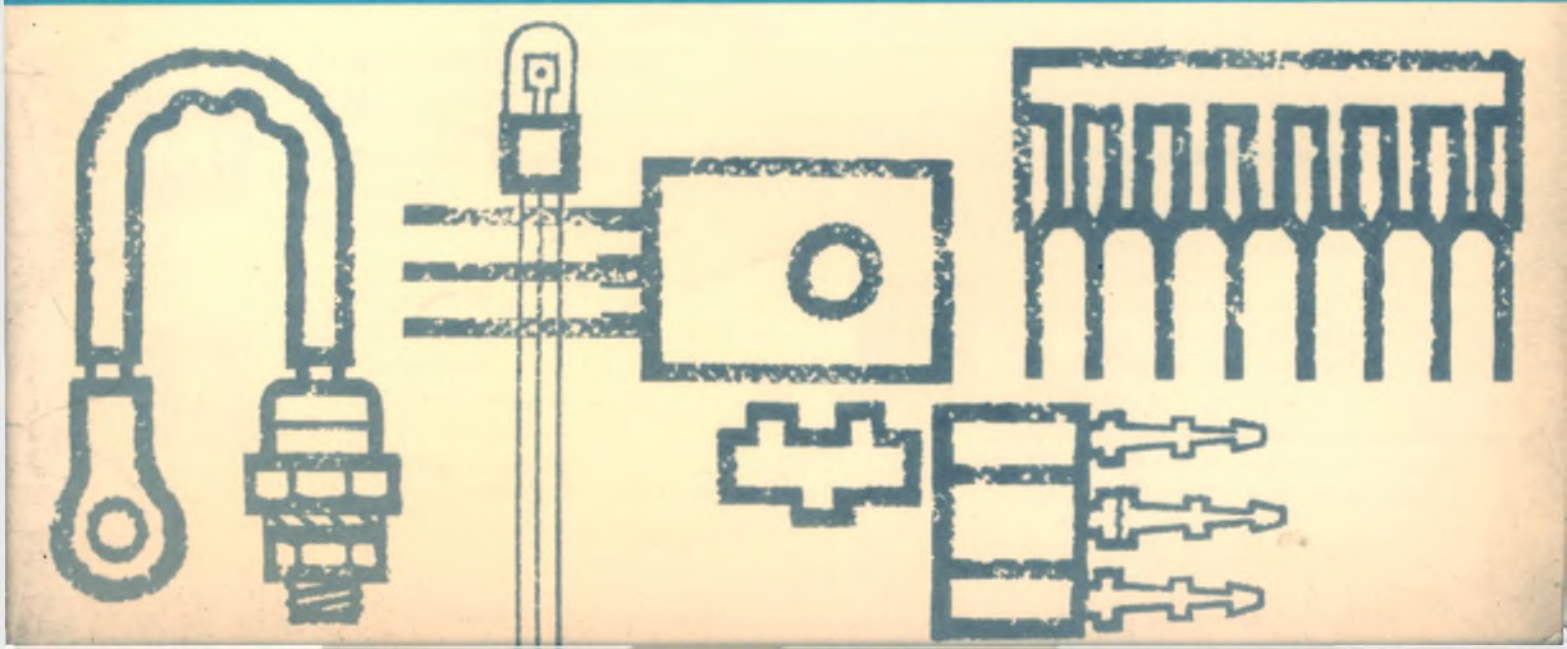
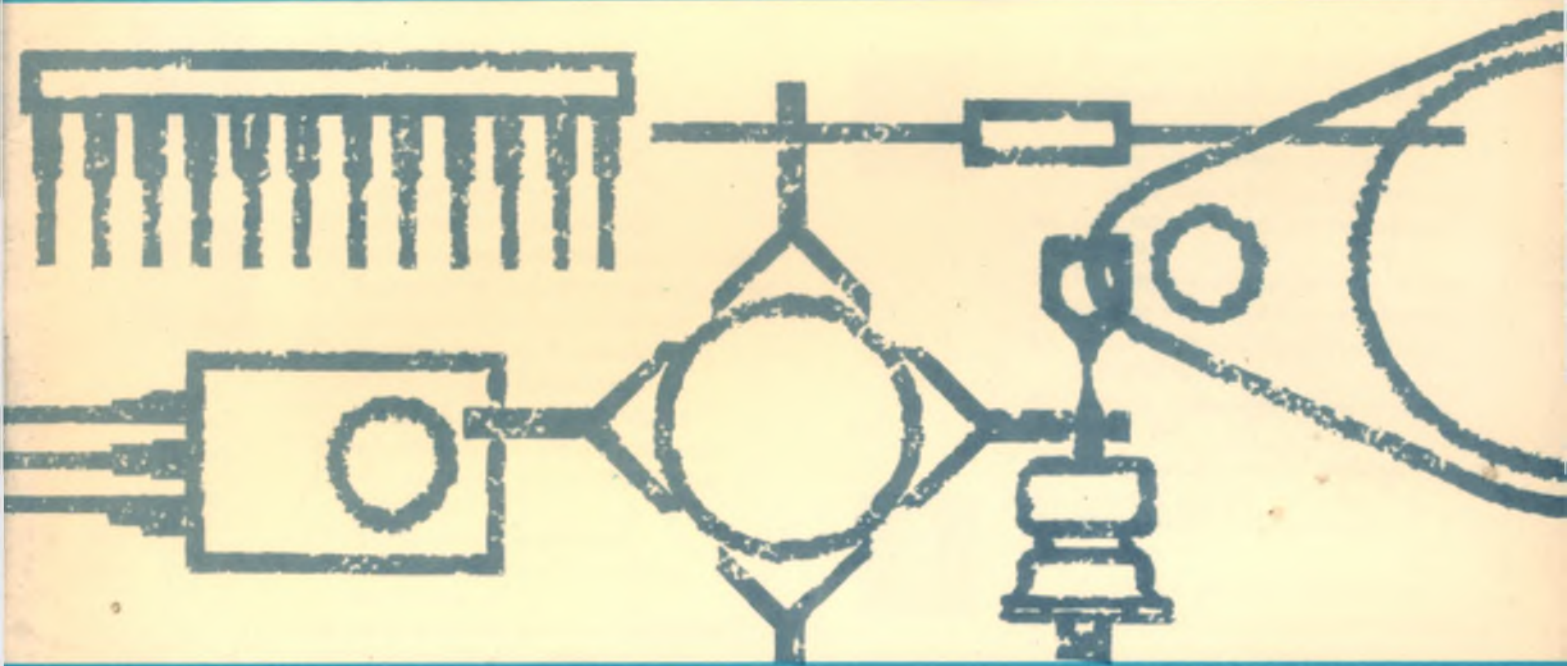


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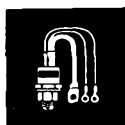
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Semiconductors quick reference guide 1974/75

This guide presents quick reference data on Mullard semiconductors.

Product information is deliberately abbreviated to give a rapid appreciation of salient characteristics, and to enable the performance of similar types to be compared quickly.

Full technical data on individual products, and details of the Mullard Technical Handbook, may be obtained from:

Central Technical Services
Mullard Limited
New Road
Mitcham, Surrey CR4 4XY
Telephone 01-648 3471 Telex 22194

For the convenience of Handbook users, the relevant book and part numbers are indicated at the top of each data table in this guide; data sheets for some new components may still be in preparation.

Mullard technical information service

Quick reference information

The most important characteristics of the current ranges of Mullard semiconductors are given in this guide.

Full technical data

Individual data sheets giving full technical data on each product are readily available, and may be obtained by quoting the relevant type number.

In addition, laboratory reports, applications reports and technical publications of many kinds are regularly issued.

Technical Handbook system

The Mullard Technical Handbook system of data is made up of three sets of books, each comprising several parts.

The three sets of books, easily identifiable by the colours on their covers, are as follows:

Book 1 (blue)	Semiconductor devices and integrated circuits
Book 2 (orange)	Valves and tubes
Book 3 (green)	Components materials and assemblies

New editions are issued at approximately yearly intervals.

New product information

As a further part of the information service, advance details of each new product or technique are published in the Mullard Bulletin, which is sent automatically to people who have asked to be kept informed of new introductions.

Index of data pages and status codes

Status codes

All of the semiconductor devices on which data is given in this book are Design or Current types. Maintenance and Obsolete types are listed below, and suggested alternatives are shown.

D Design Type. Recommended for new equipment designs.

C Current Type. Available for equipment production and for use in existing equipment installations. No

longer recommended for new equipment designs.

M Maintenance Type. Available for the maintenance of existing equipments only. No longer recommended for equipment production.

O Obsolete Type. No longer generally available, though in some cases limited stocks may exist.

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OSK57 Series	D	64	TBA500PQ	D	18	2N1100	O	*
OSK90 Series	D	64	TBA510	D	18	2N1131-1132	M	BFX88
OSK150 Series	D	64	TBA510Q	D	18	2N1302-4-6-8	M	*
OSK400 Series	O	*	TBA520	D	18	2N1303-5-7-9	M	*
OSM9510-12	D	62	TBA520Q	D	18	2N1420	O	2N1711
OSS6700B	D	62	TBA530	D	18	2N1613	D	29
OSS9110 Series	D	63	TBA530Q	D	18	2N1711	D	29
OSS9210 Series	D	63	TBA540	D	18	2N1893	O	BSW66
OSS9310 Series	O	*	TBA540Q	D	18	2N2217	O	BFY50
OSS9410 Series	D	63	TBA550	D	18	2N2218-2218A	O	BFY50
OTH10-608L	D	68	TBA550Q	D	18	2N2219-2219A	O	BFY50
OTH10-1008L	D	68	TBA560	O	TBA560C	2N2220	O	*
OTH11-609L	D	69	TBA560C	D	18	2N2221	O	*
OTH11-1009L	D	69	TBA560CQ	D	18	2N2221A	O	BFY50
OTH16-608L	D	68	TBA560Q	O	TBA560CO	2N2222	*	
OTH20-608A	D	68	TBA570	D	18	2N2222A	O	BFY50
OTH20-609L	D	69	TBA570Q	D	18	2N2297	C	29
OTH20-1209L	D	69	TBA673	D	19	2N2303	O	2N2905
OTH25-605	D	69	TBA690	D	18	2N2368	O	BSX19
OTH25-1205	D	69	TBA700	D	18	2N2369-2369A	D	28
OTH28-608	D	68	TBA720	O	TBA720A	2N2410	C	BSX59
OTH28-1208	D	68	TBA720A	D	18	2N2475	O	*
OTH35-609	D	69	TBA720AQ	D	18	2N2483-2484	O	BC107
OTH35-1209	D	69	TBA720Q	O	TBA720AQ	2N2904-2904A	D	34
OTH37-608	O	68	TBA750	D	18	2N2905-2905A	D	34
OTH37-1208	D	68	TBA750Q	D	18	2N2906-2906A	D	34
OTH44-609B	D	69	TBA915	D	17	2N2907-2907A	D	34
OTH44-1209B	D	69	TBA920	D	18	2N3053	D	29
OTH50-608A	O	*	TBA920Q	D	18	2N3055	D	30
OTH54-608	D	68	TBA990	D	19	2N3133-3134	M	2N2904-4A
OTH54-1208	D	68	TBA990Q	D	19	2N3135-3136	O	2N2906-6A
OTH57-609	O	*	TCA160	D	17	2N3303	O	*
OTH62-608	D	68	TCA160B	D	17	2N3375	C	32
OTH62-1208	D	68	TCA160BQ	D	17	2N3426	O	*
OTH66-609	D	69	TCA160C	D	17	2N3442	C	30
OTH66-1209	D	69	TCA160CQ	D	17	2N3553	C	32
OTH78-609	D	69	TCA160Q	D	17	2N3570 to 3572	O	BFY90
OTH78-1209	D	69	TCA210	D	17	2N3632	C	32
OTH84-608	D	68	TCA210D	D	17	2N3771	O	*
OTH84-1208	D	68	TCA220	D	16	2N3772	O	*
OTH105-608	D	68	TCA270	D	19	2N3823	C	36
OTH105-1208	D	68	TCA270Q	D	19	2N3866	D	32
OTH120-609	D	69	TCA280A	D	19	2N3924-6-7	O	*
OTH120-1209	D	69	TCA290A	D	18	2N4036	M	BCX35
OTH800 Series	O	*	TCA410A	D	16	2N4347	C	30
OTH1200 Series	O	*	TCA410B	D	16	2N4427	D	32
OTK11-1009L	D	69	TCA420A	D	18	3N83	See BRY39	
OTK25-1209	D	69	TCA490A	D	16	61 Series	D	67
OTK35-1205B	D	69	TCA490B	D	16	61-62SV	D	42
OTK40-1208	D	68	TCA490C	D	16	185CQY	D	41
OTK44-1209	D	69	TCA490CQ	D	16	437BGY	D	32
OTK48-1208	D	68	TCA520B	D	16	438BGY	D	32
OTK66-1208	D	68	TCA530	D	19	810BLY/A	D	32
OTK66-1209	D	69	TCA680	D	16	802CPY	D	41
OTK90-1208	D	68	TCA680B	D	16	825CPY	D	41
OTK110-1209F	D	69	TCA750	D	19			
OTK130-1208	D	68	1N23D	See BAW95D				

*Consult Mullard Ltd.

Mullard BS9000 Approved Devices

The following devices have been approved and are available to British Standards type specifications.

TRANSISTORS

Type No.	B.S. Spec. No.
BCY70	BS9365-F009
BCY71	BS9365-F009
BCY72	BS9365-F009
BFX29	BS9365-F010
BFX30	BS9365-F011
BFY50	BS9365-F012
BFY51	BS9365-F012
BFY52	BS9365-F012
BC107	BS9365-F112
BC108	BS9365-F112
BC109	BS9365-F112

THYRISTORS

Type No.	B.S. Spec. No.
BTY79-100R	BS9341-F001
BTY79-200R	BS9341-F002
BTY79-300R	BS9341-F003
BTY79-400R	BS9341-F004
BTY79-500R	BS9341-F005
BTY79-600R	BS9341-F006
BTY79-700R	BS9341-F007
BTY79-800R	BS9341-F008
BTY79-1000R	BS9341-F009

DIODES

Type No.	B.S. Spec. No.
BZY88C2V7 to CV36	BS9305-N041
BYX52 Series	BS9331-F026
BYX50 Series	BS9331-F028
BYX30 Series	BS9333-F002
BYX25 Series	BS9333-F003

Devices in preparation and available shortly:

BD131 and BD132 to BS9365
BYX42 to BS9331-F047
BTW92 to BS9341-F039

Mullard D3000

The following GFB74 series will be supplied approved to the British Post Office D3000 class A specification for silicon monolithic bipolar integrated circuits.

D3000 No.	Comparable Type	D3000 No.	Comparable Type	D3000 No.	Comparable Type
D3400A	GFB7400D	D3430A	GFB7430D	D3475A	GFB7475D
D3401A	GFB7401D	D3440A	GFB7440D	D3476A	GFB7476D
D3401XA	GFB7401*D	D3442A	GFB7442D	D3490A	GFB7490
D3402A	GFB7402D	D3450A	GFB7450D	D3493A	GFB7493D
D3403A	GFB7403D	D3451A	GFB7451D	D3495A	GFB7495D
D3404A	GFB7404D	D3453A	GFB7453D	D34107A	GFB74107D
D3405A	GFB7405D	D3454A	GFB7454D	D34121A	GFB74121D
D3405XA	GFB7405*D	D3470A	GFB7470D	D34153A	GFB74153D
D3410A	GFB7410D	D3472A	GFB7472D	D34155A	GFB74155D
D3413A	GFB7413D	D3473A	GFB7473D		
D3420A	GFB7420D	D3474A	GFB7474D		

*15V variant

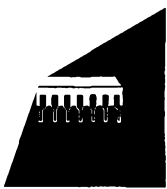
CV Cross Reference List

Qualification Approval has been obtained for all CV7000 series devices eligible for conversion to BS93000 Appendix C and these are indicated in the list by means of a dagger, e.g. CV7130† to BS9300-C130. Qualification Approvals to the BS9000 scheme (including CV) are regularly listed in BS9002. For information on new or replacement types, please contact Mullard Ltd. The devices listed may not all be currently available.

C.V. No.	Comparable Type	C.V. No.	Comparable Type	C.V. No.	Comparable Type
CV448	OA81	CV7043	OC200	CV7105†	BZY88C8V2
CV2154	SIM2	CV7044	OC201	CV7106†	BZY88C15
CV2155	SIM5	CV7054	OC23	CV7108	GEM3
CV5712	CV7005	CV7076	OA47	CV7109	GEM4
CV7001	AC128	CV7083†	OC29	CV7130†	OA91
CV7002	AC128	CV7084†	OC35	CV7138†	BZY88C3V3
CV7005	AC128	CV7085†	OC28	CV7139†	BZY88C3V6
CV7006	AC128	CV7086†	OC36	CV7140†	BZY88C3V9
CV7026	BYX22-200	CV7089	OC170	CV7141†	BZY88C4V3
CV7027	BYX22-200	CV7099†	BZY88C4V7	CV7142†	BZY88C9V1
CV7028	BYX22-400	CV7100†	BZY88C5V1	CV7143†	BZY88C10
CV7029	BYX22-600	CV7101†	BZY88C5V6	CV7144†	BZY88C11
CV7030	BYX22-800	CV7102†	BZY88C6V2	CV7145†	BZY88C12
CV7040	OA202	CV7103†	BZY88C6V8		
CV7041	OA95	CV7104†	BZY88C7V5		

Mullard CV List (cont.)

C.V. No.	Comparable Type	C.V. No.	Comparable Type	C.V. No.	Comparable Type	C.V. No.	Comparable Type
CV7146†	BZY88C13	CV7342†	BCY34	CV7683†	BZY91C16	CV7813†	BZY93C13
CV7158†	BZY96C4V7	CV7343	CV7346	CV7684†	BZY91C18	CV7814†	BZY93C15
CV7159†	BZY96C5V1	CV7344†	BCY30	CV7685†	BZY91C20	CV7815†	BZY93C16
CV7160†	BZY96C5V6	CV7345†	BCY31	CV7686†	BZY91C22	CV7816†	BZY93C18
CV7161†	BZY96C6V8	CV7346†	BCY32	CV7687†	BZY91C24	CV7817†	BZY93C20
CV7162†	BZY96C7V5	CV7347	OC202	CV7688†	BZY91C27	CV7818†	BZY93C22
CV7163†	BZY96C7V5	CV7348	2N1302	CV7689†	BZY91C30	CV7819†	BZY93C24
CV7164†	BZY96C8V2	CV7349	2N1304	CV7690†	BZY91C33	CV7820†	BZY93C27
CV7165†	BZY96C8V2	CV7350	2N1306	CV7691†	BZY91C36	CV7821†	BZY93C30
CV7166†	BZY96C9V1	CV7351	2N1308	CV7692†	BZY91C39	CV7822†	BZY93C33
CV7167†	BZY96C11	CV7352	2N1303	CV7693†	BZY91C43	CV7823†	BZY93C36
CV7168†	BZY96C12	CV7353	2N1305	CV7694†	BZY91C47	CV7824†	BZY93C39
CV7171	BZY96C4V7	CV7354	2N1307	CV7695†	BZY91C51	CV7825†	BZY93C43
CV7172	BZY96C5V1	CV7355	2N1309	CV7696†	BZY91C56	CV7826†	BZY93C47
CV7173	BZY96C5V6	CV7356	BCZ11	CV7697†	BZY91C62	CV7827†	BZY93C51
CV7174	BZY96C6V2	CV7357	IN914	CV7698†	BZY91C68	CV7828†	BZY93C56
CV7175	BZY96C6V8	CV7358†	IN916	CV7699†	BZY91C75	CV7829†	BZY93C62
CV7176	BZY96C8V2	CV7359†	OA91	CV7700†	BZY91C10R	CV7830†	BZY93C68
CV7177	BZY96C9V1	CV7376†	ACV17	CV7701†	BZY91C11R	CV7831†	BZY93C75
CV7188†	OC205	CV7379†	BZY42-300R	CV7702†	BZY91C12R	CV7838	AAV50R
CV7189	2/CV2154	CV7380†	BZY42-600R	CV7703†	BZY91C13R	CV7839	AAV50R
CV7200	BZY93C7V6R	CV7381†	BZY42-900R	CV7704†	BZY91C15R	CV7841†	BZY95C36
CV7201†	BZY93C8V2R	CV7382†	BZY42-900R	CV7705†	BZY91C16R	CV7842†	BZY95C39
CV7202†	BZY93C9V1R	CV7383	BZY42-1200R	CV7706†	BZY91C18R	CV7843†	BZY95C43
CV7203†	BZY93C10R	CV7384†	BZY42-300	CV7707†	BZY91C20R	CV7844†	BZY95C47
CV7204†	BZY93C11R	CV7385†	BZY42-800	CV7708†	BZY91C24R	CV7845†	BZY95C51
CV7205†	BZY93C11R	CV7386†	BZY42-900	CV7709†	BZY91C24R	CV7846†	BZY95C56
CV7206†	BZY93C15R	CV7387†	BZY42-900	CV7710†	BZY91C27R	CV7847†	BZY95C62
CV7207†	BZY93C15R	CV7388	BZY42-1200	CV7711†	BZY91C30R	CV7848†	BZY95C68
CV7214†	BZY93C30R	CV7401†	BZY96C5V1	CV7712†	BZY91C33R	CV7849†	BZY95C75
CV7215†	BZY93C33R	CV7410†	BZY96C8V2	CV7713†	BZY91C36R	CV7873	BSX80
CV7216†	BZY93C38R	CV7411†	BZY96C5V6	CV7714†	BZY91C39R	CV7874	BSX80
CV7217†	BZY93C38R	CV7418†	BZY96C11	CV7715†	BZY91C39R	CV7875	OA202
CV7218†	BZY93C43R	CV7419†	BZY96C6V2	CV7716†	BZY91C43R	CV7876	OA202-60
CV7219†	BZY93C41R	CV7420†	BZY96C6V8	CV7717†	BZY91C47R	CV8308	BZY98C5V6
CV7220†	BZY93C21R	CV7421†	BZY95C16	CV7718†	BZY91C51R	CV8475	BZY98C5V6
CV7221†	BZY93C51R	CV7422†	BZY95C10	CV7719†	BZY91C56R	CV8810	BZY98C7V5
CV7222†	BZY93C68R	CV7423†	BZY95C18	CV7720†	BZY91C62R	CV8815	BSX76
CV7223†	BZY93C68R	CV7424†	BZY95C20	CV7721†	BZY91C68R	CV8816	BSX77
CV7224†	BZY93C75R	CV7425†	BZY95C22	CV7722†	BZY91C75R	CV8817	BSX77
CV7241	BZY93C6V8	CV7426†	BZY95C24	CV7723†	BZY91C75R	CV8817	BSX77
CV7242	BZY93C7V5	CV7427†	BZY95C27	CV7724†	BZY91C75R	CV8818	BSX77
CV7243†	BZY93C8V2	CV7428†	BZY95C30	CV7725†	BZY91C75R	CV8819	BSX77
CV7244†	BZY93C9V1	CV7429†	BZY95C33	CV7726†	BZY91C75R	CV8820	BSX77
CV7245†	BZY93C10	CV7430	BSY26	CV7727†	AAV56	CV8821	BSX77
CV7246†	BZY93C11	CV7431	BSY27	CV7728†	AAV56	CV8822	BSX77
CV7247†	BZY93C12	CV7436†	ACV18	CV7729†	AAV51R	CV8842	BZY88C5V2
CV7248†	BZY93C13	CV7437†	ACV19	CV7730†	AAV51R	CV8844	BZY88C5V2
CV7249†	BZY93C13	CV7438†	ACV20	CV7731†	BZY93C6V8R	CV9023	OC71
CV7250†	BZY93C16	CV7439†	ACV21	CV7732†	BZY93C6V8R	CV9024	OC71
CV7251†	BZY93C18	CV7476†	BZY45	CV7733†	BZY93C7V5R	CV9259	AC128
CV7252†	BZY93C20	CV7477†	OC20	CV7734†	BZY93C8V2R	CV9297	BZY88C20
CV7253†	BZY93C22	CV7484†	2N696	CV7735†	BZY93C9V1R	CV9297	BZY88C20
CV7254†	BZY93C24	CV7495†	2N697	CV7736†	BZY93C10R	CV9507	BFY30
CV7255†	BZY93C27	CV7496†	2N697	CV7737†	BZY93C11R	CV9507	BFY30
CV7256†	BZY93C30	CV7581†	2N1131	CV7738†	BZY93C12R	CV9543	BAK13
CV7257†	BZY93C33	CV7582†	2N1132	CV7739†	BZY93C13R	CV9543	BAK13
CV7258†	BZY93C36	CV7583†	BTY79-100R	CV7781†	BZY93C15R	CV9543	BAK13
CV7259†	BZY93C39	CV7584†	BTY79-200R	CV7782†	BZY93C16R	CV9543	BAK13
CV7260†	BZY93C43	CV7585†	BTY79-400R	CV7783†	BZY93C18R	CV9543	BAK13
CV7261†	BZY93C47	CV7648	2N1718	CV7791†	BZY93C20R	CV9543	BAK13
CV7262†	BZY93C51	CV7649†	BSY95A	CV7792†	BZY93C22R	CV9543	BAK13
CV7263†	BZY93C56	CV7650†	BTY91-100R	CV7793†	BZY93C24R	CV9543	BAK13
CV7264†	BZY93C62	CV7651†	BTY91-200R	CV7794†	BZY93C24R	CV9543	BAK13
CV7265†	BZY93C68	CV7652†	BTY91-400R	CV7795†	BZY93C27R	CV9543	BAK13
CV7266†	BZY93C75	CV7653†	BTY91-600R	CV7796†	BZY93C30R	CV9543	BAK13
CV7267†	BZY93C75	CV7654†	BTY91-800R	CV7797†	BZY93C33R	CV9543	BAK13
CV7311	BZY93C30	CV7655†	BTY91-800R	CV7798†	BZY93C36R	CV9543	BAK13
CV7312	BZY93C30	CV7656†	BTY91-800R	CV7799†	BZY93C39R	CV9543	BAK13
CV7313	BZY93C30	CV7657†	BTY91-800R	CV7799†	BZY93C43R	CV9543	BAK13
CV7314	BZY93C90	CV7670†	2N2904	CV7800†	BZY93C47R	CV9543	BAK13
CV7315	BZY93C90	CV7671†	2N2905	CV7801†	BZY93C51R	CV9543	BAK13
CV7316	BZY93C300R	CV7672†	2N2905A	CV7802†	BZY93C51R	CV9543	BAK13
CV7317	BZY93C300R	CV7673†	2N2906	CV7803†	BZY93C56R	CV9543	BAK13
CV7318	BZY93C600R	CV7674†	2N2907	CV7804†	BZY93C62R	CV9543	BAK13
CV7319	BZY93C900R	CV7675†	2N2906A	CV7805†	BZY93C68R	CV9543	BAK13
CV7320	BZY93C900R	CV7676†	2N2907A	CV7806†	BZY93C75R	CV9543	BAK13
CV7329†	BTY91-100R	CV7678†	BZY91C10	CV7807†	BZY93C75R	CV9543	BAK13
CV7330†	BTY91-200R	CV7679†	BZY91C11	CV7808†	BZY93C8V2	CV9543	BAK13
CV7331†	BTY91-400R	CV7680†	BZY91C12	CV7809†	BZY93C9V1	CV9543	BAK13
CV7332	OA202	CV7681†	BZY91C13	CV7810†	BZY93C9V1	CV9543	BAK13
CV7333	BCY33	CV7682†	BZY91C15	CV7811†	BZY93C11	CV9543	BAK13
CV7431†	BCY33	CV7683†	BZY91C15	CV7812†	BZY93C12	CV9543	BAK13



Integrated circuits

GFB family of TTL integrated circuits book 1 part 6

GENERAL DATA

Supply voltage	+5.0V ±5%
Typ. noise immunity	1.0V
Fan-out	10
Operating temperature range	0 to +70°C

RATINGS

Limiting values of operation according to the absolute maximum system

Electrical	min.	max.	
V_{CC} Pin potential to ground	-0.5	7.0	V
V_{in} Input voltage d.c.	-0.5	5.5	V
Temperature			
T_{stg} Storage temperature	-65	150	°C
Operating Conditions			
V_{CC} Supply voltage	0	5.0 ± 5%	V
T_{amb} Ambient temperature		70	°C

LOGIC LEVELS

V_{OH} Output voltage 'High'	2.4	—	V
V_{OL} Output voltage 'Low'	—	0.4	V
V_{IH} Input voltage 'High'	2.0	—	V
V_{IL} Input voltage 'Low'	—	0.8	V

LOADING RULES

1 unit load = 1 standard TTL gate input load	—	1.6	mA
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SPECIAL FEATURES

- The input/output characteristics provide easy interfacing with other TTL families
- Input diode clamping

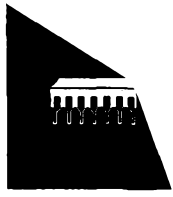
PACKAGING—Available in ceramic (suffix D) packages.
(14 lead—outline AU1.16 lead—outline AU2).

- Device pinning is identical to the 7400 series.

IMPORTANT NOTE

All the GFB74 series will be supplied to conform to the British Post Office Specification for digital integrated circuits D3000 Class A.
e.g. GFB7400D conforms to D3400A, etc.

Type No.	D3000 No.	Type No.	D3000 No.	Type No.	D3000 No.
GFB7400D	D3400A	GFB7442D	D3442A	GFB7493D	D3493A
GFB7401D	D3401A	GFB7450D	D3450A	GFB7495D	D3495A
15V variant	D3401XA	GFB7451D	D3451A	GFB74107D	D34107A
GFB7402D	D3402A	GFB7453D	D3453A	GFB74121D	D34121A
GFB7403D	D3403A	GFB7454D	D3454A	GFB74153D	D34153A
GFB7404D	D3404A	GFB7470D	D3470A	GFB74155D	D34155A
GFB7405D	D3405A	GFB7472D	D3472A		
15V variant	D3405XA	GFB7473D	D3473A		
GFB7410D	D3410A	GFB7474D	D3474A		
GFB7413D	D3413A	GFB7475D	D3475A		
GFB7420D	D3420A	GFB7476D	D3476A		
GFB7430D	D3430A	GFB7490D	D3490A		
GFB7440D	D3440A				



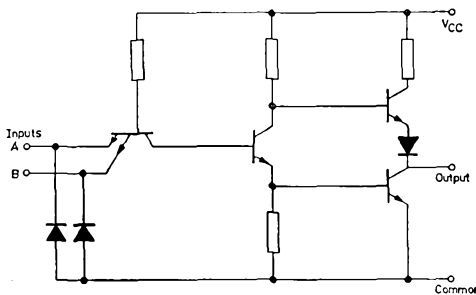
Integrated circuits

GFB family of TTL integrated circuits (cont.)

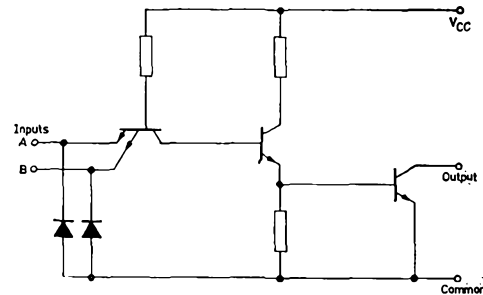
book 1 part 6

GATES

Typical equivalent circuit.



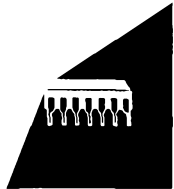
Typical equivalent circuit of gate with single-ended open-collector output transistor.



Type No.	Description	Propagation Delay (Typ.) (ns)	Av. Power Dissipation (per Gate, 25°C) (50% Duty Cycle) (mW)
GFB7400D	Quadruple 2-input NAND gate	13	10
*GFB7401D	Quadruple 2-input positive NAND gate with wired-OR capability	30	10
GFB7402D	Quadruple 2-input positive NOR gate	13	14.2
GFB7403D	Quadruple 4-input NAND gate with open collector output transistor	30	10
GFB7404D	Sextuple single-input inverter gate	13	10
*GFB7405D	Sextuple single-input inverter gate open collector output transistor	30	10
GFB7410D	Triple 3-input NAND gate	13	10
†GFB7413D	Dual 4-input SCHMITT-TRIGGER (positive NAND gate)	17	42
GFB7420D	Dual 4-input NAND gate	13	10
GFB7430D	Single 8-input NAND gate	13	10
GFB7440D	Dual 4-input NAND buffer gate	13	26.5
GFB7450D	Dual AND/OR/NOT 2-level logic circuit	13	14.2
GFB7451D	Dual AND/OR/NOT 2-level logic circuit	13	14.2
GFB7453D	8-input AND/OR/NOT 2-level logic circuit	13	28.5
GFB7454D	4-wide 2-input AND/OR/NOT gate	13	28.5

*15 Volt variants also available

†In development—available later.



Integrated circuits

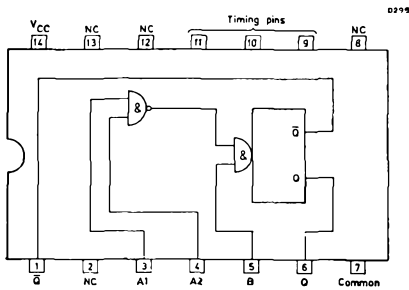
GFB family of TTL integrated circuits (cont.)

book 1 part 6

MONOSTABLE

GFB74121D

Monostable circuit d.c. triggered from positive or gated negative going inputs with inhibit facilities

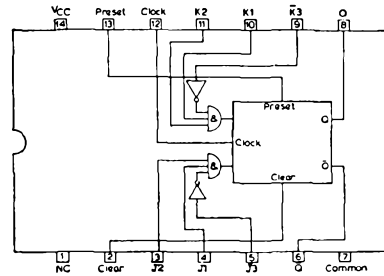


Av. power dissipation 90mW

BISTABLES

GFB7470D

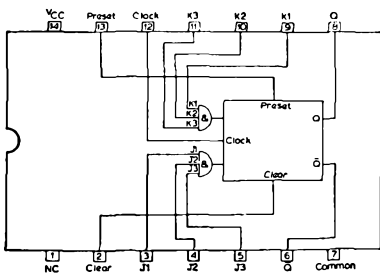
Single edge-triggered JK flip-flop with dual J and K inputs and \bar{J} and \bar{K} inputs



Max. clock rate 20MHz
Av. power dissipation 70mW

GFB7472D

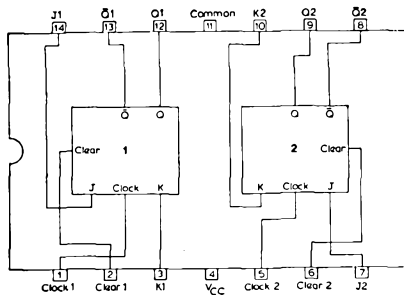
Master slave JK flip-flop with triple J and K inputs.



