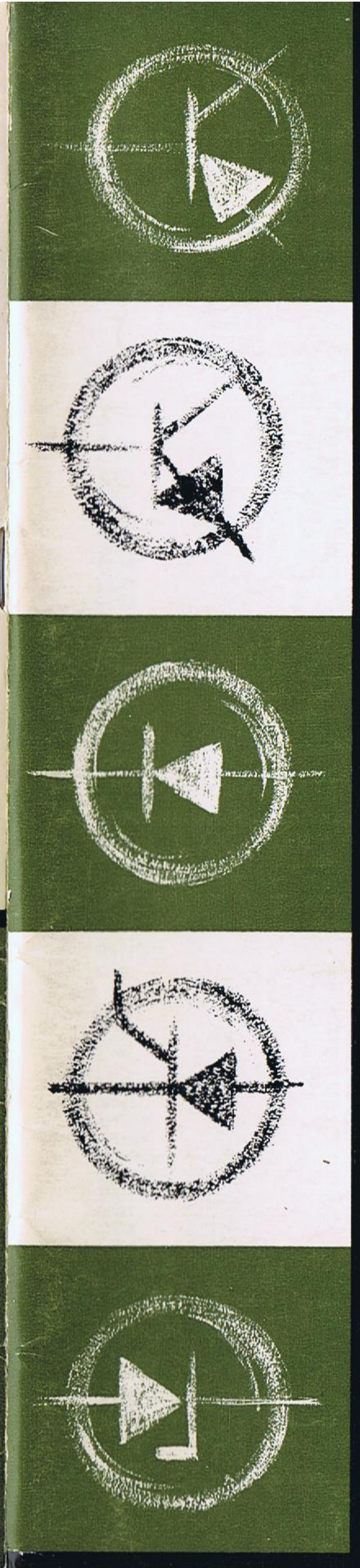

„Miniwatt"

SEMICONDUCTORS

1967

"Miniwatt" SEMICONDUCTORS

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Semiconductor types listed in colour throughout infers professional status. For complete technical data relating to current types reference should be made to the Philips Semiconductor Handbook Service, details of which are available from The Miniwatt Electronics Division, Philips Electrical Pty. Ltd., P.O. Box 34, Artarmon, N.S.W.

"Miniwatt" transistors

Type No.	Case	Outline	Description	ABSOLUTE MAXIMUM RATINGS							CHARACTERISTICS									Special Parameters	Type No.
				V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C I_{CM}* (mA)	P_{tot} at 25°C T_a (mW)	T_j (°C)	$R_{th\ j-a}$ $R_{th\ j-c}$* (°C/mW)	h_{fe}* or h_{FE}	measured at V_{CE} V_{CB}* (V)	I_C I_E* (mA)	at I_{CBO} (μA)	V_{CB} (V)	$V_{CE\ sat}$ (mV)	measured at I_C (mA)	I_B (mA)	F_T f_1* (MHz)		
SILICON N.P.N. TRANSISTORS																					
BC107	TO18	27(a)	Planar Epitaxial general purpose	—	45	5	100	300	175	0·5	125–500*	5·0	2·0			100	10	1	85	N.F. = 4·5 dB	BC107
BC108	TO18	27(a)	Planar Epitaxial audio driver	—	20	5	100	300	175	0·5	125–500*	5·0	2·0			100	10	1	85	N.F. = 4·5 dB	BC108
BC109	TO18	27(a)	Planar Epitaxial low noise amp.	—	20	5	100	300	175	0·5	240–900*	5·0	2·0			100	10	1	95	N.F. < 4·0 dB	BC109
BC112	red	34	Planar Epitaxial micro audio	20	20	4	50	60	125	1·6	80–200	0·5	0·2						150	N.F. = 2 dB	BC112
BC112	yellow	34	Planar Epitaxial micro audio	20	20	4	50	60	125	1·6	140–350	0·5	0·2						150	N.F. = 1·5 dB	BC112
BC112	green	34	Planar Epitaxial micro audio	20	20	4	50	60	125	1·6	280–550	0·5	0·2						150	N.F. = 2 dB	BC112
BCY55		43	Planar pair differential amplifier	45	45	5	30		175		100–300	5·0	0·01	<0·01	45	<1·0V	10	0·5	>50	N.F. < 3 db. Temp. Coeff. = 1μV/°C	BCY55
BCY56	TO18	27(a)	Planar Epitaxial general purpose	45	45	5	100	300	175	0·5	100–450	5·0	2·0	<0·1	20	80	10	1	85	N.F. < 5·0 dB	BCY56
BCY57	TO18	27(a)	Planar Epitaxial general purpose	25	20	5	100	300	175	0·5	200–800	5·0	2·0	<0·1	20	80	10	1	100	N.F. < 5·0 dB	BCY57
BD115	TO39	2	Audio power amplifier	220		5	150		200	0·015*	35	20	50						65		BD115
BDY10	TO3	7	Diffused Audio power	50	40	5	2A	125W	175	0·001*	100	2·0	200	<300	50	<700	2A	400	>1·0		BDY10
BDY11	TO3	7	Diffused Audio power	100	70	5	2A	125W	175	0·001*	100	2·0	200	<300	100	<700	2A	400	>1·0		BDY11
BF109▼	TO5	2(a)	Mesa video amplifier	135	110	5	50		175	0·06*	>20	10	10·0						135	C_{re} < 3·0 pF	BF109
BF115	TO72	4	Planar Epitaxial V.H.F. amplifier	50	30	5	30	170	175	0·9	45–165	10	1·0						230	N.F. = 4·0 dB . C_{re} = 0·65 pF	BF115
BF167	TO72	4	Planar forward gain control T.V. I.F. amplifier	40	30	4	25	150	175	1·0	55	10	4·0						350	N.F. = 3·0 dB . C_{re} = 0·15 pF	BF167
BF173	TO72	4	Planar Epitaxial T.V. I.F. amplifier	40	25	4	25	300(25	175	0·65	90	10	7·0						550	C_{re} = 0·23 pF	BF173
BF177	TO5	2(a)	Planar video amplifier	85	85(42	5	50	800	200	0·25	>20	10*	15*						120	C_{re} = 2·5 pF	BF177
BF178	TO5	2(a)	Planar video amplifier	145	145(42	5	50	800	200	0·22	>20	20*	30*						120	C_{re} = 2·5 pF	BF178
BF179	TO5	2(a)	Planar high voltage	200	200(42	5	50	800	200	0·22	>20	10*	15*						120	C_{re} = 2·5 pF	BF179
BF180	TO72	4	Planar U.H.F. forward gain control	30	20	3	20	150	175	1·0	44	10*	2·0*						675	C_{re} = 0·28 pF	BF180
BF181	TO72	4	Planar U.H.F. amplifier	30	20	3	20	150	175	1·0	29	10	2·0						600	C_{re} = 0·28 pF	BF181
BF184	TO72	4	Planar Epitaxial R.F. amplifier	30	20	5	30	170	175	0·9	115	10	1·0						300	C.N.F. = 3·5 dB . C_{re} = 0·65 pF	BF184
BF185	TO72	4	Planar Epitaxial R.F. amplifier	30	20	5	30	170	175	0·9	67	10	1·0						220	N.F. = 3·5 dB . C_{re} = 0·65 pF	BF185
BF200	TO72	4	Planar V.H.F. forward gain control	30	20	3	20	150	175	1·0	>15	10*	3·0*						550	C_{re} = 0·28 pF, N.F. = 3·0 dB	BF200
BFX43	TO18	27(a)	Planar Epitaxial V.H.F. amplifier	30	15	4	125	360	200	0·48	20–60	1	10	<0·1	20	<600	100	10	>500		BFX43
BFX44	TO18	27(a)	Planar Epitaxial V.H.F. amplifier	40	15	4	125	360	200	0·48	40–120	1	10	<0·1	20	<600	100	10	>500	t_s < 30 nsecs .	BFX44
BFY10	TO5	2	Mesa V.H.F. amplifier	45	25	—	50	300	175	0·5	25–50	5·0	10·0	<2·0	20	<1·5V	10	1	120*		BFY10
BFY11	TO5	2	Mesa V.H.F. amplifier	45	25	—	50	300	175	0·5	40–125	5·0	10·0	<2·0	20	<1·5V	10	1	120*		BFY11
BFY44	TO39	2(a)	Planar Epitaxial V.H.F. medium power	80	60	4	1A	4W(38	200	0·035*	20	5·0	500	<0·5	40	<700	500	100	210	P_O = 2·1 watts at 180 MHz	BFY44
BFY50	TO5	2(a)	Planar Epitaxial general purpose	80	35	6	1A	800	200	0·035*	55	6·0	150	<0·05	60	<200	150	15	>60	t_{on} = 55 nsecs. $_{off}$ = 175 nsecs	BFY50
BFY51	TO5	2(a)	Planar Epitaxial general purpose	60	30	6	1A	800	200	0·035*	70	6·0	150	<0·05	40	<350	150	15	>50	t_{on} = 55 nsecs. t_{off} = 195 nsecs	BFY51
BFY52	TO5	2(a)	Planar Epitaxial general purpose	40	20	6	1A	800	200	0·035*	130	6·0	150	<0·05	30	<350	150	15	>50	t_{on} = 55 nsecs. t_{off} = 260 nsecs	BFY52
BFY55	TO5	2(a)	Planar Epitaxial V.H.F. amplifier	80	35	7	1A	800	200	0·035*	40–120	10·0	150	<0·01	60	<200	150	15	>60		BFY55
BFY67	TO5	2(a)	Planar double diffused general purpose	75	30	7	0·5A	800	200	0·058*	40–120	10·0	150	<0·01	60	<1·5V	150	15	>60	N.F. = 4·8 dB	BFY67
BFY68	TO5	2(a)	Planar double diffused general purpose	75	30	7	0·5A	800	200	0·058*	100–300	10·0	150	<0·01	60	<1·5V	150	15	>70	N.F. = 3·5 dB	BFY68
BFY70	TO39	2(a)	Planar Epitaxial V.H.F. medium power	60	40	4	1A	4W(38	200	0·035*	20	5·0	500	<0·5	28	<700	500	100	210	P_O = 1·5 watts at 180 MHz	BFY70
BFY90	TO72	4	Planar Epitaxial industrial amp.	30	15	2·5	25	200	200	0·88	20–125	1·0	25	<0·01	15				>1000	C_{re} < 0·8 pF . N.F. < 3·5 dB	BFY90
BLY14		52	Planar Epitaxial V.H.F. power amp.	80	55	4	1A	7W(38	200	0·02*	11	10*	150*	<0·5	40	<700	500	100	190	P_O > 3·0 watts at 180 MHz	BLY14
BLY17	TO36(2)	5	Planar triple diffused H.F. power	100	100(42	4	10A	75W(38	175	0·0015*	25	0*	1A*	<10mA	40	<2·0V	10A	2A	>50	P_O > 30·0 watts at 30 MHz	BLY17
BSX19	TO18	27(a)	Planar Epitaxial very high speed switch	40	15	4·5	500*	360	200	0·48	20–60	1	10	<0·4	20	<300	10	0·3	>400	t_{on} < 12 nsecs . t_{off} < 15 nsecs	BSX19
BSX20	TO18	27(a)	Planar Epitaxial very high speed switch	40	15	4·5	500*	360	200	0·48	40–120	1	10	<0·4	20	<300	10	0·6	>500	t_{on} < 12 nsecs . t_{off} < 18 nsecs	BSX20
BSX21	TO18	27(a)	Mesa double diffused indicator driver	120	80	5	50	300	175	0·5	32	3	10	<40	120	1·8V	10	1	>60		BSX21
BSX44	TO18	27(a)	Planar Epitaxial very high speed switch	15	6	4	200*	300	200	0·58	30–150	0·4	20	<0·05	5	<450	50	5	>600	t_{on} < 20 nsecs. t_{off} < 15 nsecs	BSX44
BSY10	TO5	2	Mesa high speed switch	60	30	5	50	300	175	0·5	>40*	5·0*	5·0*	<2·0	20	<1V	10	1	>60	t_{on} = 17·7 nsecs . t_{off} < 110 nsecs	BSY10
BSY11	TO5	2	Mesa high speed switch	45	25	5	50	300	175	0·5	>55*	5·0*	5·0*	<2·0	20	<1V	10	1	>60	t_{on} = 17·7 nsecs . t_{off} < 110 nsecs	BSY11
BSY38	TO18	27(a)	Planar Epitaxial high speed switch	20	15	5	100	300	175	0·5	15–45	1	100	<0·1	20	<250	10	1	350	t_{on} < 14 nsecs . t_{off} < 45 nsecs	BSY38
BSY39	TO18	27(a)	Planar Epitaxial high speed switch	20	15	5	100	300	175	0·5	20–70	1	100	<0·1	20	<250	10	1	350	t_{on} < 14 nsecs . t_{off} < 45 nsecs	BSY39

▼ Maintenance type only

"Miniwatt" transistors

Type No.	Case	Outline	Description	ABSOLUTE MAXIMUM RATINGS							CHARACTERISTICS									Special Parameters	Type No.
				V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C I_{CM}* (mA)	P_{tot} at 25°C T_a (mW)	T_j (°C)	$R_{th\ j-a}$ $R_{th\ j-c}$* (°C/mW)	h_{fe}* or h_{FE}	measured at V_{CE} V_{CB}* (V)	I_C I_E* mA)	at I_{CBO} (μA)	V_{CB} (V)	$V_{CE\ sat}$ (mV)	measured at I_C (mA)	I_B (mA)	F_T f_t* (MHz)		
SILICON N.P.N. TRANSISTORS																					
2N696	TO5(2)	2	Planar diffused general purpose	60	40[42]	5	500	600	175	0·4	20–60	10	150	<1·0	30	<1·5V	150	15	80		2N696
2N697	TO5(2)	2	Planar diffused general purpose	60	40[42]	5	500	600	175	0·4	40–120	10	150	<1·0	30	<1·5V	150	15	100		2N697
2N698	TO5(2)	2	Planar diffused amplifier	120	60	7		800	200	0·219	20–60	10	150	<0·005	75	<1·2V	50	5	120		2N698
2N699	TO5(2)	2	Planar diffused amplifier	120	80[42]	5		600	175	0·25	40–120	10	150	<2·0	60	<5·0V	150	15	120		2N699
2N706	TO18	27(a)	Planar Epitaxial switch	25	20[42]	3	50	300	175	0·5	>20	1	10	<0·5	15	<600	10	1	>200	t_s < 60 nsecs	2N706
2N706A	TO18	27(a)	Planar Epitaxial switch	25	15	5	50	300	175	0·5	20–60	1	10	<0·5	15	<600	10	1	>200	t_{on} < 40 nsecs . t_{off} < 75 nsecs	2N706A
2N706B	TO18	27(a)	Planar Epitaxial switch	25	15	5	50	300	175	0·5	20–60	1	10	<0·5	15	<400	10	1	>200	t_{on} < 40 nsecs . t_{off} < 75 nsecs	2N706B
2N708	TO18	27(a)	Planar Epitaxial switch or amplifier	40	15	5	500*	360	200	0·48	30–120	1	10	<0·025	20	<400	10	1	>300	t_s < 25 nsecs	2N708
2N709	TO18	27(a)	Planar Epitaxial high speed switch	15	6	4	200*	300	200	0·58	20–120	0·5	10	<0·05	5	<300	3	0·15	>600	t_{on} < 15 nsecs . t_{off} < 15 nsecs	2N709
2N743	TO18	27(a)	Planar Epitaxial high speed switch	20	12	5	200	300	175	0·5	20–60	0·35	10	<1	20	<350[43]	10	1	>300	t_{on} < 12 nsecs . t_{off} < 40 nsecs	2N743
2N744	TO18	27(a)	Planar Epitaxial high speed switch	20	12	5	200	300	175	0·5	40–120	0·35	10	<1	20	<350[43]	10	1	>300	t_{on} < 12 nsecs . t_{off} < 45 nsecs	2N744
2N753	TO18	27(a)	Planar Epitaxial switch	25	15	5	50	300	175	0·5	40–120	1	10	<0·5	15	<600	10	1	>200	t_{on} < 40 nsecs . t_{off} < 75 nsecs	2N753
2N784	TO18	27(a)	Planar Epitaxial switch	30	15	5	200	300			>25*	1	10	<0·25	30				>200	t_{on} < 20 nsecs . t_{off} < 75 nsecs	2N784
2N784A	TO18	27(a)	Planar Epitaxial switch	40	15	5	200	350	200	0·5	25–150	1	10	<0·025	25	<650	100	10		t_{on} < 20 nsecs . t_{off} < 40 nsecs	2N784A
2N834	TO18	27(a)	Planar Epitaxial switch	40	30	5	200	300	175	0·5	>25	1	10	<0·5	20	<250	10	1	>350	t_{on} < 35 nsecs . t_{off} < 75 nsecs	2N834
2N835	TO18	27(a)	Planar Epitaxial switch	25	20	3	200	300	175	0·5	>20	1	10	<0·5	20	<300	10	1	>300	t_{on} < 20 nsecs . t_{off} < 35 nsecs	2N835
2N914	TO18	27(a)	Planar Epitaxial switch or amplifier	40	15	5	500*	360	200	0·48	30–120	1	10	<0·025	20	<700	200	20	>300	t_{on} < 40 nsecs . t_{off} < 40 nsecs	2N914
2N918	TO72	4	Planar Epitaxial V.H.F. amplifier	30	15	3	50	200	200	0·88	>20	1	3	<0·01	15	<400	10	1	>600	N.F. < 60 dB	2N918
2N919	TO18	27(a)	Planar Epitaxial switch	25	15	5	220	360	200	0·48	20–60	1	10	<0·02	15	<200	10	1	400		2N919
2N920	TO18	27(a)	Planar Epitaxial switch	25	15	5	220	360	200	0·48	40–120	1	10	<0·02	15	<200	10	1	400		2N920
2N929	TO18	27(a)	Planar low noise amplifier	45	45	5	30	300	175	0·5	100–350	5	10	<0·01	45	<1V	10	0·5	>50	N.F. < 4 dB	2N929
2N929A	TO18	27(a)	Planar low noise amplifier	60	45	6	30	500	175	0·29	160–350	5	10	<0·002	45	<0·5	10	0·5	100	N.F. < 4 dB	2N929A
2N930	TO18	27(a)	Planar low noise amplifier	45	45	5	30	300	175	0·5	200–600	5	10	<0·01	45	<1V	10	0·5	>50	N.F. < 3 dB	2N930
2N930A	TO18	27(a)	Planar low noise amplifier	60	45	6	30	500	175	0·29	200–600	5	10	<0·002	45	<0·5	10	0·5	100	N.F. < 3 dB	2N930A
2N1613	TO5	2(a)	refer BFY67																		2N1613
2N1711	TO5	2(a)	refer BFY68																		2N1711
2N2218	TO5	2(a)	Planar amplifier/switch	60	30	5	800	800	175	0·19	40–120	10	150	<0·01	50	<1·6V	500	50	>250		2N2218
2N2219	TO5	2(a)	Planar amplifier/switch	60	30	5	800	800	175	0·19	100–300	10	150	<0·01	50	<1·6V	500	50	>250		2N2219
2N2221	TO18	27(a)	Planar amplifier/switch	60	30	5	800	500	175	0·3	40–120	10	150	<0·01	50	<0·4	150	15	>250		2N2221
2N2222	TO18	27(a)	Planar amplifier/switch	60	30	5	800	500	175	0·3	100–300	10	150	<0·01	50	<0·4	150	15	>250		2N2222
2N2297	TO5	2(a)	refer BFY55																		2N2297
2N2368	TO18	27(a)	Planar Epitaxial high speed switch	40	15	4·5	200	360	200	0·48	20–60	1	10	<0·4	20	<250	10	1	>400	t_{on} < 12 nsecs t_{off} < 15 nsecs	2N2368
2N2369	TO18	27(a)	Planar Epitaxial high speed switch	40	15	4·5	200	360	200	0·48	40–120	1	10	<0·4	20	<250	10	1	>500	t_{on} < 12 nsecs t_{off} < 18 nsecs	2N2369
2N2369A	TO18	27(a)	Planar Epitaxial high speed switch	40	15	4·5	200	360	200	0·48	40–120	1	10	<0·4[44]	20	<200	10	1	>500	t_{on} < 12 nsecs t_{off} < 18 nsecs	2N2369A
2N2475	TO18	27(a)	refer BSX44																		2N2475
2N2483	TO18	27(a)	Planar low noise amplifier	60	60	6	50*	360	200	0·48	>175	5	1	<0·01	45	<350	1	0·1	> 60	N.F. < 4 dB	2N2483
2N2484	TO18	27(a)	Planar low noise amplifier	60	60	6	50*	360	200	0·48	>250	5	1	<0·01	45	<350	1	0·1	> 60	N.F. < 3 dB	2N2484
2N2569	TO18	27	Planar Epitaxial chopper	20	15	5	100	300	175	0·5	>50	10	0·1	<0·01	15	0·2	10	0·5	>100	V_{offset} < 0·25 mV.	2N2569
2N2570	TO18	27	Planar Epitaxial chopper	20	15	5	100	300	175	0·5	>50	10	0·1	<0·01	15	0·2	10	0·5	>100	V_{offset} < 0·5 mV.	2N2570
2N3570	TO72	4	Planar Epitaxial U.H.F. industrial	30	15	3	50	200	200	0·88	20–150	6	5	<0·01	6				>1500	N.F. < 7 dB	2N3570
2N3571	TO72	4	Planar Epitaxial U.H.F. industrial	25	15	3	50	200	200	0·88	20–200	6	5	<0·01	6				>1200	N.F. < 4 dB	2N3571
2N3572	TO72	4	Planar Epitaxial U.H.F. industrial	25	13	3	50	200	200	0·88	20–300	6	5	<0·01	6				>1000	N.F. < 6 dB	2N3572

