800	—	125	80	8	3A	80 at 1A	—	—		2
2N3724	PE	800	—	50	30	6	500	35‡ at 500	1.7	40	High speed switching	2
2N3725	PE	800	—	80	50	6	500	35‡ at 500	1.7	40		2
2N1714	tDM	800	16	—	60	6	750	40 at 200	—	—		2
2N1715	tDM	800	16	—	100	6	750	40 at 200	—	—		2
2N1716	tDM	800	16	—	60	6	750	80 at 200	—	—		2
2N1717	tDM	800	16	—	100	6	750	80 at 200	—	—		2
2N1718	tDM	800	16	—	60	6	750	40 at 200	—	—	H.F.	16
2N1719	tDM	800	16	—	100	6	750	40 at 200	—	—		16
2N1720	tDM	800	16	—	60	6	750	80 at 200	—	—		16
2N1721	tDM	800	16	—	100	6	750	80 at 200	—	—		16
2N698	P	800	40	120	80	7	500	20‡ at 150	—	—	Medium power	2
2N1507	DDP	800	50	60	30	5	1A	100‡ at 150	—	—		2
2N1889	DDP	800	50	100	60	7	500	40‡ at 150	—	—		2
2N1893	DDP	800	50	120	80	7	500	40‡ at 150	—	—		2
2N2192	PE	800	50	60	40	5	1A	100‡ at 150	—	—		2
2N2192A	PE	800	50	60	40	5	1A	100‡ at 150	—	—		2
2N2193	PE	800	50	80	50	8	1A	40‡ at 150	—	—		2
2N2193A	PE	800	50	80	50	8	1A	40‡ at 150	—	—	Medium power	2
2N2194	PE	800	50	60	40	5	1A	20‡ at 150	—	—		2
2N2194A	PE	800	50	60	40	5	1A	20‡ at 150	—	—		2
2N2243	PE	800	50	120	80	7	1A	20‡ at 150	—	—		2
2N2243A	PE	800	50	120	80	7	1A	40‡ at 150	—	—		2
2N3036	PE	800	50	120	80	7	1.2A	50‡ at 150	—	—		2
2N1613	DDP	800	60	75	50	7	500	40‡ at 150	—	—		2
2N1890	DDP	800	60	100	60	7	500	100‡ at 150	—	—	Medium power	2
2N1711	DDP	800	60	75	50	7	1A	100‡ at 150	—	—		2
BFR39	—	800	100	90	80	—	1A	30‡ at 150	—	—		24
BFR40	—	800	100	70	60	—	1A	40‡ at 150	—	—	General purpose	24
BFR41	—	800	100	60	50	—	1A	60‡ at 150	—	—		24
BF257	PE	800	110	160	160	5	100	25‡ at 30	0.05	100		2
BF258	PE	800	110	250	250	5	100	25‡ at 30	0.05	200	Video amplifiers	2
BF259	PE	800	110	300	300	5	100	25‡ at 30	0.05	250		2
BFR86	—	800	130	120	120	—	400	20‡ at 30	—	—		24
BFR87	—	800	130	160	160	—	400	20‡ at 30	—	—	Video output	24
BFR88	—	800	130	250	250	—	400	20‡ at 30	—	—		24
BFR89	—	800	130	300	300	—	400	20‡ at 30	—	—		24
2N2217	PE	800	250	60	30	5	800	20‡ at 150	—	—		2
2N2218	PE	800	250	60	30	5	800	40‡ at 150	—	—		2
2N2218A	PE	800	250	75	40	6	800	80 at 150	0.01	60	H.F.	2
2N2219	PE	800	250	60	30	5	800	100‡ at 150	—	—		2
2N2219A	PE	800	250	75	40	6	800	200 at 150	0.01	60		2

Continued

Silicon NPN Transistors

Type	Construction	P_C Max. (mW)	Typical f_T or $^*f_1$ † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or $^*h_{fe}$)	Max I_{CBO} at V_{CB} µA	V	Application	Base Ref.
TEXAS (*Continued*)												
Current Types (*Continued*)												
2N2537	PE	800	250	60	30	5	800	50‡ at 150	—	—	H.F.	2
2N2538	PE	800	250	60	30	5	800	100‡ at 150	—	—		2
2N2883	PE	800	500	40	20	4	300	20‡ at 100	—	—	U.H.F./V.H.F. amps./	2
2N2884	PE	800	500	40	20	4	300	20‡ at 100	—	—	osc.	2
2N3275A	PE	1W	—	80	50	6	1.2A	35‡ at 500	0.5	60		2
2N3830	PE	1W	—	80	50	5	1.2A	30‡ at 500	—	—	High speed switching	2
2N3831	PE	1W	—	70	40	5	1.2A	35‡ at 500	—	—		2
2N5058	PE	1W	—	300	300	7	150	90 at 30	0.05	100	TV line scan	2
2N5059	PE	1W	—	250	250	6	150	90 at 30	0.05	100		2
2N3444	PE	1W	150	80	50	5	1A	40 at 500	0.5	60		2
2N3253	PE	1W	175	75	40	5	1A	50 at 500	0.5	60		2
2N3252	PE	1W	200	60	30	5	1A	60 at 500	0.5	40	High speed switching	2
2N5413	PE	1W	250	60	40	6	2A	60 at 2A	1	40		2
2N5414	PE	1W	250	80	50	6	2A	60 at 2A	1	40		2
2N3996	PE	2W	—	100	80	8	5A	80 at 1A	—	—		26
2N3997	PE	2W	—	100	80	8	5A	160 at 1A	—	—	High speed power	26
2N3998	PE	2W	—	100	80	8	5A	80 at 1A	—	—	switching	25
2N3999	PE	2W	—	100	80	8	5A	160 at 1A	—	—		25
TIP29	D	2W	3	40	40	5	1A	120 at 200	—	—		51
TIP29A	D	2W	3	60	60	5	1A	120 at 200	—	—		51
TIP31	D	2W	3	40	40	5	3A	60 at 1A	—	—	General purpose	51
TIP31A	D	2W	3	60	60	5	3A	60 at 1A	—	—		51
2N4301	PE	3.5W	—	100	80	8	10A	75 at 5A	—	—	Power amplifiers	27
TIP33	D	3.5W	3	40	40	5	10A	75 at 1A	—	—		51
TIP33A	D	3.5W	3	60	60	5	10A	75 at 1A	—	—		51
TIP35	D	3.5W	3	40	40	5	25A	60 at 5A	—	—	General purpose	51
TIP35A	D	3.5W	3	60	60	5	25A	60 at 5A	—	—		51
2N5387	tDM	3.5W	15†	200	200	10	7.5A	60 at 2A	—	—		27
2N5388	tDM	3.5W	15†	250	250	10	7.5A	60 at 2A	—	—	Power amplifiers	27
2N5389	tDM	3.5W	15†	300	300	10	7.5A	60 at 2A	—	—		27
TIP541	—	4W	—	—	45	—	2A	120 at 1A	—	—	General purpose	2
2N4002	PE	4W	—	100	80	8	30A	50 at 15A	—	—		27
2N4003	PE	4W	—	120	100	8	30A	50 at 15A	—	—		27
2N3713	DM	4W	0.03†	80	60	7	10A	50 at 1A	—	—	Power amps &	1
2N3714	DM	4W	0.03†	100	80	7	10A	50 at 1A	—	—	switching	1
2N3715	DM	4W	0.03†	80	60	7	10A	100 at 1A	—	—		1
2N3716	DM	4W	0.03†	100	80	7	10A	100 at 1A	—	—		1
2S033	tDM	4W	25	100	75	8	3A	65 at 1A	2	80		1
2S034	tDM	4W	25	100	75	8	3A	130 at 1A	2	80	High level amps &	1
2S035	tDM	4W	25	150	100	8	3A	65 at 1A	2	120	switching	1
2S036	tDM	4W	25	150	100	8	3A	130 at 1A	2.	120		1
BFX34T	PE	5W	70	120	60	—	5A	95 at 2A	—	—		2
TIP501	—	6W	—	—	40	—	3A	102 at 1A	—	—		2
TIP502	—	6W	—	—	60	—	3A	102 at 1A	—	—		2
BC429	—	6W	100	45	45	5	1A	105 at 150	—	—		65
BC429A	—	6W	100	60	60	5	1A	105 at 150	—	—		65
BD135	—	6.5W	50	45	45	5	1.5A	145 at 150	—	—		65
BD137	—	6.5W	50	60	60	5	1.5A	100 at 150	—	—		65
BD139	—	6.5W	50	80	80	5	1.5A	100 at 150	—	—	General purpose	65
2N5148	—	7W	—	—	80	—	2A	60 at 1A	—	—		2
2N5150	—	7W	—	—	80	—	2A	135 at 1A	—	—		2
BF456	—	7W	65	160	160	5.5	100	40‡ at 30	—	—		65
BF457	—	8W	90	160	160	5	100	25‡ at 30	—	—		65
BF458	—	8W	90	250	250	5	100	25‡ at 30	—	—		65
BF459	—	8W	90	300	300	5	100	25‡ at 30	—	—		65
BU105	tD	10W	1.1	1,500	—	—	2.5A	— —	—	—	High voltage	1
2N5152	—	11.7W	—	—	80	—	2A	60 at 2.5A	—	—	General purpose	2
2N5154	—	11.7W	—	—	80	—	2A	135 at 2.5A	—	—		2
BU108	tD	12.5W	1.2	1,500	—	—	5A	— —	—	—	High voltage	1
2N4300	tD	15W	—	—	30	—	2A	75 at 1A	—	—	General purpose	2
BDY65	tD	15W	30	150	100	—	1A	175 at 200	—	—		2

Continued

Type	Construction	P_C Max. (mW)	Typical f_T or $^*f_1$ + fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or $^*h_{fe}$)	Max I_{CBO} at V_{CB} µA	V	Application	Base Ref.
TEXAS (*Continued*)												
Current Types (*Continued*)												
BDY66	—	15W	30	150	100	—	1A	175 at 200	—	—		2
BUY41	PE	15W	40	125	80	—	3A	170 at 1A	—	—		2
BD400	tD	15W	90	170	100	7	1A	40‡ at 500	—	—		65
TIP503	—	20W	—	—	120	—	2A	120 at 1A	—	—		1
TIP504	—	20W	—	—	150	—	2A	120 at 1A	—	—		1
TIP505	—	20W	—	—	120	—	2A	120 at 1A	—	—		25
TIP506	—	20W	—	—	150	—	2A	120 at 1A	—	—		25
TIP530	—	20W	—	—	300	—	3A	75 at 1.5A	—	—		1
2N5938	—	20W	—	—	50	—	4A	90 at 1A	—	—		38
BD410	—	20W	90	500	325	6	1A	135 at 50	—	—		65
BUY40	PE	30W	—	100	80	—	5A	140 at 1A	—	—		25
TIP509	—	30W	—	—	120	—	4A	120 at 2A	—	—	General purpose	1
TIP510	—	30W	—	—	150	—	4A	120 at 2A	—	—		1
TIP511	—	30W	—	—	120	—	4A	120 at 2A	—	—		27
TIP512	—	30W	—	—	150	—	4A	120 at 2A	—	—		27
2N2150	—	30W	—	—	80	—	2A	40 at 1A	—	—		25
2N2151	—	30W	—	—	80	—	2A	80 at 1A	—	—		25
2N2880	—	30W	—	—	70	—	5A	80 at 1A	—	—		25
BD461	—	30W	50	35	30	6	4A	40‡ at 2A	—	—		65
BD463	—	30W	50	35	30	6	4A	30‡ at 2A	—	—		65
2N4240	—	35W	—	—	300	—	2A	55 at 750	—	—		1
2N4998	—	35W	—	—	80	—	2A	60 at 1A	—	—		25
2N5000	—	35W	—	—	80	—	2A	135 at 1A	—	—		25
TIP47	—	40W	—	—	250	—	1A	90 at 300	—	—		99
TIP48	—	40W	—	—	300	—	1A	90 at 300	—	—	High voltage	99
TIP49	—	40W	—	—	350	—	1A	90 at 300	—	—		99
TIP50	—	40W	—	—	400	—	1A	90 at 300	—	—		99
TIP542	—	40W	—	—	45	—	10A	120 at 5A	—	—		27
TIP543	—	40W	—	—	65	—	10A	120 at 5A	—	—		27
2N3551	—	40W	—	—	60	—	12A	55 at 10A	—	—		—
2N3552	—	40W	—	—	80	—	12A	55 at 10A	—	—	General purpose	—
2N4004	—	40W	—	—	80	—	20A	90 at 10A	—	—		—
2N4005	—	40W	—	—	100	—	20A	90 at 10A	—	—		—
2N5939	—	40W	—	—	80	—	10A	120 at 5A	—	—		25
2N5940	—	40W	—	—	70	—	10A	120 at 5A	—	—		25
BUY71	tD	40W	0.3	—	2,200	—	1.5A	— —	—	—	High voltage	1
2N4301	—	50W	—	—	80	—	10A	75 at 5A	—	—	General purpose	27
BD253C	tD	50W	2	900	400	—	4A	15‡ at 1A	—	—		1
BD253	tD	50W	2.5	350	200	—	4A	15‡ at 1A	—	—	High voltage	1
BD253A	tD	50W	2.5	500	250	—	4A	15‡ at 1A	—	—		1
BD253B	tD	50W	2.5	700	300	—	4A	15‡ at 1A	—	—		1
BDY63	PE	50W	40	100	80	—	10A	90 at 5A	—	—		27
2N5002	—	58W	—	—	80	—	5A	60 at 2.5A	—	—		25
2N5004	—	58W	—	—	80	—	5A	135 at 2.5A	—	—		25
TIP525	—	60W	—	—	200	—	5A	90 at 2.5A	—	—		1
TIP526	—	60W	—	—	200	—	5A	90 at 2.5A	—	—		27
TIP41	—	65W	3	40	40	5	6A	15‡ at 3A	—	—	General purpose	99
TIP41A	—	65W	3	60	60	5	6A	15‡ at 3A	—	—		99
TIP41B	—	65W	3	80	80	5	6A	15‡ at 3A	—	—		99
TIP41C	—	65W	3	100	100	5	6A	15‡ at 3A	—	—		99
TIP529	—	67W	—	—	300	—	3A	75 at 1.5A	—	—		27
BUY70A	tD	75W	1	1,000	—	—	10A	15‡ at 1A	—	—		1
BUY70B	tD	75W	1	800	—	—	10A	15‡ at 1A	—	—	High voltage	1
BUY70C	tD	75W	1	500	—	—	10A	15‡ at 1A	—	—		1
TIP515	—	80W	—	—	120	—	12A	120 at 6A	—	—		1
TIP516	—	80W	—	—	150	—	12A	120 at 6A	—	—		27
TIP517	—	80W	—	—	120	—	12A	120 at 6A	—	—		1
TIP518	—	80W	—	—	150	—	12A	120 at 6A	—	—	General purpose	27
2N3263	—	83W	—	—	60	—	25A	37 at 15A	—	—		—
2N3264	—	83W	—	—	90	—	25A	50 at 15A	—	—		—
2S721	tDM	85W	3	60	30	—	2A	40 at 1A	—	—		13

Continued

Silicon NPN Transistors

Type	Construction	P_C Max. (mW)	Typical f_T or $^*f_t$ † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or $^*h_{fe}$)	Max I_{CBO} at V_{CB} µA	V	Application	Base Ref.
TEXAS (*Continued*)												
Current Types (*Continued*)												
2S722	tDM	85W	3	100	60	—	2A	40 at 1A	—	—		13
2S723	tDM	85W	3	60	30	—	2A	80 at 1A	—	—		13
2S724	tDM	85W	3	100	60	—	2A	80 at 1A	—	—		13
2N4913	—	87W	—	—	40	—	5A	62 at 2.5A	—	—	General purpose	1
2N4914	—	87W	—	—	60	—	5A	62 at 2.5A	—	—		1
2N4915	—	87W	—	—	80	—	5A	62 at 2.5A	—	—		1
TIP3055	—	90W	3	100	70	7	15A	45 at 4A	—	—		4
TIP51	—	100W	—	—	250	—	3A	90 at 300	—	—		4
TIP52	—	100W	—	—	300	—	3A	90 at 300	—	—	High voltage	4
TIP53	—	100W	—	—	350	—	3A	90 at 300	—	—		4
TIP54	—	100W	—	—	400	—	3A	90 at 300	—	—		4
TIP535	—	100W	—	—	200	—	7.5A	60 at 5A	—	—		1
TIP536	—	100W	—	—	300	—	7.5A	60 at 5A	—	—		1
TIP537	—	100W	—	—	400	—	7.5A	60 at 5A	—	—		1
2N3902	—	100W	—	—	400	—	2.5A	60 at 1A	—	—		1
2N4002	—	100W	—	—	80	—	30A	50 at 15A	—	—	General purpose	27
2N4003	—	100W	—	—	100	—	30A	50 at 15A	—	—		27
2N5157	—	100W	—	—	500	—	3.5A	60 at 1A	—	—		1
2N6128	—	100W	—	—	80	—	10A	75 at 5A	—	—		27
BUY69A	tD	100W	1	1,000	—	—	10A	15‡ at 2.5A	—	—		1
BUY69B	tD	100W	1	800	—	—	10A	15‡ at 2.5A	—	—	High voltage	1
BUY69C	tD	100W	1	500	—	—	10A	15‡ at 2.5A	—	—		1
2S024	tDM	100W	10	100	32	—	7.5A	20‡ at 2A	—	—		13
2S025	tDM	100W	10	150	60	—	7.5A	20‡ at 2A	—	—		13
2S026	tDM	100W	10	200	100	—	7.5A	20‡ at 2A	—	—		13
BDY64	PE	100W	30	100	80	—	30A	60 at 15A	—	—		27
TIP538	—	125W	—	—	200	—	15A	60 at 7.5A	—	—		1
TIP539	—	125W	—	—	300	—	15A	60 at 7.5A	—	—		1
TIP540	—	125W	—	—	400	—	15A	60 at 7.5A	—	—		1
2N3265	—	125W	—	—	60	—	25A	37 at 15A	—	—	General purpose	27
2N3266	—	125W	—	—	90	—	25A	50 at 15A	—	—		27
2N5038	—	140W	—	—	90	—	20A	60 at 12A	—	—		1
TIP531	—	150W	—	—	300	—	15A	70 at 7.5A	—	—		1
TIP532	—	150W	—	—	400	—	15A	70 at 7.5A	—	—		1
TIP533	—	150W	—	—	300	—	15A	70 at 7.5A	—	—		27
TIP534	—	150W	—	—	400	—	15A	70 at 7.5A	—	—		27
2N1936	—	150W	—	—	60	—	20A	30 at 10A	—	—		27
2N1937	—	150W	—	—	80	—	20A	30 at 10A	—	—		27
2N3846	—	150W	—	—	200	—	20A	35 at 10A	—	—		27
2N3847	—	150W	—	—	300	—	20A	35 at 10A	—	—		27
2N5758	—	150W	—	—	100	—	6A	62 at 3A	—	—		1
2N5759	—	150W	—	—	120	—	6A	50 at 3A	—	—	General Purpose	1
2N5760	—	150W	—	—	140	—	6A	37 at 3A	—	—		1
2N6270	—	150W	—	—	80	—	30A	60 at 15A	—	—		1
2N6271	—	150W	—	—	100	—	30A	60 at 15A	—	—		1
2N6272	—	150W	—	—	80	—	30A	60 at 15A	—	—		27
2N6273	—	150W	—	—	100	—	30A	60 at 15A	—	—		27
TIXP547	—	200W	—	—	60	—	100A	57 at 50A	—	—		42
TIXP548	—	200W	—	—	80	—	100A	57 at 50A	—	—	High voltage	42
TIXP549	—	200W	—	—	100	—	100A	57 at 50A	—	—		42
2N5301	—	200W	—	—	40	—	30A	37 at 15A	—	—		1
2N5302	—	200W	—	—	60	—	30A	37 at 15A	—	—		1
2N5303	—	200W	—	—	80	—	20A	37 at 15A	—	—		1
2N6322	—	200W	—	—	200	—	30A	95 at 5A	—	—		1
2N6323	—	200W	—	—	200	—	30A	95 at 5A	—	—	General purpose	27
2N6324	—	200W	—	—	300	—	30A	90 at 5A	—	—		1
2N6325	—	200W	—	—	300	—	30A	90 at 5A	—	—		27
2N5685	—	300W	—	—	60	—	50A	37 at 25A	—	—		1
2N5686	—	300W	—	—	80	—	50A	37 at 25A	—	—		1
XP43	DM	300W	2	80	60	—	60A	100 at 10A	—	—		1

Continued

Type	Construction	P_C Max. (mW)	Typical f_T or f_t † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or h_{fe})	Max I_{CBO} at V_{CB} µA	V	Application	Base Ref.
TEXAS (*Continued*)												
Current Types (*Continued*)												
XP43A	DM	300W	2	100	80	—	60A	100 at 10A	—	—	General purpose	1
XP43B	DM	300W	2	120	100	—	60A	100 at 10A	—	—	General purpose	1
‡ Minimum value												
TUNGSRAM												
Replacement Types												
BF167	PE	130	350	40	30	—	25	— —	—	—	TV video I.F.	2
BF173	PE	260	550	40	25	4	25	— —	—	—	TV video I.F.	2
BFW60	PE	300	80	40	35	6	500	70 at 100	0.5	40	General purpose	43
BU105	—	7W	—	1,500	—	6	2A	— —	—	—	TV line deflection	1
Current Types												
BF115	PE	145	230	50	30	5	30	— —	—	—	A.M./F.M.	20
BF200	PE	150	550	30	20	3	20	— —	—	—	TV V.H.F. tuners	20
BF181	PE	150	600	30	20	3	20	— —	—	—	TV mixers	20
BF180	PE	150	675	30	20	3	20	— —	—	—	TV tuners	20
BFY90	PE	200	1,300	30	15	2.5	50	87 at 2	0.01	15	U.H.F. amplifiers	20
BF195	PE	220	200	30	20	5	30	— —	—	—	A.M./F.M. input	43
BF194	PE	220	260	30	20	5	30	— —	—	—	A.M./F.M. input	43
BC147	PE	220	300	50	45	6	100	240 at 2	5	20	A.F. driver	43
BC148	PE	220	300	30	20	5	100	240 at 2	5	20	General purpose	43
BC149	PE	220	300	30	20	5	100	410 at 2	5	20	A.F. input	43
BF196	PE	250	400	40	30	4	25	— —	—	—	TV I.F. amplifiers	43
BF197	PE	250	550	40	25	4	25	— —	—	—	TV I.F. amplifiers	43
BC107	PE	300	300	50	45	6	100	240 at 2	0.015	20	A.F. driver	2
BC108	PE	300	300	30	20	5	100	240 at 2	0.015	20	General purpose	2
BC109	PE	300	300	30	20	5	100	410 at 2	0.015	20	A.F. input	2
BF337	PE	625	200	50	45	—	1A	350 at 100	—	—	General purpose	50
BF338	PE	625	200	30	25	—	1A	350 at 100	—	—	General purpose	50
BFX84	PE	800	50	100	60	6	1A	20 at 10	0.05	100	General purpose	2
BFY50	PE	800	50	80	60	6	1A	30 at 150	0.05	80	General purpose	2
BFY51	PE	800	50	60	60	6	1A	40 at 150	0.05	60	General purpose	2
BFY52	PE	800	50	40	40	6	1A	60 at 150	0.05	40	General purpose	2
BD135	PE	2W	250	45	45	5	350	100 at 150	0.01	30	A.F. amplifier driver	51
BD137	PE	2W	250	60	60	5	350	100 at 150	0.01	30	A.F. amplifier driver	51
BD139	PE	2W	250	80	80	5	350	100 at 150	0.01	30	A.F. amplifier driver	51
BF336	P	3W	80	185	180	—	0.1	20 at 30	—	—	General purpose	2
BD232	D	7W	20	500	300	—	1A	87 at 50	—	—	TV line driver	51
BD160	D	10W	—	250	—	—	7A	— —	—	—	TV line deflection	1
BU204	D	10W	7.5	1,300	600	—	3A	2 at 2A	—	—	TV frame deflection	1
BU205	D	10W	7.5	1,500	700	—	3A	2 at 2A	—	—	TV frame deflection	1
BU206	D	10W	7.5	1,700	800	—	3A	1.8 at 2A	—	—	TV frame deflection	1
BD131	PE	11W	60	45	45	6	2A	165 at 500	5	40	A.F. output	51
BU208	D	12.5W	7	1,500	700	—	7.5A	2.25 at 4.5	—	—	TV frame deflection	1
BD124	PE	15W	60	70	45	6	2A	75 at 500	2	60	TV frame deflection	1
BD133	PE	15W	60	90	60	—	6A	40 at 500	—	—	General purpose	51
BD235	E	25W	3	60	60	—	6A	25 at 1A	—	—	General purpose	51
BD237	E	25W	3	100	80	—	6A	25 at 1A	—	—	General purpose	51
BU126	D	30W	8	750	300	—	6A	37 at 1A	—	—	TV power supplies	1
BD201	E	60W	3	60	45	—	12A	30 at 3A	—	—	General purpose	52
BD203	E	60W	3	60	60	—	12A	30 at 2A	—	—	General purpose	52
BD181	D	78W	3	55	45	—	15A	45 at 3A	—	—	General purpose	1
BDY20	D	115W	1	100	60	7	15A	45 at 4A	5mA	100	A.F. amplifiers	1
BD182	D	117W	—	70	60	—	15A	45 at 4A	—	—	A.F. amplifiers	1
BD183	D	117W	—	85	80	—	15A	45 at 3A	—	—	A.F. amplifiers	1
BD184	D	117W	—	95	90	—	15A	45 at 3A	—	—	A.F. amplifiers	1
‡ Minimum value												

Multiple Transistors

Type	Polarity	P_c Max. (mW)	Typical f_T or $^*f_1$, † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or $^*h_{fe}$)	Max I_{CBO} at V_{CB} µA	V	Construction	Basc Ref.
FERRANTI												
Current Types												
BD320A	NPN	5W	—	—	60	—	1A	1,000‡ at 500	—	—		2
BD320B	NPN	5W	—	—	60	—	1A	5,000‡ at 500	—	—		2
BD320C	NPN	5W	—	—	60	—	1A	10,000‡ at 500	—	—		2
BD321A	NPN	5W	—	—	60	—	2A	1,000‡ at 500	—	—		2
BD321B	NPN	5W	—	—	60	—	2A	5,000‡ at 500	—	—		2
BD321C	NPN	5W	—	—	60	—	2A	10,000‡ at 500	—	—	Darlington	2
BD322A	NPN	7.5W	—	—	60	—	1A	1,000‡ at 500	—	—	amplifiers	2
BD322B	NPN	7.5W	—	—	60	—	1A	5,000‡ at 500	—	—		2
BD322C	NPN	7.5W	—	—	60	—	1A	10,000‡ at 500	—	—		2
BD323A	NPN	10W	—	—	60	—	2A	1,000‡ at 500	—	—		2
BD323B	NPN	10W	—	—	60	—	2A	5,000‡ at 500	—	—		2
BD323C	NPN	10W	—	—	60	—	2A	10,000‡ at 500	—	—		2
ZDT40	NPN	300	250	45	35	4	500	75‡ at 10	0.5	45		18
ZDT41	NPN	300	250	60	45	5	500	75‡ at 10	0.05	60		18
ZDT42	NPN	300	250	60	60	5	500	60‡ at 10	0.05	60		18
ZDT44	NPN	300	250	60	60	5	500	60‡ at 10	0.05	60	Differential	18
ZDT45	NPN	300	250	100	70	5	500	60‡ at 10	0.05	100	amplifiers	18
2N2223	NPN	500	50	100	60	7	500	125 at 10	—	—		18
2N2223A	NPN	500	50	100	60	7	500	125 at 10	—	—		18
2N2060	NPN	500	60	100	60	7	500	100 at 10	—	—		18

‡ Minimum value

JOSEPH LUCAS (ELECTRICAL) Ltd.

Current Types

DT3410	NPN	7W	—	40	40	5	2A	1,000‡ at 2A	10	40		52
DT3410A	NPN	17.5W	—	40	40	5	2A	1,000‡ at 2A	10	40		51
DT3411	NPN	7W	—	80	80	5	2A	1,000‡ at 2A	10	80		52
DT3411A	NPN	17.5W	—	80	80	5	2A	1,000‡ at 2A	10	80	Darlington	51
DT3420	NPN	7W	—	40	40	5	2A	1,750‡ at 2A	10	40	amplifiers	52
DT3420A	NPN	17.5W	—	40	40	5	2A	1,750‡ at 2A	10	40		51
DT3421	NPN	7W	—	80	80	5	2A	1,750‡ at 2A	10	80		52
DT3421A	NPN	17.5W	—	80	80	5	2A	1,750‡ at 2A	10	80		51

‡ Minimum value

MULLARD

Current Types

BCX21	NPN	3.5W	—	60	45	—	1A	2,000‡ at 150	—	—		2
BDX42	NPN	5W	—	60	45	—	1A	1,500‡ at 500	—	—		51
BDX43	NPN	5W	—	80	60	—	1A	1,500‡ at 500	—	—		51
BDX44	NPN	5W	—	100	80	—	1A	1,500‡ at 500	—	—		51
BSS50	NPN	5W	—	60	45	—	1A	1,500‡ at 500	—	—		2
BSS51	NPN	5W	—	80	60	—	1A	1,500‡ at 500	—	—		2
BSS52	NPN	5W	—	100	80	—	1A	1,500‡ at 500	—	—		2
BD263	NPN	36W	—	80	60	—	4A	750‡ at 1.5A	—	—		51
BD263A	NPN	36W	—	100	80	—	4A	750‡ at 1.5A	—	—		51
BD263B	NPN	36W	—	120	100	—	4A	750‡ at 1.5A	—	—	Darlington	51
BD267	NPN	55W	—	80	60	—	8A	750‡ at 3A	—	—	amplifiers	52
BD267A	NPN	55W	—	100	80	—	8A	750‡ at 3A	—	—		52
BDX63	NPN	90W	—	80	60	—	8A	1,000‡ at 3A	—	—		1
BDX63A	NPN	90W	—	100	80	—	8A	1,000‡ at 3A	—	—		1
BDX63B	NPN	90W	—	120	100	—	8A	1,000‡ at 3A	—	—		1
BDX65	NPN	117W	—	80	60	—	12A	1,000‡ at 5A	—	—		1
NDX65A	NPN	117W	—	100	80	—	12A	1,000‡ at 5A	—	—		1
BDX67	NPN	150W	—	80	60	—	16A	1,000‡ at 10A	—	—		1
BDX67A	NPN	150W	—	100	80	—	16A	1,000‡ at 10A	—	—		1
BSS60	PNP	5W	—	−60	−45	—	1A	1,500‡ at 500	—	—		2

Continued

Type	Polarity	P_C Max. (mW)	Typical f_T or *f_t, † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or *h_{fe})	Max I_{CBO} at V_{CB} μA	V	Construction	Base Ref.
MULLARD (*Continued*)												
Current Types (*Continued*)												
BSS61	PNP	5W	—	−80	−60	—	1A	1,500‡ at 500	—	—		2
BD262	PNP	36W	—	−60	−60	—	4A	750‡ at 1.5A	—	—		51
BD262A	PNP	36W	—	−80	−80	—	4A	750‡ at 1.5A	—	—		51
BD262B	PNP	36W	—	−100	−100	—	4A	750‡ at 1.5A	—	—		51
BD266	PNP	55W	—	−60	−60	—	8A	750‡ at 3A	—	—		52
BD266A	PNP	55W	—	−80	−80	—	8A	750‡ at 3A	—	—		52
BDX62	PNP	90W	—	−60	−60	—	8A	1,000‡ at 3A	—	—	Darlington amplifiers	1
BDX62A	PNP	90W	—	−80	−80	—	8A	1,000‡ at 3A	—	—		1
BDX62B	PNP	90W	—	−100	−100	—	8A	1,000‡ at 3A	—	—		1
BDX64	PNP	117W	—	−60	−60	—	12A	1,000‡ at 5A	—	—		1
BDX64A	PNP	117W	—	−80	−80	—	12A	1,000‡ at 5A	—	—		1
BDX66	PNP	150W	—	−60	−60	—	16A	1,000‡ at 10A	—	—		1
BDX66A	PNP	150W	—	−80	−80	—	16A	1,000‡ at 10A	—	—		1
BCY87	NPN	150	50	45	40	5	30	275 at 0.05	0.005	20	Differential amplifiers	44
BCY88	NPN	150	50	45	40	5	30	275 at 0.05	0.02	20		44
BCY89	NPN	150	50	45	40	5	30	275 at 0.01	0.05	20		44
			‡ Minimum value									
NEWMARKET												
Current Types												
NKT6001	NPN	150	200	45	45	5	30	150 at 0.01	0.01	45	Differential amplifiers	18
NKT6003	NPN	150	200	45	45	5	30	150 at 0.01	0.01	45		18
NKT6005	NPN	150	200	45	45	5	30	150 at 0.01	0.01	45		18
NKT6010	NPN	150	200	45	45	5	30	150 at 0.01	0.01	45		18
R.C.A.												
Current Types												
2N6386	NPN	40W	20*	—	40	—	—	1,000‡ at 3A	—	—		52
2N6387	NPN	40W	20*	—	60	—	—	1,000‡ at 5A	—	—		52
2N6388	NPN	40W	20*	—	80	—	—	1,000‡ at 5A	—	—		52
BDX33	NPN	70W	20*	—	45	—	—	750 at 4A	—	—		52
BDX33A	NPN	70W	20*	—	60	—	—	750 at 4A	—	—		52
BDX33B	NPN	70W	20*	—	80	—	—	750 at 4A	—	—		52
BDX33C	NPN	70W	20*	—	100	—	—	750 at 4A	—	—		52
RCA1000	NPN	100W	20*	—	60	—	—	1,000‡ at 3A	—	—		1
RCA1001	NPN	100W	20*	—	80	—	—	1,000‡ at 3A	—	—	Darlington amplifiers	1
2N6055	NPN	100W	20*	—	60	—	—	750‡ at 4A	—	—		1
2N6056	NPN	100W	20*	—	80	—	—	750‡ at 4A	—	—		1
2N6383	NPN	100W	20*	—	40	—	—	1,000‡ at 5A	—	—		1
2N6384	NPN	100W	20*	—	60	—	—	1,000‡ at 5A	—	—		1
2N6385	NPN	100W	20*	—	80	—	—	1,000‡ at 5A	—	—		1
BDX34	PNP	70W	20*	—	−45	—	—	750 at 4A	—	—		52
BDX34A	PNP	70W	20*	—	−60	—	—	750 at 4A	—	—		52
BDX34B	PNP	70W	20*	—	−80	—	—	750 at 4A	—	—		52
BDX34C	PNP	70W	20*	—	−100	—	—	750 at 4A	—	—		52
			‡ Minimum value									
SGS-ATES												
Current Types												
BFX66	NPN	500	—	—	60	—	100	2,000‡ at 100	—	—	Darlington amplifiers	75
BFX67	NPN	500	—	—	60	—	500	7,000‡ at 100	—	—		75
2N997	NPN	—	—	—	40	—	—	1,000‡ at 0.1	—	—		75
2N998	NPN	—	—	—	60	—	—	800‡ at 1	—	—		75
2N999	NPN	—	—	—	60	—	—	1,000‡ at 0.1	—	—		75

Continued

Multiple Transistors

Type	Polarity	P_C Max. (mW)	Typical f_T or *f_t † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or *h_{fe})	Max I_{CBO} at V_{CB} µA	V	Construction	Base Ref.
SGS-ATES (*Continued*)												
Current Types (*Continued*)												
2N2060	NPN	—	—	—	60	5**	—	60	—	—		18
2N2060A	NPN	—	—	—	60	3**	—	60	—	—		18
2N2223	NPN	—	—	—	60	15**	—	87	—	—		18
2N2223A	NPN	—	—	—	60	5**	—	87	—	—		18
2N2453	NPN	—	—	—	30	5**	—	375	—	—		18
2N2639	NPN	—	—	—	45	5**	—	175	—	—		18
2N2642	NPN	—	—	—	45	5**	—	200	—	—		18
2N2643	NPN	—	—	—	45	10**	—	200	—	—		18
2N2903	NPN	—	—	—	30	10**	—	375	—	—		18
2N2903A	NPN	—	—	—	30	5**	—	375	—	—		18
2N2915	NPN	—	—	—	45	3**	—	100‡	—	—		18
2N2916	NPN	—	—	—	45	3**	—	225‡	—	—		18
2N2917	NPN	—	—	—	45	5**	—	100‡	—	—		18
2N2918	NPN	—	—	—	45	5**	—	225‡	—	—		18
2N2919	NPN	—	—	—	60	3**	—	100‡	—	—		18
2N2920	NPN	—	—	—	60	3**	—	225‡	—	—		18
2N2920A	NPN	—	—	—	60	1.5**	—	225‡	—	—		18
2N3410	NPN	—	—	—	30	10**	—	75	—	—		18
2N3411	NPN	—	—	—	30	5**	—	125	—	—		18
2N3423	NPN	—	—	—	15	10**	—	20‡	—	—		18
2N3424	NPN	—	—	—	15	5**	—	20‡	—	—		18
2N3680	NPN	—	—	—	50	3**	—	375	—	—		18
BFX15	NPN	600	50	—	40	—	100	90‡ at 10	—	—		18
BFX16	NPN	500	60	—	45	—	30	175‡ at 1	—	—		18
BFX70	NPN	600	60	—	60	—	100	100 at 10	—	—		18
BFX71	NPN	600	50	—	60	—	100	125 at 10	—	—		18
BFX72	NPN	600	50	—	60	—	100	125 at 10	—	—		18
BFX99	NPN	600	60	—	60	—	100	100 at 10	—	—		18
BFY81	NPN	500	60	—	45	—	10	150‡ at 1	—	—		18
BFY82	NPN	500	250	—	45	—	30	50‡ at 10	—	—		18
BFY83	NPN	600	50	—	60	—	100	50‡ at 10	—	—		18
BFY84	NPN	380	600	—	12	—	100	20‡ at 3	—	—		18
2N3726	PNP	—	—	—	−45	−5**	—	120‡	—	—		18
2N4015	PNP	—	—	—	−60	−5**	—	120‡	—	—		18
2N4023	PNP	—	—	—	−45	−3**	—	425	—	—		18
2N4025	PNP	—	—	—	−60	−3**	—	425	—	—		18
BFX11	PNP	500	130	—	−45	—	500	80‡ at 50	—	—		18
BFX36	PNP	600	40	—	−60	—	50	200 at 0.01	—	—		18
BFX79	NPN/PNP	500	60	—	60	—	500	60‡ at 150	—	—		18
BFX80	NPN/PNP	500	40	—	60	—	50	160‡ at 1	—	—	Dual amplifiers	18
BFX81	NPN/PNP	500	350	—	20	—	200	40‡ at 30	—	—		18

Match (2N2060 – 2N3680) — Differential amplifiers

Match (2N3726 – 2N4025)

‡ Minimum value

** V_{BE} match (mV)

TEXAS

Current Types

2N5525	NPN	360	200	40	30	—	200	5,000‡ at 10	—	—		24
2N5526	NPN	360	200	40	30	—	200	1,000‡ at 10	—	—		24
BD477	NPN	8.5W	—	45	45	10	1.2A	4,000‡	—	—		65
P7009	NPN	5W	—	25	20	10	1A	4,000‡	—	—	Darlington amplifiers	65
TIP110	NPN	50W	—	60	60	5	2A	750‡	—	—		99
TIP111	NPN	50W	—	80	80	5	2A	750‡	—	—		99
TIP112	NPN	50W	—	100	100	5	2A	750‡	—	—		99
TIP120	NPN	60W	—	60	60	5	5A	1,000‡	—	—		99

Continued

Type	Polarity	P_C Max. (mW)	Typical f_T or f_t, f_{ab} (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or h_{fe})	Max I_{CBO} at V_{CB} μA	V	Construction	Base Ref.
TEXAS (*Continued*)												
Current Types (Continued)												
TIP 121	NPN	60W	—	80	80	5	5A	1,000‡	—	—		99
TIP122	NPN	60W	—	100	100	5	5A	1,000‡	—	—		99
TIP140	NPN	125W	—	60	60	5	10A	500‡	—	—		52
TIP141	NPN	125W	—	80	80	5	10A	500‡	—	—		52
TIP142	NPN	125W	—	100	100	5	10A	500‡	—	—		52
BD466	PNP	8.5W	—	−45	−45	−10	500	4,000‡	—	—		65
P6009	PNP	5W	—	−25	−20	−10	500	4,000‡	—	—		65
TIP115	PNP	50W	—	−60	−60	−5	2A	750‡	—	—		99
TIP116	PNP	50W	—	−80	−80	−5	2A	750‡	—	—	Darlington amplifiers	99
TIP117	PNP	50W	—	−100	−100	−5	2A	750‡	—	—		99
TIP125	PNP	60W	—	−60	−60	−5	5A	1,000‡	—	—		99
TIP126	PNP	60W	—	−80	−80	−5	5A	1,000‡	—	—		99
TIP127	PNP	60W	—	−100	−100	−5	5A	1,000‡	—	—		99
TIP145	PNP	125W	—	−60	−60	−5	10A	500‡	—	—		52
TIP146	PNP	125W	—	−80	−80	−5	10A	500‡	—	—		52
TIP147	PNP	125W	—	−100	−100	−5	10A	500‡	—	—		52
2N2060	NPN	500	—	100	60	7	500	100 at 10	0.002	80		18
2N2223	NPN	500	—	100	60	7	500	125 at 10	0.01	80		18
2N2223A	NPN	500	—	100	60	7	500	125 at 10	0.01	80		18
2N2639	NPN	300	—	45	45	5	30	65‡ at 1	0.01	45		18
2N2640	NPN	300	—	45	45	5	30	65‡ at 1	0.01	45		18
2N2641	NPN	300	—	45	45	5	30	65‡ at 1	0.01	45		18
2N2642	NPN	300	—	45	45	5	30	200 at 1	0.01	45		18
2N2643	NPN	300	—	45	45	5	30	200 at 1	0.01	45		18
2N2644	NPN	300	—	45	45	5	30	200 at 1	0.01	45		18
2N2913	NPN	750	—	45	45	6	30	150‡ at 1	0.01	45		18
2N2914	NPN	750	—	45	45	6	30	300‡ at 1	0.01	45		18
2N2915	NPN	750	—	45	45	6	30	150‡ at 1	0.01	45		18
2N2916	NPN	750	—	45	45	6	30	300‡ at 1	0.01	45		18
2N2917	NPN	750	—	45	45	6	30	150‡ at 1	0.01	45		18
2N2918	NPN	750	—	45	45	6	30	300‡ at 1	0.01	45		18
2N2919	NPN	750	—	60	60	6	30	150‡ at 1	0.002	45		18
2N2920	NPN	750	—	60	60	6	30	300‡ at 1	0.002	45		18
2N2972	NPN	300	—	45	45	—	—	150 at 0.01	—	—		18
2N2973	NPN	300	—	45	45	—	—	375 at 0.01	—	—		18
2N2974	NPN	300	—	45	45	—	—	150 at 0.01	—	—		18
2N2975	NPN	300	—	45	45	—	—	375 at 0.01	—	—		18
2N2976	NPN	300	—	45	45	—	—	150 at 0.01	—	—	Differential amplifiers	18
2N2977	NPN	300	—	45	45	—	—	375 at 0.01	—	—		18
2N3052	NPN	700	—	35	15	5	200	80 at 10	0.025	20		28
2N3680	NPN	300	—	60	50	6	30	300‡ at 1	0.01	45		18
2N2802	PNP	250	—	−25	−20	−5	30	70 at 0.1	0.01	25		18
2N2803	PNP	250	—	−25	−20	−5	30	70 at 0.1	0.01	25		18
2N2804	PNP	250	—	−25	−20	−5	30	70 at 0.1	0.01	25		18
2N2805	PNP	250	—	−25	−20	−5	30	80 at 0.1	0.01	25		18
2N2806	PNP	250	—	−25	−20	−5	30	80 at 0.1	0.01	25		18
2N2807	PNP	250	—	−25	−20	−5	30	80 at 0.1	0.01	25		18
2N3347	PNP	300	—	−60	−45	−6	30	60‡ at 1	0.01	45		18
2N3348	PNP	300	—	−60	−45	−6	30	60‡ at 1	0.01	45		18
2N3349	PNP	300	—	−60	−45	−6	30	60‡ at 1	0.01	45		18
2N3350	PNP	300	—	−60	−45	−6	30	150‡ at 1	0.01	45		18
2N3351	PNP	300	—	−60	−45	−6	30	150‡ at 1	0.01	45		18
2N3352	PNP	300	—	−60	−45	−6	30	150‡ at 1	0.01	45		18
2N3806	PNP	500	—	−60	−60	−5	50	300 at 1	0.01	50		18
2N3807	PNP	500	—	−60	−60	−5	50	600 at 1	0.01	50		18
2N3808	PNP	500	—	−60	−60	−5	50	300 at 1	0.01	50		18
2N3809	PNP	500	—	−60	−60	−5	50	600 at 1	0.01	50		18
2N3810	PNP	500	—	−60	−60	−5	50	300 at 1	0.01	50		18
2N3811	PNP	500	—	−60	−60	−5	50	600 at 1	0.01	50		18
2N3838	PNP/ NPN	250	—	60	40	5	600	200 at 150	—	—	Dual amplifiers	28