Max. clock rate 10MHz
Av. power dissipation 40mW

GFB7473D

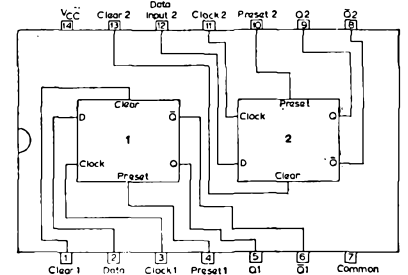
Dual master-slave JK flip-flop with single J and K inputs



Max. clock rate 10MHz
Av. power dissipation 40mW

GFB7474D

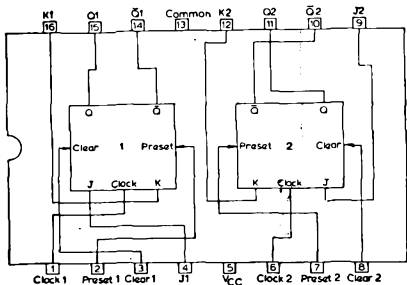
Edge-triggered dual D-type flip-flop with direct, clear and preset inputs, complementary Q and \bar{Q} outputs.



Max. clock rate 15MHz
Av. power dissipation 42.5mW

GFB7476D

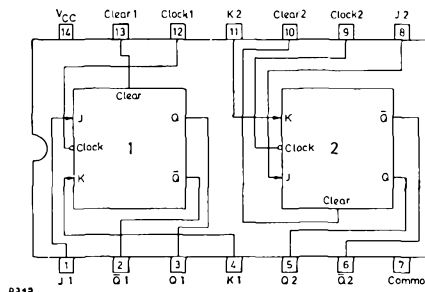
Dual master-slave JK flip-flop with single J, K, preset and clear inputs (16-lead DIL)



Max. clock rate 10MHz
Av. power dissipation 40mW

†GFB74107D

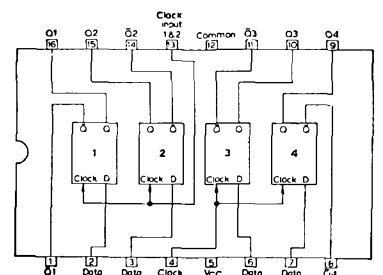
Dual master-slave JK flip-flop with single J and K inputs.



Max. clock rate 10MHz
Av. power dissipation 40mW

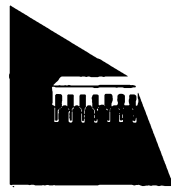
GFB7475D

Quadruple bistable latching circuits with Q and \bar{Q} outputs for use as temporary storage of binary information or as dual master-slave flip-flop with two-phase clocking (16-lead DIL)



Av. power dissipation 160mW

†In development—available later.



Integrated circuits

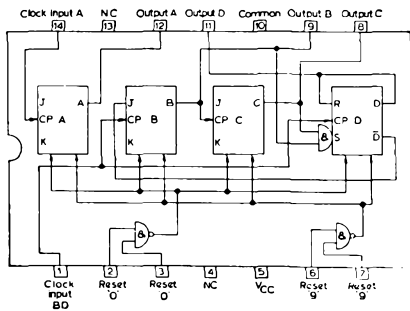
GFB family of TTL integrated circuits (cont.)

book 1 part 6

COUNTERS

† GFB7490D

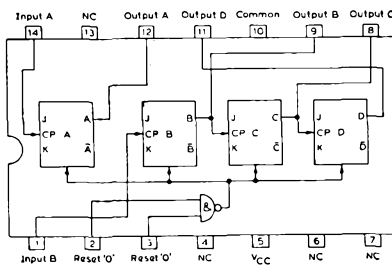
High speed decade counter consisting of four master slave flip-flops permitting three independent count modes



Max. clock rate **10MHz**
Av. power dissipation **160mW**

† GFB7493D

4-bit binary counter consisting of four master-slave flip-flops internally connected to provide a divide-by-two and divide-by-five counters



Max. count frequency **10MHz**
Av. power dissipation **128mW**

DATA SELECTOR/ MULTIPLEXERS

† GFB74153

† GFB74155

The GFB74153 is a dual 4-line-to-1-line data selector/multiplexer. The GFB74155 is a dual 2-line-to-4-line data selector/multiplexer.

(16-lead DIL)

Av Power
dissipation

GFB74153
GFB74155

180mW
125mW

SHIFT REGISTER

† GFB7495D

4-bit right-left shift register

Maximum shift frequency **36MHz**
Power dissipation (typ.) **195mW**

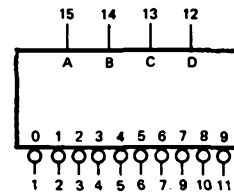
Pin No.	Pin No.
1 serial input	8 clock 2, left shift
2 input A	9 clock 1, right shift
3 input B	10 output D
4 input C	11 output C
5 input D	12 output B
6 mode control	13 output A
7 common	14 V _{cc}

DECODER

GFB7442D

BCD to Decimal decoder

(16-lead DIL)

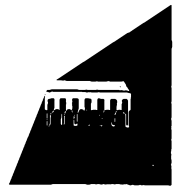


V_{cc} = Pin 16
GND = Pin 8

Average power dissipation

140mW

†In development—available later.



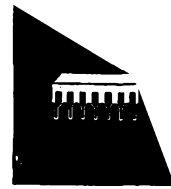
Integrated circuits

GXB 10,000 family of CML integrated circuits

book 1 part 6

Type No.	Description	Propagation Delay (Typ.) (ns)	Power consumption per package (mW)
GXB10101	Quadruple OR/NOR gate with strobe		
GXB10102	Quadruple NOR gate	2.0	100
GXB10105	Triple OR/NOR gate	2.0	75
GXB10106	Triple 4-3-3 input NOR gate		
GXB10107	Triple exclusive OR/exclusive NOR gate	2.4	115
GXB10109	Dual OR/NOR gate	2.0	50
GXB10110	Dual 3-input/3-output OR line driver	2.4	150
GXB10111	Dual 3-input/3-output NOR line driver	2.4	150
* GXB10114	Triple line receiver		
GXB10115	Quadruple line receiver	2.0	95
GXB10117	Dual OR-AND/OR-AND-INVERT gate	2.3	100
GXB10118	Dual OR/AND gate	2.3	100
GXB10119	OR/AND gate	2.3	100
GXB10121	4-wide OR-AND/OR-AND-INVERT gate	2.3	100
* GXB10124	Quad TTL-MECL Translator		
* GXB10125	Quad MECL-TTL Translator		
GXB10130	Dual D-LATCH	2.0	110
GXB10131	Dual D-type Master-Slave flip-flop	2.0	230
GXB10132	Dual Multiplexer with latch (common reset)	3.0	210
GXB10133	Quad latch with output enable	3.0	310
GXB10134	Dual Multiplexer with latch	3.0	—
* GXB10136	Universal binary counter	3.3	—
* GXB10137	Universal decade counter	3.3	—
* GXB10149	256 × 4 Programmable read only memory	—	—
GXB10160	12-bit parity Checker/Generator	4.5	310
GXB10161	Three-bit decoder (one of eight lines low)	4.0	490
GXB10162	Three-bit decoder (one of eight lines high)	4.0	490
GXB10164	Eight input Multiplexer	4.2	490
* GXB10165	Priority decoder	—	—
* GXB10173	Quad 2-input Multiplexer with latch	—	—
GXB10174	Dual 4-1 Multiplexer	3.5	325
* GXB10175	Quintuple latch	—	—
GXB10179	Look ahead carry block	3.0	250
* GXB10180	Dual High Speed adder/subtractor	—	—
GXB10181	4-bit arithmetic logic unit	7.0	600
* GXB10210	High speed 3 input/3 output OR gate	—	—
* GXB10211	High speed 3 input/3 output NOR gate	—	—
* GXB10214	High speed triple differential line receiver	—	—
* GXB10231	High Speed, Dual D flip-flop	—	—
* GXB95410	256-bit Random access memory	—	—

* In development—for availability consult Mullard Ltd.



MOS Integrated circuits

FD, FE and GY family book 1 part 6

A series of complex monolithic integrated circuits using MOS P-channel enhancement mode technology.

D.C. noise margin (min.)		1.0V
Operating temperature range	FD family	-55 to +85°C 0 to +75°C

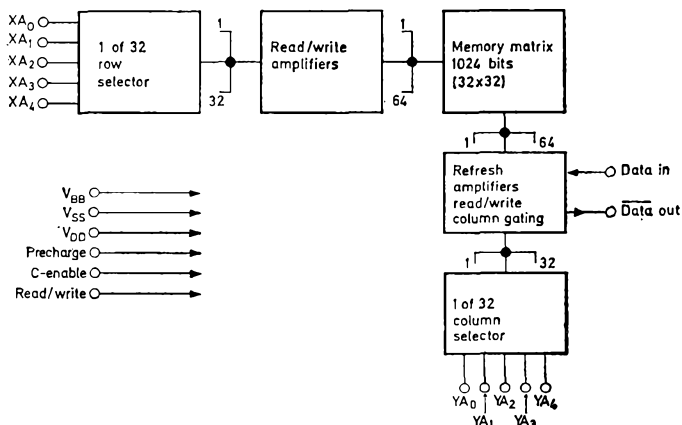
READ/WRITE RANDOM ACCESS MEMORIES

GYQ101/111/131

1024-bit read/write random access memories

	GYQ 101	111	131
Supply voltages V_{SS}	16	16	16V
$V_{BB}-V_{SS}$	3-4	3-4	3-4V
Cycle time (min.)	500	390	315ns
Access time	300	220	150ns
Stand by power	3.0	6.0	4.0 μ W/bit

18-lead dual-in-line package.



READ ONLY MEMORIES

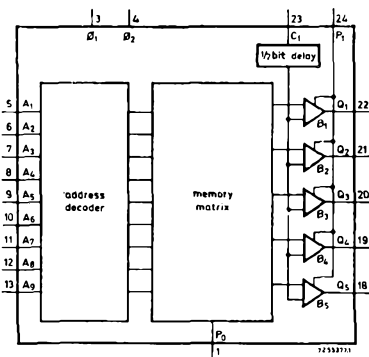
Power dissipation ($f = 1\text{MHz}$): 90mW 24-lead ceramic dual-in-line package (outline AW)

These memories are available with either an optional or a standard bit pattern as follows:

Optional bit pattern

FDR116Z

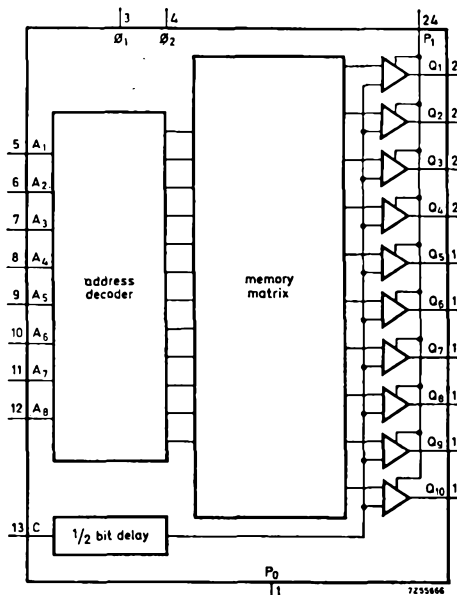
Read only memory, 512-word, 5 bits per word



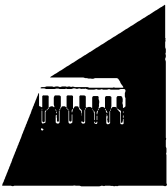
Read access time (max.) 850ns
Clock rate (max.) 1.2MHz

FDR126Z

Read only memory, 256-word, 10 bits per word.



Read access time (max.) 1 μ s
Clock rate (max.) 1MHz

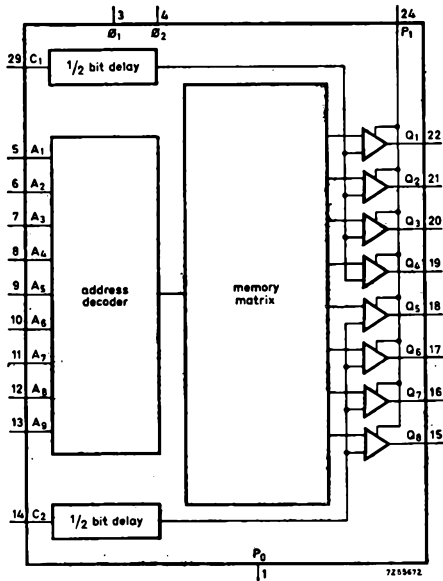


MOS Integrated circuits

FD, FE and GY family (cont.) book 1 part 6

FDR131Z

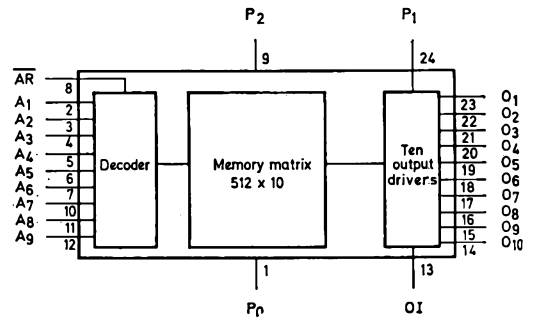
Read only memory, 512-word, 8 bits per word.



Read access time (max.) 1.5µs
 Clock rate (max.) 0.66MHz

FDR146Z

Static read only memory, 512-word, 10 bits per word.

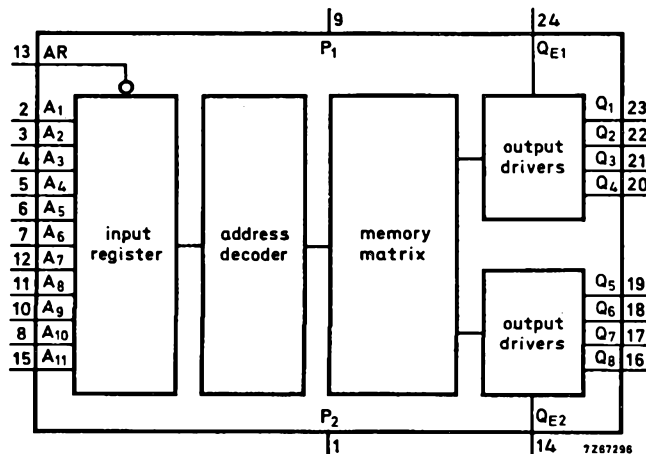


FDR151Z

Static read only memory, 2,048 words, 8 bits per word.

FDR151BZ

As FDR151Z but in DIL plastic encapsulation.





MOS Integrated circuits

FD, FE and GY family (cont.) book 1 part 6

READ ONLY MEMORIES (cont.)

Set bit pattern

The following read-only-memories are available as standard product in pre-programmed version where the bit pattern is fixed to perform the selected function and also to serve for preliminary investigations by the customer before the final bit pattern is established.

FDR116Z1

Identical to FDR116Z but with fixed bit pattern for dot code matrix ASCII character generator (row scan).

FDR116Z2

Identical to FDR116Z but with fixed bit pattern for Character Generator (5x7 dot matrix; row scan system).

FDR126Z1

Identical to FDR126Z but with fixed bit pattern to convert from both ASCII to selectric line code and selectric line code to ASCII

FDR131Z1

Identical to FDR131Z but with fixed bit pattern to convert from both 7-bit ASCII to 8-bit EBCDIC and from 8-bit EBCDIC to 7-bit ASCII. Either odd or even parity ASCII can be used as inputs to the R.O.M.

FDR131Z2

Identical to FDR131Z but with fixed bit pattern for Character Generator (5x7 dot matrix; column scan system)

FDR146Z1

Identical to FDR146Z but with fixed bit pattern for character generation. The memory contains 64 ASCII encoded symbols. Each high resolution character is a 7x9 matrix organised for column scanning

FDR146Z2

Identical to FDR146Z but with fixed bit pattern for Static Character Generator upper and lower case (5x7 dot matrix; row scan system).
FDR146B, BZ1, BZ2 as FDR146Z but in plastic DIL package.

Desk calculators

FDY Series

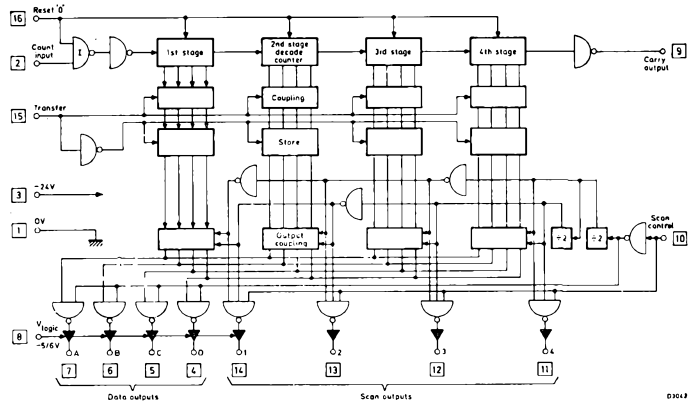
The FDY Series provides the basic circuitry for all calculator functions. The series is made up of thirteen units and these can be incorporated into larger systems. The range is primarily designed for desk calculators and application notes are available. The circuits are provided in 24 pin, 28 pin or 40 pin dual-in-line hermetic packages.

Decade counters

FEJ271 Quad decade counter/store

FEJ271 is an MOS/LSI counting module for use in low speed counting applications. It consists of 4-decade counting stages with a carry output

Maximum counting speed 1MHz
16-lead dual-in-line package.

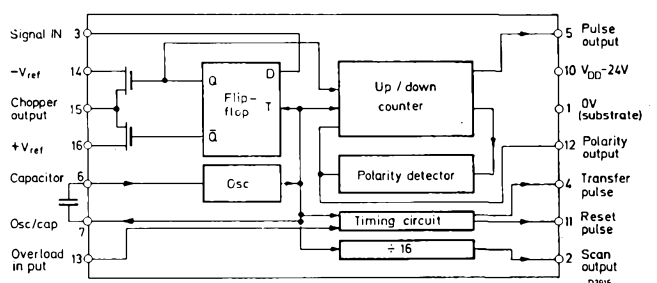


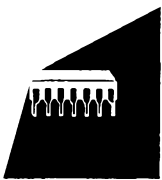
Analogue to Digital Converter

FEY101

The FEY101 contains the logic section of an integrating type A-D converter designed for use in economic digital voltmeter systems. It is intended to be used with an FEJ271 quad-decade counter, an operational amplifier and decoder driver and a few discrete components to form a complete voltmeter.

Measuring range is ±2000 divisions.
16-lead dual-in-line package.





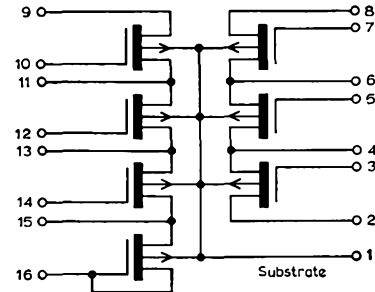
MOS Integrated circuits (cont.)

multiple transistor array book 1 part 6

GKY102

The GKY102 is a monolithic intergated p-channel enhancement MOS circuit comprising seven identical interdigitated MOS transistors with their drains and sources connected internally as shown in the circuit diagram.

It is ideally suited for breadboarding 4-phase logic circuits and other ratio-less type dynamic circuits as well as for general switching applications since each transistor has a typical ON resistance of 300 ohms. All external gate input connections have a protection device incorporated to prevent damage by electrostatic charges during normal handling.



Max. clock voltage -30 V
 'ON' resistance at $-V_{GS} = 25V$ 170-540 Ω
 Operating temperature range -55 to +125 $^{\circ}C$
 16-lead hermetic-in-plastic dual-in-line package.

linear integrated circuits book 1 part 7

OPERATIONAL AMPLIFIERS

Type No.	Description and Construction	Nominal Supply Voltage (V)	Output Voltage (V)	Input Impedance (k Ω)	Output Impedance (Ω)	Input Offset Voltage (mV)	Gain (Typ.)	Operating Temperature Range ($^{\circ}C$)
TBA221 TBA221B TBA221D	Operational amplifier	AP1 +15 AU3 -15 AS	± 14	1000	—	2	100000	0 to +70
TBA222	Operational amplifier	AP1 +15 -15	± 14	1000	—	1	200000	-55 to +125
TCA220	Triple operational amplifier	AU2 +6 -6	+3.5 -6	25	—	2	4000	-55 to +125
TCA410A TCA410B	Voltage follower	J7 +15 -15	± 13.5	Input Current { 1nA max 3nA max }	1 Ω	3	0.995	-25 to +70 $^{\circ}C$
TCA490A TCA490B TCA490C	Dual operational amplifier and Stereo pre-amplifier	AU1 +12 -12	± 8 ± 8	Slewrate V/ μs 5	noise fig. (μv) { 4 2.5 1.25 }	0.5	12000	0 to +70 $^{\circ}C$
TCA520B	Operational Amplifier (low voltage range)	AU3 5 -0.1	+0.1	50	—	2	40000	-25 to +70 $^{\circ}C$
TCA680 TCA680B	Operational Amplifier	AP1 +15 AU3 -15	± 12.5	20	—	2	20000	0 to +70 $^{\circ}C$



Integrated circuits

linear integrated circuits (cont.) book 1 part 7

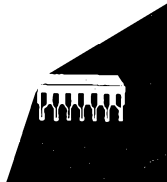
AUDIO AMPLIFIERS

Type No.	Description and Construction	Nominal Supply Voltage (V)	Input Impedance (kΩ)	Load Impedance (Ω)	Output Power (mW)	Noise Figure	Gain (Typ.)	Operating Temperature Range (°C)	
OM200/S2	Hearing aid amplifier	P	5	—	—	0.2	<6dB	80dB	-20 to +80
TAA263	Linear A.F. amplifier	J8*	—	150	10	5dB	77dB	-20 to +100	
TAA300	Linear A.F. amplifier	AP2	9	15	8	1W	≤20nW $V_{in} = 8.5mV$	-55 to +150	
TAA310A	Low-noise A.F. amplifier	AP2	7	20	—	2.0V _{rms} † (30Hz to 15kHz)	2.5dB	100dB	-20 to +60
TAA370	Hearing aid amplifier	AT	1.3	—	—	1.5	3dB	90dB	-20 to +85
TAA960	Triple amplifiers for active filters	AP2	+6	(each amplifier) 25	Output impedance 9 or 0.5KΩ	Output Power (mW)	—	(each amplifier) 39dB	-55 to +65
TBA915	Low current drain A.F. amplifier	AP2	18	9	20	500	—	$V_{in} = 10mV$	-55 to +125
TCA160/B/C	A.F. amplifier	AU2**	12	15	8	2.1W†	—	1.0nW 70dB	-25 to +125
TCA160Q/BQ/CQ		AV							
TCA210	Pre-amplifier and output amplifier	AU2	12	0.5	800	2.5	6dB	10000	-55 to +125
TCA210D		CF		17	15	800	—	500	
TAA320	MOST L.F. Pre-amplifier	G3		$V_{GSO} \text{ max. (V)}$ -20	$V_{DS} \text{ max. (V)}$ -20	$I_D \text{ max. (mA)}$ 25	$g_m \text{ (mA/V)}$ 40	$r_{\theta} \text{ min. (G}\Omega)$ 100	

*J8 connections are as follows
 1 Input
 2 Positive supply
 3 Output
 4 Common and negative supply

**Dual-in-line with heatsink.

†at onset of clipping
 ‡output voltage



Integrated circuits

linear integrated circuits (cont.) book 1 part 7

RADIO CIRCUITS

Type No.	Description and Construction	Supply Voltage (V)	Output power (W)	A.G.C. Range (dB)	Sensitivity (μ V)	Distortion (%)	Operating Temperature Range ($^{\circ}$ C)
TBA570 TBA570Q	AM/FM receiver circuit AU2 AV	3.6 to 12	1	65	16 15	1	-20 to +125
TBA690	AM/FM receiver circuit AU2	2.7 to 11.4	0.6	60	4	1	-20 to +125
TBA700	AM/FM receiver circuit AU2	9	1	60	15	1	-20 to +125
Channel separation Input voltage Voltage gain (dB) (V) (dB)							
TCA290A	Stereo decoder circuit AU2	15	40	1 p-p	8-12	0.2	-30 to +80
Supply Voltage Output Limiting Voltage Voltage Distortion Temperature (V) (mV) (μ V) (dB) (%) Range ($^{\circ}$ C)							
TCA420A	I.F. amplifier for F.M. AU2	15	15	35	65	0.8	-25 to +80

TELEVISION CIRCUITS

Nominal Supply Voltage : 12V
Operating Temperature Range: -20 to +60 $^{\circ}$ C

Type No.	Description and Construction	Functions
TBA480	FM-I.F. amplifier and demodulator	For audio section intercarrier I.F. amplifier and demodulator. Can also be used in F.M. broadcast receivers.
TBA500N TBA500NQ TBA500P TBA500PQ	Luminance combination AU2 AV	Delay line matching stage. Gated black level clamp. D.C. contrast control. Beam current limiter.
TBA510 TBA510Q	Chrominance combination AU2 AV	Variable gain A.G.C. chroma amplifier. Chroma blanking and burst gate function. Colour killer and PAL delay line driver stage.
TBA520 TBA520Q	Colour demodulator AU2 AV	Dual active synchronous demodulator for R-Y and B-Y chrominance signals matrix. PAL phase switch and flip-flop.
TBA530 TBA530Q	R-G-B matrix amplifier AU2 AV	R-G-B- matrix pre-amplifier with low thermal drift.
TBA540 TBA540Q	Reference combination AU2 AV	Phase and amplitude controlled reference oscillator using quartz crystal. Synchronous demodulator circuit. A.C.C., colour killer and identification signal generator.
TBA550 TBA550Q	Television signal processing circuit AU2 AV	Video pre-amplifier. A.G.C. for r.f. and i.f. stages. Noise protection circuits.
TBA560 TBA560Q	Luminance & chrominance combination AU2 AV	Sync. separator, phase detector. Blanking for video amplifier.
TBA720A TBA720AQ	Line oscillator AU2 AV	Combines the functions of TBA500/Q and TBA510/Q
TBA750 TBA750Q	Line oscillator AU2 AV	Line oscillator with D.C. controls and square-wave output.
TBA750 TBA750Q	Limiter amplifier AU2 AV	Limiter amplifier, f.m. detector, d.c. volume control and a.f. amplifier.
TBA920C TBA920CQ	Line oscillator circuit AU2 AV	Limiter amplifier, f.m. detector, d.c. volume control and a.f. amplifier. Sync. pulse separator, noise gate. Line oscillator, phase control. Line driver output stage.



Integrated circuits

linear integrated circuits (cont.) book 1 part 7

TELEVISION CIRCUITS (cont.)

Type No.	Description and Construction	Functions
TBA990 TBA990Q	} Colour demodulator	AU2 AV
		As TBA520 but suitable for d.c. drive to picture tube when used with TBA530 and R.G.B. output stages.
TCA270 TCA270Q	} Synchronous demodulator	AU2 AV
		Video amplifier with buffer stage. Noise inverter. A.G.C. detector and output stage for tuners and i.f. amplifiers. A.F.C. demodulator with buffer output stage.

OTHER CIRCUITS

Type No.	Description	Supply Voltage (V)	Input Voltage (V) Low	Input Voltage (V) High	Output Voltage (V) Low	Output Voltage (V) High	Output Impedance (Ω)	Operating Temperature Range ($^{\circ}\text{C}$)
SAJ110	Bipolar frequency divider (organ circuit)	9	1	6	0.1	7.3	120	-25 to +125

Type No.	Description	Supply Voltage (V)	Drain Current (mA)	Gate Cut-off Current (μA)	Operating Temperature Range ($^{\circ}\text{C}$)
TAA320A	MOST level sensor	-20	60	1	-20 to +125

Type No.	Description and Construction	Stabilised Voltage (V)	Nom. Operating Current (mA)	Differential Resistance (Ω)	Temperature Coefficient ($\text{mV}/^{\circ}\text{C}$)	Operating Temperature Range ($^{\circ}\text{C}$)
TAA550	Voltage stabiliser for varicap diodes supply available in 3 voltage groups	AP2 31-32 (red) 32-34 (yellow) 34-35 (green)	5	10	-0.13	-20 to +150

Type No.	Description and Construction	Line Regulation $\%/V_{\text{out}}$	Load Regulation $\%/V_{\text{out}}$	Short-circuit Current Limit (mA)	Input Voltage Range (V)	Output Voltage Range (V)	Operating Temperature Range ($^{\circ}\text{C}$)	
TBA281	Voltage regulation circuit	AP1	0.1	0.2	65	9.5-40	2-37	0 to +70

Type No.	Description and Construction	V_{CBO} (max.) (V)	Carrier Leakage Power (nW)	f_{T} (typ.) (MHz)	Operating Temperature Range ($^{\circ}\text{C}$)	Gain (Typ.) (dB)	
TBA673	4-transistor bridge for modulation/demodulation	AP2	+30	3 (typ.)	250	-25 to +100	-0.75

Type No.	Description and Construction	Internal Supply Voltage (nom.) (V)	Output Trigger current (max.) (mA)	Operating Temperature range ($^{\circ}\text{C}$)	Trigger circuit	
TCA280A	Trigger module for Thyristor & Triac control	AU2	12	30	0 to +70	Phase control or zero crossing switch

Type No.	Description and Construction	Line Regulation mV/V_{out}	Load Regulation mV/mA	Short-circuit Current Limit (mA)	Input Voltage Range (V)	Output Voltage Range (V)	Operating Temperature Range ($^{\circ}\text{C}$)	
TCA530	Voltage regulator for use with varicap diodes (adjustable)	AU2	0.2	1.0	4	47-63	30 ± 1	+10 to 60

Type No.	Description and Construction	Line Regulation	Load Regulation	Short-circuit Current Limit (mA)	Input Voltage Range (V)	Output Voltage Range (V)	Operating Temperature Range ($^{\circ}\text{C}$)	
TCA750	Voltage regulator for use with varicap tuners	AU2	—	—	5.5	27-54	* $\left\{ \begin{array}{l} 21-31 \\ 8-18 \\ 8-26 \end{array} \right\}$	+10 to +60

*Voltage adjustable with external components.



selection by voltage

V _{CB} max. (V)	P _{tot} max. (mW) (T = 25°C)	f _r , f ₁ or f _a min. (MHz)	h _{FE} at I _C (mA)		Type No.	Page No.	
			f _{thre}	f _{thre}			
70	117W	—	20 to 70	4-0A	BD182	30	
	800	250	>25	500	BSX59	30	
	800	250	>30	500	BSX61	30	
75	800	60 (typ)	40 to 120	150	2N1613	29	
	800	70	100 to 300	150	2N1711	29	
80	880	80	110 (typ)	150	BCX32	29	
	880	100	90 (typ)	150	*BCX35	34	
	36W	7.0 (typ)	>750	1.5A	*BD262A	37	
	36W	7.0 (typ)	>750	1.5A	BD263	37	
	55W	2.5 (typ)	>750	3.0A	*BD266A	37	
	55W	2.5 (typ)	>750	3.0A	BD267	37	
	1.25W	—	>1500	500	BDX43	37	
	90W	7.0 (typ)	>1000	3.0A	*BDX62A	37	
	90W	7.0 (typ)	>1000	3.0A	BDX63	37	
	117W	2.5 (typ)	>1000	5.0A	*BDX64A	37	
	117W	2.5 (typ)	>1000	5.0A	BDX65	37	
	150W	7 (typ)	>1000	10A	*BDX66A	37	
	150W	7 (typ)	>1000	10A	BDX67	37	
	55W	3.0	>30	2.0A	BDX77	30	
	55W	3.0	>30	2.0A	*BDX78	35	
	40W	70 (typ)	30 to 120	5.0A	BDY92	30	
	800	60	>30	150	BFY50	29	
	5W	—	>1500	500	BSS51	37	
	30W	0.25 (typ)	20 to 55	1.0A	*OC28	26	
	30W	0.25 (typ)	30 to 110	1.0A	*OC36	26	
	800	60	40 to 120	150	2N2297	29	
	5.0W	—	>1500	500	*BSS61	37	
	85	117W	—	20 to 70	3.0A	BD183	30
		88W	250 (typ)	15 to 100	1.4A	BLX14	31
90	11W	60	>40	500	BD133	30	
95	117W	—	20 to 70	4.0A	BD184	30	
100	880	80	100 (typ)	150	BCX31	29	
	6.5W	250 (typ)	40 to 160	150	BD139	29	
	6.5W	75 (typ)	40 to 160	150	*BD140	34	
	25W	3.0	>25	1.0A	BD237	30	
	25W	3.0	>25	1.0A	*BD238	35	
	36W	7.0 (typ)	>750	1.5A	BD262B	37	
	36W	7.0 (typ)	>750	1.5A	BD263A	37	
	55W	2.5 (typ)	>750	3.0A	BD267A	37	
	15W	100	45 to 450	500	BDX35	31	
	1.25W	—	>1500	500	BDX44	37	
	90W	7.0 (typ)	>1000	3.0A	BDX62B	37	
	90W	7.0 (typ)	>1000	3.0A	*BDX63A	37	
	117W	2.5 (typ)	>1000	5.0A	BDX65A	37	
	150W	7 (typ)	>1000	10A	BDX67A	37	
	115W	1.0	20 to 70	4.0A	BDY20	30	
	40W	70 (typ)	30 to 120	5.0A	BDY91	30	
	800	50	>30	150	BFX84	29	
	800	50	>70	150	BFX85	29	
	5W	—	>1500	500	BSS52	37	
	870	100 (typ)	>40	2.0A	BSV64	30	
	800	80 (typ)	>40	100	BSW66	30	
30W	0.25 (typ)	25 to 75	1.0A	*OC20	26		
115W	0.8	20 to 70	4.0A	2N3055	30		
110	195W	275 (typ)	10 to 70	1.4A	BLX15	31	
	300	50	>30	25	*BSS68	33	
	250	50	>30	25	*BSV68	33	
120	36W	7.0 (typ)	>750	1.5A	BD263B	37	
	15W	100	45 to 450	500	BDX36	31	
	15W	100	45 to 450	500	BDX37	31	
	90W	7.0 (typ)	>1000	3.0A	BDX63B	37	
	40W	70 (typ)	30 to 120	5.0A	BDY90	30	
	300	60	>20	1.0	BSS38	28	
	800	80 (typ)	>40	100	BSW67	30	
300	60	>20	4.0	BSX21	28		
140	100W	1.0 (typ)	20 to 70	2.0A	2N4347	30	
150	800	80 (typ)	>40	100	BSW68	30	
160	117W	1.0 (typ)	20 to 70	3.0A	2N3442	30	
185	3.0W	80	>20	30	BF336	29	
200	50W	100 (typ)	>50	1.0A	BUY86	31	

V _{CB} max. (V)	P _{tot} max. (mW) (T = 25°C)	f _r , f ₁ or f _a min. (MHz)	h _{FE} at I _C (mA)		Type No.	Page No.
			f _{thre}	f _{thre}		
250	10W	—	—	—	BD160	30
	3.0W	80	>20	30	BF337	29
	5.0W	60 (typ)	>50	10	*BFT45	34
300	3.0W	80	>20	30	BF338	29
	3.0W	130 (typ)	70 (typ)	100	BF355	29
	5.0W	60 (typ)	>50	10	*BFT44	34
	50W	100 (typ)	>50	1.0A	BUY87	31
500	7.0W	15 (typ)	25 to 175	50	BD232	29
600	30W	12 (typ)	15 to 60	1.0A	BDY95	30
	40W	10 (typ)	15 to 60	2.0A	BDY98	30
750	30W	12 (typ)	15 to 60	1.0A	BDY93	30
	30W	12 (typ)	15 to 60	1.0A	BDY94	30
	40W	10 (typ)	15 to 60	2.0A	BDY96	30
	40W	10 (typ)	15 to 60	2.0A	BDY97	30
	30W	8.0 (typ)	15 to 60	1.0A	BU126	31
30W	8.0 (typ)	15 to 60	1.0A	BU133	31	
1300	10W	7.5 (typ)	>2	2.0A	BU204	31
	12.5W	7.0 (typ)	>2.25	4.5A	BU207	31
1500	10W	7.5 (typ)	>2	2.0A	BU205	31
	12.5W	7.0 (typ)	>2.25	3.0A	BU208	31
1700	10W	7.5 (typ)	>1.8	2.0A	BU206	31
	12.5W	7.0 (typ)	>2.25	3.0A	BU209	31