"Miniwatt" transistors

Type No.	Case	Outline	Description	ABSOLUTE MAXIMUM RATINGS V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C av./peak (mA)	P_{tot} at 25°C T_a (mW)	T_j (°C)	$R_{th\ j-a}$ $R_{th\ j-c}$* (°C/mW)
GERMANIUM P.N.P. TRANSISTORS										
AC107		1	Alloyed low-noise A.F. pre amp.	15	15	5	5/10	80	75	0·6
AC125	TO1	8	Alloyed A.F. pre amp. and driver	32	12	10	100	500(21	90	0·3
AC126	TO1	8	Alloyed A.F. pre amp. and driver	32	12	10	100	500(21	90	0·3
AC128	TO1	8	Alloyed A.F. power	32	16	10	1000/2000	1·0W(21	90	0·04*
2AC128			available in matched pairs							
AC132	TO1	8	Alloyed A.F. power	32	12	10	200	500(21	90	0·3
2AC132			available in matched pairs							
AC188	TO1	8	Alloyed A.F. power	25	15	10	1000/2000	1·1W(46	90	0·04*
ACY17	TO5	2(b)	Alloyed L.F. general purpose switch	70	32	12	500/1000	240	85	0·25
ACY18	TO5	2(b)	Alloyed L.F. general purpose switch	50	30	12	500/1000	240	85	0·25
ACY19	TO5	2(b)	Alloyed L.F. general purpose switch	50	30	12	500/1000	240	85	0·25
ACY20	TO5	2(b)	Alloyed L.F. general purpose switch	40	20	12	500/1000	240	85	0·25
ACY21	TO5	2(b)	Alloyed L.F. general purpose switch	40	20	12	500/1000	240	85	0·25
ACY22	TO5	2(b)	Alloyed L.F. general purpose switch	20	15	12	500/1000	240	85	0·25
ACY39	TO5	2(b)	Alloyed L.F. general purpose switch	110	40	25	500/1000	240	85	0·25
ACY40	TO5	2(b)	Alloyed L.F. general purpose switch	32	18	12	500/1000	240	85	0·25
ACY41	TO5	2(b)	Alloyed L.F. general purpose switch	32	18	12	500/1000	240	85	0·25
AD139		33	Alloyed A.F. power	32	15	10	1000/3000	13W	90	0·004*
2AD139			available in matched pairs							
AD140 ▼	TO3	7	Alloyed A.F. power	55	40(35	10	3000	35W	90	0·0015*
2AD140			available in matched pairs							
AD149	TO3	7	Alloyed A.F. power	50	30	20	3500	22·5W(45	100	0·002*
2AD149			available in matched pairs							
AD162		33	Alloyed A.F. power	32	20	10	1000/3000	6W(41	90	0·0045*
ADY26	TO36	5	Alloyed L.F. high power	80	60	40	25A/30A	100W(36	90	0·0006*
ADZ11	TO36	5	Alloyed med-volt. high current switch	50	40	30	15A/20A	45W(45	90	0·0008*
ADZ12	TO36	5	Alloyed high volt. high current switch	80	60	50	15A/20A	45W(45	90	0·0008*
AF102	TO7	3	Alloy diffused V.H.F. amp., osc.	25	—	0·5	10	50(6	75	0·6
AF114 •	TO7	3	Alloy diffused V.H.F. amp. to 100 MHz	32	15	1·0	10	75	75	0·6
AF114N	TO44	32								
AF115 •	TO7	3	Alloy diffused mixer to 100MHz	32	15	1·0	10	75	75	0·6
AF115N	TO44	32	R.F. amp. to 27 MHz							
AF116 •	TO7	3	Alloy diffused R.F. and I.F.	32	15	1·0	10	75	75	0·6
AF116N	TO44	32	amp. to 16 MHz							
AF117 •	TO7	3	Alloy diffused R.F., I.F.	32	15	1·0	10	75	75	0·6
AF117N	TO44	32	amp. to 6 MHz							
AF118	TO7	3	Alloy diffused video amp.	70	70	0·5	30	375	75	0·25
AF121		29(a)	Alloy diffused amp. to 100 MHz	25	25(33	—	10/15	100	75	0·45
AF124	TO72	4	Alloy diffused V.H.F. amp. to 100 MHz	32	15	1·0	10	60	75	0·75
AF125	TO72	4	Alloy diffused mixer to 100 MHz, R.F. amp. to 27 MHz	32	15	1·0	10	60	75	0·75
AF126	TO72	4	Alloy diffused R.F., I.F. amp. to 16 MHz	32	15	1·0	10	60	75	0·75
AF127	TO72	4	Alloy diffused R.F., I.F. amp. mixer to 6 MHz	32	15	1·0	10	60	75	0·75
AF139	TO72	4	Mesa U.H.F., amp. to 860 MHz	20	15	0·3	10	60(6	90	0·75
AF178	TO12	30	Alloy diffused V.H.F. amp. to 260 MHz	25	—	0·5	10	75(6	75	0·6
AF179	TO12	30	Alloy diffused TV I.F. amp.	25	25(33	—	10/15	180(25(6	80	0·37

▼ maintenance type only • obsolescent type

CHARACTERISTICS h_{fe}* or h_{FE}	measured at V_{CE} V_{CB}* (V)	I_C I_E* (mA)	at I_{CBO} (μA)	V_{CB} (V)	$V_{CE\ sat}$ (mV)	measured at I_C (mA)	I_B (mA)	F_T or f_t* (MHz)	Special Parameters	Type No.
GERMANIUM P.N.P. TRANSISTORS										
35–160*	5	0·3	<3	5	—	—	—	>2(34	N.F. (30Hz—15 kHz) < 5 dB	AC107
80–170*	5*	2*	<10	10	<500	100	—	>1·3*	f_β > 10 kHz	AC125
130–300*	5*	2*	<10	10	<500	100	—	>1·7*	f_β > 10 kHz	AC126
60–175	0*	300*	<10	10	<600	1000	—	>1·0*		AC128
									f_β > 10 kHz	2AC128
115	0*	50*	<10	10	<350	200	—	>1·3*	matched with NPN type AC127	AC132 2AC132
95–500	0*	500*	<15	10	<600	1000	—	>1·0	matched with NPN type AC187	AC188
50–150	0*	300*	<10	6	<300	300	15	1·0		ACY17
40–120	0*	300*	<10	6	<300	300	15	1·0		ACY18
80–250	0*	300*	<10	6	<300	300	15	1·5		ACY19
50–145	0*	50*	<10	6	<200	50	1·3	1·0		ACY20
90–250	0*	50*	<10	6	<200	50	1·3	1·3		ACY21
30–300	0*	300*	<10	6	<300	300	15	0·8		ACY22
50–150	0*	300*	<10	6	<300	300	15	1·0		ACY39
30–70	0*	300*	<10	6	<320	300	15	0·6		ACY40
50–250	0*	300*	<10	6	<300	300	15	1·0		ACY41
30–115	0*	1000*	100	10	<400	1000	—	>0·01(34		AD139 2AD139
30–100	1	1000	<100	0·5	<800	3000	—	>0·003(34		AD140 2AD140
30–100	0*	1000*	<350	14	<700	3000	—	>0·3	f_β > 7 kHz	AD149 2AD149
50–300	1	500	<200	32	<600	1000	—	1·5	matched with NPN type AD161	AD162
40–120	0*	5000*	<1800	60	<500	25A	2.5A	>0·1		ADY26
>25	0*	5000	<8000	50	<1000	15A	—	>0·08		ADZ11
>25	0*	5000	<8000	80	<1000	15A	—	>0·1		ADZ12
>20*	12	1	<10	12	—	—	—	180*	N.F. = 6 dB at 200 MHz	AF102
150*	6	1*	<8	6	—	—	—	75*		AF114 AF114N
150*	6	1*	>8	6	—	—	—	75*	N.F. 3 dB at 10·7 MHz	AF115 AF115N
150*	6	1*	<8	6	—	—	—	75*	N.F. <4·5 dB at 10·7 MHz	AF116 AF116N
150*	6	1*	<8	6	—	—	—	75*	N.F. <3 dB at 1 MHz	AF117 AF117N
>100m℧(37	6*	10*	<60	70	<5000	30	—	>125*		AF118
80m℧(37	10	3	<8	10	—	—	—	270	N.F. <6 dB at 100 MHz, C_{re} < 0·65pF	AF121
150*	6	1*	<8	6	—	—	—	75*		AF124
150*	6	1*	<8	6	—	—	—	75*		AF125
150*	6	1*	<8	6	—	—	—	75*		AF126
150*	6	1*	<8	6	—	—	—	75*		AF127
50	12*	1·5*	<8	20	—	—	—	550	C_{re} 0·25 pF	AF139
>20	12*	1*	<10	12	—	—	—	180*	C_{re} 0·8 pF	AF178
>30	10	3	<8	10	—	—	—	270	C_{re} <0·68 pF	AF179

Type No.	Case	Outline	Description	ABSOLUTE MAXIMUM RATINGS V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C av./peak (mA)	P_{tot} at 25° C T_a (mW)	T_j (°C)	$R_{th\ j-a}$ $R_{th\ j-c}$* (°C/mW)	CHARACTERISTICS h_{fe}* or h_{FE}	measured at V_{CE} V_{CB}* (V)	I_C I_E* (mA)	at I_{CBO} (μA)	V_{CB} (V)	$V_{CE\ sat}$ (mV)	measured at I_C (mA)	I_B (mA)	F_T or f_i* (MHz)	Special Parameters	Type No.
GERMANIUM P.N.P. TRANSISTORS (*Continued*)																					
AF180	TO12	30	Alloy diffused TV tuner R.F. amp.	25	25[26]	—	25	156	75	0·32	>20	10*	3*	<10	10	—	—	—	—	forward gain control range 40 dB	AF180
AF181	TO12	30	Alloy diffused TV I.F. amp.	30	30[26]	0·6	20	156	75	0·32	>20	10*	3*	<7	10	—	—	—	170	forward gain control range > 56 dB	AF181
AF185	TO12	30	Alloy diffused R.F. amp., osc., mixer to 27 MHz	32	15	1·2	30	120	90	0·45	>40	10*	1*	<3	10	—	—	—	80*		AF185
AF186		29(b)	Alloy diffused U.H.F. TV tuner R.F. amp., osc.	25	25[42]	—	15	70[6]	75	0·65	>40	10*	2*	<3·5	10	—	—	—	820	forward gain control range 35 dB	AF186
AFY16	TO72	4	Mesa U.H.F. amp., to 860 MHz	30	25	0·5	8	60[6]	90	0·75	>10	12*	1·5*	<3	20	—	—	—	550	C_{re} 0·25 pF	AFY16
AFY19	TO39	2(a)	Alloy diffused V.H.F., amp. to 180 MHz	32	32	—	150/300	800[38]	90	0·25	>33	2*	100*	<1000	32	<1000	300	20	>225*	P_o > 400 mW at 180 MHz	AFY19
AFY40		29(b)	Epitaxial Mesa U.H.F. amp. to 860 MHz	32	20	0·3	20	140[25]	90	0·42[25]	>10	20*	4*	<8	20	—	—	—	700		AFY40
AFZ11	TO72	4	Alloy diffused low noise V.H.F. amp. to 100 MHz	20	10	—	10	83	75	0·6	>10	6*	1*	<6	6	—	—	—	>70	N.F. < 6 dB at 100 MHz	AFZ11
AFZ12	TO72	4	Alloy diffused low noise V.H.F. amp. to 200 MHz	20	10	0·5	10	83	75	0·6	>20	6	1	<6	6	—	—	—	>135*	N.F. < 7·5 dB at 200 MHz	AFZ12
ASY26	TO5	2(b)	Alloyed med. curr., med. speed switchg.	30	15	20	200/300	150	85	0·4	>20	1	100	<7	30	<250	50	2	>4	t_{on} = 340 ns, t_{off} = 975 ns	ASY26
ASY27	TO5	2(b)	Alloyed med. curr., med. speed switchg.	25	15	20	200/300	150	85	0·4	>30	1	100	<7	25	<250	50	1·25	>6	t_{on} = 250 ns, t_{off} = 1 μs	ASY27
ASY31 ▼		1	Alloyed medium speed switch	25	20	20	100/200	125	75	0·4	>21	0*	100*	<3	5	<250	50	2	>4*		ASY31
ASY32 ▼		1	Alloyed medium speed switch	25	20	20	100/200	125	75	0·4	>31	0*	100*	<3	5	<250	50	1·25	>6*		ASY32
ASY67	TO12	30	Alloy diffused high speed switch	50	20	—	50	167	75	0·3	>50	6	10	<50	50	—	—	—	>150		ASY67
ASY76	TO5	2(b)	Alloyed medium current switch	40	20	10	500/1000	500	85	0·25	25–130	0*	300*	<10	10	<300	300	12	>0·5		ASY76
ASY77	TO5	2(b)	Alloyed medium current switch	60	20	10	500/1000	500	85	0·25	25–130	0*	300*	<10	10	<300	300	12	>0·5		ASY77
ASY80	TO5	2(b)	Alloyed medium current switch	40	32	20	500/1000	500	85	0·25	>50	0*	300*	<10	10	<400	300	6	>0·7		ASY80
ASZ11 •		1	Alloyed medium speed switch	20	20[24]	20	200	125	75	0·4	>17	0*	50*	<3	5	<220	50	3·1	>3*		ASZ11
ASZ12 •		1	Alloyed medium speed switch	20	20[24]	20	200	125	75	0·4	>30	0*	50*	<3	5	<220	50	1·75	>5·5*		ASZ12
ASZ15	TO3	7	Alloyed high power, low speed switch	100	60	40	8A/10A	30W[8]	90	0·0015*	15–30	1	6A	<3000	100	<400	10A	1000	0·2		ASZ15
ASZ16	TO3	7	Alloyed high power, low speed switch	60	32	20	8A/10A	30W[8]	90	0·0015*	35–80	1	6A	<3000	60	<400	10A	1000	0·25		ASZ16
ASZ17	TO3	7	Alloyed high power, low speed switch	60	32	20	8A/10A	30W[8]	90	0·0015*	20–45	1	6A	<3000	60	<400	10A	1000	0·22		ASZ17
ASZ18	TO3	7	Alloyed high power, low speed switch	100	32	40	8A/10A	30W[8]	90	0·0015*	20–65	1	6A	<3000	100	<400	10A	1000	0·22		ASZ18
ASZ20	TO7	3	Alloy diffused wide band amp.	40	15	—	25	110	75	0·6	>45*	6	1	<50	40	—	—	—	>40*		ASZ20
ASZ20N	TO44	32																			ASZ20N
ASZ21 ▼	TO18	27(a)	Alloy diffused high speed switch	20	9	—	30/50	120	85	0·5	>50	1	30	<20	15	<350	10	0·4	>300*		ASZ21
ASZ23 ▼	TO7	3	Alloy diffused avalanche, high speed pulse	—	—	2	2/100	83	75	0·6	—	—	—	<8	6	—	—	—	—	$V_{(BR)\ CBO}$ >15V, t_r = 1 ns	ASZ23
AU103	TO3	7	Alloy diffused hor. deflection power amp.	155	155[27]	—	10A	10W[39]	90	0·0015*	>15	1	10A	<10mA	155	<700	10A	800	15	switch-off time <1·7 μs	AU103
AU104	TO3	7	Alloy diffused hor. deflection power amp.	185	185[27]	—	12A	15W[10]	90	0·0015*	>15	1	10A	<10mA	185	<850	12A	1·3A	15	switch-off time < 1·8 μs	AU104
AUY10 ▼	TO3	7	Alloy diffused R.F. power amp.	70	60[24]	—	700	6W[5][28]	75	0·004*	>40	10	600	<600	60	—	—	—	>60*		AUY10
OC16 •		37	Alloyed L.F. power amp.	32	16	10	1500/3000	30W[8]	75	0·001*	10–56	1	2A	<2·5mA	14	<800	3A	450	0·2*	refer AD149 preferred type	OC16
OC20 ▼	TO3	7	Alloyed high voltage/current switch	100	75	40	8A/10A	30W[8]	90	0·0015*	20–45	1	6A	<100	0·5	<1000	6A	—	0·25*		OC20
OC22 ▼	TO3	7	Alloyed medium freq. power switch	36	24	15	1000/2000	15W[8]	90	0·003*	>50	2	1000	<100	10	600	1000	30	2·5*		OC22
OC23 ▼	TO3	7	Alloyed power switch, core driver	36	24	15	1000/2000	15W[8]	90	0·003*	>50	2	1000	<100	10	600	1000	30	2·5*		OC23
OC24 ▼	TO3	7	Alloyed switch, M.F. power osc.	36	24	15	1000/2000	15W[8]	90	0·003*	>50	2	1000	<100	10	600	1000	30	2·5*		OC24
OC26 •	TO3	7	Alloyed A.F. power available in matched pairs	40	20	10	3500	12·5W[10]	90	0·0012*	15–45	1	3000	<3mA	40	<800	3000	—	—	f_β > 3 kHz refer AD149 preferred type	OC26
2OC26																					2OC26
OC28	TO3	7	identical to ASZ15																		OC28
OC29	TO3	7	identical to ASZ16																		OC29
OC30 ▼		6	Alloyed A.F. power available in matched pairs	32	16	10	1400	4W[8]	75	0·0075	28	1	800	<40	14	<500	1400	–	0·3*	f_β = 9 kHz refer AD139 preferred type	OC30
2OC30																					2OC30