Continued

Type	Polarity	P_C Max. (mW)	Typical f_T or $*f_t$ † fab (MHz)	Absolute Max. Ratings V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C (mA)	Typical h_{FE} at (mA) (or $*h_{fe}$)	Max I_{CBO} at V_{CB} µA	V	Construction	Base Ref.
TEXAS (*Continued*)												
Current Types (*Continued*)												
2N4854	PNP/NPN	600	—	60	40	—	—	200 at 150	—	—	Dual amplifiers	18
2N4855	PNP/NPN	640	—	60	40	—	—	80 at 150	—	—	Dual amplifiers	18

‡ Minimum value

Silicon Field Effect Transistors–FET's

Type	Construction	Absolute Max. Ratings Pd (mW)	Vds (V)	Vdg (V)	Vgs (V)	Ig (mA)	V (BR) gss	Max. Gate Reverse Current (nA)	Typical Forward Transfer Admittance (µmhos)	Max. Input Capacitance (pF)	Application	Base Ref.
MULLARD												
Current Types												
BFW12, BFW13	NcPE	150	30	30	30	5	—	0.1	—	—	General purpose	21
BFR29	NcPE	200	30	30	10	50	—	—	—	—	Audio, I.F., V.H.F.	55
BFR30	NcPE	200	25	25	25	5	—	0.2	—	—	Micro-miniature	58
BFR31	NcPE	200	25	25	25	5	—	0.2	—	—	Micro-miniature	58
BFR84, BFS28	NcMOS	200	20	—	8	20	—	1	12,000	4.5*	Communications	22
BSV81	NcPE	200	30	30	10	50	—	—	—	—	Choppers	55
BFQ10, BFQ11, BFQ12, BFQ13, BFQ14, BFQ15, BFQ16	dual NcPE	250	30	30	30	10	—	—	—	—	High performance, low level differential amplifiers	32
BFS21, BFS21A	NcPE	250	30	30	30	20	—	—	3,000‡	5	Matched pair*	21
BF244A, BF244B, BF244C	NcPE	300	30	30	30	10	—	5	—	—	Low noise	29
BF245A, BF245B, BF245C	NcPE	300	30	30	30	10	—	5	—	—	Low noise	56
BF256A, BF256B, BF256C	NcPE	300	30	30	30	10	—	5	—	—	General purpose	56
BFW10	NcPE	300	30	30	30	20	—	—	5,000	5	Low noise, wideband amplifiers	21
BFW11	NcPE	300	30	30	30	20	—	—	5,250	5	Low noise, wideband amplifiers	21
BFW61	NcPE	300	25	25	25	20	—	—	4,250	6	General purpose	21
2N3823	NcPE	300	30	30	30	10	30	—	5,000	6	V.H.F. amps/mixers	21
BSV78	NcPE	350	40	40	40	50	—	0.25	—	—	General purpose	57
BSV79	NcPE	350	40	40	40	50	—	0.25	—	—	General purpose	57
BSV80	NcPE	350	40	40	40	50	—	0.25	—	—	General purpose	57

‡ Minimum value * Typical value

Type	Construction	Absolute Max. Ratings					V (BR) gss	Max. Gate Reverse Current (nA)	Typical Forward Transfer Admittance (μmhos)	Max. Input Capacitance (pF)	Application	Base Ref.
		Pd (mW)	Vds (V)	Vdg (V)	Vgs (V)	Ig (mA)						
R.C.A.												
Replacement Types												
40468	NcMOS	375	20	—	—	—	—	0.2	7,500	0.12		22
3N124	NcMOS	400	20	—	—	—	—	0.05	5,000	0.12	R.F. amplifiers	22
3N125	NcMOS	400	20	—	—	—	—	1	5,000	0.12		22
3N149	NcMOS	400	20	—	—	—	—	1	—	0.12		22
40559	NcMOS	400	20	—	—	—	—	1	—	0.12	Mixers	22
Current Types												
3N128	NcMOS	330	20	—	15	—	—	0.05	7,500	5.5		23
3N139	NcMOS	330	35	—	14	—	—	1	6,000	3	R.F. amplifiers	23
3N140	NcMOS	330	20	—	20	—	—	1	10,000	5.5		22
3N141	NcMOS	330	20	—	20	—	—	1	10,000	5.5	Mixers	22
3N142	NcMOS	330	20	—	15	—	—	1	7,500	5.5	R.F. amplifiers	23
3N143	NcMOS	330	20	—	15	—	—	1	7,500	5.5	Mixers	23
3N152	NcMOS	330	20	—	15	—	—	1	7,500	5.5		23
3N154	NcMOS	330	20	—	15	—	—	0.05	7,500	5.5		23
3N159	NcMOS	330	20	—	20	—	—	1	10,000	5.5		22
3N187	NcMOS	330	20	—	6	—	—	50	12,000	6	R.F. amplifiers	22
3N200	NcMOS	330	20	—	6	—	—	50	15,000	6		22
40467A	NcMOS	330	20	—	15	—	—	1	7,500	5.5		23
40468A	NcMOS	330	20	—	15	—	—	1	7,500	5.5		23
40559A	NcMOS	330	20	—	15	—	—	1	2,800	5.5	Mixers	23
40600	NcMOS	330	20	—	15	—	—	1	10,000	5.5	R.F. amplifiers	22
40601	NcMOS	330	20	—	15	—	—	1	2,700	5.5	Mixers	22
40602	NcMOS	330	20	—	15	—	—	1	10,000	5.5	I.F. amplifiers	22
40603	NcMOS	330	20	—	15	—	—	1	10,000	5.5	R.F. amplifiers	22
40604	NcMOS	330	20	—	15	—	—	1	2,800	5.5	Mixers	22
40673	NcMOS	330	20	—	6	—	—	50	12,000	6		22
40819	NcMOS	330	25	—	6	—	—	50	12,000	6		22
40820	NcMOS	330	20	—	6	—	—	50	12,000	6		22
40821	NcMOS	330	20	—	6	—	—	50	12,000	6	R.F. amplifiers	22
40822	NcMOS	330	18	—	6	—	—	50	12,000	6.5		22
40823	NcMOS	330	18	—	6	—	—	50	12,000	6.5		22
3N138	NcMOS	400	35	—	14	—	—	0.01	6,000	3	Choppers	23
3N153	NcMOS	400	20	—	14	—	—	0.05	10,000	6		23
TEXAS												
Current Types												
A5T6449	N	—	—	—	300	0.01	—	—	100	10	High voltage	57
A5T6450	N	—	—	—	200	0.01	—	—	100	10		57
BC264L	N	—	—	—	7.5	1nA	30	—	2,500	6		29
BC264LA	N	—	—	—	1.2	1nA	30	—	2,500	6	General purpose amps.	29
BC264LB	N	—	—	—	1.4	1nA	30	—	3,000	6		29
BC264LC	N	—	—	—	1.5	1nA	30	—	3,500	6		29
BC264LD	N	—	—	—	1.6	1nA	30	—	4,000	6	General purpose amps.	29
BF256LA	N	—	—	—	7.5	5nA	—	—	4,500	4.5		29
BF256LB	N	—	—	—	7.5	5nA	—	—	4,500	4.5	V.H.F. amps./mixers	29
BF256LC	N	—	—	—	7.5	5nA	—	—	4,500	4.5		29
BF320	P	—	—	—	—	0.02	15	—	800	32		29
BF320A	P	—	—	—	—	0.02	15	—	800	32		29
BF320B	P	—	—	—	—	0.02	15	—	800	32	General purpose amps.	29
BF320C	P	—	—	—	—	0.02	15	—	800	32		29
BF347	N	—	—	—	1	0.5nA	30	—	—	8	Choppers	29
BF348	N	—	—	—	6	5nA	—	—	10,000	4	V.H.F. amps./mixers	29
BFW10	N	—	—	—	—	0.5nA	30	—	3.5	5		21
BFW11	N	—	—	—	—	0.5nA	30	—	3	5	General purpose amps.	21
BFW61	N	—	—	—	—	1nA	25	—	2,000	6		21
E8517	N	—	—	—	—	10pA	40	—	70	2		21
E8517A	N	—	—	—	—	1pA	40	—	70	2	Low leakage	21
E8518	N	—	—	—	—	10pA	40	—	80	2		21
E8518A	N	—	—	—	—	1pA	40	—	80	2		21

Continued

Silicon Field Effect Transistors—FET's

Type	Construction	Absolute Max. Ratings					V (BR) gss	Max. Gate Reverse Current (nA)	Typical Forward Transfer Admittance (μmhos)	Max. Input Capacitance (pF)	Application	Base Ref.
		Pd (mW)	Vds (V)	Vdg (V)	Vgs (V)	Ig (mA)						
TEXAS (*Continued*)												
Current Types (*Continued*)												
E8519	N	—	—	—	—	10pA	40	—	100	2	Low leakage	21
E8519A	N	—	—	—	—	1pA	40	—	100	2		21
TIS68	N	—	—	—	—	2nA	25	—	1,000	8		29
TIS69	N	—	—	—	—	2nA	25	—	1,000	8	Differential amplifiers	29
TIS70	N	—	—	—	—	2nA	25	—	1,000	8		29
TIS88A	N	—	—	—	6	1nA	—	—	4,000	4.5	V.H.F. amps./mixers	29
2N2497	P	—	—	—	—	10nA	20	—	1,000	32		30
2N2498	P	—	—	—	—	10nA	20	—	1,500	32		30
2N2499	P	—	—	—	—	10nA	20	—	2,000	32		30
2N2608	P	—	—	—	—	10nA	30	—	1,000	17		57
2N2609	P	—	—	—	—	30nA	30	—	2,500	30		57
2N4220	N	—	—	—	4	0.1nA	30	—	1,000	6	General purpose amps.	21
2N4220A	N	—	—	—	4	0.1nA	30	—	1,000	6		21
2N4221	N	—	—	—	8	0.1nA	30	—	2,000	6		21
2N4221A	N	—	—	—	8	0.1nA	30	—	2,000	6		21
2N4222	N	—	—	—	8	0.1nA	30	—	2,500	6		21
2N4222A	N	—	—	—	8	0.1nA	30	—	2,500	6		21
2N4445	N	—	—	—	10	3nA	25	—	—	50		21
2N4446	N	—	—	—	10	3nA	25	—	—	50		21
2N4447	N	—	—	—	10	3nA	20	—	—	50	Choppers	21
2N4448	N	—	—	—	10	3nA	20	—	—	50		21
2N5549	N	—	—	—	6	0.25nA	40	—	—	8		57
3N160	P	—	—	—	5	10pA	25	—	3.5	10		36
3N161	P	—	—	—	5	100pA	25	—	3.5	10	General purpose	36
3N174	P	—	—	—	6	2.5pA	25	—	0.4	4.5		36
3N201	N	—	—	—	5	—	25	—	8,000	—		21
3N202	N	—	—	—	5	—	25	—	8,000	—		21
3N203	N	—	—	—	5	—	25	—	7,000	—		21
3N204	N	—	—	—	4	—	25	—	10,000	—		21
3N205	N	—	—	—	4	—	25	—	10,000	—	R.F., I.F. amps./mixers	21
3N206	N	—	—	—	4	—	25	—	7,000	—		21
3N211	N	—	—	—	5.5	—	27	—	17,000	—		21
3N212	N	—	—	—	4	—	27	—	17,000	—		21
3N213	N	—	—	—	5.5	—	35	—	15,000	—		21
BFW54	NcPE	150	50	50	−50	10	−50	—	4,750	6		30
BFW55	NcPE	150	50	50	−50	10	−50	—	4,750	6	General purpose	30
BFW56	NcPE	150	50	50	−50	10	−50	—	4,750	6		30
BF244	NcPE	200	30	30	−30	10	—	—	4,625	4	V.H.F. amps./mixers	29
BF245	NcPE	200	30	30	−30	10	—	—	4,625	4		29
TIS34	NcPE	200	30	30	−30	10	−30	—	5,000	6		29
TIS58	NcPE	200	25	25	−25	10	−25	—	4,000	6		29
TIS59	NcPE	200	25	25	−25	10	−25	—	4,800	6	General purpose	29
2N3819	NcP	200	25	25	−25	10	−25	—	4,250	8		29
2N3820	NcP	200	20	20	−20	10	−20	—	2,900	32		29
2N5248	NcPE	200	30	30	−30	10	−30	—	5,000	6		29
BF246	NcPE	250	25	25	−25	10	−25	—	2,500	12	V.H.F. amps./mixers	29
BF247	NcPE	250	25	25	−25	10	−25	—	2,500	12		29
TIS42	NcPE	240	25	25	−25	10	−25	—	—	18	Choppers	29
2N5045	NcPE	250	—	50	−50	30	—	0.25	1,500	8	Low level D.C. amplifiers	32
2N5046	NcPE	250	—	50	−50	30	—	0.25	1,500	8		32
2N5047	NcPE	250	—	50	−50	30	—	0.25	1,500	8		32
2N3329	PcDP	300	—	—	—	−10	20	—	1,500	20		21
2N3330	PcDP	300	—	—	—	−10	20	—	2,250	20	Low level D.C. and audio amplifiers	21
2N3331	PcDP	300	—	—	—	−10	20	—	3,000	20		21
2N3332	PcDP	300	—	—	—	−10	20	—	1,600	20		21
2N3821	NcPE	300	50	50	−50	10	−50	—	5,000	6		21
2N3822	NcPE	300	50	50	−50	10	−50	—	4,625	6	U.H.F. amps./mixers	21
2N3823	NcPE	300	30	30	−30	10	−30	—	5,000	6		21
2N3824	NcPE	300	50	50	−50	10	−50	—	—	6	Choppers	21
2N3909	PcP	300	−20	−20	20	−10	20	—	3,000	32	Small signal amplifiers	21
2N3993	PcDP	300	−25	−25	25	−10	25	—	9,000	16	High speed choppers	21

Continued

Type	Construction	Absolute Max. Ratings					V(BR) gss	Max. Gate Reverse Current (nA)	Typical Forward Transfer Admittance (μmhos)	Max. Input Capacitance (pF)	Application	Base Ref.
		Pd (mW)	Vds (V)	Vdg (V)	Vgs (V)	Ig (mA)						
TEXAS (*Continued*)												
Current Types (*Continued*)												
2N3994	PcDP	300	−25	−25	25	−10	25	—	7,000	16	High speed choppers	21
2N4416	NcPE	300	30	30	−30	10	−30	−0.1	6,000	4	V.H.F. amps/mixers	21
2N4416A	NcPE	300	35	35	−35	10	−35	−0.1	6,000	4	V.H.F. amps/mixers	21
TIS73	NcPE	360	30	30	−30	50	−30	−2	—	18		29
TIS74	NcPE	360	30	30	−30	50	−30	−2	—	18	Choppers	29
TIS75	NcPE	360	30	30	−30	50	−30	−2	—	18	Choppers	29
TIXS67	PcP	360	−25	−25	±25	50pA	—	50pA	5,000	10		33
TIXS78	NcP	360	—	300	−75	10	—	−1	7,875	15	General purpose	29
TIXS79	NcP	360	—	200	−50	10	—	−1	7,875	18	General purpose	29
2N3970	NcPE	360	40	40	−50	50	−40	—	—	25		30
2N3971	NcPE	360	40	40	−40	50	−40	—	—	25		30
2N3972	NcPE	360	40	40	−40	50	−40	—	—	25		30
2N4091	NcPE	360	40	40	−40	10	−40	—	—	16		30
2N4092	NcPE	360	40	40	−40	10	−40	—	—	16		30
2N4093	NcPE	360	40	40	−40	10	−40	—	—	16		30
2N4391	NcPE	360	40	40	−40	50	−40	—	—	14		30
2N4392	NcPE	360	40	40	−40	50	−40	—	—	14		30
2N4393	NcPE	360	40	40	−40	50	−40	—	—	14		30
2N4856	NcPE	360	40	40	−40	50	−40	−0.5	—	18		30
2N4857	NcPE	360	40	40	−40	50	−40	−0.5	—	18	High speed choppers	30
2N4858	NcPE	360	40	40	−40	50	−40	−0.5	—	18	High speed choppers	30
2N4859	NcPE	360	30	30	−30	50	−30	−0.25	—	18		30
2N4860	NcPE	360	30	30	−30	50	−30	−0.25	—	18		30
2N4861	NcPE	360	30	30	−30	50	−30	−0.25	—	18		30
2N4856A	NcPE	360	40	40	−40	50	−40	—	—	10		30
2N4857A	NcPE	360	40	40	−40	50	−40	—	—	10		30
2N4858A	NcPE	360	40	40	−40	50	−40	—	—	10		30
2N4859A	NcPE	360	30	30	−30	50	−30	—	—	10		30
2N4860A	NcPE	360	30	30	−30	50	−30	—	—	10		30
2N4861A	NcPE	360	30	30	−30	50	−30	—	—	10		30
2N5245	NcPE	360	30	30	−30	50	−30	−1	6,000	4.5		29
2N5246	NcPE	360	30	30	−30	50	−30	−1	4,500	4.5	V.H.F. amps./mixers	29
2N5247	NcPE	360	30	30	−30	50	−30	−1	5,750	4.5	V.H.F. amps./mixers	29
2N2386	PcDP	500	—	—	—	10	−20	—	1,000	50		30
2N2497	PcDP	500	—	—	—	10	−20	—	900	32	Small signal low noise amps	30
2N2498	PcDP	500	—	—	—	10	−20	—	1,350	32	Small signal low noise amps	30
2N2499	PcDP	500	—	—	—	10	−20	—	1,800	32	Small signal low noise amps	30
2N2500	PcDP	500	—	—	—	10	−20	—	900	32	Small signal low noise amps	30

Semiconductor Diodes

(Signal, switching and low-power rectifier diodes)

Type	Construction	Peak Inverse Volts	Minimum Forward Current		Maximum Reverse Current		Max. Rect. Current (mA)	Application	Connections
			mA	at Volts	μA	at Volts			
EMIHUS									
Current Types									
BA130	Silicon planar epitaxial	30	10	1	0.1	25	—	Switching	A1
BAW28	Silicon planar epitaxial	30	100	1	0.2	30	—	Switching	A1
BAX13	Silicon planar epitaxial	75	2	0.7	0.05	50	—	Switching	A1
BAX78	Silicon planar epitaxial	55	100	0.95	0.1	55	—	Switching	A1
BAY31	Silicon planar epitaxial	15	30	1	0.1	1	—	Switching	A1
BAY36	Silicon planar epitaxial	30	30	1	0.1	10	—	Switching	A1
BAY38	Silicon planar epitaxial	50	50	1	0.05	50	—	Switching	A1

Continued

Type	Construction	Peak Inverse Volts	Minimum Forward Current		Maximum Reverse Current		Max. Rect. Current (mA)	Application	Connections
			mA	at Volts	μA	at Volts			
EMIHUS (*Continued*)									
Current Types (*Continued*)									
BAY71	Silicon planar epitaxial	50	20	1	0.1	35	—	Switching	A1
BAY74		50	200	1	0.1	35	—		A1
HS1390		40	10	1.15	0.05	10	—		A1
HS1392		20	30	1	0.1	10	—		A1
HS1395		30	10	1.15	0.05	10	—		A1
HS9001		100	100	1	0.025	20	—		A1
HS9002		100	30	1	0.025	20	—		A1
HS9003		75	200	1	0.05	50	—		A1
HS9004		75	100	1	0.05	50	—		A1
HS9005		75	20	1	0.05	50	—		A1
HS9006		50	300	1	0.1	40	—		A1
HS9007		50	200	1	0.1	40	—		A1
HS9008		50	100	1	0.1	40	—		A1
HS9009		50	20	1	0.1	40	—		A1
HS9010		30	—	—	0.1	20	—		A1
HS9070		15	10	1	0.1	10	—		A1
HS9078		25	10	1	0.1	25	—		A1
HS9089		30	250	1	0.1	30	—		A1
HS9097		60	250	1	—	—	—		A1
HS9099		15	30	1	—	—	—		A1
HS9501		75	350	1	0.1	40	—		A1
HS9502		40	350	1	0.1	20	—		A1
HS9503		20	350	1	0.1	10	—		A1
HS9504		75	250	1	0.1	40	—		A1
HS9505		40	250	1	0.1	20	—		A1
HS9506		20	250	1	0.1	10	—		A1
HS9507		75	150	1	0.1	40	—		A1
HS9508		40	150	1	0.1	20	—		A1
HS9509		20	100	1	0.1	10	—		A1
HS9591		70	350	1.3	0.2	70	—		A1
HS9592		50	200	1	0.2	50	—		A1
HS9593		70	200	1	0.2	70	—		A1
HSP1001		175	100	1	0.05	150	—		A1
HSP1006		60	100	1	0.2	50	—		A1
HSP1007		175	50	1	0.05	150	—		A1
HSP1009		175	50	1	0.2	150	—		A1
HSP1010		60	50	1	0.05	50	—		A1
HSP1011		60	20	1	0.2	50	—		A1
HSP1012		50	50	1	0.2	50	—		A1
HSP1013		120	50	1	0.05	100	—		A1
HSP1020		200	200	1	0.02	200	—		A1
HSP1022		150	—	—	0.006	150	—		A1
HSP1023		200	—	—	0.006	150	—		A1
HSP1051		150	—	—	0.5	100	—	General purpose	A1
HSP1053		40	—	—	0.1	40	—		A1
HSP1054		20	50	1	0.001	15	—		A1
HSP1056		160	—	—	—	100	—		A1
HSP1058		15	10	1	1	20	—		A1
HSP1060		20	50	1	0.2	20	—		A1
HSP1080		150	—	—	0.01	150	—		A1
HSP1083		15	—	—	5	15	—		A1
HSP1920		50	200	1.2	0.1	50	—		A1
HSP1921		100	200	1.2	0.1	100	—		A1
HSP1922		150	200	1.2	0.1	150	—		A1
HSP1923		200	200	1.2	0.1	200	—		A1
1N251		40	5	1	0.1	10	—	Switching	A1
1N252		30	10	1	0.1	5	—		A1
1N625		30	4	1.5	1	20	—	General purpose	A1
1N626		50	4	1.5	1	35	—		A1
1N627		100	4	1.5	1	75	—		A1
1N628		150	4	1.5	1	125	—		A1

Continued

Type	Construction	Peak Inverse Volts	Minimum Forward Current		Maximum Reverse Current		Max. Rect. Current (mA)	Application	Connections
			mA	at Volts	μA	at Volts			
EMIHUS (*Continued*)									
Current Types (*Continued*)									
1N629	Silicon planar epitaxial	200	4	1.5	1	175	—	General purpose	A1
1N643		200	10	1	1	100	—		A1
1N643A		200	100	1	1	100	—		A1
1N658		120	100	1	0.05	40	—		A1
1N659		60	6	1	5	50	—		A1
1N660		120	6	1	5	100	—		A1
1N660A		120	10	1	5	100	—		A1
1N662		100	10	1	1	50	—		A1
1N662A		100	100	1	20	50	—		A1
1N663A		100	10	1	20	50	—		A1
1N914		75	10	1	0.025	20	—	Switching	A1
1N914A		75	20	1	0.025	20	—		A1
1N914B		75	100	1	0.025	20	—		A1
1N914E		30	10	1	—	—	—		A1
1N916		75	10	1	0.025	20	—		A1
1N916A		75	20	1	0.025	20	—		A1
1N3062		75	20	1	100	50	—		A1
1N3063		75	10	1	100	50	—		A1
1N3064		75	10	0.85	100	50	—		A1
1N3065		75	20	1	100	50	—		A1
1N3066		75	10	1	100	50	—		A1
1N3067		30	5	1	100	20	—		A1
1N3068		30	5	1	100	20	—		A1
1N3069		65	50	1	100	50	—		A1
1N3596		20	30	1	0.1	20	—		A1
1N3600		50	200	1	0.1	50	—		A1
1N3604		75	50	1	0.05	50	—		A1
1N3605		40	20	0.88	0.05	30	—		A1
1N3606		75	20	0.88	0.05	50	—		A1
1N3669		70	400	1.1	0.25	70	—		A1
1N3873		50	150	0.95	0.1	50	—		A1
1N3956		30	0.1	2.55	0.05	30	—		A1
1N4009		25	30	1	0.1	25	—		A1
1N4147		30	30	1	5	30	—		A1
1N4148		75	10	1	0.025	20	—		A1
1N4149		75	10	1	0.025	20	—		A1
1N4150		50	200	1	0.1	50	—		A1
1N4151		75	50	1	0.05	50	—		A1
1N4152		40	20	0.88	0.05	30	—		A1
1N4153		75	20	0.88	0.05	50	—		A1
1N4154		35	30	1	0.1	25	—		A1
1N4305		75	10	0.85	0.1	50	—		A1
1N4446		75	20	1	0.025	20	—		A1
1N4447		75	20	1	0.025	20	—		A1
1N4448		75	100	1	0.025	20	—		A1
1N4449		75	30	1	0.025	20	—		A1
1N4450		40	200	1	0.05	30	—		A1
1N4451		40	300	1	0.05	30	—		A1
1N5315		75	200	1	0.05	50	—		A1
FERRANTI									
Current Types									
BA225††	Double diode	25	—	—	—	—	100*	General purpose	70
BA226†		25	—	—	—	—	100*		69
BAW63	Silicon planar	60	—	—	1	60	200*	High speed switching	71
BAW63A		30	—	—	1	30	200*		71
BAW63B		15	—	—	1	15	200*		71
BAW64†		60	—	—	1	60	200*		69
BAW65†		30	—	—	1	30	200*		69

Continued

Type	Construction	Peak Inverse Volts	Minimum Forward Current		Maximum Reverse Current		Max. Rect. Current (mA)	Application	Connections
			mA	at Volts	μA	at Volts			
FERRANTI (*Continued*)									
Current Types (*Continued*)									
BAW66††	Silicon planar	30	—	—	1	30	200*	High speed switching	70
BAW67†		15	—	—	1	15	200*		69
BAW68††		15	—	—	1	15	200*		70
BBY17	Variable capacitance. Silicon epitaxial planar	100	Nom.cap. = 6.8pF at 4V		0.2	80	—	V.H.F./U.H.F. tuners	A1
BBY18		100	Nom.cap. = 10pF at 4V		0.2	80	—		A1
BBY19		100	Nom.cap. = 15pF at 4V		0.2	80	—		A1
BBY20		100	Nom.cap. = 22pF at 4V		0.2	80	—		A1
BBY21		100	Nom.cap. = 33pF at 4V		0.2	80	—		A1
BBY22		100	Nom.cap. = 47pF at 4V		0.2	80	—		A1
ZC700		30	Nom.cap. = 6.8pF at 4V		0.02	25	—		A1
ZC701		30	Nom.cap. = 8.2pF at 4V		0.02	25	—		A1
ZC702		30	Nom.cap. = 10pF at 4V		0.02	25	—		A1
ZC703		30	Nom.cap. = 12pF at 4V		0.02	25	—		A1
ZC704		30	Nom.cap. = 15pF at 4V		0.02	25	—		A1
ZC705		30	Nom.cap. = 18pF at 4V		0.02	25	—		A1
ZC706		30	Nom.cap. = 22pF at 4V		0.02	25	—		A1
ZC707		30	Nom.cap. = 27pF at 4V		0.02	25	—		A1
ZC708		30	Nom.cap. = 33pF at 4V		0.02	25	—		A1
ZC709		30	Nom.cap. = 39pF at 4V		0.02	25	—		A1
ZC710		30	Nom.cap. = 47pF at 4V		0.02	25	—		A1
ZC711		30	Nom.cap. = 56pF at 4V		0.02	25	—		A1
ZC712		30	Nom.cap. = 68pF at 4V		0.02	25	—		A1
ZC713		30	Nom.cap. = 82pF at 4V		0.02	25	—		A1
ZC714		30	Nom.cap. = 100pF at 4V		0.02	25	—		A1
ZC800	Hyperabrupt variable capacitance. Silicon epitaxial planar	25	1.8 to 10pF cap. range		0.02	20	—	Large capacity variation. V.H.F./U.H.F. tuners	A1
ZC801		25	2.7 to 15pF cap. range		0.02	20	—		A1
ZC802		25	4.0 to 22pF cap. range		0.02	20	—		A1
ZC803		25	6.0 to 33pF cap. range		0.02	20	—		A1
ZC804		25	8.5 to 47pF cap. range		0.02	20	—		A1
ZC805		25	12 to 68pF cap. range		0.02	20	—		A1
ZC806		25	18 to 100pF cap. range		0.02	20	—		A1
ZC820		25	1.8 to 10pF cap. range		0.02	20	—		95
ZC821		25	2.7 to 15pF cap. range		0.02	20	—		95
ZC822		25	4.0 to 22pF cap. range		0.02	20	—		95
ZC823		25	6.0 to 33pF cap. range		0.02	20	—		95
ZC824		25	8.5 to 47pF cap. range		0.02	20	—		95
ZC825		25	12 to 68pF cap. range		0.02	20	—		95
ZC826		25	18 to 100pF cap. range		0.02	20	—		95
ZDX1F†	Double diode Silicon planar	15	—	—	1	15	250	General purpose	94
ZDX1R†		15	—	—	1	15	250		94
ZDX2F†		30	—	—	1	30	250		94
ZDX2R†		30	—	—	1	30	250		94
ZDX3F†		50	—	—	1	50	250		94
ZDX3R†		50	—	—	1	50	250		94
ZDX4F†		100	—	—	1	100	250		94
ZDX4R†		100	—	—	1	100	250		94
ZS10A	Silicon junction	60	—	—	0.05	60	100	General purpose, low capacitance	C2
ZS10B		60	—	—	0.5	60	100		C2
ZS20A		120	—	—	0.05	120	100		C2
ZS20B		120	—	—	0.5	120	100		C2
ZS21		200	—	—	0.5	200	100		C2
ZS22		300	—	—	0.5	300	100		C2
ZS24		400	—	—	0.5	400	100		C2
ZS120		50	—	—	5	50	250	General purpose	A1
ZS121		100	—	—	5	100	250		A1
ZS122		200	—	—	5	200	250		A1
ZS123		300	—	—	5	300	250		A1
ZS124		400	—	—	5	400	250		A1
ZS130	Silicon planar epitaxial	50	—	—	2	50	250	High speed logic	A1
ZS131		50	—	—	2	50	250		A1
ZS132		100	—	—	5	100	250		A1

Continued

Type	Construction	Peak Inverse Volts	Minimum Forward Current		Maximum Reverse Current		Max. Rect. Current (mA)	Application	Connections
			mA	at Volts	μA	at Volts			
FERRANTI (*Continued*)									
Current Types (*Continued*)									
ZS133	Silicon planar epitaxial	70	—	—	2	70	250	High speed logic	A1
ZS140		15	—	—	1	15	250		A1
ZS141		50	—	—	1	50	250	High speed	A1
ZS142		30	—	—	1	30	250	switching	A1
ZS143		70	—	—	1	70	250		A1
ZS150		50	—	—	0.001	50	250		A1
ZS151		100	—	—	0.001	100	250		A1
ZS152		50	—	—	0.005	50	250	High temperature	A1
ZS153		100	—	—	0.005	100	250	operation	A1
ZS154		50	—	—	0.1	50	250		A1
ZS155		100	—	—	0.1	100	250		A1
	* Per diode † Common cathode ‡ Common anode								
I.T.T.									
Current Types									
AA143	Germanium gold bonded	25	—	—	20	20	60	A.M./F.M. detector	A1
AA144		90	—	—	200	75	10	General purpose	A1
BA157	Silicon	400	—	—	5	400	400	High speed	A1
BA158		600	—	—	5	600	400	switching	A1
BA159		1,000	—	—	5	1,000	400		A1
BA160	Silicon planar	20	—	—	1	10	100	TV tuners	A1
BA170	Silicon junction	20	—	—	3	15	150		A1
BA200	Silicon planar epitaxial	35	—	—	0.05	25	150		A1
BA201		50	—	—	0.1	30	150	General purpose	A1
BS202		75	—	—	0.1	50	150		A1
BA203		100	—	—	0.5	75	150		A1
BA243		20	—	—	0.1	15	100	Radio/TV tuner	A1
BA244		20	—	—	0.1	15	100	bandswitching	A1
BAW21	Silicon avalanche	—	—	—	0.1	70	400	Protection	A1
BAX13	Silicon planar epitaxial	50	—	—	0.2	50	150		A1
BAX16		150	—	—	0.1	150	200	General purpose	A1
BAY17	Silicon junction	15	—	—	0.01	12	200		A1
BAY18		60	—	—	0.01	50	200		A1
BB121A	Variable capacitance Silicon planar epitaxial	3 to 25	Cap. 4.5 to 5.5pF		0.01	28	—		A1
BB121B		3 to 25	Cap. 4.5 to 5.5pF		0.01	28	—		A1
BB122		3 to 25	Cap. 4.5 to 5.5pF		0.01	28	—		A1
BB139		3 to 25	Cap. 5.0 to 6.5pF		0.01	28	—	TV, U.H.F./V.H.F.	A1
BB141A		3 to 25	Cap. 4.0 to 5.0pF		0.01	28	—	tuners	A1
BB141B		3 to 25	Cap. 4.0 to 5.0pF		0.01	28	—		A1
BB142		3 to 25	Cap. 4.0 to 5.0pF		0.01	28	—		A1
DK13	Germanium gold bonded	50	—	—	60	50	120		A1
DK14		80	—	—	90	80	120		A1
DK15		100	—	—	90	100	120		A1
DK19		25	—	—	160	25	110		A1
DK20		50	—	—	25	50	70	General purpose	A1
DK21		8	—	—	25	3	30		A1
ITT33	Silicon planar epitaxial	35	—	—	0.1	20	150		A1
ITT44		50	—	—	0.1	20	150		A1
ITT210	Silicon variable capacitance	—	Cap. 8.0 to 12pF		—	—	—	F.M., A.F.C.	A1
ITT600	Silicon planar epitaxial	75	—	—	0.1	50	200		A1
ITT920		50	—	—	0.2	50	200		A1
ITT921		100	—	—	0.2	100	200		A1
ITT922		150	—	—	0.2	150	200		A1
ITT923		200	—	—	0.2	200	200		A1
ITT2001		100	—	—	0.1	50	100	General purpose	A1
ITT2002		200	—	—	0.1	150	100		A1
ITT2003		250	—	—	0.1	150	100		A1
1N914		75	—	—	0.035	20	75		A1
1N916		75	—	—	0.025	20	75		A1

Continued

Type	Construction	Peak Inverse Volts	Minimum Forward Current		Maximum Reverse Current		Max. Rect. Current (mA)	Application	Connections
			mA	at Volts	μA	at Volts			
I.T.T. (*Continued*)									
Current Types (*Continued*)									
1N3062	Silicon planar	75	—	—	0.1	75	—		A1
1N3065		75	—	—	0.1	75	—		A1
1N4148	Silicon planar epitaxial	75	—	—	0.025	20	150		A1
1N4149		75	—	—	0.025	20	150		A1
1N4150		60	—	—	0.1	50	150		A1
1N4151		75	—	—	0.05	50	150	General purpose	A1
1N4154		35	—	—	0.1	25	150		A1
1N4446		75	—	—	0.025	20	150		A1
1N4447		75	—	—	0.025	20	150		A1
1N4448		75	—	—	0.025	20	150		A1
1N4449		75	—	—	0.025	20	150		A1
MULLARD									
Replacement Types									
AAY11	Germanium point contact	90	10	1.5	250	90	35*	High speed switching	A2
BAX78	Silicon planar epitaxial	50	—	—	0.05	50	115	High speed logic	A2
BYX26-60	Silicon avalanche	60	—	—	1	60	250	General purpose	A1
BYX26-150		150	—	—	1	150	250		A1
GEXM66	Germanium point contact	5	—	—	50	1	15*	V.H.F. mixers	A1
Current Types									
AA119	Germanium point contact	45	0.1	0.25	350	45	35*	A.M. detector	A1
AAY30	Germanium gold bonded	50	—	—	50	30	400	High speed switching	A1
AAY32		30	—	—	70	30	110	General purpose	A1
AAY33		12	—	—	100	12	240	High speed switching	A1
AAZ13		8	1	0.27	150	8	30*		A2
AAZ15		75	0.1	0.15	25	75	140*	General purpose	A2
AAZ17		50	0.1	0.15	150	50	110*	High speed switching	A2
BA102	Silicon variable capacitance	20	Cap. 20 to 45pF		100	20	—	TV, A.F.C.	A1
BA145	Double diffused silicon	300	—	—	10	300	10*	Colour TV detectors	A1
BA148	Silicon	350	—	—	200	300	300*	High speed logic	A1
BA182	Silicon planar	35	—	—	0.1	20	100	V.H.F. tuner switching	A13
BA314	Silicon	—	—	—	—	—	250	L.V. stabiliser	A1
BA316		10	—	—	—	—	100	General purpose	A1
BA317		30	—	—	—	—	100		A1
BA318		50	—	—	—	—	100		A1
BAV10		60	—	—	—	—	300	High speed gating	A1
BAV18		60	—	—	—	—	200	Switching	A1
BAV19		120	—	—	—	—	200		A1
BAV20		180	—	—	—	—	200		A1
BAV21		250	—	—	—	—	200		A1
BAV44		65	—	—	—	—	1A	High speed	A10
BAV45		35	—	—	0.01	20	50	Low leakage	C6
BAW62		75	—	—	—	—	100	High speed logic	A1
BAX12	Diffused silicon	120	—	—	100	90	400*	General purpose	A1
BAX13		50	—	—	200	50	75*	Fast logic	A1
BAX16		150	—	—	0.025	50	200	General purpose	A1
BAX17		200	—	—	0.025	50	200		A1
BB105B	Silicon variable capacitance	28	Cap. 2.0 to 2.3pF		0.1	28	—	U.H.F. tuners	A13
BB105G		28	Cap. 1.8 to 2.8pF		0.1	28	—	V.H.F. tuners	A13
BB110		30	Cap. 27 to 31pF		0.02	30	100	F.M. tuners	A13
BB113		32	Cap. 230 to 280pF		0.05	32	—	A.M. tuners	100
OA47	Germanium gold bonded	25	0.1	0.25	10	25	110*	High speed switching	A2

Continued

Type	Construction	Peak Inverse Volts	Minimum Forward Current		Maximum Reverse Current		Max. Rect. Current (mA)	Application	Connections
			mA	at Volts	μA	at Volts			
MULLARD (*Continued*)									
Current Types (*Continued*)									
OA90	Germanium point contact	30	—	—	1,100	30	10*		A1
OA91		115	—	—	275	100	50*		A1
OA95		115	—	—	250	100	50*	General purpose	A1
OA200	Silicon junction	50	—	—	0.1	50	160		A1
OA202		150	—	—	0.1	150	160		A1
1N914	Silicon planar epitaxial	75	—	—	0.025	20	75*		A1
1N916		75	—	—	0.025	20	75*	High speed logic	A1
1N4009		25	—	—	0.1	25	75		A1
1N4148	Silicon planar	75	—	—	0.025	20	75		A1
1N4149		100	—	—	0.025	20	75	High speed	A1
1N4446		75	—	—	0.025	20	100	switching	A1
1N4448		75	—	—	0.025	20	100		A1
	* Average value								
NEWMARKET									
Current Types									
OA47	Germanium gold bonded	30	—	—	1.2	5	50		A2
OA79	Germanium point contact	45	—	—	18	10	30		A2
OA90		30	—	—	250	20	40	General purpose	A2
OA91		115	—	—	7	10	50		A2
1N4148	Silicon planar	75	—	—	0.025	20	200	High speed switching	A1
SGS-ATES									
Current Types									
AY102	Germanium junction	320	—	—	150	10	10A	TV damper	96
AY103K		200	—	—	60	10	—		C18
AY104		90	—	—	100	90	—	High speed	C18
AY105K		250	—	—	60	10	—	TV damper	C18
AY106		200	—	—	150	10	10A	TV booster	96
TEXAS									
Current Types									
BA128	Silicon	50	—	—	0.1	50	100		A1
BA130		25	—	—	0.1	25	75		A1
BA180		10	—	—	—	—	50	Switching	A1
BA181		20	—	—	—	—	50		A1
BAV10		60	—	—	0.1	60	300		A1
BAV47		45	—	—	—	—	50		89
BAV48		45	—	—	—	—	50	Low leakage	89
BAV49		35	—	—	—	—	50		89
BAX13		50	—	—	0.05	25	75		A1
BAX16		150	—	—	0.025	50	200		A1
BAY31		15	—	—	0.1	10	100		A1
BAY36		30	—	—	0.1	10	100	Switching	A1
BAY71		35	—	—	0.1	35	75		A1
BAY72		100	—	—	0.1	100	225		A1
BAY74		50	—	—	0.1	35	200		A1
BY401		50	—	—	0.5	50	500		A1
BY402		100	—	—	0.5	100	500		A1
BY403		200	—	—	0.5	200	500		A1
BY404		400	—	—	0.5	400	500		A1
OA200		50	—	—	0.1	50	160	General purpose	A1
OA202		150	—	—	0.1	150	160		A1
1N645		225	—	—	0.2	225	400		A1
1N646		300	—	—	0.2	300	400		A1