*p-n-p types, V_{CB} max. negative



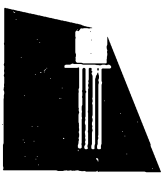
Transistors

selection by total dissipation

P _{tot} max. (T = 25°C)	V _{CB} max. (V)	f _r , f ₁ or f _a (MHz) min.	h _{FE} at I _C I _{thre} (mA)		Type No.	Page No.
			>20	1-0		
30mW	+8	1200	>20	1-0	BFT24	28
120mW	+30	800 (typ)	>20	3-0	BF362	28
	+30	600	>20	3-0	BF363	28
130mW	+36	550 (typ)	>10	1-0A	BLY90	32
140mW	+30	6-0	>35	200	ASY74	26
145mW	+50	230 (typ)	>40	20	BF115	28
150mW	+30	675 (typ)	—	—	BF180	28
	+30	600 (typ)	—	—	BF181	28
	+30	270	>15	3-0	BF200	27
180mW	+20	5000 (typ)	25 to 150	10	BFR90	28
	+20	5000 (typ)	25 to 150	25	BFR91	28
200mW	+30	1200	25 to 150	2-0	BFX89	28
	+30	1000	25 to 125	2-0	BFY90	28
220mW	+30	260 (typ)	115 (typ)	1-0	BF194	28
	+30	200 (typ)	67 (typ)	1-0	BF195	28
250mW	-64	0-25	10 to 35	20	*BCY30	33
	-64	0-25	15 to 60	20	*BCY31	33
	-64	0-25	20 to 70	20	*BCY32	33
	-32	0-4	10 to 35	20	*BCY33	33
	-32	0-6	15 to 60	20	*BCY34	33
	+40	400 (typ)	>27	4-0	BF196	27
	+40	550 (typ)	>38	7-0	BF197	27
	-30	550 (typ)	—	—	*BF324	33
	-40	325 (typ)	—	—	*BF450	33
	-40	325 (typ)	—	—	*BF451	33
	+20	1600 (typ)	>25	50	BFW30	28
	-110	50	>30	25	*BSV68	33
	300mW	+50	300 (typ)	†125 to 500	2-0	BC107
+30		300 (typ)	†125 to 900	2-0	BC108	27
+30		300 (typ)	†240 to 900	2-0	BC109	27
+50		300 (typ)	†125 to 500	2-0	BC547	27
+30		300 (typ)	†125 to 900	2-0	BC548	27
+30		300 (typ)	†240 to 900	2-0	BC549	27
-50		150 (typ)	†75 to 260	2-0	*BC557	33
-30		150 (typ)	†75 to 500	2-0	*BC558	33
-25		150 (typ)	†125 to 500	2-0	*BC559	33
+120		60	>20	1-0	BSS38	28
-110		50	>30	25	*BSS68	33
+120		60	>20	4-0	BSX21	28
+20		350 (typ)	30 to 60	10	BSY38	28
+20		350 (typ)	40 to 120	10	BSY39	28
+20		200	50 to 200	10	BSY95A	28
340mW	+32	2-5 (typ)	100 (typ)	20	AC127	27
350mW	+50	300 (typ)	†125 to 500	2-0	BC147	27
	+30	300 (typ)	†125 to 900	2-0	BC148	27
	+30	300 (typ)	†240 to 900	2-0	BC149	27
	-50	150 (typ)	†75 to 260	2-0	*BC157	33
	-30	150 (typ)	†75 to 500	2-0	*BC158	33
	-25	150 (typ)	†125 to 500	2-0	*BC159	33
	-50	250	>50	10	*BCY70	33
	-45	200	100 to 600	10	*BCY71	33
	-25	200	>50	10	*BCY72	33
360mW	-60	40	70 to 300	0-01	*BFX37	33
	+40	400	20 to 60	10	BSX19	28
	+40	500	40 to 120	10	BSX20	28
	+40	500	40 to 120	10	2N2369A	28
400mW	-60	200	40 to 120	150	*2N2906	34
	-60	200	40 to 120	150	*2N2906A	34
	-60	200	100 to 300	150	*2N2907	34
	-60	200	100 to 300	150	*2N2907A	34
410mW	-32	0-45	10 to 30	150	*BCY38	33
	-64	0-45	10 to 50	150	*BCY39	33
	-32	0-85	15 to 120	150	*BCY40	33
	-50	0-45	12 to 70	150	*BCY54	33
500mW	+20	5000 (typ)	>30	50	BFR96	29
600mW	-60	100	>50	10	*BFX29	34
	-65	—	50 to 200	10	*BFX30	34

P _{tot} max. (T = 25°C)	V _{CB} max. (V)	f _r , f ₁ or f _a (MHz) min.	h _{FE} at I _C I _{thre} (mA)		Type No.	Page No.
			>40	10		
600mW	-50	100	>40	10	*BFX87	34
	-40	100	>40	10	*BFX88	34
	+60	40	20 to 60	150	2N696	29
	+60	50	40 to 120	150	2N697	29
	-60	200	40 to 120	150	*2N2904	34
	-60	200	40 to 120	150	*2N2904A	34
	-60	200	100 to 300	150	*2N2905	34
625mW	-50	100 (typ)	100 to 600	100	*BC327	34
	-30	100 (typ)	100 to 600	100	*BC328	34
	+50	200 (typ)	100 to 600	100	BC337	29
	+30	200 (typ)	100 to 600	100	BC338	29
700mW	+32	1-0	52 to 180	500	AC176	27
800mW	+100	50	>30	150	BFX84	29
	+100	50	>70	150	BFX85	29
	+40	50	>70	150	BFX86	29
	+80	60	>30	150	BFY50	29
	+60	50	>40	150	BFY51	29
	+40	50	>60	150	BFY52	29
	+40	50	>30	150	BFY53	29
	+100	80 (typ)	>40	100	BSW66	30
	+120	80 (typ)	>40	100	BSW67	30
	+150	80 (typ)	>40	100	BSW68	30
	+70	250	>25	500	BSX59	30
+70	250	>30	500	BSX61	30	
+75	60 (typ)	40 to 120	150	2N1613	29	
+75	70	100 to 300	150	2N1711	29	
+80	60	40 to 120	150	2N2297	29	
870mW	+100	100 (typ)	>40	2A	BSV64	30
880mW	+100	80	100 (typ)	150	BCX31	29
	+80	80	110 (typ)	150	BCX32	29
	+60	80	120 (typ)	150	BCX33	29
	+40	80	140 (typ)	150	BCX34	29
	-80	100	90 (typ)	150	*BCX35	34
-60	100	90 (typ)	150	*BCX36	34	
-40	100	90 (typ)	150	*BCX37	34	
1-0W	-32	1-5 (typ)	55 to 175	50	*AC128	26
	+25	5-0 (typ)	100 to 500	300	AC187	27
	-25	1-5 (typ)	100 to 500	300	*AC188	26
1-25W	+60	—	>1500	500	BDX42	37
	+80	—	>1500	500	BDX43	37
	+100	—	>1500	500	BDX44	37
1-5W	+40	1200 (typ)	>25	150	BFW16A	31
	+40	1100 (typ)	>25	150	BFW17A	31
3-0W	+185	80	>20	30	BF336	29
	+250	80	>20	30	BF337	29
	+300	80	>20	30	BF338	29
	+300	130 (typ)	70 (typ)	100	BF355	29
+36	1400 (typ)	>10	100	BLX65	31	
3-5W	+60	—	>2000	150	BCX21	37
	+30	3500 (typ)	>40	150	BFR94	31
	+40	700 (typ)	10 to 200	100	2N4427	32
4-0W	+32	3-0 (typ)	80 to 320	500	AD161	27
	+36	1400 (typ)	>10	100	BLX66	31
	+65	1200 (typ)	>10	100	BLX91	31
4-5W	+36	1400 (typ)	>10	100	BLX67	31
5-0W	-300	60 (typ)	>50	10	*BFT44	34
	-250	60 (typ)	>50	10	*BFT45	34
	+65	250	>10	200	BLY33	31
	+40	250	>10	200	BLY34	31
	+60	—	>1500	500	BSS50	37
	+80	—	>1500	500	BSS51	37
	+100	—	>1500	500	BSS52	37
	-60	—	>1500	500	*BSS60	37
	-80	—	>1500	500	*BSS61	37
	+60	100	50 to 250	150	2N3053	29
	+55	700 (typ)	110 to 200	50	2N3866	32
6-0W	-32	1-5 (typ)	80 to 320	500	*AD162	26
	+65	1200 (typ)	>10	100	BLX92	31

*p-n-p types, V_{CB} max. negative



selection by total dissipation

P _{tot} max. (T = 25°C)	V _{CB} max. (V)	f _r , f ₁ or f _a (MHz) min.	h _{FE} at I _C (mA)		Type No.	Page No.
			I _{th}	I _{th}		
6.5W	+45	250 (typ)	40 to 250	150	BD135	29
	-45	75 (typ)	40 to 250	150	*BD136	34
	+60	250 (typ)	40 to 160	150	BD137	29
	-60	75 (typ)	40 to 160	150	*BD138	34
	+100	250 (typ)	40 to 160	150	BD139	29
7.0W	+500	15 (typ)	25 to 175	50	BD232	29
	+65	500 (typ)	10 to 100	250	2N3553	32
8W	+36	1300 (typ)	>10	500	BLY53A	31
	+55	800 (typ)	>10	500	BLY98A	32
10W	+250	—	—	—	BD160	30
	+40	250	>10	200	BLY85	32
	+66	250	>10	200	BLY97	32
	+1300	7.5 (typ)	>2	2.0A	BU204	31
	+1500	7.5 (typ)	>2	2.0A	BU205	31
+1700	7.5 (typ)	>1.8	2.0A	BU206	31	
11W	+70	60	>40	500	BD131	30
	-45	60	>40	500	*BD132	34
	+90	60	>40	500	BD133	30
11.6W	+65	500 (typ)	10 to 100	250	2N3375	32
12W	+65	250	10 to 220	1.0A	BLY83	32
	+40	250	>10	1.0A	BLY84	32
12.5W	+65	1200 (typ)	>10	100	BLX93	31
	+1300	7.0 (typ)	>2.25	4.5A	BU207	31
	+1500	7.0 (typ)	>2.25	4.5A	BU208	31
	+1700	7.0 (typ)	>2.25	3.0A	BU209	31
15W	+70	60	35 to 150	500	BD124	30
	+100	100	45 to 450	500	BDX35	31
	+120	100	45 to 450	500	BDX36	31
	+120	100	45 to 450	500	BDX37	31
20W	+65	300 (typ)	>5	500	BLY93A	32
21.5W	+40	2000	>20	1.0A	BLX98	31
22.5W	-50	0.5 (typ)	30 to 100	1.0A	*AD149	26
	-40	—	15 to 80	1.0A	*OC25	26
	+55	300 (typ)	20 to 100	1.0A	810BLY/A	32
23W	+65	400 (typ)	10 to 150	250	2N3632	32
25W	+45	3.0	>25	1.0A	BD233	30
	-45	3.0	>25	1.0A	*BD234	35
	+60	3.0	>25	1.0A	BD235	30
	-60	3.0	>25	1.0A	*BD236	35
	+100	3.0	>25	1.0A	BD237	30
	-100	3.0	>25	1.0A	*BD238	35
30W	+750	12 (typ)	15 to 60	1.0A	BDY93	30
	+750	12 (typ)	15 to 60	1.0A	BDY94	30
	+600	12 (typ)	15 to 60	1.0A	BDY95	30
	+750	8.0 (typ)	15 to 60	1.0A	BU126	31
	+750	8.0 (typ)	15 to 80	1.0A	BU133	31
	-100	0.25 (typ)	25 to 75	1.0A	*OC20	26
	-80	0.25 (typ)	20 to 55	1.0A	*OC28	26
	-60	0.25 (typ)	45 to 130	1.0A	*OC29	26
	-60	0.25 (typ)	25 to 75	1.0A	*OC35	26
	-80	0.25 (typ)	30 to 110	1.0A	*OC36	26
36W	-60	7.0 (typ)	>750	1.5A	*BD262	37
	-80	7.0 (typ)	>750	1.5A	*BD262A	37
	-100	7.0 (typ)	>750	1.5A	*BD262B	37
	+80	7.0 (typ)	>750	1.5A	BD263	37
	+100	7.0 (typ)	>750	1.5A	BD263A	37
	+120	7.0 (typ)	>750	1.5A	BD263B	37
	+22	3.0	>50	2.0A	BD433	30
	+32	3.0	>50	2.0A	BD435	30
+45	3.0	>40	2.0A	BD437	30	
40W	+120	70 (typ)	30 to 120	5.0A	BDY90	30
	+100	70 (typ)	30 to 120	5.0A	BDY91	30
	+80	70 (typ)	30 to 120	5.0A	BDY92	30
	+750	10 (typ)	15 to 60	2.0A	BDY96	30
	+600	10 (typ)	15 to 60	2.0A	BDY97	30
	+750	10 (typ)	15 to 60	2.0A	BDY98	30
	+60	900 (typ)	25 to 80	1.0A	BLW64	31

P _{tot} max. (T = 25°C)	V _{CB} max. (V)	f _r , f ₁ or f _a (MHz) min.	h _{FE} at I _C (mA)		Type No.	Page No.
			I _{th}	I _{th}		
50W	+36	1000 (typ)	30 (typ)	1.0A	BLX69	31
	+65	1000 (typ)	10 to 100	1.0A	BLX94	31
	+200	100 (typ)	>50	1.0A	BUY86	31
	+300	100 (typ)	>50	1.0A	BUY87	31
	-60	2.5 (typ)	>750	3.0A	*BD266	37
55W	-80	2.5 (typ)	>750	3.0A	*BD266A	37
	+80	2.5 (typ)	>750	2.0A	BD267	37
	+100	2.5 (typ)	>750	2.0A	BD267A	37
	+80	3.0	>30	2.0A	BDX77	30
	-80	3.0	>30	2.0A	*BDX78	35
	+60	3.0	>30	3.0A	BD201	30
60W	-60	3.0	>30	3.0A	*BD202	35
	+60	3.0	>30	2.0A	BD203	30
	-60	3.0	>30	2.0A	*BD204	35
	+65	500 (typ)	15 to 100	1.4A	BLX13	31
70W	+36	650 (typ)	10 to 120	1.0A	BLX89A	32
	+65	500 (typ)	10 to 120	1.0A	BLY93A	32
	+55	—	20 to 70	3.0A	BD181	30
88W	+140	300 (typ)	15 to 100	1.4A	BLX14	31
	+65	1200 (typ)	>15	1.6A	BLX95	31
90W	-60	7.0 (typ)	>1000	3.0A	*BDX62	37
	-80	7.0 (typ)	>1000	3.0A	*BDX62A	37
	-100	7.0 (typ)	>1000	3.0A	*BDX62B	37
	+80	7.0 (typ)	>1000	3.0A	BDX63	37
	+100	7.0 (typ)	>1000	3.0A	BDX63A	37
	+120	7.0 (typ)	>1000	3.0A	BDX63B	37
100W	+36	550	>20	1.0A	BLW60	31
	+36	1.0 (typ)	20 to 70	2.0A	2N4347	30
115W	+100	1.0	20 to 70	4.0A	BDY20	30
	+50	1.0 (typ)	>30	2.0A	BDY38	30
	+100	0.8	20 to 70	4.0A	2N3055	30
117W	+70	—	20 to 70	4.0A	BD182	30
	+85	—	20 to 70	3.0A	BD183	30
	+95	—	20 to 70	4.0A	BD184	30
	-60	2.5 (typ)	>1000	5.0A	*BDX64	37
	-80	2.5 (typ)	>1000	5.0A	*BDX64A	37
	+80	2.5 (typ)	>1000	5.0A	BDX65	37
	+100	2.5 (typ)	>1000	5.0A	BDX65A	37
	+160	1.0 (typ)	20 to 70	3.0A	2N3442	30
130W	+36	550 (typ)	>10	1.0A	BLY90	32
	+65	500 (typ)	10 to 120	1.0A	BLY94	32
150W	-60	7 (typ)	>1000	10A	*BDX66	37
	-80	7 (typ)	>1000	10A	*BDX66A	37
	+80	7 (typ)	>1000	10A	BDX67	37
	+100	7 (typ)	>1000	10A	BDX67A	37
195W	+110	275 (typ)	10 to 70	1.4A	BLX15	31

*p-n-p types. V_{CB} max. negative

Transistors

selection by cut-off frequency

f_T, f_1 or f_a (MHz) min.	P_{tot} max. (mW) $T = 25^\circ\text{C}$	V_{CB} max. (V)	h_{FE} at I_C (mA) f_{Tf_0}		Type No.	Page No.
0.25	250	-64	10 to 35	20	*BCY30	33
	250	-64	15 to 60	20	*BCY31	33
	250	-64	20 to 70	20	*BCY32	33
	30W	-100	25 to 75	1.0A	*OC20	26
	22.5W	-40	15 to 80	1.0A	*OC25	26
	30W	-80	20 to 55	1.0A	*OC28	26
	30W	-60	45 to 130	1.0A	*OC29	26
	30W	-60	25 to 75	1.0A	*OC35	26
	30W	-60	30 to 110	1.0A	*OC36	26
	0.4	250	-32	10 to 35	20	*BCY33
0.45	410	-32	10 to 30	150	*BCY38	33
	410	-64	10 to 50	150	*BCY39	33
	410	-50	12 to 70	150	*BCY54	33
0.5 (typ)	22.5W	-50	30 to 100	1.0A	*AD149	26
0.6	250	-32	15 to 60	20	*BCY34	33
0.8	115W	-100	20 to 70	4.0A	*2N3055	30
0.85	410	-32	15 to 120	150	*BCY40	33
1.0 (typ)	117W	+160	20 to 70	3.0A	2N3442	30
	100W	+140	20 to 70	2.0A	2N4347	30
1.0	700	+32	52 to 180	500	AC176	27
	115W	+100	20 to 70	4A	BDY20	30
	115W	+50	>30	2A	BDY38	30
1.5 (typ)	1.0W	-32	55 to 175	50	*AC128	26
	1.0W	-25	100 to 500	300	*AC188	26
	6.0W	-32	80 to 320	500	*AD162	26
2.5 (typ)	340	+32	100 (typ)	20	AC127	27
	55W	-60	>750	3.0A	*BD266	37
	55W	-80	>750	3.0A	*BD266A	37
	55W	+80	>750	3.0A	BD267	37
	55W	+100	>750	3.0A	BD267A	37
	117W	-60	>1000	5.0A	*BDX64	37
	117W	-80	>1000	5.0A	*BDX64A	37
	117W	+80	>1000	5.0A	BDX65	37
	117W	+100	>1000	5.0A	BDX65A	37
	3.0 (typ)	4.0W	+32	80 to 320	500	AD161
3.0	60W	+60	>30	3.0A	BD201	30
	60W	-60	>30	3.0A	*BD202	35
	60W	+60	>30	2.0A	BD203	30
	60W	-60	>30	2.0A	*BD204	35
	25W	+45	>25	1.0A	BD233	30
	25W	-45	>25	1.0A	*BD234	35
	25W	+60	>25	1.0A	BD235	30
	25W	-60	>25	1.0A	*BD236	35
	25W	+100	>25	1.0A	BD237	30
	25W	-100	>25	1.0A	*BD238	35
	36W	+22	>50	2.0A	BD433	30
	36W	+32	>50	2.0A	BD435	30
	36W	+45	>40	2.0A	BD437	30
	55W	+80	>30	2.0A	BDX77	30
	55W	-80	>30	2.0A	*BDX78	35
	5.0 (typ)	1.0W	+25	100 to 500	300	AC187
6.0	140	+30	>35	200	ASY74	26
7.0 (typ)	36W	-60	>750	1.5A	*BD262	37
	36W	-80	>750	1.5A	*BD262A	37
	36W	-100	>750	1.5A	*BD262B	37
	36W	+80	>750	1.5A	BD263	37
	36W	+100	>750	1.5A	BD263A	37
	36W	+120	>750	1.5A	BD263B	37
	90W	-60	>1000	3.0A	*BDX62	37
	90W	-80	>1000	3.0A	*BDX62A	37
	90W	-100	>1000	3.0A	*BDX62B	37
	90W	+80	>1000	3.0A	BDX63	37
	90W	+100	>1000	3.0A	BDX63A	37
	90W	+120	>1000	3.0A	BDX63B	37
	150W	-60	>1000	10A	*BDX66	37
	150W	-80	>1000	10A	*BDX66A	37
	150W	+80	>1000	10A	BDX67	37
	150W	+100	>1000	10A	BDX67A	37
	12.5W	+1300	>2.25	4.5A	BU207	31

f_T, f_1 or f_a (MHz) min.	P_{tot} max. (mW) $T = 25^\circ\text{C}$	V_{CB} max. (V)	h_{FE} at I_C (mA) f_{Tf_0}		Type No.	Page No.
7.0 (typ)	12.5W	+1500	>2.25	4.5A	BU208	31
	12.5W	+1700	>2.25	3.0A	BU209	31
7.5 (typ)	10W	+1300	>2	2.0A	BU204	31
	10W	+1500	>2	2.0A	BU205	31
	10W	+1700	>1.8	2.0A	BU206	31
8.0 (typ)	30W	+750	15 to 60	1.0A	BU126	31
	30W	+750	15 to 80	1.0A	BU133	31
10 (typ)	40W	+750	15 to 60	2.0A	BDY96	30
	40W	+750	15 to 60	2.0A	BDY97	30
	40W	+600	15 to 60	2.0A	BDY98	30
12 (typ)	30W	+750	15 to 60	1.0A	BDY93	30
	30W	+750	15 to 60	1.0A	BDY94	30
	30W	+600	15 to 60	1.0A	BDY95	30
15 (typ)	7.0W	+500	25 to 175	50	BD232	29
40	360	-60	70 to 300	0.01	*BFX37	33
	600	+60	20 to 60	150	2N696	29
50	800	+100	>30	150	BFX84	29
	800	+100	>70	150	BFX85	29
	800	+40	>70	150	BFX86	29
	800	+60	>40	150	BFY51	29
	800	+40	>60	150	BFY52	29
	800	+40	>30	150	BFY53	29
	300	-110	>30	25	*BSS68	33
	250	-110	>30	25	*BSV68	33
	600	+60	40 to 120	150	2N697	29
	60 (typ)	5.0W	-300	>50	10	*BFT44
5.0W		-250	>50	10	*BFT45	34
60	15W	+70	35 to 150	500	BD124	30
	11W	+70	>40	500	BD131	30
	11W	-45	>40	500	*BD132	34
	11W	+90	>40	500	BD133	30
	800	+80	>30	150	BFY50	29
	300	+120	>20	1.0	BSS38	28
	300	+120	>20	4.0	BSX21	28
	800	+75	40 to 120	150	2N1613	29
	800	+80	40 to 120	150	2N2297	29
	70 (typ)	40W	+120	30 to 120	5.0A	BDY90
40W		+100	30 to 120	5.0A	BDY91	30
40W		+80	30 to 120	5.0A	BDY92	30
70	800	+75	100 to 300	150	2N1711	29
75 (typ)	6.5W	-45	40 to 250	150	*BD136	34
	6.5W	-60	40 to 160	150	*BD138	34
	6.5W	-100	40 to 160	150	*BD140	34
80 (typ)	800	+100	>40	100	BSW66	30
	800	+120	>40	100	BSW67	30
	800	+150	>40	100	BSW68	30
80	880	+100	100 (typ)	150	BCX31	29
	880	+80	110 (typ)	150	BCX32	29
	880	+60	120 (typ)	150	BCX33	29
	880	+40	140 (typ)	150	BCX34	29
	3.0W	+185	>20	30	BF336	29
	3.0W	+250	>20	30	BF337	29
3.0W	+300	>20	30	BF338	29	
100 (typ)	625	-50	100 to 600	100	*BC327	34
	625	-30	100 to 600	100	*BC328	34
	870	+100	>40	2A	BSV64	30
	50W	+200	>50	1.0A	BUY86	31
	50W	+300	>50	1.0A	BUY87	31
100	880	-80	90 (typ)	150	*BCX35	34
	880	-60	90 (typ)	150	*BCX36	34
	880	-40	90 (typ)	150	*BCX37	34
	15W	+100	45 to 450	500	BDX35	31
	15W	+120	45 to 450	500	BDX36	31
	15W	+120	45 to 450	500	BDX37	31
	600	-60	>50	10	*BFX29	34
	600	-50	>40	10	*BFX87	34
	600	-40	>40	10	*BFX88	34
	5.0W	+60	50 to 250	150	2N3053	29

*p-n-p types, V_{CB} max. negative



selection by cut-off frequency

f _T , f ₁ or f _a (MHz) min.	P _{tot} max. (mW) T = 25°C	V _{CB} max. (V)	h _{FE} at I _C (mA)		Type No.	Page No.	
			thr _a				
130 (typ)	3.0W	+300	70 (typ)	100	BF355	29	
150 (typ)	350	-50	†75 to 260	2.0	*BC157	33	
	350	-30	†75 to 500	2.0	*BC158	33	
	350	-25	†125 to 500	2.0	*BC159	33	
	300	-50	†75 to 260	2.0	*BC557	33	
	300	-30	†75 to 500	2.0	*BC558	33	
	300	-25	†125 to 500	2.0	*BC559	33	
200 (typ)	625	+50	100 to 600	100	BC337	29	
	625	+30	100 to 600	100	BC338	29	
	220	+30	115 (typ)	1.0	BF195	28	
200	350	-45	100 to 600	10	*BCY71	33	
	350	-25	>50	10	*BCY72	33	
	300	+20	50 to 200	10	BSY95A	28	
	600	-60	40 to 120	150	*2N2904	34	
	600	-60	40 to 120	150	*2N2904A	34	
	600	-60	100 to 300	150	*2N2905	34	
	600	-60	100 to 300	150	*2N2905A	34	
	400	-60	40 to 120	150	*2N2906	34	
	400	-60	40 to 120	150	*2N2906A	34	
	400	-60	100 to 300	150	*2N2907	34	
	400	-60	100 to 300	150	*2N2907A	34	
230 (typ)	140	+50	>40	20	BF115	28	
250 (typ)	6.5W	+45	40 to 250	150	BD135	29	
	6.5W	+60	40 to 160	150	BD137	29	
	6.5W	+100	40 to 160	150	BD139	29	
	88W	+85	15 to 100	1.4A	BLX14	31	
250	350	-50	>50	10	*BCY70	33	
	5W	+65	>10	200	BLY33	31	
	5W	+40	>10	200	BLY34	31	
	12W	+65	>10	1.0A	BLY83	32	
	12W	+40	>10	1.0A	BLY84	32	
	10W	+40	>10	200	BLY85	32	
	10W	+66	>10	200	BLY97	32	
	800	+70	>25	500	BSX59	30	
	800	+70	>30	500	BSX61	30	
	260 (typ)	220	+30	115 (typ)	1.0	BF194	28
270	150	+30	>15	3.0	BF200	27	
275 (typ)	195W	+110	10 to 70	1.4A	BLX15	31	
300 (typ)	300	+50	†125 to 500	2.0	BC107	27	
	300	+30	†125 to 900	2.0	BC108	27	
	300	+30	†240 to 900	2.0	BC109	27	
	350	+50	†125 to 500	2.0	BC147	27	
	350	+30	†125 to 900	2.0	BC148	27	
	350	+30	†240 to 900	2.0	BC149	27	
	300	+50	†125 to 500	2.0	BC547	27	
	300	+30	†125 to 900	2.0	BC548	27	
	300	+30	†240 to 900	2.0	BC549	27	
	20W	+65	>5	500	BLY93A	32	
	22.5W	+55	20 to 100	1.0A	810BLY/A	32	
	325 (typ)	250	-40	—	—	*BF450	33
		250	-40	—	—	*BF451	33
350 (typ)	300	+20	30 to 60	10	BSY38	28	
	300	+20	40 to 120	10	BSY39	28	
400 (typ)	250	+40	>27	4.0	BF196	27	
	23W	+65	10 to 150	250	2N3632	32	
400	360	+40	20 to 60	10	BSX19	28	
500 (typ)	11.6W	+65	10 to 100	250	2N3375	32	
	7.0W	+65	10 to 100	250	2N3553	32	
	70W	+65	10 to 120	1.0A	BLX13	31	
	70W	+65	10 to 120	1.0A	BLY93A	32	
	130W	+65	10 to 120	1.0A	BLY94	32	
500	360	+40	40 to 120	10	BSX20	28	
	360	+40	40 to 120	10	2N2369A	28	
550 (typ)	250	+40	>38	7.0	BF197	27	
	250	-30	—	—	*BF324	33	
	130W	+36	>10	1.0A	BLY90	32	

f _T , f ₁ or f _a (MHz) min.	P _{tot} max. (mW) T = 25°C	V _{CB} max. (V)	h _{FE} at I _C (mA)		Type No.	Page No.
			thr _a			
550	103W	+36	>20	1.0A	BLW60	31
600 (typ)	150	+30	—	—	BF181	28
600	120	+30	>20	3.0	BF363	28
650 (typ)	70W	+36	10 to 120	1.0A	BLY89A	32
675 (typ)	150	+30	—	—	BF180	28
700 (typ)	5W	+55	10 to 200	50	2N3866	32
	3.5W	+40	10 to 200	100	2N4427	32
800 (typ)	120	+30	>20	3.0	BF362	28
	8W	+55	>10	500	BLY98	32
900 (typ)	40W	+60	25 to 80	1.0A	BLW64	31
1000 (typ)	50W	+36	30 (typ)	1.0A	BLX69	31
	50W	+65	10 to 100	1.0A	BLX94	31
	87.5W	+65	>15	1.4A	BLX95	31
1200 (typ)	30	+8	>20	1.0	BFT24	28
	1.5W	+40	>25	150	BFW16A	31
	200	+30	25 to 150	2.0	BFX89	28
	4W	+65	>10	100	BLX91	31
	6W	+65	>10	100	BLX92	31
	12.5W	+65	>10	100	BLX93	31
1300 (typ)	8W	+36	>10	500	BLY53A	31
1400 (typ)	3W	+36	>10	100	BLX65	31
	4.0W	+36	>10	100	BLX66	31
	4.5W	+36	>10	100	BLX67	31
1600 (typ)	250	+20	>25	50	BFW30	28
2000	21.5W	+40	>20	1.0A	BLX98	31
3500 (typ)	3.5W	+30	>40	150	BFR94	31
5000 (typ)	180	+20	25 to 150	10	BFR90	28
	180	+20	25 to 150	25	BFR91	28
	500	+20	>30	50	BFR96	29

*p-n-p types, V_{CB} max. negative



Transistors

germanium p-n-p medium power transistors

book 1 parts 1 and 2

Type No.	Construction	Technique	Maximum Ratings					T_j (°C)	P_{tot} at 25°C (mW)	h_{FE}		at I_c (mA)	f_T typ (MHz)	Special Features
			V_{CBO} (V)	V_{CEO} (V)	I_{CM} (mA)	$I_{C(AV)}$ (mA)	min.			max.				
GENERAL PURPOSE														
AC128	K	A	-32	-16	2000	1000	90	1000	55	175	50	1.5	Complementary to AC127	
AC188	K	A	-25	-15	2000	1000	90	1000	100	500	300	1.5	Complementary to AC187	

germanium p-n-p high power transistors

Type No.	Construction	Technique	Maximum Ratings					T_j (°C)	P_{tot} $T_{mb}45^\circ C$ (W)	h_{FE}		at I_c (A)	f_T typ (MHz)	Special Features
			V_{CBO} (V)	V_{CEO} (V)	I_{CM} (A)	$I_{C(AV)}$ (A)	min.			max.				
GENERAL PURPOSE														
† AD149	F1	A	-50	-30	3.5	3.5	100	22.5	30	100	1.0	0.5		
AD162	F3	A	-32	-20	3.0	1.0	90	6.0	80	320	0.5	1.5	Complementary to AD161	
OC20	F1	A	-100	-75	10	8.0	90	30	25	75	1.0	0.25		
OC25	F1	A	-40	-40	4.0	4.0	90	22.5	15	80	1.0	0.25		
† OC28	F1	A	-80	-60	10	8.0	90	30	20	55	1.0	0.25		
† OC29	F1	A	-60	-32	10	8.0	90	30	45	130	1.0	0.25		
† OC35	F1	A	-60	-32	10	8.0	90	30	25	75	1.0	0.25		
† OC36	F1	A	-80	-32	10	8.0	90	30	30	110	1.0	0.25		

†Available in matched pairs

germanium n-p-n low power transistor

Type No.	Construction	Technique	Maximum Ratings					T_j (°C)	P_{tot} at 25°C (mW)	h_{FE}		at I_c (mA)	f_T min. (MHz)	$V_{CE(sat)}$ max. (V)	at I_c (mA)	at I_B (mA)
			V_{CBO} (V)	V_{CEO} (V)	I_{CM} (mA)	$I_{C(AV)}$ (mA)	min.			max.						
SWITCHING																
ASY74	H1	A	30	15	400	400	75	140	35	—	200	6.0	0.22	50	1.25	