▼ maintenance type only • obsolescent type

Type No.	Case	Outline	Description	ABSOLUTE MAXIMUM RATINGS V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C av./peak (mA)	P_{tot} at 25°C T_a (mW)	T_j (°C)	$R_{th\ j-a}$ $R_{th\ j-c}$* (°C/mW)
GERMANIUM P.N.P. TRANSISTORS (*Continued*)										
OC35	TO3	7	identical to ASZ17							
OC36	TO3	7	identical to ASZ18							
OC41 •	TO1	11 / 8	Alloyed industrial switch	16	15[40]	12	50/150	83	75	0·6
OC41N										
OC42 •	TO1	11 / 8	Alloyed industrial switch	16	15[40]	12	50/150	83	75	0·6
OC42N										
OC43 •	TO1	11 / 8	Alloyed industrial switch	15	15[18]	12	50/150	83	75	0·6
OC43N										
OC44 •	TO1	11 / 8	Alloyed A.M. B/C converter	15	15[42]	12	5/10	83	75	0·6
OC44N										
OC45 •	TO1	11 / 8	Alloyed A.M. B/C I.F. stages	15	15[42]	12	5/10	83	75	0·6
OC45N										
OC46 •	TO1	11 / 8	Alloyed medium speed switch	20	20[24]	—	100/125	80	75	0·6
OC46N										
OC47 •	TO1	11 / 8	Alloyed medium speed switch	20	20[24]	—	100/125	80	75	0·6
OC47N										
OC57▼		9	Alloyed submin. hearing aid pre amp.	7	7[19]	7	5/10	20	75	1·5
OC58▼		9	Alloyed submin. hearing aid pre amp.	7	3[19]	7	5/10	20	75	1·5
OC59▼		9	Alloyed submin. hearing aid pre amp.	7	3[19]	7	5/10	20	75	1·5
OC60▼		9	Alloyed submin. hearing aid output amp.	7	3[19]	7	5/10	20	75	1·5
OC65▼		10	Alloyed miniature hearing aid	10	10	10	10	25	65	0·65
OC66▼		10	Alloyed miniature hearing aid	10	10	10	10	25	65	0·65
OC70▼		1	Alloyed general purpose A.F.	—	30[20]	10	10/50	125	75	0·4
OC71▼	TO1	1 / 8	Alloyed general purpose A.F.	—	30[20]	10	10/50	125	75	0·4
OC71N										
OC72 •		11	Alloyed A.F. medium power available in matched pairs	32	16	10	50/125	165[21]	75	0·3[21]
2OC72										
OC74 •	TO1	11 / 8	Alloyed A.F. medium power available in matched pairs	20	10	6	300	550[21]	75	0·09[21]
2OC74										
OC74N										
2OC74N										
OC75 •	TO1	1 / 8	Alloyed general purpose A.F.	—	30[18]	10	10/50	125	75	0·4
OC75N										
OC76 ▼		11	Alloyed low speed switch	32	16	10	125/250	165[21]	75	0·3[21]
OC77 ▼		11	Alloyed low speed switch	60	15	10	125/250	165[21]	75	0·3[21]
OC79		11	Alloyed A.F. medium power available in matched pairs	26	13	6	300	550[21]	75	0·09[21]
2OC79										
OC80 •		11	Alloyed A.F. or medium speed switch	32	32[47]	20	300/600	550[21]	75	0·09[21]
OC83		11	Alloyed low speed switch	32	20	3	500/1000	600[21]	85	0·1[21]
OC84		11	Alloyed switch large signal amp.	32	32	10	500/1000	600[21]	85	0·1[21]
OC122	TO7	3	Alloyed medium speed switch	32	32[18]	12	500/2000	300	90	0·22
OC123	TO7	3	Alloyed medium speed switch	50	50[18]	15	500/2000	300	90	0·22
OC169 •	TO7	3	Alloy diffused A.M. B/C. I.F. amp.	20	20[26]	—	10	83	75	0·6
OC170 •	TO7	3	Alloy diffused A.M. B/C. converter	20	20[26]	—	10	83	75	0·6
OC171 •	TO7	3	Alloy diffused R.F. amp. to 100 MHz	20	20[26]	—	10	83	75	0·6
OC975 •	TO7	3	Alloy diffused A.F. amp.	30	—	—	10	83	75	0·6
2N1100	TO36	5	Alloyed high power A.F. amp.	100	65	—	15A	100W[8]	95	0·0005*
2N1303	TO5	2(b)	Alloyed medium speed	30	25	25	200/300	150	85	0·4
2N1305	TO5	2(b)	Alloyed medium speed	30	20	25	200/300	150	85	0·4
2N1307	TO5	2(b)	Alloyed medium speed	30	15	25	200/300	150	85	0·4
2N1309	TO5	2(b)	Alloyed medium speed	30	15	25	200/300	150	85	0·4

▼ maintenance type only • obsolescent type

CHARACTERISTICS h_{fe}* or h_{FE}	measured at V_{CE} V_{CB}* (V)	I_C I_E* (mA)	at I_{CBO} (μA)	V_{CB} (V)	$V_{CE\ sat}$ (mV)	measured at I_C (mA)	I_B (mA)	F_T or f_i* (MHz)	Special Parameters	Type No.
GERMANIUM P.N.P. TRANSISTORS (*Continued*)										
										OC35
										OC36
20–80	0*	50	<10	15	<280	125	14	>3*		OC41
										OC41N
>40	0*	50	<10	15	<280	125	7	>5·5*		OC42
										OC42N
50–200	0*	50	<10	15	<280	125	7	>12*		OC43
										OC43N
45–225*	6	1	<10	15	—	—	—	>7·5*		OC44
										OC44N
25–125*	6	1	<10	15	—	—	—	>3*		OC45
										OC45N
20–80	0*	15	<3	5	<250	50	—	>3		OC46
										OC46N
50–200	0*	15	<3	5	<250	50	—	>4·5		OC47
										OC47N
>20*	0·5	0·25*	1·5	2	—	—	—	—	f_β > 10 kHz	OC57
>30*	0·5	0·25*	1·5	2	—	—	—	—	f_β > 10 kHz	OC58
>50*	0·5	0·25*	1·5	2	—	—	—	—	f_β > 10 kHz	OC59
60–108	2	3	1·5	2	<250	10	—	—		OC60
30*	2	0·5*	<12	4·5	—	—	—	—	f_β = 15 kHz	OC65
47*	2	3	<12	4·5	—	—	—	—	f_β = 10 kHz	OC66
30*	2	0·5	<13	4·5	—	—	—	—	f_β 5–26 kHz	OC70
30–75*	2	3	<13	4·5	—	—	—	—	f_β 5–26 kHz	OC71
										OC71N
30–90	0·7*	80*	<10	10	<400	125	—	>0·35	f_β > 8 kHz	OC72
										2OC72
60–150	6	50	<20	9	<600	300	—	—	f_β > 8 kHz	OC74
										2OC74
										OC74N
										2OC74N
65–130*	2	3	<12	4·5	—	—	—	0·9	f_β = 8 kHz	OC75
										OC75N
25–170	0·7	125	<10	10	<400	125	—	>0·35		OC76
>25	0·7	125	<10	10	<400	125	—	>0·35		OC77
40–100	6	50	<20	9	<600	300	—	—	F_β > 8 kHz	OC79
										2OC79
180	6	50	<20	12	<900	600	—	2	Refer ASY80 preferred type	OC80
40–200	1	300	<100	32	<500	300	9	0·65		OC83
50–160	1	300	<100	32	<500	300	9	0·85		OC84
>50	6	100	<350	32	—	—	—	1·3*		OC122
>50	6	100	<100	10	<350	400	—	1·5*		OC123
150*	6	1*	<8	6	—	—	—	70*		OC169
150*	6	1*	<8	6	—	—	—	70*		OC170
150*	6	1*	<8	6	—	—	—	70*		OC171
>36*	6*	1*	—	—	—	—	—	—		OC975
20	2*	12A	<4000	100	<700	12A	2A	—	f_β = 10 kHz	2N1100
>20	1	10	<6	25	<200	10	0·5	>3	complementary with 2N1302 series	2N1303
40–100	1	10	<6	25	<200	10	0·25	>5	complementary with 2N1302 series	2N1305
60–200	1	10	<6	25	<200	10	0·17	>10	complementary with 2N1302 series	2N1307
80–300	1	10	<6	25	<200	10	0·13	>15	complementary with 2N1302 series	2N1309

"Miniwatt" transistors

Type No.	Case	Outline	Description	ABSOLUTE MAXIMUM RATINGS V_{CBO} (V)	V_{CEO} (V)	V_{EBO} (V)	I_C av./peak (mA)	P_{tot} at 25°C T_a (mW)	T_j (°C)	$R_{th\ j-a}$ $R_{th\ j-c}$* (°C/mW)	CHARACTERISTICS h_{fe}* or h_{FE}	measured at V_{CE} V_{CB}*	I_C I_E*	at I_{CBO} (μA)	V_{CB} (V)	$V_{CE\ sat}$ (mV)	measured at I_C	I_B	F_T or f_1* (MHz)	Special Parameters	Type No.
SILICON P.N.P. TRANSISTORS																					
BCY10		11	Alloyed general purpose	32	32[18]	12	250	310	150	0·4	>12	2	30	<0·1	6	250	125	17	1·5*		BCY10
BCY11		11	Alloyed general purpose	60	60[18]	12	250	310	150	0·4	>12	2	30	<0·1	6	250	125	17	1·5*		BCY11
BCY12		11	Alloyed general purpose	32	32[18]	12	250	310	150	0·4	40	2	30	<0·1	6	<550	125	17	2·0*		BCY12
BCY30	TO5	2	Alloyed general purpose and switching	64	50	45	50	250	150	0·5	10–35	4·5	20	<0·05	6	<550	20	3	>0·25		BCY30
BCY31	TO5	2	Alloyed general purpose and switching	64	50	45	50	250	150	0·5	15–60	4·5	20	<0·05	6	<550	20	3	>0·25		BCY31
BCY32	TO5	2	Alloyed general purpose and switching	64	50	32	50	250	150	0·5	20–70	4·5	20	<0·05	6	<550	20	3	>0·25		BCY32
BCY33	TO5	2	Alloyed general purpose and switching	32	25	16	50	250	150	0·5	10–35	4·5	20	<0·05	6	<550	20	3	>0·4		BCY33
BCY34	TO5	2	Alloyed general purpose and switching	32	25	16	50	250	150	0·5	15–60	4·5	20	<0·05	6	<550	20	3	>0·6		BCY34
BCY38	TO5	2(b)	Alloyed general purpose and switching	32	24	12	250	410	150	0·3	10–30	1	150	<0·1	6	<1·1V	150	15	>0·45		BCY38
BCY39	TO5	2(b)	Alloyed general purpose and switching	64	60	12	250	410	150	0·3	10–50	1	150	<0·1	6	<1·1V	150	15	>0·45		BCY39
BCY40	TO5	2(b)	Alloyed general purpose and switching	32	24	12	250	410	150	0·3	15–120	1	150	<0·1	6	<1·1V	150	15	>0·85		BCY40
BCY54	TO5	2(b)	Alloyed general purpose and switching	50	50	12	250	410	150	0·3	12–70	1	150	<0·1	6	<1·1V	150	15	>0·45		BCY54
BCZ10		11	Alloyed general purpose	25	25	20	50	250	150	0·5	15–60*	6	1	<0·1	10	<320	7	1	>0·3*		BCZ10
BCZ11		11	Alloyed general purpose	25	25	20	50	250	150	0·5	25–60*	6	1	<0·1	10	<320	7	1	>1·0*		BCZ11
BCZ12		11	Alloyed general purpose	60	60[42]	30	50	250	150	0·5	>10*	6	1	<0·1	10	<320	7	1	1·0*		BCZ12
BCZ13		9	Alloyed subminiature	20	20[42]	20	10	100	150	1·2	15–40*	2*	1*	<0·01	12	<250	10	1·1	>0·5*		BCZ13
BCZ14		9	Alloyed subminiature	20	20[42]	20	10	100	150	1·2	30–90*	2*	1*	<0·01	12	<250	10	1·1	>0·5*		BCZ14
BFX13	TO18	27(a)	Planar Epitaxial general purpose	20	15	5	100	300	175	0·5	25–60	0·35	10	<0·01	15	>250	10	1	>150	t_s < 150 nsecs N.F. = 4 db	BFX13
BFX14	TO18	27(a)	Planar Epitaxial general purpose	20	15	5	100	300	175	0·5	40–200	0·35	10	<0·01	15	>250	10	1	>150	t_s < 150 nsecs N.F. = 4 db	BFX14
BSY40	TO18	27(a)	Planar Epitaxial high speed	25	20	5	100	300	175	0·5	20–60	0·5	10	<0·01	25	<200	10	1	>140	t_{on} < 25 nsecs t_{off} < 100 nsecs	BFY40
BSY41	TO18	27(a)	Planar Epitaxial high speed	25	20	5	100	300	175	0·5	40–120	0·5	10	<0·01	25	<200	10	1	>140	t_{on} < 25 nsecs t_{off} < 100 nsecs	BSY41
OC201		11	Alloyed general purpose	25	20	20	50	250	150	0·5	20–80*	6	1	<0·1	6	<320	7	1	>2·0		OC201
OC202		11	Alloyed general purpose	15	10	10	50	250	150	0·5	45–120*	6	10	<0·1	6	<320	7	1	>1·4		OC202
GERMANIUM N.P.N. TRANSISTORS																					
AC127	TO1	8	Alloyed A.F. power amplifier	32	12	10	500	340	90	0·37	105	0*	50*	<15	10	<1000	500	—	>1·5*	matched with PNP types AC128, AC132	AC127
AC130	TO1	8	Alloyed symmetrical TV hor. sync.	20	10	—	100	145	90	0·45	>25	1	10	<3	20	150	10	1	>2·0		AC130
AC172	TO1	8	Alloyed A.F. low noise pre amp.	32	12	10	10	200	90	0·37	45–110*	5*	0·5*	<10	10	<500	10	—	>1·5	N.F. < 4 dB at 0·5 mA 1 kHz	AC172
AC187	TO1	8	Alloyed A.F. power amplifier	25	15	10	1A/2A	1·1W[46]	90	0·04*	95–500	0*	500*	<25	10	<800	1000	—	>1·0	matched with P.N.P. type AC188	AC187
AD161		33	Alloyed A.F. power amplifier	32	20	10	1A/3A	6W[41]	90	0·0045*	80–300	1	500	<500	32	<800	1000	—	3	matched with P.N.P. type AD162	AD161
ASY28	TO5	2(b)	Alloyed medium speed switch	30	15	20	200	150	85	0·4	>20	1	100	<7	30	<250	50	2	>4	t_{on} 225 nsecs t_{off} 775 nsecs	ASY28
ASY29	TO5	2(b)	Alloyed medium speed switch	25	15	20	200	150	85	0·4	>30	1	100	<7	25	<250	50	1·25	>10	t_{on} 185 nsecs t_{off} 800 nsecs	ASY29
ASY73	TO5	2(b)	Alloyed medium speed switch	30	15	30	400	140	75	0·35	>20	0*	200*	<3	5	<300	200	10	>4		ASY73
ASY74	TO5	2(b)	Alloyed medium speed switch	30	15	30	400	140	75	0·35	>35	0*	200*	<3	5	<300	200	5·7	>6		ASY74
ASY75	TO5	2(b)	Alloyed medium speed switch	30	15	30	400	140	75	0·35	>50	0*	200*	<3	5	<300	200	4	>10		ASY75
OC139 ▼		1	Alloyed symmetrical high speed	20	15	20	250	140	75	0·35	20–84	0*	15	<3	5	<220	50	3·1	>3·5		OC139
OC140 ▼		1	Alloyed symmetrical high speed	20	15	20	400	140	75	0·35	50–150	0*	15	<3	5	<220	50	1·25	>4·5		OC140
OC141 ▼		1	Alloyed symmetrical high speed	20	15	20	400	140	75	0·35	80–200	0*	15	<3	5	<220	50	0·75	>9		OC141
2N1302	TO5	2(b)	Alloyed medium speed computer	25	25	25	200	150	85	0·4	>20	1	10	<6	25	<200	10	0·5	>3	matched with P.N.P. type 2N1303	2N1302
2N1304	TO5	2(b)	Alloyed medium speed computer	25	20	25	200	150	85	0·4	40–100	1	10	<6	25	<200	10	0·25	>5	matched with P.N.P. type 2N1305	2N1304
2N1306	TO5	2(b)	Alloyed medium speed computer	25	15	25	200	150	85	0·4	60–200	1	10	<6	25	<200	10	0·17	>10	matched with P.N.P. type 2N1307	2N1306
2N1308	TO5	2(b)	Alloyed medium speed computer	25	15	25	200	150	85	0·4	80–300	1	10	<6	25	<200	10	0·13	>15	matched with P.N.P. type 2N1309	2N1308

NOTES FOR SILICON AND GERMANIUM TRANSISTORS

1. A derating may apply.
2. $P_c = \frac{T_{jmax} - T_{amb}}{R_{th}}$
3. I_c < 50 mA
4. I_c = O
5. Averaging time 20 msec.
6. 45°C ambient
7. In free air
8. 45°C mounting base temperature
9. Junction to mounting base
10. 75°C mounting base temp.
11. I_e = 0 mA.
12. V_{be} > 0·15V
13. 50 msec. averaging time
14. I_C < 0·5A
15. Quiescent avalanche
16. Case temp. 45°C
17. I_C < 0·15A
18. V_{be} > 0·5V
19. Z_{be} < 10kΩ
20. V_{be} > 0·1V
21. With cooling fin 56200 and heat sink
22. V_{be} > 1V
23. Z_{be} < 100kΩ
24. V_{be} > 0·2V
25. With cooling fin

26. $\frac{R_B}{R_E}$ < 100
27. V_{BE} = 1V
28. T_{mb} = 50°C
29. $\frac{Z_B}{Z_E}$ < 15
30. $\frac{R_B}{R_E}$ = 0·1
31. Junction to case
32. Case temp. = 25°C
33. $\frac{R_B}{R_E}$ < 100 and R_E > 200Ω
34. f_β
35. I_E = 3A
36. case temp. 30°C
37. $|Y_{fe}|$
38. case temp. 60°C
39. mounting base temp. 85°C
40. V_{be} > 0·3V
41. mounting base temp. < 65°C
42. V_{CER}
43. T_j = 170°C
44. I_{CES}
45. case temp. 55°C
46. class B speech and music
47. V_{BE} = 0

"Miniwatt" medium speed range of dtl i.c's

With average propagation delays of 30ns, Fanout of 8 minimum, and typical noise margin of 1·1V.