Continued

Type	Construction	Peak Inverse Volts	Minimum Forward Current		Maximum Reverse Current		Max. Rect. Current (mA)	Application	Connections
			mA	at Volts	μA	at Volts			
TEXAS (*Continued*)									
Current Types (*Continued*)									
1N659	Silicon epitaxial	50	—	—	5	50	100	High speed switching	A1
1N660		100	—	—	5	100	100		A1
1N661		200	—	—	10	200	100		A1
1N914		75	—	—	0.025	20	75		A1
1N914A		75	—	—	0.025	20	75		A1
1N914B		75	—	—	0.025	20	75		A1
1N916		75	—	—	0.025	20	75		A1
1N916A		75	—	—	0.025	20	75		A1
1N916B		75	—	—	0.025	20	75		A1
1N3062		75	—	—	0.1	50	75		A1
1N3063		75	—	—	0.1	50	75		A1
1N3064		75	—	—	0.1	50	75		A1
1N3600		50	—	—	0.1	50	225		A1
1N3604		75	—	—	0.05	75	150		A1
1N3605		40	—	—	0.05	40	150		A1
1N3606		75	—	—	0.05	75	150		A1
1N4009		25	—	—	0.1	25	150		
1N4148		75	—	—	0.025	20	75		A1
1N4149		75	—	—	0.025	20	75		A1
1N4150		50	—	—	0.1	50	225		A1
1N4152		75	—	—	0.05	75	150		A1
1N4153		40	—	—	0.05	40	150		A1
1N4154		75	—	—	0.05	75	150		A1
1N4305		25	—	—	0.1	25	150		A1
1N4444		50	—	—	0.05	50	75		A1
1N4446		75	—	—	0.025	20	75		A1
1N4447		75	—	—	0.025	20	75		A1
1N4448		75	—	—	0.025	20	75		A1
1N4449		75	—	—	0.025	20	75		A1
1N4454		75	—	—	0.1	50	75		A1
1S44		40	—	—	0.05	10	75		A1
1S111	Silicon	225	—	—	0.2	225	400	General purpose	A1
1S113		400	—	—	0.2	400	400		A1
1S120		50	—	—	0.1	50	200		A1
1S121		150	—	—	0.1	150	200		A1
1S130		50	—	—	1	50	200		A1
1S131		100	—	—	1	100	200		A1
1S132		200	—	—	1	200	200		A1
1S134		400	—	—	1	400	200		A1
1S920		50	—	—	0.1	50	200		A1
1S921		100	—	—	0.1	100	200		A1
1S922		150	—	—	0.1	150	200		A1
1S923		200	—	—	0.1	200	200		A1
1S924		300	—	—	0.1	300	200		A1
1S940		30	—	—	5	30	50		A1
1S941		50	—	—	5	50	50		A1
1S942		75	—	—	5	75	50		A1
1S951	Silicon epitaxial	70	—	—	0.2	70	225	Switching	A1
1S952		90	—	—	0.5	70	225		A1
1S953		70	—	—	0.2	70	225		A1
1S960		50	—	—	0.1	50	150	High speed switching	A1
1S961		100	—	—	0.1	100	150		A1
TUNGSRAM									
Replacement Types									
BA148	Silicon	350	—	—	200	300	300	High speed logic	A1
Current Types									
AA119	Germanium point contact	45	0.1	0.25	350	45	35	A.M. detector	A1
BA102	Silicon variable capacitance	20	Cap. 20 to 45pF		100	20	—	TV A.F.C.	A1

Continued

Type	Construction	Peak Inverse Volts	Minimum Forward Current		Maximum Reverse Current		Max. Rect. Current (mA)	Application	Connections
			mA	at Volts	μA	at Volts			
TUNGSRAM (*Continued*)									
Current Types (*Continued*)									
BA182	Silicon planar	35	—	—	0.1	20	100	Tuner switching	A13
BAX13	Diffused silicon	50	—	—	200	50	75	Fast logic	A1
OA47	Germanium gold bonded	25	0.1	0.25	10	25	110	High speed switching	A2
OA90	Germanium point contact	115	—	—	275	100	50	General purpose	A1
OA95		115	—	—	250	100	50		A1
OA202	Silicon junction	150	—	—	0.1	150	160		A1

Light Emitting Diodes LEDs

Type	Construction	Colour	Forward Current (mA)	Reverse Voltage (V)	Power Dissipation (mW)	Forward Voltage		Connections
						(V)	at (mA)	
I.T.T.								
Current Types								
CQY26	GaAsP	Red	50	3	120	1.7	20	91
CQY28		Green	40	3	120	2	20	91
CQY29		Yellow	40	3	120	2	20	91
CQY30		Red	50	3	120	1.7	20	91
CQY65		Red	40	3	100	1.7	20	91
MULLARD								
Current Types								
CQY11B	GaAs	Infra-Red	30	—	—	—	—	83
CQY11C			30	—	—	—	—	83
CQY24	GaAsP	Red	50	—	—	2	50	C19
CQY25			*	—	—	2	*	—
185CQY			*	—	—	2	*	—
CQY46			50	—	—	2	50	C19
CQY47			50	—	—	2	50	C19
CQY50	GaAs	Infra-Red	100	—	—	—	—	A15

* 10mA per segment, 80mA per device

PLESSEY								
Current Types								
GAL1	GaAs	Infra-red	100	3	—	1.25	100	92
GAL1A			100	3	—	1.25	100	92
GAL2			1A	3	—	1.5	1A	95
GAL3			1A	3	—	1.5	1A	95
GAL10			500	3	1W	1.6	500	—
GAL11			500	3	1W	1.6	500	—
GAL32			100	—	—	1.3	50	91
GPA1100*	GaP	Yellow	50	6	1W	3	10	*
GPL1		Red	25	6	50	1.9	10	92
GPL2		Red	25	6	50	1.9	10	92
GPL5		Yellow	100	6	—	4	250	95
GPL100		Red	50	6	—	1.9	10	C9
GPL101		Red	50	6	—	1.9	10	C9
GPL102		Red	50	6	—	1.9	10	C9

Continued

Light Emitting Diodes LEDs

Type	Construction	Colour	Forward Current (mA)	Reverse Voltage (V)	Power Dissipation (mW)	Forward Voltage (V)	Forward Voltage at (mA)	Connections
PLESSEY (*Continued*)								
Current Types (*Continued*)								
GPL120	GaP	Yellow	50	6	—	2.3	40	C9
GPL121	GaP	Yellow	50	6	—	2.3	40	C9
GPL122	GaP	Yellow	50	6	—	2.3	40	C9
GPL140	GaP	Green	50	6	—	2.7	40	91
GPL141	GaP	Green	50	6	—	2.7	40	91
	* GPA1100–30 element array. Refer to manufacturer for connections and array details.							
R.C.A.								
Current Types								
C30116	InGaA		50	—	—	2	50	C14
SG1001	GaA	Infra-Red	50	—	—	1.4	50	C16
SG1002	GaA	Infra-Red	50	—	—	1.4	50	C15
SG1003	GaA	Infra-Red	50	—	—	1.4	50	C15
SG1004	GaA	Infra-Red	50	—	—	1.4	50	C15
SG1006	GaA	Infra-Red	20	—	—	1.2	20	C15
SG1007	GaA	Infra-Red	100	—	—	1.2	100	Chip
SG1009	GaA	Infra-Red	100	—	—	1.5	100	C14

Photodevices

Type	Construction	Spectral Response Peak (μm)	Spectral Response Cut-off (μm)	Absolute Max. Ratings Power Dissipation (mW)	Absolute Max. Ratings Forward Voltage (V)	Absolute Max. Ratings Reverse Voltage (V)	Dark Current (μA)	Dark Current at Volts	Application	Connections
MULLARD										
Current Types										
BPX40	Silicon planar photodiode	0.8	1.1	—	—	18	0.5	15	General purpose	—
BPX41	Silicon planar photodiode	0.8	1.1	—	—	18	1	15	General purpose	—
BPX42	Silicon planar photodiode	0.8	1.1	—	—	12	5	10	General purpose	—
BPX94	Silicon photodiode	0.8	1.1	—	—	18	0.1nA	—	Low light use	9
BPY13	Silicon photodiode	0.9	1.1	—	—	50	1	—	High speed use	85
BPY13A	Silicon photodiode	0.9	1.1	—	—	100	2	—	Ultra high speed use	85
BPY69	Silicon npn duo-photodiode	0.9	1.1	—	—	60	0.05	—	Photoconductive mode	—
BPY77	Silicon photodiode	0.8	1.1	—	—	100	0.002	10	Ultra high speed use	84
OAP12	Germanium photodiode	1.55	1.8	—	—	30	15	—	Photoconductive mode	—
BPX25	Silicon npn photodiode	0.8	1.1	—	32	—	0.5	—	General purpose	9
BPX29	Silicon npn photodiode	0.8	1.1	—	32	—	0.5	—	General purpose	9
BPX25A	Silicon npn 'Darlington'	0.8	1.1	—	30	—	0.25	—	Darlington pair	9
BPX29A	Phototransistor	0.8	1.1	—	30	—	0.25	—	Darlington pair	9
PLESSEY										
Current Types										
SC100	Silicon planar photodiode	0.8	1.1	—	—	50	0.02	15	General purpose	84
OPT500	Silicon planar phototransistor	0.7	1.2	200	30	7	0.025	30	General purpose	85
R.C.A.										
Current Types										
C30801	Silicon p-type photodiode	0.4	1.1	50	0.5	100	0.2	—	170° field-of-view	84
C30802	Silicon p-type photodiode	0.4	1.1	50	0.5	100	0.5	—	170° field-of-view	84
C30805	Silicon p-type photodiode	0.4	1.125	100	0.5	225	3	—	General purpose	—
C30806	Silicon p-type photodiode	0.4	1.15	100	0.5	225	3	—	General purpose	—

Continued

Type	Construction	Spectral Response		Absolute Max. Ratings					Application	Connections
		Peak (μm)	Cut-off (μm)	Power Dissipation (mW)	Forward Voltage (V)	Reverse Voltage (V)	Dark Current (μA)	at Volts		
R.C.A. (*Continued*)										
Current Types (*Continued*)										
C30807	Silicon n-type photodiode	0.4	1.1	10	0.5	45	0.01	—	General purpose	85
C30808		0.4	1.1	100	0.5	45	0.03	—		85
C30808A		0.4	1.1	100	0.5	45	0.03	—		85
C30809		0.4	1.1	100	0.5	45	0.07	—		86
C30810		0.4	1.1	1W	0.5	45	0.3	—		As marked
C30812	Silicon p-type photodiode	0.4	1.125	100	0.5	225	0.03	—		84
C30813		0.4	1.15	100	0.5	225	0.1	—		84
C30814		0.4	1.15	100	0.5	225	0.5	—		87
C30822	Silicon n-type photodiode	0.4	1.1	100	0.5	100	0.05	—		86
C30831		0.4	1.1	1	0.5	100	0.01	—		85
C30843		0.4	1.1	10	0.5	100	0.01	—		As marked
C30844		0.4	1.1	50	0.5	100	0.03	—		
C30845		0.4	1.1	100	0.5	100	0.05	—		
C30846		0.4	1.1	100	0.5	100	0.08	—		

Power Rectifier Diodes

Type	Construction	Peak Inverse Voltage	Max. Rect. Current (A)	Max. Forward Voltage Drop		Max. Reverse Current		Connections
				Volts	at Amps	μA	at Volts	
A.E.I. SEMICONDUCTORS Ltd.								
Current Types								
BYX22 series*	Silicon	200 to 800	1.4	1.5	5	120	200 to 800	A3
BYX30 series*†		200 to 600	14	—	—	—	—	S2, S3†
BYX38 series*†		300 to 1,200	2.5	2.1	15	10	300 to 1,200	S2, S3†
BYX39 series*†		600 to 1,000	6	—	—	—	—	S2, S3†
BYX40 series*†		600 to 1,000	12	—	—	—	—	S2, S3†
BYX42 series*†		300 to 1,200	10	1.4	15	200	300 to 1,200	S2, S3†
BYX45/R series*		600 to 1,000	1.5	—	—	—	—	A4
BYX46 series*†		200 to 600	15	—	—	—	—	S2, S3†
BYX48 series*†		300 to 1,200	6	1.8	15	200	300 to 1,200	S2, S3†
BYX50 series*†		200 to 600	6	—	—	—	—	S2, S3†
F12		200	1	—	—	—	—	A1
F14		400	1	—	—	—	—	A1
F16		600	1	—	—	—	—	A1
F32		200	3	—	—	—	—	A10
F34		400	3	—	—	—	—	A10
F36		600	3	—	—	—	—	A10
F111		1,100	1	—	—	—	—	A1
F113		1,300	1	—	—	—	—	A1
F311		1,100	3	—	—	—	—	A10
GJ3M	Germanium junction	200	1	0.72	1	1mA	200	S1
GJ4M		75	1	0.72	1	1.3mA	75	S1
GJ5M		300	1	0.72	1	800	300	S1
GJ6M		150	1	0.72	1	800	150	S1
HK103A	Silicon	100	17	—	—	—	—	S2
HK103K		100	17	—	—	—	—	S3
HK203A		200	17	—	—	—	—	S2
HK203K		200	17	—	—	—	—	S3
HK403A		400	17	—	—	—	—	S2
HK403K		400	17	—	—	—	—	S3
HK603A		600	17	—	—	—	—	S2
HK603K		600	17	—	—	—	—	S3
HK803A		800	17	—	—	—	—	S2

Continued

Type	Construction	Peak Inverse Voltage	Max. Rect. Current (A)	Max. Forward Voltage Drop		Max. Reverse Current		Connections
				Volts	at Amps	μA	at Volts	
A.E.I. SEMICONDUCTORS Ltd. (*Continued*)								
Current Types (Continued)								
HK803K	Silicon	800	17	—	—	—	—	S3
HK1003A		1,000	17	—	—	—	—	S2
HK1003K		1,000	17	—	—	—	—	S3
HK1203A		1,200	17	—	—	—	—	S2
HK1203K		1,200	17	—	—	—	—	S3
HL103A		100	14	—	—	—	—	S2
HL103K		100	14	—	—	—	—	S3
HL203A		200	14	—	—	—	—	S2
HL203K		200	14	—	—	—	—	S3
HL403A		400	14	—	—	—	—	S2
HL403K		400	14	—	—	—	—	S3
HL603A		600	14	—	—	—	—	S2
HL603K		600	14	—	—	—	—	S3
HL803A		800	14	—	—	—	—	S2
HL803K		800	14	—	—	—	—	S3
HL1003A		1,000	14	—	—	—	—	S2
HL1003K		1,000	14	—	—	—	—	S3
HL1203A		1,200	14	—	—	—	—	S2
HL1203K		1,200	14	—	—	—	—	S3
M6-100		100	6	—	—	—	—	S2
M6-100R		100	6	—	—	—	—	S3
M6-200		200	6	—	—	—	—	S2
M6-200R		200	6	—	—	—	—	S3
M6-400		400	6	—	—	—	—	S2
M6-400R		400	6	—	—	—	—	S3
M6-600		600	6	—	—	—	—	S2
M6-600R		600	6	—	—	—	—	S3
M6-800		800	6	—	—	—	—	S2
M6-800R		800	6	—	—	—	—	S3
M16-100		100	16	—	—	—	—	S2
M16-100R		100	16	—	—	—	—	S3
M16-200		200	16	—	—	—	—	S2
M16-200R		200	16	—	—	—	—	S3
M16-400		400	16	—	—	—	—	S2
M16-400R		400	16	—	—	—	—	S3
M16-600		600	16	—	—	—	—	S2
M16-600R		600	16	—	—	—	—	S3
M16-800		800	16	—	—	—	—	S2
M16-800R		800	16	—	—	—	—	S3
MS-35H		300	0.4	—	—	—	—	A1
MS-36H		400	0.4	—	—	—	—	A1
MS-37H		500	0.4	—	—	—	—	A1
MS-38H		600	0.4	—	—	—	—	A1
MS1		60	0.2	1	0.2	1	60	A1
MS2		100	0.2	1	0.2	1	100	A1
MS3		150	0.2	1	0.2	1	150	A1
MS4		200	0.2	1	0.2	1	200	A1
S6-103A		100	6	—	—	—	—	S2
S6-103K		100	6	—	—	—	—	S3
S6-203A		200	6	—	—	—	—	S2
S6-203K		200	6	—	—	—	—	S3
S6-403A		400	6	—	—	—	—	S2
S6-403K		400	6	—	—	—	—	S3
S6-603A		600	6	—	—	—	—	S2
S6-603K		600	6	—	—	—	—	S3
S6-803A		800	6	—	—	—	—	S2
S6-803K		800	6	—	—	—	—	S3
S6-1003A		1,000	6	—	—	—	—	S2
S6-1003K		1,000	6	—	—	—	—	S3
S6-1203A		1,200	6	—	—	—	—	S2
S6-1203K		1,200	6	—	—	—	—	S3

Continued

Type	Construction	Peak Inverse Voltage	Max. Rect. Current (A)	Max. Forward Voltage Drop		Max. Reverse Current		Connections
				Volts	at Amps	μA	at Volts	
A.E.I. SEMICONDUCTORS Ltd. (*Continued*)								
Current Types (*Continued*)								
S6-1403A	Silicon	1,400	6	—	—	—	—	S2
S6-1403K		1,400	6	—	—	—	—	S3
S6Z-603A		600	6	—	—	—	—	S2
S6Z-603K		600	6	—	—	—	—	S3
S6Z-803A		800	6	—	—	—	—	S2
S6Z-803K		800	6	—	—	—	—	S3
S6Z-1003A		1,000	6	—	—	—	—	S2
S6Z-1003K		1,000	6	—	—	—	—	S3
S6Z-1203A		1,200	6	—	—	—	—	S2
S6Z-1203K		1,200	6	—	—	—	—	S3
SJ-053F	Silicon diffused	60	0.9	1	0.75	10	60	A3
SJ-054F		60	1.25	1	0.75	10	60	A3
SJ-103F		125	0.9	1	0.75	10	125	A3
SJ-104F		125	1.25	1	0.75	10	125	A3
SJ-203F		250	0.9	1	0.75	10	250	A3
SJ-204F		250	1.25	1	0.75	10	250	A3
SJ-403F		500	0.9	1	0.75	10	500	A3
SJ-404F		500	1.25	1	0.75	10	500	A3
SJ-603F		765	0.9	1	0.75	10	765	A3
SJ-604F		765	1.25	1	0.75	10	765	A3
SJ-803F		1,015	0.9	1	0.75	10	1,015	A3
SJ-1003F		1,270	0.9	1	0.75	10	1,270	A3
SJ-1203F		1,400	0.9	1	0.75	10	1,400	A3
SK-103A		100	17.5	—	—	—	—	S2
SK-103K		100	17.5	—	—	—	—	S3
SK-203A		200	17.5	—	—	—	—	S2
SK-203K		200	17.5	—	—	—	—	S3
SK-403A		400	17.5	—	—	—	—	S2
SK-403K		400	17.5	—	—	—	—	S3
SK-603A		600	17.5	—	—	—	—	S2
SK-603K		600	17.5	—	—	—	—	S3
SK-803A		800	17.5	—	—	—	—	S2
SK-803K		800	17.5	—	—	—	—	S3
SK-1003A		1,000	17.5	—	—	—	—	S2
SK-1003K		1,000	17.5	—	—	—	—	S3
SK-1203A		1,200	17.5	—	—	—	—	S2
SK-1203K		1,200	17.5	—	—	—	—	S3
SK-1403A		1,400	17.5	—	—	—	—	S2
SK-1403K		1,400	17.5	—	—	—	—	S3
SL-103F		100	2.5	—	—	—	—	A3
SL-103M		100	6	—	—	—	—	S1
SL-203F		200	2.5	—	—	—	—	A3
SL-203M		200	6	—	—	—	—	S1
SL-403F		400	2.5	—	—	—	—	A3
SL-403M		400	6	—	—	—	—	S1
SL-603F		600	2.5	—	—	—	—	A3
SL-603M		600	6	—	—	—	—	S1
SL-803F		800	2.5	—	—	—	—	A3
SL-803M		800	6	—	—	—	—	S1
SL-1003F		1,000	2.5	—	—	—	—	A3
SL-1003M		1,000	6	—	—	—	—	S1
SL-1203F		1,200	2.5	—	—	—	—	A3
SL-1203M		1,200	6	—	—	—	—	S1
SL-1403F		1,400	2.5	—	—	—	—	A3
SLZ-603A		600	14	—	—	—	—	S2
SLZ-603G		600	2.5	—	—	—	—	A3
SLZ-603K		600	14	—	—	—	—	S3
SLZ-803A		800	14	—	—	—	—	S2
SLZ-803G		800	2.5	—	—	—	—	A3
SLZ-803K		800	14	—	—	—	—	S3
SLZ-1003A		1,000	14	—	—	—	—	S2

Continued

Type	Construction	Peak Inverse Voltage	Max. Rect. Current (A)	Max. Forward Voltage Drop		Max. Reverse Current		Connections
				Volts	at Amps	μA	at Volts	
A.E.I. Semiconductors (*Continued*)								
Current Types (*Continued*)								
SLZ-1003G	Silicon diffused	1,000	2.5	—	—	—	—	A3
SLZ-1003K		1,000	14	—	—	—	—	S3
SLZ-1203A		1,200	14	—	—	—	—	S3
SLZ-1203G		1,200	2.5	—	—	—	—	A3
SLZ-1203K		1,200	14	—	—	—	—	S3
EMIHUS								
Current Types								
HSC1	Silicon	1,000	0.1	2	0.1	5	1,000	A8
HSC2		2,000	0.1	4	0.1	5	2,000	A8
HSC3		3,000	0.1	6	0.1	5	3,000	A8
HSC4		4,000	0.1	8	0.1	5	4,000	A8
HSC5		5,000	0.1	10	0.1	5	5,000	A8
HSC6		6,000	0.1	12	0.1	5	6,000	A8
HSC7		7,000	0.1	14	0.1	5	7,000	A8
HSC8		8,000	0.1	16	0.1	5	8,000	A8
HSC9		9,000	0.1	18	0.1	5	9,000	A8
HSC10		10,000	0.1	20	0.1	5	10,000	A8
HSC12		12,000	0.1	24	0.1	5	12,000	A8
HSC15		15,000	0.1	30	0.1	5	15,000	A8
HSC18		18,000	0.1	36	0.1	5	18,000	A8
HSC20		20,000	0.1	40	0.1	5	20,000	A8
HSC25		25,000	0.1	50	0.1	5	25,000	A8
HSC30		30,000	0.1	60	0.1	5	30,000	A8
HSC015		1,500	0.1	3	0.1	5	1,500	A8
FERRANTI								
Current Types								
HS30	Silicon	5,000	0.35	13.5	0.35	5	5,000	A8
HS31		7,500	0.35	19.5	0.35	5	7,500	A8
HS32		10,000	0.35	23	0.35	5	10,000	A8
HS33		16,000	0.35	34	0.35	5	16,000	A8
HS403		15,000	0.05	50	0.05	1	15,000	A8
HS403B		15,000	0.05	50	0.05	50	15,000	A8
HX30		5,000	0.35	13.5	0.35	5	5,000	A8
HX31		7,500	0.35	19.5	0.35	5	7,500	A8
HX32		10,000	0.35	23	0.35	5	10,000	A8
HX33		16,000	0.35	35	0.35	5	16,000	A8
ZHS101		2,000	0.1	5	0.1	0.03	2,000	A1
ZHS102		2,000	0.1	5	0.1	1	2,000	A1
ZHS103		2,000	0.1	5	0.1	0.1	2,000	A1
ZHS104		3,000	0.1	5	0.1	0.05	3,000	A1
ZHS105		3,000	0.1	5	0.1	1	3,000	A1
ZHS106		3,000	0.1	5	0.1	0.1	3,000	A1
ZR10		50	1.5	1	1.5	5	50	A9
ZR10T		50	1.5	1	1.5	5	50	S3
ZR11		100	1.5	1	1.5	5	100	A5
ZR11T		100	1.5	1	1.5	5	100	S3
ZR12		200	1.5	1	1.5	5	200	A5
SR12T		200	1.5	1	1.5	5	200	S3
ZR13		300	1.5	1	1.5	5	300	A5
ZR14		400	1.5	1	1.5	5	400	A5

* Each series comprises several different types, the basic number being suffixed by digits indicating the Peak Inverse Voltage.
† Reverse polarity types denoted by the letter 'R' after the basic number.

Continued

Type	Construction	Peak Inverse Voltage	Max. Rect. Current (A)	Max. Forward Voltage Drop		Max. Reverse Current		Connections
				Volts	at Amps	μA	at Volts	
FERRANTI (*Continued*)								
Current Types (*Continued*)								
ZR15	Silicon	500	1	1	1	5	500	A5
ZR20		50	8	1.2	5	5	50	S3
ZR21		100	8	1.2	5	5	100	S3
ZR22		200	8	1.2	5	5	200	S3
ZR23		300	8	1.2	5	5	300	S3
ZR24		400	8	1.2	5	5	400	S3
ZR60		50	0.75	1.1	0.75	10	50	A3
ZR61		100	0.75	1.1	0.75	10	100	A3
ZR62		200	0.75	1.1	0.75	10	200	A3
ZR63		300	0.75	1.1	0.75	10	300	A3
ZR64		400	0.75	1.1	0.75	10	400	A3
ZR66		600	0.75	1.1	0.75	10	600	A3
ZR68		800	0.75	1.1	0.75	10	800	A3
ZR200		50	8	1.2	5	5	50	S3
ZR201		100	8	1.2	5	5	100	S3
ZR202		200	8	1.2	5	5	200	S3
ZR204		400	8	1.2	5	5	400	S3
ZR200R to ZR204R		Reverse polarity versions of ZR200 to ZR204						S2
ZS30A		50	0.5	1.1	0.5	0.2	50	A1
ZS30B		50	0.5	1.1	0.5	5	50	A1
ZS31A		100	0.5	1.1	0.5	0.2	100	A1
ZS31B		100	0.5	1.1	0.5	5	100	A1
ZS32A		200	0.5	1.1	0.5	0.2	200	A1
ZS32B		200	0.5	1.1	0.5	5	200	A1
ZS33A		300	0.5	1.1	0.5	0.2	300	A1
ZS33B		300	0.5	1.1	0.5	5	300	A1
ZS34A		400	0.5	1.1	0.5	0.2	400	A1
ZS34B		400	0.5	1.1	0.5	5	400	A1
ZS170		50	0.75	1.2	0.75	5	50	A1
ZS171		100	0.75	1.2	0.75	5	100	A1
ZS172		200	0.75	1.2	0.75	5	200	A1
ZS174		400	0.75	1.2	0.75	5	400	A1
ZS176		600	0.75	1.2	0.75	5	600	A1
ZS178		800	0.75	1.2	0.75	5	800	A1
ZS100	Silicon junction	50	0.4	1	0.4	0.2	50	A1
ZS101		100	0.4	1	0.4	0.2	100	A1
ZS102		200	0.4	1	0.4	0.2	200	A1
ZS103		300	0.4	1	0.4	0.2	300	A1
ZS104		400	0.4	1	0.4	0.2	400	A1
ZS106		600	0.4	1	0.4	0.2	600	A1
ZS108		800	0.4	1	0.4	0.2	800	A1
ZS270		50	1.5	1.2	1.5A	10	50	A1
ZS271		100	1.5	1.2	1.5A	10	100	A1
ZS272		200	1.5	1.2	1.5A	10	200	A1
ZS273		300	1.5	1.2	1.5A	10	300	A1
ZS274		400	1.5	1.2	1.5A	10	400	A1
ZS276		600	1.5	1.2	1.5A	10	600	A1
ZS278		800	1.5	1.2	1.5A	10	800	A1
1N4001	Silicon	50	1	—	—	0.05	50	A1
1N4002		100	1	—	—	0.05	100	A1
1N4003		200	1	—	—	0.05	200	A1
1N4004		400	1	—	—	0.05	400	A1
1N4005		600	1	—	—	0.05	600	A1
1N4006		800	1	—	—	0.05	800	A1
1N4007		1,000	1	—	—	0.05	1,000	A1

Type	Construction	Peak Inverse Voltage	Max. Rect. Current (mA)	Max. Forward Voltage Drop		Max. Reverse Current		Connections
				Volts	at Amps	μA	at Volts	
INTERNATIONAL RECTIFIER CO.								
Replacement Types								
5A series*	Silicon	400 to 1,000	1	0.9	1	50	400 to 1,000	A10
10B series*		400 to 1,000	1.3	1.1	3	500	400 to 1,000	A3
SD94S		400	1.1	1	1	200	400	A3
SD96S		600	1.1	1	1	200	600	A3
SD98S		800	1.1	1	1	100	800	A3
SD910S		1,000	1.1	1	1	100	1,000	A3
Current Types								
A10D series*	Silicon avalanche	600 to 1,000	1	0.9	1	50	600 to 1,000	A10
10D series*	Silicon	50 to 1,000	1	—	—	50	50 to 1,000	A10
1N4001		50	1	—	—	50	50	A1
1N4002		100	1	—	—	50	100	A1
1N4003		200	1	—	—	50	200	A1
1N4004		400	1	—	—	50	400	A1
1N4005		600	1	—	—	50	600	A1
1N4006		800	1	—	—	50	800	A1
1N4007		1,000	1	—	—	50	1,000	A1
30S series*		100 to 1,000	3	1	3	300	100 to 1,000	A1
3F series**		100 to 1,200	3	—	—	12mA	100 to 1,200	S2
60S series*		50 to 1,000	6	—	—	2mA	50 to 1,000	A1
A6F series**	Silicon avalanche	600 to 1,000	6	—	—	1mA	600 to 1,000	S2
6F series**	Silicon diffused	100 to 1,200	6	0.5	6	12mA	100 to 1,200	S2
A12F series**	Silicon avalanche	600 to 1,000	12	—	—	1mA	600 to 1,000	S2
12F series**	Silicon diffused	100 to 1,200	12	0.9	12	12mA	100 to 1,200	S2
16F series**		100 to 1,200	16	0.9	16	12mA	100 to 1,200	S2

* Each series comprises several different types, the basic number being suffixed by digits indicating the Peak Inverse Voltage (times 100).

** Each series comprises several different types, the basic number being suffixed by digits indicating the Peak Inverse Voltage (times 10).

Note: Letter 'R' following the type number, indicates reverse polarity types

I.T.T.								
Current Types								
BY103	Silicon	1,300	1	1.3	2	5	1,300	A9
BY133		1,300	1	1.3	2	5	1,300	A1
BY134		600	1	1.3	2	5	600	A1
BY135		150	1	1.3	2	5	150	A1
BY147		7,500	0.25	9	0.25	1	7,000	—
BY154		7,500	0.5	9	0.25	1	7,000	—
BY189		850	4	1.3	4	10	500	S3
BY190		650	4	1.3	4	10	500	S3
BY296		100	2	1.3	3	10	100	A1
BY297		200	2	1.3	3	10	200	A1
BY298		400	2	1.3	3	10	400	A1
BY299		800	2	1.3	3	10	800	A1
BYY31		200	1	1.3	2	5	150	A12
BYY32		400	1	1.3	2	5	300	A12
BYY33		600	1	1.3	2	5	450	A12
BYY34		800	1	1.3	2	5	600	A12
BYY35		1,000	1	1.3	2	5	750	A12
BYY36		1,200	1	1.3	2	5	900	A12
BYY37		1,400	1	1.3	2	5	1,050	A12
BYY88		200	1	1.3	2	5	150	A9
BYY89		400	1	1.3	2	5	300	A9
BYY90		800	1	1.3	2	5	600	A9
BYY91		1,400	1	1.3	2	5	1,200	A9
BYY92		2,000	1	1.3	2	5	1,600	A9
EM501 / 1N4002		100	1	1.1	1	10	100	A1

Continued

Type	Construction	Peak Inverse Voltage	Max. Rect. Current (A)	Max. Forward Voltage Drop		Max. Reverse Current		Connections
				Volts	at Amps	μA	at Volts	
L.T. (*Continued*)								
Current Types (*Continued*)								
EM502 / 1N4003	Silicon	200	1	1.1	1	10	200	A1
EM504 / 1N4004	Silicon	400	1	1.1	1	10	400	A1
EM506 / 1N4005	Silicon	600	1	1.1	1	10	600	A1
EM508 / 1N4006	Silicon	800	1	1.1	1	10	800	A1
EM510 / 1N4007	Silicon	1,000	1	1.1	1	10	1,000	A1
EM513	Silicon	1,300	1	1.1	1	10	1,300	A1
FR1050	Silicon	50	1	1.5	3	10	50	A4
FR1100	Silicon	100	1	1.5	3	10	100	A4
FR1200	Silicon	200	1	1.5	3	10	200	A4
FR1300	Silicon	300	1	1.5	3	10	300	A4
FR1400	Silicon	400	1	1.5	3	10	400	A4
FR1500	Silicon	500	1	1.5	3	10	500	A4
FR1600	Silicon	600	1	1.5	3	10	600	A4
FR4050	Silicon	50	4	1.5	6	10	50	S3
FR4100	Silicon	100	4	1.5	6	10	100	S3
FR4200	Silicon	200	4	1.5	6	10	200	S3
FR4300	Silicon	300	4	1.5	6	10	300	S3
FR4400	Silicon	400	4	1.5	6	10	400	S3
FR4500	Silicon	500	4	1.5	6	10	500	S3
FR4600	Silicon	600	4	1.5	6	10	600	S3
RAS310AF	Silicon avalanche	1,000	1	—	—	10	1,000	A4
RAS508AF	Silicon avalanche	800	5	—	—	20	800	S3
RAS508CF	Silicon avalanche	800	10	—	—	50	800	S3
1N2070	Silicon	400	0.5	1.1	1	10	400	A1
1N4001	Silicon	50	1	1.1	1	10	50	A1
1N4383	Silicon	200	0.3	1	1	10	200	A1
1N4384	Silicon	400	0.3	1	1	10	400	A1
1N4385	Silicon	600	0.3	1	1	10	600	A1
1N4585	Silicon	800	0.3	1	1	10	800	A1
1N4586	Silicon	1,000	0.3	1	1	10	1,000	A1
1N5400	Silicon	50	3	1	3	25	50	A1
1N5401	Silicon	100	3	1	3	25	100	A1
1N5402	Silicon	200	3	1	3	25	200	A1
1N5403	Silicon	300	3	1	3	25	300	A1
1N5404	Silicon	400	3	1	3	25	400	A1
1N5405	Silicon	500	3	1	3	25	500	A1
1N5406	Silicon	600	3	1	3	25	600	A1
1N5407	Silicon	800	3	1	3	25	800	A1
1N5408	Silicon	1,000	3	1	3	25	1,000	A1
JOSEPH LUCAS (ELECTRICAL) Ltd.								
Replacement Types								
DD3020	Silicon diffused	50	2.5	1	1	1	50	S9
DD3026	Silicon diffused	400	2.5	1	1	1	400	S9
DD3076	Silicon diffused	400/800	2.5	1	1	1	400	S9
DD3078	Silicon diffused	800/1,350	2.5	1	1	1	400	S9
Current Types								
DA000	Controlled avalanche	60	0.5	1	1	1	60	A1
DA001	Controlled avalanche	100	0.5	1	1	1	100	A1
DA002	Controlled avalanche	150	0.5	1	1	1	150	A1
DA006	Controlled avalanche	400	0.5	1	1	1	400	A1
DA058	Controlled avalanche	800	0.5	1	1	1	400	A1

Continued

Power Rectifier Diodes

Type	Construction	Peak Inverse Voltage	Max. Rect. Current (A)	Max. Forward Voltage Drop		Max. Reverse Current		Connections
				Volts	at Amps	μA	at Volts	
JOSEPH LUCAS (ELECTRICAL) LTD. (*Continued*)								
Current Types (*Continued*)								
DA1000	Controlled avalanche	60	1	1	1	1	60	A1
DA1001		100	1	1	1	1	100	A1
DA1002		150	1	1	1	1	150	A1
DA2026		400	1.5	1	1	1	400	A10
DA2048		800	1	1	1	1	400	A10
DD000	Silicon diffused	50	0.5	1	1	1	50	A1
DD001		100	0.5	1	1	1	100	A1
DD003		200	0.5	1	1	1	200	A1
DD006		400	0.5	1	1	1	400	A1
DD056		400	0.5	1	1	1	400	A1
DD058		800	0.5	1	1	1	800	A1
DD710*		50	35	1.05	35	15	50	S2, S3*
DD711*		100	35	1.05	35	15	100	S2, S3*
DD713*		200	35	1.05	35	15	200	S2, S3*
DD716*		400	35	1.05	35	15	400	S2, S3*
DD1000		50	1	1	1	1	50	A1
DD1001		100	1	1	1	1	100	A1
DD1003		200	1	1	1	1	200	A1
DD1006		400	1	1	1	1	400	A1
DD2020		50	1.5	1	1	1	50	A10
DD2026		400	1.5	1	1	1	400	A10
DD2066		400	1	1	1	1	400	A10
DD2068		800	1	1	1	1	800	A10
DD4020		50	6	1	6	5	50	S9
DD4026		400	6	1	6	5	400	S9
DD4066		400	6	1	6	5	400	S9
DD4067		600	6	1	6	5	600	S9
DD4068		800	6	1	6	5	800	S9
DD4520		50	10	1	10	10	50	S9
DD4521		100	10	1	10	10	100	S9
DD4523		200	10	1	10	10	200	S9
DD4526		400	10	1	10	10	400	S9
DD5620		50	18	1.2	50	10	50	S2
DD5621		100	18	1.2	50	10	100	S2
DD5623		200	18	1.2	50	10	200	S2
DD5626		400	18	1.2	50	10	400	S2
DD6120		50	25	1.3	75	10	50	S2
DD6121		100	25	1.3	75	10	100	S2
DD6123		200	25	1.3	75	10	200	S2
DD6126		400	25	1.3	75	10	400	S2
DD7120*		50	25	1.3	75	10	50	S2, S3*
DD7121*		100	25	1.3	75	10	100	S2, S3*
DD7123*		200	25	1.3	75	10	200	S2, S3*
DD7126*		400	25	1.3	75	10	400	S2, S3*

* Reverse polarity types have suffix A. Connections for reverse polarity types are given after those for standard polarity.

MULLARD

Replacement Types

BYX20/200	Silicon	85	25	1.2	25	1.1mA	75	Cathode to case
BYX20/200R								Anode to case

Current Types

BY126	Silicon junction	650	1	1.5	5	10	650	A9
BY127		1,250	1	1.5	5	10	1,250	A9

Continued

Type	Construction	Peak Inverse Voltage	Max. Rect. Current (A)	Max. Forward Voltage Drop		Max. Reverse Current		Connections
				Volts	at Amps	μA	at Volts	
MULLARD (*Continued*)								
Current Types (*Continued*)								
BY182		12,000	2.5mA	—	—	—	—	Polarity marked
BY187		11,500	2.5mA	—	—	—	—	
BY206	Silicon	350	15	1.5	2	—	—	A12
BY207		600	15	1.5	2	—	—	A12
BY209		11,500	2.5mA	—	—	—	—	Pol. marked
BY210 series†		400 to 600	30	1.3	1	—	—	A12
BYX10	Silicon junction	800	0.2	1.1	0.2	50	800	A1
BYX22 series†	Silicon	200 to 800	1	1.5	5	120	200 to 800	A4
BYX25 series†*		600 to 1,000	20	1.8	50	1mA	600 to 1,000	S2, S3*
BYX26 series	Silicon avalanche	60 to 150	7	0.9	0.25	1	60 to 150	A12
BYX30 series†*	Silicon	200 to 600	7.5	—	—	—	—	S2, S3*
BYX36 series†	Silicon diffused	150 to 600	1	0.9	1	1	150 to 600	A12
BYX38 series†*	Silicon	300 to 1,200	2.5	2.1	15	10	300 to 1,200	S2, S3*
BYX42 series†*		300 to 1,200	10	1.4	15	200	300 to 1,200	S2, S3*
BYX46 series†*		200 to 600	15	—	—	—	—	S2, S3*
BYX48 series†*		300 to 1,200	6	1.8	15	200	300 to 1,200	S2, S3*
BYX49 series†*		300 to 1,200	2.5	—	—	—	—	Pol. marked
BYX52 series†*		300 to 1,200	40	—	—	—	—	S2, S3*
BYX55 series†		300 to 500	1.2	—	—	—	—	A12
BYX70 series†		100 to 500	30	1.2	1	—	—	A1
BYX71 series†*		300 to 500	7	—	—	—	—	Pol. marked
BYX72 series†*		150 to 500	10	—	—	—	—	
OA210	Silicon junction	400	5	—	—	—	—	—
OA211		800	4	—	—	—	—	—
1N3880*	Silicon	100	4	—	—	—	—	S2, S3*
1N3881* BYX50-200*		200	4	—	—	—	—	S2, S3*
1N3882* BYX50-300*		300	4	—	—	—	—	S2, S3*
1N4001		50	1	1.1	1	5	50	A1
1N4002		100	1	1.1	1	5	100	A1
1N4003		200	1	1.1	1	5	200	A1
1N4004		400	1	1.1	1	5	400	A1
1N4005		600	1	1.1	1	5	600	A1
1N4006		800	1	1.1	1	5	800	A1
1N4007		1,000	1	1.1	1	5	1,000	A1

* Reverse polarity types denoted by 'R' after type number

† Each series comprises several different types, the basic number being suffixed, after the hyphen, by a group of digits indicating the rated maximum Peak Inverse Voltage for each type.

NEWMARKET

Current Types

1N4001	Silicon	50	1	1.1	1	5	50	A1
1N4002		100	1	1.1	1	5	100	A1
1N4003		200	1	1.1	1	5	200	A1
1N4004		400	1	1.1	1	5	400	A1
1N4005		600	1	1.1	1	5	600	A1
1N4006		800	1	1.1	1	5	800	A1
1N4007		1,000	1	1.1	1	5	1,000	A1

R.C.A.