Transistors

germanium n-p-n medium power transistors

book 1 parts 1 and 2

Type No.	Construction Technique	V _{CB0} (V)	V _{CEO} (V)	Maximum Ratings		T _J (°C)	P _{tot} at 25°C (mW)	h _{FE}		at I _C (mA)	f _T typ (MHz)	Special Features
				I _{CM} (mA)	I _{C(AV)} (mA)			min.	max.			
GENERAL PURPOSE												
AC127	K A	32	12	500	500	90	340	100	100	20	2.5	Complementary to AC128
AC176	K A	32	20	1000	350	90	700	52	180	500	1.0(min.)	
AC187	K A	25	15	2000	1000	90	1000	100	500	300	5.0	Complementary to AC188

germanium n-p-n high power transistor

Type No.	Construction Technique	V _{CB0} (V)	V _{CEO} (V)	Maximum Ratings		T _J (°C)	P _{tot} T _{mb} 45°C (W)	h _{FE}		at I _C (A)	f _T typ (MHz)	Special Features
				I _{CM} (A)	I _{C(AV)} (A)			min.	max.			
GENERAL PURPOSE												
AD161	F3 A	32	20	3.0	1.0	90	4.0	80	320	0.5	3.0	Complementary to AD162

silicon n-p-n low power transistors

Type No.	Construction Technique	V _{CB0} (V)	V _{CEO} (V)	Maximum Ratings		T _J (°C)	P _{tot} at 25°C (mW)	h _{FE}		at I _C (mA)	f _i min. (MHz)	V _{CE(sat)} max. (V)	at I _B		Special Features		
				I _{CM} (mA)	I _{C(AV)} (mA)			min.	max.				I _C (mA)	I _B (mA)	t _{on} (ns)	t _{off} (ns)	at I _C (mA)
GENERAL PURPOSE																	
BC107 ‡	G1 PE	50	45	200	100	175	300	110	450	2.0	300*	0.25	10	0.5	100	500	10
BC108 ‡	G1 PE	30	20	200	100	175	300	110	800	2.0	300*	0.25	10	0.5	100	500	10
BC109 ‡	G1 PE	30	20	200	100	175	300	200	800	2.0	300*	0.25	10	0.5	N < 4dB at f = 30 Hz to 15 kHz		
BC147	D PE	50	45	200	100	125	350	110	450	2.0	300*	0.25	10	0.5	} N = 2dB typ. at f = 1kHz		
BC148	D PE	30	20	200	100	125	350	110	800	2.0	300*	0.25	10	0.5			
BC149	D PE	30	20	200	100	125	350	200	800	2.0	300*	0.25	10	0.5	N < 4 dB at f = 30 Hz to 15 kHz		
BC547	BD PE	50	45	200	100	150	300	110	450	2.0	300*	0.25	10	0.5	} N = 2dB typ. at f = 1kHz		
BC548	BD PE	30	20	200	100	150	300	110	800	2.0	300*	0.25	10	0.5			
BC549	BD PE	30	20	200	100	150	300	200	800	2.0	300*	0.25	10	0.5	N = 1.2dB typ. at f = 1kHz		
BF196	D1 P	40	30	25	25	125	250	27	—	4.0	400*	—	—	—	Typ. gain control range = 60dB		
BF197	D1 PE	40	25	25	25	125	250	38	—	7.0	550*	—	—	—	Typ. G _{UM} at 45MHz = 41dB		
BF200	J2 P	30	20	20	20	175	150	15	—	3.0	270	—	—	—	Typ. G _{UM} at 200 MHz = 22dB		

*Typical ‡Also available to BS9365-F112

Transistors

silicon n-p-n low power transistors (cont.)

book 1 parts 1 and 2

Type No.	Construction Technique		Maximum Ratings						h_{FE}		f_T min. (MHz)	$V_{CE(sat)}$ max. (V)	at		Special Features	
	V_{CB0} (V)	V_{CE0} (V)	I_{CM} (mA)	$I_{C(AV)}$ (mA)	T_J (°C)	P_{tot} at 25°C (mW)	min.	max.	I_C (mA)	I_B (mA)						
R.F. AMPLIFIERS																
BF115	J1	PE	50	30	30	30	175	145	40	—	20	230*	—	—	—	
BF180	J2	P	30	20	20	20	175	150	—	—	—	675*	—	—	—	N < 9.5dB at 800MHz
BF181	J2	P	30	20	20	20	175	150	—	—	—	600*	—	—	—	N = 6.8 dB typ. at 900MHz
BF194	D1	PE	30	20	30	30	125	220	115*	—	1.0	260*	—	—	—	N = 4dB typ. at 100MHz
BF195	D1	PE	30	20	30	30	125	220	67*	—	1.0	200*	—	—	—	N = 4dB typ. at 100MHz
BF362	R	P	30	20	20	20	125	120	20	—	3.0	800*	—	—	—	N = 5dB typ. at 800MHz
BF363	R	P	30	20	20	20	125	120	20	—	3.0	600	—	—	—	N = 5dB typ. at 800MHz
BFR90	AR	PE	20	15	—	25	150	180	25	50*	14	5000*	—	—	—	N = 2.4dB typ. at 500MHz
BFR91	AR	PE	20	15	—	35	150	180	25	50*	30	5000*	—	—	—	N = 1.9dB typ. at 500MHz
BFT24	AR	PE	8	5	5	2.5	150	30	20	40*	1.0	1200	0.125	1.0	0.1	N = 3.8dB at 500MHz
BFW30	J2	PE	20	10	100	50	200	250	25	—	5.0	1600*	—	—	—	N < 5.0dB at 500MHz
BFX89	J2	PE	30	15	50	25	200	200	25	150	2.0	1100	—	—	—	N = 7dB at 800MHz
BFY90	J2	PE	30	15	50	25	200	200	25	150	2.0	1000	—	—	—	N < 3.5dB at 200MHz

SWITCHING																		
															t_{on} max. (ns)	t_{off} max. (ns)	at I_C (mA)	
BSS38	BD	PE	120	80	250	100	150	300	20	—	1.0	60	0.7	4	0.4	—	1000	15
BSX19	G1	PE	40	15	500	—	200	360	20	60	10	400	0.3	10	0.6	12	15	10
BSX20	G1	PE	40	15	500	—	200	360	40	120	10	500	0.3	10	0.3	12	18	10
BSX21	G1	PE	120	80	50	50	175	300	20	—	4.0	60	1.8*	10	1.0	Numerical indicator tube driver		
BSY38	G1	PE	20	15	200	100	175	300	30	60	10	350*	0.25	10	1.0	14	45	100
BSY39	G1	PE	20	15	200	100	175	300	40	120	10	350*	0.25	10	1.0	14	45	100
BSY95A	G1	PE	20	15	200	100	175	300	50	200	10	200	0.35	10	0.2	t_s < 50ns at 10mA		
2N2369	G1	PE	40	15	500	—	200	360	40	120	10	500	0.25	10	1.0	12	18	10
2N2369A	G1	PE	40	15	500	—	200	360	40	120	10	500	0.2	10	1.0	12	18	10

*Typical



Transistors

silicon n-p-n medium power transistors

book 1 parts 1 and 2

Type No.	Construction Technique		Maximum Ratings						h_{FE}		at I_C (mA)	f_T (MHz)	$V_{CE(sat)}$ (V)	at		Special Features
			V_{CBO} (V)	V_{CEO} (V)	I_{CM} (A)	$I_{C(AV)}$ (A)	T_J (°C)	P_{tot} at 25°C (mW)	min.	max.				I_C (mA)	I_B (mA)	
GENERAL PURPOSE																
BC337	BD	PE	50	45	1.0	0.5	150	625	100	600	100	200*	0.7	500	50	
BC338	BD	PE	30	25	1.0	0.5	150	625	100	600	100	200*	0.7	500	50	
BCX31	D	PE	100	80	2.0	1.0	150	880	20	100*	150	80	1.6	1.0A	100	
BCX32	D	PE	30	60	2.0	1.0	150	880	30	110*	150	80	1.6	1.0A	100	
BCX33	D	PE	60	40	2.0	1.0	150	880	40	120*	150	80	1.6	1.0A	100	
BCX34	D	PE	40	20	2.0	1.0	150	880	60	140*	150	80	1.6	1.0A	100	
BD135	BY	PE	45	45	1.5	0.5	125	6.5W†	40	250	150	250*	0.5	500	50	
BD137	BY	PE	60	60	1.5	0.5	125	6.5W†	40	160	150	250*	0.5	500	50	
BD139	BY	PE	100	80	1.5	0.5	125	6.5W†	40	160	150	250*	0.5	500	50	
BD232	BY	D	500	300	1.0	0.25	125	7.0W†	25	150	50	20*	1.0	150	15	Line-driver in t.v. receivers
BF336	H3	P	185	180	—	0.1	200	3.0W†	20	—	30	80	—	—	—	— $C_{re}=3.5$ pF max at 0.5 MHz
BF337	H3	P	250	200	—	0.1	200	3.0W†	20	—	30	80	—	—	—	— $C_{re}=3.5$ pF max. at 0.5 MHz
BF338	H3	P	300	225	—	0.1	200	3.0W†	20	—	30	80	—	—	—	— $C_{re}=3.5$ pF max. at 0.5 MHz
BF355	H3	P	300	225	0.16	0.1	200	3.0W†	—	—	—	—	25	160	10	Line-driver in t.v. receivers
BFX84	H3	PE	100	60	1.0	1.0	200	800	30	—	150	50	0.35	150	15	
BFX85	H3	PE	100	60	1.0	1.0	200	800	70	—	150	50	0.35	150	15	
BFX86	H3	PE	40	35	1.0	1.0	200	800	70	—	150	50	0.35	150	15	
BFY50†	H3	PE	80	35	1.0	1.0	200	800	30	—	150	60	0.2	150	15	
BFY51†	H3	PE	60	30	1.0	1.0	200	800	40	—	150	50	0.35	150	15	
BFY52†	H3	PE	40	20	1.0	1.0	200	800	60	—	150	50	0.35	150	15	
BFY53	H3	PE	40	20	1.0	1.0	200	800	30	—	150	50	0.35	150	15	
2N696	H3	PE	60	40	0.5	—	175	600	20	60	150	40	1.5	150	15	
2N697	H3	PF	60	40	0.5	—	175	600	120	150	150	40	1.5	150	15	
2N1613	H3	PE	75	30	0.5	—	200	800	40	120	150	60*	1.5	150	15	
2N1711	H3	PE	75	30	1.0	—	200	800	100	300	150	70*	1.5	150	15	
2N2297	H3	PE	80	35	—	1.0	200	800	40	120	150	60*	0.2	150	15	
2N3053	H3	PE	60	40	—	0.7	200	5.0W†	50	250	150	100	1.4	150	15	
R. F. AMPLIFIER																
BF996	AR	PE	20	15	0.15	0.075	175	500	30	—	50	5000	—	—	—	Typ. G_{UM} at 500MHz=15dB

† Also available to BS9365-F012 specification

† at $T_{case} = 25^\circ\text{C}$

*Typical



Transistors

silicon n-p-n medium power transistors (cont.)

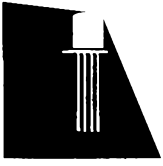
book 1 parts 1 and 2

Type No.	Construction	Technique	Maximum Ratings						h_{FE}		at I_C	f_T	$V_{CE(sat)}$	at		Special Features		
			V_{CBO}	V_{CEO}	I_{CM}	$I_{C(AV)}$	T_J	P_{tot}	min.	max.				I_C	I_B	t_{on}	t_{off}	at I_C
			(V)	(V)	(A)	(A)	(°C)	(mW)			(mA)	(MHz)	(V)	(mA)	(mA)	(ns)	(ns)	(mA)
SWITCHING																		
BSV64	H3	PE	100	60	5.0	2.0	200	870	40	—	2A	100*	1.0	5A	500	600	1200	5A
BSW66	H3	PE	100	100	2.0	1.0	200	800	40	—	100	80*	0.4	500	50	For relays and other highly inductive load switching applications		
BSW67	H3	PE	120	120	2.0	1.0	200	800	40	—	100	80*	0.4	500	50			
BSW68	H3	PE	150	150	2.0	1.0	200	800	40	—	100	80*	0.5	500	50			
BSX59	H3	PE	70	45	—	1.0	200	800	25	—	500	250	0.3	150	15			
BSX61	H3	PE	70	45	—	1.0	200	800	25	—	500	250	0.5	150	15	50	100	500

silicon n-p-n high power transistors

Type No.	Construction	Technique	Maximum Ratings						h_{FE}		at I_C	f_T	$V_{CE(sat)}$	at		Special Features
			V_{CBO}	V_{CEO}	I_{CM}	$I_{C(AV)}$	T_J	P_{tot}	min.	max.				I_C	I_B	
			(V)	(V)	(A)	(A)	(°C)	$T_{mb} = 25^\circ C$ (W)			(A)	(MHz)	(V)	(A)	(mA)	
GENERAL PURPOSE																
BD124	F3	PE	70	45	4.0	2.0	175	15	35	—	0.5	60	0.9	2.0	200	
BD131	BY	PE	70	45	6.0	3.0	150	15	40	—	0.5	60	0.7	2.0	200	
BD133	BY	PE	90	60	6.0	3.0	150	15	40	—	0.5	60	0.7	2.0	200	
BD160	F1	D	250	—	7.0	5.0	150	10	—	—	—	—	1.6	5.0	1.0A	For line deflection and E-W pincushion correction circuits
BD181	F2	D	55	45	15	10	200	78	20	70	3.0	—	—	—	—	
BD182	F2	D	70	60	15	15	200	117	20	70	4.0	—	—	—	—	For use in high quality audio amplifiers.
BD183	F2	D	85	80	15	15	200	117	20	70	3.0	—	—	—	—	
BD184	F2	D	95	90	15	15	200	117	20	70	4.0	—	—	—	—	
BD201	CD	EB	60	45	12	8.0	150	60	30	—	3.0	3.0	1.0	3.0	300	Complementary to BD202
BD203	CD	EB	60	60	12	8.0	150	60	30	—	2.0	3.0	1.0	3.0	300	Complementary to BD204
BD233	BY	EB	45	45	6.0	2.0	150	25	25	—	1.0	3.0	0.6	1.0	100	
BD235	BY	EB	60	60	6.0	2.0	150	25	25	—	1.0	3.0	0.6	1.0	100	
BD237	BY	EB	100	80	6.0	2.0	150	25	25	—	1.0	3.0	0.6	1.0	100	
BD433	BY	EB	22	22	7.0	4.0	150	36	50	—	2.0	3.0	0.5	2.0	200	Complementary to BD434
BD435	BY	EB	32	32	7.0	4.0	150	36	50	—	2.0	3.0	0.5	2.0	200	Complementary to BD436
BD437	BY	EB	45	45	7.0	4.0	150	36	40	—	2.0	3.0	0.7	3.0	300	Complementary to BD438
BDX77	CD	EB	80	80	12	8.0	150	55	30	—	2.0	3.0	1.0	3.0	300	Complementary to BDX78
BDY20	F2	D	100	60	15	15	200	115	20	70	4.0	1.0*	1.1	4.0	400	
BDY38	F2	D	50	40	6.0	6.0	200	115	30	—	2.0	1.0*	0.7	2.0	200	
BDY90	F1	D	120	100	15	10	175	40	30	120	5.0	70*	0.5	5.0	500	
BDY91	F1	D	100	80	15	10	175	40	30	120	5.0	70*	0.5	5.0	500	
BDY92	F1	D	80	60	15	10	175	40	30	120	5.0	70*	0.5	5.0	500	
BDY93	F1	D	750‡	350	6.0	3.0	150	30	15	60	1.0	12*	1.0	1.0	100	For use in converters, inverters, switching and motor control systems.
BDY94	F1	D	750‡	300	6.0	3.0	150	30	15	60	1.0	12*	1.0	1.0	100	
BDY95	F1	D	600‡	250	6.0	3.0	150	30	15	60	1.0	12*	1.0	1.0	100	
BDY96	F1	D	750‡	350	15	10	150	40	15	60	2.0	10*	1.0	2.0	200	
BDY97	F1	D	750‡	300	15	10	150	40	15	60	2.0	10*	1.0	2.0	200	
BDY98	F1	D	600‡	250	15	10	150	40	15	60	2.0	10*	1.0	2.0	200	
2N3055	F2	D	100	60	—	15	200	115	20	70	4.0	0.8	1.1	4.0	400	
2N3442	F2	D	160	140	15	10	200	117	20	70	3.0	1.0*	5.0	10	2.0A	
2N4347	F2	D	140	120	10	5.0	200	100	20	70	4.0	1.0*	5.0	5.0	1.0A	

*Typical ‡ V_{CESM}



Transistors

silicon n-p-n high power transistors (cont.)

book 1 parts 1 and 2

Type No.	Construction Technique	Maximum Ratings						P_{tot} $T_{mb} = 25^\circ C$ (W)	h_{FE}		f_T min. (MHz)	$V_{CE(sat)}$		at I_B		Special Features		
		V_{CBO} (V)	V_{CEO} (V)	I_{CM} (A)	$I_{C(AV)}$ (A)	T_j ($^\circ C$)	min.		max.	I_C (A)		max.	I_C (A)	I_B (mA)	t_{on} max. (ns)	t_{off} max. (ns)	at I_C (A)	
SWITCHING																		
BDX35	BY PE	100†	60	10	5.0	175	15	45	450	0.5	100	0.9	5.0	500	—	350*	5.0	
BDX36	BY PE	120†	60	10	5.0	175	15	45	450	0.5	100	0.9	5.0	500	—	350*	5.0	
BDX37	BY PE	120†	80	10	5.0	175	15	45	450	0.5	100	0.7	5.0	500	—	350*	5.0	
BU126	FI D	750‡	300	6.0	3.0	125	30	15	60	1.0	8.0*	10	2.5	250	For use in switched mode power supplies of colour t.v. receivers.			
BU133	FI D	750‡	250	6.0	3.0	125	30	15	80	1.0	8.0*	10	2.5	250				
BU204	FI D	1300‡	600	3.0	2.5	115	10	2	—	2.0	7.5*	5.0	2.0	1A	For use in horizontal deflection circuits of t.v. receivers.			
BU205	FI D	1500‡	700	3.0	2.5	115	10	2	—	2.0	7.5*	5.0	2.0	1A				
BU206	FI D	1700‡	800	3.0	2.5	115	10	1.8	—	2.0	7.5*	5.0	2.0	1.1A				
BU207	F1 D	1300‡	600	7.5	5.0	115	12.5	2.25	—	4.5	7*	5.0	4.5	2A	For use in horizontal deflection circuits of colour t.v. receivers			
BU208	F1 D	1500‡	700	7.5	5.0	115	12.5	2.25	—	4.5	7*	5.0	4.5	2A				
BU209	F1 D	1700‡	800	6.0	4.0	115	12.5	2.25	—	3.0	7*	5.0	3.0	1.3A				
BUY86	FI PE	200	100	10	7.0	150	50	50	—	1.0	100*	1.0	7.0	700	1000	3000	7.0	
BUY87	FI PE	300	150	—	7.0	150	50	30	—	2.0	100*	1.0	7.0	700	800	650	7.0	

*Typical † V_{CESM} ‡peak value

R.F. power transistors

Type No.	Construction Technique	Maximum Ratings						P_{tot} $T_{mb} = 25^\circ C$ (W)	h_{FE}		f_T min. (MHz)	$V_{CE(sat)}$		P_o typ. (W)	G_p typ. (dB)	at f (MHz)	at V_{cc} (V)
		V_{CBO} (V)	V_{CEO} (V)	I_{CM} (A)	$I_{C(AV)}$ (A)	T_j ($^\circ C$)	min.		max.	I_C (A)		max.	I_C (mA)				
BFR94	V PE	30	25	0.3	0.15	200	3.5	40	—	0.15	3500*	—	—	—	—	—	
BFW16A	H3 PE	40	25	0.3	0.15	200	1.5	25	—	0.15	1200*	—	—	90	6.5	800	
BFW17A	H3 PE	40	25	0.3	0.15	200	1.5	25	—	0.15	1100*	—	—	150	16	200	
BLW60	BT PE	36	18	20	8.0	200	103	20	50*	1.0	550*	—	—	45	5.5	175	
BLW64	BT PE	60	30	12	4.0	200	40	25	80	1.0	900*	—	—	>15	>9.5	224	
BLX13	BT PE	65	36	6.0	3.0	200	70	10	120	1.0	500*	—	—	25§	>18	28	
BLX14	BU PE	85	36	12	4.0	200	88	15	100	1.4	250*	1.0	0.7	140	50§	>13	
BLX15	BU PE	110	55	20	6.5	200	195	10	70	1.4	275*	1.0	0.7	140	150§	>14	
BLX65	H3 PE	36	18	2.0	0.7	150	3.0**	10	—	0.1	1400*	0.1*	0.1	20	2.0	—	
BLX66	BS PE	36	18	2.0	0.7	150	4.0**	10	—	0.1	1400*	0.1*	0.1	20	2.5	—	
BLX67	V PE	36	18	2.0	0.7	150	4.5**	10	—	0.1	1400*	0.1*	0.1	20	3.0	—	
BLX69	W PE	36	18	10	3.5	200	50	30*	—	1.0	1000*	0.5	0.7	140	20	>4	
BLX91	V PE	65	33	0.8	0.4	200	4.0	10	—	0.1	1200*	—	—	1.45	12	470	
BLX92	V PE	65	33	2.0	0.7	200	6.0	10	—	0.1	1200*	0.17*	0.1	20	2.5	—	
BLX93	V PE	65	33	3.0	1.0	150	12.5	10	—	0.1	1200*	—	—	5.0	—	1000	
BLX94	W PE	65	33	6.0	2.0	200	50	15	—	1.0	1000*	—	—	20	>6	470	
BLX95	BT PE	65	33	12	4.0	200	87.5	15	—	1.4	1000*	—	—	40	>4.5	470	
BLX98	W PE	40	27	4.0	2.0	200	21.5	20	—	1.0	2000	0.75	0.5	100	>3.5	>5.0	
BLY33	H3 PE	66‡	33	1.5	0.5	150	5	10	—	0.2	250	—	—	2.0†	8	175	
BLY34	H3 PE	40‡	20	1.5	0.5	150	5	10	—	0.2	250	—	—	3.0	8	175	
BLY53A	V PE	36	18	4.0	1.0	150	8**	10	—	0.5	1300*	0.2	0.5	100	>7.0	5.4	

* Typical ** at $T_{mb} = 90^\circ C$ † a.m. operation ‡ V_{CES} (f. > 1.0 MHz) § s.s.b. operation

Transistors

R.F. power transistors (cont.) book 1 parts 1 and 2

Type	Construction	Technique	Maximum Ratings				T _j	P _{tot} T _{mb} = 25°C	h _{FE}		f _T	V _{CE(sat)}		I _c		P _o typ. (W)	G _p typ. (dB)	at f (MHz)	at V _{CC} (V)
			V _{CB0}	V _{CE0}	I _{CM}	I _{C(AV)}			min.	max.		I _c	I _B						
BLY83	V	PE	66	33	7.5	2.5	150	12**	10	220	1.0	250	—	—	—	7††	13	175	13.8
BLY84	V	PE	40	20	7.5	2.5	150	12**	10	—	1.0	250	—	—	—	13.2	5.8	175	13.8
BLY85	V	PE	40‡	20	3.0	1.0	150	10	10	—	0.2	250	—	—	—	>4	10	175	13.8
BLY89A	BT	PE	36	18	10	5.0	200	70	10	120	1.0	650*	—	—	—	25	>6	175	13.5
BLY90	BU	PE	36	18	20	8.0	200	130	10	—	1.0	550*	—	—	—	50	>4	175	12.5
BLY93A	BT	PE	65	36	9.0	3.0	200	70	10	120	1.0	500*	—	—	—	25	>9	175	28
BLY94	BU	PE	65	36	12	6.0	200	130	10	120	1.0	500*	—	—	—	50	>7	175	28
BLY97	V	PE	66‡	33	3.0	1.0	150	10	10	—	0.2	250	—	—	—	>4	20	175	24
BLY98	V	PE	60	33	3.0	1.0	150	8**	10	—	0.5	800*	0.2	0.5	100	7	8	470	28
810BLY/A	AG	PE	55	35	9.0	3.0	—	22.5	20	100	1.0	300*	1.0	1.0	200	>20	>10	70	28
2N3375	AG	PE	65	40	1.5	0.5	200	11.6	10	100	0.25	500*	1.0	0.50	100	>3.0	—	400	28
2N3553	H3	PE	65	40	1.0	0.35	200	7.0	10	100	0.25	500*	1.0	0.25	50	>2.5	—	175	28
2N3632	AG	PE	65	40	3.0	1.0	200	23	10	150	0.25	400*	1.0	1.0	200	13.5	—	175	28
2N3866	H3	PE	55	30	0.4	0.4	200	5.0	10	200	0.05	700*	1.0	0.1	20	1.0	>10	400	28
2N4427	H3	PE	40	20	0.4	0.4	200	3.5	10	200	0.1	700*	0.5	0.1	20	1.0	>10	175	12

*Typical †V_{CEs} (f. > 1.0 MHz) **at T_{mb}=90°C †a.m. operation

†† a.m. operation in 2-stage amplifier incorporating BLY33 for a typical input power to BLY33 of 350mW and envelope distortion less than 5% at 80% modulation

broadband R.F. power modules

Type No.	Description	Construction	Frequency Range (MHz)	Supply Voltage (V)	Min. Power Output (W)	at P _{DR} (W)	Efficiency Typ. (%)
BGY21	U.H.F. amplifier module designed for portable equipment	CC	420–470	12	1.2	0.02	40
BGY22	U.H.F. amplifier modules designed for mobile communications equipments	CC	380–512	13.5	2.5	0.05	50
BGY23			380–512	13.5	7	2.5	70
BGY22A			420–480	12.5	2.5	0.05	50
BGY23A			420–480	12.5	7	2.5	70
437BGY	V.H.F. amplifier modules designed for mobile communications equipments		148–174	12.5	18	0.1	>40
438BGY			68–88	12.5	18	0.1	>40

silicon planar n-p-n differential amplifiers

Type No.	Construction	Technique	Maximum Ratings				P _{tot} at 25°C (mW)	h _{FE}		I _c (mA)	f _T (MHz)	Special Features I _{C1} /I _{C2} ratio at equal V _{BE}	
			V _{CB0}	V _{CE0}	I _{C(AV)}	T _j		min.	max.			min.	max.
BCY87	BG1	PE	45	40	30	175	150	100	450	0.05	50	0.9	1.11
BCY88	BG1	PE	45	40	30	175	150	120	600	0.5	50	0.8	1.25
BCY89	BG1	PE	45	40	30	175	150	100	600	10	50	0.67	1.5



Transistors

silicon p-n-p low power transistors

book 1 parts 1 and 2

Type No.	Construction	Technique	Maximum Ratings						h_{FE}		at f_T			at I_B		Special Features
			V_{CB0} (V)	V_{CE0} (V)	I_{CM} (mA)	$I_{C(AV)}$ (mA)	T_j (°C)	P_{tot} at 25°C (mW)	min.	max.	I_C (mA)	f_T (MHz)	$V_{CE(sat)}$ (V)	I_C (mA)	I_B (mA)	
GENERAL PURPOSE																
BC157	D	PE	-50	-45	200	100	125	350	75†	260	2.0	150*	-0.3	10	0.5	N < 10dB at f = 1kHz
BC158	D	PE	-30	-25	200	100	125	350	75†	500	2.0	150*	-0.3	10	0.5	N < 10dB at f = 1kHz
BC159	D	PE	-25	-20	200	100	125	350	125†	500	2.0	150*	-0.3	10	0.5	N < 4dB at f = 30Hz to 15kHz
BC557	BD	PE	-50	-45	200	100	150	300	75†	260	2.0	150*	-0.3	10	0.5	N < 10dB at f = 1kHz
BC558	BD	PE	-30	-25	200	100	150	300	75†	500	2.0	150*	-0.3	10	0.5	N < 10dB at f = 1kHz
BC559	BD	PE	-25	-20	200	100	150	300	125†	500	2.0	150*	-0.3	10	0.5	N < 4dB at f = 1kHz
BCY30	H2	A	-64	-50	100	50	150	250	10	35	20	0.25	-0.55	20	3.0	
BCY31	H2	A	-64	-50	100	50	150	250	15	60	20	0.25	-0.55	20	3.0	
BCY32	H2	A	-64	-50	100	50	150	250	20	70	20	0.25	-0.55	20	3.0	
BCY33	H2	A	-32	-25	100	50	150	250	10	35	20	0.4	-0.55	20	3.0	
BCY34	H2	A	-32	-25	100	50	150	250	15	60	20	0.6	-0.55	20	3.0	
BCY38	H1	A	-32	-24	500	250	150	410	10	30	150	0.45	-1.1	150	15	
BCY39	H1	A	-64	-60	500	250	150	410	10	50	150	0.45	-1.1	150	15	
BCY40	H1	A	-32	-24	500	250	150	410	15	120	150	0.85	-1.1	150	15	
BCY54	H1	A	-50	-50	500	250	150	410	12	70	150	0.45	-1.1	150	15	
BCY70‡	G1	PE	-50	-40	200	200	200	350	50	—	10	250	-0.25	10	1.0	
BCY71‡	G1	PE	-45	-45	200	200	200	350	100	600	10	200	-0.25	10	1.0	N < 2dB at f = 10Hz to 10kHz
BCY72‡	G1	PE	-25	-25	200	200	200	350	50	—	10	200	-0.25	10	1.0	
BFX37	G1	PE	-60	-60	—	50	200	360	70	300	0.01	40	-0.40	50	5.0	N < 3dB at f = 10Hz to 10kHz
R.F. AMPLIFIERS																
BF324	BD	PE	-30	-30	—	25	150	250	25	—	4.0	550*	—	—	—	N = 3dB typ at f = 100MHz
BF450	BD1	PE	-40	-40	—	25	150	250	60	—	1.0	325*	—	—	—	
BF451	BD1	PE	-40	-40	—	25	150	250	30	—	1.0	325*	—	—	—	
SWITCHING																
BSS68	BD	PE	-110	-100	100	100	150	300	30	—	25	50	-0.25	25	2.5	intended for anode switching of numerical indicator tubes.
BSV68	G1	PE	-110	-100	100	100	150	250	30	—	25	50	-0.25	25	2.5	

*Typical h_{FE} ‡also available to BS9365-F009 specification



Transistors

silicon p-n-p medium power transistors

book 1 parts 1 and 2

Type No.	Construction Technique	Maximum Ratings						h_{FE}		at I_C (mA)	f_T (MHz)	$V_{CE(sat)}$ (V)	at		Special Features
		V_{CBO} (V)	V_{CEO} (V)	I_{CM} (mA)	$I_{C(AV)}$ (mA)	T_J (°C)	P_{tot} at 25°C (mW)	min.	max.				I_C (mA)	I_B (mA)	
GENERAL PURPOSE															
BC327	BD PE	-50	-45	1.0A	500	150	625	100	600	100	100*	-0.7	500	50	Complementary to BC337
BC328	BD PE	-30	-25	1.0A	500	150	625	100	600	100	100*	-0.7	500	50	Complementary to BC338
BCX35	D PE	-80	-80	—	600	150	880	90*	—	150	100	—	—	—	—
BCX36	D PE	-60	-60	—	600	150	880	90*	—	150	100	—	—	—	—
BCX37	D PE	-40	-40	—	600	150	880	90*	—	150	100	—	—	—	—
BD132	BY PE	-45	-45	6.0A	3.0A	150	15W	40	—	500	60	-0.3	500	50	Complementary to BD131
BD136	BY PE	-45	-45	1.5A	500	125	6.5W	40	250	150	75*	-0.5	500	50	Complementary to BD135
BD138	BY PE	-60	-60	1.5A	500	125	6.5W	40	160	150	75*	-0.5	500	50	Complementary to BD137
BD140	BY PE	-100	-80	1.5A	500	125	6.5W	40	160	150	75*	-0.5	500	50	Complementary to BD139
BFT44	H3 PE	-300	-300	—	500	200	5W	50	—	10	60*	-5.0	500	100	
BFT45	H3 PE	-250	-250	—	500	200	5W	50	—	10	60*	-3.0	500	100	
BFX29†	H3 PE	-60	-60	600	600	200	600	50	—	10	100	-0.4	150	15	
BFX30§	H3 PE	-65	-65	600	600	200	600	50	—	10	—	—	—	—	$t_s < 250\text{ns}$ at 100mA
BFX87	H3 PE	-50	-50	600	600	200	600	40	—	10	100	-0.4	150	15	
BFX88	H3 PE	-40	-40	600	600	200	600	40	—	10	100	-0.4	150	15	

*Typical

† also available to BS9365-F010 specification

§ also available to BS9365-F011 specification

Type No.	Construction Technique	Maximum ratings						h_{FE}		at I_C (mA)	f_T (MHz)	$V_{CE(sat)}$ (V)	at		t_{on} (ns)	t_{off} (ns)	at I_C (mA)
		V_{CBO} (V)	V_{CEO} (V)	I_{CM} (mA)	$I_{C(AV)}$ (mA)	T_J (°C)	P_{tot} at 25°C (mW)	min.	max.				I_C (mA)	I_B (mA)			
SWITCHING																	
2N2904	H3 PE	-60	-40	—	600	200	600	40	120	150	200	-0.4	150	15	45	100	150
2N2904A	H3 PE	-60	-60	—	600	200	600	40	120	150	200	-0.4	150	15	45	100	150
2N2905	H3 PE	-60	-40	—	600	200	600	100	300	150	200	-0.4	150	15	45	100	150
2N2905A	H3 PE	-60	-60	—	600	200	600	100	300	150	200	-0.4	150	15	45	100	150
2N2906	G1 PE	-60	-40	—	600	200	400	40	120	150	200	-0.4	150	15	45	100	150
2N2906A	G1 PE	-60	-60	—	600	200	400	40	120	150	200	-0.4	150	15	45	100	150
2N2907	G1 PE	-60	-40	—	600	200	400	100	300	150	200	-0.4	150	15	45	100	150
2N2907A	G1 PE	-60	-60	—	600	200	400	100	300	150	200	-0.4	150	15	45	100	150

† at $T_{case} \leq 25^\circ\text{C}$



Transistors

silicon p-n-p high power transistors

book 1 parts 1 and 2

Type No.	Construction	Technique	Maximum Ratings						h_{FE}		f_T	$V_{CE(sat)}$		at		Special Features
			V_{CBO}	V_{CEO}	I_{CM}	$I_{C(AV)}$	T_J	P_{tot}	min.	max.		min.	max.	I_C	I_B	
			(V)	(V)	(A)	(A)	(°C)	(W)			(MHz)	(V)	(A)	(mA)		
GENERAL PURPOSE																
BD202	CD	EB	-60	-45	12	8.0	150	60	30	—	3.0	3.0	-1.0	3.0	300	Complementary to BD201
BD204	CD	EB	-60	-60	12	8.0	150	60	30	—	2.0	3.0	-1.0	3.0	300	Complementary to BD203
BD234	BY	EB	-45	-45	6.0	2.0	150	25	25	—	1.0	3.0	-0.6	1.0	100	
BD236	BY	EB	-60	-60	6.0	2.0	150	25	25	—	1.0	3.0	-0.6	1.0	100	
BD238	BY	EB	-100	-80	6.0	2.0	150	25	25	—	1.0	3.0	-0.6	1.0	100	
BD434	BY	EB	-22	-22	7.0	4.0	150	36	50	—	2.0	3.0	-0.5	2.0	200	Complementary to BD433
BD436	BY	EB	-32	-32	7.0	4.0	150	36	50	—	2.0	3.0	-0.5	2.0	200	Complementary to BD435
BD438	BY	EB	-45	-45	7.0	4.0	150	36	40	—	2.0	3.0	-0.7	3.0	300	Complementary to BD437
BDX78	CD	EB	-80	-80	12	8.0	150	55	30	—	2.0	3.0	-1.0	3.0	300	Complementary to BDX77

silicon n-channel field effect transistors

Type No.	Construction	Technique	Maximum Ratings						P_{tot}	$r_{DS(on)}$	$r_{DS(off)}$	Special Features
			V_{DB}	V_{SB}	$\pm V_{GBM}$	I_{DM}	T_J	at 25°C				
			(V)	(V)	(V)	max. (mA)	(°C)	(mW)	(Ω)	(Ω)		
INSULATED GATE FET (MOST)												
BFR29	J5	PE	30	30	10	50	125	200	—	—	For linear applications in the audio as well as the i.f. and v.h.f. frequency region	
BSV81	J5	PE	30	30	10	50	125	200	<50	$>1 \times 10^{10}$	For switching and particularly for chopping applications	

DUAL INSULATED GATE FET ('Tetrode' MOST)

Type No.	Construction	Technique	Maximum Ratings				P_{tot}	I_{GSS}	$-C_{rss}$	G	N	Measured at f
			V_{DS}	V_{GS}	I_D	T_J						
			Max. (V)	max. (V)	max. (mA)	(°C)	at 25°C (mW)	max. (nA)	typ. (fF)	typ. (dB)	max. (dB)	(MHz)
BFS28	J4	PE	20	8	20	135	200	1	25	18	4	200
BFR84	—	Protected gate version of BFS28										

Transistors

silicon n-channel field effect transistors (cont.)

book 1 parts 1 and 2

Type No.	Construction	Technique	Maximum Ratings						$V_{i(P)GS}$ max. (V)	at I_D (nA)	I_{GSS} max. (nA)	I_{DSS} ($V_{GS} = 0$)		at V_{DS} (V)	Special Features
			V_{DGM} (V)	V_{GSM} (V)	V_{DSM} (V)	I_{GM} (mA)	T_j ($^{\circ}C$)	P_{tot} at $25^{\circ}C$ (mW)				min. (mA)	max. (mA)		
JUNCTION FET															
BF244A BF244B BF244C	BC	PE	30	-30	30	10	150	300	8	10	5	2	6.5	15	N = 1.5dB typ at 100MHz, $R_G = 1k\Omega$
6												15			
12												25			
BF245A BF245B BF245C	BD2	PE	30	-30	30	10	150	300	8	10	5	2	6.5	15	N = 1.5dB typ at 100MHz $R_G = 1k\Omega$
6												15			
12												25			
BF256A BF256B BF256C	BD2	PE	30	-30	30	10	150	300	8	10	5	3	7	15	$G_p = 11dB$ typ. at 800MHz, $R_S = 47\Omega$
6												13			
11												18			
BFW10	J3	PE	30	-30	30	10	200	300	8	0.5	0.5	8	20	15	N < 2.5dB at 100MHz Noise Voltage < 75nV/ \sqrt{Hz} at 10Hz
BFW11	J3	PE	30	-30	30	10	200	300	6	0.5	0.5	4	10	15	
BFW12 BFW13	J3	PE	30	-30	30	5	200	150	2.5	0.5	0.1	1	5	15	
1.2												0.2	1.5		
BFW61	J3	PE	25	-25	25	10	200	300	8	1	1	2	20	15	
BSV78	G2	PE	40	-40	40	50	175	350	11	1	0.25	50	—	15	$r_{DS(on)} < 25\Omega$
BSV79	G2	PE	40	-40	40	50	175	350	7	1	0.25	20	—	15	$r_{DS(on)} < 40\Omega$
BSV80	G2	PE	40	-40	40	50	175	350	5	1	0.25	10	—	15	$r_{DS(on)} < 60\Omega$
2N3823	J3	PE	30	-30	30	10	200	300	8	0.5	0.5	4	20	15	N < 2.5dB at 100MHz

Matched Pairs

BFS21	J3†	PE	30	-30	30	10	125	250	6.0	0.5	0.5	4	10	15	$V_{G1S1} - V_{G2S2} < 20mV$ $I_{D1}/I_{D2} = 0.95$ to 1.05 $N < 75nV/\sqrt{Hz}$ at 10Hz
BFS21A	J3†	PE	30	-30	30	10	125	250	6.0	0.5	0.5	4	10	15	$V_{G1S1} - V_{G2S2} < 10mV$ $I_{D1}/I_{D2} = 0.95$ to 1 $N < 75nV/\sqrt{Hz}$ at 10Hz

† The devices are supplied in matched pairs, mounted in a heat conducting S-clip.