Function	Type No.	Package	Temp. Range °C	Total Fan In	Remarks
Single DTL Nand Nor Gate With 1 × 8 Input Expandable	FCH101 FCH102 FCH111 FCH112	D1 E2 D1 E2	0 to +75 −55 to +125 0 to +75 −55 to +125	1 × (8) 1 × (8) 1 × (8) 1 × (8)	Without Collector Resistor With Collector Resistor
Dual DTL Nand Nor Gate With 2 × 4 Input Expandable	FCH121 FCH122 FCH131 FCH132	D1 E2 D1 E2	0 to +75 −55 to +125 0 to +75 −55 to +125	2 × (4 + E) 2 × (4 + E) 2 × (4 + E) 2 × (4 + E)	Without Collector Resistor With Collector Resistor
Triple DTL Nand Nor Gate with 2 × 3 Input And 1 × 2 Input Expandable	FCH141 FCH142 FCH161 FCH162	D1 E2 D1 E2	0 to +75 −55 to +125 0 to +75 −55 to +125	2 × (3) + 1 × (2 + E) 2 × (3) + 1 × (2 + E) 2 × (3) + 1 × (2 + E) 2 × (3) + 1 × (2 + E)	Without Collector Resistor With Collector Resistor
Triple DTL Nand Nor Gate With 3 × 3 Input	FCH151 FCH152 FCH171 FCH172	D1 E2 D1 E2	0 to +75 −55 to +125 0 to +75 −55 to +125	3 × (3) 3 × (3) 3 × (3) 3 × (3)	Without Collector Resistor With Collector Resistor
Quadruple DTL Nand Nor Gate With 4 × 2 Input	FCH181 FCH182 FCH191 FCH192	D1 E2 D1 E2	0 to +75 −55 to +125 0 to +75 −55 to +125	4 × (2) 4 × (2) 4 × (2) 4 × (2)	Without Collector Resistor With Collector Resistor
Sextuple DTL Nand Nor Gate/ Inverter With 6 × 1 Input	FCH201 FCH202 FCH211 FCH212	D1 E2 D1 E2	0 to +75 −55 to +125 0 to +75 −55 to +125	6 × (1) 6 × (1) 6 × (1) 6 × (1)	Without Collector Resistor With Collector Resistor
Dual DTL Line Driving Nand Nor Gate With 2 × 3 Input	FCH221 FCH222	D1 E2	0 to +75 −55 to +125	2 × (3) 2 × (3)	
Diode Expander With 1 × 4 and 2 × 3 Input	FCY101 FCY102	D1 E2	0 to +75 −55 to +125	1 × (4) + 2 × (3) 1 × (4) + 2 × (3)	Max. recovery time 11 nsec, 4 nsec respectively

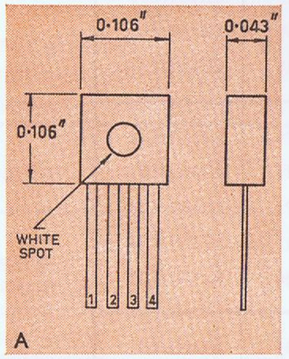
Function	Type No.	Package	Temp. Range °C	Fan Out Min.	
DTL JK Flip-Flop	FCJ101 FCJ102	D1 E2	0 to +75 −55 to +125	7 10	
DTL DC Coupled JK Master Slave Flip-flop	FCJ111 FCJ112	D1 E2	0 to +75 −55 to +125	8 6	
Monostable Multivibrator	FCK102	E2	−55 to +125	10	
Level Detector	FCL102	D1 or E2	−55 to +125	—	Max. freq. 1·0 MHz

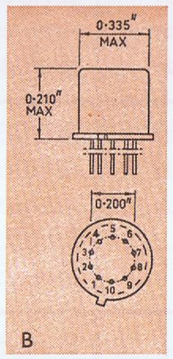
"Miniwatt" linear integrated circuits

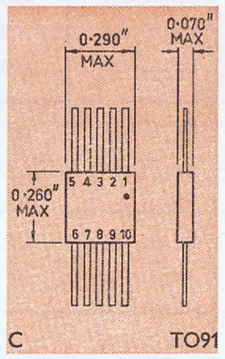
Function	Type No.	Package	Temp. Range (°C)	Operating Supply Voltage (V)	Diff. Voltage Gain (typical)	Bandwidth (—3dB) (kHz)	Input Impedance (typical) (kΩ)	C.M.R.R. at 1kHz (dB)	Voltage Drift (μV/°C)	Voltage Offset (typical) (mV)
Operational Amplifiers	TAA182 TAA191	TO91 TO86	−55 to +125 0 to +75	+12, −12 +15, −15	2000 45000	500 100	300 750	83 83	5·0 25·0	10·0 5·0
Differential Amplifiers	TAA201 TAA202	TO78 TO84	−55 to +75 −55 to +125	+12, −6 +12, −6	60 50	300 150	350 1000	75 80	10·0 10·0	7·0 7·0

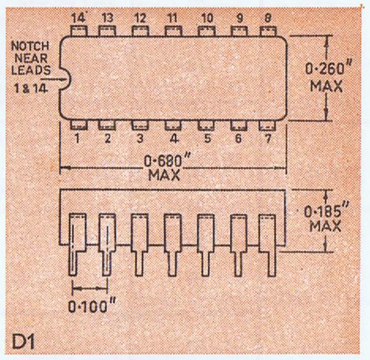
Function	Type No.	Package	Temp. Range (°C)	Operating Supply Voltage (V)	Transducer Gain at 1kHz (dB)	Bandwidth (−3dB) (kHz)	Output Current (max.) (mA)	Output Voltage Swing (V_{p-p})	Noise Figure (typical) (dB)
Hearing Aid Amplifier	OM200	A	+80	1·3	78	20	5·0	—	<6
General Purpose Amplifiers	TAA103 TAA263 TAA293	A TO72 D1	−20 to +100 −20 to +100 −20 to +100	6·0 6·0 6·0	75 77 80	D.C. to 600 D.C. to 600 D.C. to 600	22 25 30	— — —	<12 5 8
Wide Band Video Amplifiers	TAA231 TAA232	TO91 TO91	0 to +75 −55 to +125	12·0 12·0	20 20	45 MHz 35 MHz	— —	3·0 3·0	4 4
Audio Amplifier for tape recorder	TAA310	B	−20 to +75	7·0	100	15 min.	20	4·2	<4

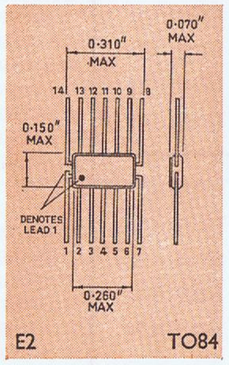
Function	Type No.	Package	Junction Temp. (°C)	P_{tot} at 45°C amb (mW)	$-V_{DS}$ (max.) (V)	$-I_D$ (mA)	g_{fs} (mV)	Noise Voltage (μV)
M.O.S. Preamplifier	TAA320	TO18	125	150	20	25	70	22

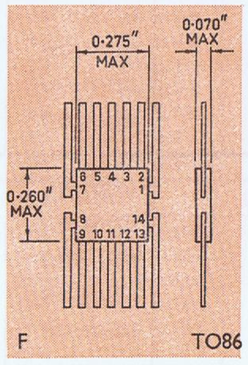


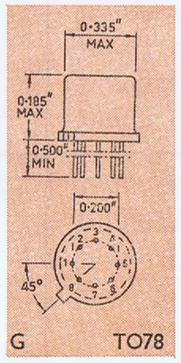


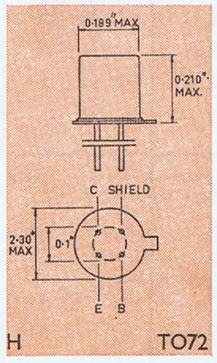


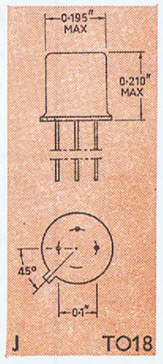












"Miniwatt" zener diode selection guide

Dissipation at Temp.	VOLTAGE TOLERANCE 5%				
	340 mW 45°C Ta	1·3W 45°C Ta	8·0W 70°C Tc	15W 100°C Tc	50W 100°C Tc
Zener Voltage					
3·3	BZY88/C3V3				
3·6	BZY88/C3V6				
3·9	BZY88/C3V9				
4·3	BZY88/C4V3				
4·7	BZY88/C4V7	BZY96/C4V7			
5·1	BZY88/C5V1	BZY96/C5V1			
5·6	BZY88/C5V6	BZY96/C5V6	BZZ14		
6·2	BZY88/C6V2	BZY96/C6V2	BZZ15	BZY93/C6V2	
6·8	BZY88/C6V8	BZY96/C6V8	BZZ16	BZY93/C6V8	
7·5	BZY88/C7V5	BZY96/C7V5	BZZ17	BZY93/C7V5	
8·2	BZY88/C8V2	BZY96/C8V2	BZZ18	BZY93/C8V2	
9·1	BZY88/C9V1	BZY96/C9V1	BZZ19	BZY93/C9V1	
10	BZY94/C10	BZY95/C10	BZZ20	BZY93/C10	BZY91/C10
11	BZY94/C11	BZY95/C11	BZZ21	BZY93/C11	BZY91/C11
12	BZY94/C12	BZY95/C12	BZZ22	BZY93/C12	BZY91/C12
13	BZY94/C13	BZY95/C13	BZZ23	BZY93/C13	BZY91/C13
15	BZY94/C15	BZY95/C15	BZZ24	BZY93/C15	BZY91/C15
16	BZY94/C16	BZY95/C16	BZZ25	BZY93/C16	BZY91/C16
18	BZY94/C18	BZY95/C18	BZZ26	BZY93/C18	BZY91/C18
20	BZY94/C20	BZY95/C20	BZZ27	BZY93/C20	BZY91/C20
22	BZY94/C22	BZY95/C22	BZZ28	BZY93/C22	BZY91/C22
24	BZY94/C24	BZY95/C24	BZZ29	BZY93/C24	BZY91/C24
27	BZY94/C27	BZY95/C27		BZY93/C27	BZY91/C27
30	BZY94/C30	BZY95/C30		BZY93/C30	BZY91/C30
33	BZY94/C33	BZY95/C33		BZY93/C33	BZY91/C33
36	BZY94/C36	BZY95/C36		BZY93/C36	BZY91/C36
39	BZY94/C39	BZY95/C39		BZY93/C39	BZY91/C39
43	BZY94/C43	BZY95/C43		BZY93/C43	BZY91/C43
47	BZY94/C47	BZY95/C47		BZY93/C47	BZY91/C47
51	BZY94/C51	BZY95/C51		BZY93/C51	BZY91/C51
56	BZY94/C56	BZY95/C56		BZY93/C56	BZY91/C56
62	BZY94/C62	BZY95/C62		BZY93/C62	BZY91/C62
68	BZY94/C68	BZY95/C68		BZY93/C68	BZY91/C68
75	BZY94/C75	BZY95/C75		BZY93/C75	BZY91/C75

"Miniwatt" zener diodes

Type No.	Voltage Tol.	CHARACTERISTICS AT 25°C				Outline	MAXIMUM RATINGS
		Zener Voltage — V_D Nominal (V)	Zener Voltage — V_D Range (V)	Temp. Coefficient $\frac{d(-V_D)}{dT}$ (mV/°C)	Dynamic Resistance r_D (Ω)		
		At $-I_D$ = 5mA					
BZ100	10%	5·0	4·5 to 5·5	−1·7		JEDEC DO7 OUTLINE No. 14	Max. dissipation at 45°C Ambient = 290mW.
		At $-I_D$ = 1mA					
BZY56(OAZ240) ▼	5%	4·7	4·4 to 5·0	−2·0	370	JEDEC DO7 OUTLINE No. 14	Max. Zener current = 25mA. Max. junction temp. = 150°C. Max. $R_{th\ j-a}$ free air = 0·45°C/mW. Max. dissipation at 45°C Ambient = 230 mW.
BZY57(OAZ241) ▼		5·1	4·8 to 5·4	−1·8	360		
BZY58(OAZ242) ▼		5·6	5·3 to 6·0	−1·0	280		
BZY59(OAZ243) ▼		6·2	5·8 to 6·6	+0·5	200		
BZY60(OAZ244) ▼		6·8	6·4 to 7·2	+2·7	5·0		
BZY61(OAZ245) ▼		7·5	7·1 to 7·9	+4·0	8·0		
BZY62(OAZ246) ▼		8·2	7·7 to 8·7	+5·0	6·2		
BZY63(OAZ247) ▼		9·1	8·6 to 9·6	+6·2	8·0		
		At $-I_D$ = 1mA					
BZY64(OAZ268) ▼	15%	4·3	3·3 to 5·0	−2·2	375	JEDEC DO7 OUTLINE No. 14	Max. Zener current = 25 mA. Max. junction temp. = 150°C. Max. $R_{th\ j-a}$ free air = 0·45°C/mW. Max. dissipation at 45°C Ambient = 230mW.
BZY65(OAZ269) ▼		5·1	4·4 to 6·0	−1·8	360		
BZY66(OAZ270) ▼		6·2	5·3 to 7·2	+0·5	200		
BZY67(OAZ271) ▼		7·5	6·4 to 8·7	+4·0	8·0		
BZY68(OAZ272) ▼		9·1	7·7 to 10·6	+6·2	8·0		
BZY69(OAZ273) ▼		12·0	9·4 to 15·0	+9·2	21		
		At $-I_D$ = 20mA					
BZY74(OAZ290)	15%	6·2	5·3 to 7·2	<+4·0	<13	JEDEC DO4 OUTLINE No. 20	Max. Zener current = 0·5A. Max. junction temp. = 150°C. Max. $R_{th\ j-c}$ = 10°C/W. Max. dissipation at 70°C case temp. = 8·0 W.
BZY75(OAZ291)		7·5	6·4 to 8·7	<+6·0	<10		
BZY76(OAZ292)		9·1	7·7 to 10·6	<+8·0	<11		
		At $-I_D$ = 11·5mA					
BZY78		5·3	5·1 to 5·6	<−4·0	<20	JEDEC DO7 OUTLINE No. 14	Max. dissipation at 45°C Ambient = 230mW.
		At $-I_D$ = 5mA					
BZY88/C3V3	5%	3·3	3·1 to 3·5	−2·3	85	JEDEC DO7 OUTLINE No. 14	Max. Zener current limited by max. dissipation. Max. junction temp. = 150°C. Max. $R_{th\ j-a}$ free air = 0·31°C/mW. Max. dissipation at 45°C Ambient = 340mW.
BZY88/C3V6		3·6	3·4 to 3·8	−2·0	76		
BZY88/C3V9		3·9	3·7 to 4·1	−2·05	78		
BZY88/C4V3		4·3	4·0 to 4·5	−1·8	70		
BZY88/C4V7		4·7	4·4 to 5·0	−1·55	<85		
BZY88/C5V1		5·1	4·8 to 5·4	−1·2	<75		
BZY88/C5V6		5·6	5·3 to 6·0	−0·2	<55		
BZY88/C6V2		6·2	5·8 to 6·6	+2·0	<30		
BZY88/C6V8		6·8	6·4 to 7·2	+3·2	<15		
BZY88/C7V5		7·5	7·1 to 7·9	+4·2	<15		
BZY88/C8V2		8·2	7·7 to 8·7	+5·0	<20		
BZY88/C9V1		9·1	8·6 to 9·6	+6·0	<25		
		At $-I_D$ = 2A		(%/°C)			
BZY91/C10	5%	10·0	9·4 to 10·6	+0·09	<0·4	JEDEC DO5 OUTLINE No. 42	Max. average Forward current = 10A. Max. peak Zener current = 100A. Max. junction temp. = 175°C. Max. $R_{th\ j-c}$ = 1·47°C/W. Max. dissipation at 100°C case temp. = 50W. Also available with reverse polarity.
BZY91/C11		11·0	10·4 to 11·6	+0·09	<0·4		
BZY91/C12		12·0	11·4 to 12·6	+0·09	<0·5		
BZY91/C13		13·0	12·4 to 14·1	+0·09	<0·5		
BZY91/C15		15·0	13·9 to 15·6	+0·09	<0·6		
BZY91/C16		16·0	15·4 to 17·1	+0·09	<0·6		
BZY91/C18		18·0	16·9 to 19·1	+0·09	<0·7		

▼ Maintenance type only

Type No.	Voltage Tol.	CHARACTERISTICS AT 25°C: Zener Voltage $-V_D$ Nominal (V)	Zener Voltage $-V_D$ Range (V)	Temp. Coefficient $\frac{d(-V_D)}{dT}$ (mV/°C)	Dynamic Resistance r_D Maximum (Ω)	Outline	MAXIMUM RATINGS
		At $-I_D$ = 1A		(%/°C)			
BZY91/C20	5%	20·0	18·9 to 21·2	+0·075	0·8	JEDEC DO5 OUTLINE No. 42	Max. average Forward current = 10A. Max. peak Zener current = 100A. Max. junction temp. = 175°C. Max. $R_{th\ j-c}$ = 1·47°C/W. Max. dissipation at 100°C case temp. = 50W. Also available with reverse polarity.
BZY91/C22		22·0	20·8 to 23·3	+0·078	0·8		
BZY91/C24		24·0	22·7 to 25·9	+0·080	0·9		
BZY91/C27		27·0	25·1 to 28·9	+0·083	1·0		
BZY91/C30		30·0	28·0 to 32·0	+0·086	1·1		
BZY91/C33		33·0	31·0 to 35·0	+0·088	1·2		
BZY91/C36		36·0	34·0 to 38·0	+0·090	1·3		
		At $-I_D$ = 0·5A		(%/°C)			
BZY91/C39	5%	39·0	37·0 to 41·0	+0·090	1·4	JEDEC DO5 OUTLINE No. 42	Max. average Forward current = 10A. Max. peak Zener current = 100A. Max. junction temp. = 175°C. Max. $R_{th\ j-c}$ = 1·47°C/W. Max dissipation at 100°C case temp. = 50W. Also available with reverse polarity.
BZY91/C43		43·0	40·0 to 45·0	+0·092	1·5		
BZY91/C47		47·0	44·0 to 50·0	+0·093	1·7		
BZY91/C51		51·0	48·0 to 54·0	+0·093	1·8		
BZY91/C56		56·0	53·0 to 60·0	+0·094	2·0		
BZY91/C62		62·0	58·0 to 66·0	+0·094	2·2		
BZY91/C68		68·0	64·0 to 72·0	+0·095	2·4		
BZY91/C75		75·0	71·0 to 79·0	+0·095	2·6		
		At $-I_D$ = 2A					
BZY93/C6V2	5%	6·2	5·8 to 6·6			JEDEC DO4 OUTLINE No. 20	Max. Zener current limited by max. dissipation. Max. junction temp. = 175°C. Max. $R_{th\ j-c}$ = 5·0°C/W. Max. dissipation at 100°C case temp. = 15W. Also available with reverse polarity.
BZY93/C6V8		6·8	6·4 to 7·2				
BZY93/C7V5		7·5	7·1 to 7·9				
BZY93/C8V2		8·2	7·7 to 8·7				
		At $-I_D$ = 1A					
BZY93/C9V1	5%	9·1	8·6 to 9·6		1·5	JEDEC DO4 OUTLINE No. 20	Max. Zener current limited by max. dissipation. Max. junction temp. = 175°C. Max. $R_{th\ j-c}$ = 5·0°C/W. Max. dissipation at 100°C. case temp. = 15W. Also available with reverse polarity.
BZY93/C10		10·0	9·4 to 10·6	+10	1·5		
BZY93/C11		11·0	10·4 to 11·6		2·0		
BZY93/C12		12·0	11·4 to 12·6		2·0		
BZY93/C13		13·0	12·4 to 14·1		2·0		
BZY93/C15		15·0	13·9 to 15·6		2·5		
		At $-I_D$ = 0·5A					
BZY93/C16	5%	16·0	15·4 to 17·1		2·5	JEDEC DO4 OUTLINE No. 20	Max. Zener current limited by max. dissipation. Max. junction temp. = 175°C. Max. $R_{th\ j-c}$ = 5·0°C/W. Max. dissipation at 100°C case temp. = 15W. Also available with reverse polarity.
BZY93/C18		18·0	16·9 to 19·1		3·0		
BZY93/C20		20·0	18·9 to 21·2		3·0		
BZY93/C22		22·0	20·8 to 23·2		3·5		
BZY93/C24		24·0	22·7 to 25·9		4·0		
BZY93/C27		27·0	25·1 to 28·9		4·0		
BZY93/C30		30·0	28·0 to 32·0	+30	4·5		
BZY93/C33		33·0	31·0 to 35·0		5·0		