Current Types

D1201A (44002)	Silicon diffused junction	100	1	1.1	1	—	—	A1
D1201B (44003)		200	1	1.1	1	—	—	A1
D1201D (44004)		300	1	1.1	1	—	—	A1
D1201F (44001)		50	1	1.1	1	—	—	A1

Continued

Power Rectifier Diodes

Type	Construction	Peak Inverse Voltage	Max. Rect. Current (A)	Max. Forward Voltage Drop		Max. Reverse Current		Connections
				Volts	at Amps	μA	at Volts	
R.C.A. (*Continued*)								
Current Types (*Continued*)								
D1201M (44005)		400	1	1.1	1	—	—	A1
D1201N (44006)		800	1	1.1	1	—	—	A1
D1201P (44007)		1,000	1	1.1	1	—	—	A1
D2101S (40892)		700	1	1.5	4	—	—	A3
D2103S (40891)		700	3	1.4	4	—	—	A3
D2103SF (40890)		750	3	1.4	4	—	—	A3
D2201A (44934)		100	1.5	1.9	4	—	—	A1
D2201B (44935)		200	1.5	1.9	4	—	—	A1
D2201D (44936)		400	1.5	1.9	4	—	—	A1
D2201F (44933)		50	1.5	1.9	4	—	—	A1
D2201M (44937)		600	1.5	1.9	4	—	—	A1
D2201N (44938)		800	1.5	1.9	4	—	—	A1
D2540A (40957)		100	60	1.8	100	—	—	S2
D2540B (40958)		200	60	1.8	100	—	—	S2
D2540D (40959)		400	60	1.8	100	—	—	S2
D2540F (40956)		50	60	1.8	100	—	—	S2
D2540M (40960)		600	60	1.8	100	—	—	S2
D2600EF (40644)		550	1	1.6	0.02	—	—	A10
D2601A		100	1.5	1.9	4	—	—	A10
D2601B (TA7892)		200	1.5	1.9	4	—	—	A10
D2601D (TA7893)		400	1.5	1.9	4	—	—	A10
D2601DF (40643)		450	1.5	1.9	4	—	—	A10
D2601EF (40642)		550	1.5	1.9	4	—	—	A10
D2601F		50	1.5	1.9	4	—	—	A10
D2601M (TA7894)		600	1.5	1.9	4	—	—	A10
D2601N (TA7895)		800	1.5	1.9	4	—	—	A10
TAD2201D		400	1	1.5	4	—	—	A1
TAD2201G		150	1.8	1.6	4	—	—	A1
TAD2201MF		650	1	1.5	4	—	—	A1
1N248C		50	20	0.6	20	—	—	S2
1N249C	Silicon diffused junction	100	20	0.6	20	—	—	S2
1N250C		200	20	0.6	20	—	—	S2
1N440B		100	0.75	1.5	0.75	—	—	A10
1N441B		200	0.75	1.5	0.75	—	—	A10
1N442B		300	0.75	1.5	0.75	—	—	A10
1N443B		400	0.75	1.5	0.75	—	—	A10
1N444B		500	0.65	1.5	0.65	—	—	A10
1N445B		600	0.65	1.5	0.65	—	—	A10
1N536		50	0.75	1.1	0.5	—	—	A10
1N537		100	0.75	1.1	0.5	—	—	A10
1N538		200	0.75	1.1	0.5	—	—	A10
1N539		300	0.75	1.1	0.5	—	—	A10
1N540		400	0.75	1.1	0.5	—	—	A10
1N547		600	0.75	1.2	0.5	—	—	A10
1N1095		500	0.75	1.2	0.5	—	—	A10
1N1183A		50	40	0.65	40	—	—	A1
1N1184A		100	40	0.65	40	—	—	A1
1N1186A		200	40	0.65	40	—	—	A1
1N1187A		300	40	0.65	40	—	—	A1
1N1188A		400	40	0.65	40	—	—	A1
1N1189A		500	40	0.65	40	—	—	A1
1N1190A		600	40	0.65	40	—	—	A1
1N1195A		300	20	0.6	20	—	—	A1
1N1196A		400	20	0.6	20	—	—	A1
1N1197A		500	20	0.6	20	—	—	A1
1N1198A		600	20	0.6	20	—	—	A1
1N1199A		50	12	0.55	12	—	—	S2
1N1200A		100	12	0.55	12	—	—	S2
1N1202A		200	12	0.55	12	—	—	S2
1N1203A		300	12	0.55	12	—	—	S2
1N1204A		400	12	0.55	12	—	—	S2
1N1205A		500	12	0.55	12	—	—	S2

Continued

Type	Construction	Peak Inverse Voltage	Max. Rect. Current (A)	Max. Forward Voltage Drop		Max. Reverse Current		Connections
				Volts	at Amps	μA	at Volts	
R.C.A. (*Continued*)								
Current Types (*Continued*)								
1N1206A	Silicon diffused junction	600	12	0.55	12	—	—	S2
1N1341B		50	6	0.65	6	—	—	S2
1N1342B		100	6	0.65	6	—	—	S2
1N1344B		200	6	0.65	6	—	—	S2
1N1345B		300	6	0.65	6	—	—	S2
1N1346B		400	6	0.65	6	—	—	S2
1N1347B		500	6	0.65	6	—	—	S2
1N1348B		600	6	0.65	6	—	—	S2
1N1763A		400	1	1.2	1	—	—	A10
1N1764A		500	1	1.2	1	—	—	A10
1N2858A		50	1	1.2	1	—	—	A10
1N2859A		100	1	1.2	1	—	—	A10
1N2860A		200	1	1.2	1	—	—	A10
1N2861A		300	1	1.2	1	—	—	A10
1N2862A		400	1	1.2	1	—	—	A10
1N2863A		500	1	1.2	1	—	—	A10
1N2864A		600	1	1.2	1	—	—	A10
1N3193		200	0.75	1.2	0.5	—	—	A10
1N3194		400	0.75	1.2	0.5	—	—	A10
1N3195		600	0.75	1.2	0.5	—	—	A10
1N3196		800	0.5	1.2	0.5	—	—	A10
1N3253		200	0.75	1.2	0.5	—	—	A10
1N3254		400	0.75	1.2	0.5	—	—	A10
1N3255		600	0.75	1.2	0.5	—	—	A10
1N3256		800	0.5	1.2	0.5	—	—	A10
1N3563		1,000	0.4	1.2	0.5	—	—	A10
1N3879		50	9	1.4	6	—	—	S2
1N3880		100	9	1.4	6	—	—	S2
1N3881		200	9	1.4	6	—	—	S2
1N3882		300	9	1.4	6	—	—	S2
1N3883		400	9	1.4	6	—	—	S2
1N3889		50	18	1.4	12	—	—	S2
1N3890		100	18	1.4	12	—	—	S2
1N3891		200	18	1.4	12	—	—	S2
1N3892		300	18	1.4	12	—	—	S2
1N3893		400	18	1.4	12	—	—	S2
1N3899		50	30	1.4	20	—	—	S2
1N3900		100	30	1.4	20	—	—	S2
1N3901		200	30	1.4	20	—	—	S2
1N3902		300	30	1.4	20	—	—	S2
1N3903		400	30	1.4	20	—	—	S2
1N3909		50	45	1.4	30	—	—	S2
1N3910		100	45	1.4	30	—	—	S2
1N3911		200	45	1.4	30	—	—	S2
1N3912		300	45	1.4	30	—	—	S2
1N3913		400	45	1.4	30	—	—	S2
1N5211		200	1	1.2	1	—	—	A10
1N5212		400	1	1.2	1	—	—	A10
1N5213		600	1	1.2	1	—	—	A10
1N5214		800	0.75	1.2	1	—	—	A10
1N5215		200	1	1.2	1	—	—	A10
1N5216		400	1	1.2	1	—	—	A10
1N5217		600	1	1.2	1	—	—	A10
1N5218		800	0.75	1.2	1	—	—	A10
1N5391		50	1.5	1.4	1.5	—	—	A1
1N5392		100	1.5	1.4	1.5	—	—	A1
1N5393		200	1.5	1.4	1.5	—	—	A1
1N5394		300	1.5	1.4	1.5	—	—	A1
1N5395		400	1.5	1.4	1.5	—	—	A1
1N5396		500	1.5	1.4	1.5	—	—	A1
1N5397		600	1.5	1.4	1.5	—	—	A1

Continued

Power Rectifier Diodes

Type	Construction	Peak Inverse Voltage	Max. Rect. Current (A)	Max. Forward Voltage Drop		Max. Reverse Current		Connections
				Volts	at Amps	μA	at Volts	
R.C.A. *(Continued*								
Current Types (Continued)								
1N5398	Silicon diffused junction	800	1.5	1.4	1.5	—	—	A1
1N5399		1,000	1.5	1.4	1.5	—	—	A1
		Note: New type numbers are now employed. Old type numbers are given in parenthesis.						
SEMITRON								
Current Types								
R020	Silicon diffused	200	1	1.2	1	10	200	A1
R040		400	1	1	1	10	400	A1
R080		800	1	1	1	10	800	A1
R205	Silicon	50	2	1.2	2	100	50	A3
R210		100	2	1.2	2	100	100	A3
R220		200	2	1.2	2	100	200	A3
R240		400	2	1.2	2	100	400	A3
R260		600	2	1.2	2	80	600	A3
R280		800	2	1.2	2	60	800	A3
R305*		50	6	1.4	6	100	50	S2, S3*
R310*		100	6	1.4	6	100	100	S2, S3*
R320*		200	6	1.4	6	100	200	S2, S3*
R340*		400	6	1.4	6	100	400	S2, S3*
R360*		600	6	1.4	6	80	600	S2, S3*
R380*		800	6	1.4	6	60	800	S2, S3*
R705*		50	15	1.4	15	100	50	S2, S3*
R710*		100	15	1.4	15	100	100	S2, S3*
R720*		200	15	1.4	15	100	200	S2, S3*
R740*		400	15	1.4	15	100	400	S2, S3*
R760*		600	15	1.4	15	80	600	S2, S3*
R780*		800	15	1.4	15	60	800	S2, S3*
		* Reverse polarity types have suffix 'R' after type number. Connections for reverse polarity types are given after those for standard polarity.						
TEXAS								
Current Types								
1N1130	Silicon	1,500	0.3	1.5	0.3	50	1,500	S2
1N1131		1,500	0.3	1.5	0.3	50	1,500	S2
1N2069		200	0.75	1.2	0.5	10	200	A10
1N2070		400	0.75	1.2	0.5	10	400	A10
1N2071		600	0.75	1.2	0.5	10	600	A10
1N3879		50	6	1.4	6	—	—	S2
1N3879R								S3
1N3880		100	6	1.4	6	—	—	S2
1N3880R								S3
1N3881		200	6	1.4	6	—	—	S2
1N3881R								S3
1N3882		300	6	1.4	6	—	—	S2
1N3882R								S3
1N3883		400	6	1.4	6	—	—	S2
1N3883R								S3
1N3889		50	12	1.5	12	—	—	S2
1N3889R								S3
1N3890		100	12	1.5	12	—	—	S2
1N3890R								S3
1N3891		200	12	1.5	12	—	—	S2
1N3891R								S3
1N3892		300	12	1.5	12	—	—	S2
1N3892R								S3

Continued

Type	Construction	Peak Inverse Voltage	Max. Rect. Current (A)	Max. Forward Voltage Drop		Max. Reverse Current		Connections
				Volts	at Amps	μA	at Volts	
TEXAS (*Continued*)								
Current Types (*Continued*)								
1N3893, 1N3893R		400	12	1.5	12	—	—	S2, S3
1N4001		50	1	—	—	—	—	A1
1N4002		100	1	—	—	—	—	A1
1N4003	Silicon	200	1	—	—	—	—	A1
1N4004		400	1	—	—	—	—	A1
1N4005		600	1	—	—	—	—	A1
1N4006		800	1	—	—	—	—	A1
1N4007		1,000	1	—	—	—	—	A1
1S020		100	1.5	1.25	5	50	100	A3
1S021		200	1.5	1.25	5	50	200	A3
1S023		400	1.5	1.25	5	50	400	A3
1S025		600	1.5	1.25	5	50	600	A3
1S027		800	1.5	1.25	5	50	800	A3
1S100	Silicon diffused	100	0.75	1.25	2	2	100	A3
1S101		200	0.75	1.25	2	2	200	A3
1S103		400	0.75	1.25	2	2	400	A3
1S105		600	0.75	1.25	2	2	600	A3
1S107		800	0.75	1.25	2	2	800	A3
1S109		1,000	0.75	1.25	2	2	1,000	A3
1S111		225	0.4	—	—	0.2	225	A1
1S113		400	0.4	—	—	0.2	400	A1
1S115	Silicon alloyed	600	0.4	—	—	0.2	600	A1
1S117		800	0.4	—	—	0.2	800	A1
1S410, 1S410R		100	3	1.6	10	5	100	S2, S3
1S411, 1S411R		200	3	1.6	10	5	200	S2, S3
1S413, 1S413R		400	3	1.6	10	5	400	S2, S3
1S415, 1S415R		600	3	1.6	10	5	600	S2, S3
1S417, 1S417R		800	3	1.6	10	5	800	S2, S3
1S419, 1S419R	Silicon diffused	1,000	3	1.6	10	5	1,000	S2, S3
1S420, 1S420R		100	10	1.5	30	50	100	S2, S3
1S421, 1S421R		200	10	1.5	30	50	200	S2, S3
1S423, 1S423R		400	10	1.5	30	50	400	S2, S3
1S425, 1S425R		600	10	1.5	30	50	600	S2, S3
1S427, 1S427R		800	10	1.5	30	50	800	S2, S3
1SX170		60	1	1.2	1	—	—	A1
1SX171		100	1	1.2	1	—	—	A1
1SX172		200	1	1.2	1	—	—	A1
1SX173	Silicon	300	1	1.2	1	—	—	A1
1SX174		400	1	1.2	1	—	—	A1
1SX175		500	1	1.2	1	—	—	A1
TUNGSRAM								
Current Types								
BY126	Silicon junction	650	1	1.5	5	10	650	A9
BY127		1,250	1	1.5	5	10	1,250	A9

Continued

Power Rectifier Diodes

Type	Construction	Peak Inverse Voltage	Max. Rect. Current (A)	Max. Forward Voltage Drop		Max. Reverse Current		Connections
				Volts	at Amps	μA	at Volts	
TUNGSRAM (*Continued*)								
Current Types (*Continued*)								
BY164	Silicon bridge	120	1.4	—	—	—	—	As Marked
BY182	Silicon	12, 000	2.5mA	—	—	—	—	As Marked
BY187	Silicon	11, 500	2.5mA	—	—	—	—	As Marked
BY206		350	0.4	1.5	2	—	—	A1
BYX10	Silicon junction	800	0.2	1.1	0.2	50	800	A1
WESTINGHOUSE								
Current Types								
S1M1	Silicon diffused	100	1.5	0.5	1.5	10	100	A11
S2M1	Silicon diffused	200	1.5	0.5	1.5	10	200	A11
S4M1	Silicon diffused	400	1.5	0.5	1.5	10	400	A11
S6M1	Silicon diffused	600	1.5	0.5	1.5	10	600	A11
S8M1	Silicon diffused	800	1.5	0.5	1.5	10	800	A11
S10M1	Silicon diffused	1, 000	1.5	0.5	1.5	10	1, 000	A11
S12M1	Silicon diffused	1, 200	1.5	0.5	1.5	10	1, 200	A11
S1CN1	Silicon diffused	100	1.5	0.5	1.5	10	100	A1
S2CN1	Silicon diffused	200	1.5	0.5	1.5	10	200	A1
S4CN1	Silicon diffused	400	1.5	0.5	1.5	10	400	A1
S6CN1	Silicon diffused	600	1.5	0.5	1.5	10	600	A1
S8CN1	Silicon diffused	800	1.5	0.5	1.5	10	800	A1
S10CN1	Silicon diffused	1, 000	1.5	0.5	1.5	10	1, 000	A1
S12CN1	Silicon diffused	1, 200	1.5	0.5	1.5	10	1, 200	A1
S1AN12	Silicon diffused	100	10	0.5	10	2mA	100	S2
S2AN12	Silicon diffused	200	10	0.5	10	2mA	200	S2
S4AN12	Silicon diffused	400	10	0.5	10	2mA	400	S2
S6AN12	Silicon diffused	600	10	0.5	10	2mA	600	S2
S8AN12	Silicon diffused	800	10	0.5	10	2mA	800	S2
S10AN12	Silicon diffused	1, 000	10	0.5	10	2mA	1, 000	S2
S12AN12	Silicon diffused	1, 200	10	0.5	10	2mA	1, 200	S2
S15AN12	Silicon diffused	1, 500	10	0.5	10	2mA	1, 500	S2

Power Rectifier Diode Stacks

Type	Construction	Peak Inverse Voltage	Max. Rect. Current (A)	Phase	Connections
INTERNATIONAL RECTIFIER CO.					
Current Types					
BS series*	Silicon, encapsulated	50 to 800	1	Single phase, full-wave	As marked
1SB series*	Silicon, encapsulated	50 to 1, 000	1	Single phase, full-wave	Cathode = short lead
10DC series*†	Silicon, encapsulated	100 to 400	1.8	1-phase, half-wave	Centre lead negative†
10DB series*	Silicon, encapsulated	50 to 1, 000	2	Single phase, full-wave	As marked
BSB series*	Silicon, encapsulated	50 to 800	2.5	Single phase, full-wave	As marked
3SB series*	Silicon, encapsulated	50 to 1, 000	3	Single phase, full-wave	As marked
5B series*	Silicon, encapsulated	50 to 400	5	Single phase, full-wave	As marked
5SB series*	Silicon, encapsulated	50 to 1, 000	5	Single phase, full-wave	As marked
6SB series*	Silicon, encapsulated	50 to 600	6	Single phase, full-wave	As marked
7B series*	Silicon, encapsulated	50 to 1, 000	7.5	Single phase, full-wave	As marked
10B series*	Silicon, encapsulated	50 to 800	10	Single phase, full-wave	As marked
26MB series*	Silicon, encapsulated	50 to 600	25	Single phase, full-wave	As marked
25B series*	Silicon, encapsulated	50 to 600	25	Single phase, full-wave	As marked
40B series*	Silicon, encapsulated	50 to 600	40	Single phase, full-wave	As marked

Continued

Type	Construction	Peak Inverse Voltage	Max. Rect. Current (A)	Phase	Connections
INTERNATIONAL RECTIFIER CO. (*Continued*)					
Current Types (*Continued*)					
4T series*	Silicon, encapsulated	50 to 1,000	3.8	Three-phase	As marked
6T series*		50 to 1,000	6.5		
9T series*		50 to 1,000	10		
12T series*		50 to 800	12		
I.T.T.					
Current Types					
B40C 1500	Silicon bridge	40	1.5	Full-wave	Polarity marked
B40C 3200-2200		40	2.2		
B40C 5000-3000		40	3		
B80C 1500		80	1.5		
B80C 3200-2200		80	2.2		
B80C 5000-3000		80	3		
B125C 1500		125	1.5		
B250C 1500		250	1.5		
B500C 1500		500	1.5		
MULLARD					
Current Types					
BY164	Silicon bridge	120	1.4	Single phase	Polarity marked
BY179		800	1		
0SH01 series*		100 to 400	1		
0SH01A series*					
0SH02 series*		200 to 800	1.9		
0SH02A series*					
0SH03 series*		200 to 800	3		
0SH05 series*		200 to 800	5		
0SH07 series*		600 to 1,000	7		
0SH10 series*		600 to 1,000	10		
0SH10A series*		200 to 800	10		
0SH30 series*		300 to 1,200	30		
0SH40 series*		300 to 1,200	40		
0SH64 series*		300 to 1,200	64		
0SH110 series*		300 to 1,200	110		
0SK40 series*		300 to 1,200	40	Three phase	
0SK57 series*		300 to 1,200	57		
0SK90 series*		300 to 1,200	90		
0SK150 series*		300 to 1,200	150		
0SS9110-3	Silicon	3,000	3.5	Single phase	
0SS9110-30		30,000	3.5		
0SS9210-3		3,000	5		
0SS9210-30		30,000	5		
0SS9410-3		3,000	10		
0SS9410-30		30,000	10		

† Suffix 'R' indicates centre lead positive

* Each series comprises several different types, the basic number being suffixed by digits indicating the Peak Inverse Voltage.

* Each series comprises several different types. The basic number being suffixed, after the hyphen, by a group of figures indicating the rated maximum Peak Inverse Voltage for each type.

Power Rectifier Diode Stacks

Type	Construction	Peak Inverse Voltage	Max. Rect. Current (A)	Phase	Connections
TEXAS					
Current Types					
1B05J series*	Silicon bridge	50 to 400	0.5	Single phase	Polarity marked
1B08T series*		50 to 800	1		
1B10J series*		50 to 800	1		
1B20K series*		50 to 1,000	2		
1B40K series*		50 to 800	4		
1B100M series*		50 to 800	10		
3B30L series*		50 to 1,000	3	Three phase	
3B60L series*		50 to 800	6		
T1005		50	1	Single phase	
T102		200	1		
T104		400	1		
T106		600	1		
1N2890	Silicon	2,000	0.25	Half-wave	
1N2900		3,000	0.25		
1N2910		4,000	0.25		
1N2918		5,000	0.25		
1N2922		6,000	0.25		
1N2924		6,500	0.25		
1S150R06		6,000	1.5		
1S150R08		8,000	1.5		
1S150R10		10,000	1.5		

* Each series comprises several different types, the basic number being suffixed by digits indicating the Peak Inverse Voltage (times 10).

Thyristors

Type	Peak Inverse Volts	Max. Rect. Current (A)	Max. Holding Current (mA)	Max. Gate Firing Characteristic		Max. Forward Voltage Drop		Max. Reverse Current		Connections
				mA	at Volts	Volts	at Amps	mA	at Volts	
A.E.I. SEMICONDUCTORS Ltd.										
Current Types										
BT101-300R	300	6.5	—	10	2	2.3	20	1.5	200	S6
BT101-500R	500	6.5	—	10	2	2.3	20	1.5	200	S6
BT102-300R	300	6.5	—	50	2.5	2.3	20	1.5	400	S6
BT102-500R	500	6.5	—	50	2.5	2.3	20	1.5	400	S26
BT106	700	1	—	50	3.5	2.3	20	1.5	700	S6
BT107	500	6.5	—	10	2	—	—	—	—	S6
BT108	500	6.5	—	50	3.5	—	—	—	—	S6
BTW47 series*	600 to 1,600	14	—	150	3.5	—	—	—	—	S7
BTW92 series*	600 to 1,600	20	—	150	3.5	—	—	—	—	S7
BTX18 series*	100 to 500	1	5	50	2	1.5	1	0.8	100 to 500	C8
BTX81 series*	100 to 800	20	100	80	3.5	1.8	50	11	100 to 800	S7
BTX82 series*	100 to 800	26	—	80	3.5	—	—	—	—	S7
BTY79 series*	100 to 1,000	6.4	15	30	3	2.3	20	8	100 to 1,000	S6
BTY87 series*	100 to 800	10	10	65	3.5	3	50	13	100 to 800	S7
BTY91 series*	100 to 800	14	10	40	3	2	50	13	100 to 800	S7
CR1-XX1C series**	50 to 600	1	—	10	3	—	—	—	—	C8
CR1-XXC/A series**	50 to 600	1	—	1	3	—	—	—	—	C8
CR1-XXC/B series**	50 to 600	1	—	0.2	3	—	—	—	—	C8
CR2-XX1C series**	50 to 600	2	—	10	3	—	—	—	—	C8

Continued

Type	Peak Inverse Volts	Max. Rect. Current (A)	Max. Holding Current (mA)	Max. Gate Firing Characteristic		Max. Forward Voltage Drop		Max. Reverse Current		Connections
				mA	at Volts	Volts	at Amps	mA	at Volts	
A.E.I. SEMICONDUCTORS Ltd. (*Continued*)										
Current Types (*Continued*)										
CR2-XX1C/A series**	50 to 600	2	—	1	3	—	—	—	—	C8
CR5-XX1B series**	50 to 600	5	—	80	3	—	—	—	—	S7
CR6-XX1B series**	50 to 600	5	—	80	3	—	—	—	—	S7
CR6-XX1BA series**	50 to 600	5	—	80	3	—	—	—	—	S7
CR6-XX1C series**	50 to 600	5	—	80	3	—	—	—	—	S7
CR6-XX1CA series**	50 to 600	5	—	80	3	—	—	—	—	S7
CR6-XX3RB series**	900 to 1,500	5	—	80	3	—	—	—	—	S7
CR6-XX3RBA series**	900 to 1,500	5	—	80	3	—	—	—	—	S7
CR6-XX3RC series**	900 to 1,500	5	—	80	3	—	—	—	—	S7
CR6-XX3RCA series**	900 to 1,500	5	—	80	3	—	—	—	—	S7
CR8-XX1A series**	50 to 600	5	—	25	3	—	—	—	—	C11
CR8-XX1B series**	50 to 600	5	—	25	3	—	—	—	—	S7
CR8-XX1C series**	50 to 1,000	5	—	25	3	—	—	—	—	S6
CR10-XX1B series**	50 to 600	10	—	80	3	—	—	—	—	S7
CR12-XX1B series**	50 to 600	10	—	60	3	—	—	—	—	S7
CR12-XX1BA series**	50 to 600	10	—	60	3	—	—	—	—	S7
CR12-XX1C series**	50 to 600	10	—	60	3	—	—	—	—	S7
CR12-XX1CA series**	50 to 600	10	—	60	3	—	—	—	—	S7
CR12-XX3RB series**	900 to 1,500	10	—	60	3	—	—	—	—	S7
CR12-XX3RBA series*	900 to 1,500	10	—	60	3	—	—	—	—	S7
CR12-XX3RC series**	900 to 1,500	10	—	60	3	—	—	—	—	S7
CR12-XX3RCA series*	900 to 1,500	10	—	60	3	—	—	—	—	S7
CR16-XX1B series**	50 to 600	14	—	40	3	—	—	—	—	S7
CR18-XX1B series**	50 to 600	14	—	40	3	—	—	—	—	S7
CR18-XX1BA series**	50 to 600	14	—	40	3	—	—	—	—	S7
CR18-XX1C series**	50 to 600	14	—	40	3	—	—	—	—	S7
CR18-XX1CA series**	50 to 600	14	—	40	3	—	—	—	—	S7
CR18-XX3RB series**	900 to 1,500	14	—	40	3	—	—	—	—	S7
CR18-XX3RBA series*	900 to 1,500	14	—	40	3	—	—	—	—	S7
CR18-XX3RC series**	900 to 1,500	14	—	40	3	—	—	—	—	S7
CR18-XX3RCA series*	900 to 1,500	14	—	40	3	—	—	—	—	S7
CR18-XX3RBC series*	900 to 1,500	14	—	60	3	—	—	—	—	S7
CR18-XXRBAC series*	900 to 1,500	14	—	60	3	—	—	—	—	S7
CR18-XX3RCC series*	900 to 1,500	14	—	60	3	—	—	—	—	S7
CR18-XX3RCAC series	900 to 1,500	14	—	60	3	—	—	—	—	S7
CR20-XX1B series**	50 to 600	20	—	40	3	—	—	—	—	S7
CR20-XX1BA series**	50 to 600	20	—	40	3	—	—	—	—	S7
CR20-XX1C series**	50 to 600	20	—	40	3	—	—	—	—	S7
CR20-XX1CA series**	50 to 600	20	—	40	3	—	—	—	—	S7
CR20-XX3RB series**	900 to 1,500	20	—	40	3	—	—	—	—	S7
CR20-XX3RBA series*	900 to 1,500	20	—	40	3	—	—	—	—	S7
CR20-XX3RBC series*	900 to 1,500	20	—	60	3	—	—	—	—	S7
CR20-XX3RBAC series	900 to 1,500	20	—	60	3	—	—	—	—	S7
CR20-XX3RC series**	900 to 1,500	20	—	40	3	—	—	—	—	S7
CR20-XX3RCA series*	900 to 1,500	20	—	40	3	—	—	—	—	S7
CR20-XX3RCAC series	900 to 1,500	20	—	60	3	—	—	—	—	S7
CR24-XX1B series**	50 to 600	24	—	40	3	—	—	—	—	S7
CR24-XX1BC series**	50 to 600	24	—	60	3	—	—	—	—	S7
CR24-XX1C series**	50 to 600	24	—	40	3	—	—	—	—	S7
CR24-XX1CC series**	50 to 600	24	—	60	3	—	—	—	—	S7
CR24-XX3RB series**	900 to 1,500	24	—	40	3	—	—	—	—	S7
CR24-XX3RBA series*	900 to 1,500	24	—	40	3	—	—	—	—	S7
CR24-XX3RCC series*	900 to 1,500	24	—	60	3	—	—	—	—	S7
CR24-XX3RCAC series	900 to 1,500	24	—	60	3	—	—	—	—	S7
CR24-XX3RBC series*	900 to 1,500	24	—	60	3	—	—	—	—	S7
CR24-XX3RBAC series	900 to 1,500	24	—	60	3	—	—	—	—	S7
CR24-XX3RC series**	900 to 1,500	24	—	40	3	—	—	—	—	S7
CR24-XX3RCA series*	900 to 1,500	24	—	40	3	—	—	—	—	S7
CR25-XX1B series**	50 to 600	22	—	40	3	—	—	—	—	S7
CR27-XX1B series**	50 to 600	32	—	60	3	—	—	—	—	S7
CR27-XX1BA series**	50 to 600	32	—	60	3	—	—	—	—	S7

Continued

Type	Peak Inverse Volts	Max. Rect. Current (A)	Max. Holding Current (mA)	Max. Gate Firing Characteristics		Max. Forward Voltage Drop		Max. Reverse Current		Connections
				mA	at Volts	Volts	at Amps	mA	at Volts	
A. E. I. SEMICONDUCTORS Ltd. *(Continued)*										
Current Types (Continued)										
CR27-XX1C series**	50 to 600	32	—	60	3	—	—	—	—	S7
CR27-XX1CA series**	50 to 600	32	—	60	3	—	—	—	—	S7
CR27-XX3RB series**	900 to 1, 500	32	—	60	3	—	—	—	—	S7
CR27-XX3RBA series*	900 to 1, 500	32	—	60	3	—	—	—	—	S7
CR27-XX3RC series**	900 to 1, 500	32	—	60	3	—	—	—	—	S7
CR27-XX3RCA series*	900 to 1, 500	32	—	60	3	—	—	—	—	S7
CR28-XX1B series**	50 to 600	32	—	60	3	—	—	—	—	S7
CR28-XX1BA series**	50 to 600	32	—	60	3	—	—	—	—	S7
CR28-XX1C series**	50 to 600	32	—	60	3	—	—	—	—	S7
CR28-XX1CA series**	50 to 600	32	—	60	3	—	—	—	—	S7
CR28-XX3RB series**	900 to 1, 500	32	—	60	3	—	—	—	—	S7
CR28-XX3RBA series*	900 to 1, 500	32	—	60	3	—	—	—	—	S7
CR28-XX3RC series**	900 to 1, 500	32	—	60	3	—	—	—	—	S7
CR28-XX3RCA series*	900 to 1, 500	32	—	60	3	—	—	—	—	S7
CR30-XX3A series**	100 to 1, 400	31	—	60	3	—	—	—	—	S12
CR30-XX3AA series**	100 to 1, 400	31	—	60	3	—	—	—	—	S12
CR31-XX3A series**	100 to 1, 400	38	—	150	3	—	—	—	—	S12
CR31-XX3AA series**	100 to 1, 400	38	—	150	3	—	—	—	—	S12
CR50-XX3A series**	100 to 1, 400	45	—	60	3	—	—	—	—	S12
CR50-XX3AA series**	100 to 1, 400	45	—	60	3	—	—	—	—	S12
CR51-XX3A series**	100 to 1, 400	55	—	150	3	—	—	—	—	S12
CR51-XX3AA series**	100 to 1, 400	55	—	150	3	—	—	—	—	S12
CR70-XX1A series**	50 to 1, 400	60	—	100	3	—	—	—	—	S12
CR70-XX1C series**	50 to 1, 400	60	—	100	3	—	—	—	—	S12
CR80-XX1A series**	50 to 1, 400	78	—	100	3	—	—	—	—	S12
CR80-XX1C series**	50 to 1, 400	78	—	100	3	—	—	—	—	S12
CR100-XX1C series**	50 to 1, 400	90	—	100	3	—	—	—	—	S12
CR100-XX1D series**	50 to 1, 400	90	—	100	3	—	—	—	—	S12
CR120-XX1C series**	50 to 1, 400	105	—	100	3	—	—	—	—	S12
CR125-XX1D series**	50 to 1, 400	110	—	150	3	—	—	—	—	S12
CR130-XX1C series**	50 to 1, 400	130	—	150	3	—	—	—	—	S12
2N681	25	13.5	—	40	2.2	—	—	—	—	S7
2N682	50	13.5	—	40	2.2	—	—	—	—	S7
2N683	100	13.5	—	40	2.2	—	—	—	—	S7
2N684	150	13.5	—	40	2.2	—	—	—	—	S7
2N685	200	13.5	—	40	2.2	—	—	—	—	S7
2N686	250	13.5	—	40	2.2	—	—	—	—	S7
2N687	300	13.5	—	40	2.2	—	—	—	—	S7
2N688	400	13.5	—	40	2.2	—	—	—	—	S7
2N689	500	13.5	—	40	2.2	—	—	—	—	S7
2N690	600	13.5	—	40	2.2	—	—	—	—	S7
2N691	700	13.5	—	40	2.2	—	—	—	—	S7
2N692	800	13.5	—	40	2.2	—	—	—	—	S7
2N1909	25	60	—	90	2.6	—	—	—	—	S12
2N1910	50	60	—	90	2.6	—	—	—	—	S12
2N1911	100	60	—	90	2.6	—	—	—	—	S12
2N1912	150	60	—	90	2.6	—	—	—	—	S12
2N1913	200	60	—	90	2.6	—	—	—	—	S12
2N1914	250	60	—	90	2.6	—	—	—	—	S12
2N1915	300	60	—	90	2.6	—	—	—	—	S12
2N1916	400	60	—	90	2.6	—	—	—	—	S12
2N2023	25	70	—	90	2.6	—	—	—	—	S12
2N2024	50	70	—	90	2.6	—	—	—	—	S12
2N2025	100	70	—	90	2.6	—	—	—	—	S12
2N2026	150	70	—	90	2.6	—	—	—	—	S12
2N2027	200	70	—	90	2.6	—	—	—	—	S12
2N2028	250	70	—	90	2.6	—	—	—	—	S12
2N2029	300	70	—	90	2.6	—	—	—	—	S12
2N2030	400	70	—	90	2.6	—	—	—	—	S12
2N5204	600	13.5	200	55	2.5	—	—	—	—	S7
2N5205	800	13.5	200	55	2.5	—	—	—	—	S7

Continued

Type	Peak Inverse Volts	Max. Rect. Current (A)	Max. Holding Current (mA)	Max. Gate Firing Characteristic		Max. Forward Voltage Drop		Max. Reverse Current		Connections
				mA	at Volts	Volts	at Amps	mA	at Volts	
A.E.I. SEMICONDUCTORS Ltd. (*Continued*)										
Current Types (*Continued*)										
2N5206	1,000	13.5	200	55	2.5	—	—	—	—	S7
2N5207	1,200	13.5	200	55	2.5	—	—	—	—	S7
INTERNATIONAL RECTIFIER CO.										
Current Types										
1R5 series**	25 to 400	1	2	0.2	0.8	—	—	—	—	C8
1R6 series**	25 to 400	1	5	1	0.8	—	—	—	—	C8
1RC series*	50 to 400	2	10	1.5	0.8	—	—	—	—	98
1R106 series**	15 to 400	2.55	3	0.2	1	—	—	—	—	98
3RC series*	50 to 600	3	32	15	2	—	—	—	—	S7
4RCM series*	50 to 600	4	45	50	2.5	—	—	—	—	S7
5RC series*	50 to 600	5	42	15	2	—	—	—	—	S7
1R122 series**	50 to 400	5.1	30	25	1.5	—	—	—	—	99
8RCM series*	100 to 600	8	65	80	3	—	—	—	—	S7
10RC series*	100 to 1,000	10	62	40	3	—	—	—	—	S7
12RCM series*	100 to 600	12	65	80	3	—	—	—	—	S7
16RC series*	100 to 1,000	16	52	40	2	—	—	—	—	S7
1R30 series**	25 to 400	16	50	25	1.5	—	—	—	—	S7
1R31 series**	25 to 400	16	50	9	1.5	—	—	—	—	S7
1R32 series**	25 to 400	16	50	25	1.5	—	—	—	—	S7
1R33 series**	25 to 400	16	50	9	1.5	—	—	—	—	S7
22RC series*	100 to 600	22	52	40	2	—	—	—	—	S7
1R140 series**	50 to 400	25	150	180	3	—	—	—	—	S7
1R141 series**	50 to 400	25	150	180	3	—	—	—	—	S7
I.T.T.										
Current Types										
BRX44	30	3.6	5	0.2	7	1.7	1	0.1	30	29
BRX45	60	3.6	5	0.2	7	1.7	1	0.1	60	29
BRX46	100	3.6	5	0.2	7	1.7	1	0.1	100	29
BRX47	200	3.6	5	0.2	7	1.7	1	0.1	200	29
BRX48	300	3.6	5	0.2	7	1.7	1	0.1	300	29
BRX49	400	3.6	5	0.2	7	1.7	1	0.1	400	29
BT106	650	10	25	20	6	—	—	—	—	S6
BT119	750	12		0.015	6	—	—	—	—	66
BT120	700	22		0.015	6	—	—	—	—	66
BT121	500	10		0.015	6	—	—	—	—	66
BT122	500	10		0.015	6	—	—	—	—	66
BTW52	60	8	25	20	6	—	—	—	—	66
BTW53	100	8	25	20	6	—	—	—	—	66
BTW54	200	8	25	20	6	—	—	—	—	66
BTW55	400	8	25	20	6	—	—	—	—	66
BTW56	600	8	25	20	6	—	—	—	—	66

* Each series comprises several different types, the basic number being suffixed, after the hyphen, by a group of digits indicating the Peak Inverse Voltage for each type.

** Each series comprises several different types, the basic number being suffixed, after the hyphen, by a group of digits the first two or three (shown as XX) indicating the Peak Inverse Voltage (times 10) for each type.

* Each series comprises several different types, the basic number being suffixed by a number indicating the Peak Inverse Voltage (times 10) for each type.

** Each series comprises several different types, the basic number being suffixed by a letter indicating the Peak Inverse Voltage for each type using the following code:-

Q = 15V U = 25V Y = 30V F = 50V A = 100V G = 150V B = 200V
H = 250V C = 300V D = 400V.