Dual Field Effect Transistors

Type No.	Construction	Technique	V_{DGM} (V)	V_{GSM} (V)	V_{DSM} (V)	I_{GM} (mA)	T_j ($^{\circ}C$)	P_{tot} at $25^{\circ}C$ (mW)	ΔI_G (pA)	ΔV_{GS} (mV)	CMRR (dB)	Special Features	
BFQ10 BFQ11 BFQ12 BFQ13 BFQ14 BFQ15 BFQ16	BG2	PE	30	-30	30	10	200	250	3.5	<10	< 5	> 100	Intended for high-performance, low-level differential amplifiers
<10											> 90		
<10											> 90		
<10											> 90		
<15											> 90		
<20											> 90		
<50											> 80		

silicon planar p-n-p-n switches

Type No.	Description	Construction	Maximum Ratings						V_A (V)	at I_A (mA)
			V_{GAK} (V)	$V_{GA A}$ (V)	I_{ARM} (mA)	I_A (mA)	T_j ($^{\circ}C$)	P_{tot} at $25^{\circ}C$ (mW)		
BR101	p-n-p-n controlled switch for use as a saw tooth generator in t.v. field timebase applications	J6	50	50	500	100	150	250	<1.4	50
BRY39	Integrated p-n-p-n transistor pair Applications include controlled switch, programmable unijunction transistor and thyristor tetrode.	J6	70	70	2500	175	150	275	<1.4	50
BRY56	Trigger device for switching applications such as motor control, oscillators, relay replacements, timers, pulse shapers.	BD3	70	70	2500	175	150	300	<1.4	100



Transistors

darlington transistors

book 1 parts 1 and 2

Type No	Construction	Polarity	Maximum Ratings					T	h_{FE} min.	at I_C (A)	f_T typ. (MHz)	$V_{CE(sat)}$ max. (V)	at		Special Features		
			V_{CBO} (V)	V_{CEO} (V)	I_{CM} (A)	$I_{C(AV)}$ (A)	I_C (A)						I_B (mA)	t_{on} max. (μs)	t_{off} max. (μs)	at I_C (A)	
3.5W ($T_{case} \leq 25^\circ C$)																	
BCX21	H3	n-p-n	60	45	—	1.0	150	2000	0.15	—	1.6	1.0	1.0	0.4	1.5	0.5	
5.0W ($T_{mb} \leq 100^\circ C$)																	
BDX42	BY	n-p-n	60	45	—	1.0	150	1500	0.5	—	1.6	1.0	4.0	0.4	1.5	0.5	
BDX43			80	60									1.0				4.0
BDX44			100	80									4.0				
5.0W ($T_{case} \leq 25^\circ C$) Complementary types																	
BSS50	H3	n-p-n	60	45	—	1.0	200	1500	0.5	—	1.6	1.0	4.0	0.4	1.5	0.5	
BSS51			80	60									1.0				4.0
BSS52			100	80									4.0				
BSS60	H3	p-n-p	-60	-45	—	1.0	200	1500	0.5	—	-1.6	1.0	4.0	4.0	1.5	0.5	
BSS61			-80	-60									1.0				
36W ($T_{mb} \leq 25^\circ C$) Complementary types																	
BD262	BY	p-n-p	-60	-60	6.0	4.0	150	750	1.5	7.0	-2.5	1.5	6.0	0.5	2.5	3.0	
BD262A			-80	-80									6.0				
BD262B			-100	-100									6.0				
BD263	BY	n-p-n	80	60	6.0	4.0	150	750	1.5	7.0	2.5	1.5	6.0	0.5	2.5	3.0	
BD263A			100	80									6.0				
BD263B			120	100									6.0				
55W ($T_{mb} \leq 25^\circ C$) Complementary types																	
BD266	CD	p-n-p	-60	-60	12	8.0	150	750	3.0	2.5	-2.0	3.0	12	0.5*	2.5*	3.0	
BD266A			-80	-80									12				
BD267	CD	n-p-n	80	60	12	8.0	150	750	3.0	2.5	2.0	3.0	12	0.5*	2.5*	3.0	
BD267A			100	80									12				
90W ($T_{mb} \leq 25^\circ C$) Complementary types																	
BDX62	F2	p-n-p	-60	-60	12	8.0	200	1000	3.0	7.0	-2.0	3.0	12	0.5*	2.5*	3.0	
BDX62A			-80	-80									12				
BDX62B			-100	-100									12				
BDX63	F2	n-p-n	80	60	12	8.0	200	1000	3.0	7.0	2.0	3.0	12	0.5*	2.5*	3.0	
BDX63A			100	80									12				
BDX63B			120	100									12				
117W ($T_{mb} \leq 25^\circ C$) Complementary types																	
BDX64	F2	p-n-p	-60	-60	16	12	200	1000	5.0	-2.5	2.5	5.0	20	0.4*	3.0*	5.0	
BDX64A			-80	-80									16				
BDX65	F2	n-p-n	80	60	16	12	200	1000	5.0	2.5	2.5	5.0	20	0.4*	3.0*	5.0	
BDX65A			100	80									16				
150W ($T_{mb} \leq 25^\circ C$) Complementary types																	
BDX66	F2	p-n-p	-60	-60	20	16	200	1000	10	7.0	-2.0	10	40	0.4*	3.0*	5.0	
BDX66A			-80	-80									20				
BDX67	F2	n-p-n	80	60	20	16	200	1000	10	7.0	2.0	10	40	0.4*	3.0*	5.0	
BDX67A			100	80									20				

*Typical

Microminiature devices

primarily intended for hybrid, thin and thick film circuits

book 1 parts 1 and 2

n-p-n transistors

Type No.	Construction	Technique	Maximum Ratings					h_{FE}		at I_C (mA)	f_T min. (MHz)	$V_{CE(sat)}$ max. (V)	at		Nearest type in TO-18 envelope
			V_{CBO} (V)	V_{CEO} (V)	$I_{C(AV)}$ (mA)	T_J (°C)	P_{tot} at 25°C (mW)	min.	max.				I_C (mA)	I_B (mA)	
BCW31R	Y1	PE	30	20	100	150	200	110	220	2.0	300*	0.25	10	0.5	BC108A
BCW32R								200	450						
BCW33R								420	800						
BCW71R	Y1	PE	50	45	100	150	200	110	220	2.0	300*	0.25	10	0.5	BC107A
BCW72R								200	450						
BCX19	Y7	PE	50	45	500	150	310	100	600	100	200*	0.62	500	50	BC337
BCX20	Y7	PE	30	25	500	150	310	100	600	100	200*	0.62	500	50	BC338
BFR92	Y7	PE	20	15	25	150	180	25	—	14	5000*	—	—	—	BFR90
BFR93	Y7	PE	15	12	35	150	180	25	—	30	5000*	—	—	—	BFR91
BFS17R	Y1	PE	25	15	25	150	200	25	150	2.0	1300*	—	—	—	BFY90
BFS20R	Y1	PE	30	20	25	150	200	40	—	7.0	275	—	—	—	BF173
BSV52R	Y1	PE	20	12	100	150	200	40	120	10	400	0.25	10	1.0	BSX20
BFT25	Y7	PE	8	5	2.5	150	30	20	40*	1.0	1200	0.175	1.0	0.1	BFT24 (AR outline)

p-n-p transistors

BCW29R	Y1	PE	-30	-20	100	150	200	120	260	2.0	150*	-0.3	10	0.5	BC178A
BCW30R								215	500						
BCW69R	Y1	PE	-50	-45	100	150	200	120	260	2.0	150*	-0.3	10	0.5	BC177A
BCW70R								215	500						
BCX17	Y7	PE	-50	-30	500	150	310	100	600	100	100*	-0.62	500	50	BC327
BCX18	Y7	PE	-45	-25	500	150	310	100	600	100	100*	-0.62	500	50	BC328

*Typical

n-channel junction field effect transistors

Type No.	Construction	Technique	V_{DGO} (V)	V_{GSO} (V)	Maximum Ratings		T_J (°C)	P_{tot} at 25°C (mW)	$V_{(P)GS}$ max. (V)	at I_D (nA)	$-I_{GSS}$ max. (nA)	I_{DSS} ($V_{GS} = 0$)		at V_{DS} (V)
					$\pm V_{DS}$ (V)	I_C (mA)						min. (mA)	max. (mA)	
BFR30	Y2	PE	25	-25	25	5.0	150	200	-5.0	0.5	0.2	4.0	10	10
BFR31	Y2	PE	25	-25	25	5.0	150	200	-2.5	0.5	0.2	1.0	5.0	10

diodes

Type No.	Construction	Technique	Description	V_{RRM} (V)	I_{FRM} (mA)	$I_{F(AV)}$ (mA)	Max. Reverse Recovery Time, t_{rr} Measured at:				Nearest type
							t_{rr} (ns)	I_F (mA)	I_R (mA)	R_L (Ω)	
BAV70	Y4	PE	Common cathode double diode Common anode double diode Two diodes in series intended for high speed switching.	70	200	100	6.0	10	1	100	2 × 1N4148
BAW56	Y5	PE									
BAV99	Y6	PE									



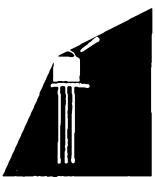
Microminiature devices

silicon planar voltage reference diodes

200mW ($T_{amb} = 25^{\circ}\text{C}$) $\pm 5\%$ voltage tolerance, Construction Y3

book 1 part 3

Type No.	Nom. Zener Voltage (V)	Measured at Test I_z		Max. Slope Resistance (Ω)	Typ. Temp. Coefficient (mV/ $^{\circ}\text{C}$)	Test I_z (mA)	Max. I_R at V_R	
		Min. Voltage (V)	Max. Voltage (V)				(μA)	(V)
BZX84								
—C4V7	4.7	4.4	5.0	80	-1.4	5.0	3.0	2.0
—C5V1	5.1	4.8	5.4	60	-0.8	5.0	2.0	2.0
—C5V6	5.6	5.2	6.0	40	+1.2	5.0	1.0	2.0
—C6V2	6.2	5.8	6.6	10	+2.3	5.0	3.0	4.0
—C6V8	6.8	6.4	7.2	15	+3.0	5.0	2.0	4.0
—C7V5	7.5	7.0	7.9	15	+4.0	5.0	1.0	5.0
—C8V2	8.2	7.7	8.7	15	+4.6	5.0	0.7	5.0
—C9V1	9.1	8.5	9.6	15	+5.5	5.0	0.5	6.0
—C10	10	9.4	10.6	20	+6.4	5.0	0.2	7.0
—C11	11	10.4	11.6	20	+7.4	5.0	0.1	8.0
—C12	12	11.4	12.7	25	+8.4	5.0	0.1	8.0



Photodevices

phototransistors

book 1 part 3

Type No.	Spectral Response		Description and Construction	Max. Dark Current (μA)	Sensitivity min. ($\mu\text{A}/\text{lux}$)	Cut-off Frequency (kHz)	T_j max. ($^{\circ}\text{C}$)	V_{CE} max. (V)	I_{CM} max. (mA)
	Peak (μm)	Cut-off (μm)							
BPX25	0.8	1.1	Silicon n-p-n general purpose phototransistor with lensed window	J2	0.5	5.0 200	150	32	100
BPX29									
BPX25A	0.8	1.1	Silicon n-p-n "Darlington-pair" phototransistor with lensed window.	J2	0.25	50 —	175	30	100
BPX29A									

photodiodes

Type No.	Spectral Response		Description and Construction	Max. Dark Current (μA)	Sensitivity min. ($\mu\text{A}/\text{lux}$)	Cut-off Frequency (kHz)	T_j max. ($^{\circ}\text{C}$)	V_R max. (V)	I_R max. (mA)	
	Peak (μm)	Cut-off (μm)								
BPX40	0.8	1.1	Unencapsulated silicon planar photodiodes for general purpose applications.	AX	0.5 at 15V	—	125	18	2	
BPX41	0.8	1.1		AX	1.0 at 15V	—	125	18	5	
BPX42	0.8	1.1		AY	5.0 at 10V	—	125	12	20	
BPX94	0.8	1.1	Silicon photodiode for low light level applications	J2	0.1 nA	0.008	—	150	18	—
BPY13	0.9	1.1	Silicon photodiode for high-speed applications	^a H6	1.0	0.25 ^a $\mu\text{A}/\mu\text{W}$	10 MHz	—	50	—
BPY13A	0.9	1.1	Silicon photodiode for ultra high speed applications	^a H6	2.0	0.25 ^a $\mu\text{A}/\mu\text{W}$	300 MHz	—	100 ^b	—
BPY69	0.9	1.1	Silicon n-p-n duo-photodiodes for use in photoconductive mode	AK2	0.05	0.2	—	125	60	10
BPY77	0.8	1.1	Silicon photodiode for ultra high speed applications	G5	0.002 at 10V	0.035 typ	—	200	100	40
OAP12	1.55	1.8	Germanium photodiode for use in photoconductive† mode	AK1	15	0.05 ^c	50	60	30	3.0

^aWith monochromatic light, at 0.9 μm . Measured with a gallium arsenide diode type CQY11

f.i.e. Reverse biased

^bTypical operating voltage (depletion voltage)

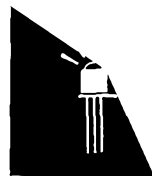
^cAT 25 $^{\circ}\text{C}$, $V_R = 10\text{V}$ and 800 lux from 2700K source

^aH6 is 2-lead TO-5 with end window.

electroluminescent diodes

Ga As diodes emitting near infrared radiation for use in optical transmission of information, optoelectronic couplings and monochromatic sources

Type No.	Peak Spectral Response (μm)	Description and Construction		I_{FRM} max. (mA)	I_F max. (mA)	P/I min. (mW/A)	t_r typ. (ns)	T_j Temperature Range ($^{\circ}\text{C}$)	
CQY11B	0.875	Ga As diode in modified TO-18 encapsulation with plane window	G4	200	30	3.0	100	-55	+150
CQY11C	0.875	Ga As diode in modified TO-18 encapsulation with lensed window	G4	200	30	3.0	100	-55	+150
CQY50	0.93	Ga As diode in subminiature encapsulator with lensed window	CB	500	100	8.0	500	-65	+150



Photodevices

visible (red) electroluminescent diodes and displays

book 1 part 3

Type No.	Peak Spectral Response (μm)	Description and Construction	I_F max. (mA)	V_F max. (V)	Luminance (at 20mA) typ. (cd/m^2)	T_j max. ($^{\circ}\text{C}$)	
CQY24* CQY46† CQY47‡	0.65	Diffused red plastic encapsulated GaAsP light emitting diode for general use i.e. panel warning light, logic-state indicator	CA	50	2	500	100
185CQY (CQY25)	0.65	Seven segment GaAsP numerical indicator encapsulated in red epoxy package	BE	10 (per segment) 80 (per device)	2	680 ($I_F=5\text{mA}$)	85

*Available with plastic panel mounting clip type RTC757 (black) or RTC758 (colourless).

†As CQY24 but in clear red plastic.

‡As CQY24 but in clear colourless plastic.

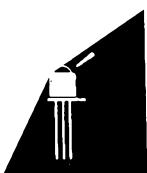
solid-state photo relays

Type No.	Description and Construction	I_C/I_F typ.	I_F (max.) (mA)	Minimum Isolation Voltage(pk) (V)	t_r (typ.) (μs)	t_f (typ.) (μs)	
CNY22	Solid-state photorelays consisting of a GaAs electro-luminescent diode and a silicon n-p-n photo-transistor	BN	0.5	30	4000	5	5
CNY23		BN	1.0	30	2800	5	5
CNY42		BN*	0.5	30	4000	5	5
CNY43		BN*	1.0	30	2800	5	5
CNY44		T1	0.6†	30	1500	2	2
CNY46	T2	0.6†	30	1500	2	2	

*4-pin configuration † $I_F = 10\text{mA}$

pyro-electric detectors

Type No.	Typ. Noise Equivalent Power (500K, 90, 1) (W)	Typical Detectivity D^* (λ_{pk} , 800, 1) $\text{cm}(\text{Hz})^{1/2}/\text{W}$	Wavelength Range (μm)	Typical Responsivity (V/W)	Frequency Range	Sensitive Area (mm)
802CPY	1.5×10^{-9}	1.2×10^8	2-25	1×10^3	10Hz-100kHz	2.0 diam.
825CPY	(500K, 10, 1) 3×10^{-10}	D^* (500K, 10, 1) 6×10^8	2-25	2×10^5	5Hz-50Hz	3x1



Photodevices

infrared photoconductive detectors book 2 part 2

Type No.	Spectral Response		Description and Construction		Typical Detectivity $D^*(\lambda_{pk}, 800, 1)$ $\text{cm}(\text{Hz})^{1/2}/\text{W}$	Typical Monochromatic Responsivity (V/W)	Typical Time Constant (μs)	Sensitive Area (mm)	Element Resistance (k Ω)
	Peak (μm)	Cut-off (μm)							
RPY75	1.5 to 2.1	2.6	Lead sulphide detectors for room temperature operation RPY75A incorporates a germanium filter to cut off visible radiations	AL	2.0 × 10 ¹⁰	5 × 10 ⁵	250	1.0 × 1.0	> 200
RPY75A									
RPY76	1.5 to 2.1	2.6	Lead sulphide detectors for room temperature operation RPY76A incorporates a germanium filter to cut off visible radiations	aH5	2.0 × 10 ¹⁰	5 × 10 ⁵	250	1.0 × 1.0	> 200
RPY76A									
61SV	2.2	3.5	Lead sulphide detector for room temperature operation	AM	4.0 × 10 ¹⁰	8 × 10 ⁴	100	6.0 × 6.0	1 to 4M Ω
62SV	2.5	3.5	Lead sulphide detector for room temperature operation	AM	6.0 × 10 ¹⁰	1.2 × 10 ⁵	175	6.0 × 6.0	1 to 4M Ω
ORP13	5.3	5.6	Indium antimonide detector for liquid N ₂ temperature 77K operation	AN	5.5 × 10 ¹⁰	3.5 × 10 ⁴	5	6.0 × 0.5	20 to 60
RPY31	5.3	5.6	Indium antimonide detector for liquid N ₂ temperature 77K operation	AN	4.0 × 10 ¹⁰	2.6 × 10 ³	5	4.0 × 4.0	1 to 5
RPY35	5.3	5.6	Indium antimonide detector for liquid N ₂ or miniature Joule-Thompson coolers	BA	4.0 × 10 ¹⁰	2.6 × 10 ³	5	4.0 × 4.0	1 to 5
RPY51 RPY52	5.3	5.6	Indium antimonide detectors for 77K operation using liquid N ₂ or miniature Joule-Thompson coolers	BA	9.0 × 10 ¹⁰	4.5 × 10 ⁴	2.5	0.5 × 0.5	1.2 to 3.5
					5.0 × 10 ¹⁰				
ORP10	6 to 6.3	7.5	Indium antimonide detector for room temperature operation	AO	2.0 × 10 ⁸	1.0	0.1	6.0 × 0.5	30 to 120 Ω
RPY77 RPY78	6 to 6.3	7.5	Indium antimonide labyrinth detectors for room temperature operation	BB	> 1 × 10 ⁸	5.0	< 0.1	2 × 2	0.5 to 1.5
	6 to 6.3	7.0†		BB	> 9.5 × 10 ⁷	5.0	< 0.1	2 × 2	0.5 to 1.5

aH5 (TO-5 with end window) connections as follows: 1 and 2 Cell connections 3 Metal case

† Limited spectral response due to sapphire window



Photodevices

cadmium sulphide photoconductive cells book 2 part 2

All types: Spectral response range 0.3 to 0.9µm

Type No.	Incidence of Illumination	Max. Dissipation		Max. Cell Voltage (d.c. or pk.) (V)	Nominal* Cell Resistance (kΩ)	Ambient Temperature Limits (°C)	Base
		(mW)	at (°C)				
ORP12	End-on	200	25	110	2.4	-10 to +60	Wired-in
ORP52	Side-on and End-on	400	25	200	1.2	-40 to +70	Wired-in
ORP60	End-on	70	25	350	60	-40 to +70	Wired-in
ORP61	Side-on	70 20	25 70	350	60	-40 to +70	Wired-in
ORP62	Side-on	100	25	350	45	-40 to +70	Wired-in
ORP69	Side-on and End-on	100	25	350	30	-40 to +70	Wired-in
ORP90	Side-on	1000 300	25 70	350	1.0	-40 to +70	B7G
ORP93	Side-on	1000 350	25 70	400	1.7	-40 to +70	B7G
RPY30	Side-on	200	25	150	1.6	-30 to +60	Wired-in
RPY33	End-on (Cadmium sulpho-selenide)	75	25	50	2.5 (at 25 lux)	-40 to +60	Wired-in
RPY58A	Side-on (Monograin)	100	25	50	0.6	-40 to +60	Wired-in
RPY71	Side-on (Linear monograin)	50	25	50	3.0 to 6.0 (at 10 lux)	-40 to +70	Wired-in
RPY82	Side-on (Lacquer coated)	300	25	100	0.95	-40 to +70	Wired-in

*Measured at 50 lux and with lamp of colour temperature 2700K.



Microwave solid state mixer diodes book 1 part 3

Type No.	Description	Construction	Maximum Operating Frequency (GHz)	Typical Noise Figure (dB)	Leakage Current at $V_R=0.5V$ (μA)	Forward Current at $V_F=0.5V$ (mA)	Typical Impedance Z_{if} (Ω)	Operating Temperature ($^{\circ}C$)
AAV34	Germanium sub-miniature diodes for use in Q band	AH	40	8.5	10	2.0	750	-55 to +100
AAV39 (CV7762) AAV39A	} Germanium sub-miniature diode for use in X band	AH	18	6.0	3.0	5.0	350	-55 to +100
				7.0				
AAV50 (CV7838) AAV50R* (CV7839)	} Germanium diode for use in X band	X	12	6.2	3.0	9.0	400	-55 to +100
AAV51 (CV7776) AAV51R* (CV7777)	} Germanium diode for use in J band	AZ	18	7.0	3.0	9.0	270	-55 to +100
AAV52 AAV52R*	Germanium diode for use in J band	AZ	18	8.0	3.0	9.0	270	-55 to +100
AAV56 AAV56R*	Germanium diode for use in S band		4	6.5	3.0	9.0	450	-55 to +100
AAV59	Germanium Q band diode	AH	40	8.5	2.0	2.0	1000	-55 to +100

*Reverse polarity version.

Schottky barrier mixer diodes

Type No.	Construction	Maximum Operating Frequency (GHz)	Typical Noise Figure (dB)	Typical Impedance Z_{if} (Ω)	Operating Temperature ($^{\circ}C$)
BAT10	CE	12	7.0	600	-55 to +150
BAT11	AE	12	6.5	320	-55 to +150
BAV22 BAV22R*	X	12	7.0	425	-55 to +100
BAV71	AH	40	10**	1050	-55 to +150
BAV72	M	40	10**	1050	-55 to +150
BAV96A BAV96B BAV96C BAV96D	M	12	7.5 7.0 6.5 6.0	300	-55 to +150
BAW95D BAW95E BAW95F BAW95G	BO	12	7.8 7.2 6.8 6.3	415	-55 to +150

*Reverse polarity version.

**Maximum.



Microwave solid state Schottky barrier detector diodes book 1 part 3

Type No.	Description	Construction	Frequency Range (GHz)	Typical Tangential Sensitivity (dbm)	Typical 1/f noise (dB)	Typical Video Impedance (Ω)
BAV46	Schottky barrier diode for use in X band Doppler radar systems	BO	1 to 12	-52	10	850
BAV75	Schottky barrier diode for low level detector applications	C	1 to 12	-50	10	325
BAV97	Schottky barrier diode for low level detector applications diode for use up to Q band	M	1 to 12	-54	10	500

backward diodes

Type No.	Description	Construction	Frequency Range (GHz)	Typical Tangential Sensitivity (dbm)	Min. Figure of Merit	Typical Video Impedance (Ω)
AEY17	Germanium bonded backward diode for use at X band	AH	1 to 18	-53	120*	300
AEY29 AEY29R**	Germanium bonded backward diode for use at J band	AZ	12 to 18	-53	50†	300
AEY31 AEY31A	Subminiature germanium bonded backward diode for use up to J band	M	1 to 18 1 to 18	-53 -50	120* 50*	300 300
AEY32	Subminiature germanium bonded backward diode for use up to Q band	M	18 to 40	—	50	4000

*Measured at 9.375GHz.

**Reverse polarity version.

†Measured at 16.5GHz in JAN 201 holder.

Gunn effect devices

Type No.	Description	Construction	Operating Voltage (V)	Frequency Range (GHz)	Pout (typ.) (mW)	Ptot Max. (25°C) (W)
CXY11A CXY11B CXY11C	Ga As bulk effect devices employing the Gunn effect to produce c.w. oscillations in X band	C	7.0	8 to 12	8.0 12 15	1.0
CXY14A CXY14B CXY14C	Ga As bulk effect devices employing the Gunn effect to produce c.w. oscillations in J band	C	7.0	12 to 18	8.0 12 20	1.0
CXY16D CXY16E CXY16F	Ga As bulk effect devices employing the Gunn effect to produce c.w. oscillations in X band	C	8.0	8 to 12	200 300 400	9.0 10 11
CXY17A CXY17B CXY17C CXY17D CXY17E	Ga As bulk effect devices employing the Gunn effect to produce c.w. oscillations in C band	C	10	4 to 8	50 75 100 200 300	6.0 8.0 10 11 12
CXY18A CXY18B CXY18C CXY18D CXY18E	Ga As bulk effect devices employing the Gunn effect to produce c.w. oscillations in J band	C	6.0	12 to 18	50 75 100 200 300	4.0 6.0 8.0 10 11
CXY19	Ga As bulk effect device employing the Gunn effect to produce c.w. oscillations in X band	C	12	8 to 12	150	6.0
CXY21	Ga As bulk effect device employing the Gunn effect to produce c.w. oscillations in X band	C	9.5	8 to 12	60	2.5



Microwave solid state multiplier varactor diodes book 1 part 3

Type No.	Description and construction		Capacitance at V_R		V_R max. (V)	Maximum Transit Time (ps)	Typical Cut-off Frequency (GHz)
			(pF)	(V)			
BAY96	Silicon planar diode for use in high efficiency multiplier circuits, input powers up to 30W	E1	16 35	40 6	120	—	25
BXY27	Silicon planar epitaxial varactor diode for use in multipliers up to S band and input powers up to 10W	C	4.5	6	55	—	70
BXY28	Silicon planar epitaxial varactor diode for use in high efficiency multipliers in the 2 to 4 GHz range	C	1.5	6	45	—	100 min.
BXY29	Silicon planar epitaxial varactor diode for use in frequency multiplier circuits in the 4 to 8 GHz range	C	1.0	6	25	—	120
BXY32	Silicon planar step recovery diode for high order frequency multipliers with outputs in X band	C	0.75	6	20	150	150
BXY35	Silicon planar epitaxial varactor diodes for frequency multipliers up to 18 GHz, available in a variety of outlines	E1, N	9	6	100	—	25
BXY36		C, N, Z	5	6	70	500	75
BXY37		C, N, Z	3	6	70	350	100
BXY38		C, N, Z, O	1.6	6	50	300	120
BXY39		C, N, Z, O	1.0	6	40	200	150
BXY40 BXY41		C, N, Z, O	0.65 0.4	6 6	25 25	150 100	180 200
BXY56 BXY57	High efficiency silicon diodes for multipliers with output frequencies in C and X bands	C	2.0 3.0	6 6	60 60	— —	160 140
1N4885	Silicon varactor diode for use in high efficiency multiplier circuits	E1	35	6	150	—	25
1N5152	Silicon planar epitaxial varactor diodes for use in multipliers up to S band	C	6	6	75	—	100
1N5153		N	6	6	75	—	100
1N5155	Silicon planar epitaxial varactor diode for use in multipliers up to C band	C	2	6	35	—	120
1N5157	Silicon planar epitaxial varactor diode for use in multipliers up to X band	C	0.8	6	20	—	200

tuning varactor diodes

Type No.	Description and construction		Capacitance		at V_R (V)	V_R max. (V)
			min. (pF)	max. (pF)		
BXY53 BXY54 BXY55	Silicon planar epitaxial tuning devices	C	0.8	1.2	4	60
3.7			5.7	4	60	
12			18	4	60	

special purpose varactor diodes

Type No.	Description and construction		Capacitance at V_R		V_R max. (V)	Series Resonant Frequency (GHz)	Typical Cut-off Frequency (GHz)
			(pF)	(V)			
CAY10	Gallium arsenide diode, diffused mesa type, for use in microwave parametric amplifiers, frequency multipliers and switches	C	0.4	0	6	10	250
CXY10	Gallium arsenide diode with a high cut-off frequency for L use in parametric amplifiers, frequency multipliers and switches	L	0.2	0	6	30	400
CXY12	Gallium arsenide diode with a high cut-off frequency for L use in frequency multipliers up to Q band	L	0.25	6	10	29	500

impatt diodes

Type No.	Description and construction		Frequency Range (GHz)	Power Output (min.) (mW)	Operating Voltage (V)
BXY50 BXY51 BXY52	High power diodes for use as oscillators or negative resistance amplifiers	O	8 to 10 10 to 12 12 to 14	500 400 300	90 80 70

Diodes

germanium point contact diodes book 1 part 3

Abridged data applying at 25°C T_{amb}

Type No.	Description and Construction	V _{RRM} (V)	I _{FRM} (mA)	I _{F(AV)} (mA)	Typical V _F at I _F (V)	Typical I _R at V _R (μA)	Typical V _R (V)	T _{amb} max. (°C)
OA90	Subminiature high frequency detector diode	A1	30	45	10	2.0	30	75
AA119	Detector diode	A1	45	100	35	2.6	30	60
OA91	Subminiature general purpose diode	A1	115	150	50	2.1	30	75
OA95	Subminiature general purpose diode	A1	115	150	50	1.85	30	75

germanium gold bonded diodes

Type No.	Description and Construction	V _{RRM} (V)	I _{FRM} (mA)	Typical V _F at I _F (V)	Typical I _R at V _{RRM} (μA)	Typical Q _s (pC)	Typical Recovered Charge Measured at:	R _L (Ω)			
							I _F (mA)	V _R (V)			
AAZ13	High speed switching	A1	8	100	0.6	30	30	20	10	5	500
AAZ33		A1	12	240	0.5max.	30	15	60	10	10	1000
AAZ32		A1	30	150	0.60max.	30	11	100	10	10	1000
OA47	General purpose	A1	30	150	0.54	30	10	280	10	10	1000
AAZ30	High speed switching	A1	30	400	0.88	150	8.0	250	10	10	1000
AAZ17	General purpose	A1	75	250	0.8	250	60	300	10	10	1000
AAZ15	High voltage	A1	100	250	0.8	250	16	750	10	10	1000

silicon junction diodes

Abridged data applying at 25°C T_{amb}

Type No.	Description and Construction	V _{RRM} (V)	I _{FRM} (mA)	I _{F(AV)} (mA)	V _F max. at I _F (V)	Typical I _R at max. V _{RRM} (μA)
OA200	General purpose diode	A1	50	250	80	0.02
OA202	General purpose diode	A1	150	250	80	0.01

silicon whiskerless diodes

Type No.	Description and Construction	V _{RRM} (V)	I _{FRM} (mA)	I _{F(AV)} (mA)	C _d (pF)	V _F max at I _F (V)	t _{rr} (ns)	Max. Reverse Recovery Time Measured at:					
								I _F (mA)	V _R (V)	R _L (Ω)	I _R (mA)		
BA314	Low voltage stabiliser	B1	—	250	<140	0.96	100	—	—	—	—	—	
BA316	10V, 30V and 50V general purpose diodes	B1	10	225	100	3	1.1	100	4	10	6	100	1
BA317		B1	30	225	100	3	1.1	100	4	10	6	100	1
BA318		B1	50	225	100	3	1.1	100	4	10	6	100	1
BAV10		High speed diode for core gating applications in very fast memories	B1	60	600	300	2.5	1.0	200	6.0	400	—	100
BAV18	General purpose switching diodes	B1	60	625	200	5.0	1.25	200	50	30	—	100	3
BAV19		B1	120	625	200	5.0	1.25	200	50	30	—	100	3
BAV20		B1	180	625	200	5.0	1.25	200	50	30	—	100	3
BAV21		B1	250	625	200	5.0	1.25	200	50	30	—	100	3
BAV44	High speed, high current diode for servo-amplifiers, digital voltmeters and oscilloscopes	AQ2	65	3.5A	1A	7.5	0.9	100	20	1A	—	50	1A