Type No.	Voltage Tol.	CHARACTERISTICS AT 25°C: Zener Voltage $-V_D$ Nominal (V)	Zener Voltage $-V_D$ Range (V)	Temp. Coefficient $\frac{d(-V_D)}{dT}$ (mV/°C)	Dynamic Resistance r_D Maximum (Ω)	Outline	MAXIMUM RATINGS
		At $-I_D$ = 0·2A					
BZY93/C36	5%	36·0	34·0 to 38·0		5·5	JEDEC DO4 OUTLINE No. 20	Max. Zener current limited by max. dissipation. Max. junction temp. = 175°C. Max. $R_{th\ j-c}$ = 5·0°C/W. Max. dissipation at 100°C case temp. = 15W. Also available with reverse polarity.
BZY93/C39		39·0	37·0 to 41·0		6·0		
BZY93/C43		43·0	40·0 to 45·0		7·0		
BZY93/C47		47·0	44·0 to 50·0		7·5		
BZY93/C51		51·0	48·0 to 54·0		8·0		
BZY93/C56		56·0	53·0 to 60·0		8·5		
BZY93/C62		62·0	58·0 to 66·0		9·5		
BZY93/C68		68·0	64·0 to 72·0		10·0		
BZY93/C75		75·0	71·0 to 79·0	+70	10·5		
		At $-I_D$ = 5mA.					
BZY94/C10	5%	10·0	9·4 to 10·6	+10		JEDEC DO7 OUTLINE No. 14	Max. Zener current limited by max. dissipation. Max. junction temp. = 150°C. Max. $R_{th\ j-a}$ free air = 0·31°C/mW. Max. dissipation at 45°C Ambient temp. = 340 mW.
BZY94/C11		11·0	10·4 to 11·6	+12	15		
BZY94/C12		12·0	11·4 to 12·6		15		
BZY94/C13		13·0	12·4 to 14·1				
BZY94/C15		15·0	13·9 to 15·6				
BZY94/C16		16·0	15·4 to 17·1				
BZY94/C18		18·0	16·9 to 19·1				
BZY94/C20		20·0	18·9 to 21·2				
BZY94/C22		22·0	20·8 to 23·2				
BZY94/C24		24·0	22·7 to 25·9				
BZY94/C27		27·0	25·1 to 28·9				
BZY94/C30		30·0	28·0 to 32·0				
BZY94/C33		33·0	31·0 to 35·0	+30	60		
BZY94/C36		36·0	34·0 to 38·0				
		At $-I_D$ = 2mA.					
BZY94/C39	5%	39·0	37·0 to 41·0			JEDEC DO7 OUTLINE No. 14	Max. Zener current limited by max. dissipation. Max. junction temp. = 150°C. Max. $R_{th\ j-a}$ free air = 0·31°C/mW. Max. dissipation at 45°C Ambient temp. = 340mW.
BZY94/C43		43·0	40·0 to 45·0				
BZY94/C47		47·0	44·0 to 50·0				
BZY94/C51		51·0	48·0 to 54·0				
BZY94/C56		56·0	53·0 to 60·0				
BZY94/C62		62·0	58·0 to 66·0				
BZY94/C68		68·0	64·0 to 72·0				
BZY94/C75		75·0	71·0 to 79·0	+70	250		

Type No.	Voltage Tol.	CHARACTERISTICS AT 25°C: Zener Voltage $-V_D$ Nominal (V)	Zener Voltage $-V_D$ Range (V)	Temp. Coefficient $\frac{d(-V_D)}{dT}$ (mV/°C)	Dynamic Resistance r_D Maximum (Ω)	Outline	MAXIMUM RATINGS
		At $-I_D$ = 50mA.					
BZY95/C10	5%	10·0	9·4 to 10·6	10·0	4·0	JEDEC DO1 OUTLINE No. 26	Max. Zener current limited by max. dissipation. Max. junction temp. = 175°C. Max. $R_{th\ j-a}$ free air = 100°C/W. Max. dissipation at 45°C Ambient = 1·3W.
BZY95/C11		11·0	10·4 to 11·6				
BZY95/C12		12·0	11·4 to 12·6				
BZY95/C13		13·0	12·4 to 14·1		6·0		
BZY95/C15		15·0	13·9 to 15·6				
		At $-I_D$ = 20mA					
BZY95/C16	5%	16·0	15·4 to 17·1			JEDEC DO1 OUTLINE No. 26	Max Zener current limited by max. dissipation. Max. junction temp. = 175°C. Max. $R_{th\ j-a}$ free air = 100°C/W. Max. dissipation at 45°C Ambient = 1·3W.
BZY95/C18		18·0	16·9 to 19·1		11·0		
BZY95/C20		20·0	18·9 to 21·2				
BZY95/C22		22·0	20·8 to 23·2				
BZY95/C24		24·0	22·7 to 25·9		14·0		
BZY95/C27		27·0	25·1 to 28·9				
BZY95/C30		30·0	28·0 to 32·0				
BZY95/C33		33·0	31·0 to 35·0	30·0	25·0		
BZY95/C36		36·0	34·0 to 38·0				
		At $-I_D$ = 10mA					
BZY95/C39	5%	39·0	37·0 to 41·0			JEDEC DO1 OUTLINE No. 26	Max. Zener current limited by max. dissipation. Max. junction temp. = 175°C. Max. $R_{th\ j-a}$ free air = 100°C/W. Max. dissipation at 45°C Ambient = 1·3W.
BZY95/C43		43·0	40·0 to 45·0		40·0		
BZY95/C47		47·0	44·0 to 50·0				
BZY95/C51		51·0	48·0 to 54·0				
BZY95/C56		56·0	53·0 to 60·0		63·0		
BZY95/C62		62·0	58·0 to 66·0				
BZY95/C68		68·0	64·0 to 72·0				
BZY95/C75		75·0	71·0 to 79·0	70·0	100·0		
		At $-I_D$ = 100mA					
BZY96/C4V7	5%	4·7	4·4 to 5·0		10·0	JEDEC DO1 OUTLINE No. 26	Max. Zener current limited by max. dissipation. Max. junction temp. = 175°C. Max. $R_{th\ j-a}$ free air = 100°C/W. Max. dissipation at 45°C Ambient = 1·3W.
BZY96/C5V1		5·1	4·8 to 5·4				
BZY96/C5V6		5·6	5·3 to 6·0				
BZY96/C6V2		6·2	5·8 to 6·6				
BZY96/C6V8		6·8	6·4 to 7·2		3·0		
		At $-I_D$ = 50mA					
BZY96/C7V5	5%	7·5	7·1 to 7·9			JEDEC DO1 OUTLINE No. 26	Max. Zener current limited by max. dissipation. Max. junction temp. = 175°C Max. $R_{th\ j-a}$ free air = 100°C/W. Max. dissipation at 45°C Ambient = 1·3W.
BZY96/C8V2		8·2	7·7 to 8·7				
BZY96/C9V1		9·1	8·6 to 9·6				

Type No.	Tol.	CHARACTERISTICS AT 25°C: Zener Voltage $-V_D$ Nominal (V)	Zener Voltage $-V_D$ Range (V)	Temp. Coefficient $\frac{d(-V_D)}{dT}$ (mV/°C)	Dynamic Resistance (Ω)	Outline	MAXIMUM RATINGS
		At $-I_D$ = 1mA					
BZZ10 ▼	10%	6·0	5·3 to 6·6	−1·0	280	JEDEC DO7 OUTLINE No. 14	Max. Zener current = 25 mA. Max. junction temp. = 150°C. Max. $R_{th\ j-a}$ free air = 0·45° C/mW Max. dissipation at 45°C Ambient = 230 mW.
BZZ11 ▼		6·5	5·8 to 7·2	+1·5	140		
BZZ12 ▼		7·2	6·4 to 7·9	+3·3	17		
BZZ13 ▼		8·0	7·1 to 8·7	+4·6	6·0		
		At $-I_D$ = 20mA					
BZZ14(OAZ222)	5%	5·6	5·3 to 6·0	<+2·5	<13	JEDEC DO4 OUTLINE No. 20	Max. Zener current = 0·5 A. Max. junction temp. = 150°C Max. $R_{th\ j-c}$ = 10°C/W Max. dissipation at 70°C case temp. = 8·0 W
BZZ15(OAZ223)		6·2	5·8 to 6·6	<+3·5	< 6		
BZZ16(OAZ224)		6·8	6·4 to 7·2	<+4·0	< 5		
BZZ17(OAZ225)		7·5	7·1 to 7·9	<+4·5	< 7·5		
BZZ18(OAZ226)		8·2	7·7 to 8·7	<+6·0	<10		
BZZ19(OAZ227)		9·1	8·6 to 9·6	<+6·5	<10		
BZZ20(OAZ228)		10·0	9·5 to 10·6	<+8·0	<11		
		At $-I_D$ = 20mA					
BZZ21(OAZ229)	5%	11·0	10·4 to 11·6	< 7·5	4·4	JEDEC DO4 OUTLINE No. 20	Max. Zener current limited by max. dissipation. Max. junction temp. = 150°C Max. $R_{th\ j-c}$ = 10°C/W Max. dissipation at 70°C case temp. = 8·0W
BZZ22(OAZ230)		12·0	11·4 to 12·6	< 8·8	5·25		
BZZ23(OAZ231)		13·0	12·4 to 14·1	<10·0	6·3		
BZZ24(OAZ232)		15·0	13·9 to 15·6	<12·6	8·9		
BZZ25(OAZ233)		16·0	15·4 to 17·1	<13·8	10·5		
BZZ26(OAZ234)		18·0	16·9 to 19·1	<16·4	14·5		
BZZ27(OAZ235)		20·0	18·9 to 21·2	<19·0	19·5		
BZZ28(OAZ236)		22·0	20·8 to 23·3	<21·6	26·0		
BZZ29(OAZ237)		24·0	22·7 to 25·9	<24·2	33·5		
		At $-I_D$ = 1mA					
OAZ200 ▼	5%	4·7	4·4 to 5·0	−2·0	350	OUTLINE No. 15	Max. Zener current limited by max. dissipation. Max. junction temp. = 150°C Max. $R_{th\ j-a}$ free air = 0·4°C/mW Max. dissipation at 45°C Ambient = 260 mW
OAZ201 ▼		5·1	4·8 to 5·4	−1·8	330		
OAZ202 ▼		5·6	5·3 to 6·0	−1·0	275		
OAZ203 ▼		6·2	5·8 to 6·6	+0·5	215		
OAZ204 ▼		6·8	6·4 to 7·2	+2·5	40		
OAZ205 ▼		7·5	7·1 to 7·9	+4·0	8·6		
OAZ206 ▼		8·2	7·7 to 8·7	+5·0	7·6		
OAZ207 ▼		9·1	8·6 to 9·6	+6·2	9·6		
		At $-I_D$ = 1mA					
OAZ208 ▼	15%	4·3	3·3 to 5·0	−2·0	350	OUTLINE No. 15	Max. Zener current limited by max. dissipation. Max. junction temp. = 150°C Max. $R_{th\ j-a}$ free air = 0·4°C/mW Max. dissipation at 45°C dissipation = 260 mW
OAZ209 ▼		5·1	4·4 to 6·0	−1·8	330		
OAZ210 ▼		6·2	5·3 to 7·2	+0·5	215		
OAZ211 ▼		7·5	6·4 to 8·7	+4·0	8·6		
OAZ212 ▼		9·1	7·7 to 10·6	+6·2	9·6		
OAZ213 ▼		12·0	9·4 to 15·0	+9·2	35		

▼ Maintanance type only

"Miniwatt" silicon power diode selection guide

MAXIMUM AVERAGE CURRENT

Max. Reverse Crest Voltage	1A	6A	10A	14A	20A	25A	40A	60A	100A	150A	250A
50V						BYX21/100 BYX21/100R					
85V						BYX20/200 BYX20/200R					
100V					BYX21/200 BYX28/200 BYX21/200R BYX28/200R						
200V	BYX22/200	BYZ13 BYZ19	BYY22 BYY23	BYX30/200 BYX30/200R	BYX13/400 BYX13/400R	BYX28/400 BYX28/400R	BYZ14 BYZ15	BYX31/200	BYX32/200 BYX32/200R	BYX14/400 BYX14/400R	BYX33/200 BYX33/200R
300V			BYY67 BYY68	BYX30/300 BYX30/300R	BYX13/600 BYX13/600R		BYY73 BYY74	BYX31/300		BYX14/600 BYX14/600R	
400V	BYX22/400	BYZ12 BYZ18	BYY24 BYY25	BYX30/400 BYX30/400R	BYX13/800 BYX13/800R		BYY15 BYY16	BYX31/400	BYX32/400 BYX32/400R	BYX14/800 BYX14/800R	BYX33/400 BYX33/400R
500V				BYX30/500 BYX30/500R	BYX13/1000 BYX13/1000R		BYY75 BYY76	BYX31/500		BYX14/1000 BYX14/1000R	
600V	BYX22/600	BYZ11 BYZ17			BYX13/1200 BYX25/600 BYX13/1200R BYX25/600R		BYY77 BYY78		BYX32/600 BYX32/600R	BYX14/1200 BYX14/1200R	BYX33/600 BYX33/600R
800V	BYX22/800	BYZ10 BYZ16			BYX13/1600 BYX25/800 BYX13/1600R BYX25/800R		BYX15 BYX16		BYX32/800 BYX32/800R	BYX14/1600 BYX14/1600R	BYX33/800 BYX33/800R
1000V					BYX25/1000 BYX25/1000R				BYX32/1000 BYX32/1000R		BYX33/1000 BYX33/1000R
1200V									BYX32/1200 BYX32/1600 BYX32/1200R BYX32/1600R		BYX33/1200 BYX33/1600 BYX33/1200R BYX33/1600R

Types in Black on colour background are Controlled Avalanche Diodes.

"Miniwatt" silicon power diodes

Type No.	Reverse Polarity Type No.	MAXIMUM RATINGS $-V_{CW}$ (V)	$-V_{RP}$ (V)	I_D (A)	I_{DM} (A)	I_{DS} (A)	$R_{th\,j-a}$* $R_{th\,j-c}$ (°C/W)	T_j max (°C)	CHARACTERISTICS V_D at I_D (max) (V)	I_D (A)	$-I_D$ at $-V_D$ max (mA)	$-V_D$ (V)	Outline No.
BY100		800	1250[9]	1·0[1]	10·0	40[9]	60*	150	1·5[10]	5	0·01[10]	1250	26
BY114		450	650[9]	1·0[1]	10·0	40[9]	60*	150	1·5[10]	5	0·01[10]	650	26
BY118		300	300	5·0[1]	14·0	20[23]	5·0	150	1·2[10]	14·0	0·1[10]	300	33
BYX10		800	1600[9]	0·2[1][18]	1·5	15[9]	200*	125	1·6[10]	1·5	0·001[10]	800	24
BYX11 ●		2000	2500[17]	0·01[1]	0·1	1·0[9]	—	125	1·0[10]	0·1	200nA[10]	2000	24
BYX12 ●		2000	2500[17]	0·01[1]	0·1	1·0[9]	—	125	1·0[10]	0·1	50nA[10]	2000	
BYX13/400	BYX13/400R	200	400	20[1][2]	100	400[3]	1·1	150	2·0[8]	100	2·0[7]	200	21
BYX13/600	BYX13/600R	300	600	20[1][2]	100	400[3]	1·1	150	2·0[8]	100	2·0[7]	300	
BYX13/800	BYX13/800R	400	800	20[1][2]	100	400[3]	1·1	150	2·0[8]	100	2·0[7]	400	
BYX13/1000 (BYY69)	BYX13/1000R (BYY70)	500	1000	20[1][2]	100	400[3]	1·1	150	2·0[8]	100	1·7[7]	500	
BYX13/1200 (BYY71)	BYX13/1200R (BYY72)	600	1200	20[1][2]	100	400[3]	1·1	150	2·0[8]	100	1·4[7]	600	
BYX13/1600	BYX13/1600R	800	1600	20[1][2]	100	400[3]	1·1	150	2·0[8]	100	1·2[7]	800	
BYX14/400	BYX14/400R	200	400	150[1][4]	750	3000[5]	0·28	190	1·8[6]	750	15[6]	200	23
BYX14/600	BYX14/600R	300	600	150[1][4]	750	3000[5]	0·28	190	1·8[6]	750	15[6]	300	
BYX14/800 (BYY93)	BYX14/800R (BYY94)	400	800	150[1][4]	750	3000[5]	0·28	190	1·8[6]	750	15[6]	400	
BYX14/1000	BYX14/1000R	500	1000	150[1][4]	750	3000[5]	0·28	190	1·8[6]	750	15[6]	500	
BYX14/1200 (BYY95)	BYX14/1200R (BYY96)	600	1200	150[1][4]	750	3000[5]	0·28	190	1·8[6]	750	15[6]	600	
BYX14/1600	BYX14/1600R	800	1600	150[1][4]	750	3000[5]	0·28	190	1·8[6]	750	15[6]	800	
BYX15	BYX16	800	1600	40[1]	200	800[9][11]	1·0	150	1·8[10]	200	2·0[11]	800	22
BYX20/200	BYX20/200R	85	200	25[1]	80	300[9]	1·0	175	1·2[10]	25	1·1[11]	75	25
BYX21/100	BYX21/100R	50	100[9]	25[1]	80	250[9]	1·5	175	1·6[10]	80	6·0[11]	45	28
BYX21/200	BYX21/200R	100	200[9]	25[1]	80	250[9]	1·5	175	1·6[10]	80	3·0[11]	90	
BYX22/200 ▼		200	200[17]	1·0	15[21]	55[21]	70*		2·4[21]	15	0·12[22]	200	26
BYX22/400 ▼		400	400[17]	1·0	15[21]	55[21]	70*	Tamb	2·4[21]	15	0·12[22]	400	
BYX22/600 ▼		600	600[17]	1·0	15[21]	55[21]	70*	150	2·4[21]	15	0·12[22]	600	
BYX22/800 ▼		800	800[17]	1·0	15[21]	55[21]	70*		2·4[21]	15	0·12[22]	800	
BYX23/400		400	500[14]	100[1]	500	1600[13]	0·4	190	1·7[15]	500	20[12]	400	22
BYX23/600		600	750[14]	100[1]	500	1600[13]	0·4	190	1·7[15]	500	17[12]	600	
BYX23/800		800	1000[14]	100[1]	500	1600[13]	0·4	190	1·7[15]	500	13[12]	800	
BYX23/1000		1000	1250[14]	100[1]	500	1600[13]	0·4	190	1·7[15]	500	10[12]	1000	
BYX25/600	BYX25/600R	600	750[14]	20	440	360	1·3	175	1·8[10]	50	1·0[11]	600	20
BYX25/800	BYX25/800R	800	1000[14]	20	440	360	1·3	175	1·8[10]	50	0·8[11]	800	
BYX25/1000	BYX25/1000R	1000	1250[14]	20	440	360	1·3	175	1·8[10]	50	0·6[11]	1000	

Types in Black on colour background are Controlled Avalanche Diodes.

● Obsolescent type ▼ Maintenance type.