Continued

Type	Peak Inverse Volts	Max. Rect. Current (A)	Max. Holding Current (mA)	Max. Gate Firing Characteristic		Max. Forward Voltage Drop		Max. Reverse Current		Connections
				mA	at Volts	Volts	at Amps	mA	at Volts	
I.T.T. (*Continued*)										
Current Types (*Continued*)										
BTY79A/05	50	10	25	20	6	—	—	—	—	S6
BTY79A/10	100	10	25	20	6	—	—	—	—	S6
BTY79A/20	200	10	25	20	6	—	—	—	—	S6
BTY79A/30	300	10	25	20	6	—	—	—	—	S6
BTY79A/40	400	10	25	20	6	—	—	—	—	S6
BTY79A/50	500	10	25	20	6	—	—	—	—	S6
CRS1/05	50	1.25	20	10	6	1.2	1.5,	1	50	C8
CRS1/10	100	1.25	20	10	6	1.2	1.5	1	100	C8
CRS1/20	200	1.25	20	10	6	1.2	1.5	1	200	C8
CRS1/30	300	1.25	20	10	6	1.2	1.5	1	300	C8
CRS1/35	350	1.25	20	10	6	1.2	1.5	1	350	C8
CRS1/40	400	1.25	20	10	6	1.2	1.5	1	400	C8
CRS1/50	500	1.25	20	10	6	1.2	1.5	1	500	C8
CRS3/05	50	4.5	25	20	6	1.3	4.5	1	50	S6
CRS3/10	100	4.5	25	20	6	1.3	4.5	1	100	S6
CRS3/20	200	4.5	25	20	6	1.3	4.5	1	200	S6
CRS3/30	300	4.5	25	20	6	1.3	4.5	1	300	S6
CRS3/35	350	4.5	25	20	6	1.3	4.5	1	350	S6
CRS3/40	400	4.5	25	20	6	1.3	4.5	1	400	S6
CRS3/50	500	4.5	25	20	6	1.3	4.5	1	500	S6
CRS3/60	600	4.5	25	20	6	1.3	4.5	1	600	S6
TO.8N0.6A00	60	0.8	20	10	6	—	—	—	—	C8
TO.8N1A00	100	0.8	20	10	6	—	—	—	—	C8
TO.8N2A00	200	0.8	20	10	6	—	—	—	—	C8
TO.8N3A00	300	0.8	20	10	6	—	—	—	—	C8
TO.8N4A00	400	0.8	20	10	6	—	—	—	—	C8
TO.8N5A00	500	0.8	20	10	6	—	—	—	—	C8
T3N0.6C00	60	3	25	20	6	—	—	—	—	S6
T3N1C00	100	3	25	20	6	—	—	—	—	S6
T3N2C00	200	3	25	20	6	—	—	—	—	S6
T3N3C00	300	3	25	20	6	—	—	—	—	S6
T3N4C00	400	3	25	20	6	—	—	—	—	S6
T3N5C00	500	3	25	20	6	—	—	—	—	S6
T3N6C00	600	3	25	20	6	—	—	—	—	S6
MULLARD										
Current Types										
BT100 series*	300 to 500	2	30	10†	6†	1.4	5	2	200 to 400	S6
BT101 series*	300 to 500	6.5	—	10†	—	2.3	20	1.5	200	S6
BT102 series*	300 to 500	6.5	—	50†	—	2.3	20	1.5	400	S6
BT107	500	6.5	—	10†	—	2	—	—	—	S6
BT108	500	6.5	—	50†	—	2.5	—	—	—	S6
BT109	500	6.5	—	10†	—	2	—	—	—	97
BT127 series*	350 to 750	3.2	50	40	6	—	—	—	—	66
BT128	700	3.2	—	40†	—	4	—	—	—	66
BT129	750	3.2	—	40†	—	4	—	—	—	66
BTW23 series*	600 to 1,600	90	—	200†	—	3.5	—	—	—	S2
BTW24 series*	600 to 1,600	35	—	200†	—	3.5	—	—	—	S2
BTW30 series*	300 to 1,200	12	—	—	—	—	—	—	—	S7
BTW31 series*	300 to 1,200	16	—	—	—	—	—	—	—	S7
BTW32 series*	800 to 1,200	26	—	—	—	—	—	—	—	S7
BTW33 series*	800 to 1,200	65	—	—	—	—	—	—	—	S2
BTW35	500	5	—	—	—	—	—	—	—	S6
BTW38 series*	600 to 1,200	10	—	50	—	1.5	—	—	—	S6
BTW47 series*	500 to 1,600	14	—	150	—	3.5	—	—	—	S7
BTW92 series*	600 to 1,600	20	—	150	—	3.5	—	—	—	S7
BTX94 series*	100 to 800	25	—	100	3	2.3	50	—	—	S7
BTX95 series*	500 to 800	15	—	—	—	—	—	—	—	S6
BTY79 series*	150 to 400	4.7	15	25†	2†	2.3	20	8	150 to 400	S6

Continued

Type	Peak Inverse Volts	Max. Rect. Current (A)	Max. Holding Current (mA)	Max. Gate Firing Characteristic		Max. Forward Voltage Drop		Max. Reverse Current		Connections
				mA	at Volts	Volts	at Amps	mA	at Volts	
I.T.T. (*Continued*)										
Current Types (*Continued*)										
BTY87 series*	100 to 800	12	10	65†	3.5†	3	50	13	100 to 800	S7
BTY91 series*	100 to 800	16	10	40†	3†	2	50	13	100 to 800	S7
R.C.A.										
Current Types										
S2060A (106A)	100	4	3	0.2	0.8	—	—	—	—	99
S2060B (106B)	200	4	3	0.2	0.8	—	—	—	—	99
S2060C (106C)	300	4	3	0.2	0.8	—	—	—	—	99
S2060D (106D)	400	4	3	0.2	0.8	—	—	—	—	99
S2060E (106E)	500	4	3	0.2	0.8	—	—	—	—	99
S2060F (106F)	50	4	3	0.2	0.8	—	—	—	—	99
S2060M (106M)	600	4	3	0.2	0.8	—	—	—	—	99
S2060Q (106Q)	15	4	3	0.2	0.8	—	—	—	—	99
S2060Y (106Y)	30	4	3	0.2	0.8	—	—	—	—	99
S2061A (107A)	100	4	6	0.5	0.8	—	—	—	—	99
S2061B (107B)	200	4	6	0.5	0.8	—	—	—	—	99
S2061C (107C)	300	4	6	0.5	0.8	—	—	—	—	99
S2061D (107D)	400	4	6	0.5	0.8	—	—	—	—	99
S2061E (107E)	500	4	6	0.5	0.8	—	—	—	—	99
S2061F (107F)	50	4	6	0.5	0.8	—	—	—	—	99
S2061M (107M)	600	4	6	0.5	0.8	—	—	—	—	99
S2061Q (107Q)	15	4	6	0.5	0.8	—	—	—	—	99
S2061Y (107Y)	30	4	6	0.5	0.8	—	—	—	—	99
S2062A (108A)	100	4	10	2	0.8	—	—	—	—	99
S2062B (108B)	200	4	10	2	0.8	—	—	—	—	99
S2062C (108C)	300	4	10	2	0.8	—	—	—	—	99
S2062D (108D)	400	4	10	2	0.8	—	—	—	—	99
S2062E (108E)	500	4	10	2	0.8	—	—	—	—	99
S2062F (108F)	50	4	10	2	0.8	—	—	—	—	99
S2062M (108M)	600	4	10	2	0.8	—	—	—	—	99
S2062Q (108Q)	15	4	10	2	0.8	—	—	—	—	99
S2062Y (108Y)	30	4	10	2	0.8	—	—	—	—	99
S2400A (40942)	100	4.5	20	15	2	—	—	—	—	72
S2400B (40943)	200	4.5	20	15	2	—	—	—	—	72
S2400D (40944)	400	4.5	20	15	2	—	—	—	—	72
S2400M (40945)	600	4.5	20	15	2	—	—	—	—	72
S2600B (40654)	200	7	20	15	1.5	—	—	—	—	73
S2600D (40655)	400	7	20	15	1.5	—	—	—	—	73
S2600M (40833)	600	7	20	15	1.5	—	—	—	—	73
S2610B (40658)	200	3.3	20	15	1.5	—	—	—	—	73
S2610D (40659)	400	3.3	20	15	1.5	—	—	—	—	73
S2610M (40835)	600	3.3	20	15	1.5	—	—	—	—	73
S2620B (40656)	200	7	20	15	1.5	—	—	—	—	73
S2620D (40657)	400	7	20	15	1.5	—	—	—	—	73
S2620M (40834)	600	7	20	15	1.5	—	—	—	—	73
S2710B (40504)	200	1.7	20	15	2	—	—	—	—	66
S2710D (40505)	400	1.7	20	15	2	—	—	—	—	66
S2710M (40506)	600	1.7	20	15	2	—	—	—	—	66
S2800A (40867)	100	8	20	15	1.5	—	—	—	—	99
S2800B (40868)	200	8	20	15	1.5	—	—	—	—	99
S2800D (40869)	400	8	20	15	1.5	—	—	—	—	99
S3700B (40553)	200	5	50	40	3.5	—	—	—	—	66
S3700D (40554)	400	5	50	40	3.5	—	—	—	—	66

* Each series comprises several different types, the basic number being suffixed, after the hyphen, by a group of figures indicating the rated Peak Inverse Voltage for each type. The final letter 'R' denotes reverse polarity connections.

† Minimum value.

Continued

Type	Peak Inverse Volts	Max. Rect. Current (A)	Max. Holding Current (mA)	Max. Gate Firing Characteristic		Max. Forward Voltage Drop		Max. Reverse Current		Connections
				mA	at Volts	Volts	at Amps	mA	at Volts	
R.C.A. (*Continued*)										
Current Types (*Continued*)										
S3700M (40555)	600	5	50	40	3.5	—	—	—	—	66
S3701M (40768)	600	5	—	35	4	—	—	—	—	66
S3702S (40889)	700	5	—	45	4	—	—	—	—	66
S3703SF (40888)	50	5	—	40	4	—	—	—	—	66
S3704A	100	5	50	40	3.5	—	—	—	—	66
S3704B	200	5	50	40	3.5	—	—	—	—	66
S3704D	400	5	50	40	3.5	—	—	—	—	66
S3704M	600	5	50	40	3.5	—	—	—	—	66
S3704S	700	5	50	40	3.5	—	—	—	—	66
S3705M (40640)	600	5	—	30	4	—	—	—	—	66
S3706M (40641)	600	5	—	30	4	—	—	—	—	66
S3714A	100	5	50	40	3.5	—	—	—	—	66
S3714B	200	5	50	40	3.5	—	—	—	—	66
S3714D	400	5	50	40	3.5	—	—	—	—	66
S3714M	600	5	50	40	3.5	—	—	—	—	66
S3714S	700	5	50	40	3.5	—	—	—	—	66
S6200A (40749)	100	20	20	15	2	—	—	—	—	74
S6200B (40750)	200	20	20	15	2	—	—	—	—	74
S6200D (40751)	400	20	20	15	2	—	—	—	—	74
S6200M (40752)	600	20	20	15	2	—	—	—	—	74
S6210A (40753)	100	20	20	15	2	—	—	—	—	S10
S6210B (40754)	200	20	20	15	2	—	—	—	—	S10
S6210D (40755)	400	20	20	15	2	—	—	—	—	S10
S6210M (40756)	600	20	20	15	2	—	—	—	—	S10
S6220A (40757)	100	20	20	15	2	—	—	—	—	S11
S6220B (40758)	200	20	20	15	2	—	—	—	—	S11
S6220D (40759)	400	20	20	15	2	—	—	—	—	S11
S6220M (40760)	600	20	20	15	2	—	—	—	—	S11
S6400N (40937)	800	35	70	40	2	—	—	—	—	74
S6410N (40938)	800	35	70	40	2	—	—	—	—	S10
S6420A (40680)	100	35	70	40	2	—	—	—	—	S11
S6420B (40681)	200	35	70	40	2	—	—	—	—	S11
S6420D (40682)	400	35	70	40	2	—	—	—	—	S11
S6420M (40683)	600	35	70	40	2	—	—	—	—	S11
S6420N (40952)	800	35	70	40	2	—	—	—	—	S11
S6431M (40216)	600	35	70	80	2	—	—	—	—	S10
S7430M (40735)	600	35	150	180	3	—	—	—	—	S10
S7432M	600	35	150	180	3	—	—	—	—	S10
TAS3707D	400	5	—	40	4	—	—	—	—	66
TAS3707EF	650	5	—	40	4	—	—	—	—	66
TAS7431B	200	40	150	80	3	—	—	—	—	S10
TAS7431D	400	40	150	80	3	—	—	—	—	S10
TAS7431M	600	40	150	80	3	—	—	—	—	S10
2N681	25	25	70	25	3	—	—	—	—	S10
2N682	50	25	70	25	3	—	—	—	—	S10
2N683	100	25	70	25	3	—	—	—	—	S10
2N684	150	25	70	25	3	—	—	—	—	S10
2N685	200	25	70	25	3	—	—	—	—	S10
2N686	250	25	70	25	3	—	—	—	—	S10
2N687	300	25	70	25	3	—	—	—	—	S10
2N688	400	25	70	25	3	—	—	—	—	S10
2N689	500	25	70	25	3	—	—	—	—	S10
2N690	600	25	70	25	3	—	—	—	—	S10
2N1842A	16	25	110	45	3.5	—	—	—	—	S10
2N1843A	16	50	110	45	3.5	—	—	—	—	S10
2N1844A	100	16	110	45	3.5	—	—	—	—	S10
2N1845A	150	16	110	45	3.5	—	—	—	—	S10
2N1846A	200	16	110	45	3.5	—	—	—	—	S10
2N1847A	250	16	110	45	3.5	—	—	—	—	S10
2N1848A	300	16	110	45	3.5	—	—	—	—	S10
2N1849A	400	16	110	45	3.5	—	—	—	—	S10

Continued

Type	Peak Inverse Volts	Max. Rect. Current (A)	Max. Holding Current (mA)	Max. Gate Firing Characteristic		Max. Forward Voltage Drop		Max. Reverse Current		Connections
				mA	at Volts	Volts	at Amps	mA	at Volts	
R.C.A. (*Continued*)										
Current Types (*Continued*)										
2N1850A	500	16	110	45	3.5	—	—		—	S10
2N3228	200	5	20	15	2	—	—	—	—	66
2N3525	400	5	20	15	2	—	—	—	—	66
2N3528	200	2	20	15	2	—	—	—	—	72
2N3529	400	2	20	15	2	—	—	—	—	72
2N3650	100	35	150	180	3	—	—	—	—	S10
2N3651	200	35	150	180	3	—	—	—	—	S10
2N3652	300	35	150	180	3	—	—	—	—	S10
2N3653	400	35	150	180	3	—	—	—	—	S10
2N3654	50	35	150	180	3	—	—	—	—	S10
2N3655	100	35	150	180	3	—	—	—	—	S10
2N3656	200	35	150	180	3	—	—	—	—	S10
2N3657	300	35	150	180	3	—	—	—	—	S10
2N3658	400	35	150	180	3	—	—	—	—	S10
2N3668	100	12.5	50	40	2	—	—	—	—	66
2N3669	200	12.5	50	40	2	—	—	—	—	66
2N3670	400	12.5	50	40	2	—	—	—	—	66
2N3870	100	35	70	40	2	—	—	—	—	74
2N3871	200	35	70	40	2	—	—	—	—	74
2N3872	400	35	70	40	2	—	—	—	—	74
2N3873	600	35	70	40	2	—	—	—	—	74
2N3896	100	35	70	40	2	—	—	—	—	S10
2N3897	200	35	70	40	2	—	—	—	—	S10
2N3898	400	35	70	40	2	—	—	—	—	S10
2N3899	600	35	70	40	2	—	—	—	—	S10
2N4101	600	5	20	15	2	—	—	—	—	66
2N4102	600	2	20	15	2	—	—	—	—	72
2N4103	600	12.5	50	40	2	—	—	—	—	66

Note: New type numbers are now employed. Old type numbers are given in parenthesis.

TEXAS										
Current Types										
TI40A0	50	3	50	50	1	2	3	1	50	S6
TI40A1	100	3	50	50	1	2	3	1	100	S6
TI40A2	200	3	50	50	1	2	3	1	200	S6
TI40A3	300	3	50	50	1	2	3	1	300	S6
TI40A4	400	3	50	50	1	2	3	1	400	S6
TI145A0	50	0.75	50	50	1	2	1	1	50	C8
TI145A1	100	0.75	50	50	1	2	1	1	100	C8
TI145A2	200	0.75	50	50	1	2	1	1	200	C8
TI145A3	300	0.75	50	50	1	2	1	1	300	C8
TI145A4	400	0.75	50	50	1	2	1	1	400	C8
TIC39 series*	30 to 400	20	5	0.2	1	1.75	2	—	—	—
TIC44	30	6	5	0.2	0.8	1.4	0.3	—	—	C8
TIC45	60	6	5	0.2	0.8	1.4	0.3	—	—	C8
TIC46	100	6	5	0.2	0.8	1.4	0.3	—	—	C8
TIC47	200	6	5	0.2	0.8	1.4	0.3	—	—	C8
TIC60	30	6	5	0.2	0.8	1.7	1.2	—	—	76
TIC61	60	6	5	0.2	0.8	1.7	1.2	—	—	76
TIC62	100	6	5	0.2	0.8	1.7	1.2	—	—	76
TIC63	150	6	5	0.2	0.8	1.7	1.2	—	—	76
TIC64	200	6	5	0.2	0.8	1.7	1.2	—	—	76
TIC106 series*	30 to 400	30	5	0.2	1	1.7	5	—	—	99
TIC116 series*	50 to 600	80	40	20	1.5	1.7	8	—	—	99
TIC126 series*	50 to 600	100	40	20	1.5	1.4	12	—	—	99
2N1595	50	1	25	10	3	2	1	1	50	C8
2N1596	100	1	25	10	3	2	1	1	100	C8
2N1597	200	1	25	10	3	2	1	1	200	C8
2N1598	300	1	25	10	3	2	1	1	300	C8

Continued

Type	Peak Inverse Volts	Max. Rect. Current (A)	Max. Holding Current (mA)	Max. Gate Firing Characteristic		Max. Forward Voltage Drop		Max. Reverse Current		Connections
				mA	at Volts	Volts	at Amps	mA	at Volts	
TEXAS (*Continued*)										
Current Types (*Continued*)										
2N1599	400	1	25	10	3	2	1	1	400	C8
2N1600	50	3	25	10	3	2	3	1	50	S6
2N1601	100	3	25	10	3	2	3	1	100	S6
2N1602	200	3	25	10	3	2	3	1	200	S6
2N1603	300	3	25	10	3	2	3	1	300	S6
2N1604	400	3	25	10	3	2	3	1	400	S6
2N1770	25	4.7	—	15	1	0.8	4.7	4.5	25	S6
2N1771	50	4.7	—	15	1	0.8	4.7	4.5	50	S6
2N1772	100	4.7	—	15	1	0.8	4.7	4.5	100	S6
2N1773	150	4.7	—	15	1	0.8	4.7	4	150	S6
2N1774	200	4.7	—	15	1	0.8	4.7	3	200	S6
2N1775	250	4.7	—	15	1	0.8	4.7	2.5	250	S6
2N1776	300	4.7	—	15	1	0.8	4.7	2	300	S6
2N1777	400	4.7	—	15	1	0.8	4.7	1	400	S6
2N1843B	50	16	—	75	1	1.5	16	1	50	S6
2N1844B	100	16	—	75	1	1.5	16	1	100	S6
2N1846B	200	16	—	75	1	1.5	16	1	200	S6
2N1848B	300	16	—	75	1	1.5	16	1	300	S6
2N1849B	400	16	—	75	1	1.5	16	1	400	S6
2N1850B	500	16	—	75	1	1.5	16	1	500	S6
2N3001	30	0.35	3	0.02	—	1.1	0.35	—	—	C8
2N3002	60	0.35	3	0.02	—	1.1	0.35	—	—	C8
2N3003	100	0.35	3	0.02	—	1.1	0.35	—	—	C8
2N3004	200	0.35	3	0.02	—	1.1	0.35	—	—	C8
2N3005	30	0.35	5	0.02	—	1.1	0.35	—	—	C8
2N3006	60	0.35	5	0.02	—	1.1	0.35	—	—	C8
2N3007	100	0.35	5	0.02	—	1.1	0.35	—	—	C8
2N3008	200	0.35	5	0.02	—	1.1	0.35	—	—	C8
2N3555	30	1	3	0.02	—	1.4	1.6	—	—	C8
2N3556	60	1	3	0.02	—	1.4	1.6	—	—	C8
2N3557	100	1	3	0.02	—	1.4	1.6	—	—	C8
2N3558	200	1	3	0.02	—	1.4	1.6	—	—	C8
2N3559	30	1	5	0.2	—	1.4	1.6	—	—	C8
2N3560	60	1	5	0.2	—	1.4	1.6	—	—	C8
2N3561	100	1	5	0.2	—	1.4	1.6	—	—	C8
2N3562	200	1	5	0.2	—	1.4	1.6	—	—	C8

* Each series comprises several different types, the basic number being followed by a letter indicating the Peak Inverse Voltage for each type using the following code:-
Y = 30V F = 50V A = 100V B = 200V C = 300V D = 400V E = 500V
M = 600V

WESTINGHOUSE

Current Types

CS11B	30	0.75	20	7.5	3.5	2.2	2.4	1	25	C8
CS11C	60	0.75	20	7.5	3.5	2.2	2.4	1	50	C8
CS11D	100	0.75	20	7.5	3.5	2.2	2.4	1	80	C8
CS11E	150	0.75	20	7.5	3.5	2.2	2.4	1	125	C8
CS11G	200	0.75	20	7.5	3.5	2.2	2.4	1	180	C8
CS11H	250	0.75	20	7.5	3.5	2.2	2.4	1	200	C8
CS11K	350	0.75	20	7.5	3.5	2.2	2.4	1	300	C8
CS11N	500	0.75	20	7.5	3.5	2.2	2.4	1	400	C8

Triacs

Type	Peak Inverse Volts	Max. Rect. Current (A)	Max. Holding Current (mA)	Max. Gate Firing Characteristic		Max. Forward Voltage Drop		Connections
				mA	at Volts	Volts	at Amps	
INTERNATIONAL RECTIFIER CO.								
Current Types								
60AC40	400	60	500	500	2.5	—	—	—
60AC60	600	60	500	500	2.5	—	—	—
60AC80	800	60	500	500	2.5	—	—	—
60AC100	1,000	60	500	500	2.5	—	—	—
100AC40	400	100	500	500	2.5	—	—	—
100AC60	600	100	500	500	2.5	—	—	—
100AC80	800	100	500	500	2.5	—	—	—
100AC100	1,000	100	500	500	2.5	—	—	—
200AC40	400	200	500	500	2.5	—	—	—
200AC60	600	200	500	500	2.5	—	—	—
200AC80	800	200	500	500	2.5	—	—	—
200AC100	1,000	200	500	500	2.5	—	—	—
MULLARD								
Current Types								
BTW34-600	600	50	—	200	2.5	—	—	S13
BTW34-800	800	50	—	200	2.5	—	—	S13
BTW34-1000	1,000	50	—	200	2.5	—	—	S13
BTW34-1200	1,200	50	—	200	2.5	—	—	S13
BTW37-600	600	12	—	100	2.5	—	—	S13
BTW37-800	800	12	—	100	2.5	—	—	S13
BTW37-1000	1,000	12	—	100	2.5	—	—	S13
BTW37-1200	1,200	12	—	100	2.5	—	—	S13
BTW44-100	100	50	—	200	2.5	—	—	S13
BTW44-200	200	50	—	200	2.5	—	—	S13
BTW44-300	300	50	—	200	2.5	—	—	S13
BTW44-400	400	50	—	200	2.5	—	—	S13
BTW44-500	500	50	—	200	2.5	—	—	S13
BTW44-600	600	50	—	200	2.5	—	—	S13
BTX94-100	100	25	—	150	3	—	—	S13
BTX94-200	200	25	—	150	3	—	—	S13
BTX94-300	300	25	—	150	3	—	—	S13
BTX94-400	400	25	—	150	3	—	—	S13
BTX94-500	500	25	—	150	3	—	—	S13
BTX94-600	600	25	—	150	3	—	—	S13
BTX94-800	800	25	—	150	3	—	—	S13
BXT94-1000	1,000	25	—	150	3	—	—	S13
BTX94-1200	1,200	25	—	150	3	—	—	S13
R.C.A.								
Current Types								
T2300A (40525)	100	2.5	—	3	2.2	—	—	80
T2300B (40526)	200	2.5	—	3	2.2	—	—	80
T2300D (40527)	400	2.5	—	3	2.2	—	—	80
T2301A (40766)	100	2.5	—	4	2.2	—	—	80
T2301B (40691)	200	2.5	—	4	2.2	—	—	80
T2301D (40692)	400	2.5	—	4	2.2	—	—	80
T2302A (40528)	100	2.5	—	10	2.2	—	—	80
T2302B (40529)	200	2.5	—	10	2.2	—	—	80
T2302D (40530)	400	2.5	—	10	2.2	—	—	80
T2304B (40769)	200	0.5	—	10	2.2	—	—	80
T2304D (40770)	400	0.5	—	10	2.2	—	—	80
T2305B (40771)	200	0.5	—	25	2.2	—	—	80
T2305D (40772)	400	0.5	—	25	2.2	—	—	80
T2306A (40696)	100	2.5	—	45	2.2	—	—	80
T2306B (40697)	200	2.5	—	45	2.2	—	—	80
T2306D (40698)	400	2.5	—	45	2.2	—	—	80
T2310A (40531)	100	1.6	—	3	2.2	—	—	80
T2310B (40532)	200	1.6	—	3	2.2	—	—	80

Continued

Triacs

Type	Peak Inverse Volts	Max. Rect. Current (A)	Max. Holding Current (mA)	Max. Gate Firing Characteristic		Max. Forward Voltage Drop		Connections
				mA	at Volts	Volts	at Amps	
R.C.A. (*Continued*)								
Current Types								
T2310D (40533)	400	1.6	—	3	2.2	—	—	80
T2311A (40767)	100	1.6	—	4	2.2	—	—	80
T2311B (40761)	200	1.6	—	4	2.2	—	—	80
T2311D (40762)	400	1.6	—	4	2.2	—	—	80
T2312A (40534)	100	1.9	—	10	2.2	—	—	80
T2312B (40535)	200	1.9	—	10	2.2	—	—	80
T2312D (40536)	400	1.9	—	10	2.2	—	—	80
T2313A (40684)	100	1.9	—	25	2.2	—	—	80
T2313B (40685)	200	1.9	—	25	2.2	—	—	80
T2313D (40686)	400	1.9	—	25	2.2	—	—	80
T2313M (40687)	600	1.9	—	25	2.2	—	—	80
T2316A (40693)	100	1.9	—	45	2.2	—	—	80
T2316B (40694)	200	1.9	—	45	2.2	—	—	80
T2316D (40695)	400	1.9	—	45	2.2	—	—	80
T2500B (41014)	200	6	—	25	2.5	—	—	81
T2500D (41015)	400	6	—	25	2.5	—	—	81
T2700B (40429)	200	6	—	25	2.2	—	—	78
T2700D (40430)	400	6	—	25	2.2	—	—	78
T2706B (40727)	200	6	—	45	2.2	—	—	78
T2706D (40728)	400	6	—	45	2.2	—	—	78
T2710B (40502)	200	3.3	—	25	2.2	—	—	78
T2710D (40503)	400	3.3	—	25	2.2	—	—	78
T2716B (40729)	200	3.3	—	45	2.2	—	—	78
T2716D (40730)	400	3.3	—	45	2.2	—	—	78
T2800B (40668)	200	8	—	25	2.5	—	—	81
T2800D (40669)	400	8	—	25	2.5	—	—	81
T2800M (40670)	600	8	—	25	2.5	—	—	81
T2801DF (40842)	450	6	—	80	4	—	—	81
T2806B (40721)	200	8	—	45	2.5	—	—	81
T2806D (40722)	400	8	—	45	2.5	—	—	81
T2850A (40900)	100	8	—	25	2.5	—	—	81
T2850B (40901)	200	8	—	25	2.5	—	—	81
T2850D (40902)	400	8	—	25	2.5	—	—	81
T4100M (40797)	600	15	—	50	2.5	—	—	82
T4101M (40795)	600	10	—	25	2.5	—	—	82
T4103B (40783)	200	15	—	50	2.5	—	—	82
T4103D (40784)	400	15	—	50	2.5	—	—	82
T4104B (40779)	200	10	—	50	2.5	—	—	82
T4104D (40780)	400	10	—	50	2.5	—	—	82
T4105B (40775)	200	6	—	50	2.5	—	—	82
T4105D (40776)	400	6	—	50	2.5	—	—	82
T4106B (40711)	200	15	—	45	2.5	—	—	82
T4106D (40712)	400	15	—	45	2.5	—	—	82
T4107B (40717)	200	10	—	45	2.5	—	—	82
T4107D (40718)	400	10	—	45	2.5	—	—	82
T4110M (40798)	600	15	—	50	2.5	—	—	S13
T4111M (40796)	600	10	—	25	2.5	—	—	S13
T4113B (40785)	200	15	—	50	2.5	—	—	S13
T4113D (40786)	400	15	—	50	2.5	—	—	S13
T4114B (40781)	200	10	—	50	2.5	—	—	S13
T4114D (40782)	400	10	—	50	2.5	—	—	S13
T4115B (40777)	200	6	—	50	2.5	—	—	S13
T4115D (40778)	400	6	—	50	2.5	—	—	S13
T4116B (40713)	200	15	—	45	2.5	—	—	S13
T4116D (40714)	400	15	—	45	2.5	—	—	S13
T4117B (40719)	200	10	—	45	2.5	—	—	S13
T4117D (40720)	400	10	—	45	2.5	—	—	S13
T4120B (40802)	200	15	—	50	2.5	—	—	S13
T4120D (40803)	400	15	—	50	2.5	—	—	S13
T4120M (40804)	600	15	—	50	2.5	—	—	S13
T4121B (40799)	200	10	—	25	2.5	—	—	S13

Continued

Type	Peak Inverse Volts	Max. Rect. Current (A)	Max. Holding Current (mA)	Max. Gate Firing Characteristic		Max. Forward Voltage Drop		Connections
				mA	at Volts	Volts	at Amps	
R.C.A. (*Continued*)								
Current Types (*Continued*)								
T4121D (40800)	400	10	—	25	2.5	—	—	S13
T4121M (40801)	600	10	—	25	2.5	—	—	S13
T4700B (40575)	200	15	—	30	2.5	—	—	78
T4700D (40576)	400	15	—	30	2.5	—	—	78
T4706B (40715)	200	15	—	45	2.5	—	—	78
T4706D (40716)	400	15	—	45	2.5	—	—	78
T6400N (40925)	800	40	—	50	2.5	—	—	82
T6401B (40660)	200	30	—	50	2.5	—	—	82
T6401D (40661)	400	30	—	50	2.5	—	—	82
T6401M (40671)	600	30	—	50	2.5	—	—	82
T6404B (40791)	200	40	—	80	2.5	—	—	82
T6404D (40792)	400	40	—	80	2.5	—	—	82
T6405B (40787)	200	25	—	80	2.5	—	—	82
T6405D (40788)	400	25	—	80	2.5	—	—	82
T6406B (40699)	200	40	—	45	2.5	—	—	82
T6406D (40670)	400	40	—	45	2.5	—	—	82
T6406M (40671)	600	40	—	45	2.5	—	—	82
T6407B (40705)	200	30	—	45	2.5	—	—	82
T6407D (40706)	400	30	—	45	2.5	—	—	82
T6407M (40709)	600	30	—	45	2.5	—	—	82
T6410N (40926)	800	40	—	50	2.5	—	—	S13
T6411B (40662)	200	30	—	50	2.5	—	—	S13
T6411D (40663)	400	30	—	50	2.5	—	—	S13
T6411M (40672)	600	30	—	50	2.5	—	—	S13
T6414B (40793)	200	40	—	80	2.5	—	—	S13
T6414D (40794)	400	40	—	80	2.5	—	—	S13
T6415B (40789)	200	25	—	80	2.5	—	—	S13
T6415D (40790)	400	25	—	80	2.5	—	—	S13
T6416B (40702)	200	40	—	45	2.5	—	—	S13
T6416D (40703)	400	40	—	45	2.5	—	—	S13
T6416M (40704)	600	40	—	45	2.5	—	—	S13
T6417B (40707)	200	30	—	45	2.5	—	—	S13
T6417D (40708)	400	30	—	45	2.5	—	—	S13
T6417M (40710)	600	30	—	45	2.5	—	—	S13
T6420B (40688)	200	40	—	50	2.5	—	—	S13
T6420D (40689)	400	40	—	50	2.5	—	—	S13
T6420M (40690)	600	40	—	50	2.5	—	—	S13
T6420N (40927)	800	40	—	50	2.5	—	—	S13
T6421B (40805)	200	30	—	50	2.5	—	—	S13
T6421D (40806)	400	30	—	50	2.5	—	—	S13
T6421M (40807)	600	30	—	50	2.5	—	—	S13
T8401B (41029)	200	60	—	75	2.5	—	—	82
T8401D (41030)	400	60	—	75	2.5	—	—	82
T8401M (41031)	600	60	—	75	2.5	—	—	82
T8411B (41032)	200	60	—	75	2.5	—	—	S13
T8411D (41033)	400	60	—	75	2.5	—	—	S13
T8411M (41034)	600	60	—	75	2.5	—	—	S13
T8421B (41035)	200	60	—	75	2.5	—	—	S13
T8421D (41036)	400	60	—	75	2.5	—	—	S13
T8421M (41037)	600	60	—	75	2.5	—	—	S13
T8430B (40916)	200	80	—	75	2.5	—	—	82
T8430D (40917)	400	80	—	75	2.5	—	—	82
T8430M (40918)	600	80	—	75	2.5	—	—	82
T8440B (40919)	200	80	—	75	2.5	—	—	S13
T8440D (40920)	400	80	—	75	2.5	—	—	S13
T8440M (40921)	600	80	—	75	2.5	—	—	S13
T8450B (40922)	200	80	—	75	2.5	—	—	S13
T8450D (40923)	400	80	—	75	2.5	—	—	S13
T8450M (40924)	600	80	—	75	2.5	—	—	S13
2N5441	200	40	—	50	2.5	—	—	82
2N5442	400	40	—	50	2.5	—	—	82

Continued

Triacs

Type	Peak Inverse Volts	Max. Rect. Current (A)	Max. Holding Current (mA)	Max. Gate Firing Characteristic		Max. Forward Voltage Drop		Connections
				mA	at Volts	Volts	at Amps	
R.C.A. (*Continued*)								
Current Types (*Continued*)								
2N5443	600	40	—	50	2.5	—	—	82
2N5444	200	40	—	50	2.5	—	—	S13
2N5445	400	40	—	50	2.5	—	—	S13
2N5446	600	40	—	50	2.5	—	—	S13
2N5567	200	10	—	25	2.5	—	—	82
2N5568	400	10	—	25	2.5	—	—	82
2N5569	200	10	—	25	2.5	—	—	S13
2N5570	400	10	—	25	2.5	—	—	S13
2N5571	200	15	—	50	2.5	—	—	82
2N5572	400	15	—	50	2.5	—	—	82
2N5573	200	15	—	50	2.5	—	—	S13
2N5574	400	15	—	50	2.5	—	—	S13
2N5754	100	2.5	—	25	2.2	—	—	80
2N5755	200	2.5	—	25	2.2	—	—	80
2N5756	400	2.5	—	25	2.2	—	—	80
2N5757	600	2.5	—	25	2.2	—	—	80
TEXAS								
Current Types								
TIC205A	100	2	30	5	10	1.9	2.8	77
TIC205B	200	2	30	5	10	1.9	2.8	77
TIC205D	400	2	30	5	10	1.9	2.8	77
TIC206A	100	3	30	5	10	2.2	4.2	78
TIC206B	200	3	30	5	10	2.2	4.2	78
TIC206D	400	3	30	5	10	2.2	4.2	78
TIC215A	100	3	30	5	10	2	4.2	77
TIC215B	200	3	30	5	10	2	4.2	77
TIC215D	400	3	30	5	10	2	4.2	77
TIC216A	100	6	30	5	10	1.7	8.4	78
TIC216B	200	6	30	5	10	1.7	8.4	78
TIC216D	400	6	30	5	10	1.7	8.4	78
TIC226B	200	8	60	50	—	2.1	12	78
TIC226D	400	8	60	50	—	2.1	12	78
TIC236B	200	12	50	50	—	2.1	17	78
TIC236D	400	12	50	50	—	2.1	17	78
TIC246B	200	16	50	50	—	1.7	22.5	78
TIC246D	400	16	50	50	—	1.7	22.5	78
TIC253B	200	20	50	50	—	1.7	28.2	79
TIC253D	400	20	50	50	—	1.7	28.2	79
TIC253E	500	20	50	50	—	1.7	28.2	79
TIC253M	600	20	50	50	—	1.7	28.2	79
TIC263B	200	25	50	50	—	1.7	35.2	79
TIC263D	400	25	50	50	—	1.7	35.2	79
TIC263E	500	25	50	50	—	1.7	35.2	79
TIC263M	600	25	50	50	—	1.7	35.2	79

Silicon Reference Diodes

Type	Nominal Zener Voltage (V)	Tolerance ±%	Max. Zener Current (mA)	Max. Dynamic Resistance (Ω)	Max. Dissipation (mW)	Connections
A.E.I. SEMICONDUCTORS Ltd.						
Replacement Types						
MR1A	6.6	5	10	20	250	C13
MR2A	6.6	5	10	20	250	C13
MR3A	9.8	5	5	150	250	C13
MR4A	6.6	5	5	60	250	C13
MR5A	6.6	5	5	60	250	C13
MR6A	11.0	5	5	120	250	C13
MR7A	10.0	5	10	50	250	C13
MR10A	6.6	5	10	20	250	C13
MR11A	6.6	5	10	20	250	C13
VR7E	7.0	5	—	4	5.8W	S2
VR8E	8.0	5	—	4	5.8W	S2
VR9E	9.0	5	—	4	5.8W	S2
VR10E	10.0	5	—	5	5.8W	S2
VR11E	11.0	5	—	6	5.8W	S2
VR12E	12.0	5	—	11	5.8W	S2
VR13E	13.0	5	—	12	5.8W	S2
VR15E	15.0	5	—	17	5.8W	S2
VR16E	16.0	5	—	19	5.8W	S2
VR18E	18.0	5	—	22	5.8W	S2
VR20E	20.0	5	—	26	5.8W	S2
VR22E	22.0	5	—	29	5.8W	S2
VR24E	24.0	5	—	34	5.8W	S2
VR27E	27.0	5	—	39	5.8W	S2
VR30E	30.0	5	—	44	5.8W	S2
VR35E	35.0	5	—	22	5.8W	S2
VR425E	4.25	5	—	19	5.8W	S2
VR475E	4.75	5	—	18	5.8W	S2
VR525E	5.25	5	—	17	5.8W	S2
VR575E	5.75	5	—	10	5.8W	S2
VR625E	6.25	5	—	4	5.8W	S2
Current Types						
BZY93-C6V8	6.8	5	2A	0.2	20W	S2
BZY93-C7V5	7.5	5	2A	0.3	20W	S2
BZY93-C8V2	8.2	5	2A	0.3	20W	S2
BZY93-C9V1	9.1	5	1A	0.5	20W	S2
BZY93-C10	10.0	5	1A	0.5	20W	S2
BZY93-C11	11.0	5	1A	1	20W	S2
BZY93-C12	12.0	5	1A	1	20W	S2
BZY93-C13	13.0	5	1A	1	20W	S2
BZY93-C15	15.0	5	1A	1.2	20W	S2
BZY93-C16	16.0	5	500	1.2	20W	S2
BZY93-C18	18.0	5	500	1.5	20W	S2
BZY93-C20	20.0	5	500	1.5	20W	S2
BZY93-C22	22.0	5	500	1.8	20W	S2
BZY93-C24	24.0	5	500	2	20W	S2
BZY93-C27	27.0	5	500	2	20W	S2
BZY93-C30	30.0	5	500	2.5	20W	S2
BZY93-C33	33.0	5	500	3	20W	S2
LR51C	5.1	5	—	75	400	A1
LR56C	5.6	5	—	55	400	A1
LR62C	6.2	5	—	27	400	A1
LR68C	6.8	5	—	15	400	A1
LR75C	7.5	5	—	15	400	A1
LR82C	8.2	5	—	10	400	A1
LR91C	9.1	5	—	15	400	A1
LR100C	10.0	5	—	20	400	A1
LR110C	11.0	5	—	25	400	A1
LR120C	12.0	5	—	30	400	A1
LR130C	13.0	5	—	34	400	A1

Continued

Type	Nominal Zener Voltage (V)	Tolerance ±%	Max. Zener Current (mA)	Max. Dynamic Resistance (Ω)	Max. Dissipation (mW)	Connections
A.E.I. SEMICONDUCTORS Ltd. (*Continued*)						
Current Types (*Continued*)						
LR150C	15.0	5	—	40	400	A1
LR160C	16.0	5	—	44	400	A1
LR180C	18.0	5	—	50	400	A1
LR200C	20.0	5	—	53	400	A1
LR220C	22.0	5	—	56	400	A1
LR240C	24.0	5	—	58	400	A1
LR270C	27.0	5	—	60	400	A1
LR300C	30.0	5	—	60	400	A1
LR330C	33.0	5	—	60	400	A1
LR360C	36.0	5	—	60	400	A1
LR390C	39.0	5	—	60	400	A1
VR7F	7.0	5	—	22	2.25W	A3
VR8F	8.0	5	—	19	2.25W	A3
VR9F	9.0	5	—	18	2.25W	A3
VR10F	10.0	5	—	17	2.25W	A3
VR11F	11.0	5	—	10	2.25W	A3
VR12F	12.0	5	—	4	2.25W	A3
VR13F	13.0	5	—	4	2.25W	A3
VR15F	15.0	5	—	4	2.25W	A3
VR16F	16.0	5	—	4	2.25W	A3
VR18F	18.0	5	—	5	2.25W	A3
VR20F	20.0	5	—	6	2.25W	A3
VR22F	22.0	5	—	11	2.25W	A3
VR24F	24.0	5	—	12	2.25W	A3
VR27F	27.0	5	—	17	2.25W	A3
VR30F	30.0	5	—	19	2.25W	A3
VR35F	35.0	5	—	22	2.25W	A3
VR425F	4.25	5	—	26	2.25W	A3
VR475F	4.75	5	—	29	2.25W	A3
VR525F	5.25	5	—	34	2.25W	A3
VR575F	5.75	5	—	39	2.25W	A3
VR625F	6.25	5	—	44	2.25W	A3
VZ33F	3.3	5	50	14	1.5W	A3
VZ36F	3.6	5	50	13	1.5W	A3
VZ39F	3.9	5	50	12	1.5W	A3
VZ43F	4.3	5	50	11	1.5W	A3
VZ47F	4.7	5	50	10	1.5W	A3
VZ51F	5.1	5	50	9	1.5W	A3
VZ56F	5.6	5	50	8	1.5W	A3
VZ62F	6.2	5	50	7	1.5W	A3
VZ68F	6.8	5	20	6	1.5W	A3
VZ75F	7.5	5	20	4.5	1.5W	A3
VZ82F	8.2	5	20	4	1.5W	A3
VZ91F	9.1	5	20	4	1.5W	A3
VZ100F	10.0	5	20	4.5	1.5W	A3
VZ110F	11.0	5	20	5.5	1.5W	A3
VZ120F	12.0	5	20	7	1.5W	A3
VZ130F	13.0	5	20	10	1.5W	A3
VZ150F	15.0	5	10	16	1.5W	A3
VZ160F	16.0	5	10	20	1.5W	A3
VZ180F	18.0	5	10	28	1.5W	A3
VZ200F	20.0	5	10	37	1.5W	A3
VZ220F	22.0	5	10	47	1.5W	A3
VZ240F	24.0	5	10	55	1.5W	A3
VZ270F	27.0	5	10	70	1.5W	A3
VZ300F	30.0	5	10	85	1.5W	A3
VZ330F	33.0	5	10	110	1.5W	A3

Type	Nominal Zener Voltage (V)	Tolerance ±%	Max. Zener Current (mA)	Max. Dynamic Resistance (Ω)	Max. Dissipation (mW)	Connections
EMIHUS						
Current Types						
HS2027	2.7	5	—	80	250	A1
HS2030	3.0	5	—	80	250	A1
HS2033	3.3	5	—	80	250	A1
HS2036	3.6	5	—	75	250	A1
HS2039	3.9	5	—	70	250	A1
HS2043	4.3	5	—	65	250	A1
HS2047	4.7	5	—	55	250	A1
HS2051	5.1	5	—	40	250	A1
HS2056	5.6	5	—	15	250	A1
HS2062	6.2	5	—	5	250	A1
HS2068	6.8	5	—	4	250	A1
HS2075	7.5	5	—	3.5	250	A1
HS2082	8.2	5	—	4	250	A1
HS2091	9.1	5	—	4.5	250	A1
HS2100	10.0	5	—	5	250	A1
HS2110	11.0	5	—	6	250	A1
HS2120	12.0	5	—	7	250	A1
HS2130	13.0	5	—	8	250	A1
HS2150	15.0	5	—	9.5	250	A1
HS2160	16.0	5	—	10	250	A1
HS2180	18.0	5	—	11	250	A1
HS2200	20.0	5	—	12	250	A1
HS2220	22.0	5	—	13	250	A1
HS2240	24.0	5	—	14	250	A1
HS2270	27.0	5	—	15	250	A1
HS2300	30.0	5	—	15	250	A1
HS2330	33.0	5	—	15	250	A1
HS2984	12.0	5	—	21	250	A1
HS2988	9.1	5	—	8	250	A1
HS2989	8.2	5	—	6.2	250	A1
HS2990	6.8	5	—	5	250	A1
HS2991	7.5	5	—	8	250	A1
HS2992	5.6	5	—	280	250	A1
HS2995	6.2	5	—	200	250	A1
HS2996	5.1	5	—	360	250	A1
HS2997	4.7	5	—	370	250	A1
HS7027	2.7	5	—	80	400	A1
HS7030	3.0	5	—	80	400	A1
HS7033	3.3	5	—	80	400	A1
HS7036	3.6	5	—	75	400	A1
HS7039	3.9	5	—	70	400	A1
HS7043	4.3	5	—	65	400	A1
HS7047	4.7	5	—	55	400	A1
HS7051	5.1	5	—	40	400	A1
HS7056	5.6	5	—	15	400	A1
HS7062	6.2	5	—	5	400	A1
HS7068	6.8	5	—	4	400	A1
HS7075	7.5	5	—	3.5	400	A1
HS7082	8.2	5	—	4	400	A1
HS7091	9.1	5	—	4.5	400	A1
HS7100	10.0	5	—	5	400	A1
HS7110	11.0	5	—	6	400	A1
HS7120	12.0	5	—	7	400	A1
HS7130	13.0	5	—	8	400	A1
HS7150	15.0	5	—	9.5	400	A1
HS7160	16.0	5	—	10	400	A1
HS7180	18.0	5	—	11	400	A1
HS7200	20.0	5	—	12	400	A1
HS7220	22.0	5	—	13	400	A1
HS7240	24.0	5	—	14	400	A1
HS7270	27.0	5	—	15	400	A1