Diodes

silicon whiskerless diodes (cont.) book 1 part 3

Type No.	Description and Construction		V_{RRM} (V)	I_{FRM} (mA)	$I_{F(AV)}$ (mA)	C_d max. (pF)	V_F max. (V)	max. at I_F (mA)	t_{rr} (ns)	Max. Reverse Recovery Time Measured at:			
										I_F (mA)	V_R (V)	R_L (Ω)	I_R (Am)
BAV45	Extremely low leakage and low capacitance diode ($I_R = 10\text{pA}$ at $V_R = 20\text{V}$)	G5	35	100	50	1.3	1.0	10	250	10	1	100	1.0
BAW62	High speed diode for fast logic applications	B1	75	225	100	2.0	1.0	100	4.0	10	1.0	100	1.0
BAX12	Controlled avalanche diode avalanche voltage 120–175V at 1mA	AQ1	90	800	400	35	1.0	200	60	30	3	100	1.0
BAX13	High speed diode intended for logic application	AQ1	50	150	75	—	1.0	20	4	10	6	100	1.0
BAX16	Intended for general purpose industrial applications	AQ1	150	300	200	10	1.3	100	120	30	3	100	1.0
BAX17	Intended for general purpose industrial applications	AQ1	200	300	200	10	1.2	200	120	30	3	100	1.0
1N914	High speed diodes for computer	AQ1	100	225	75	4.0	1.0	10	4.0	10	6.0	100	1.0
1N916	High speed diodes for computer and other applications	AQ1	100	225	75	2.0	1.0	10	4.0	10	6.0	100	1.0
1N4009	Ultra high speed diode	AQ1	25	—	—	4.0	1.0	30	2.0	10	6.0	100	1.0
Abridged data applying at 25°C T_{amb}													
1N4148	High speed diodes for computer and other applications	B1	75	225	75	4	1.0	10	4	10	6	100	1.0
1N4149		B1	100	225	75	2	1.0	10	4	10	6	100	1.0
1N4446		B1	75	450	150	4	1.0	20	4	10	6	100	1.0
1N4448		B1	75	450	150	4	1.0	100	4	10	6	100	1.0

variable capacitance diodes

Type No.	Description and Construction		V_R max. (V)	I_R max. (μA)	C_d at V_R (pF)		V_R (V)	Capacitance Ratio	
					min.	max.		min.	max.
BA102	Intended for a.f.c. control in TV receivers	A1	20	5	20	45	4.0	1.4	—
BA182	Band switching v.h.f. TV	BV	35	0.1	0.6	1.0	20	—	—
BB105B	Intended for u.h.f. tuners	BV	28	0.1	2.0	2.3	25	4.5	6.0
BB105G	Intended for v.h.f. tuners	BV	28	0.1	1.8	2.8	25	4.0	6.0
BB110	Silicon planar variable capacitance diode for tuning in band II f.m. and for r.f. and interstage circuits	BV	30	0.02	27	33	3.0	2.65 typ.	
BB113	Silicon planar variable capacitance triple diode for tuning in LW, MW and SW-bands of a.m. radio receivers	BW	32	0.05	230	280	1.0	13pF max. at 30V	

Diodes

fast recovery low power rectifier diodes book 1 part 3

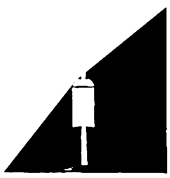
Type No.	Description and Construction		V_{RRM} (V)	I_{FSM} (A)	$I_{F(AV)}$ (mA)	V_F max. at I_F (V)		Q_S max. (nC)	Max. recovered charge Measured at:		
									I_F (mA)	V_R (V)	$-di/dt$ (mA/ μ s)
BY206	Fast soft recovery diode	A3	350	15	400	1.5	2.0	60	400	≥ 50	400
BY207	Fast soft recovery diode	A3	600	15	400	1.5	2.0	60	400	≥ 50	400
BY210-400 -600	Fast soft recovery diode	A3	400	30	—	1.3	1.0	60	400	≥ 50	400
	Fast soft recovery diode	A3	600	30	—	1.3	1.0	60	400	≥ 50	400
BYX70-100 -300 -500	High speed diodes for use in inverters and similar applications.	B2	100	30	1.0	1.2	1.0	0.9	10	2.0	5.0
			300								
			500								

low power silicon rectifier diodes

Type No.	Description and Construction		V_{RRM} (V)	I_{FSM} (A)	$I_{F(AV)}$ (A)	V_F max. at I_F (V)		I_R max. at V_{RRM} (μ A)
BYX26-60 (CV8308) BYX26-150 (CV8805)	Controlled avalanche rectifier diodes	A2	60	7.0	0.25	0.9	0.25	1.0
			150					
BYX36-150 -300 -600	Intended for general purpose industrial applications	A2	150	30	1	1.1	1	1.0
			300					
			600					
1N4001 to 1N4007	General purpose rectifier diodes	B2	50 to 1000	30	1	1.1	1	10

silicon voltage reference diodes

Type No.	Construction	Zener Voltage (at test I_Z) (V)		Typical Temperature Coefficient (%/ $^{\circ}$ C)	Ambient Temperature Range ($^{\circ}$ C)		Max. Dynamic Resistance (at test I_Z) (Ω)	Test I_Z (mA)	I_{ZM} max. (mA)	P_{tot} max. (mW)
		Min.	Max.		Min.	Max.				
BZV10 BZV11 BZV12 BZV13 BZV14	B1	6.2	6.8	± 0.01	0	+70	50	2	50	400
				± 0.005						
				± 0.002						
				± 0.001						
				± 0.0005						
BZX90 BZX91 BZX92 BZX93 BZX94	B1	6.2	6.8	± 0.01	-55	+100	15	7.5	50	400
				± 0.005						
				± 0.002						
				± 0.001						
				± 0.0005						
BZY78	A1	5.1	5.6	+0.006	-40	+25	20	11.5	25	400
				-0.004	+25	+100				
BZY78P	A1	5.1	5.6	± 0.01	0	+80	20	11.5	25	400
1N821 1N823 1N825 1N827 1N829	B1	5.8	6.5	± 0.01	-55	+100	15	7.5	50	400
				± 0.005						
				± 0.002						
				± 0.001						
				± 0.0005						



Diodes

silicon voltage regulator diodes book 1 part 3 selector chart

Voltage Regulator Diodes Selector Chart								
Reference voltage	Max. dissipation							
	400 mW	1.3W	1.5W	2.5W	15W	20W	75W	
2.7								
3.0								
3.3								
3.6								
3.9								
4.3								
4.7	4.7							
5.1								
5.6								
6.2								
6.8								
7.5								
8.2								
9.1								
10								
11								
12								
13								
15								
16	BZX79							
18								
20								
22								
24			BZX61					
27								
30				BZY95				
33								
36								
39								
43								
47								
51								
56								
62								
68								
75								
Encapsulation	DO-35	DO-7	DO-15	DO-1	SO-15	Plastic	DO-4	DO-5
Polarity	Norm.	Norm.	Norm.	Norm.	Norm.	Both	Both	Both
Rated diss. at Temp.	50°C amb.	50°C amb.	25°C amb.	25°C amb.	25°C amb.	60°C hs	75°C stud	65°C stud

SO-SWIFT and "SELECT" SERVICE

This service is applicable to the BZX61, BZX79 and BZY88 ranges.

The following parameters can be specially selected:—

V_z At any specified current within the rating of the device as specified in the main data. This voltage can be chosen between 3.6 and 75V for the BZX61 range, between 4.7 and 75V for the BZX79 range, and between 2.7 and 36V for the BZY88 range.

The voltage tolerance can be selected down to $\pm 1\%$.

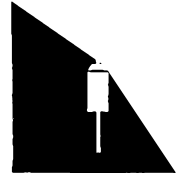
r_z At any specified current within the rating of the device as specified in the main data. The slope resistance value can be specified down to 50% of the maximum value quoted for the standard device.

I_R At any specified voltage up to 95% of the nominal V_z for the device measured at 5mA.

V_F To customers requirements.

The scope of this and obviously all other parameters is determined by the overall capabilities of the product.

Markings Any form of type marking can be supplied.



Diodes

silicon voltage regulator diodes (cont.) book 1 part 3

400mW ($T_{amb} = 50^{\circ}\text{C}$) $\pm 5\%$ voltage tolerance, construction B1

Type No.	Nom. Zener Voltage (V)	Min. Voltage (V)	Measured at Test I_z		Max. Slope Resistance (Ω)	Typ. Temp. Coefficient (mV/ $^{\circ}\text{C}$)	Test I_z (mA)	Max. I_R at V_R (V)	
			Max. Voltage (V)					(μA)	
BZX79									
—C4V7	4.7	4.4	5.0	80	-1.4	5.0	3.0	2.0	
—C5V1	5.1	4.8	5.4	60	-0.8	5.0	2.0	2.0	
—C5V6	5.6	5.2	6.0	40	+1.2	5.0	1.0	2.0	
—C6V2	6.2	5.8	6.6	10	+2.3	5.0	3.0	4.0	
—C6V8	6.8	6.4	7.2	15	+3.0	5.0	2.0	4.0	
—C7V5	7.5	7.0	7.9	15	+4.0	5.0	1.0	5.0	
—C8V2	8.2	7.7	8.7	15	+4.6	5.0	0.7	5.0	
—C9V1	9.1	8.5	9.6	15	+5.5	5.0	0.5	6.0	
—C10	10	9.4	10.6	20	+6.4	5.0	0.2	7.0	
—C11	11	10.4	11.6	20	+7.4	5.0	0.1	8.0	
—C12	12	11.4	12.7	25	+8.4	5.0	0.1	8.0	
—C13	13	12.4	14.1	30	+9.4	5.0	0.1	8.0	
—C15	15	13.8	15.6	30	+11.4	5.0	0.05	10.5	
—C16	16	15.3	17.1	40	+12.4	5.0	0.05	11.2	
—C18	18	16.8	19.1	45	+14.4	5.0	0.05	12.6	
—C20	20	18.8	21.2	55	+16.4	5.0	0.05	14	
—C22	22	20.8	23.3	55	+18.4	5.0	0.05	15.4	
—C24	24	22.7	25.6	70	+20.4	5.0	0.05	16.8	
—C27	27	25.1	28.9	80	+23.5 max.	2.0	0.05	18.9	
—C30	30	28	32	80	+26 max.	2.0	0.05	21.0	
—C33	33	31	35	80	+29 max.	2.0	0.05	23.1	
—C36	36	34	38	90	+31 max.	2.0	0.05	25.2	
—C39	39	37	41	130	+34 max.	2.0	0.05	27.4	
—C43	43	40	46	150	+37 max.	2.0	0.05	30.1	
—C47	47	44	50	170	+40 max.	2.0	0.05	33.0	
—C51	51	48	54	180	+44 max.	2.0	0.05	35.7	
—C56	56	52	60	200	+47 max.	2.0	0.05	39.3	
—C62	62	58	66	215	+51 max.	2.0	0.05	43.5	
—C68	68	64	72	240	+56 max.	2.0	0.05	47.7	
—C75	75	70	79	255	+60 max.	2.0	0.05	52.5	

400mW ($T_{amb} = 50^{\circ}\text{C}$) $\pm 5\%$ voltage tolerance, construction A1

‡BZY88									
Type No.	Nom. Zener Voltage (V)	Min. Voltage (V)	Max. Voltage (V)	Max. Slope Resistance (Ω)	Typ. Temp. Coefficient (mV/ $^{\circ}\text{C}$)	Test I_z (mA)	Max. I_R at V_R (μA)	Max. I_R at V_R (V)	
—C1V3*	1.3	1.24	1.44	15**	-3.7	5.0	0.5	5.0	
—C2V7	2.7	2.5	2.9	120	-2.2	5.0	25	1.0	
—C3V0	3.0	2.8	3.2	120	-2.4	5.0	5.0	1.0	
—C3V3	3.3	3.1	3.5	110	-2.4	5.0	3.0	1.0	
—C3V6	3.6	3.4	3.8	105	-2.0	5.0	3.0	1.0	
—C3V9	3.9	3.7	4.1	100	-2.05	5.0	3.0	1.0	
—C4V3	4.3	4.0	4.6	90	-1.8	5.0	3.0	1.0	
—C4V7	4.7	4.4	5.0	85	-1.55	5.0	3.0	2.0	
—C5V1	5.1	4.8	5.4	75	-1.2	5.0	1.0	2.0	
—C5V6	5.6	5.3	6.0	55	-0.2	5.0	1.0	2.0	
—C6V2	6.2	5.8	6.6	27	+2.0	5.0	1.0	2.0	
—C6V8	6.8	6.4	7.2	15	+3.2	5.0	1.0	3.0	
—C7V5	7.5	7.0	7.9	15	+4.2	5.0	0.5	3.0	

‡available to BS9305-NO41.

*Forward voltage regulator diode.

**typical

Diodes

silicon voltage regulator diodes (cont.) book 1 part 3

400mW ($T_{amb} = 50^{\circ}\text{C}$) $\pm 5\%$ voltage tolerance, construction A1

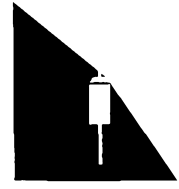
Type No.	Nom. Zener Voltage (V)	Min. Voltage (V)	Measured at Test I_z		Max. Slope Resistance (Ω)	Typ. Temp. Coefficient (mV/ $^{\circ}\text{C}$)	Test I_z (mA)	Max. I_R at V_R	
			Max. Voltage (V)					(μA)	(V)
†BZY88 (cont)									
—C8V2	8.2	7.7	8.7		20	+5.0	5.0	0.4	3.0
—C9V1	9.1	8.5	9.6		25	+6.0	5.0	0.4	5.0
—C10	10	9.4	10.6		25	+7.0	5.0	2.5	7.0
—C11	11	10.4	11.6		25	+8.7	5.0	2.5	7.0
—C12	12	11.4	12.7		35	+9.0	5.0	2.5	8.0
—C13	13	12.4	14.1		35	+10.5	5.0	2.5	9.0
—C15	15	13.8	15.6		35	+12.5	5.0	2.5	10
—C16	16	15.3	17.1		40	+13	5.0	2.5	10
—C18	18	16.8	19.1		45	+15	5.0	2.5	13
—C20	20	18.8	21.2		50	+17	5.0	2.5	14
—C22	22	20.8	23.3		60	+19	5.0	2.5	15
—C24	24	22.7	25.9		75	+21	5.0	2.5	17
—C27	27	25.1	28.9		85	+23.5	5.0	2.5	19
—C30	30	28	32		95	+26	5.0	2.5	21
—C33	33	31	35		120	+28	5.0	2.5	23
—C36	36	34	38		150	+30	5.0	2.5	25

also available to BS9305—NO41

1N748A to 1N759A are also available

1.3W ($T_{amb} = 25^{\circ}\text{C}$) $\pm 5\%$ voltage tolerance, construction B2

Type No.	Nom. Zener Voltage (V)	Min. Voltage (V)	Measured at Test I_z		Max. Slope Resistance (Ω)	Typ. Temp. Coefficient (%/ $^{\circ}\text{C}$)	Test I_z (mA)	Max. I_R at V_R	
			Max. Voltage (V)					(μA)	(V)
BZX61									
—C3V6	3.6	3.4	3.8		20	-0.6	50	30	1.0
—C3V9	3.9	3.7	4.1		20	-0.5	50	20	1.0
—C4V3	4.3	4.0	4.6		15	-0.4	50	20	1.0
—C4V7	4.7	4.4	5.0		15	-0.25	50	20	1.0
—C5V1	5.1	4.8	5.4		10	-0.1	50	10	1.0
—C5V6	5.6	5.2	6.0		5.0	+0.005	50	5.0	2.0
—C6V2	6.2	5.8	6.6		5.0	+0.015	50	5.0	2.0
—C6V8	6.8	6.4	7.2		5.0	+0.03	50	5.0	2.0
—C7V5	7.5	7.0	7.9		5.0	+0.04	20	5.0	3.0
—C8V2	8.2	7.7	8.7		7.5	+0.04	20	5.0	3.0
—C9V1	9.1	8.5	9.6		8.0	+0.05	20	5.0	5.0
—C10	10	9.4	10.6		8.5	+0.05	20	5.0	7.0
—C11	11	10.4	11.6		9.0	+0.05	20	5.0	7.0
—C12	12	11.4	12.7		9.0	+0.05	20	5.0	8.0
—C13	13	12.4	14.1		10	+0.05	20	5.0	9.0
—C15	15	13.8	15.6		14	+0.06	20	5.0	10
—C16	16	15.3	17.1		16	+0.06	10	5.0	11
—C18	18	16.8	19.1		20	+0.06	10	5.0	13
—C20	20	18.8	21.2		22	+0.06	10	5.0	14
—C22	22	20.8	23.3		23	+0.06	10	5.0	15
—C24	24	22.7	25.9		25	+0.06	10	5.0	17
—C27	27	25.1	28.9		35	+0.06	10	5.0	19
—C30	30	28	32		40	+0.07	10	5.0	21
—C33	33	31	35		45	+0.07	10	5.0	23
—C36	36	34	38		50	+0.07	10	5.0	25
—C39	39	37	41		60	+0.07	5	5.0	27
—C43	43	40	46		70	+0.07	5	5.0	30
—C47	47	44	50		80	+0.08	5	5.0	33
—C51	51	48	54		95	+0.08	5	5.0	36
—C56	56	52	60		105	+0.08	5	5.0	39
—C62	62	58	66		110	+0.08	5	5.0	43
—C68	68	64	72		120	+0.08	5	5.0	48
—C75	75	70	79		135	+0.08	5	5.0	52



Diodes

silicon voltage regulator diodes (cont.) book 1 part 3

1.5W ($T_{amb} = 25^{\circ}\text{C}$) $\pm 5\%$ voltage tolerance, construction Q2

Type No.	Nom. Zener Voltage (V)	Measured at Test I_z		Max. Slope Resistance (Ω)	Typ. Temp. Coefficient (mV/ $^{\circ}\text{C}$)	Test I_z (mA)	Max. I_R at V_R	
		Min. Voltage (V)	Max. Voltage (V)				(μA)	(V)
—C4V7	4.7	4.4	5.0	10	-0.6	100	20	1.0
—C5V1	5.1	4.8	5.4	5.0	-0.4	100	20	1.0
—C5V6	5.6	5.2	6.0	4.0	+1.0	100	20	1.0
—C6V2	6.2	5.8	6.6	3.0	+2.0	100	20	2.0
—C6V8	6.8	6.4	7.2	3.0	+3.0	100	20	2.0
—C7V5	7.5	7.0	7.9	3.5	+4.0	50	20	3.0
—C8V2	8.2	7.7	8.7	3.5	+5.0	50	20	5.6
—C9V1	9.1	8.5	9.6	4.5	+6.4	50	20	6.2
—C10	10	9.4	10.6	5.0	+8.0	50	20	6.8

BZY95								
—C10	10	9.4	10.6	4.0	+7.0	50	10	6.8
—C11	11	10.4	11.6	4.5	+7.5	50	10	7.5
—C12	12	11.4	12.7	5.0	+8.0	50	10	8.2
—C13	13	12.4	14.1	6.0	+8.5	50	10	9.1
—C15	15	13.8	15.6	8.0	+10	50	10	10
—C16	16	15.3	17.1	9.0	+11	20	10	11
—C18	18	16.8	19.1	11	+12	20	10	12
—C20	20	18.8	21.2	12	+14	20	10	13
—C22	22	20.8	23.3	13	+16	20	10	15
—C24	24	22.7	25.9	14	+18	20	10	16
—C27	27	25.1	28.9	18	+20	20	10	18
—C30	30	28	32	22	+25	20	10	20
—C33	33	31	35	25	+30	20	10	22
—C36	36	34	38	30	+32	20	10	24
—C39	39	37	41	35	+35	10	10	27
—C43	43	40	46	40	+40	10	10	30
—C47	47	44	50	50	+45	10	10	33
—C51	51	48	54	55	+50	10	10	36
—C56	56	52	60	63	+55	10	10	39
—C62	62	58	66	75	+60	10	10	43
—C68	68	64	72	90	+65	10	10	47
—C75	75	70	79	100	+70	10	10	51

2.5W ($T_{amb} = 25^{\circ}\text{C}$) $\pm 5\%$ voltage tolerance, construction A4

BZX70								
—C7V5	7.5	7.0	7.9	3.5	+3.0	50	50	2.0
—C8V2	8.2	7.7	8.7	3.5	+4.0	50	20	5.6
—C9V1	9.1	8.5	9.6	4.0	+5.5	50	10	6.2
—C10	10	9.4	10.6	4.0	+7.0	50	10	6.8
—C11	11	10.4	11.6	4.5	+7.5	50	10	7.5
—C12	12	11.4	12.7	5.0	+8.0	50	10	8.2

Diodes

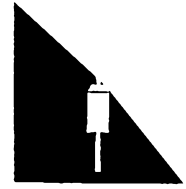
silicon voltage regulator diodes (cont.) book 1 part 3

2.5W ($T_{amb} = 25^{\circ}\text{C}$) $\pm 5\%$ voltage tolerance, construction A4

Type No. BZX70	Nom. Zener Voltage (V)	Measured at Test I_z			Typ. Temp. Coefficient (mV/ $^{\circ}\text{C}$)	Test I_z (mA)	Max. I_R at V_R	
		Min. Voltage (V)	Max. Voltage (V)	Max. Slope Resistance (Ω)			(μA)	(V)
—C13	13	12.4	14.1	6.0	+8.5	50	10	9.1
—C15	15	13.8	15.6	8.0	+10	50	10	10
—C16	16	15.3	17.1	9.0	+11	20	10	11
—C18	18	16.8	19.1	11	+12	20	10	12
—C20	20	18.8	21.2	12	+14	20	10	13
—C22	22	20.8	23.3	13	+16	20	10	15
—C24	24	22.7	25.9	14	+18	20	10	16
—C27	27	25.1	28.9	18	+20	20	10	18
—C30	30	28	32	22	+25	20	10	20
—C33	33	31	35	25	+30	20	10	22
—C36	36	34	38	30	+32	20	10	24
—C39	39	37	41	35	+35	10	10	27
—C43	43	40	46	40	+40	10	10	30
—C47	47	44	50	50	+45	10	10	33
—C51	51	48	54	55	+50	10	10	36
—C56	56	52	60	63	+55	10	10	39
—C62	62	58	66	75	+60	10	10	43
—C68	68	64	72	90	+65	10	10	47
—C75	75	70	79	100	+70	10	10	51

15W ($T_{amb} = 25^{\circ}\text{C}$) $\pm 5\%$ voltage tolerance, construction BQ.

Type No. BZV15	Nom. Zener Voltage (V)	Measured at Test I_z			Typ. Temp. Coefficient (%/ $^{\circ}\text{C}$)	Test I_z (mA)	Max. I_R at V_R	
		Min. Voltage (V)	Max. Voltage (V)	Max. Slope Resistance (Ω)			(μA)	(V)
—C10	10	9.4	10.6	0.5	0.09	1.0	50	6.8
—C11	11	10.4	11.6	1.0	0.09	1.0	50	7.5
—C12	12	11.4	12.7	1.0	0.09	1.0	50	8.2
—C13	13	12.4	14.1	1.0	0.09	1.0	50	9.1
—C15	15	13.8	15.6	1.2	0.09	1.0	50	10
—C16	16	15.3	17.1	1.2	0.09	0.5	50	11
—C18	18	16.8	19.1	1.5	0.09	0.5	50	12
—C20	20	18.8	21.2	1.5	0.075	0.5	50	13
—C22	22	20.8	23.3	1.8	0.075	0.5	50	15
—C24	24	22.7	25.9	2.0	0.08	0.5	50	16
—C27	27	25.1	28.9	2.0	0.082	0.5	50	18
—C30	30	28	32	2.5	0.085	0.5	50	20
—C33	33	31	35	3.0	0.088	0.5	50	22
—C36	36	34	38	4.0	0.09	0.2	50	24
—C39	39	37	41	5.0	0.09	0.2	50	27
—C43	43	40	46	6.5	0.092	0.2	50	30
—C47	47	44	50	7.0	0.093	0.2	50	33
—C51	51	48	54	7.5	0.093	0.2	50	36
—C56	56	52	60	8.0	0.094	0.2	50	39
—C62	62	58	66	9.0	0.094	0.2	50	43
—C68	68	64	72	10.0	0.094	0.2	50	47
—C75	75	70	79	10.5	0.095	0.2	50	51



Diodes

silicon voltage regulator diodes (cont.) book 1 part 3

20W ($T_{mb} = 75^{\circ}\text{C}$) $\pm 5\%$ voltage tolerance, construction E1

Type No. ‡BZY93	Nom. Zener Voltage (V)	Measured at Test I_Z		Max. Slope Resistance (Ω)	Typ. Temp Coefficient (mV/ $^{\circ}\text{C}$)	Test I_Z (mA)	Max. I_R at V_R (V)	
		Min. Voltage (V)	Max. Voltage (V)				(μA)	(V)
—C6V8	6.8	6.4	7.2	0.2	+2.5	2.0	100	2.0
—C7V5	7.5	7.0	7.9	0.3	+3.0	2.0	100	2.0
—C8V2	8.2	7.7	8.7	0.3	+4.0	2.0	100	5.6
—C9V1	9.1	8.5	9.6	0.5	+5.0	1.0	50	6.2
—C10	10	9.4	10.6	0.5	+7.0	1.0	50	6.8
—C11	11	10.4	11.6	1.0	+7.5	1.0	50	7.5
—C12	12	11.4	12.7	1.0	+8.0	1.0	50	8.2
—C13	13	12.4	14.1	1.0	+8.5	1.0	50	9.1
—C15	15	13.8	15.6	1.2	+10	1.0	50	10
—C16	16	15.3	17.1	1.2	+11	0.5	50	11
—C18	18	16.8	19.1	1.5	+12	0.5	50	12
—C20	20	18.8	21.2	1.5	+14	0.5	50	13
—C22	22	20.8	23.3	1.8	+16	0.5	50	15
—C24	24	22.7	25.9	2.0	+18	0.5	50	16
—C27	27	25.1	28.9	2.0	+21	0.5	50	18
—C30	30	28	32	2.5	+25	0.5	50	20
—C33	33	31	35	3.0	+30	0.5	50	22
—C36	36	34	38	4.0	+32	0.2	50	24
—C39	39	37	41	5.0	+35	0.2	50	27
—C43	43	40	46	6.5	+40	0.2	50	30
—C47	47	44	50	7.0	+45	0.2	50	33
—C51	51	48	54	7.5	+50	0.2	50	36
—C56	56	52	60	8.0	+55	0.2	50	39
—C62	62	58	66	9.0	+60	0.2	50	43
—C68	68	64	72	10	+65	0.2	50	47
—C75	75	70	79	10.5	+70	0.2	50	51

‡Reverse polarity types (stud-anode) are available and are denoted by 'R' at the end of the type number, e.g. BZY93—C10R.

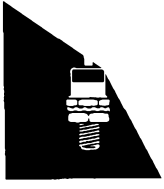
Diodes

silicon voltage regulator diodes (cont.) book 1 part 3

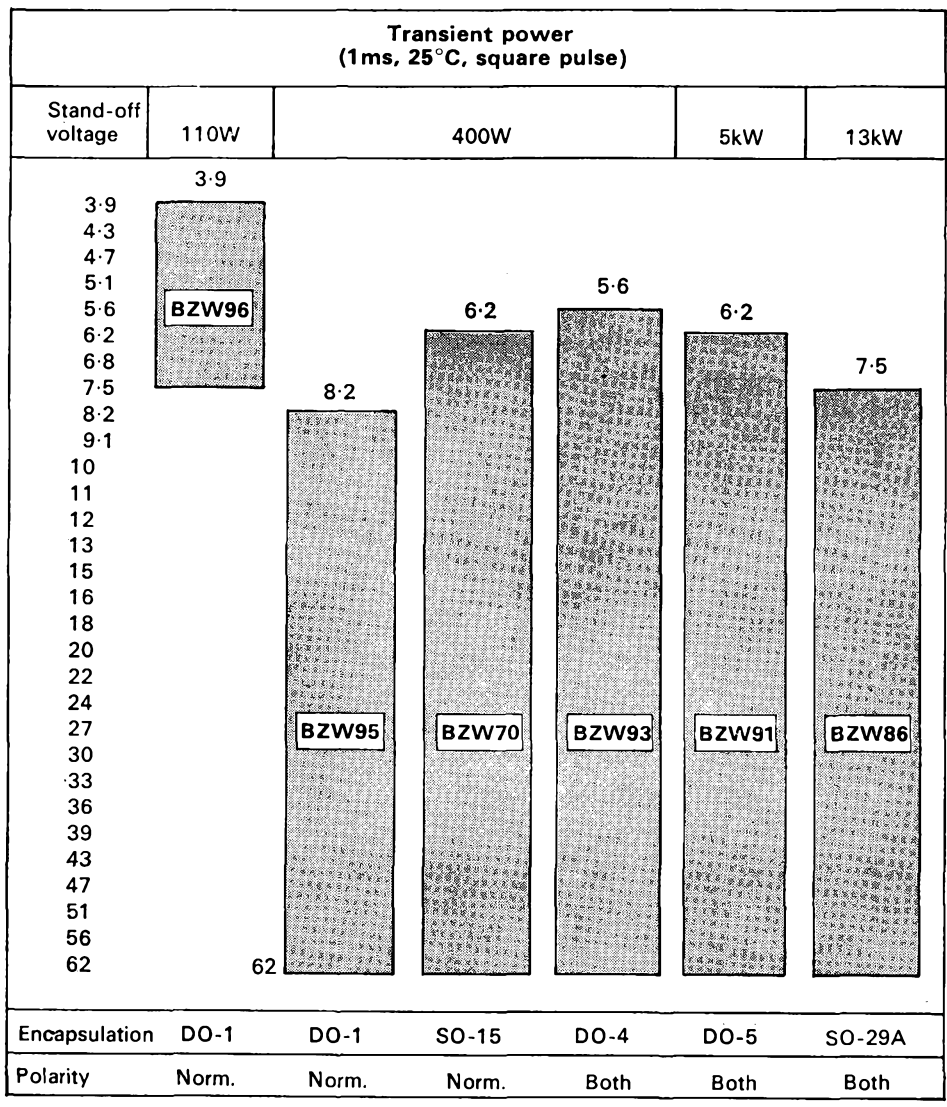
75W ($T_{mb} = 65^{\circ}\text{C}$) $\pm 5\%$ voltage tolerance, construction AF

Type No. ‡BZY91	Nom. Zener Voltage (V)	Min. Voltage (V)	Measured at Test I_Z		Typ. Temp. Coefficient (%/°C)	Test I_Z (A)	Max. I_R at V_R	
			Max. Voltage (V)	Max. Slope Resistance (Ω)			(mA)	(V)
—C7V5	7.5	7.0	7.9	0.2	+0.1	5.0	5.0	2.0
—C8V2	8.2	7.7	8.7	0.3	+0.1	5.0	5.0	5.6
—C9V1	9.1	8.5	9.6	0.4	+0.09	2.0	5.0	6.2
—C10	10	9.4	10.6	0.4	+0.09	2.0	1.0	6.8
—C11	11	10.4	11.6	0.4	+0.09	2.0	1.0	7.5
—C12	12	11.4	12.7	0.5	+0.09	2.0	1.0	8.2
—C13	13	12.4	14.1	0.5	+0.09	2.0	1.0	9.1
—C15	15	13.8	15.6	0.6	+0.09	2.0	1.0	10
—C16	16	15.3	17.1	0.6	+0.09	2.0	1.0	11
—C18	18	16.8	19.1	0.7	+0.09	2.0	1.0	12
—C20	20	18.8	21.2	0.8	+0.075	1.0	1.0	13
—C22	22	20.8	23.3	0.8	+0.075	1.0	1.0	15
—C24	24	22.7	25.9	0.9	+0.080	1.0	1.0	16
—C27	27	25.1	28.9	1.0	+0.082	1.0	1.0	18
—C30	30	28	32	1.1	+0.085	1.0	1.0	20
—C33	33	31	35	1.2	+0.088	1.0	1.0	22
—C36	36	34	38	1.3	+0.090	1.0	1.0	24
—C39	39	37	41	1.4	+0.090	0.5	1.0	27
—C43	43	40	46	1.5	+0.092	0.5	1.0	30
—C47	47	44	50	1.7	+0.093	0.5	1.0	33
—C51	51	48	54	1.8	+0.093	0.5	1.0	36
—C56	56	52	60	2.0	+0.094	0.5	1.0	39
—C62	62	58	66	2.2	+0.094	0.5	1.0	43
—C68	68	64	72	2.4	+0.094	0.5	1.0	47
—C75	75	70	79	2.6	+0.095	0.5	1.0	51

‡Reverse polarity types (stud-anode) are available and are denoted by 'R' at the end of the type number, e.g. BZY91—C10R.