"Miniwatt" silicon power diodes

Type No.	Reverse Polarity Type No.	MAXIMUM RATINGS $-V_{CW}$ (V)	$-V_{RP}$ (V)	I_D (A)	I_{DM} (A)	I_{DS} (A)	$R_{th\,j-a}$* $R_{th\,j-c}$ (°C/W)	T_j max (°C)	CHARACTERISTICS V_D at I_D (max) (V)	I_D (A)	$-I_D$ at $-V_D$ max (mA)	$-V_D$ (V)	Out-line No.
BYX27/400		400	500[14]	250[1]	1250	4000[13]	0·2	190	1·8[15]	1250	50[12]	400	23
BYX27/600		600	750[14]	250[1]	1250	4000[13]	0·2	190	1·8[15]	1250	42[12]	600	
BYX27/800		800	1000[14]	250[1]	1250	4000[13]	0·2	190	1·8[15]	1250	32[12]	800	
BYX27/1000		1000	1250[14]	250[1]	1250	4000[13]	0·2	190	1·8[15]	1250	25[12]	1000	
BYX28/200	BYX28/200R	100	200[9]	25[1]	80	300[9]	1·5	175	1·45	80[10]	3·0[11]	90	31
BYX28/400	BYX28/400R	200	400[9]	25[1]	80	300[9]	1·5	175	1·45	80[10]	1·5[11]	180	
BYX29/75000		75kV	100kV	0·05[1]	0·25	5·0[9]	2·5[25]	125	88[10]	0·05	0·033	75kV	40
BYX29/100000		100kV	135kV	0·05[1]	0·25	5·0[9]	2·0[25]	125	116[10]	0·05	0·033	100kV	
BYX29/125000		125kV	165kV	0·05[1]	0·25	5·0[9]	1·6[25]	125	145[10]	0·05	0·033	125kV	
BYX29/150000		150kV	200kV	0·05[1]	0·25	5·0[9]	1·6[25]	125	175[10]	0·05	0·033	150kV	
BYX30/200	BYX30/200R	200	250[14]	14[1]	310	250[5]	1·3	150	3·2[8]	50	4·0[7]	200	20
BYX30/300	BYX30/300R	300	375[14]	14[1]	310	250[5]	1·3	150	3·2[8]	50	4·0[7]	300	
BYX30/400	BYX30/400R	400	500[14]	14[1]	310	250[5]	1·3	150	3·2[8]	50	4·0[7]	400	
BYX30/500	BYX30/500R	500	625[14]	14[1]	310	250[5]	1·3	150	3·2[8]	50	3·5[7]	500	
BYX32/200	BYX32/200R	200	200	100[1]	500	1600[13]	0·4	190	1·7[15]	500	20[12]	200	22
BYX32/400	BYX32/400R	400	400	100[1]	500	1600[13]	0·4	190	1·7[15]	500	20[12]	400	
BYX32/600	BYX32/600R	600	600	100[1]	500	1600[13]	0·4	190	1·7[15]	500	17[12]	600	
BYX32/800	BYX32/800R	800	800	100[1]	500	1600[13]	0·4	190	1·7[15]	500	13[12]	800	
BYX32/1000	BYX32/1000R	1000	1000	100[1]	500	1600[13]	0·4	190	1·7[15]	500	10[12]	1000	
BYX32/1200	BYX32/1200R	1200	1200	100[1]	500	1600[13]	0·4	190	1·7[15]	500	8[12]	1200	
BYX32/1600	BYX32/1600R	1200	1600	100[1]	500	1600[13]	0·4	190	1·7[15]	500	8[12]	1200	
BYX33/200	BYX33/200R	200	200	250[1]	1250	4000[13]	0·2	190	1·8[15]	1250	50[12]	200	23
BYX33/400	BYX33/400R	400	400	250[1]	1250	4000[13]	0·2	190	1·8[15]	1250	50[12]	400	
BYX33/600	BYX33/600R	600	600	250[1]	1250	4000[13]	0·2	190	1·8[15]	1250	42[12]	600	
BYX33/800	BYX33/800R	800	800	250[1]	1250	4000[13]	0·2	190	1·8[15]	1250	32[12]	800	
BYX33/1000	BYX33/1000R	1000	1000	250[1]	1250	4000[13]	0·2	190	1·8[15]	1250	25[12]	1000	
BYX33/1200	BYX33/1200R	1200	1200	250[1]	1250	4000[13]	0·2	190	1·8[15]	1250	20[12]	1200	
BYX33/1600	BYX33/1600R	1200	1600	250[1]	1250	4000[13]	0·2	190	1·8[15]	1250	20[12]	1200	
BYX34/200		200	250[14]	60[1]	1000	1200[9][26]	0·4	150	1·85[26]	300	25[11]	200	41
BYX34/300		300	375[14]	60[1]	1000	1200[9][26]	0·4	150	1·85[26]	300	17[11]	300	
BYX34/400		400	500[14]	60[1]	1000	1200[9][26]	0·4	150	1·85[26]	300	12·5[11]	400	
BYX34/500		500	625[14]	60[1]	1000	1200[9][26]	0·4	150	1·85[26]	300	10·0[11]	500	
BYY10		800	1200	0·5	5·0		10	125	1·45	5·0	·075	800	22
BYY15	BYY16	400	800	40[1][20]	200	800[9][11]	1·0	150	1·8[10]	200	2·0[11]	400	
BYY22	BYY23	200	400	10[1][19]	50	200[3]	1·1	150	1·5[8]	50	2·0[7]	200	21
BYY24	BYY25	400	800	10[1][19]	50	200[3]	1·1	150	1·5[8]	50	2·0[7]	400	
BYY67	BYY68	300	600	10[1][19]	50	200[3]	1·1	150	1·5[8]	50	2·0[7]	300	
BYY73	BYY74	300	600	40[1][20]	200	800[9][11]	1·0	150	1·8[10]	200	2·0[11]	300	22
BYY75	BYY76	500	1000	40[1][20]	200	800[9][11]	1·0	150	1·8[10]	200	1·7[11]	500	
BYY77	BYY78	600	1200	40[1][20]	200	800[9][11]	1·0	150	1·8[10]	200	1·4[11]	600	

Types in Black on colour background are Controlled Avalanche Diodes.

"Miniwatt" silicon power diodes

Type No.	Reverse Polarity Type No.	MAXIMUM RATINGS $-V_{CW}$ (V)	$-V_{RP}$ (V)	I_D (A)	I_{DM} (A)	I_{DS} (A)	$R_{th\,j-a}$* $R_{th\,j-c}$ (°C/W)	T_j max (°C)	CHARACTERISTICS V_D at I_D (max) (V)	I_D (A)	$-I_D$ at $-V_D$ max (mA)	$-V_D$ (V)	Out-line No.
BYZ10	BYZ16	800	1200	6[1]	20	38[3]	5	150	1·7[8]	5	0·2[11]	800	20
BYZ11	BYZ17	600	900	6[1]	20	38[3]	5	150	1·7[8]	5	0·2[11]	600	
BYZ12	BYZ18	400	600	6[1]	20	38[3]	5	150	1·7[8]	5	0·2[11]	400	
BYZ13	BYZ19	200	300	6[1]	20	30[3]	6	150	1·4[10][24]	5	0·6[11]	200	
BYZ14	BYZ15	200	400	40[1][20]	200	800[9][11]	1·0	150	1·8[10]	200	2·0[11]	200	22
OA210 ●		400	400	0·5[16]	5·0	—	—	150	1·05[24][7]	0·5	·045[7][24]	400	26
OA211 ●		800	800	0·4[16]	4·0	—	—	150	1·0[7][24]	0·4	·015[7][24]	800	18
OA214 ●		700	700	0·5[16]	5·0	—	—	150	1·05[7][24]	0·5	·065[7][24]	700	18
OA605		50	50	1·0[1]	10·0	40	—	150	1·5[10]	5·0	0·01[10]	50	26
OA610		100	100	1·0[1]	10·0	40	—	150	1·5[10]	5·0	0·01[10]	100	
OA620		200	200	1·0[1]	10·0	40	—	150	1·5[10]	5·0	0·10[10]	200	
OA630		300	300	1·0[1]	10·0	40	—	150	1·5[10]	5·0	0·01[10]	300	
OA650		500	500	1·0[1]	10·0	40	—	150	1·5[10]	5·0	0·01[10]	500	
OA660		600	600	1·0[1]	10·0	40	—	150	1·5[10]	5·0	0·01[10]	600	
OA670		700	700	1·0[1]	10·0	40	—	150	1·5[10]	5·0	0·01[10]	700	

● Obsolescent type

Notes:

1. Averaging time 20 milliseconds
2. For six phase or capacitive load I_D = 16A
3. Case temp 125°C and 10 millisecond duration
4. For six phase or capacitive load I_D = 120A
5. Junction temp. 150°C and 10 millisecond duration
6. Case temp. 175°C
7. Case temp. 125°C
8. Case temp. 25°C
9. 10 millisecond duration
10. Junction temp. 25°C
11. Junction temp. 125°C
12. Junction temp. 175°C
13. Junction temp. 190°C and 10 millisecond duration
14. Controlled avalanche diode. Minimum reverse breakdown voltage.
15. Junction temp. 190°C
16. Averaging time 50 milliseconds
17. 1 millisecond duration
18. For capacitive load I_D = 0·15A
19. For six phase or capacitive load I_D = 8A
20. For six phase or capacitive load I_D = 32A
21. Ambient temp. 25°C
22. Ambient temp. 125°C
23. 3 microsecond duration
24. Typical
25. Thermal resistance junction to cooling oil
26. Junction temp. 150°C

"Miniwatt" silicon controlled rectifier selection guide

Max. Reverse Crest Working Voltage	MAX. R.M.S. CURRENT						
	10A	19A	25A	31A	48A	78A	110A
100V	BTY79/100R	BTY87/100R	BTY91/100R BTX64/100R	BTX12/100R	BTX13/100R	BTY95/100R	BTY99/100R BTX66/100R
200V	BTY79/200R	BTY87/200R	BTY91/200R BTX64/200R	BTX12/200R	BTX13/200R	BTY95/200R	BTY99/200R BTX66/200R
300V	BTY79/300R	BTY87/300R	BTY91/300R BTX64/300R	BTX12/300R	BTX13/300R	BTY95/300R	BTY99/300R BTX66/300R
400V	BTY79/400R	BTY87/400R	BTY91/400R BTX64/400R	BTX12/400R	BTX13/400R	BTY95/400R	BTY99/400R BTX66/400R
500V	BTY79/500R	BTY87/500R BTX35/500R	BTY91/500R BTX64/500R BTX36/500R	BTX12/500R	BTX13/500R	BTY95/500R BTX37/500R	BTY99/500R BTX66/500R BTX38/500R
600V	BTY79/600R	BTY87/600R BTX35/600R	BTY91/600R BTX36/600R	BTX12/600R	BTX13/600R	BTY95/600R BTX37/600R	BTY99/600R BTX38/600R
700V	BTY79/700R	BTY87/700R BTX35/700R	BTY91/700R BTX36/700R			BTY95/700R BTX37/700R	BTY99/700R BTX38/700R
800V	BTY79/800R	BTY87/800R BTX35/800R	BTX48/1000R BTY91/800R BTX36/800R BTX48/1200R BTX48/1400R			BTY95/800R BTX37/800R	BTX49/1000R BTY99/800R BTX38/800R BTX49/1200R BTX49/1400R

Types in Black on colour background are Controlled Avalanche Devices.

"Miniwatt" silicon controlled rectifiers

Type No.	Max. Reverse Crest Voltage (V)	Max. Reverse Transient Voltage (V)	Max. Forward Crest Offstate Voltage (V)	Max. Average Current I_D (av) (A)	Max. R.M.S. Current I_D (rms) (A)	Max. Surge Current (10 msec.) I_D (s) (A)	Fusing Factor I^2t (A^2 sec.)	Thermal Resist. $R_{th\ j-c}$ (°C/W)	Max. Junct. Temp. T_j (°C)	Outline No.
BTX12/100R	100[1]	400[1]	100	20	31	250	250	1·45	125	35
BTX12/200R	200[1]	400[1]	200	20	31	250	250	1·45	125	
BTX12/300R	300[1]	500[1]	300	20	31	250	250	1·45	125	
BTX12/400R	400[1]	500[1]	400	20	31	250	250	1·45	125	
BTX12/500R	500[1]	700[1]	500	20	31	250	250	1·45	125	
BTX12/600R	600[1]	700[1]	600	20	31	250	250	1·45	125	
BTX13/100R	100[1]	400[1]	100	30	48	300	300	1·45	125	35
BTX13/200R	200[1]	400[1]	200	30	48	300	300	1·45	125	
BTX13/300R	300[1]	500[1]	300	30	48	300	300	1·45	125	
BTX13/400R	400[1]	500[1]	400	30	48	300	300	1·45	125	
BTX13/500R	500[1]	700[1]	500	30	48	300	300	1·45	125	
BTX13/600R	600[1]	700[1]	600	30	48	300	300	1·45	125	
BTX35/500R	500[4]	550[11]	500[4][10]	12	19	106	55[5]	2·0	125	JEDEC
BTX35/600R	600[4]	660[11]	600[4][10]	12	19	106	55[5]	2·0	125	TO48
BTX35/700R	700[4]	770[11]	700[4][10]	12	19	106	55[5]	2·0	125	OUTLINE
BTX35/800R	800[4]	880[11]	800[4][10]	12	19	106	55[5]	2·0	125	38
BTX36/500R	500[4]	550[11]	500[4][10]	16	25	136	75[5]	2·0	125	JEDEC
BTX36/600R	600[4]	660[11]	600[4][10]	16	25	136	75[5]	2·0	125	TO48
BTX36/700R	700[4]	770[11]	700[4][10]	16	25	136	75[5]	2·0	125	OUTLINE
BTX36/800R	800[4]	880[11]	800[4][10]	16	25	136	75[5]	2·0	125	38
BTX37/500R	500[6]	550[11]	500[6][10]	50	78	680	2000[5]	0·6	125	JEDEC
BTX37/600R	600[6]	660[11]	600[6][10]	50	78	680	2000[5]	0·6	125	TO49
BTX37/700R	700[6]	770[11]	700[6][10]	50	78	680	2000[5]	0·6	125	OUTLINE
BTX37/800R	800[6]	880[11]	800[6][10]	50	78	680	2000[5]	0·6	125	39
BTX38/500R	500[6]	550[11]	500[6][10]	70	110	900	4000[5]	0·4	125	JEDEC
BTX38/600R	600[6]	660[11]	600[6][10]	70	110	900	4000[5]	0·4	125	TO49
BTX38/700R	700[6]	770[11]	700[6][10]	70	110	900	4000[5]	0·4	125	OUTLINE
BTX38/800R	800[6]	880[11]	800[6][10]	70	110	900	4000[5]	0·4	125	39
BTX48/1000R	800[13]	1000[13]	800[13]	16	25	200	200[3]	1·0	125	JEDEC
BTX48/1200R	800[13]	1200[13]	800[13]	16	25	200	200[3]	1·0	125	TO48
BTX48/1400R	800[13]	1400[13]	800[13]	16	25	200	200[3]	1·0	125	OUTLINE 38

Types in Black on colour background are Controlled Avalanche Devices

"Miniwatt" silicon controlled rectifiers

Type No.	Max. Reverse Crest Voltage (V)	Max. Reverse Transient Voltage (V)	Max. Forward Crest Offstate Voltage (V)	Max. Average Current I_D (av) (A)	Max. R.M.S. Current I_D(rms) (A)	Max. Surge Current (10 msec.) I_D (s) (A)	Fusing Factor I^2t (A^2 sec.)	Thermal Resist. $R_{th\ j-c}$ (°C/W)	Max. Junct. Temp. T_j (°C)	Outline No.
BTX49/1000R	800[13]	1000[11][14]	800[13]	70	110	900	4000[3]		125	JEDEC TO49 OUTLINE 39
BTX49/1200R	800[13]	1200[11][14]	800[13]	70	110	900	4000[3]		125	
BTX49/1400R	800[13]	1400[11][14]	800[13]	70	110	900	4000[3]		125	
BTX64/100R	100[4]	150[8][4]	100[4]	16[15]	25	106[3]	55[3]	2·0	125	JEDEC TO48 OUTLINE 38
BTX64/200R	200[4]	300[8][4]	200[4]	16[15]	25	106[3]	55[3]	2·0	125	
BTX64/300R	300[4]	400[8][4]	300[4]	16[15]	25	106[3]	55[3]	2·0	125	
BTX64/400R	400[4]	500[8][4]	400[4]	16[15]	25	106[3]	55[3]	2·0	125	
BTX64/500R	500[4]	600[8][4]	500[4]	16[15]	25	106[3]	55[3]	2·0	125	
BTX66/100R	100[6]	150[6][8]	100[6]	50[16]	100	680[3]	2000[3]	0·6	125	JEDEC TO49 OUTLINE 39
BTX66/200R	200[6]	300[6][8]	200[6]	50[16]	110	680[3]	2000[3]	0·6	125	
BTX66/300R	300[6]	400[6][8]	300[6]	50[16]	110	680[3]	2000[3]	0·6	125	
BTX66/400R	400[6]	500[6][8]	400[6]	50[16]	110	680[3]	2000[3]	0·6	125	
BTX66/500R	500[6]	600[6][8]	500[6]	50[16]	110	680[3]	2000[3]	0·6	125	
BTY79/100R	100[12]	150[8][12]	100[12]	6·4	10	50[3]	—	3·0	125	JEDEC TO64 OUTLINE 36
BTY79/200R	200[12]	300[8][12]	200[12]	6·4	10	50[3]	—	3·0	125	
BTY79/300R	300[12]	400[8][12]	300[12]	6·4	10	50[3]	—	3·0	125	
BTY79/400R	400[12]	500[8][12]	400[12]	6·4	10	50[3]	—	3·0	125	
BTY79/500R	500[12]	600[8][12]	500[12]	6·4	10	50[3]	—	3·0	125	
BTY79/600R	600[12]	720[8][12]	600[12]	6·4	10	50[3]	—	3·0	125	
BTY79/700R	700[12]	850[8][12]	700[12]	6·4	10	50[3]	—	3·0	125	
BTY79/800R	800[12]	960[8][12]	800[12]	6·4	10	50[3]	—	3·0	125	
BTY87/100R (BTY84)	100[4]	150[4][8]	100[4]	12	19	106	55[5]	2·0	125	JEDEC TO48 OUTLINE 38
BTY87/200R (BTY85)	200[4]	300[4][8]	200[4]	12	19	106	55[5]	2·0	125	
BTY87/300R (BTY86)	300[4]	400[4][8]	300[4]	12	19	106	55[5]	2·0	125	
BTY87/400R	400[4]	500[4][8]	400[4]	12	19	106	55[5]	2·0	125	
BTY87/500R	500[4]	600[4][8]	500[4]	12	19	106	55[5]	2·0	125	
BTY87/600R	600[4]	720[4][8]	600[4]	12	19	106	55[5]	2·0	125	
BTY87/700R	700[4]	850[4][8]	700[4]	12	19	106	55[5]	2·0	125	
BTY87/800R	800[4]	960[4][8]	800[4]	12	19	106	55[5]	20	125	
BTY91/100R (BTY88)	100[4]	150[4][8]	100[4]	16	25	136	75[5]	2·0	125	JEDEC TO48 OUTLINE 38
BTY91/200R (BTY89)	200[4]	300[4][8]	200[4]	16	25	136	75[5]	2·0	125	
BTY91/300R (BTY90)	300[4]	400[4][8]	300[4]	16	25	136	75[5]	2·0	125	
BTY91/400R	400[4]	500[4][8]	400[4]	16	25	136	75[5]	2·0	125	
BTY91/500R	500[4]	600[4][8]	500[4]	16	25	136	75[5]	2·0	125	
BTY91/600R	600[4]	720[4][8]	600[4]	16	25	136	75[5]	2·0	125	
BTY91/700R	700[4]	850[4][8]	700[4]	16	25	136	75[5]	2·0	125	
BTY91/800R	800[4]	960[4][8]	800[4]	16	25	136	75[5]	2·0	125	

Types in Black on colour background are Controlled Avalanche Devices.