Continued

Type	Nominal Zener Voltage (V)	Tolerance ±%	Max. Zener Current (mA)	Max. Dynamic Resistance (Ω)	Max. Dissipation (mW)	Connections
EMIHUS (*Continued*)						
Current Types (*Continued*)						
HS7300	30.0	5	—	15	400	A1
HS7330	33.0	5	—	15	400	A1
1N746A	3.3	5	—	28	400	A1
1N747A	3.6	5	—	24	400	A1
1N748A	3.9	5	—	23	400	A1
1N749A	4.3	5	—	22	400	A1
1N750A	4.7	5	—	19	400	A1
1N751A	5.1	5	—	17	400	A1
1N752A	5.6	5	—	11	400	A1
1N753A	6.2	5	—	7	400	A1
1N754A	6.8	5	—	5	400	A1
1N755A	7.5	5	—	6	400	A1
1N756A	8.2	5	—	8	400	A1
1N757A	9.1	5	—	10	400	A1
1N758A	10.0	5	—	17	400	A1
1N759A	12.0	5	—	30	400	A1
FERRANTI						
Current Types						
BZX88-C4V7	4.7	5	—	80	—	71
BZX88-C5V1	5.1	5	—	60	—	71
BZX88-C5V6	5.6	5	—	25	—	71
BZX88-C6V2	6.2	5	—	10	—	71
BZX88-C6V8	6.8	5	—	15	—	71
BZX88-C7V5	7.5	5	—	15	—	71
BZX88-C8V2	8.2	5	—	15	—	71
BZX88-C9V1	9.1	5	—	15	—	71
BZX88-C10	10.0	5	—	20	—	71
BZX88-C11	11.0	5	—	20	—	71
BZX88-C12	12.0	5	—	25	—	71
BZX88-C13	13.0	5	—	30	—	71
BZX88-C15	15.0	5	—	30	—	71
BZX88-C16	16.0	5	—	40	—	71
BZX88-C18	18.0	5	—	45	—	71
BZX88-C20	20.0	5	—	55	—	71
BZX88-C22	22.0	5	—	55	—	71
BZX88-C24	24.0	5	—	70	—	71
BZX88-C27	27.0	5	—	80	—	71
BZX88-C30	30.0	5	—	80	—	71
BZX88-C33	33.0	5	—	80	—	71
BZX88-C36	36.0	5	—	90	—	71
BZX88-C39	39.0	5	—	100	—	71
BZX88-C43	43.0	5	—	110	—	71
BZX88-C47	47.0	5	—	120	—	71
KS030A	3.0	5	—	150	400	A2
KS033A	3.3	5	—	100	400	A2
KS036A	3.6	5	—	95	400	A2
KS039A	3.9	5	—	90	400	A2
KS043A	4.3	5	—	85	400	A2
KS047A	4.7	5	—	80	400	A2
KS051A	5.1	5	—	70	400	A2
KS056A	5.6	5	—	60	400	A2
KS062A	6.2	5	—	35	400	A2
KS068A	6.8	5	—	15	400	A2
KS075A	7.5	5	—	15	400	A2
KS082A	8.2	5	—	15	400	A2
KS091A	9.1	5	—	15	400	A2
KS100A	10.0	5	—	25	400	A2

Continued

Type	Nominal Zener Voltage (V)	Tolerance ±%	Max. Zener Current (mA)	Max. Dynamic Resistance (Ω)	Max. Dissipation (mW)	Connections
FERRANTI (*Continued*)						
Current Types (*Continued*)						
KS110A	11.0	5	—	40	400	A2
KS120A	12.0	5	—	60	400	A2
KS130A	13.0	5	—	75	400	A2
KS150A	15.0	5	—	90	400	A2
KS160A	16.0	5	—	120	400	A2
KS180A	18.0	5	—	150	400	A2
KS30A	3.3	5	110	130	300	C2
KS30B	3.3	10	110	130	300	C2
KS31A	3.6	5	110	100	300	C2
KS32A	3.9	5	90	90	300	C2
KS32B	3.9	10	90	90	300	C2
KS33A	4.3	5	80	80	300	C2
KS34A	4.7	5	75	75	300	C2
KS34B	4.7	10	75	75	300	C2
KS35A	5.1	5	65	70	300	C2
KS36A	5.6	5	60	40	300	C2
KS36B	5.6	10	60	40	300	C2
KS37A	6.2	5	50	15	300	C2
KS38A	6.8	5	45	10	300	C2
KS38B	6.8	10	45	10	300	C2
KS39A	7.5	5	42	10	300	C2
KS40A	8.2	5	40	15	300	C2
KS40B	8.2	10	40	15	300	C2
KS41A	9.1	5	35	18	300	C2
KS42A	10.0	5	30	25	300	C2
KS42B	10.0	10	30	25	300	C2
KS43A	11.0	5	27	40	300	C2
KS44A	12.0	5	25	45	300	C2
KS44B	12.0	10	25	45	300	C2
KS77	9.0	5	—	35	56.7	A1
KS77B	9.0	5	—	35	56.7	A1
KS78	9.0	5	—	35	56.7	A1
KS78B	9.0	5	—	35	56.7	A1
INTERNATIONAL RECTIFIER CO.						
Replacement Types						
MZ3.9T10	3.9	10	180	30	750	A3
MZ4.7T10	4.7	10	150	28	750	A3
MZ5.6T10	5.6	10	130	24	750	A3
MZ6.8T10	6.8	10	110	15	750	A3
MZ8.2T10	8.2	10	90	6	750	A3
MZ10T10	10.0	10	75	6	750	A3
MZ12T10	12.0	10	60	10	750	A3
MZ15T10	15.0	10	50	25	750	A3
MZ18T10	18.0	10	40	40	750	A3
MZ22T10	22.0	10	33	70	750	A3
MZ27T10	27.0	10	26	95	750	A3
Current Types						
1N702	2.6	10%. For 5% add suffix 'A' to type number.	5	60	250	A1
1N703	3.4		5	55	250	A1
1N704	4.1		5	45	250	A1
1N705	4.8		5	35	250	A1
1N706	5.8		5	20	250	A1
1N707	7.1		5	10	250	A1
1N708	5.6		25	3.6	250	A1
1N709	6.2		25	4.1	250	A1
1N710	6.8		25	4.7	250	A1

Continued

Type	Nominal Zener Voltage (V)	Tolerance ±%	Max. Zener Current (mA)	Max. Dynamic Resistance (Ω)	Max. Dissipation (mW)	Connections
INTERNATIONAL RECTIFIER CO. *(Continued)*						
Current Types (Continued)						
1N711	7.5	10%. For 5% add suffix 'A' to type number.	25	5.3	250	A1
1N712	8.2		25	6	250	A1
1N713	9.1		12	7	250	A1
1N714	10.0		12	8	250	A1
1N715	11.0		12	9	250	A1
1N716	12.0		12	10	250	A1
1N717	13.0		12	11	250	A1
1N718	15.0		12	13	250	A1
1N719	16.0		12	15	250	A1
1N720	18.0		12	17	250	A1
1N721	20.0		4	20	250	A1
1N722	22.0		4	24	250	A1
1N723	24.0		4	28	250	A1
1N724	27.0		4	35	250	A1
1N725	30.0		4	42	250	A1
1N746	3.3		20	28	400	A1
1N747	3.6		20	24	400	A1
1N748	3.9		20	23	400	A1
1N749	4.3		20	22	400	A1
1N750	4.7		20	19	400	A1
1N751	5.1		20	17	400	A1
1N752	5.6		20	11	400	A1
1N753	6.2		20	7	400	A1
1N754	6.8		20	5	400	A1
1N755	7.5		20	6	400	A1
1N756	8.2		20	8	400	A1
1N757	9.1		20	10	400	A1
1N758	10.0		20	17	400	A1
1N759	12.0		20	30	400	A1
1N957	6.8	Type number suffix: A = 10% B = 5%	18.5	4.5	400	A1
1N958	7.5		16.5	5.5	400	A1
1N959	8.2		15	6.5	400	A1
1N960	9.1		14	7.5	400	A1
1N961	10.0		12.5	8.5	400	A1
1N962	11.0		11.5	9.5	400	A1
1N963	12.0		10.5	11.5	400	A1
1N964	13.0		9.5	13	400	A1
1N965	15.0		8.5	16	400	A1
1N966	16.0		7.8	17	400	A1
1N967	18.0		7	21	400	A1
1N958	20.0		6.2	25	400	A1
1N969	22.0		5.6	29	400	A1
1N970	24.0		5.2	33	400	A1
1N971	27.0		4.6	41	400	A1
1N972	30.0		4.2	49	400	A1
1N973	33.0		3.8	58	400	A1
1N974	38.0		3.4	70	400	A1
1N975	39.0		3.2	80	400	A1
1N976	43.0		3	93	400	A1
1N977	47.0		2.7	105	400	A1
1N978	51.0		2.5	125	400	A1
1N979	56.0		2.2	150	400	A1
1N980	62.0		2	185	400	A1
1N981	68.0		1.8	230	400	A1
1N982	75.0		1.7	270	400	A1
1N983	82.0		1.5	330	400	A1
1N984	91.0		1.4	400	400	A1
1N985	100		1.3	500	400	A1
1N1805	6.8	10%. For 5% add suffix 'A' to type number	1A	1	10W	S3*S2
1N1806	7.5		1A	1	10W	S3*S2
1N1807	8.2		1A	1	10W	S3*S2

Continued

Type	Nominal Zener Voltage (V)	Tolerance ±%	Max. Zener Current (mA)	Max. Dynamic Resistance (Ω)	Max. Dissipation (mW)	Connections
INTERNATIONAL RECTIFIER CO. *(Continued)*						
Current Types (Continued)						
1N1808	9.1		500	1	10W	S3*S2
1N1351	10.0		500	2	10W	S3*S2
1N1352	11.0		500	2	10W	S3*S2
1N1353	12.0		500	2	10W	S3*S2
1N1354	13.0		500	2	10W	S3*S2
1N1355	15.0		500	2	10W	S3*S2
1N1356	16.0		500	3	10W	S3*S2
1N1357	18.0		150	3	10W	S3*S2
1N1358	20.0		150	3	10W	S3*S2
1N1359	22.0		150	3	10W	S3*S2
1N1360	24.0		150	3	10W	S3*S2
1N1361	27.0		150	3	10W	S3*S2
1N1362	30.0		150	4	10W	S3*S2
1N1363	33.0		150	4	10W	S3*S2
1N1364	36.0	10%. For 5%	150	5	10W	S3*S2
1N1365	39.0	add suffix	150	5	10W	S3*S2
1N1366	43.0	'A' to type	150	6	10W	S3*S2
1N1367	47.0	number.	150	7	10W	S3*S2
1N1368	51.0		150	8	10W	S3*S2
1N1369	56.0		150	9	10W	S3*S2
1N1370	62.0		50	12	10W	S3*S2
1N1371	68.0		50	14	10W	S3*S2
1N1372	75.0		50	20	10W	S3*S2
1N1373	82.0		50	22	10W	S3*S2
1N1374	91.0		50	35	10W	S3*S2
1N1375	100		50	40	10W	S3*S2
1N1809	110		50	47	10W	S3*S2
1N1810	120		50	56	10W	S3*S2
1N1811	130		50	65	10W	S3*S2
1N1812	150		50	82	10W	S3*S2
1N1813	160		50	93	10W	S3*S2
1N1814	180		50	115	10W	S3*S2
1N1815	200		50	140	10W	S3*S2
1N2970	6.8		370	1.2	10W	S3*S2
1N2971	7.5		335	1.3	10W	S3*S2
1N2972	8.2		305	1.5	10W	S3*S2
1N2973	9.1		275	2	10W	S3*S2
1N2974	10.0		250	3	10W	S3*S2
1N2975	11.0		230	3	10W	S3*S2
1N2976	12.0		210	3	10W	S3*S2
1N2977	13.0		190	3	10W	S3*S2
1N2978	14.0		180	3	10W	S3*S2
1N2979	15.0		170	3	10W	S3*S2
1N2980	16.0		155	4	10W	S3*S2
1N2981	17.0		145	4	10W	S3*S2
1N2982	18.0	Type number	140	4	10W	S3*S2
1N2983	19.0	suffix.	130	4	10W	S3*S2
1N2984	20.0	A = 10%	125	4	10W	S3*S2
1N2985	22.0	B = 5%	115	5	10W	S3*S2
1N2986	24.0		105	5	10W	S3*S2
1N2987	25.0		100	6	10W	S3*S2
1N2988	27.0		95	7	10W	S3*S2
1N2989	30.0		85	8	10W	S3*S2
1N2990	33.0		75	9	10W	S3*S2
1N2991	36.0		70	10	10W	S3*S2
1N2992	39.0		65	11	10W	S3*S2
1N2993	43.0		60	12	10W	S3*S2
1N2994	45.0		55	13	10W	S3*S2
1N2995	47.0		55	14	10W	S3*S2
1N2996	50.0		50	15	10W	S3*S2
1N2997	51.0		50	15	10W	S3*S2

Continued

Type	Nominal Zener Voltage (V)	Tolerance ±%	Max. Zener Current (mA)	Max. Dynamic Resistance (Ω)	Max. Dissipation (mW)	Connections
INTERNATIONAL RECTIFIER CO. *(Continued)*						
Current Types (Continued)						
1N2998	52.0	Type number suffix. A = 10% B = 5%	50	15	10W	S3*S2
1N2999	56.0		45	16	10W	S3*S2
1N3000	62.0		40	17	10W	S3*S2
1N3001	68.0		37	18	10W	S3*S2
1N3002	75.0		33	22	10W	S3*S2
1N3003	82.0		30	25	10W	S3*S2
1N3004	91.0		28	35	10W	S3*S2
1N3005	100		25	40	10W	S3*S2
1N3006	105		25	45	10W	S3*S2
1N3007	110		23	55	10W	S3*S2
1N3008	120		20	75	10W	S3*S2
1N3009	130		19	100	10W	S3*S2
1N3010	140		18	125	10W	S3*S2
1N3011	150		17	175	10W	S3*S2
1N3012	160		16	200	10W	S3*S2
1N3013	175		14	250	10W	S3*S2
1N3014	180		14	260	10W	S3*S2
1N3015	200		12	300	10W	S3*S2
1N4370	2.4	10%. For 5% suffix 'A' to type number.	20	30	400	A1
1N4371	2.7		20	30	400	A1
1N4372	3.0		20	29	400	A1
1N4728	3.3	10%, For 5% add suffix 'A' to type number.	76	10	1W	A1
1N4729	3.6		69	10	1W	A1
1N4730	3.9		64	9	1W	A1
1N4731	4.3		58	9	1W	A1
1N4732	4.7		53	8	1W	A1
1N4733	5.1		49	7	1W	A1
1N4734	5.6		45	5	1W	A1
1N4735	6.2		41	2	1W	A1
1N4736	6.8		37	3.5	1W	A1
1N4737	7.5		34	4	1W	A1
1N4738	8.2		31	4.5	1W	A1
1N4739	9.1		28	5	1W	A1
1N4740	10.0		25	7	1W	A1
1N4741	11.0		33	8	1W	A1
1N4742	12.0		21	9	1W	A1
1N4743	13.0		19	10	1W	A1
1N4744	15.0		17	14	1W	A1
1N4745	16.0		15.5	16	1W	A1
1N4746	18.0		14	20	1W	A1
1N4747	20.0		12.5	22	1W	A1
1N4748	22.0		11.5	23	1W	A1
1N4749	24.0		10.5	25	1W	A1
1N4750	27.0		9.5	35	1W	A1
1N4751	30.0		8.5	40	1W	A1
1N4752	33.0		7.5	45	1W	A1
1N4753	36.0		7	50	1W	A1
1N4754	39.0		6.5	60	1W	A1
1N4755	43.0		6	70	1W	A1
1N4756	47.0		5.5	80	1W	A1
1N4757	51.0		5	95	1W	A1
1N4758	56.0		4.5	110	1W	A1
1N4759	62.0		4	125	1W	A1
1N4760	68.0		3.7	150	1W	A1
1N4761	75.0		3.3	175	1W	A1
1N4762	82.0		3	200	1W	A1
1N4763	91.0		2.8	250	1W	A1
1N4764	100	Type number suffix: A = 10% B = 5%	2.5	350	1W	A1
1N5221	2.4		20	30	500	A1
1N5222	2.5		20	30	500	A1
1N5223	2.7		20	30	500	A1

Continued

Type	Nominal Zener Voltage (V)	Tolerance ±%	Max. Zener Current (mA)	Max. Dynamic Resistance (Ω)	Max. Dissipation (mW)	Connections
INTERNATIONAL RECTIFIER CO. *(Continued)*						
Current Types (Continued)						
1N5224	2.8		20	30	500	A1
1N5225	3.0		20	29	500	A1
1N5226	3.3		20	28	500	A1
1N5227	3.6		20	24	500	A1
1N5228	3.9		20	23	500	A1
1N5229	4.3		20	22	500	A1
1N5230	4.7		20	19	500	A1
1N5231	5.1		20	17	500	A1
1N5232	5.6		20	11	500	A1
1N5233	6.0		20	7	500	A1
1N5234	6.2		20	7	500	A1
1N5235	6.8		20	5	500	A1
1N5236	7.5		20	6	500	A1
1N5237	8.2		20	8	500	A1
1N5238	8.7		20	8	500	A1
1N5239	9.1		20	10	500	A1
1N5240	10.0		20	17	500	A1
1N5241	11.0		20	22	500	A1
1N5242	12.0		20	30	500	A1
1N5243	13.0		9.5	13	500	A1
1N5244	14.0		9	15	500	A1
1N5245	15.0		8.5	16	500	A1
1N5246	16.0		7.8	17	500	A1
1N5247	17.0		7.4	19	500	A1
1N5248	18.0		7	21	500	A1
1N5249	19.0		6.6	23	500	A1
1N5250	20.0		6.2	25	500	A1
1N5251	22.0		5.6	29	500	A1
1N5252	24.0	Type	5.2	33	500	A1
1N5253	25.0	number	5	35	500	A1
1N5254	27.0	suffix:	4.6	41	500	A1
1N5255	28.0	A = 10%	4.5	44	500	A1
1N5256	30.0	B = 5%	4.2	49	500	A1
1N5257	33.0		3.8	58	500	A1
1N5333	3.3		380	3	5W	A1
1N5334	3.6		350	2.5	5W	A1
1N5335	3.9		320	2	5W	A1
1N5336	4.3		290	2	5W	A1
1N5337	4.7		260	2	5W	A1
1N5338	5.1		240	2	5W	A1
1N5339	5.6		220	1.5	5W	A1
1N5340	6.0		200	1	5W	A1
1N5341	6.2		200	1	5W	A1
1N5342	6.8		175	1	5W	A1
1N5343	7.5		175	1.5	5W	A1
1N5344	8.2		150	1.5	5W	A1
1N5345	8.7		150	2	5W	A1
1N5346	9.1		150	2	5W	A1
1N4347	10.0		125	2	5W	A1
1N5348	11.0		125	2.5	5W	A1
1N5349	12.0		100	2.5	5W	A1
1N5350	13.0		100	2.5	5W	A1
1N5351	14.0		100	2.5	5W	A1
1N5352	15.0		75	2.5	5W	A1
1N5353	16.0		75	2.5	5W	A1
1N5354	17.0		70	2.5	5W	A1
1N5355	18.0		65	2.5	5W	A1
1N5356	19.0		65	3	5W	A1
1N5357	20.0		65	3	5W	A1
1N5358	22.0		50	3.5	5W	A1
1N5359	24.0		50	3.5	5W	A1

Continued

Type	Nominal Zener Voltage (V)	Tolerance ±%	Max. Zener Current (mA)	Max. Dynamic Resistance (Ω)	Max. Dissipation (mW)	Connections
INTERNATIONAL RECTIFIER CO. *(Continued)*						
Current Types (Continued)						
1N5360	25.0	Type number suffix: A = 10% B = 5%	50	4	5W	A1
1N5361	27.0		50	5	5W	A1
1N5362	28.0		50	6	5W	A1
1N5363	30.0		40	8	5W	A1
1N5364	33.0		40	10	5W	A1
1N5365	36.0		30	11	5W	A1
1N5366	39.0		30	14	5W	A1
1N5367	43.0		30	20	5W	A1
1N5368	47.0		25	25	5W	A1
1N5369	51.0		25	27	5W	A1
1N5370	56.0		20	35	5W	A1
1N5371	60.0		20	40	5W	A1
1N5372	62.0		20	42	5W	A1
1N5373	68.0		20	44	5W	A1
1N5374	75.0		20	45	5W	A1
1N5375	82.0		15	65	5W	A1
1N5376	87.0		15	75	5W	A1
1N5377	91.0		15	75	5W	A1
1N5378	100		12	90	5W	A1
1ZS3.3	3.3	10%. For 5% add suffix 'A' to type number.	76	10	1W	A1
1ZS3.6	3.6		69	10	1W	A1
1ZS3.9	3.9		64	9	1W	A1
1ZS4.3	4.3		58	9	1W	A1
1ZS4.7	4.7		53	8	1W	A1
1ZS5.1	5.1		49	7	1W	A1
1ZS5.6	5.6		45	5	1W	A1
1ZS6.2	6.2		41	2	1W	A1
1ZS6.8	6.8		37	3.5	1W	A1
1ZS7.5	7.5		34	4	1W	A1
1ZS8.2	8.2		31	4.5	1W	A1
1ZS9.1	9.1		28	5	1W	A1
1ZS10	10.0		25	7	1W	A1
1ZS11	11.0		23	8	1W	A1
1ZS12	12.0		21	9	1W	A1
1ZS13	13.0		19	10	1W	A1
1ZS15	15.0		17	14	1W	A1
1ZS16	16.0		15.5	16	1W	A1
1ZS18	18.0		14	20	1W	A1
1ZS20	20.0		12.5	22	1W	A1
1ZS22	22.0		11.5	23	1W	A1
1ZS24	24.0		10.5	25	1W	A1
1ZS27	27.0		9.5	35	1W	A1
1ZS30	30.0		8.5	40	1W	A1
1ZS33	33.0		7.5	45	1W	A1
1ZS36	36.0		7	50	1W	A1
1ZS39	39.0		6.5	60	1W	A1
1ZS43	43.0		6	70	1W	A1
1ZS47	47.0		5.5	80	1W	A1
1ZS51	51.0		5	95	1W	A1
1ZS56	56.0		4.5	110	1W	A1
1ZS62	62.0		4	125	1W	A1
1ZS68	68.0		3.7	150	1W	A1
1ZS75	75.0		3.3	175	1W	A1
1ZS82	82.0		3	200	1W	A1
1ZS91	91.0		2.8	250	1W	A1
1ZS100	100		2.5	350	1W	A1
1ZM3.3	3.3	Type number suffix: T10 = 10% T5 = 5%	60	21	1W	A1
1ZM3.6	3.6		60	20	1W	A1
1ZM3.9	3.9		50	18	1W	A1
1ZM4.3	4.3		50	17	1W	A1
1ZM4.7	4.7		40	16	1W	A1

Continued

Type	Nominal Zener Voltage (V)	Tolerance ±%	Max. Zener Current (mA)	Max. Dynamic Resistance (Ω)	Max. Dissipation (mW)	Connections
INTERNATIONAL RECTIFIER CO. *(Continued)*						
Current Types (Continued)						
1ZM5.1	5.1		40	15	1W	A1
1ZM5.6	5.6		35	14	1W	A1
1ZM6.2	6.2		35	12	1W	A1
1ZM6.8	6.8		20	4	1W	A1
1ZM7.5	7.5		20	4	1W	A1
1ZM8.2	8.2		20	4.5	1W	A1
1ZM9.1	9.1		20	5	1W	A1
1ZM10	10.0		20	5.3	1W	A1
1ZM11	11.0		20	5.5	1W	A1
1ZM12	12.0		20	7	1W	A1
1ZM13	13.0		20	10	1W	A1
1ZM15	15.0		10	16	1W	A1
1ZM16	16.0		10	18	1W	A1
1ZM18	18.0		10	21	1W	A1
1ZM20	20.0		10	26	1W	A1
1ZM22	22.0		10	30	1W	A1
1ZM24	24.0		10	33	1W	A1
1ZM27	27.0		10	39	1W	A1
1ZM30	30.0		10	44	1W	A1
1ZM33	33.0		10	49	1W	A1
1ZM36	36.0		10	55	1W	A1
1ZM39	39.0		10	60	1W	A1
1ZM43	43.0		10	65	1W	A1
1ZM47	47.0		10	70	1W	A1
1ZM51	51.0		10	75	1W	A1
1ZM56	56.0		10	85	1W	A1
1ZM62	62.0		10	95	1W	A1
1ZM68	68.0		10	110	1W	A1
1ZM75	75.0	Type	10	120	1W	A1
1ZM82	82.0	number	5	140	1W	A1
1ZM91	91.0	suffix:	5	160	1W	A1
1ZM100	100	T10 = 10%	5	180	1W	A1
1ZM110	110	T5 = 5%	5	220	1W	A1
1ZM120	120		5	260	1W	A1
1ZM130	130		5	360	1W	A1
1ZM150	150		2	450	1W	A1
1ZM160	160		2	550	1W	A1
1ZM180	180		2	800	1W	A1
1ZM200	200		2	1,200	1W	A1
1ZC3.3	3.3		60	21	1.5W	A10
1ZC3.6	3.6		60	20	1.5W	A10
1ZC3.9	3.9		50	18	1.5W	A10
1ZC4.3	4.3		50	17	1.5W	A10
1ZC4.7	4.7		40	16	1.5W	A10
1ZC5.1	5.1		40	15	1.5W	A10
1ZC5.6	5.6		35	14	1.5W	A10
1ZC6.2	6.2		35	12	1.5W	A10
1ZC6.8	6.8		20	4	1.5W	A10
1ZC7.5	7.8		20	4	1.5W	A10
1ZC8.2	8.2		20	4.5	1.5W	A10
1ZC9.1	9.1		20	5	1.5W	A10
1ZC10	10.0		20	5.3	1.5W	A10
1ZC11	11.0		20	5.5	1.5W	A10
1ZC12	12.0		20	7	1.5W	A10
1ZC13	13.0		10	10	1.5W	A10
1ZC15	15.0		10	16	1.5W	A10
1ZC16	16.0		10	20	1.5W	A10
1ZC18	18.0		10	30	1.5W	A10
1ZC20	20.0		10	35	1.5W	A10
1ZC22	22.0		10	40	1.5W	A10
1ZC24	24.0		10	45	1.5W	A10

Continued

Type	Nominal Zener Voltage (V)	Tolerance ±%	Max. Zener Current (mA)	Max. Dynamic Resistance (Ω)	Max. Dissipation (mW)	Connections
INTERNATIONAL RECTIFIER Co. (*Continued*)						
Current Types (*Continued*)						
1ZC27	27.0		10	55	1.5W	A10
1ZC30	30.0		10	55	1.5W	A10
1ZC33	33.0		10	55	1.5W	A10
1Z3.3	3.3		60	14	1.5W	A10
1Z3.6	3.6		60	13	1.5W	A10
1Z3.9	3.9		50	12	1.5W	A10
1Z4.3	4.3		50	12	1.5W	A10
1Z4.7	4.7		40	11	1.5W	A10
1Z5.1	5.1		40	11	1.5W	A10
1Z5.6	5.6		35	10	1.5W	A10
1Z6.2	6.2		35	9	1.5W	A10
1Z6.8	6.8		30	6	1.5W	A10
1Z7.5	7.5		30	5	1.5W	A10
1Z8.2	8.2		25	5	1.5W	A10
1Z9.1	9.1		25	5	1.5W	A10
1Z10	10.0		20	6	1.5W	A10
1Z11	11.0		20	7	1.5W	A10
1Z12	12.0		15	8	1.5W	A10
1Z13	13.0		15	13	1.5W	A10
1Z15	15.0		13	16	1.5W	A10
1Z16	16.0		13	25	1.5W	A10
1Z18	18.0		10	35	1.5W	A10
1Z20	20.0		10	40	1.5W	A10
1Z22	22.0		9	50	1.5W	A10
1Z24	24.0	Type	9	55	1.5W	A10
1Z27	27.0	number	7	70	1.5W	A10
1Z30	30.0	suffix:	7	80	1.5W	A10
1Z33	33.0	T10 = 10%	6	90	1.5W	A10
3Z3.3	3.3	T5 = 5%	600	2	10W	S2
3Z3.6	3.6		500	1.5	10W	S2
3Z3.9	3.9		500	1.5	10W	S2
3Z4.3	4.3		500	1.5	10W	S2
3Z4.7	4.7		400	1.4	10W	S2
3Z5.1	5.1		400	1.3	10W	S2
3Z5.6	5.6		350	1.2	10W	S2
3Z6.2	6.2		350	0.8	10W	S2
3Z6.8	6.8		300	0.5	10W	S2
3Z7.5	7.5		300	0.5	10W	S2
3Z8.2	8.2		250	0.8	10W	S2
3Z9.1	9.1		250	1.2	10W	S2
3Z10	10.0		200	1.8	10W	S2
3Z11	11.0		200	2	10W	S2
3Z12	12.0		170	2.4	10W	S2
3Z13	13.0		170	3	10W	S2
3Z15	15.0		140	3.5	10W	S2
3Z16	16.0		140	4	10W	S2
3Z18	18.0		110	5	10W	S2
3Z20	20.0		110	6	10W	S2
3Z22	22.0		90	7.5	10W	S2
3Z24	24.0		90	9	10W	S2
3Z27	27.0		70	14	10W	S2
3Z30	30.0		70	20	10W	S2
3Z33	33.0		65	25	10W	S2
5ZS3.3	3.3		380	3	5W	A1
5ZS3.6	3.6		350	2.5	5W	A1
5ZS3.9	3.9	Type number	320	2	5W	A1
5ZS4.3	4.3	suffix:	290	2	5W	A1
5ZS4.7	4.7	A = 10 %	260	2	5W	A1
5ZS5.1	5.1	B = 5%	240	1.5	5W	A1
5ZS5.6	5.6		220	1	5W	A1
5ZS6.0	6.0		200	1	5W	A1

Continued

Type	Nominal Zener Voltage (V)	Tolerance ±%	Max. Zener Current (mA)	Max. Dynamic Resistance (Ω)	Max. Dissipation (mW)	Connections
INTERNATIONAL RECTIFIER Co. (*Continued*)						
Current Types (Continued)						
5ZS6.2	6.2	Type number suffix: A = 10% B = 5%	200	1	5W	A1
5ZS6.8	6.8		175	1	5W	A1
5ZS7.5	7.5		175	1.5	5W	A1
5ZS8.2	8.2		150	1.5	5W	A1
5ZS8.7	8.7		150	2	5W	A1
5ZS9.1	9.1		150	2	5W	A1
5ZS10	10.0		125	2	5W	A1
5ZS11	11.0		125	2.5	5W	A1
5ZS12	12.0		100	2.5	5W	A1
5ZS13	13.0		100	2.5	5W	A1
5ZS14	14.0		100	2.5	5W	A1
5ZS15	15.0		75	2.5	5W	A1
5ZS16	16.0		75	2.5	5W	A1
5ZS17	17.0		70	2.5	5W	A1
5ZS18	18.0		65	2.5	5W	A1
5ZS19	19.0		65	3	5W	A1
5ZS20	20.0		65	3	5W	A1
5ZS22	22.0		50	3.5	5W	A1
5ZS24	24.0		50	3.5	5W	A1
5ZS25	25.0		50	4	5W	A1
5ZS27	27.0		50	5	5W	A1
5ZS28	28.0		50	6	5W	A1
5ZS30	30.0		40	8	5W	A1
5ZS33	33.0		40	10	5W	A1
5ZS36	36.0		30	11	5W	A1
5ZS39	39.0		30	14	5W	A1
5ZS43	43.0		30	20	5W	A1
5ZS47	47.0		25	25	5W	A1
5ZS51	51.0		25	27	5W	A1
5ZS56	56.0		20	35	5W	A1
5ZS60	60.0		20	40	5W	A1
5ZS62	62.0		20	42	5W	A1
5ZS68	68.0		20	44	5W	A1
5ZS75	75.0		20	45	5W	A1
5ZS82	82.0		15	65	5W	A1
5ZS87	87.0		15	75	5W	A1
5ZS91	91.0		15	75	5W	A1
5ZS100	100		12	90	5W	A1
10Z3.3	3.3	Type number suffix: T10 = 10% T5 = 5%	600	2	10W	S2
10Z3.6	3.6		500	1.5	10W	S2
10Z3.9	3.9		500	1.5	10W	S2
10Z4.3	4.3		500	1.5	10W	S2
10Z4.7	4.7		400	1.4	10W	S2
10Z5.1	5.1		400	1.3	10W	S2
10Z5.6	5.6		350	1.2	10W	S2
10Z6.2	6.2		350	0.8	10W	S2
10Z6.8	6.8		300	0.5	10W	S2
10Z7.5	7.5		300	0.5	10W	S2
10Z8.2	8.2		250	0.8	10W	S2
10Z9.1	9.1		250	1.2	10W	S2
10Z10	10.0		200	1.8	10W	S2
10Z11	11.0		200	2	10W	S2
10Z12	12.0		170	2.4	10W	S2
10Z13	13.0		170	3	10W	S2
10Z15	15.0		140	3.5	10W	S2
10Z16	16.0		140	4	10W	S2
10Z18	18.0		110	5	10W	S2
10Z20	20.0		110	6	10W	S2
10Z22	22.0		90	7.5	10W	S2

Continued

Type	Nominal Zener Voltage (V)	Tolerance ±%	Max. Zener Current (mA)	Max. Dynamic Resistance (Ω)	Max. Dissipation (mW)	Connections
INTERNATIONAL RECTIFIER Co. *(Continued)*						
Current Types (Continued)						
10Z24	24.0	Type number suffix: T10 = 10% T5 = 5%	90	9	10W	S2
10Z27	27.0		70	14	10W	S2
10Z30	30.0		70	20	10W	S2
10Z33	33.0		65	25	10W	S2
	* S2 connections have suffix 'R' added to type number.					
I.T.T.						
Current Types						
Z2A33BF/CF*	3.3	10	270	39	1W	A14
Z2A36BF/CF*	3.6	10	250	37	1W	A14
Z2A39BF/CF*	3.9	10	220	35	1W	A14
Z2A43BF/CF*	4.3	10	200	33	1W	A14
Z2A47BF/CF*	4.7	10	190	31	1W	A14
Z2A51BF/CF*	5.1	10	176	28	1W	A14
Z2A56BF/CF*	5.6	10	160	25	1W	A14
Z2A62BF/CF*	6.2	10	130	18	1W	A14
Z2A68BF/CF*	6.8	10	130	18	1W	A14
Z2A75BF/CF*	7.5	10	120	19	1W	A14
Z2A82BF/CF*	8.2	10	110	22	1W	A14
Z2A91BF/CF*	9.1	10	95	27	1W	A14
Z2A100BF/CF*	10.0	10	90	31	1W	A14
Z2A110BF/CF*	11.0	10	80	36	1W	A14
Z2A120BF/CF*	12.0	10	75	40	1W	A14
Z2A130BF/CF*	13.0	10	65	50	1W	A14
Z2A150BF/CF*	15.0	10	60	54	1W	A14
Z3B33BF/CF*	3.3	10	20	33	1.5W	A3
Z3B36BF/CF*	3.6	10	20	30	1.5W	A3
Z3B39BF/CF*	3.9	10	20	25	1.5W	A3
Z3B43BF/CF*	4.3	10	20	22	1.5W	A3
Z3B47BF/CF*	4.7	10	20	19	1.5W	A3
Z3B51BF/CF*	5.1	10	20	18	1.5W	A3
Z3B56BF/CF*	5.6	10	20	18	1.5W	A3
Z3B62BF/CF*	6.2	10	20	14	1.5W	A3
Z3B68BF/CF*	6.8	10	20	7	1.5W	A3
Z3B75BF/CF*	7.5	10	20	4	1.5W	A3
Z3B82BF/CF*	8.2	10	20	4	1.5W	A3
Z3B91BF/CF*	9.1	10	20	5	1.5W	A3
Z3B100BF/CF*	10.0	10	20	6	1.5W	A3
Z3B110BF/CF*	11.0	10	20	8	1.5W	A3
Z3B120BF/CF*	12.0	10	20	10	1.5W	A3
Z3B130BF/CF*	13.0	10	20	11	1.5W	A3
Z3B150BF/CF*	15.0	10	20	12	1.5W	A3
Z3B160BF/CF*	16.0	10	20	13	1.5W	A3
Z3B180BF/CF*	18.0	10	20	14	1.5W	A3
Z3B200BF/CF*	20.0	10	20	15	1.5W	A3
Z3B220BF/CF*	22.0	10	20	16	1.5W	A3
Z3B240BF/CF*	24.0	10	20	19	1.5W	A3
Z3B270BF/CF*	27.0	10	20	23	1.5W	A3
Z3B300BF/CF*	30.0	10	20	28	1.5W	A3
Z3B330BF/CF*	33.0	10	20	33	1.5W	A3
Z3B360BF/CF*	36.0	10	20	38	1.5W	A3
Z3B390BF/CF*	39.0	10	20	44	1.5W	A3
Z3B430BF/CF*	43.0	10	20	51	1.5W	A3
Z3B470BF/CF*	47.0	10	20	59	1.5W	A3
Z3B510BF/CF*	51.0	10	20	70	1.5W	A3
Z3B560BF/CF*	56.0	10	10	82	1.5W	A3
Z3B620BF/CF*	62.0	10	10	95	1.5W	A3
Z3B680BF/CF*	68.0	10	10	110	1.5W	A3

Continued

Type	Nominal Zener Voltage (V)	Tolerance ±%	Max. Zener Current (mA)	Max. Dynamic Resistance (Ω)	Max. Dissipation (mW)	Connections
L.T.T. *(Continued)*						
Current Types (Continued)						
Z3B750BF/CF*	75.0	10	10	125	1.5W	A3
Z3B820BF/CF*	82.0	10	10	145	1.5W	A3
Z3B910BF/CF*	91.0	10	10	180	1.5W	A3
Z3B1000BF/CF*	100	10	10	250	1.5W	A3
Z5D82BF/CF*	8.2	10	—	2.5	10W	S2
Z5D91BF/CF*	9.1	10	—	5	10W	S2
Z5D100BF/CF*	10.0	10	—	5	10W	S2
Z5D110BF/CF*	11.0	10	—	5	10W	S2
Z5D120BF/CF*	12.0	10	—	5	10W	S2
Z5D130BF/CF*	13.0	10	—	5	10W	S2
Z5D150BF/CF*	15.0	10	—	5	10W	S2
Z5D160BF/CF*	16.0	10	—	5	10W	S2
Z5D180BF/CF*	18.0	10	—	5	10W	S2
Z5D200BF/CF*	20.0	10	—	5	10W	S2
Z5D220BF/CF*	22.0	10	—	5	10W	S2
Z5D240BF/CF*	24.0	10	—	5	10W	S2
Z5D270BF/CF*	27.0	10	—	8	10W	S2
Z5D300BF/CF*	30.0	10	—	8	10W	S2
Z5D330BF/CF*	33.0	10	—	8	10W	S2
Z5D360BF/CF*	36.0	10	—	8	10W	S2
Z5D390BF/CF*	39.0	10	—	10	10W	S2
Z5D430BF/CF*	43.0	10	—	10	10W	S2
Z5D470BF/CF*	47.0	10	—	10	10W	S2
Z5D510BF/CF*	51.0	10	—	10	10W	S2
Z5D560BF/CF*	56.0	10	—	15	10W	S2
Z5D620BF/CF*	62.0	10	—	15	10W	S2
Z5D680BF/CF*	68.0	10	—	30	10W	S2
Z5D750BF/CF*	75.0	10	—	30	10W	S2
Z5D820BF/CF*	82.0	10	—	40	10W	S2
Z5D910BF/CF*	91.0	10	—	40	10W	S2
Z5D1000BF/CF*	100	10	—	50	10W	S2
ZD3.9	3.9	5	240	3.8	1.1W	A9
ZD4.3	4.3	5	210	3.8	1.1W	A9
ZD4.7	4.7	5	180	3.8	1.1W	A9
ZD5.1	5.1	5	170	2	1.1W	A9
ZD5.6	5.6	5	160	1	1.1W	A9
ZD6.2	6.2	5	145	1	1.1W	A9
ZD6.8	6.8	5	130	1	1.1W	A9
ZD7.5	7.5	5	120	1	1.1W	A9
ZD8.2	8.2	5	110	1	1.1W	A9
ZD9.1	9.1	5	100	2	1.1W	A9
ZD10	10.0	5	90	2	1.1W	A9
ZD11	11.0	5	82	4	1.1W	A9
ZD12	12.0	5	75	4	1.1W	A9
ZD13	13.0	5	67	5	1.1W	A9
ZD15	15.0	5	60	5	1.1W	A9
ZD16	16.0	5	56	6	1.1W	A9
ZD18	18.0	5	53	6	1.1W	A9
ZD20	20.0	5	48	6	1.1W	A9
ZD22	22.0	5	44	6	1.1W	A9
ZD24	24.0	5	40	7	1.1W	A9
ZD27	27.0	5	35	7	1.1W	A9
ZD30	30.0	5	31	8	1.1W	A9
ZD33	33.0	5	28	8	1.1W	A9
ZD36	36.0	5	26	21	1.1W	A9
ZD39	39.0	5	24	21	1.1W	A9
ZD43	43.0	5	22	24	1.1W	A9
ZD47	47.0	5	20	24	1.1W	A9
ZD51	51.0	5	18	25	1.1W	A9
ZD56	56.0	5	16.5	25	1.1W	A9
ZD62	62.0	5	14	25	1.1W	A9