Silicon surge suppressor diodes selector chart book 1 part 4



110W pulse power rating ($t_p=1ms$) Construction Q2

Type No.	Max. Stand-off Voltage V_R (V)	I_R max. at V_R (mA)	Clamping Voltage $V_{1(CL),R}$ (V)		Measured at I_{RSM} ($t_p = 500\mu s$) (A)	Max. I_{RSM} ($t_p = 1ms$) (A)
			Typ.	Max.		
BZW96						
—3V9	3.9	2.0	6.5	8.2	10	12
—4V3	4.3	0.2	7.5	8.8	10	11
—4V7	4.7	0.2	8.0	9.4	10	10
—5V1	5.1	0.2	8.5	10	10	9
—5V6	5.6	0.2	9.5	11	10	8.5
—6V2	6.2	0.1	11	13	10	8
—6V8	6.8	0.1	13	15	10	7.5
—7V5	7.5	0.1	14	15	10	7

Silicon surge suppressor diodes book 1 part 4

0.4kW pulse power rating ($t_p = 1\text{ms}$) Construction Q2

Type No.	Max. stand-off Voltage V_R (V)	I_R max. at V_R (mA)	Clamping Voltage $V_{(CL)R}$ (V)		Measured at I_{RSM} ($t_p = 500\mu\text{s}$) (A)	Max. I_{RSM} ($t_p = 1\text{ms}$) (A)
			typ.	max.		
BZW95			typ.	max.		
—8V2	8.2	0.1	13.5	15.5	20	28
—9V1	9.1	0.1	15	17.5	20	25
—10	10	0.1	17	19	20	22
—11	11	0.1	19	21	20	19
—12	12	0.1	21	23	20	17
—13	13	0.1	22	26	20	15
—15	15	0.1	23	26	10	15
—16	16	0.1	25	29	10	13
—18	18	0.1	28	33	10	12
—20	20	0.1	32	38	10	10
—22	22	0.1	36	43	10	9
—24	24	0.1	41	48	10	8
—27	27	0.1	47	54	10	7
—30	30	0.1	44	52	5	7
—33	33	0.1	49	58	5	6.5
—36	36	0.1	56	65	5	6
—39	39	0.1	63	72	5	5
—43	43	0.1	71	82	5	5
—47	47	0.1	80	93	5	4.5
—51	51	0.1	89	104	5	4
—56	56	0.1	98	116	5	3.5
—62	62	0.1	104	116	5	3

0.4kW pulse power rating ($t_p = 1\text{ms}$) Construction A4

BZW70						
—6V2	6.2	0.5	10	11.2	20A	37
—6V8	6.8	0.5	11	12.5		34
—7V5	7.5	0.1	12	14		31
—8V2	8.2	0.1	13.5	15.5		28
—9V1	9.1	0.1	15	17.5		25
—10	10	0.1	17	19		22
—11	11	0.1	19	21		19
—12	12	0.1	21	23		17
—13	13	0.1	23	26		15
—15	15	0.1	22	26		10A
—16	16	0.1	25	29	13	
—18	18	0.1	28	33	12	
—22	22	0.1	36	43	9	
—24	24	0.1	41	48	8	
—27	27	0.1	47	54	7	



Silicon surge suppressor diodes book 1 part 4

0.4kW pulse power rating ($t_p = 1\text{ms}$) Construction A4

Type No.	Max. stand-off Voltage V_R (V)	I_R max. at V_R (mA)	Clamping Voltage $V_{(CL)R}$ (V)		Measured at I_{RSM} ($t_p = 500\mu\text{s}$) (A)	max. I_{RSM} ($t_p = 1\text{ms}$) (A)
			typ.	max.		
BZW70 (cont.)						
—30	30	0.1	44	52	5A	7
—33	33	0.1	49	58		6.5
—36	36	0.1	56	65		6
—39	39	0.1	63	72		5
—43	43	0.1	71	82		5
—47	47	0.1	80	93		4.5
—51	51	0.1	89	104		4
—56	56	0.1	98	116		3.5
—62	62	0.1	104	116		3

0.4kW pulse power rating ($t_p = 1\text{ms}$) Construction E

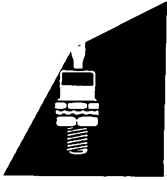
*BZW93						
Type No.	Max. stand-off Voltage V_R (V)	I_R max. at V_R (mA)	Clamping Voltage $V_{(CL)R}$ (V) typ.	Clamping Voltage $V_{(CL)R}$ (V) max.	Measured at I_{RSM} ($t_p = 500\mu\text{s}$) (A)	max. I_{RSM} ($t_p = 1\text{ms}$) (A)
—5V6	5.6	0.5	9	10		40
6V2	6.2	0.5	10	11.2	20	37
—6V8	6.8	0.5	11	12.5	20	34
—7V5	7.5	0.1	12	14	20	31
—8V2	8.2	0.1	13.5	15.5	20	28
—9V1	9.1	0.1	15	17.5	20	25
—10	10	0.1	17	19	20	22
—11	11	0.1	19	21	20	19
—12	12	0.1	21	23	20	17
—13	13	0.1	23	26	20	15
—15	15	0.1	22	26	10	15
—16	16	0.1	25	29	10	13
—18	18	0.1	28	33	10	12
—20	20	0.1	32	38	10	10
—22	22	0.1	36	43	10	9
—24	24	0.1	41	48	10	8
—27	27	0.1	47	54	10	7
—30	30	0.1	44	52	5	7
—33	33	0.1	49	58	5	6.5
—36	36	0.1	56	65	5	6
—39	39	0.1	63	72	5	5.5
—43	43	0.1	71	82	5	5
—47	47	0.1	80	93	5	5
—51	51	0.1	89	104	5	4
—56	56	0.1	98	116	5	3.5
—62	62	0.1	104	116	5	3

*Reverse polarity types (stud-anode) are available and are denoted by suffix 'R' e.g. BZW93—9V1R

5kW pulse power rating ($t_p = 1\text{ms}$) Construction AF

*BZW91						
Type No.	Max. stand-off Voltage V_R (V)	I_R max. at V_R (mA)	Clamping Voltage $V_{(CL)R}$ (V) typ.	Clamping Voltage $V_{(CL)R}$ (V) max.	Measured at I_{RSM} ($t_p = 500\mu\text{s}$) (A)	max. I_{RSM} ($t_p = 1\text{ms}$) (A)
—6V2	6.2	60	9.5	10.5	150	250
—6V8	6.8	60	10	11.5	150	250
—7V5	7.5	5	11	12.5	150	250
—8V2	8.2	5	12	13.5	150	250
—9V1	9.1	5	13	15	150	250
—10	10	5	14.5	17	150	250

*Reverse polarity types (stud-anode) are available and are denoted by suffix 'R' e.g. BZW91—9V1R



Silicon surge suppressor diodes book 1 part 4

5kW pulse power rating ($t_p = 1\text{ ms}$) Construction AF

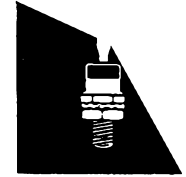
Type No.	Max. stand-off Voltage V_R (V)	I_R max. at V_R (mA)	Clamping Voltage $V_{(CL)R}$ (V)		Measured at I_{RSM} ($t_p = 500\mu\text{s}$) (A)	Max. I_{RSM} ($t_p = 1\text{ ms}$) (A)
			typ.	max.		
*BZW91 (cont.)						
—11	11	5	16	19	150	250
—12	12	5	17.5	22	150	250
—13	13	5	19	26	150	250
—15	15	5	22	28	100	150
—16	16	5	24	31	100	150
—18	18	5	26	34	100	150
—20	20	5	28	37	100	150
—22	22	5	31	40	100	150
—24	24	5	34	44	100	150
—27	27	5	38	48	100	150
—30	30	5	40	52	50	70
—33	33	10	44	56	50	70
—36	36	10	49	61	50	70
—39	39	10	54	66	50	70
—43	43	10	60	72	50	70
—47	47	10	66	79	50	50
—51	51	10	72	87	50	50
—56	56	10	79	97	50	50
—62	62	10	86	97	50	50

*Reverse polarity types (stud-anode) are available and are denoted by suffix 'R' e.g. BZW91-9V1R

13kW pulse power rating ($t_p = 1\text{ ms}$) Construction BF

*BZW86						
Type No.	Max. stand-off Voltage V_R (V)	I_R max. at V_R (mA)	Clamping Voltage $V_{(CL)R}$ (V)		Measured at I_{RSM} ($t_p = 500\mu\text{s}$) (A)	Max. I_{RSM} ($t_p = 1\text{ ms}$) (A)
			typ.	max.		
—7V5	7.5	2	12	14	1000	1000
—8V2	8.2	2	13	15.5	1000	930
—9V1	9.1	2	14	17	1000	860
—10	10	2	15.5	18.5	1000	800
—11	11	2	17	20	1000	740
—12	12	2	18.5	22	1000	680
—13	13	2	20	24	1000	500
—15	15	2	23	27	1000	500
—16	16	2	27	32	500	500
—18	18	2	31	36	500	450
—20	20	2	34	40	500	400
—22	22	2	37	43	500	350
—24	24	2	40	47	500	300
—27	27	2	44	52	500	250
—30	30	2	47	55	250	250
—33	33	2	51	60	250	230
—36	36	2	55	65	250	210
—39	39	2	60	70	250	190
—43	43	2	66	77	250	170
—47	47	2	72	84	250	170
—51	51	2	78	92	250	155
—56	56	2	85	102	250	140
—62	62	2	92	102	250	130

*Reverse polarity types (stud-anode) are available and are denoted by suffix 'R' e.g. BZW86-9V1R



Rectifier diodes & stacks

silicon avalanche rectifier diodes book 1 part 4

$I_{F(AV)}$ max. $T_{mb} = 125^\circ\text{C}$ (A)	Type No.	V_{RWM} max. (V)	I_{FRM} max. (A)	I_{FSM} max. (10ms) (A)	Construction
1.5 ($T_{amb} = 55^\circ\text{C}$)	BYX45- 600R - 800R -1000R	600 800 1000	15	40	Q1
6	† BYX39- 600 - 800 -1000	600 800 1000	100	100	E1
12	† BYX40- 600 - 800 -1000	600 800 1000	250	200	E1
20	§† BYX25- 600 - 800 -1000	600 800 1000	440	360	E1
40	† BYX56- 600 - 800 -1000	600 800 1000	450	800	AF1

†Reverse polarity types (stud-anode) are also available. These are denoted by the final letter R, e.g. BYX39-600R.

§Also available to BS9333-F003.

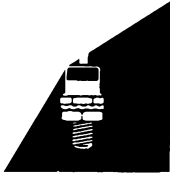
fast recovery silicon rectifier diodes

$I_{F(AV)}$ max. $T_{mb} = 125^\circ\text{C}$ (A)	Type No.	V_{RWM} max. (V)	t_{rr} max. (ns)	Q_s max. (nC)	Special features	Construction
1.2 ($T_{amb} = 55^\circ\text{C}$)	BYX55-350 -600	300 500	—	—		A4
4	1N3880 1N3880R 1N3881/BYX50-200† 1N3881R/BYX50-200R† 1N3882/BYX50-300† 1N3882R/BYX50-300R†	100 100 200 200 300 300	350 150	400		E1
7 ($T_{mb} = 85^\circ\text{C}$)	† BYX71-350 -600	300 500	— 300	— 700		BQ
7.5	§† BYX30-200 -300 -400 -500 -600	200 300 400 500 600	350	700	These devices have avalanche characteristics and can be used in a series string for high voltage applications	E1
15	† BYX46-200 -300 -400 -500 -600	200 300 400 500 600	350	700		E1

†Reverse polarity types (stud-anode) are also available. These are denoted by the final letter R, e.g. BYX50-200R

†Also available to BS9331-F028.

§Also available to BS9333-F002.



Rectifier diodes & stacks

rectifier diodes book 1 part 4

$I_{F(AV)}$ max. $T_{mb} = 125^\circ\text{C}$ (A)	Type No.	V_{RRM} max. (V)	Construction	$I_{F(AV)}$ max. $T_{mb} = 125^\circ\text{C}$ (A)	Type No.	V_{RRM} max. (V)	Construction
0.36 ($T_{amb} = 40^\circ\text{C}$)	BYX10	1600	A3	6.0	†BYX48-300	300	F1
1.0	BY126	650	A4		-600	600	
1.0	BY127	1250	A4		-900	900	
					-1200	1200	
1.4 ($T_{amb} = 30^\circ\text{C}$)	BYX22-200	300*	Q2	10	†BYX42-300	300	E1
	-400	600*			-600	600	
	-600	900*			-900	900	
	-800	1200*			-1200	1200	
2.5	†BYX49-300	300	BQ	10 ($T_{mb} = 75^\circ\text{C}$)	†BYX72-150	150	BQ
	-600	600			-300	300	
	-900	900			-500	500	
	-1200	1200					
2.5	†BYX38-300	300	E1	40	§†BYX52-300	300	AF1
	-600	600			-600	600	
	-900	900			-900	900	
	-1200	1200			-1200	1200	

* V_{RSM} §Also available to BS9331-FO26
 †Reverse polarity type (stud anode) are also available. They are denoted by the final letter R e.g. BYX48-600R.

high voltage devices

$I_{F(AV)}$ max. $T_{amb} = 35^\circ\text{C}$ (A)	$T_{oil} = 90^\circ\text{C}$ (A)	Type No.	V_{RWM} max. (kV)	Description
2.5mA	—	BY182	12	} Silicon e.h.t. rectifiers in plastic envelopes.
2.5mA	—	BY187	11.5	
2.5mA	—	BY209	11.5	Silicon e.h.t. soft-recovery rectifier diode.
50mA	—	BYX29-75000	75	} Silicon avalanche diodes in ceramic envelopes with metal connectors. Intended for oil cooling.
		100000	100	
		125000	125	
		150000	150	
—	50mA	BYX35	25	Silicon diode in a ceramic tube. Intended for oil cooling.
0.4 ($T_{amb} = 25^\circ\text{C}$)	—	BY215	12	Resin-potted, modular construction with centre-tap. Intended for natural convection cooling.
0.5	—	OSS6700B	4	Resin-potted, modular construction. Intended for natural convection cooling. A medium four-pin valve base with bayonet catch and connector plate is available.
1.5	—	OSM9510-12	12	Resin-potted, modular construction with centre-tap. Intended for natural convection cooling.



Rectifier diodes & stacks

high voltage devices (cont.) book 1 part 4

$T_{amb} = 35^{\circ}\text{C}$ (A)	$I_{F(AV)}^{max.}$ $T_{oil} = 90^{\circ}\text{C}$ (A)	Type No.	V_{RWM} max. (kV)	Description
3.5	6.0	OSS9110-3 -30	3 30	The stacks consist of three to thirty rectifier diodes connected in series mounted on standard valve bases or $\frac{1}{4}$ " UNF studs at each end. Intended for natural convection or oil cooling.
5.0	20 ($T_{oil} = 35^{\circ}\text{C}$)	OSS9210-3 -30	3 30	
10	30 ($T_{oil} = 35^{\circ}\text{C}$)	OSS9410-3 -30	3 30	

encapsulated silicon diode bridge modules

Single-phase

$T_{amb} \leq 35^{\circ}\text{C}$ (A)	Maximum Average Output Current		Type No.	Construction	Maximum a.c. Input Voltages		Maximum Av. Output Voltage (V)
	$T_{chassis} \leq 35^{\circ}\text{C}$ (A)				r.m.s. (V)	Repetitive Peak (V)	
0.7†	—		OSH007	BH3	570	1600	510
1.0	—		BY179	BX	280	800	400
1.0	—		OSH01-100	BJ	70	150	63
			OSH01-200		140	300	125
			OSH01-400		280	600	250
1.0	—		OSH01A-100	BH1	70	150	63
			OSH01A-200		140	300	125
			OSH01A-400		280	600	250
1.4	—		BY164	BX	42	120	60
2.0	—		OSH02A-200	BH2	140	350	125
			OSH02A-400		280	650	250
			OSH02A-600		420	950	375
			OSH02A-800		560	1250	510
3.0	—		OSH03-200	BL	140	200	125
			OSH03-400		280	400	250
			OSH03-600		420	600	375
			OSH03-800		560	800	510
5.0	—		OSH05-200	BM	140	300	125
			OSH05-400		280	600	250
			OSH05-600		420	900	375
			OSH05-800		570	1200	510
7.0	—		OSH07-600	BM	420	600	375
			OSH07-800		570	800	510
			OSH07-1000		710	1000	635
10	16		OSH10-600	BM	420	600	375
			OSH10-800		570	800	510
			OSH10-1000		710	1000	635
10	—		OSH10A-200	BM	140	300	125
			OSH10A-400		280	600	250
			OSH10A-600		420	900	375
			OSH10A-800		570	1200	510

† $T_{amb} = 45^{\circ}\text{C}$



Rectifier diodes & stacks

bridge-connected rectifier diode stacks book 1 part 4

SINGLE PHASE BRIDGES

I_o d.c. max. at 35°C (A)	Type Number	V_i r.m.s. max. (V)	V_{IRM} max. (V)	V_o d.c. max. (V)
30	OSH30-300	140	300	125
	-600	280	600	250
	-900	420	900	375
	-1200	560	1200	500
40	OSH40-300	140	300	125
	-600	280	600	250
	-900	420	900	375
	-1200	560	1200	500
64	OSH64-300	140	300	125
	-600	280	600	250
	-900	420	900	375
	-1200	560	1200	500
110	OSH110-300	140	300	125
	-600	280	600	250
	-900	420	900	375
	-1200	560	1200	500

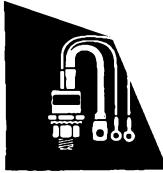
THREE PHASE BRIDGES

I_o d.c. max. at 35°C (A)	Type Number	V_i r.m.s. max. (V)	V_{IRM} max. (V)	V_o d.c. max. (V)
40	OSK40-300	140	300	190
	-600	280	600	380
	-900	420	900	570
	-1200	560	1200	760
57	OSK57-300	140	300	190
	-600	280	600	380
	-900	420	900	570
	-1200	560	1200	760
90	OSK90-300	140	300	190
	-600	280	600	380
	-900	420	900	570
	-1200	560	1200	760
150	OSK150-300	140	300	190
	-600	280	600	380
	-900	420	900	570
	-1200	560	1200	760

Thyristors & stacks

thyristors book 1 part 5

$I_{T(AV)}$ max. at $T_{mb} = 85^\circ\text{C}$ (180° conduction) (A)	Type No.	V_{RRM} max. (V)	I_{TSM} max. (10ms) (A)	I_{GT} min. (mA)	V_{GT} min. (V)	Special features	Construction
1.0 ($T_{case} = 105^\circ\text{C}$)	BTX18- 100	120	10	5.0	2.0		H4
	- 200	240					
	- 300	350					
	- 400	500					
	- 500	600					
6.4	BTY79- 100R	100	80	30	3.0	Also available to BS9341 —F001 to F009	S
	- 200R	200					
	- 300R	300					
	- 400R	400					
	- 500R	500					
	- 600R	600					
	- 800R	800					
-1000R	1000						
6.5	BT101-300R -500R	300 500	55	10	2.0		S
6.5	BT102-300R -500R	300 500	55	50	2.5		S
6.5	BT107	500	70	10	2.0		S
6.5	BT108	500	70	50	2.5		S
6.5	BT109	500	50	10	2.0		BRI

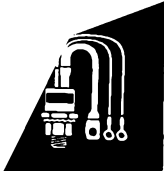


Thyristors & stacks

thyristors (cont.) book 1 part 5

$I_{T(AV)}$ max. at $T_{mb} = 85^{\circ}\text{C}$ (180° conduction) (A)	Type No.	V_{RRM} max. (V)	I_{TSM} max. (10ms) (A)	I_{GT} min. (mA)	V_{GT} min. (V)	Special features	Construction
9.0	BTW38- 600R	600	150	50	1.5	BTW38 Series $\frac{dV}{dt}$ max. = 20V/ μs	S but with M5 metric thread
	- 600RV	600					
	- 800R	800					
	- 800RV	800					
	-1000R	1000					
	-1000RV	1000					
10	BTY87-100R	100	140	65	3.5		AD
	-200R	200					
	-300R	300					
	-400R	400					
	-500R	500					
	-600R	600					
14	BTY91-100R	100	200	40	3.0		AD
	-200R	200					
	-300R	300					
	-400R	400					
	-500R	500					
	-600R	600					
14	BTW47-500RM	600	220	150	3.5		AD but with M6 metric thread (see note 1)
	-800RM	800					
	-1000RM	1000					
	-1200RM	1200					
	-1400RM	1400					
	-1600RM	1600					
20	BTW92- 600RM	600	320	150	3.5	$\frac{dv}{dt}$ max. = 300V/ μs $\frac{di}{dt}$ max. = 300A/ μs	AD but with M6 metric thread (see note 1)
	- 800RM	800					
	-1000RM	1000					
	-1200RM	1200					
	-1400RM	1400					
	-1600RM	1600					
35	BTW24- 600RM	600	800	150	3.5		AC metric thread
	- 800RM	800					
	-1000RM	1000					
	-1200RM	1200					
	-1400RM	1400					
	-1600RM	1600					
90	BTW23- 600RM	600	2000	200	3.5		U metric thread (see note 1)
	- 800RM	800					
	-1000RM	1000					
	-1200RM	1200					
	-1400RM	1400					
	-1600RM	1600					

Note 1: Types with UNF thread are available on request. These are indicated by the suffix RU e.g. BTW23-600RU.
Flying leads or tags are available when required as alternative to the standard outline. Consult Mullard Ltd. before ordering.
Types with dv/dt of 1000V/ μs are available on request. Add suffix 09 to the type number when ordering e.g. BTW23-800RM-09.



Thyristors & stacks

inverter type thyristors book 1 part 5

$I_{T(AV)}$ max. at $T_{mb} = 85^{\circ}\text{C}$ (180° conduction) (A)	Type No.	V_{RRM} max. (V)	t_q max. (μs)	$\frac{dV_D}{dt}$ max. (V/ μs)	Construction
3.2	BT127- 350R - 750R	350 750	10	—	F4
12	BTW30- 300RM - 400RM - 500RM - 600RM - 800RM -1000RM -1200RM	300 400 500 600 800 1000 1200	6 12	200	AD but with M6 metric thread (see note 1)
16	BTW31- 300RM - 400RM - 500RM - 600RM - 800RM -1000RM -1200RM	300 400 500 600 800 1000 1200	12 20	200	AD but with M6 metric thread (see note 1)
26	BTW32- 800RM -1000RM -1200RM	800 1000 1200	25	200	AC metric thread
65	BTW33- 800RM -1000RM -1200RM	800 1000 1200	25	200	U metric thread

Note 1: Types with UNF thread are available on request. These are indicated by the suffix RU e.g. BTW31-800RU.

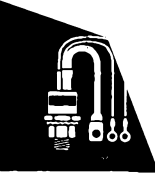
pulse modulator thyristors

$I_{T(RMS)}$ max. (A)	Type No.	V_{DWM} max. (V)	V_{RWM} max. (V)	I_{TRM} max. $\frac{1}{2}$ sine wave $t \leq 2\mu\text{s}$ (A)	$\frac{di}{dt}$ max. (A/ μs)	Construction
5	BTW35	500	300	100	1000	S
15	BTX95-500R -600R -700R -800R	500 600 700 800	250 300 350 400	200	1000	S

T.V. line output thyristors

$I_{T(AV)}$ max. at $T_{mb} = 85^{\circ}\text{C}$ 180° conduction (A)	Type No.	I_{TSM} (max.) (10 mS) (A)	I_{GT} min. (mA)	V_{GT} min. (V)	t_q (μs)	Construction
3.2	BT128 BT129	50	40	4.0	4.5 2.4	F4

These devices incorporate a diode connected inverse-parallel. $Q_s = 7\mu\text{C}$, $t_{rr} = 300\text{ns}$.



Thyristors & stacks triacs book 1 part 5

$I_{T(RMS)}$ max. (A)	Type No.	$\pm V_{DRM}$ max. (V)	I_{GT} min. (mA)	V_{GT} min. (V)	Special features	Construction
12 ($T_{mb} = 85^\circ\text{C}$)	BTW37- 600	600	100	2.5	BTW37 Series: $\frac{dV}{dt}$ max. = 20V/ μs BTW37 Series V: $\frac{dV}{dt}$ max. = 200V/ μs	S but with M5 metric thread
	- 600V	800				
	- 800V	1000				
	-1000	1200				
	-1000V					
	-1200					
	-1200V					
25 ($T_{mb} = 85^\circ\text{C}$)	BTX94- 100	100	150	3.0		AD
	- 200	200				
	- 300	300				
	- 400	400				
	- 500	500				
	- 600	600				
	- 800	800				
	-1000	1000				
-1200	1200					
50 ($T_{mb} = 85^\circ\text{C}$)	BTW44- 100	100	200	2.5		AC (metric thread)
	- 200	200				
	- 300	300				
	- 400	400				
	- 500	500				
	- 600					
50 ($T_{mb} = 80^\circ\text{C}$)	BTW34- 600	600	200	2.5		AC (metric thread)
	- 800	800				
	-1000	1000				
	-1200	1200				

thyristor trigger & control modules book 3 part 6

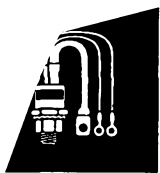
61 series

Type number	Description	Function
TT61	Trigger transformer	Interface, giving two isolated outputs for use between thyristor or triac gates and control sections
UPA61	Universal power amplifier	(a) Pulse generator for driving TT61 (b) D.C. driver (c) Other circuit functions
RSA61	Rectifier and synchroniser	Provides power supplies and synchronising signals
DOA61	Differential operational amplifier	For use in closed loop control systems
2NOR61	Twin NOR	For logic functions

MY5000 series

The following trigger modules and accessories are capable of triggering Mullard thyristors over their full temperature range. Suitable for both single phase or three phase operation, control is achieved by means of an external variable resistor or from an external voltage or current source. In addition, feedback may be applied where automatic control is required.

Type	Firing Angle Control Range	Equivalent Range of Power Control in Resistive Load	T_{amb}
MY5011	5°–167°	99.9% to 0.25%	-20°C + 65°C
MY5201	Transformer to drive MY5011.		

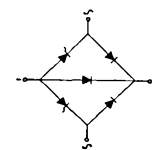


Thyristors & stacks

bridge-connected thyristor stacks book 1 part 5

Single-phase

Max. mean output current 180° conduction of each thyristor $T_{amb} \leq 35^\circ\text{C}$		Repetitive peak output current	Circuit Diagram	
Natural convection cooling	Forced air cooling 500ft/min		250V r.m.s.	440V r.m.s.
10A	12A	40A	OTH10-608L	OTH10-1008L
16A	20A	200A	OTH16-608L	
20A	32A	140A	OTH20-608A	
28A	32A*	200A	OTH28-608	OTH28-1208
37A	40A	320A	OTH37-608	OTH37-1208
54A	70A†	450A	OTH54-608	OTH54-1208
62A	70A	450A	OTH62-608	OTH62-1208
84A	94A	1250A	OTH84-608	OTH84-1208
105A	180A	1250A	OTH105-608	OTH105-1208

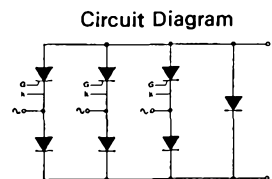


†At $T_{amb} \leq 60^\circ\text{C}$

*At $T_{amb} \leq 55^\circ\text{C}$

Three-phase

Maximum mean output current 120° conduction of each thyristor $T_{amb} \leq 35^\circ\text{C}$		Repetitive peak output current	Circuit Diagram
Natural convection cooling	Forced air cooling 500 ft/min		
40A	48A	200A	OTK40-1208
48A	48A	200A	OTK48-1208
66A	90A	800A	OTK66-1208
90A	90A	450A	OTK90-1208
130A	225A	1250A	OTK130-1208
200A	225A	1250A	OTK200-1208
225A	225A	1250A	OTK225-1208



Other types of stacks can be built to customers' requirements



Thyristors & stacks

a.c. controller thyristors stacks book 1 part 5

Single-phase

Maximum r.m.s. current 180° conduction of each thyristor $T_{amb} \leq 35^\circ\text{C}$		Controlled power Resistive load				Circuit Diagram	
Natural convection cooling	Forced air cooling 500 ft/min	250Vr.m.s.		440Vr.m.s.		250Vr.m.s.	440Vr.m.s.
		Natural cooling	Forced air cooling	Natural cooling	Forced air cooling		
11A	14A	2.6kW	3.3kW	4.7kW	6.1kW	OTH11-609L	OTH11-1009L
20A	30A	5.0kW	7.5kW	8.8kW	13.2kW	OTH20-609L	OTH20-1209L
25A	25A*	6.2kW	6.2W*	11kW	11kW	OTH25-605†	OTH25-1205†
35A	44A	8.7kW	11kW	15kW	19kW	OTH35-609	OTH35-1209
44A	44A*	11kW	11kW	19kW	19kW	OTH44-609B	OTH44-1209B
66A	78A	18kW	19kW	29kW	34kW	OTH66-609	OTH66-1209
78A	78A	19kW	19kW	34kW	34kW	OTH78-609	OTH78-1209
120A	200A	30kW	50kW	53kW	88kW	OTH120-609	OTH120-1209

*At $T_{amb} \leq 60^\circ\text{C}$

†Incorporates TRIAC BTX94

Three-phase

Maximum r.m.s. current per phase, 180° conduction of each thyristor $T_{amb} \leq 35^\circ\text{C}$		Controlled power Resistive load at 440Vr.m.s.		Circuit Diagram	
Natural convection cooling	Forced air cooling 500 ft/min	Natural cooling	Forced air cooling		
11A	—	8.3kW	—	OTK11-1009L	
25A	44A	18kW	31kW	OTK25-1209	
35A	35A at $T_{amb} \leq 55^\circ\text{C}$	25kW	26kW	OTK35-1209B	
44A	49A at $T_{amb} \leq 55^\circ\text{C}$	33kW	37kW	OTK44-1209	
66A	78A	47kW	56kW	OTK66-1209	
110A	200A at $T_{amb} \leq 45^\circ\text{C}$	79kW	143kW	OTK110-1209F	
150A				} Built to customer requirements	
175A					
200A					

CONSTRUCTION and DIMENSIONS (All dimensions in millimetres)

A

	A1	A2	A3	A4
	DO-7	DO-15	DO-14	
A max.	7.6	7.6	7.6	12.5
B max.	2.5	3.56	3.56	6.5
C nom.	0.52	0.8	0.5	1.05
D min.	25	25	25	25

B

	B1	B2
	DO-35	
φA max.	1.85	2.70
B max.	4.5	5.85
C min.	24	28
φD max.	0.56	0.86

C

	Nom.
A	1.57
B	1.70
C	0.55
φD	1.56
φD1	2.00
φD2	3.05
E	1.57

D

Connections	1	2	3
D	e	b	c
D1	b	e	c

E

SO-10, DO-4

A	10.28
D	11.1 max.
φD1	9.3 max.
F	3.2
J	20.3 max.
N	11.1
S1	4.7 max.
φT	2.3 min.

10-32UNF 2A

	Stud	Eyelet
E1	k	a
E2	a	k

F

F1, F2, SO-5B/SB2-2 TO-3
F3, SO-55/SB2-5
F4, TO-66

	F1	F2	F3	F4
A	16.9	13.1	13.1	14.99 max.
B	26.2 max.	19.0 max.	17.78 max.	17.78 max.
C	10.9	6.0	5.33 max.	5.33 max.
D	30.1	23.0	24.3	24.3
E	4.2 max.	4.0	3.86 max.	3.86 max.
F	20.3 max.	14.6	12.7 max.	12.7 max.
G	3.15	0.9	2.8	1.91 max.
H	9.5 max.	8.9 max.	8.64 max.	8.64 max.
J	12.0	9.0 min.	9.14 min.	9.14 min.
K	39.5 max.	31.4 max.	31.6 max.	31.6 max.
L	1.0	1.0	1.0	1.0

G

G1,2,3,4,5
SO-12A/SB3-6A
TO-18

A	4.8 max.
B	5.3 max.
C	12.7 min.
D	0.43
E	1.0
F	1.05
G	2.54
H	5.55

	1	2	3
G1	e	b	c+envelope
G2	s	d	g+envelope
G3	d	g	s+envelope
G4	A	A	K
G5	A	-	K

H

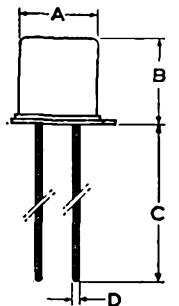
H1,2,3,4,5
SO-3/SB3-3A
TO-5

A	8.9
B	8.15
C	6.35
D	5.08
E	0.79
F	12.7 min.
G	0.48 max.
H	0.4
J	0.85

H1	b+case
H2	case isolated
H3	c+case
H4	e cathode
	b gate
	c anode+case

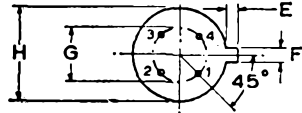
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J



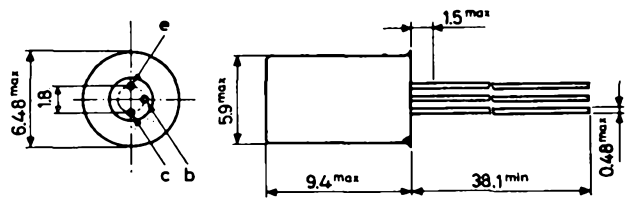
J1,2,3,4,5,6,7
SO-12A/SB4-3
TO-72
A 4-8 max.
B 5-3 max.
C 12-7 min.
D 0-43
E 1-0
F 1-05
G 2-54
H 5-55

Connections				
	1	2	3	4
J1	b	e	c	s+envelope
J2	e	b	c	s+envelope
J3	s	d	g	screen+envelope
J4	d	g	g	s+envelope
J5	d	s	g	b+envelope
J6	K	G _K	G _A	A
J7	0/p	V/p	I/p	V _N

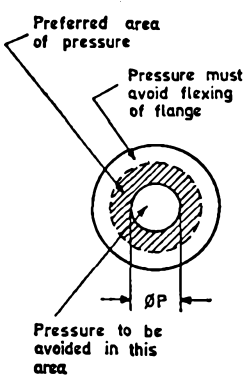


K

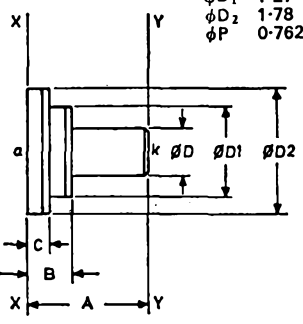
SO-21/SB3-10
TO-1



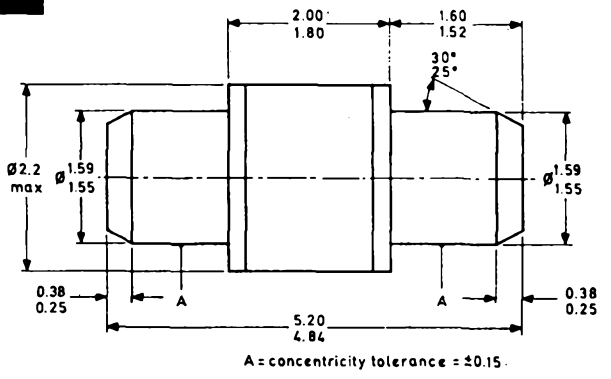
L



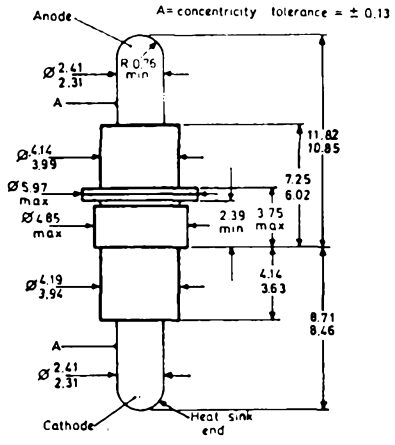
Nom.
A 1-52
B 0-75
C 0-30
φD 0-625
φD₁ 1-27
φD₂ 1-78
φP 0-762