"Miniwatt" silicon controlled rectifiers

Type No.	Max. Reverse Crest Voltage (V)	Max. Reverse Transient Voltage (V)	Max. Forward Crest Offstate Voltage (V)	Max. Average Current I_D (av) (A)	Max. R.M.S. Current I_D (rms) (A)	Max. Surge Current (10 msec.) I_D (s) (A)	Fusing Factor I^2t (A^2 sec.)	Thermal Resist. $R_{th\ j-c}$ (°C/W)	Max. Junct. Temp. T_j (°C)	Outline No.
BTY95/100R	100[4]	150[4][8]	100[4]	50	78	680	2000[5]	0·6	125	JEDEC TO49 OUTLINE 39
BTY95/200R	200[4]	300[4][8]	200[4]	50	78	680	2000[5]	0·6	125	
BTY95/300R	300[4]	400[4][8]	300[4]	50	78	680	2000[5]	0·6	125	
BTY95/400R	400[4]	500[4][8]	400[4]	50	78	680	2000[5]	0·6	125	
BTY95/500R	500[6]	600[6][8]	500[6]	50	78	680	2000[5]	0·6	125	
BTY95/600R	600[6]	720[6][8]	600[6]	50	78	680	2000[5]	0·6	125	
BTY95/700R	700[6]	850[6][8]	700[6]	50	78	680	2000[5]	0·6	125	
BTY95/800R	800[6]	960[6][8]	800[6]	50	78	680	2000[5]	0·6	125	
BTY99/100R	100[4]	150[4][8]	100[4]	70	110	900	4000[5]	0·4	125	JEDEC TO49 OUTLINE 39
BTY99/200R	200[4]	300[4][8]	200[4]	70	110	900	4000[5]	0·4	125	
BTY99/300R	300[4]	400[4][8]	300[4]	70	110	900	4000[5]	0·4	125	
BTY99/400R	400[4]	500[4][8]	400[4]	70	110	900	4000[5]	0·4	125	
BTY99/500R	500[6]	600[6][8]	500[6]	70	110	900	4000[5]	0·4	125	
BTY99/600R	600[6]	720[6][8]	600[6]	70	110	900	4000[5]	0·4	125	
BTY99/700R	700[6]	850[6][8]	700[6]	70	110	900	4000[5]	0·4	125	
BTY99/800R	800[6]	960[6][8]	800[6]	70	110	900	4000[5]	0·4	125	

Notes:

1. Gate voltage − 5 volts to 0·25 volts and $R_{thj-a} < 7°C/W$
2. With $R < 100\Omega$ between gate and cathode
3. Duration 10 milliseconds
4. Gate voltage −5 voltage to 0·25 volts and $R_{thj-a} < 9°C/W$ for A.C.
5. Duration 1·5 to 10 milliseconds
6. Gate voltage −5 volts to 0·25 volts and $R_{thj-a} < 3°C/W$ for A.C.
7. Gate voltage −5 volts to 0·25 volts and $R_{thj-a} < 11°C/W$
8. Max. duration 5 milliseconds
9. Gate voltage −5 volts to 0·25 volts and $R_{thj-a} < 4°C/W$
10. At greater voltages device may switch to on state.
11. Avalanche voltage
12. Gate voltage −5 volts to 0·25 volts and $R_{thj-a} < 12°C/W$ for A.C.
13. Gate voltage negative to cathode
14. Junction temp. 125°C
15. Case temp. 35°C
16. Case temp. 60°C

"Miniwatt" germanium diodes

Type No.	Outline No.	Description	MAXIMUM RATINGS AT 25°C					Max. Operating Temp. T_{amb} (°C)	CHARACTERISTICS AT 25°C			
			$-V_D$ (V)	$-V_{DM}$ (V)	I_D (mA)	I_{DM} (mA)	$I_D(s)$ (1 sec) (mA)		V_D at I_D (max) (V)	I_D (mA)	$-I_D$ at (max) (μA)	$-V_D$ (V)
AA119 / 2AA119	14	Point Contact detector/ratio detector	30[1]	45	35[1][2]	100	200	60	0·88	1·0	150	30
AAY11	14	Point contact computer diode	60[1]	90	35[1][2]	150	200	60	0·5	1·0	100	60
AAY12	13	Gold bonded general purpose	100	100	115[1]	350	500	75	0·55	10	30	100
AAY21	14	Point contact high speed switching	15	—	20	50	—	60	0·45	2·0	60	15
AAY30	14	Gold bonded general purpose	30	50	110	400	500	75[4]	0·45	10	50	30
AAY32	14	Gold bonded general purpose	30	30	110	150	200	85[4]	0·45	10	70	30
AAY33	14	Gold bonded general purpose	15	—	100	240	—	75[4]	0·42	10	15	10
AAZ12	13	Junction diode high speed switching	30	—	220[1]	1A	4A[3]	75[4]	0·22	1·0	60	30
AAZ13	14	Gold bonded high speed switch	8	—	30[1]	100[5]	—	75[4]	0·6	10	150	8
AAZ15	14	Gold bonded general purpose	75	100	140[6]	250	500	85[4]	0·45	10	25	75
AAZ17	14	Gold bonded high speed switch	50	75	140[6]	250	500	85[4]	0·45	10	150	50
AAZ18	14	Gold bonded high current switch	20	20	180[6]	300	400	75[4]	0·41	10	50	20
AY100	17	Power Rectifier	120	120	12A	12A	90A[7]	75[4]	0·5	2A	40(typ)	85
OA5	13	Gold bonded general purpose	100	100	125	350	500	75	0·55	10	30	100
OA7	13	Gold bonded high current switch	25	25	140[6]	250	400	75	0·48	10	6 (typ)	25
OA9	13	Gold bonded high current switch	25	25	270[6]	500	800	75	0·41	10	50	25
OA10	13	Junction diode for pulse applications	30	30	220[1]	1A	5A[3]	75	0·43	30	20	30
OA31	17	Power rectifier	85	85	12A	12A	90A[7]	75[4]	0·56	2A	100	85
OA47	14	Gold bonded high current switch	25	25	110[6]	150	200	60	0·45	10	100	25
OA70 ●	16	Superseded—refer OA90										
OA71 ●	16	Superseded—Refer OA91										
OA72 ●	16	Superseded—Refer AA119										
OA73 ●	16	Detector	20[1]	30	50[2]	150	400	75	1·0	8	1200	30
OA74 ●	16	Superseded—Refer OA91										
OA79 / 2OA79 ●	16	Superseded—Refer AA119/2AA119										
OA80 ●	16	Superseded—Refer OA90										
OA81 ●	16	Superseded—Refer OA91										
OA85 ●	16	Superseded—Refer OA95										
OA86 ●	16	Switching—Refer AAY11	60[1]	90	35[1][2]	150	200	60	1·47	10	92	60
OA90[8]	14	Video Detector	20[1]	30	8[1]	45	200	75	1·5	10	450	20
OA91	14	General purpose	90[1]	115	50[1][2]	150	500	75	1·9	10	180	75
OA92[8]	14	Switching	15	15	10	50	100	75	1·0	3	85	15
OA95	14	General purpose	90[1]	115	50[1][2]	150	500	75	1·5	10	110	75
OA674 ●	11	Stabilisation diode	1·0	—	10	—	—	75	0·143	2	—	—
OA675	8	Stabilisation diode	1·0	—	10	—	—	75	0·132	2	—	—

● Obsolescent type.

"Miniwatt" silicon diodes

Type No.	Outline No.	Description	MAXIMUM RATINGS AT 25°C					Max. Operating Temp. T_{amb} (°C)	CHARACTERISTICS AT 25°C			
			$-V_D$ (V)	$-V_{DM}$ (V)	I_D (mA)	I_{DM} (mA)	$I_D(s)$ (1 sec) (mA)		V_D at I_D (max) (V)	I_D (mA)	$-I_D$ at (max) (μA)	$-V_D$ (V)
BA100	14	General Purpose	60	—	90	100	200	90	1·5	30	20[9]	60
BA102	14	Voltage Dependent Capacitor	$C_D(-V_D = 4V) = 20 — 45$ pF . $C_D(-V_D = 20V) = 9 — 25$pF									
BA114	14	Stabilising Diode	—	—	20	—	—	90	0·8	3	—	—
BA122	14	General Purpose	100	—	90	100	200	90	1·5	30	20[9]	100
BA145	24	Double diffused high speed switch	300	350	10	100	1000	125[4]	1·0[10]	100	10[10]	300
BA148	24	Double diffused high speed switch	300	350	300	2000	15A	125[4]	1·5	2A	200[11]	300
BAX13	51	Oxide passivated high speed logic	25	40	75	150	500	200[4]	1·0	20	0·05	25
BAX16	51	Oxide passivated general purpose	150	150	200	300	500	200[4]	1·5	100	0·1	150
BAX78	14	Epitaxial Planar Diode	55	55	300	600	600	200[4]	0·95	100	0·1	55
BAY32 ●	14	General Purpose planar diode	150	150	170	250	500	190[4]	1·5	100	0·1	150
BAY33 ●	14	General Purpose planar diode	150	150	130	200	350	190[4]	2·5	100	0·1	150
BAY38	14	Fast switching planar diode	50	—	115	225	500	190[4]	1·0	50	·05	50
BAY39	14	Fast switching planar diode	75	—	450	750	—	190[4]	0·7	10	0·1	75
BAY66	48	Varactor Diode	100	$P_{tot} = 7·0$W at $T_c = 80°C$				150[4]	Cut-off freq = 20GHz			
BAY96	20	Planar Epitaxial Varactor	120	$P_{tot} = 12·5$W at $T_c = 80°C$				175[4]	Cd = 28-39 pF			
BY140	44	T.V. E.H.T. Rectifier	12·5 kV	12·5 kV	2	200	1000[12]	70	40	100	6[8]	12·5 kV
OA200	14	General Purpose	50		160[6]	250	—	125	1·15	30	·1	50
OA202	14	General Purpose	150		160[6]	250		125	1·15	30	·1	150

GERMANIUM TUNNEL DIODES

Type No.	Outline No.	I_D max at $T_j = 90°C$ (mA)	CHARACTERISTICS AT $T_j = 25°C$						
			I_p Typ. (mA)	V_p Typ. (mV)	V_{fp} Typ. (mV)	I_p/I_v Typ.	V_v Typ. (mV)	T (typ.) (nS)	C_v (pF)
AEY13		—	2	50	—	11	300	—	3·5
AEY14	14/27	100	11	80	500	5	340	0·7	15
AEY15	45	—	2	50	—	11	300	—	2·8
AEY16	45	—	2	50	—	11	300	—	2·1
AEY18	14/27	25	2·5	70	480	6	330	1·5	6
AEY19	14/27	50	4·7	75	480	6	330	1·0	8
AEY20	14/27	100	10	80	500	6	340	0·7	15
AEY21	14/27	100	20	80	510	6	360	0·5	25
AEY22	14/27	50	5	75	480	6	330	1·0	8

GERMANIUM MICROWAVE MIXER DIODES

Type No.	Outline No.	CHARACTERISTICS AT Tamb = 25°C			
		Noise Figure (dB)	Leakage Current at $V_R = 0·5V$ (uA)	Forward Current at $V_F = ·5V$ (mA)	Impedance Z_{IF} (Ω)
AAY34	46	8·5	10·0	2·0	<1000
AAY39	46	6·0	3·0	10·0	<1000
AAY40	47	8·0	10·0	10·0	350

● Obsolescent type

NOTES FOR GERMANIUM AND SILICON DIODES

1. Averaging time 50 milliseconds
2. $-V_{DM} = 0$
3. Maximum duration 100μseconds
4. Junction temperature
5. Maximum duration 5 milliseconds
6. Derate with increased temperature
7. During switch on
8. $T_{amb} = 75°C$
9. $T_{amb} = 60°C$
10. $T_j = 75°C$
11. $T_j = 125°C$
12. Duration < 10 milliseconds.

TRANSISTOR AC CURRENT GAIN V. FREQUENCY

The relationships between the various cut-off frequencies are illustrated below.

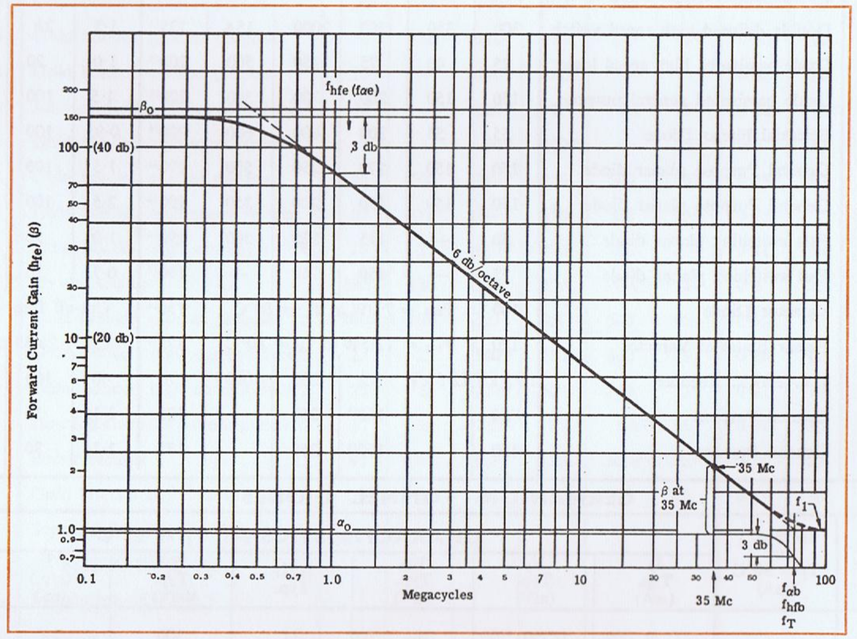
By definition, gain bandwidth product (f_T) is gain × frequency of measurement. Hence, if f_{hfe} is the 3 dB down point of β ($f_{\alpha e}$),

$$f_T = f_{hfe} \times 0{\cdot}7 \times \beta_O$$

$$f_{hfe} = \frac{f_T}{0{\cdot}7 \times \beta_O}$$

The high frequency cut-off point of α is very close to f_T in many transistors. At this frequency the α has dropped to $0{\cdot}7\,\alpha_O$. Therefore, f_T and f_{hfb} ($f_{\alpha b}$) are approximately the same.

β (h_{fe}) is often given at 1 kc, which is on the flat part of the curve and is considered to be β_O. The f_T of the transistor also is given and from this information the complete curve can be constructed by drawing the 6 dB/octave line leading from f_T to its intersection with the β_O line.



Transistor AC Current Gain Vs. Frequency

TRANSISTOR SYMBOLS:

C_{re} = feedback capacitance collector to base
C.NF = conversion noise figure
F_T = transition frequency
f_1 = frequency at which $|h_{fe}| = 1$
f_β = common emitter cutoff frequency
h_{fe} = small signal forward current gain
h_{FE} = large signal or DC forward current gain
I_C = collector current
I_{CBO} = collector base cutoff current
NF = noise factor
P_{tot} = device dissipation
$R_{th\ j-a}$ = thermal resistance junction to ambient
$R_{th\ j-c}$ = thermal resistance junction to case
T_j = junction temperature
t_{on} = turn on time
t_{off} = turn off time
t_d = delay time
t_f = fall time
t_s = storage time
t_r = rise time
V_{CBO} = maximum collector base voltage with emitter open circuit
V_{CEO} = maximum collector emitter voltage with base open circuit
V_{EBO} = maximum emitter base voltage with collector open circuit
V_{Offset} = offset voltage
$V_{CE\ sat}$ = collector emitter saturation voltage

DIODE SYMBOLS

I_D = average forward current

I_{DM} = repetitive peak forward current

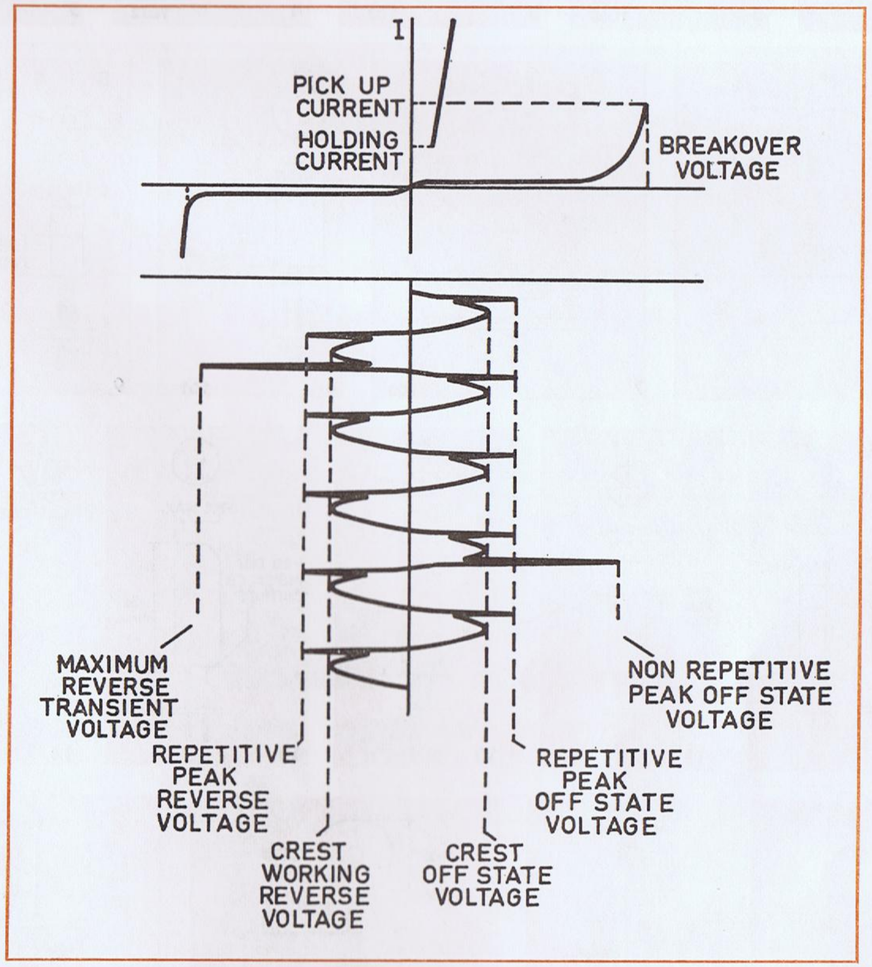
I_{DS} = forward surge current

$-V_D$ = continuous reverse voltage

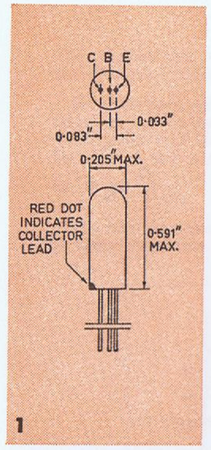
V_D = forward voltage drop

$-V_{DM}$, $-V_{CW}$ = Crest working reverse voltage

$-V_{RP}$ = non repetitive peak reverse voltage



Simplified S.C.R. characteristic
with superimposed anode to cathode voltage



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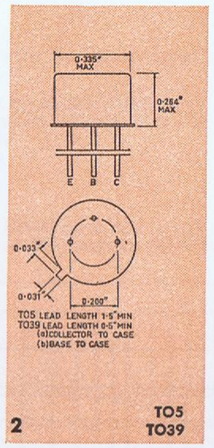
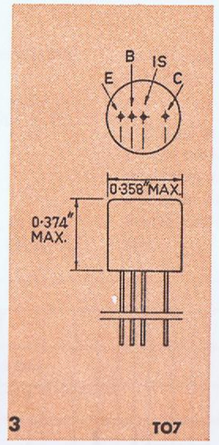