Continued

Silicon Reference Diodes

Type	Nominal Zener Voltage (V)	Tolerance ±%	Max. Zener Current (mA)	Max. Dynamic Resistance (Ω)	Max. Dissipation (mW)	Connections
L.T.T. (*Continued*)						
Current Types (*Continued*)						
ZD68	68.0	5	13	25	1.1W	A9
ZD75	75.0	5	12	30	1.1W	A9
ZD82	82.0	5	11	30	1.1W	A9
ZD91	91.0	5	10	60	1.1W	A9
ZD100	100	5	9	60	1.1W	A9
ZD110	110	5	8.2	80	1.1W	A9
ZD120	120	5	7.5	80	1.1W	A9
ZD130	130	5	6.7	110	1.1W	A9
ZD150	150	5	6	110	1.1W	A9
ZD160	160	5	5.6	150	1.1W	A9
ZD180	180	5	5.3	150	1.1W	A9
ZD200	200	5	4.8	150	1.1W	A9
ZF2.7	2.7	5	99	70	400	A1
ZF3	3.0	5	86	70	400	A1
ZF3.3	3.3	5	77	70	400	A1
ZF3.6	3.6	5	71	70	400	A1
ZF3.9	3.9	5	65	70	400	A1
ZF4.3	4.3	5	58	50	400	A1
ZF4.7	4.7	5	55	40	400	A1
ZF5.1	5.1	5	52	30	400	A1
ZF5.6	5.6	5	49	10	400	A1
ZF6.2	6.2	5	45	4.8	400	A1
ZF6.8	6.8	5	41	4.5	400	A1
ZF7.5	7.5	5	37	4	400	A1
ZF8.2	8.2	5	33	4.5	400	A1
ZF9.1	9.1	5	30	4.8	400	A1
ZF10	10.0	5	28	5.2	400	A1
ZF11	11.0	5	25	6	400	A1
ZF12	12.0	5	22.5	7	400	A1
ZF13	13.0	5	20.5	9	400	A1
ZF15	15.0	5	19	11	400	A1
ZF16	16.0	5	17	13	400	A1
ZF18	18.0	5	15	18	400	A1
ZF20	20.0	5	14	20	400	A1
ZF22	22.0	5	12.5	25	400	A1
ZF24	24.0	5	11	28	400	A1
ZF27	27.0	5	10	30	400	A1
ZF30	30.0	5	9	35	400	A1
ZF33	33.0	5	8	40	400	A1
ZF2.7P	2.7	5	160	75	500	A1
ZF3P	3.0	5	140	80	500	A1
ZF3.3P	3.3	5	130	80	500	A1
ZF3.6P	3.6	5	120	80	500	A1
ZF3.9P	3.9	5	110	80	500	A1
ZF4.3P	4.3	5	100	80	500	A1
ZF4.7P	4.7	5	90	70	500	A1
ZF5.1P	5.1	5	80	30	500	A1
ZF5.6P	5.6	5	70	10	500	A1
ZF6.2P	6.2	5	64	4.8	500	A1
ZF6.8P	6.8	5	58	4.5	500	A1
ZF7.5P	7.5	5	53	4	500	A1
ZF8.2P	8.2	5	47	4.5	500	A1
ZF9.1P	9.1	5	43	4.8	500	A1
ZF10P	10.0	5	40	5.2	500	A1
ZF11P	11.0	5	36	6	500	A1
ZF12P	12.0	5	32	7	500	A1
ZF13P	13.0	5	29	9	500	A1
ZF15P	15.0	5	27	11	500	A1
ZF16P	16.0	5	24	13	500	A1
ZF18P	18.0	5	21	18	500	A1
ZF20P	20.0	5	20	20	500	A1

Continued

Type	Nominal Zener Voltage (V)	Tolerance ±%	Max. Zener Current (mA)	Max. Dynamic Resistance (Ω)	Max. Dissipation (mW)	Connections
I.T.T. *(Continued)*						
Current Types (Continued)						
ZF22P	22.0	5	18	25	500	A1
ZF24P	24.0	5	16	28	500	A1
ZF27P	27.0	5	14	30	500	A1
ZF30P	30.0	5	13	35	500	A1
ZF33P	33.0	5	12	40	500	A1
ZPU100	100	10	10	140	1.37W	A1
ZPU120	120	10	8.5	170	1.37W	A1
ZPU150	150	10	7	200	1.37W	A1
ZPU180	180	10	5.5	220	1.37W	A1
ZPU220	220	10	5	240	1.37W	A1
ZPY3.9	3.9	5	290	4	1.37W	A1
ZPY4.3	4.3	5	260	4	1.37W	A1
ZPY4.7	4.7	5	235	4	1.37W	A1
ZPY5.1	5.1	5	215	2	1.37W	A1
ZPY5.6	5.6	5	193	1	1.37W	A1
ZPY6.2	6.2	5	183	1	1.37W	A1
ZPY6.8	6.8	5	157	1	1.37W	A1
ZPY7.5	7.5	5	143	1	1.37W	A1
ZPY8.2	8.2	5	127	1	1.37W	A1
ZPY9.1	9.1	5	117	2	1.37W	A1
ZPY10	10.0	5	105	2	1.37W	A1
ZPY11	11.0	5	94	3	1.37W	A1
ZPY12	12.0	5	85	3	1.37W	A1
ZPY13	13.0	5	78	4	1.37W	A1
ZPY15	15.0	5	70	4	1.37W	A1
ZPY16	16.0	5	63	5	1.37W	A1
ZPY18	18.0	5	57	5	1.37W	A1
ZPY20	20.0	5	52	6	1.37W	A1
ZPY22	22.0	5	48	7	1.37W	A1
ZPY24	24.0	5	42	8	1.37W	A1
ZPY27	27.0	5	38	9	1.37W	A1
ZPY30	30.0	5	35	10	1.37W	A1
ZPY33	33.0	5	31	11	1.37W	A1
ZPY36	36.0	5	29	25	1.37W	A1
ZPY39	39.0	5	26	30	1.37W	A1
ZPY43	43.0	5	24	35	1.37W	A1
ZPY47	47.0	5	22	40	1.37W	A1
ZPY51	51.0	5	20	45	1.37W	A1
ZPY56	56.0	5	18	50	1.37W	A1
ZPY62	62.0	5	16	60	1.37W	A1
ZPY68	68.0	5	14	65	1.37W	A1
ZPY75	75.0	5	13	70	1.37W	A1
ZPY82	82.0	5	12	80	1.37W	A1
ZPY91	91.0	5	11	120	1.37W	A1
ZPY100	100	5	10	130	1.37W	A1
ZW2.7	2.7	5	180	70	600	A1
ZW3	3.0	5	155	70	600	A1
ZW3.3	3.3	5	140	70	600	A1
ZW3.6	3.6	5	130	70	600	A1
ZW3.9	3.9	5	120	70	600	A1
ZW4.3	4.3	5	105	50	600	A1
ZW4.7	4.7	5	100	40	600	A1
ZW5.1	5.1	5	95	30	600	A1
ZW5.6	5.6	5	90	10	600	A1
ZW6.2	6.2	5	83	4.8	600	A1
ZW6.8	6.8	5	75	4.5	600	A1
ZW7.5	7.5	5	67	4	600	A1
ZW8.2	8.2	5	60	4.5	600	A1
ZW9.1	9.1	5	54	4.8	600	A1
ZW10	10.0	5	50	5.2	600	A1
ZW11	11.0	5	45	6	600	A1

Continued

Silicon Reference Diodes

Type	Nominal Zener Voltage (V)	Tolerance ±%	Max. Zener Current (mA)	Max. Dynamic Resistance (Ω)	Max. Dissipation (mW)	Connections
L.T.T. *(Continued)*						
Current Types (Continued)						
ZW12	12.0	5	40	7	600	A1
ZW13	13.0	5	36	9	600	A1
ZW15	15.0	5	34	11	600	A1
ZW16	16.0	5	30	13	600	A1
ZW18	18.0	5	27	18	600	A1
ZW20	20.0	5	25	20	600	A1
ZW22	22.0	5	22	25	600	A1
ZW24	24.0	5	20	28	600	A1
ZW27	27.0	5	17	30	600	A1
ZW30	30.0	5	16	35	600	A1
ZW33	33.0	5	14	40	600	A1
ZX3.9	3.9	5	280	3.8	1.3W	S7
ZX4.3	4.3	5	240	3.8	1.3W	S7
ZX4.7	4.7	5	210	3.8	1.3W	S7
ZX5.1	5.1	5	190	2	1.3W	S7
ZX5.6	5.6	5	180	1	1.3W	S7
ZX6.2	6.2	5	160	1	1.3W	S7
ZX6.8	6.8	5	150	1	1.3W	S7
ZX7.5	7.5	5	140	1	1.3W	S7
ZX8.2	8.2	5	130	1	1.3W	S7
ZX9.1	9.1	5	117	2	1.3W	S7
ZX10	10.0	5	105	2	1.3W	S7
ZX11	11.0	5	95	4	1.3W	S7
ZX12	12.0	5	86	4	1.3W	S7
ZX13	13.0	5	78	5	1.3W	S7
ZX15	15.0	5	71	5	1.3W	S7
ZX16	16.0	5	65	6	1.3W	S7
ZX18	18.0	5	60	6	1.3W	S7
ZX20	20.0	5	55	6	1.3W	S7
ZX22	22.0	5	50	6	1.3W	S7
ZX24	24.0	5	45	7	1.3W	S7
ZX27	27.0	5	40	7	1.3W	S7
ZX30	30.0	5	30	8	1.3W	S7
ZX33	33.0	5	33	8	1.3W	S7
ZX36	36.0	5	30	21	1.3W	S7
ZX39	39.0	5	28	21	1.3W	S7
ZX43	43.0	5	25	24	1.3W	S7
ZX47	47.0	5	22	24	1.3W	S7
ZX51	51.0	5	20	25	1.3W	S7
ZX56	56.0	5	18.5	25	1.3W	S7
ZX62	62.0	5	17	25	1.3W	S7
ZX68	68.0	5	15.5	25	1.3W	S7
ZX75	75.0	5	14	30	1.3W	S7
ZX82	82.0	5	12.5	30	1.3W	S7
ZX91	91.0	5	11.5	60	1.3W	S7
ZX100	100	5	10.5	60	1.3W	S7
ZX110	110	5	9.5	80	1.3W	S7
ZX120	120	5	8.6	80	1.3W	S7
ZX130	130	5	7.8	110	1.3W	S7
ZX150	150	5	7	110	1.3W	S7
ZX160	160	5	6.3	150	1.3W	S7
ZX180	180	5	5.7	150	1.3W	S7
ZX200	200	5	5.2	150	1.3W	S7
ZY3.9	3.9	5	240	3.8	1.1W	A1
ZY4.3	4.3	5	210	3.8	1.1W	A1
ZY4.7	4.7	5	180	3.8	1.1W	A1
ZY5.1	5.1	5	170	2	1.1W	A1
ZY5.6	5.6	5	160	1	1.1W	A1
ZY6.2	6.2	5	145	1	1.1W	A1
ZY6.8	6.8	5	130	1	1.1W	A1
ZY7.5	7.5	5	120	1	1.1W	A1

Continued

Type	Nominal Zener Voltage (V)	Tolerance ±%	Max. Zener Current (mA)	Max. Dynamic Resistance (Ω)	Max. Dissipation (mW)	Connections
I.T.T. (*Continued*)						
Current Types (*Continued*)						
ZY8.2	8.2	5	110	1	1.1W	A1
ZY9.1	9.1	5	100	2	1.1W	A1
ZY10	10.0	5	90	2	1.1W	A1
ZY11	11.0	5	82	4	1.1W	A1
ZY12	12.0	5	75	4	1.1W	A1
ZY13	13.0	5	67	5	1.1W	A1
ZY15	15.0	5	60	5	1.1W	A1
ZY16	16.0	5	56	6	1.1W	A1
ZY18	18.0	5	53	6	1.1W	A1
ZY20	20.0	5	48	6	1.1W	A1
ZY22	22.0	5	44	6	1.1W	A1
ZY24	24.0	5	40	7	1.1W	A1
ZY27	27.0	5	35	7	1.1W	A1
ZY30	30.0	5	31	8	1.1W	A1
ZY33	33.0	5	28	8	1.1W	A1
ZY36	36.0	5	26	21	1.1W	A1
ZY39	39.0	5	24	21	1.1W	A1
ZY43	43.0	5	22	24	1.1W	A1
ZY47	47.0	5	20	24	1.1W	A1
ZY51	51.0	5	18	25	1.1W	A1
ZY56	56.0	5	16.5	25	1.1W	A1
ZY62	62.0	5	14	25	1.1W	A1
ZY68	68.0	5	13	25	1.1W	A1
ZY75	75.0	5	12	30	1.1W	A1
ZY82	82.0	5	11	30	1.1W	A1
ZY91	91.0	5	10	60	1.1W	A1
ZY100	100	5	9	60	1.1W	A1
ZY110	110	5	8.2	80	1.1W	A1
ZY120	120	5	7.5	80	1.1W	A1
ZY130	130	5	6.7	110	1.1W	A1
ZY150	150	5	6	110	1.1W	A1
ZY160	160	5	5.6	150	1.1W	A1
ZY180	180	5	5.3	150	1.1W	A1
ZY200	200	5	4.8	150	1.1W	A1

* Type numbers having suffix BF = 10% tolerance
CF = 5% tolerance

JOSEPH LUCAS (ELECTRICAL) Ltd.

Current Types

ZC708	8.2	5	2	0.09	100W	S2
ZC709	9.1	5	2	0.1	100W	S2
ZC710	10.1	5	2	0.1	100W	S2
ZC711	11.0	5	2	0.11	100W	S2
ZC712	12.0	5	2	0.12	100W	S2
ZC713	13.0	5	2	0.13	100W	S2
ZC715	15.0	5	2	0.15	100W	S2
ZC716	16.0	5	2	0.16	100W	S2
ZC718	18.0	5	2	0.18	100W	S2
ZC720	20.0	5	2	0.35	100W	S2
ZC722	22.0	5	2	0.38	100W	S2
ZC724	24.0	5	2	0.4	100W	S2
ZC727	27.0	5	2	0.45	100W	S2
ZC730	30.0	5	2	0.5	100W	S2
ZC733	33.0	5	2	0.55	100W	S2
ZC736	36.0	5	2	0.6	100W	S2
ZC739	39.0	5	0.5	1	100W	S2
ZC743	43.0	5	0.5	1.1	100W	S2
ZC747	47.0	5	0.5	1.2	100W	S2

Continued

Type	Nominal Zener Voltage (V)	Tolerance ±%	Max. Zener Current (mA)	Max. Dynamic Resistance (Ω)	Max. Dissipation (mW)	Connections
JOSEPH LUCAS (ELECTRICAL) Ltd. *(Continued)*						
Current Types **(***Continued***)**						
ZC751	51.0	5	0.5	1.4	100W	S2
ZC756	56.0	5	0.5	1.5	100W	S2
ZC762	62.0	5	0.5	1.7	100W	S2
ZC768	68.0	5	0.5	1.8	100W	S2
ZC775	75.0	5	0.5	2	100W	S2
ZC782	82.0	5	0.25	5.6	100W	S2
ZC791	91.0	5	0.25	6	100W	S2
ZC799	100	5	0.25	7	100W	S2
ZC5008	8.2	5	0.2	2.5	10W	A1
ZC5009	9.1	5	0.2	2.5	10W	A1
ZC5010	10.0	5	0.2	2.5	10W	A1
ZC5011	11.0	5	0.2	2.5	10W	A1
ZC5012	12.0	5	0.2	2.5	10W	A1
ZC5013	12.3	5	0.2	2.5	10W	A1
ZC5015	15.0	5	0.1	5	10W	A1
ZC5016	16.0	5	0.1	5	10W	A1
ZC5018	18.0	5	0.1	5	10W	A1
ZC5020	20.0	5	0.1	5	10W	A1
ZC5022	22.0	5	0.1	5	10W	A1
ZC5024	24.0	5	0.1	5	10W	A1
ZC5027	27.0	5	0.1	5	10W	A1
ZC5030	30.0	5	0.1	8	10W	A1
ZC5033	33.0	5	0.05	8	10W	A1
ZC5036	36.0	5	0.05	8	10W	A1
ZC5039	39.0	5	0.05	8	10W	A1
ZC5043	43.0	5	0.05	10	10W	A1
ZC5047	47.0	5	0.05	10	10W	A1
ZC5051	51.0	5	0.05	10	10W	A1
ZC5056	56.0	5	0.05	10	10W	A1
ZC5062	62.0	5	0.05	15	10W	A1
ZC5068	68.0	5	0.02	50	10W	A1
ZC5075	75.0	5	0.02	50	10W	A1
ZC5082	82.0	5	0.02	50	10W	A1
ZC5091	91.0	5	0.02	60	10W	A1
ZC5099	100	5	0.02	60	10W	A1
ZC5108	8.2	5	0.2	2.5	20W	A1
ZC5109	9.1	5	0.2	2.5	20W	A1
ZC5110	10.0	5	0.2	2.5	20W	A1
ZC5111	11.0	5	0.2	2.5	20W	A1
ZC5112	12.0	5	0.2	2.5	20W	A1
ZC5113	13.0	5	0.2	2.5	20W	A1
ZC5115	15.0	5	0.1	5	20W	A1
ZC5116	16.0	5	0.1	5	20W	A1
ZC5118	18.0	5	0.1	5	20W	A1
ZC5120	20.0	5	0.1	5	20W	A1
ZC5122	22.0	5	0.1	5	20W	A1
ZC5124	24.0	5	0.1	5	20W	A1
ZC5127	27.0	5	0.1	5	20W	A1
ZC5130	30.0	5	0.1	8	20W	A1
ZC5133	33.0	5	0.05	8	20W	A1
ZC5136	36.0	5	0.05	8	20W	A1
ZC5139	39.0	5	0.05	8	20W	A1
ZC5143	43.0	5	0.05	10	20W	A1
ZC5147	47.0	5	0.05	10	20W	A1
ZC5151	51.0	5	0.05	10	20W	A1
ZC5156	56.0	5	0.05	10	20W	A1
ZC5162	62.0	5	0.05	15	20W	A1
ZC5168	68.0	5	0.02	50	20W	A1
ZC5175	75.0	5	0.02	50	20W	A1
ZC5182	82.0	5	0.02	50	20W	A1

Continued

Type	Nominal Zener Voltage (V)	Tolerance ±%	Max. Zener Current (mA)	Max. Dynamic Resistance (Ω)	Max. Dissipation (mW)	Connections
JOSEPH LUCAS (ELECTRICAL) Ltd. *(Continued)*						
Current Types (Continued)						
ZC5191	91.0	5	0.02	60	20W	A1
ZC5199	100	5	0.02	60	20W	A1
MULLARD						
Replacement Types						
OAZ222	5.6	5	7A	—	10W	S2
OAZ223	6.2	5	7A	—	10W	S2
OAZ224	6.8	5	7A	—	10W	S2
OAZ225	7.5	5	7A	—	10W	S2
OAZ226	8.2	5	7A	—	10W	S2
OAZ227	9.1	5	7A	—	10W	S2
OAZ228	10.0	5	7A	—	10W	S2
OAZ229	11.0	5	7A	—	10W	S2
OAZ230	12.0	5	7A	—	10W	S2
OAZ231	13.0	5	7A	—	10W	S2
OAZ232	15.0	5	7A	—	10W	S2
OAZ233	16.0	5	7A	—	10W	S2
OAZ234	18.0	5	7A	—	10W	S2
OAZ235	20.0	5	7A	—	10W	S2
OAZ236	22.0	5	7A	—	10W	S2
OAZ237	24.0	5	7A	—	10W	S2
OAZ240	4.7	5	25	—	245	A1
OAZ241	5.1	5	25	—	245	A1
OAZ242	5.6	5	25	—	245	A1
OAZ243	6.2	5	25	—	245	A1
OAZ244	6.8	5	25	—	245	A1
OAZ245	7.5	5	25	—	245	A1
OAZ246	8.2	5	25	—	245	A1
OAZ247	9.1	5	25	—	245	A1
1N748A	3.9	5	250	—	400	A1
1N749A	4.3	5	250	—	400	A1
1N750A	4.7	5	250	—	400	A1
1N751A	5.1	5	250	—	400	A1
1N752A	5.6	5	250	—	400	A1
1N753A	6.2	5	250	—	400	A1
1N754A	6.8	5	250	—	400	A1
1N755A	7.5	5	250	—	400	A1
1N756A	8.2	5	250	—	400	A1
1N757A	9.1	5	250	—	400	A1
1N758A	10.0	5	250	—	400	A1
1N759A	12.0	5	250	—	400	A1
Current Types						
BZV10 to 14	6.5	5	50	50	400	A1
BZV15 series*	10 to 75	5	—	—	15W	Polarity marked
BZX61 series*	6.8 to 75	5	3A	—	1.3W	A1
BZX70 series*	10 to 75	5	5A	—	2.5W	A1
BZX79 series*	4.7 to 75	5	—	—	400	A1
BZX84 series*	4.7 to 12	5	—	—	200	A1
BZX90 to 94	6.5	5	50	15	400	A1
BZY78	5.3	5	25	20	280	A2
BZY88 series*	5.3 to 9.1	5	250	—	400	A1
BZY91 series*	7.5 to 75	5	100A	—	75W	S2
BZY93 series*	6.8 to 75	5	20A	—	20W	S2
BZY95 series*	10 to 75	5	5A	—	1.5W	A3
BZY96 series*	4.7 to 10	5	3.5A	—	1.5W	A3
1N821	6.2	5	50	15	400	A1
1N823	6.2	5	50	15	400	A1

Continued

Silicon Reference Diodes

Type	Nominal Zener Voltage (V)	Tolerance ±%	Max. Zener Current (mA)	Max. Dynamic Resistance (Ω)	Max. Dissipation (mW)	Connections
MULLARD (*Continued*)						
Current Types (Continued)						
1N825	6.2	5	50	15	400	A1
1N827	6.2	5	50	15	400	A1
1N829	6.2	5	50	15	400	A1
SEMITRON						
Current Types						
ZOB series*	0.7 to 33	5*	5	10	1W	A1
Z1B series*	2.4 to 33	5*	100 to 8	10	300	88
Z2B series*	3.0 to 400	5*	650 to 5	—	2.5W	A3
Z3B series*†	3.0 to 200	5*	50	—	10W	S2†
Z4B series*	3.0 to 200	5*	312 to 5	—	1W	A1
Z5B series*	3.0 to 33	5*	102 to 9	—	400	A1
Z6B series*	3.6 to 200	5*	5 to 0.25	—	75W	S2
Z7B series*†	3.0 to 400	5*	3A to 50mA	—	25W	S2†
ZS7	6.5	5	5	15	—	C2
ZSA7	6.5	5	5	15	—	A1
ZS9	8.4	5	5	20	—	C2
ZS11	11 or 11.4	1, 5 or 10	5	60	—	C2
ZSA11	11 or 11.4	1, 5 or 10	5	60	—	A1
ZS14	13.8	5	5	40	—	C2
ZS17	16.8	5	5	90	—	C2
ZS23	22.8	1, 5 or 10	5	120	—	C2
1N746	3.3	10	—	28	400	A1
1N747	3.6	10	—	24	400	A1
1N748	3.9	10	—	23	400	A1
1N749	4.3	10	—	22	400	A1
1N750	4.7	10	—	19	400	A1
1N751	5.1	10	—	17	400	A1
1N752	5.6	10	—	11	400	A1
1N753	6.2	10	—	7	400	A1
1N754	6.8	10	—	5	400	A1
1N755	7.5	10	—	6	400	A1
1N756	8.2	10	—	8	400	A1
1N757	9.1	10	—	10	400	A1
1N758	10.0	10	—	17	400	A1
1N759	12.0	10	—	30	400	A1
1N821	6.2	5	7.5	15	400	A1
1N823	6.2	5	7.5	15	400	A1
1N825	6.2	5	7.5	15	400	A1
1N827	6.2	5	7.5	15	400	A1
1N829	6.2	5	7.5	15	400	A1
1N935	9.0	5	7.5	20	400	A1
1N936	9.0	5	7.5	20	400	A1
1N937	9.0	5	7.5	20	400	A1
1N938	9.0	5	7.5	20	400	A1
1N939	9.0	5	7.5	20	400	A1
1N940	9.0	5	7.5	20	400	A1
1N957	6.8	10	18.5	4.5	400	A1
1N958	7.5	10	16.5	5.5	400	A1
1N959	8.2	10	15	6.5	400	A1
1N960	9.1	10	14	7.5	400	A1
1N961	10.0	10	12.5	8.5	400	A1
1N962	11.0	10	11.5	9.5	400	A1
1N963	12.0	10	10.5	11.5	400	A1

* Each series comprises several different types, the basic number being suffixed, after the hyphen, by a group of figures indicating the Nominal Zener Voltage for each

Continued

Type	Nominal Zener Voltage (V)	Tolerance ±%	Max. Zener Current (mA)	Max. Dynamic Resistance (Ω)	Max. Dissipation (mW)	Connections
SEMITRON (*Continued*)						
Current Types (*Continued*)						
1N964	13.0	10	9.5	13	400	A1
1N965	15.0	10	8.5	16	400	A1
1N966	16.0	10	7.8	17	400	A1
1N967	18.0	10	7.0	21	400	A1
1N968	20.0	10	6.2	25	400	A1
1N969	22.0	10	5.6	29	400	A1
1N970	24.0	10	5.2	33	400	A1
1N971	27.0	10	4.6	41	400	A1
1N972	30.0	10	4.2	49	400	A1
SGS–ATES						
Current Types						
BZX43	6.7	5	0.25	750	—	C17
BZX44	6.7	5	0.25	750	—	C17
BZX45	6.7	5	0.25	750	—	C17
TEXAS						
Current Types						
1S2000 series*	3 to 16	10	—	—	400	A1
1S2000A series*	3 to 16	5	—	—	400	A1
1S3000 series*	6.8 to 200	10	—	—	400	A10
1S3000A series*	6.8 to 200	5	—	—	400	A10
1S4000 series*	6.8 to 200	10	—	—	600	A10
1S4000A series*	6.8 to 200	5	—	—	600	A10
1S5000 series*	15 to 150	10	—	—	10W	S3
1S5000R series*	15 to 150	10	—	—	10W	S2
1S5000A series*	15 to 150	5	—	—	10W	S3
1S5000RA series*	15 to 150	5	—	—	10W	S2
1S5000C series*	15 to 150	10	—	—	10W	S4
1S6000 series*	6.8 to 200	10	—	—	10W	S3
1S6000R series*	6.8 to 200	10	—	—	10W	S2
1S6000A series*	6.8 to 200	5	—	—	10W	S3
1S6000RA series*	6.8 to 200	5	—	—	10W	S2
1S7000 series*	3 to 16	10	—	—	400	A1
1S7000A series*	3 to 16	5	—	—	400	A1
1S7000B series*	3 to 16	15	—	—	400	A1

* Each series comprises several different types the basic number being followed by a series of figures indicating the Nominal Zener Voltage for each type.

** For other tolerances letter 'B' in type number is substituted with A = 1%, H = 2%, C = 10%, D = 15%.

† Reverse polarity types have suffix 'R' to type number. Connections are S3 in place of S2.

* Each series comprises several different types, the basic number includes digits indicating the Nominal Zener Voltage i.e. 1S 7036 = 3.6V; 1S6200 = 200V; 1S6091A = 91V etc.

EXPLANATION OF VALVE BASE CONNECTIONS

The following pages of valve-base diagrams show all the sets of base connections that are necessary to cover the valves listed in the tables of characteristics. They are grouped into sections according to the base designations (B7G, B8A, B9A, etc.), and within a section each diagram has a code number to the bottom right of it which identifies that particular set of connections.

Thus to find the base connections of a valve listed in the tables, it is first of all necessary to look up the designation in the 'Base Type' column, which gives the right section of diagrams, and then the number in the 'Base Ref.' column, which gives the code number of a particular diagram in that section. For example, to obtain the connections of the 6F33 valve, one would have to turn to the section of diagrams headed 'B7G' and then look for diagram No. 8.

British and American bases which are not interchangeable are given their standard designations. American bases which are interchangeable with British are in some cases given the British designations. Thus, B7G is used to cover both British and American miniature 7-pin bases and B9A for the British 9-pin and the American Noval. The term International Octal (IO) is used to cover both the British B8-O designation and the American standard Octal.

The designation B8B is now out of date; however, it is used here to cover the British B8G base and the American Loctal and Lock-in types. None of these are identical but the differences are so slight that all will fit the same valveholder. The differences are concerned chiefly with minor points about the spigot material, spigot taper and so on.

Care must be taken to distinguish between the IO and MO bases, particularly as the latter is sometimes called the British Octal and is now designated B8-MO. The two differ in pin spacing and in spigot size and are not interchangeable. The MO is used by one manufacturer only and has the larger diameter spigot of the two.

Similar electrodes which operate in turn on the same electron stream are numbered in order from the cathode, the numbers being appended as subscripts to the electrode symbols.

Similar electrode systems in multiple valves are distinguished by a single tick (′) for the first electrode system, by a double (″) for the second, and so on, the ticks being appended to the appropriate electrode symbols.

Dissimilar electrode systems in multiple valves are distinguished by additional letter subscripts appended to the symbols for the less complex electrode structures.

A number against a pin indicates that it is joined internally to the pin of that number.

Where more than one electrode is joined internally to the same pin only the electrode of major importance is usually designated. Thus, the suppressor grid of a pentode is not always shown when it is joined internally to cathode or filament negative. An exception is made when it may be important to the user to know precisely which electrodes are joined together.

No distinction is normally made between valves with and without external metal screens. The base connections show an 'M' for such a screen in cases where all or only some valves have it, but others with the same code reference may have no such screen or an internal screen. The 'M' pin should, therefore, normally be earthed.

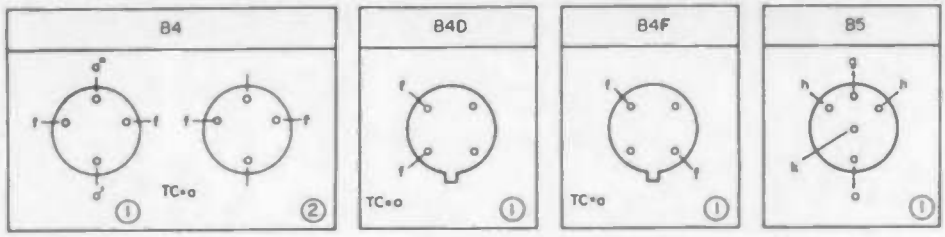
Abbreviations for Valve-base Connections

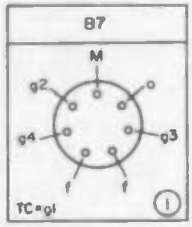
MAIN SYMBOLS

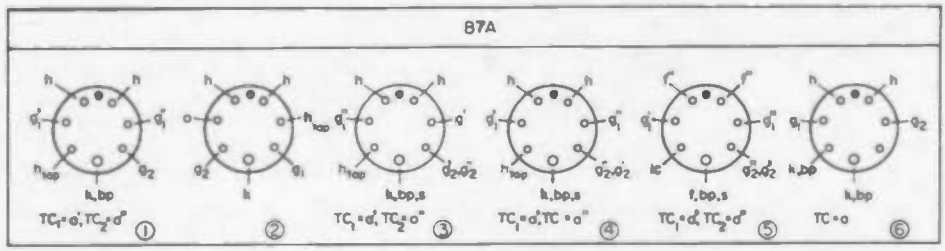
a	=	anode
bp	=	beam plates
ce	=	control electrode
f	=	filament
g	=	grid
h	=	heater
ic	=	internal connection (external connections must not be made to a pin so designated)
jp	=	jumper
k	=	cathode
M	=	external conducting coating
m	=	internal conducting coating
p	=	priming electrode
r	=	resistance
s	=	internal shield
st	=	spark trap
t	=	target
tr	=	trigger
TC	=	top cap
SC	=	side cap

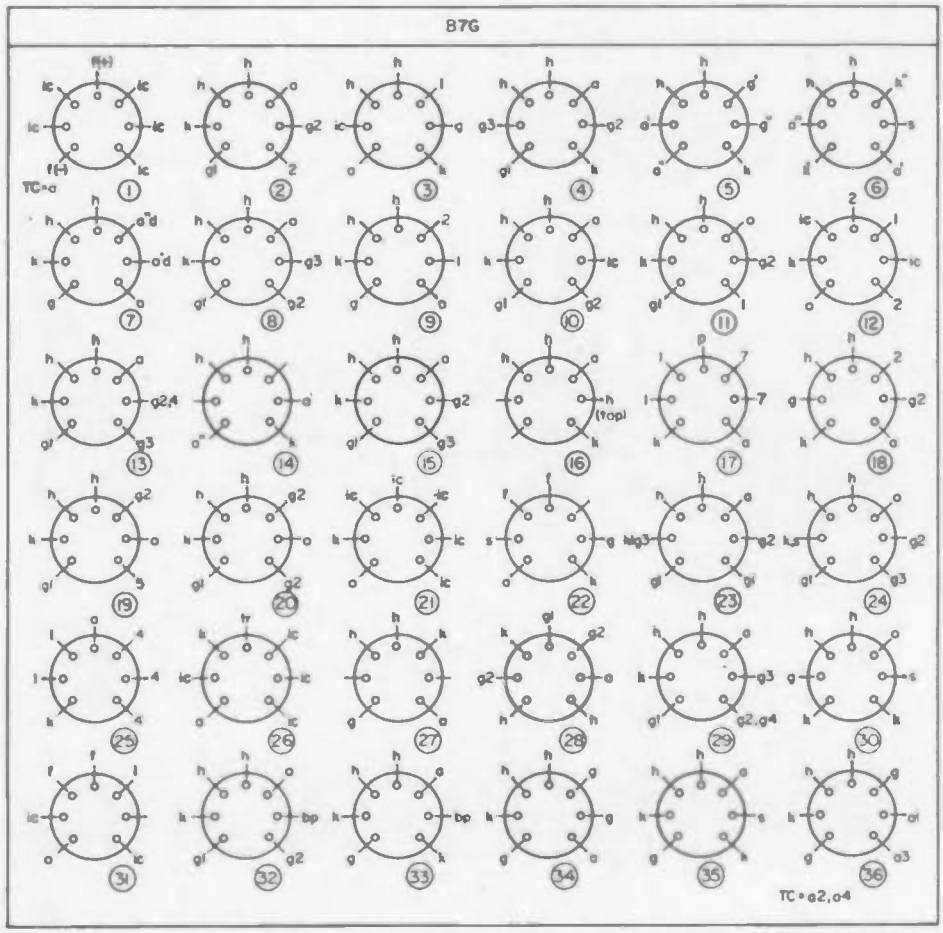
SUBSCRIPT SYMBOLS

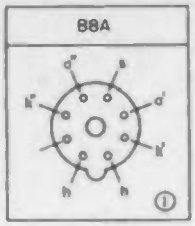
d	=	diode
p	=	pentode
r	=	rectifier
t	=	triode
B	=	blue
G	=	green
R	=	red
tap	=	filament or heater tapping
(+)	=	positive
(—)	=	negative

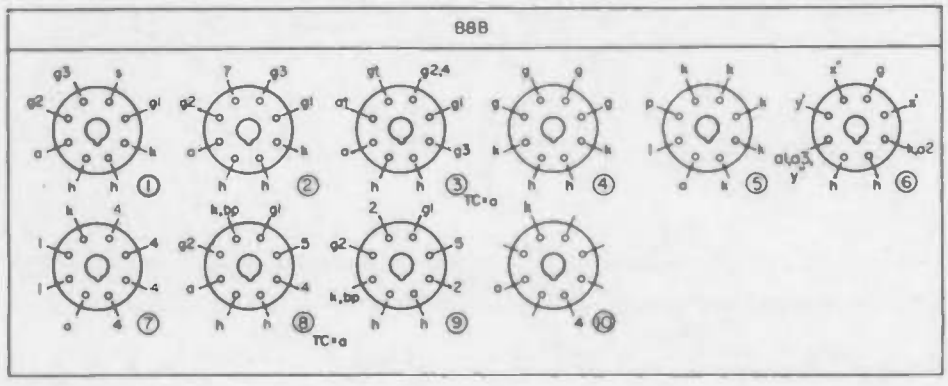

B4
B4D
B4F
B5
TC=o
TC=o
TC=o

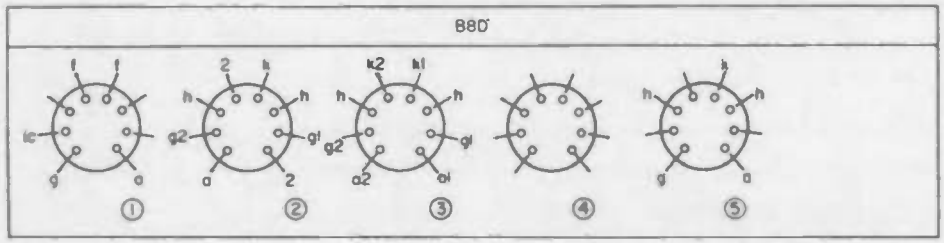

B7
M
TC=g1

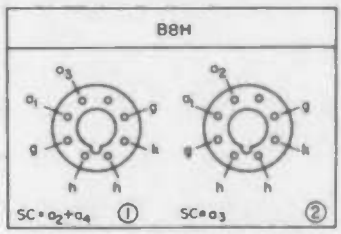

B7A
h,bp
TC1=o', TC2=o''
h,bp,s
TC1=o', TC2=o''
h,bp,s
TC1=o', TC=o''
f,bp,s
TC1=o', TC2=o''
h,bp
TC=o

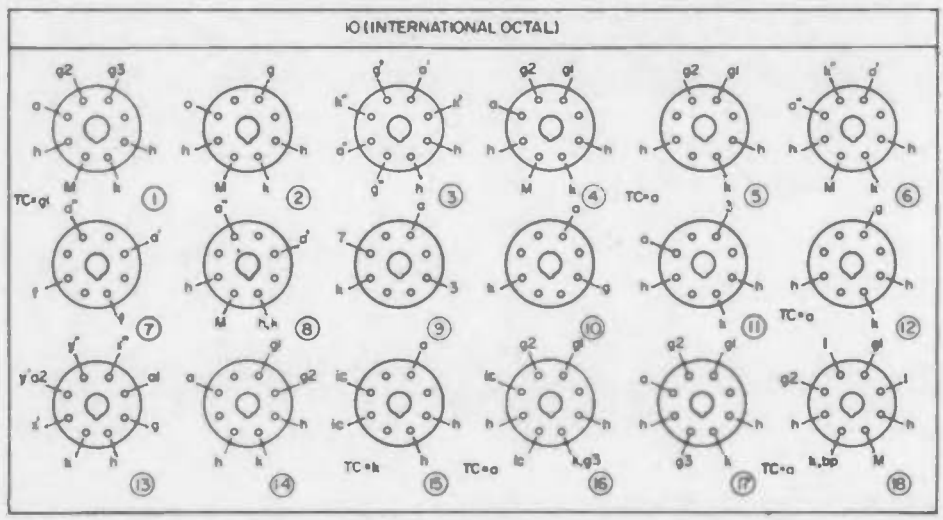

B7G
TC=o
TC=o2,o4

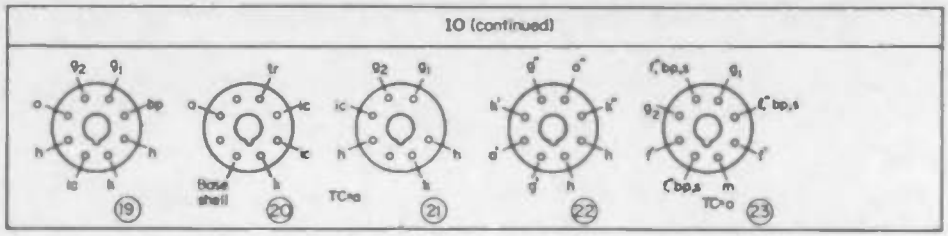

B8A
①

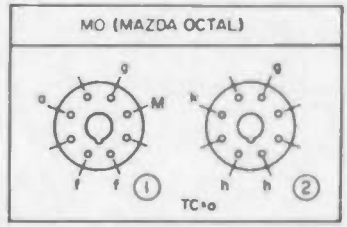

B8B
①
②
③
TC=a
④
⑤
⑥
⑦
⑧
TC=a
⑨
⑩

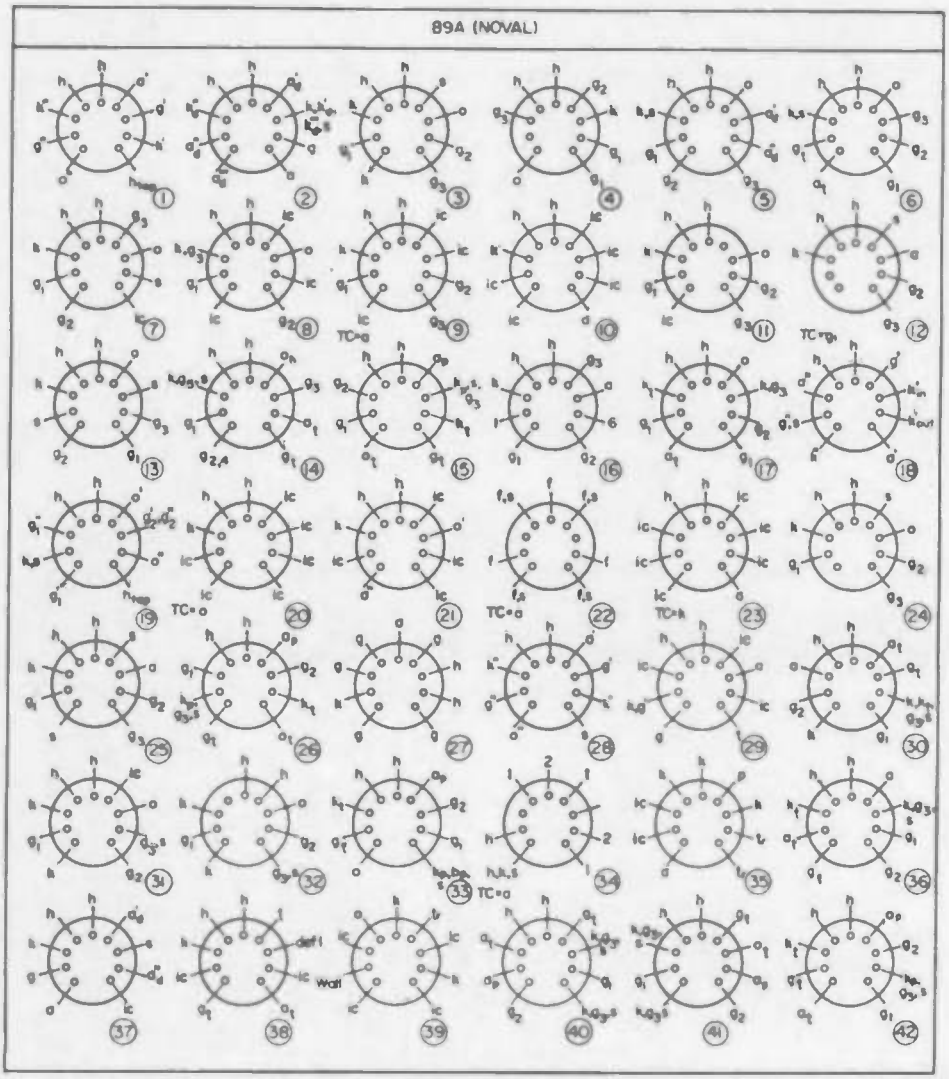

B8D
①
②
③
④
⑤


B8H
SC=a2+a4 ①
SC=a3 ②

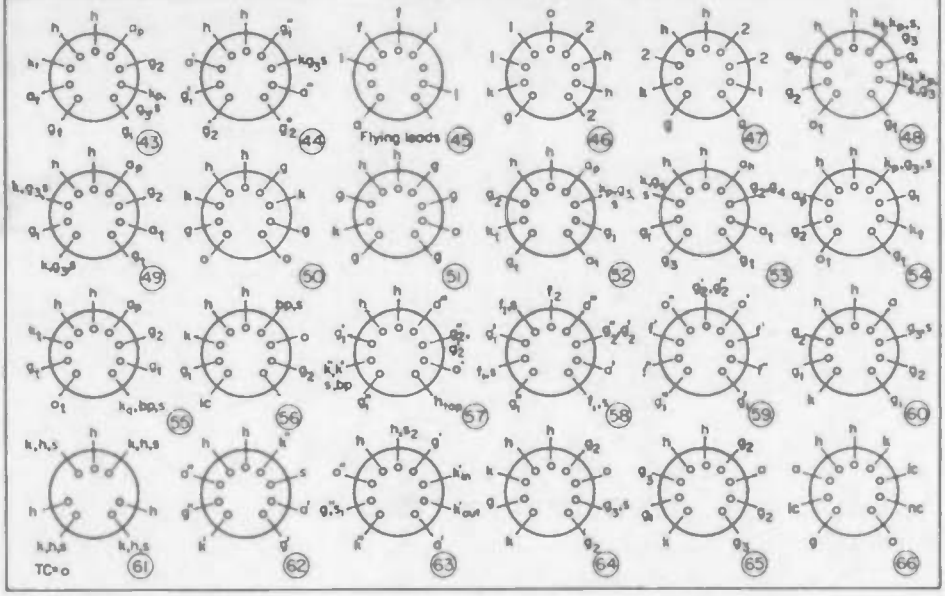

IO (INTERNATIONAL OCTAL)
TC=g1 ①
②
③
④
TC=a ⑤
⑥
⑦
⑧
⑨
⑩
⑪
TC=a ⑫
⑬
⑭
TC=k ⑮
TC=a ⑯
⑰
TC=a ⑱


IO (continued)
Base shell
TC=o
TC=o

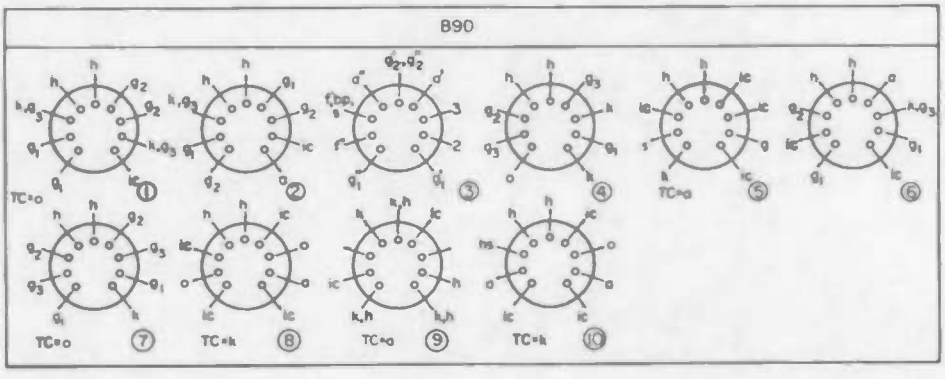

MO (MAZDA OCTAL)
M
TC=o


89A (NOVAL)
TC=o
TC=o
TC=o
TC=o
wall

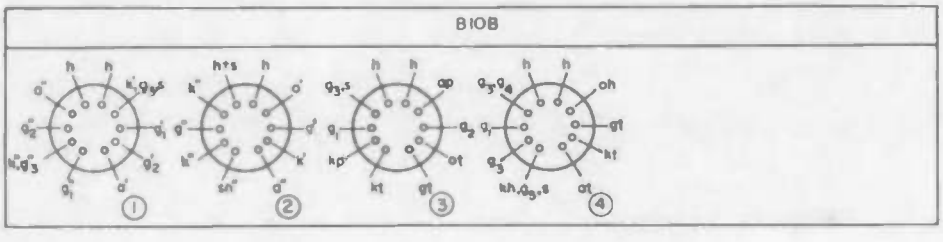
B9A (continued)