2 TO5 TO39



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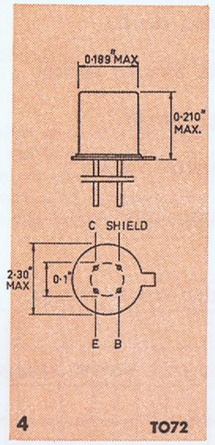

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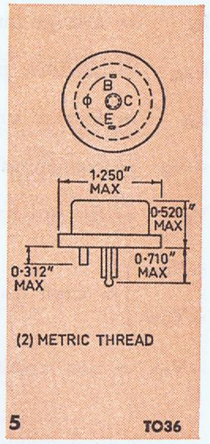

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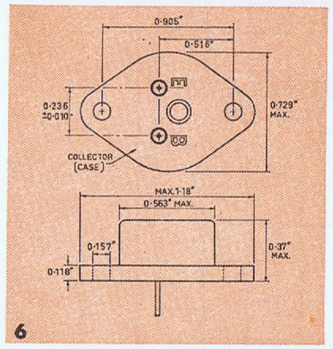

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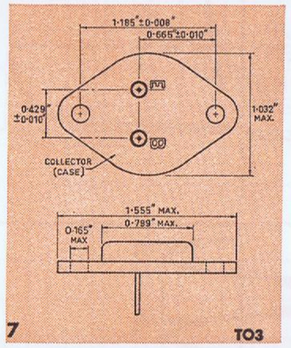

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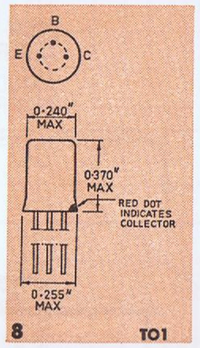

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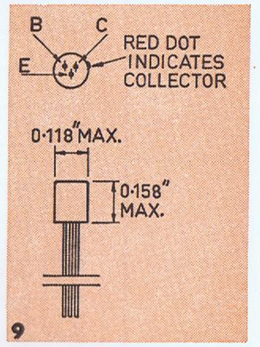

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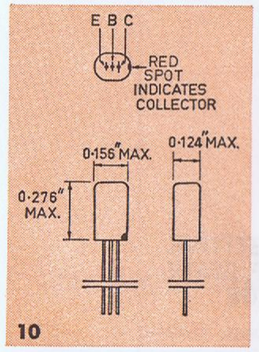

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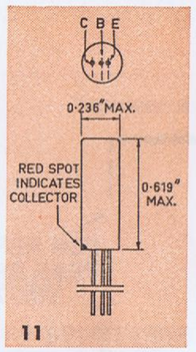

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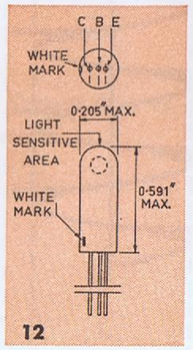

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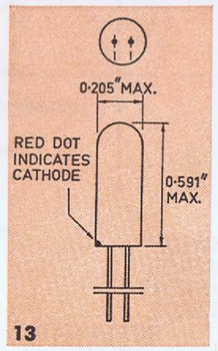

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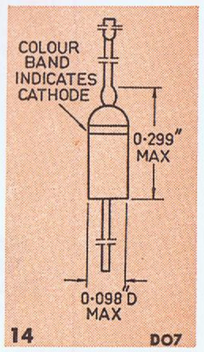

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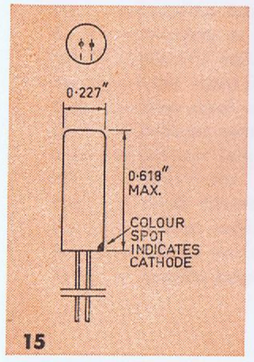

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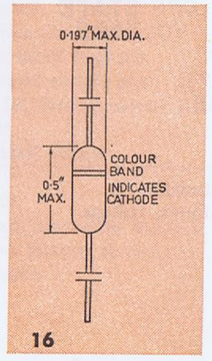

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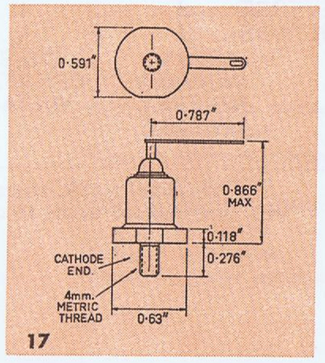

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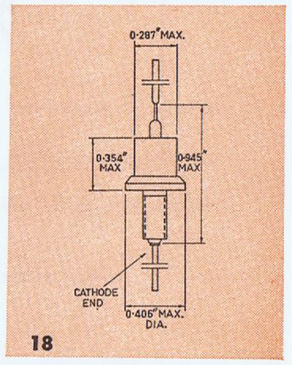

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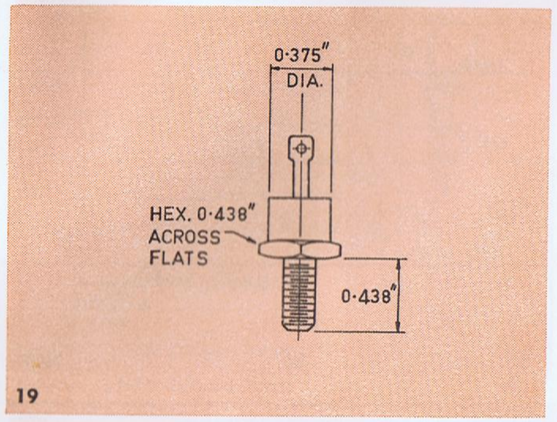

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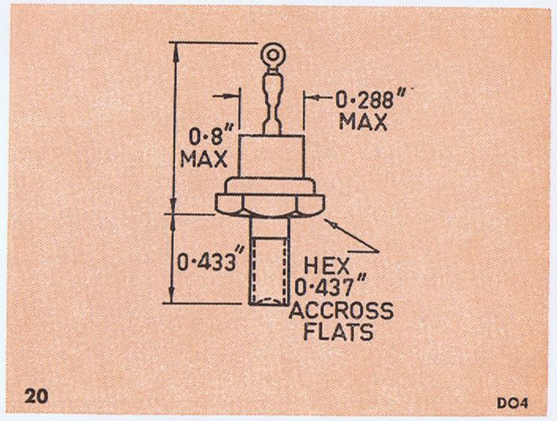

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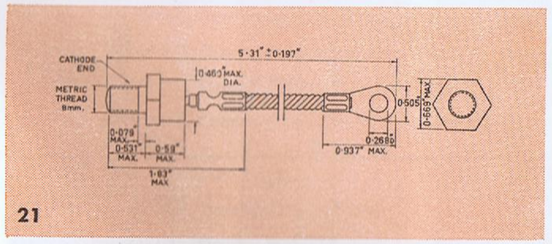

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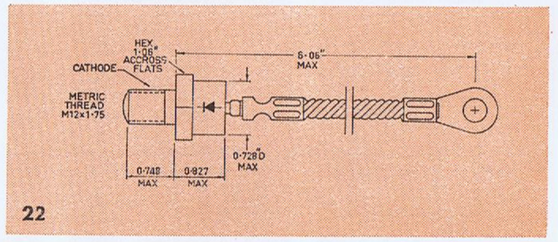

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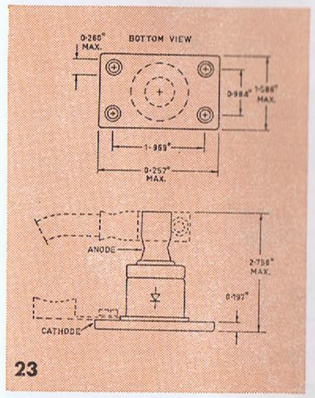

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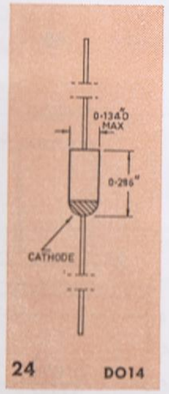

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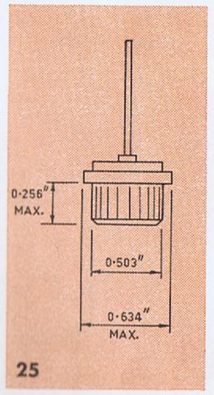

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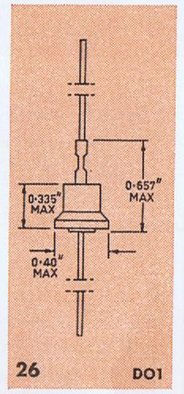

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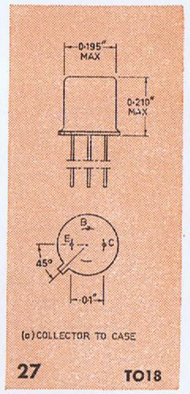

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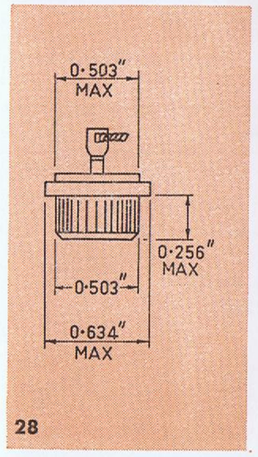

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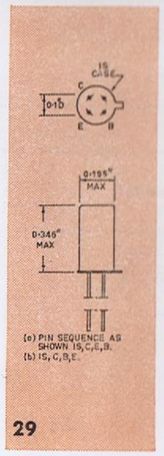

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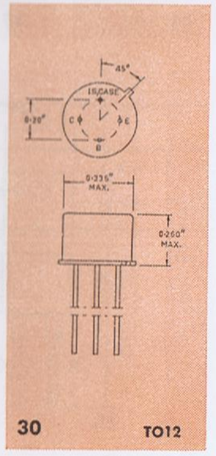

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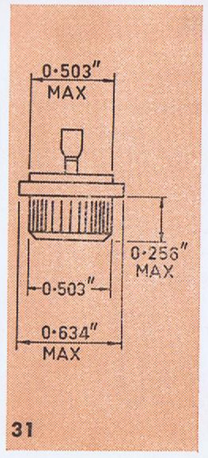

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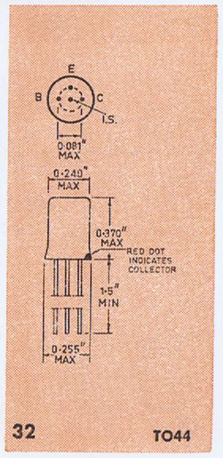
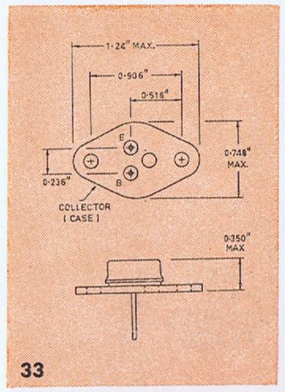
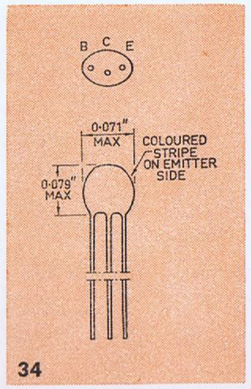
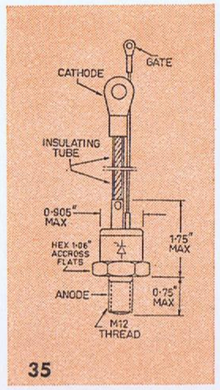


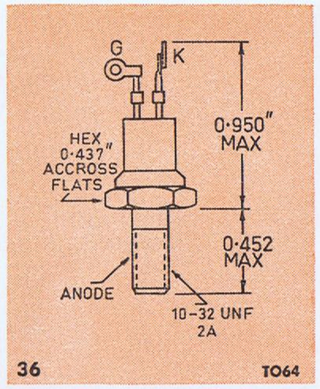
32 TO44

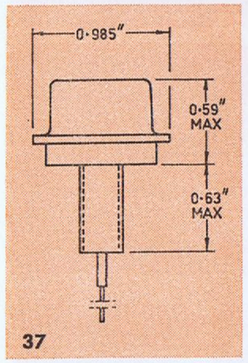
"Miniwatt" semi conductor outlines

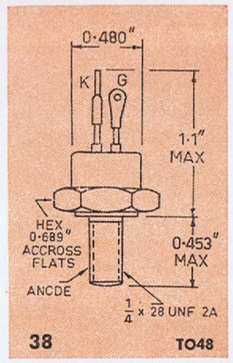


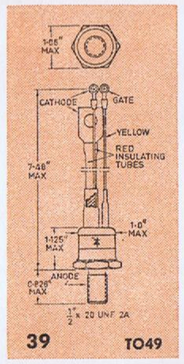


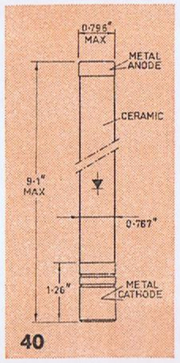


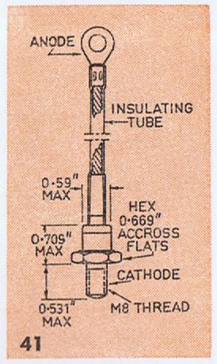


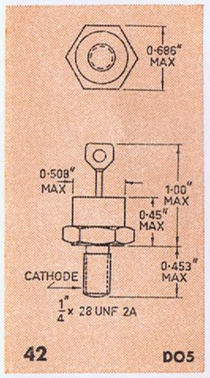


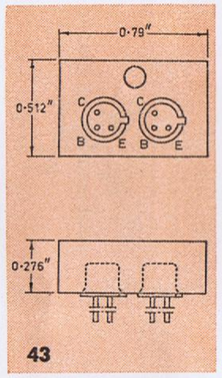


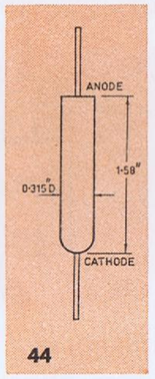


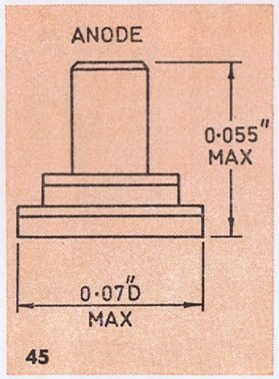


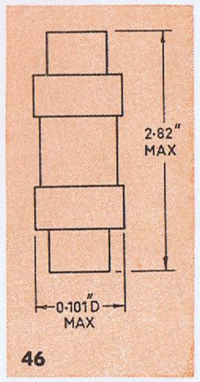


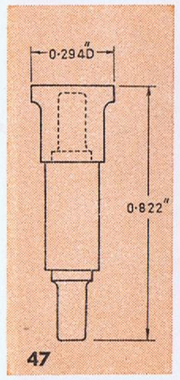


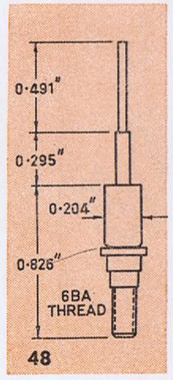


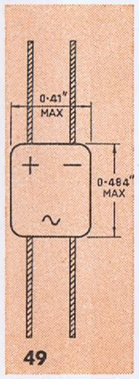


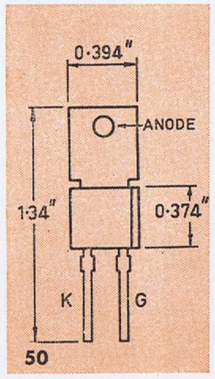


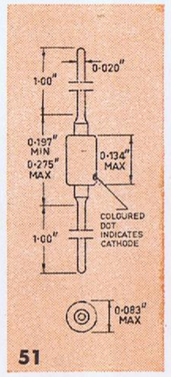


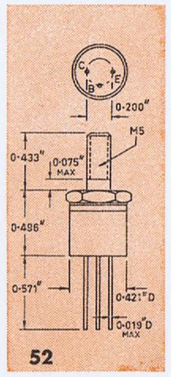












"Miniwatt" LATE RELEASES — silicon transistors

Type No.	Description	Outline No.	V_{CEO} (V)	I_C I_{CM}* (mA)	P_{tot} at 25°C T_{amb} (mW)	h_{FE}	at I_C I_E* (mA)	V_{CE} V_{CB}* (V)	Special Parameters
BC186	PNP P.E. General Purpose	27(a)	25	100	300	40–200	2	5	F_T = 100MHz
BC187	PNP P.E. General Purpose	27(a)	25	100	300	100–500	2	5	F_T = 130MHz
BCY70	PNP P.E. General Purpose	27(a)	40	200*	350	>50	10	1·0	F_T > 250MHz; $V_{CE\,SAT}$<0·25V
BCY71	PNP P.E. General Purpose	27(a)	25	200*	350	>100	10	1·0	F_T > 300MHz; NF < 3dB
BCY72	PNP P.E. General Purpose	27(a)	25	200*	350	>50	10	1·0	F_T > 200MHz; $V_{CE\,SAT}$ < 0·25V
BDY17	NPN Diffused Power	7	60	10A	50W	>20	4A*	4*	$V_{CE\,SAT}$ < 2·0V
BDY18		7	70	10A	50W	>20	4A*	4*	$V_{CE\,SAT}$ < 2·0V
BDY19	NPN Diffused Power	7	80	10A	50W	>20	4A*	4*	$V_{CE\,SAT}$ < 2·0V
BDY20	NPN Diffused Power	7	60	6A	50W	20–100	4A*	4*	$V_{CE\,SAT}$ < 1·1V
BFX12	PNP P.E. General Purpose	27(a)	15	100	300	20–60	10	0·35	NF = 4·0dB; F_T > 150MHz
2N2904	PNP P.E. General Purpose Switch	2(a)	40	600	600	40–120	150	10	$V_{CE\,SAT}$ < 0·4V; t_{on} < 45ns
2N2904A	PNP P.E. General Purpose Switch	2(a)	60	600	600	40–120	150	10	$V_{CE\,SAT}$ < 0·4V; t_{on} < 45ns
2N2905	PNP P.E. General Purpose Switch	2(a)	40	600	600	100–300	150	10	$V_{CE\,SAT}$ < 0·4V; t_{on} < 45ns
2N2905A	PNP P.E. General Purpose Switch	2(a)	60	600	600	100–300	150	10	$V_{CE\,SAT}$ < 0·4V; t_{on} < 45ns
2N3055	NPN Diffused Power	7	60	10A	50W	>20	4A*	4*	$V_{CE\,SAT}$ < 2·0V
2N3133	PNP P.E. General Purpose Switch	2(a)	35	600	600	40–120	150	10	$V_{CE\,SAT}$ < 0·6V; t_{on} < 75ns
2N3134	PNP P.E. General Purpose Switch	2(a)	35	600	600	100–300	150	10	$V_{CE\,SAT}$ < 0·6V; t_{on} < 75ns

s.c.r.'s

Type No.	Description	Max. Reverse Crest Voltage	Max. Reverse Transient Voltage	Max. Forward Crest Offstate Voltage	Max. AV Current (A)	Max. Surge Current	Outline
BT100/300	low power S.C.R.	200	300	200	2·0	40	50
BT100/500	low power S.C.R.	400	500	400	2·0	40	50
BTX18/100	low power industrial S.C.R.	100	120	100	1·0	10	2
BTX18/200	low power industrial S.C.R.	200	240	200	1·0	10	2
BTX18/300	low power industrial S.C.R.	300	350	300	1·0	10	2

diodes

Type No.	Description	Ratings	Outline
BY122	Bridge rectifier assembly	Max. RMS V_{IN} = 42; Max. I_{OUT} = 800mA	49
BY123	Bridge rectifier assembly	Max. RMS V_{IN} = 280; Max. I_{OUT} = 700mA	49

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