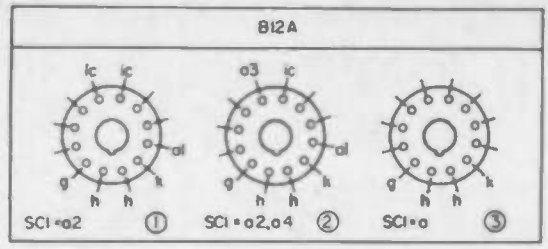


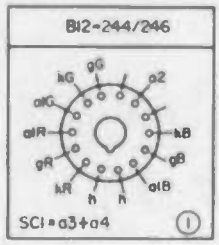
B9D

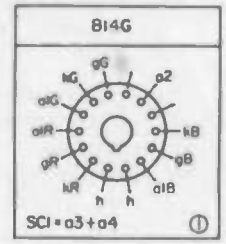


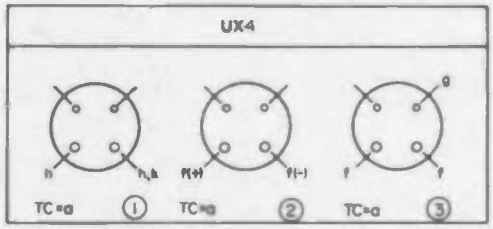
B10B

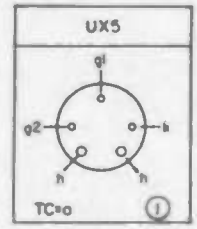



B12A
SCI=a2 ①
SCI=a2,a4 ②
SCI=a ③


B12-244/246
SCI=a3+a4 ①


B14G
SCI=a3+a4 ①


UX4
TC=a ①
TC=a ②
TC=a ③


UX5
TC=a ①

EXPLANATION OF SEMICONDUCTOR CONNECTIONS

The code numbers in the preceding tables, under the headings 'Base Ref.' or 'Connections', correspond to references in the following lists. They are divided into four groups:

Plain numbers—devices having TO—style headers
'A' numbers—wire mounted, double ended
'C' numbers—wire mounted, single ended
'S' numbers—stud mounted

Generally the plain numbers are used for transistors and the remainder for diodes, rectifiers, thyristors etc. Care should be exercised when selecting replacements for existing devices to ensure that physical dimensions are acceptable as this is not taken into consideration in these lists and only the electrical connections are catered for.

TRANSISTOR BASE DIAGRAMS

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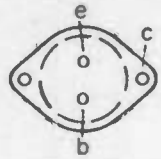
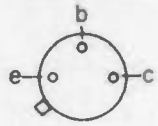
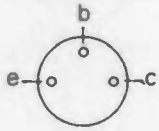
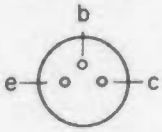
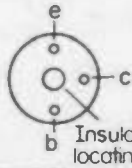
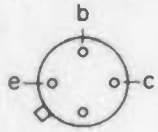
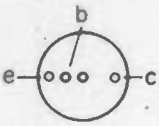
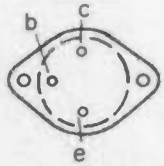
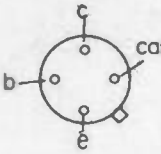
1	
2	
3	
4	
5	
6	
7	
8	
9	

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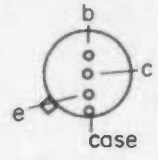
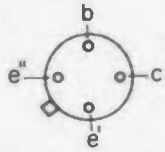
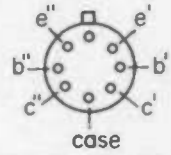
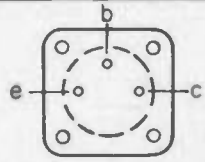
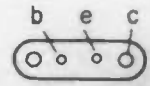
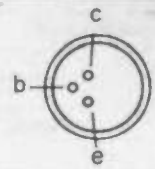
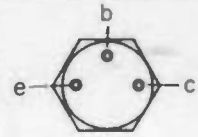
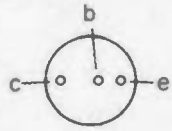
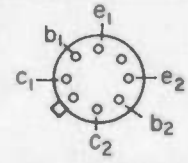
10	
11	
12	
13	
14	
15	
16	
17	
18	

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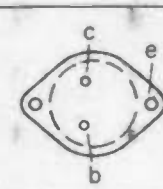
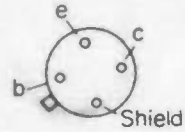
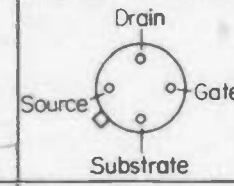
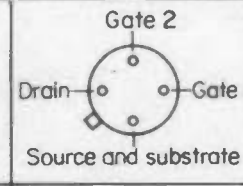
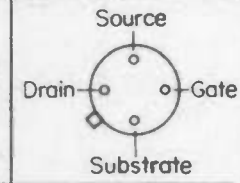
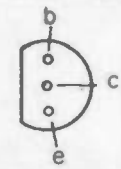
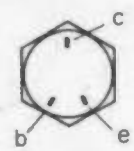
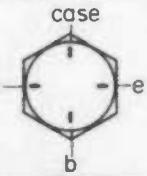
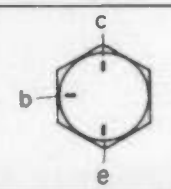
19	
20	
21	
22	
23	
24	
25	
26	
27	

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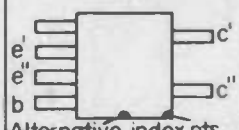
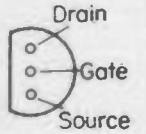
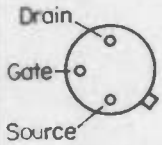
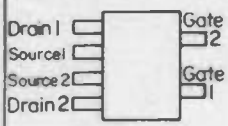
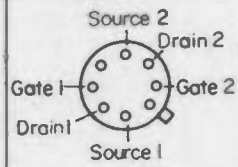
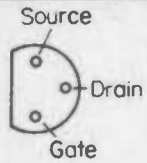
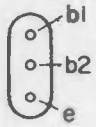
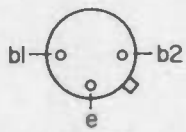
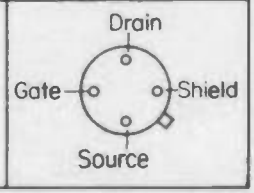
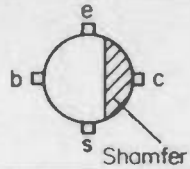
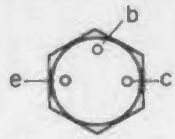
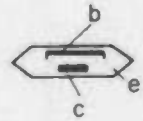
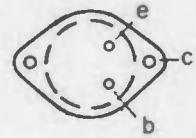
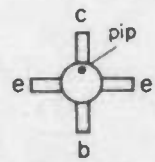
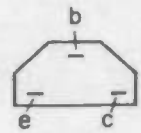
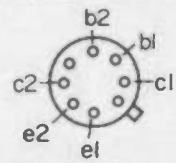
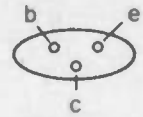
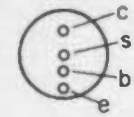
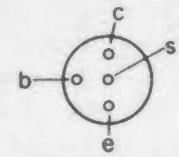
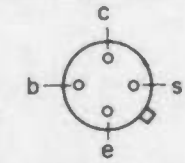
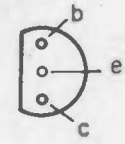
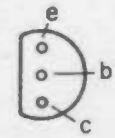
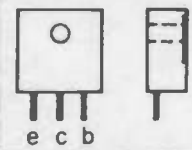
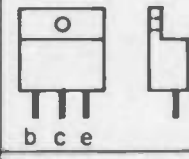
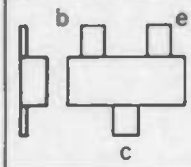
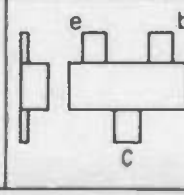
28	
29	
30	
31	
32	
33	
34	
35	
36	

Ref	Base diagram
37	
38	
39	
40	
41	
42	Narrow lead = E Centre lead = B Wide lead = C
43	
44	
45	

Ref	Base diagram
46	
47	
48	
49	
50	
51	
52	
53	
54	

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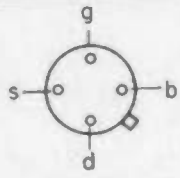
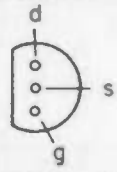
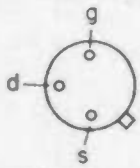
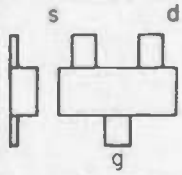
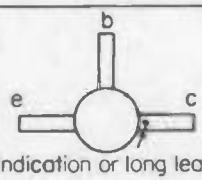
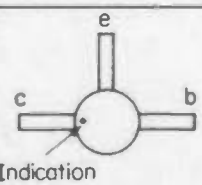
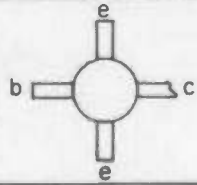
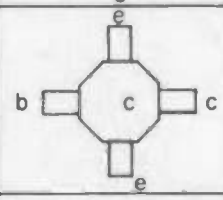
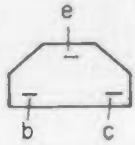
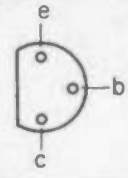
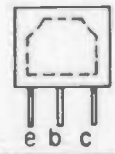
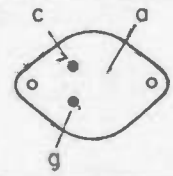
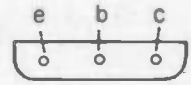
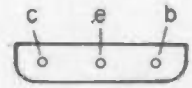
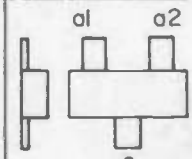
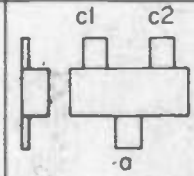
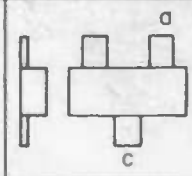
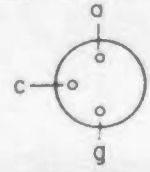
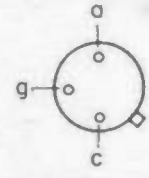
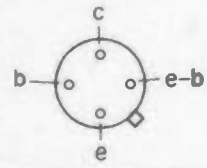
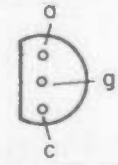
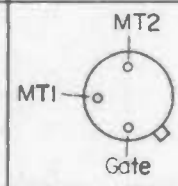
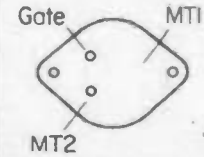
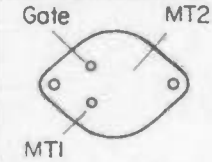
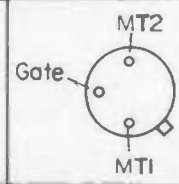
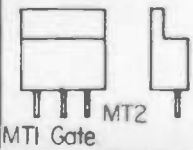
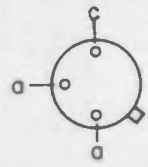
55	
56	
57	
58	
59	
60	
61	
62	
63	

Ref	Base diagram
64	
65	
66	
67	
68	
69	
70	
71	
72	

Ref	Base diagram
73	
74	Large lead = g Small lead = c Case = a
75	
76	
77	
78	
79	
80	
81	

(*Continued*)

Transistor Base Diagrams (*Continued*)

Ref	Base diagram
82	Large lead = MT1 Small lead = Gate Case = MT2
83	
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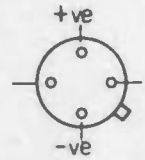
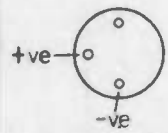
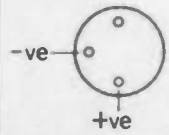
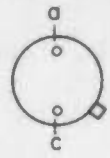
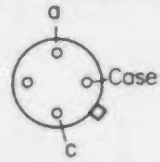
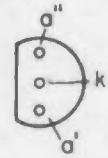
85	
86	
87	

Ref	Base diagram
88	
89	
90	
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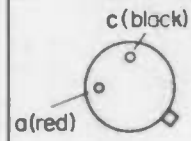
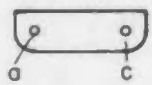
92	
93	

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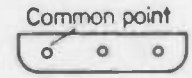
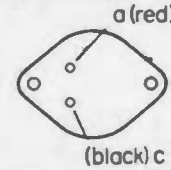
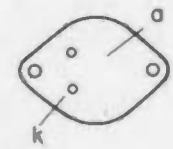
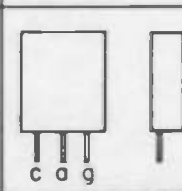
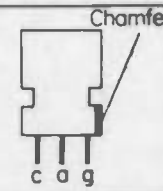
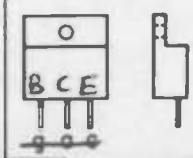
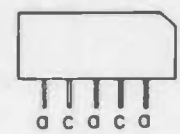
94	
95	
96	
97	
98	
99	
100	

DIODE, RECTIFIER AND THYRISTOR CONNECTIONS

A—WIRE MOUNTED, DOUBLE ENDED

Ref.	Connections
A1	Cathode end marked with coloured band
A2	Anode end marked with coloured band
A3	Cathode to flange
A4	Anode to flange
A5	Cathode lead sleeved red; black case
A6	Anode lead sleeved; red case
A7	Anode to case
A8	Cathode end marked red
A9	Cathode to case

Ref.	Connections
A10	Polarity indicated by rectifier symbol
A11	Chamfer denotes cathode
A12	Cathode end domed
A13	Cathode end marked with a dot
A14	Anode end domed
A15	Flange = cathode Body = anode

C—WIRE MOUNTED, SINGLE ENDED

Ref.	Connections
C1	Cathode lead (adjacent to dot) connected to case
C2	Cathode lead adjacent to dot
C3	Anode lead adjacent to dot
C4	Middle lead common anode
C5	Anode lead adjacent to tab
C6	Clockwise from tab: (1) anode (2) } cathode and (3) } case
C7	Clockwise from tab: (1) } (2) } anode (3) cathode
C8	Clockwise from tab: (1) cathode (2) gate (3) anode
C9	Anode adjacent to notch

(Continued)

C—WIRE MOUNTED, SINGLE ENDED (Continued)

Ref.	Connections
C10	Polarity indicated by rectifier symbol
C11	Case = anode Long tab = cathode Short tab = gate
C12	Flat wire = cathode Round wire = anode
C13	Sleeved lead to supply positive
C14	Negative lead to case
C15	Case is negative
C16	Case is positive
C17	Clockwise from tab: (1) cathode (2) anode and case (3) —
C18	Centre lead = cathode

Ref.	Connections
C19	Plain wire = cathode

S—Stud Mounted

Ref.	Connections
S1	Cathode to larger stud
S2	Cathode to stud
S3	Anode to stud
S4	Double anode
S5	Cathode to stud— Anode to lug
S6	Anode to stud— Cathode to long lead
S7	Anode to stud— Cathode to large terminal
S8	Clockwise from lug: (1) cathode (2) case (3) anode
S9	Polarity indicated by rectifier symbol

(*Continued*)

S–STUD MOUNTED (Continued)

Ref.	Connections
S10	Large lead = c Small lead = g Stud = a
S11	Large lead = c Small lead = g Case = a Stud isolated

Ref.	Connections
S12	Case = anode Thick red lead = cathode Thin red lead = aux. cathode Thin yellow lead = gate
S13	Large lead = MT1 Small lead = gate Stud = MT2

Ref.	Connections

TRADE NAMES AND MANUFACTURERS' ADDRESSES

A.E.I. SEMICONDUCTORS LTD.	A.E.I. Semiconductors Ltd., Carholme Road, Lincoln. LN1 1SG
BRIMAR, MAZDA	Thorn Radio Valves & Tubes Ltd., Mollison Avenue, Brimsdown, Enfield, Middlesex. EN3 7NS
EMIHUS	Emihus Microcomponents Ltd., Glenrothes, Fife, Scotland. KY7 5PY
ENGLISH ELECTRIC VALVE CO. LTD.	English Electric Valve Co. Ltd., Waterhouse Lane, Chelmsford, Essex. CM1 2QU
FERRANTI	Ferranti Ltd., Hollinwood, Lancashire. OL9 7JS
HIVAC LTD.	Hivac Ltd., Asheridge Road, Chesham, Buckinghamshire. HP5 2QA
INTERNATIONAL RECTIFIER CO.	International Rectifier Co., Hurst Green, Oxted, Surrey. RH8 9BB
I.T.T. (Valves)	I.T.T. Components Group Europe, (STC Ltd.), Brixham Road, Paignton, Devon. TQ4 7BE
I.T.T. (Rectifiers)	I.T.T. Components Group Europe, (STC Ltd.), Edinburgh Way, Harlow, Essex. CM20 2DE
I.T.T. SEMICONDUCTORS	I.T.T. Semiconductors, Footscray, Sidcup, Kent.
JOSEPH LUCAS (ELECTRICAL) LTD.	Lucas Electrical Co. Ltd., Mere Green Road, Four Oaks, Sutton Coldfield. B75 5BN
M-O VALVE CO.	The M-O Valve Co. Ltd., Brook Green Works, Hammersmith, London. W6 7PE
MULLARD	Mullard Ltd., Mullard House, Torrington Place, London. WC1E 7HD
NEWMARKET	Newmarket Transistors Ltd., Exning Road, Newmarket, Suffolk, CB8 OAU
PLESSEY	Plessey Optoelectronics & Microwave, Plessey Ltd., Wood Burcote Way, Towcester, Northants. NN12 7JN
R.C.A.	R.C.A. Ltd., Sunbury-on-Thames, Middlesex. TW16 7HW
SALFORD ELECTRICAL INSTRUMENTS	Salford Electrical Instruments Ltd., Peel Works, Barton Lane, Eccles, Manchester. M30 OHL
SEMITRON	Semitron Ltd., Cricklade, Swindon, Wiltshire.
SGS-ATES	SGS-ATES (U.K.) Ltd., Planar House, Walton Street, Aylesbury, Buckinghamshire.
TEXAS	Texas Instruments Ltd., Manton Lane, Bedford. MK41 7PA
TUNGSRAM	British Tungsram Radio Works Ltd., West Road, Tottenham, London N17 ORN
WESTINGHOUSE BRAKE & SIGNAL CO. LTD.	Westinghouse Brake and Signal Co. Ltd., Chippenham, Wiltshire. SN15 1JD

Index to Valves and Valve Equivalents

Index to Semiconductors and Semiconductor Comparable Types

Duncan's Amp Pages

Tube numbering - last updated 26/08/06 21:34:52

Frequently, questions are asked about Vacuum Tube numbering schemes, so here is a few bits and pieces to start the ball rolling. This is by no means exhaustive, so if you feel you can add to this then please mail me and I'll get the information included, with appropriate credits.

This page is lengthy, so you may wish to print it out.

CV numbers | European | European (old) | Mazda tubes | Mazda rectifiers | USA (RETMA)

CV numbers

Format is CV followed by up to 5 digits, e.g. CV4004. Used by the British Military to codify vacuum tubes, gas tubes, and latterly, some semiconductor devices.
CV numbers can be directly mapped onto NATO numbers, as 5960-XX-000-YYYY where XX is the country code, and YYYY is the CV number. For example, 5960-99-000-4004 = CV4004 (12AX7WA), with 99 indicating country of origin as UK.

European scheme (Mullard/Philips)

First letter: Filament

A 4V
B 0.18A (series)
C 0.2A (series)
D <= 1.4V (series/parallel)
E 6.3V (series/parallel)
F 12.6V
G 5V (parallel)
H 0.15A (series)
K 2V
L 0.45A (series)
P 0.3A (series)
U 0.1A (series)
V 0.05A (series)
X 0.6A (series)
Y 0.45A (series)

Second and subsequent letters: construction

A Diode (excluding rectifier)
B Double diode
C Triode (signal, not power)
D Power output triode
E Tetrode (signal, not power)
F Pentode (signal, not power)

L Power output tetrode or pentode
H Hexode or heptode (of the hexode type)
K Octode or heptode (of the octode type)
M Tuning indicator
Q Nonode.
Y Half wave rectifier
Z Full wave rectifier

First digit: Basing
1 Miscellaneous
2 Miniature 10 pin.
3 International octal
4 8-pin miniature (B8A)
5 Magnoval (B9D)
8 Noval (B9A)
9 Miniature (B7G)

Remaining digits: sequence number
* Note that signal pentodes and tetrodes which end in even numbers are sharp cutoff tubes. Those ending in odd numbers, are remote cutoff tubes.

Examples
EF86: 6.3V filament, signal pentode, Noval base, sharp cutoff.
GZ34: 5V filament, full wave rectifier, International Octal base.
PCL82: 0.3A series string filament, signal triode + power pentode, Noval base.
E88CC: Doesn't fit! This is actually as special quality version of the ECC88, and swapping of the second and third field was commonplace to denote "SQ" tubes.

European scheme (old Philips)

Many thanks to **Frank Philipse** for providing the following information. He kindly translated the Dutch text to English from: Gegevens en schakelingen van moderne ontvang-en versterkerbuizen. (1940 Philips).

Frank says "Initially type coding of Philips tubes was done in the following way: The type number consisted of a capital letter, followed by 3 or 4 digits. The capital letter indicated the heater current as follows:"

First letter: Heater current
A 0.06 to 0.10A
B 0.10 to 0.20A
C 0.20 to 0.40A
D 0.40 to 0.70A
E 0.70 to 1.25A
F 1.25A and higher

Subsequent digits: Heater voltage, elements, amplification factor
The first digit, or in case of a four digit number the first two digits, indicated the heater voltage. For triodes, the last two digits indicated the amplification factor in it's working point. For tubes with more grids the last two digits had the following meaning:

41, 51, etc. were tetrodes with space charge grid. (dual grid tubes)
42, 52, etc. were H.F. screen grid tubes. (tetrode)
43, 53, etc. were output pentodes.
44, 54, etc. were binodes. (this was a combined diode-triode or diode-tetrode)
45, 55, etc. were H.F. tetrodes-selectodes (tetrode with variable gain)
46, 56, etc. were H.F. pentodes.
47, 57, etc. were H.F. pentodes-selectodes. (pentode with variable gain)
48, 58, etc. were hexode frequency changers.
49, 59, etc. were hexodes-selectodes. (hexode with variable gain)

An E499 for example is a triode. The E means that the heater current lies between 0.4 and 1.25 A (1.0 actually). The heater voltage is 4 Volts and the amplification factor is 99.
An E446 is a H.F. pentode with a heater current between 0.4 and 1.25 A (1.1A actually) and a heater voltage of 4 Volts.
Eventually, because of new developed tubes, this type numbering system was no longer sufficient and a new system was developed. Since 1934 all new tubes were coded according to the new system which is still in use for most European tubes. (e.g. ABC1, EABC80, AD1, EL34)

Mazda signal valves

First number: Filament
1 1.4V (parallel or series)
6 6.3V (parallel or series)
10 0.1A (series)
20 0.2A (series)
30 0.3A (series)

Letters: construction
C Frequency changer with special oscillator section.
D Signal diode(s).
F Voltage amplifier tetrode or pentode.
FD Voltage amplifier tetrode or pentode with diodes.
FL Voltage amplifier tetrode or pentode with voltage amplifier triode.
K Small gas triode or tetrode.
L Voltage amplifier triode or double triode, including oscillator triode.
LD Voltage amplifier triode with diode(s).
M Tuning indicator
P Power amplifier tetrode or pentode
PL Power amplifier tetrode or pentode with voltage amplifier triode.

Final number: sequence number

Examples:
6F22: 6.3V filament, Voltage amplifier tetrode or pentode. (6F22 = EF86).
6P15: 6.3V filament, Power amplifier tetrode or pentode. (6P15 = EL84 / 6BQ5).
30PL12: 0.3A series string filament, Power amplifier tetrode or pentode with voltage amplifier triode. (30PL12 = PCL82 / 16A8).

Mazda power rectifiers

Letters indicate rectifier type:
U High vacuum half-wave.
UUHigh vacuum full-wave.

Final number: sequence number

USA (RETMA) system

First number: filament voltage
0 Cold cathode (e.g. voltage regulator tube).
1 0.1 - 2.0
2 2.1 - 2.9
3 3.0 - 3.9
n n.0 - n.9

Letter or letters: sequence code
One or two letters to indicate the sequence code. When the single character codes were used up, double character codes were introduced. Note that U - Z generally (but not always) as the only character, or last character, are used for rectifiers

Final number: Element count
The number of elements in the tube, the filament counting as 1. For example, the 6SN7 has two cathodes, two grids, two plates, and a filament.

Additional letters:
A Controlled heater warmup time, although can also be used to denote increased ratings or performance over and above the non-A model.
B Improved ratings/performance.
C Ditto.
G Glass bulb.
GT Glass tubular.
W Ruggedised version.
X Low loss ceramic base.
Y Low loss phenolic base.

Examples:
6SN7GT: Filament rating is between 6.0 - 6.9V, SN=sequence code, 7 elements, glass tubular envelope.
6V6GTY: Filament rating is between 6.0 - 6.9V, V=sequence code, 6 elements, glass tubular envelope, low loss phenolic base.
12AY7: Filament rating is between 12.0 - 12.9V, AY=sequence code, 7 elements.

VS Variable mu tetrode
W Variable mu pentode
X Triode hexode, heptode, octode, frequency changer
Y Tuning indicator
Z HF pentode

USA (Radio Manufacturers Association)
This code consists of digits, letters, digits plus an optional suffix. A variant is used by the Russians.

The first digits give the heater voltage rating, with the exception that the codes 7
and 14 are used to indicate 6.3V and 12.6V valves with a loctal base.
Not all tubes follow the rules; for instance 1F4 has 2V heaters and 2C22 has 6.3V heaters.

Letters specify the type of valve, but there appears to be no consistency of coding. S often indicates a single-ended (no top cap) version of an earlier valve with such a cap

Second digits give either the number of active electrodes, or the number of external connections.

The suffix letters specify the type of envelope or base. The code is
G large Glass envelope.
GC Glass Compact, a tubular glass envelope
GT Glass Tubular, the smallest glass envelope
LT Locking base
M Metal envelope
WA High quality version

Mazda Code (Great Britain)
Consists of digits, Letters, digits. Do not confuse with a US code.

First digits give heater voltage, except that 10, 20, 30 indicate 100mA, 200mA,
300mA for series connection

Letters give type of valve
C Frequency changer
D Signal diode
F Signal tetrode/pentode
K Thyratron
L Signal triode
M Tuning indicator
P Output tetrode/pentode
U Half wave rectifier
UU Full wave rectifier.
Mazda codes tend not to double up letters - L is used for multiple triodes also.

Final digits distinguish between otherwise identical codes.

British Royal Air Force
Code consists of letters followed by digits. The letters have the following
meanings :
VCR - valve cathode ray (CRT)
VGT - valve gas triode (thyratron)
VI - valve indicator (tuning eye)
VR - valve receiving (general receiving valve)
VS - valve stabilising (gas stabiliser)
VT - valve transmitting (general transmitting valve)
VU - rectifier

British Army
Again, letters followed by digits. The letter part gives the valve type as follows :
ACR - Army CRT
AR - Army receiving valve (generally triode)
ARD - Army receiving diode
ARDD - Army receiving double diode
ARH - Army receiving hexode
ARP - Army receiving pentode
ARS - Army receiving screen grid (tetrode)
ARTH - Army receiving triode hexode
ARTP - Army receiving triode pentode
AT - Army transmitting valve (generally power triode)
ATP - Army transmitting Pentode
ATS - Army transmitting Screen Grid (Tetrode)
AU - Army Rectifier
AW - Army Stabiliser

British Royal Navy
Another letters followed by digits code. The letters give the type of the valve, as follows :
NC Navy CRT
NGT Navy gas triode (thyratron)
NR Navy receiving valve
NS Navy stabiliser
NT Navy transmitting (or power) valve
NU Navy rectifier

Other British series
CV (common valve) numbers replaced the above 3 codes during WW2. There is no way to decode these by simple inspection of their number. ZA and 10E are also used as prefixes to catalogue numbers. For example UHF Œhorned¹ triode 10E/392 is also equivalent to ZA 3055, VR 135, NR 80, CV 1135 and E 1148.

French Army
Originally numbered in the TM (Télégraphie Militaire) series with the letters TM followed by the type number. There was also an Œ11¹ series of all-metal construction with octal base and equivalent to comparable American types but using 11-volt heaters. Thus 11L6 was similar to 6L6 but using 11-volt heaters. Valves marked ECMR indicate French army origin (Etablissement Centrale du Matériel Radio-télégraphique militaire.

German Defence (Reichswehr)
Most German army valves use a special base and bear codes in the format: two letters, two digits, one letter and two digits.

First letter
R Reichswehr (Defence), includes both Wehrmacht (Army) and Kriegsmarine (Navy)

Second letter
D Dekametric wavebands
G Rectifier (Gleichrichter) or diode
K Cathode ray tube
L Transmitting or Power
V Amplifier (Verstärker)

First number
Heater voltage

Third letter
A Cathode ray indicator

D Dual anode
G Rectifier or diode
H Hexode
L Speed modulation
M Magnetron
P Pentode
T Triode

Final number
This indicates the maximum power output in watts if the valve is a power tube, the coefficient of amplification if an amplifier or maximum rectified current if a rectifier.

A different scheme was used by the Air Force, employing two letters and a number.
The number is a simple type number, issued progressively as each new valve was registered.

First letter
L Luftwaffe (German Air Force)

Second letter
B Cathode ray tube
D Dekametric waves
F Special type
G Rectifier or diode
K Stabiliser
M Magnetron
S Transmitting, wavelengths above 1 metre
V Amplifier, wavelengths above 1 metre

Exceptions to this scheme include SA (rectifier), SD (triode) and SF (pentode), all using 1.9V heaters.

Mazda (France)
Television tubes use the code letter C (for cathode ray tube), a number (indicating screen size in mm), then two letters followed by a number. The first indicates the method of deflection (M = magnetic, S = electrostatic) and the second the screen colour (B = blue, G = green, R = radar long-persistence, W = white). The numbers were allocated sequentially.

Miniwatt (France)
This is a subset of the European system. Either two or three letters are used, followed by a sequential number.
First letter (heater)
A 4V AC
B 180mA DC
C 200mA AC/DC
D 1.4V battery
E AC and 6.3V car battery
F 13V car battery
H 4V battery
K 2V battery
U 100mA AC/DC

Second and optional third letter (type of valve)
A Diode
B Double diode
C Triode (oscillator, detector, amplifier)
D Audio power triode
E Pentode
F RF pentode
H Hexode or heptode

K Octode
L Audio power pentode
M Visual tuning indicator
X Dual-anode rectifier (gas-filled)
Y Single anode rectifier (vacuum)
Z Dual-anode rectifier (vacuum)

Television tubes use two letters followed by a number. The first indicates the method of deflection (D = electrostatic, M = magnetic) and the second the screen colour (B = blue, G = green, R = radar long-persistence, W = white). The numbers were allocated sequentially.

Telefunken (Germany)
This simple code had just two series, RE and RS, standing for Röhren-Empfangen (receiving valves) and Röhren-Senden (transmitting valves). The three-digit number following indicates first the heater current (first two digits, in hundredths of an amp) then the heater voltage (4, 3, 2 or 1 for 4V, 3V, 2V or 1.5V). The final letter indicates the valve base pattern, t for Telefunken, d for Europa-base with side contact for space grid, and no letter at all for Europa-base.

American Army (US Army - Signal Corps)
VT numbers are USA military valves, with no way of decoding their pattern without look-up tables, although many valves were dual-marked with VT and civilian part numbers.

BVA numbers (British Valve Association) were assigned to valves used for civilian replacements in WW2.

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Page maintained by webmaster@Brighton-UK.com

How to decode European Valve numbers

Valve Numbers and how to decode them

European system, also known in Britain as the Mullard Code
Two codes are used, one for transmitting and industrial valves, the other for receiving valves. Both consist of a string of two or three letters followed by a series of digits, for example ECC83, EL34.

TRANSMITTING VALVES
First letter (general class of valve)

M	LF power amplifier or modulator triode
P	RF power pentode
Q	RF power tetrode
R	Rectifier
T	RF power triode

Second letter (type of cathode)

G	Oxide-coated filament in mercury-vapour rectifier
V	Indirectly heated oxide-coated cathode
X	Directly heated pure tungsten filament
Y	Directly heated thoriated tungsten filament
Z	Directly heated oxide-coated filament (except in mercury-vapour rectifiers)

Third letter

S	Silica envelope

First number (anode voltage in kV) followed by hyphen

05	0.5kV
5	5kV
12	12kV and so on

Second number (output)
For valves up to 5kW anode dissipation, the figures indicate maximum anode dissipation in watts.
For water-cooled valves above 5kW dissipation, the figures indicate the maximum output in kW.
For rectifiers, the figures indicate the maximum permissible rectified current per valve in milliamps.

RECEIVING AND GENERAL PURPOSE VALVES

First letter (heater rating)

A	4V
B	180mA DC series connection
C	200mA AC/DC series connection
D	1.4V DC (normally directly heated, can also be 0.625, 1.2 or 1.25V)
E	6.3V (by far the most common prefix)
F	12.6 or 13V
G	5V, later defined as Œmiscellaneous voltages¹
H	150mA series connection
K	2V DC
L	450mA series connection (?)

O cold device, not heated, e.g. cold cathode tube, voltage stabiliser or
semiconductor device
P 300mA AC/DC series connection
U 100mA series connection
V 50mA series connection
X 600mA series connection
Y 450mA series connection

The second and where applicable, third and fourth letters in multi-electrode valves indicate the types of device in the valve. They are normally listed in alphabetical order.

A Signal diode
B (=AA) double diode
C Signal triode
D Output or power triode (e.g. TV shunt stabiliser)
E Signal tetrode
F Signal or RF pentode
H Hexode or heptode (Hexode structure)
K Heptode or octode (octode structure)
L Output tetrode, beam tetrode, or pentode (including TV line output valves)
M Magic eye tuning indicator
N Gas-filled triode or thyratron
Q Nonode
X Full-wave rectifier or double diode (gas-filled)
Y Half wave rectifier or single diode (vacuum)
Z Full-wave rectifier or double diode (vacuum)

Digits indicate the base (first digit) and a code to distinguish valves that would otherwise have identical numbers (e.g. EL84 and EL85 are both output pentodes with a 6.3V heater on a B9A base. They are otherwise different).

1 - 10	side contact
11 - 20	footless
21 - 30	Loctal
31 - 39 and 300 series	International Octal
40 - 49, 140 - 149	B8A
60, 70	Subminiatures
80 - 89, 180 and 800 series	B9A
90 - 99	B7G
200 series	B10B
500 series	B9D

GEC Code (Marconi/Osram Brands also)
Consist of Letter (or Letters) followed by digits (e.g. L63, KT88). The digits are simply to distinguish similar valves (like all triodes), and cannot be decoded. The letters have the following meaning.

A Industrial valve (Maybe almost anything - power triode, etc.)
B Double triode
D Diode
GU Gas-filled rectifier
GT Gas Triode (Thyratron)
H Signal triode (high impedance)
KT Kinkless tetrode (beam tetrode)
L Signal triode (low impedance)
MU Indirectly heated rectifier
N Output pentode
P Output triode
QP Quiescent push-pull double pentode
S Tetrode (Screen Grid Valve)
U Rectifier

OTHER BOOKS ON RADIO, TELEVISION AND AUDIO FROM THE NEWNES TECHNICAL LIST. FURTHER INFORMATION MAY BE OBTAINED ON ANY OF THESE BOOKS SIMPLY BY WRITING TO THE PUBLISHERS AT THE ADDRESS BELOW.

Beginners Guide to Colour Television
2nd Edition
Gordon J. King, RTechEng, MIPRE, FSRE, MRTS, FISTC
1973 0 408 00101 1 188 pages Illus
190 × 127 mm

Beginners Guide to Electric Wiring
2nd Edition
F. Guillou and C. Gray
1975 0 600 41026 9 192 pages Illus
190 × 127 mm

Beginners Guide to Electronics 3rd Edition
T. L. Squires, CEng, MIERE and C. M. Deason, MSc, BSc
1974 0 408 00126 7 240 pages Illus
190 × 127 mm

Beginners Guide to Radio 7th Edition
Gordon J. King, RTechEng, MIPRE, FSRE, MRTS, FISTC
1970 0 408 00016 3 204 pages Illus
190 × 127 mm

Beginners Guide to Television 5th Edition
Gordon J. King, RTechEng, MIPRE, FSRE, MRTS, FISTC
1972 0 408 00084 8 212 pages Illus
190 × 127 mm

Beginners Guide to Transistors 2nd Edition
I. R. Sinclair and J. A. Reddihough
1975 0 408 00145 3 160 pages Illus
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Guide to Broadcasting Stations 17th Edition
1973 0 592 00081 8 206 pages Illus
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50 Photoelectric Circuits and Systems
P. S. Smith
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R. M. Marston
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Clement Brown
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Questions and Answers on Hi-Fi
Clement Brown, Assoc IERE
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Questions and Answers on Integrated Circuits
R. G. Hibberd, BSc, CEng, FIEE
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Clement Brown
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Electronics Pocket Book 3rd Edition
P. J. McGoldrick, MSc, BSc(Eng), AMIEE
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184 × 126 mm

Transistor Pocket Book
R. G. Hibberd, BSc, CEng, FIEE
1965 0 600 41327 6 312 pages Illus
184 × 126 mm

Integrated Circuit Pocket Book
R. G. Hibberd, BSc, CEng, FIEE
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