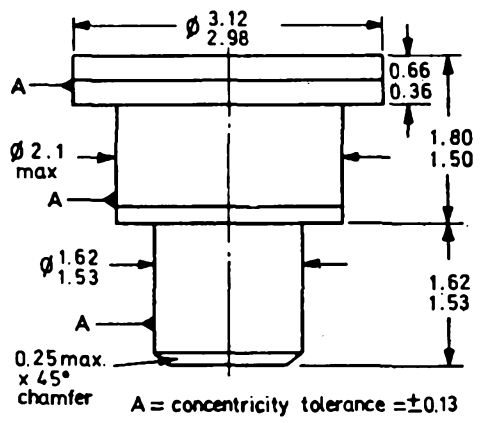
M



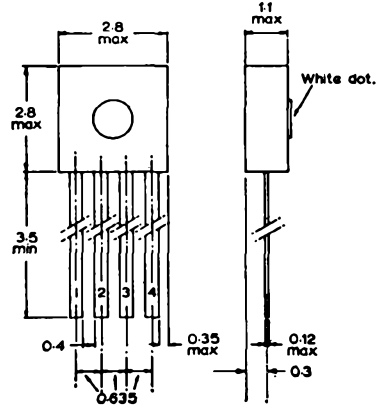
N



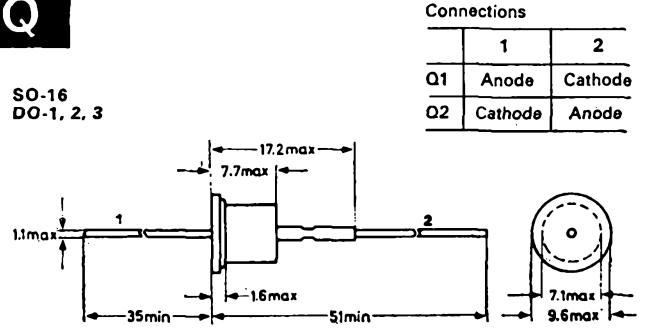
O



P



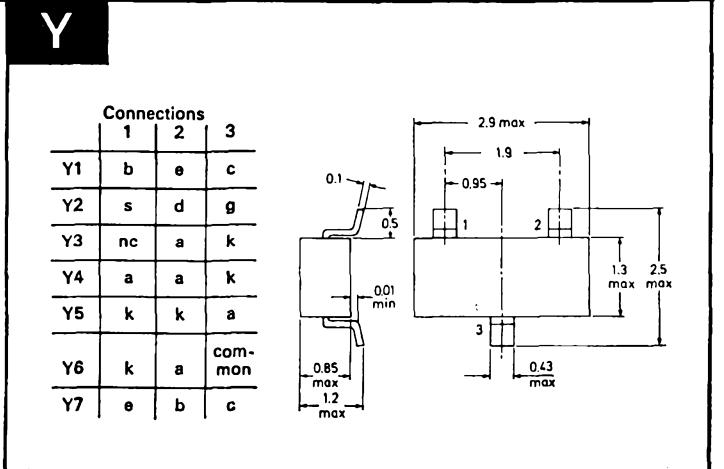
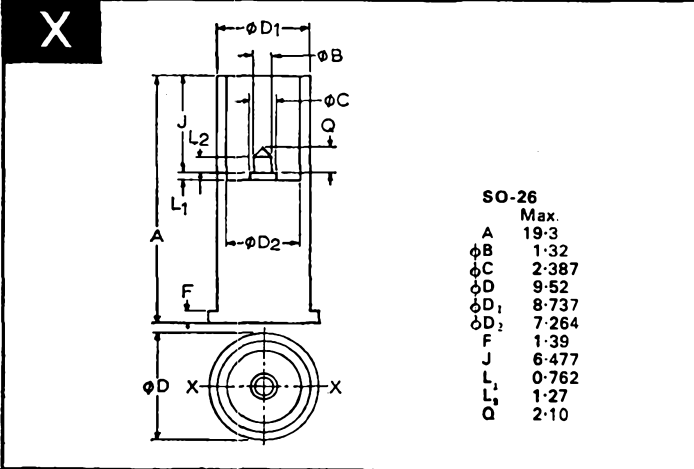
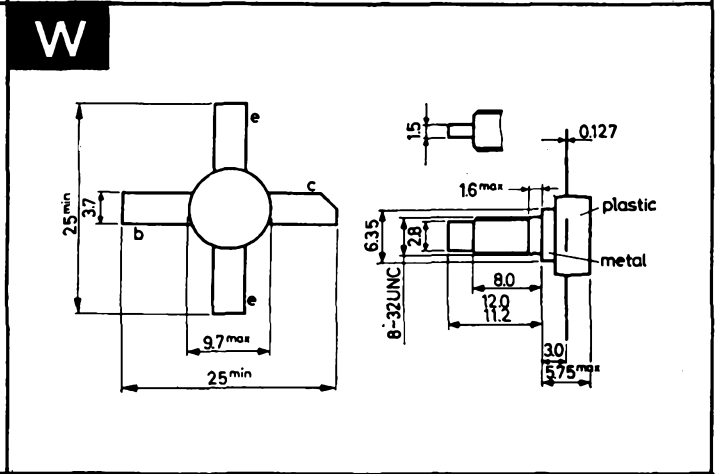
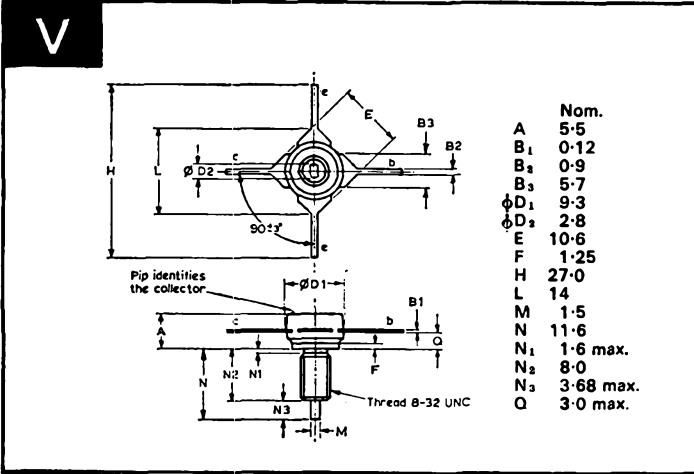
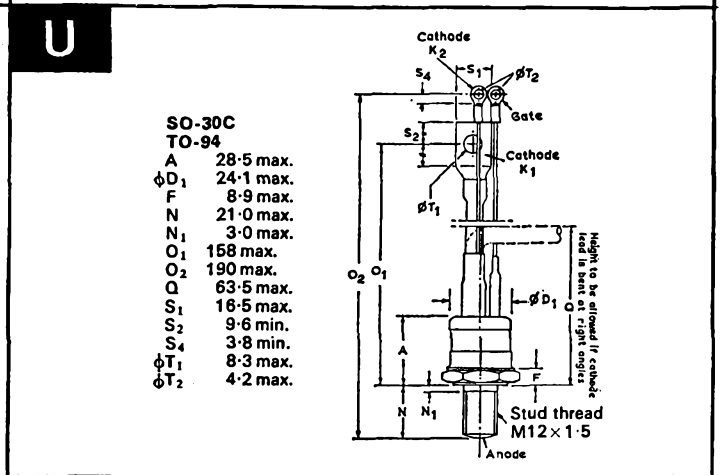
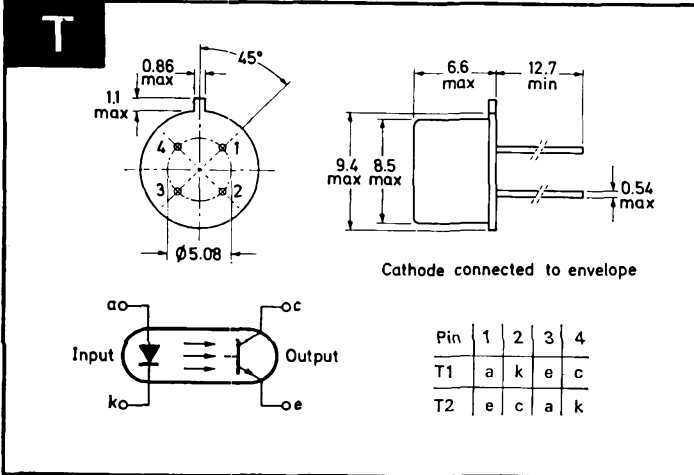
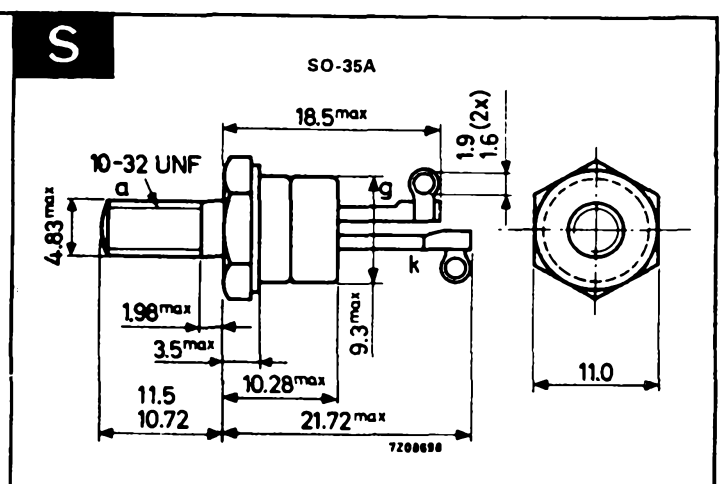
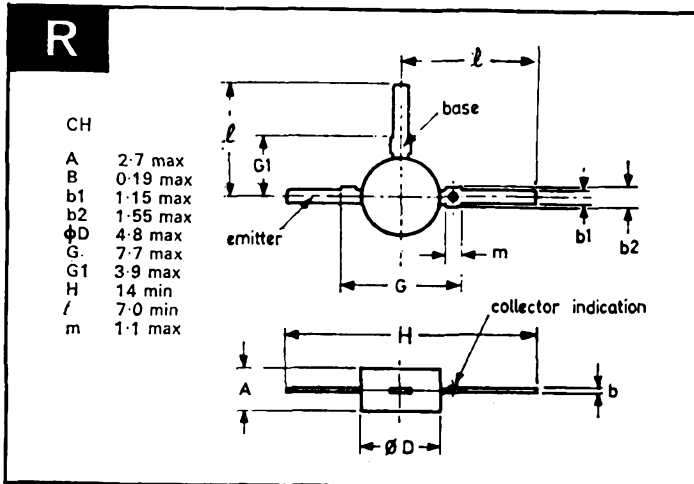
Q



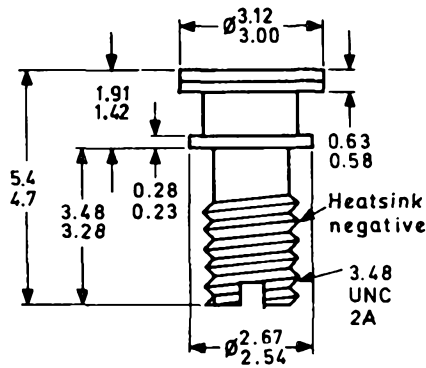
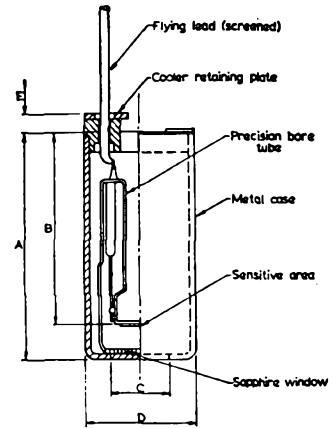
Connections		
	1	2
Q1	Anode	Cathode
Q2	Cathode	Anode

SO-16
DO-1, 2, 3

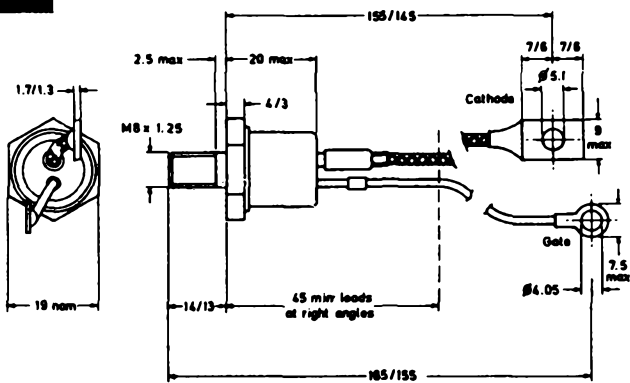
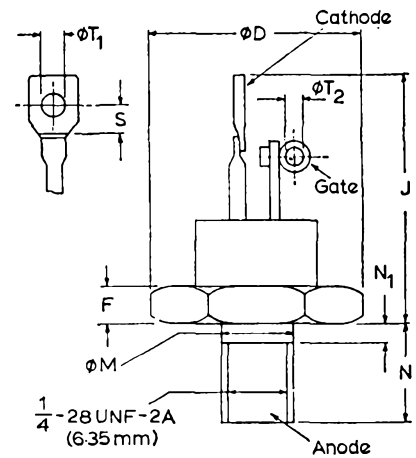
CONSTRUCTION and DIMENSIONS (All dimensions in millimetres)—continued



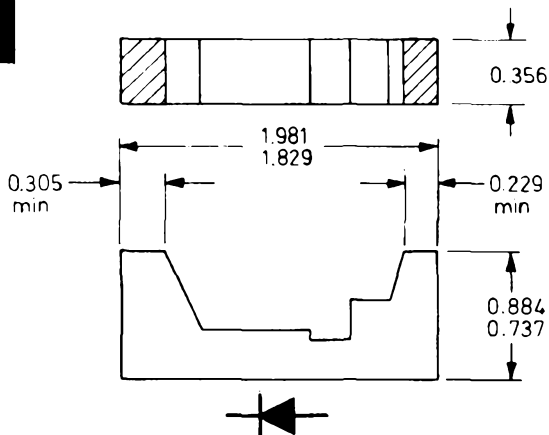
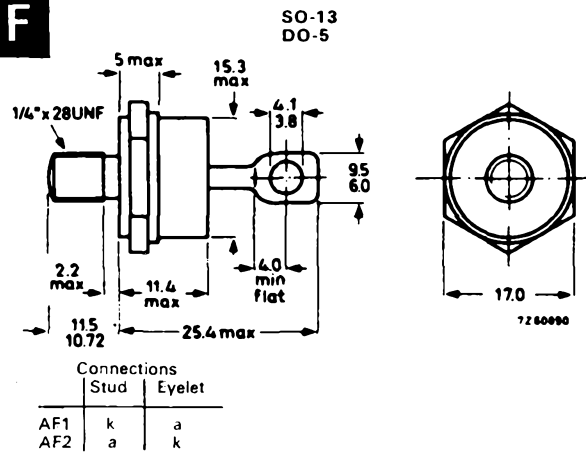
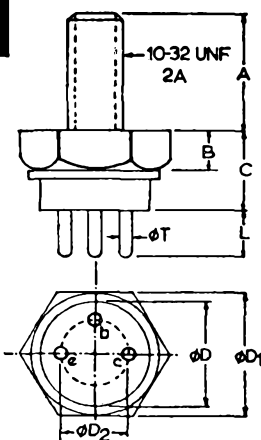
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Z**AB**

A 48-0
 B 42-0
 C 14-0 dia.
 D 23-0 dia.
 E 4-0

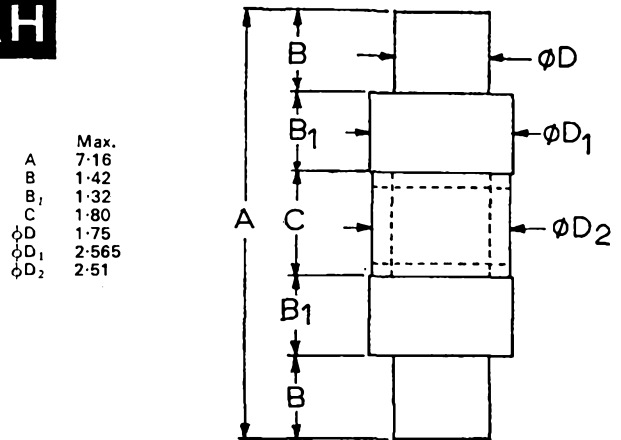
AC**AD**

SO-36,
 TO-48
 ϕD 16-51 max.
 F 5-5 max.
 J 30-48 max.
 ϕM 6-35 max.
 N 11-50 max.
 N_1 2-26 max.
 S 3-05 min.
 ϕT_1 3-18 min.
 ϕT_2 1-53 min.

AE**AF****AG**

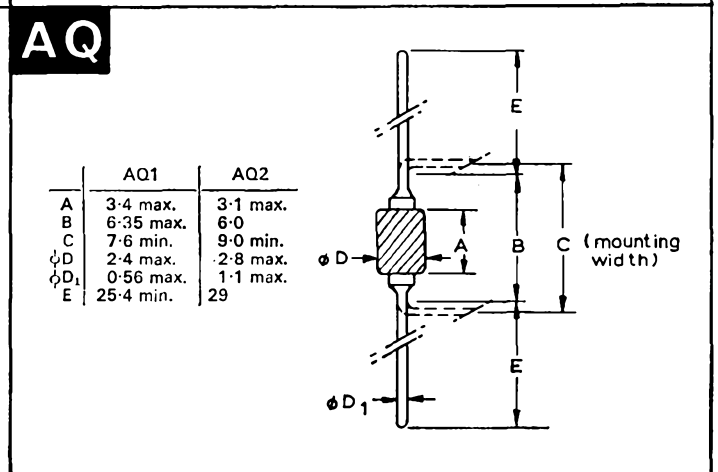
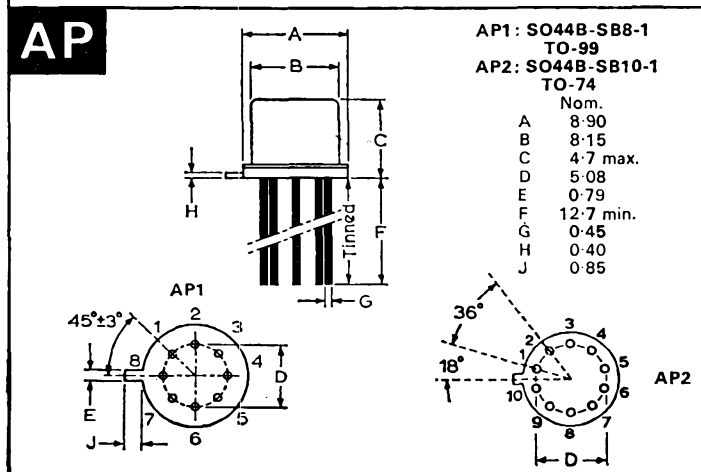
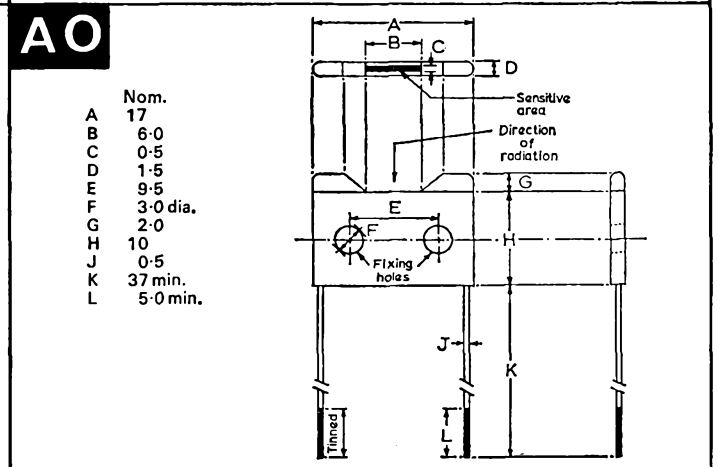
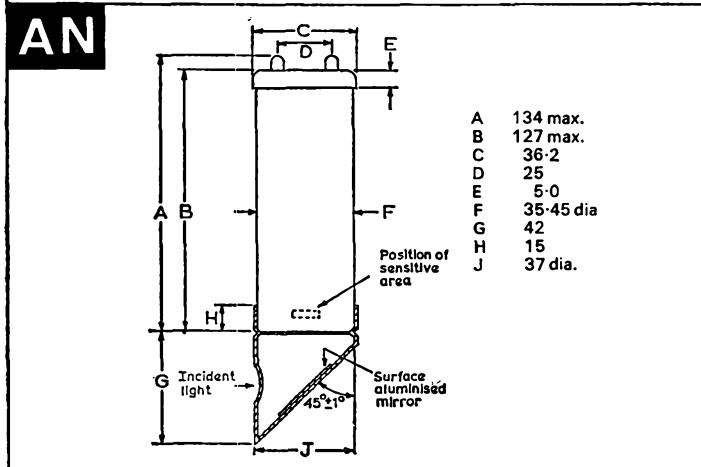
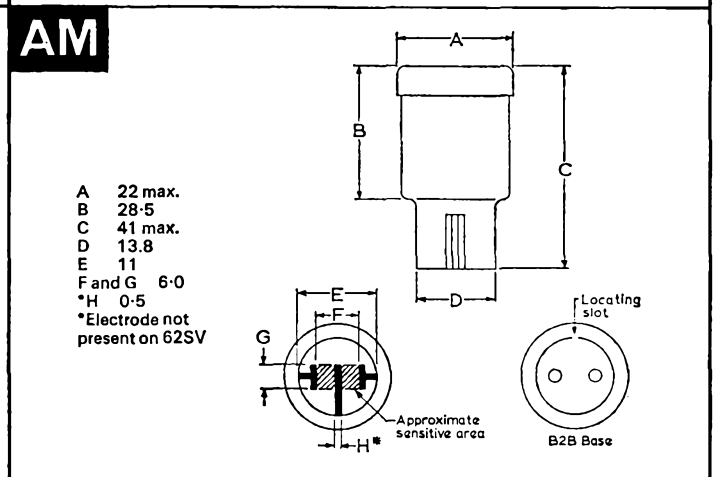
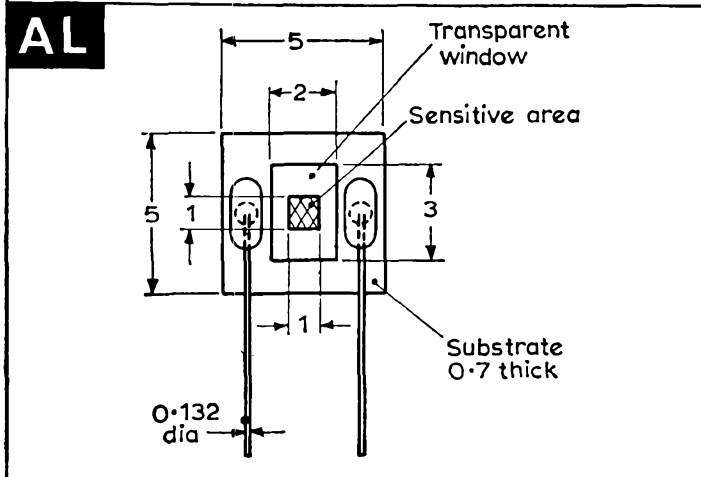
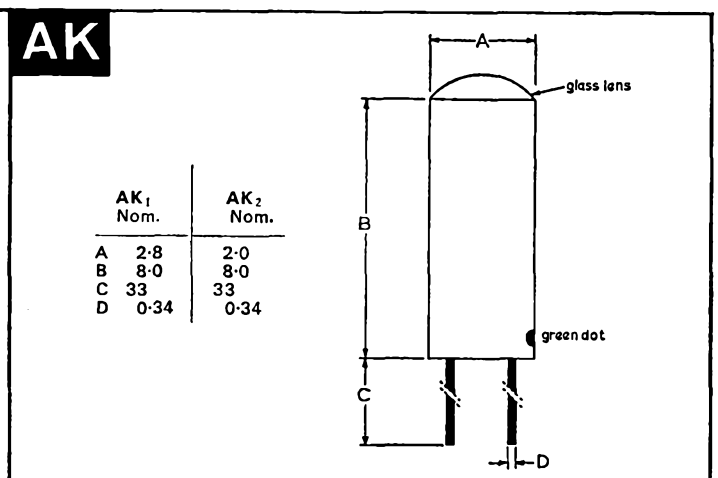
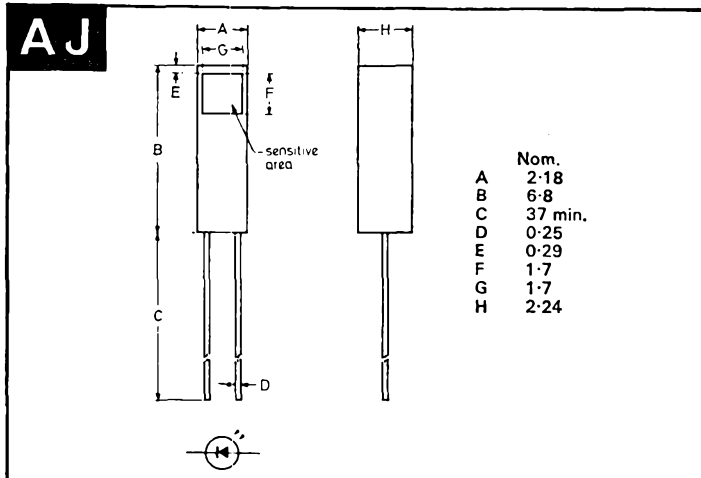
TO-60
 Max.
 A 11-50
 B 3-10
 C 7-62
 ϕD 8-6
 ϕD_1 11-10
 ϕD_2 5-08 nom.
 L 4-70
 ϕT 1-10

Emitter connected to envelope

AH

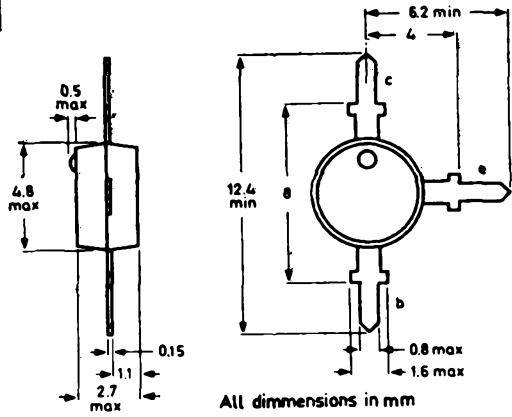
Max.
 A 7-16
 B 1-42
 B_1 1-32
 C 1-80
 ϕD 1-75
 ϕD_1 2-565
 ϕD_2 2-51

CONSTRUCTION and DIMENSIONS (All dimensions in millimetres)—continued

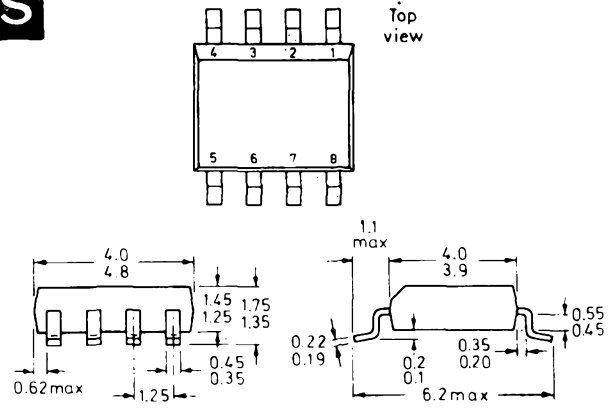


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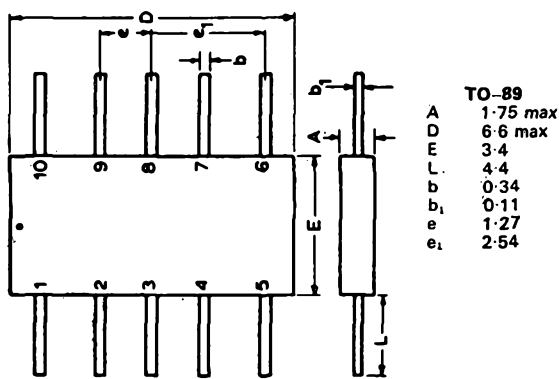
AR



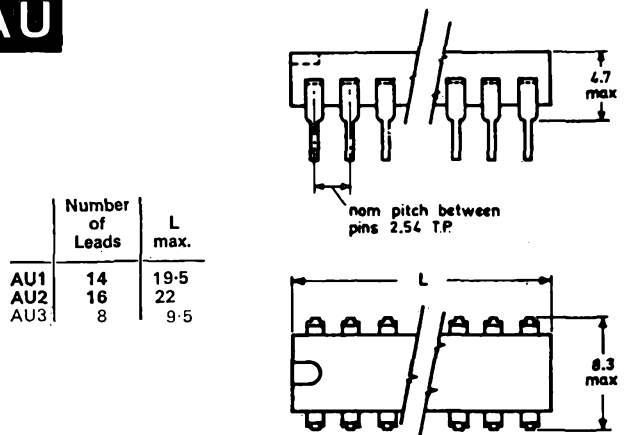
AS



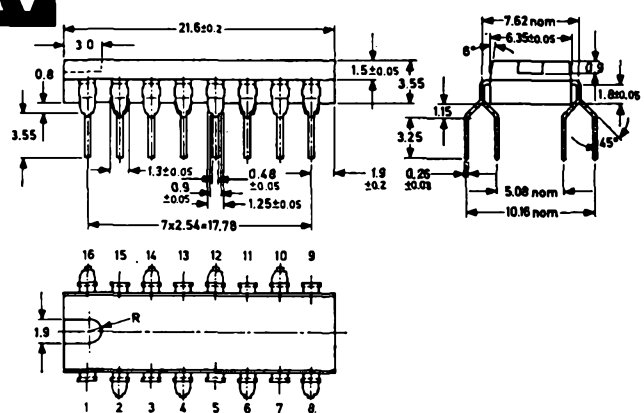
AT



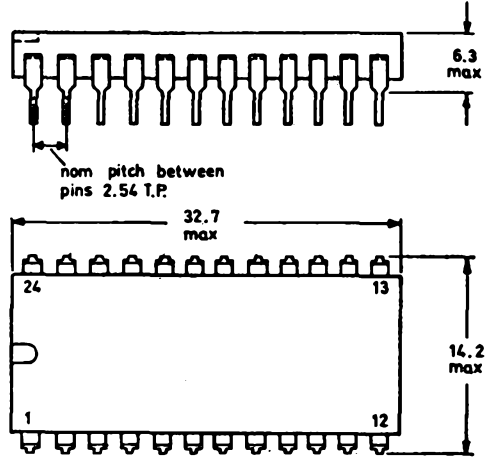
AU



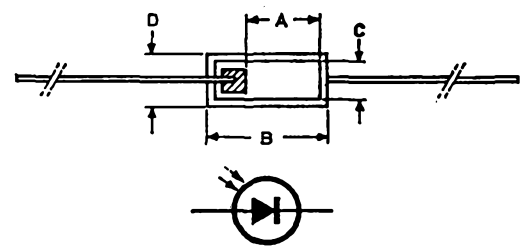
AV



AW

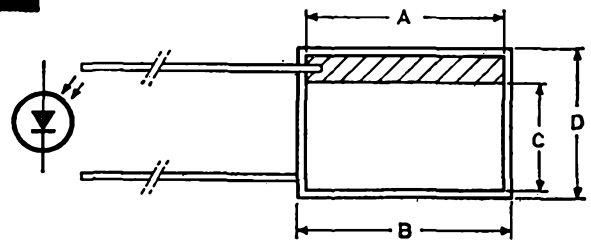


AX



	BPX40	BPX41		
A	2-2	3-55	Lead length	30
B	3-35	4-7	Lead diameter	0.15
C	0.95	1.85		
D	1.25	2.15		

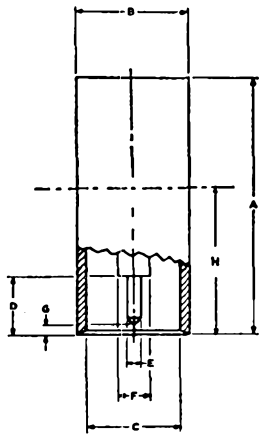
AY



	Nom.		
A	6.7	Lead length	30
B	7.0	Lead diameter	0.15
C	3.7		
D	5.0		

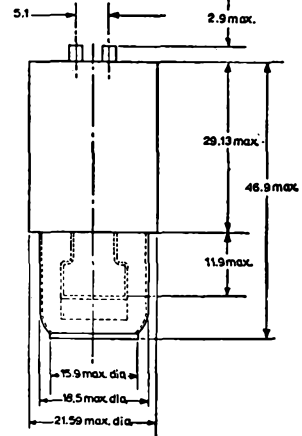
CONSTRUCTION and DIMENSIONS (All dimensions in millimetres)—continued

AZ

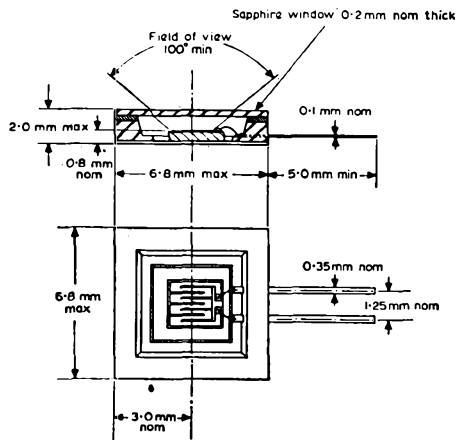


- A Max. 19.43
 - B dia.* 5.59
 - C dia. 4.80
 - D 3.73 min.
 - E dia. 0.86
 - F dia. 1.60 nom.
 - G 0.71
 - H 10.32 nom.
- *These tolerances apply only over H

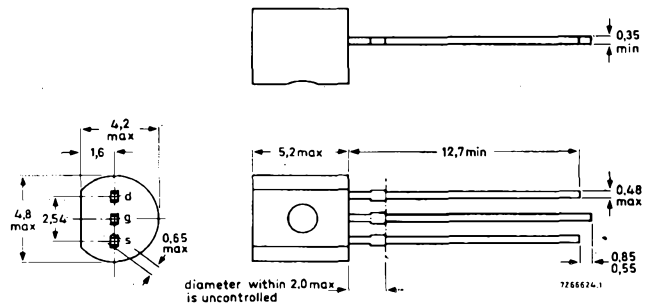
BA



BB

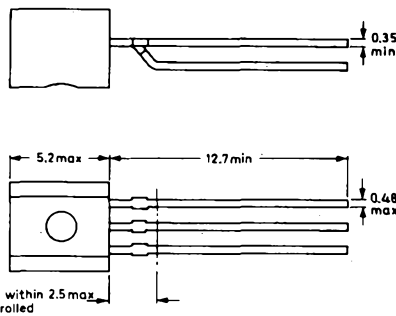


BC

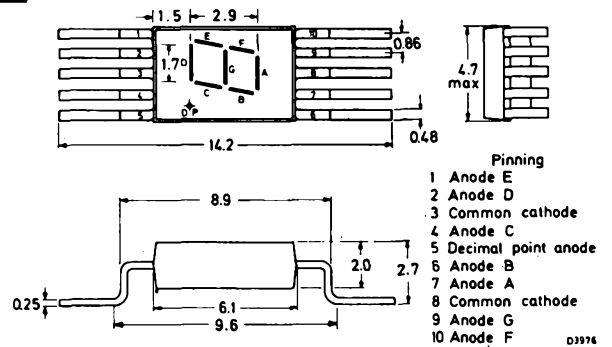


BD

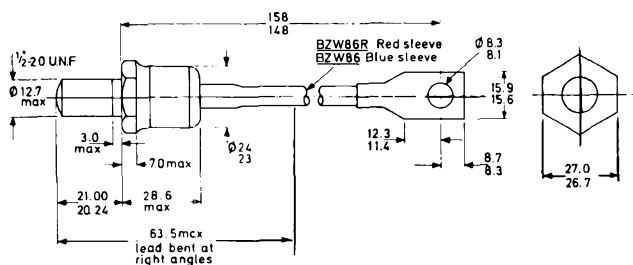
Pin	1	2	3
BD	e	b	c
BD1	b	e	c
BD2	d	s	g
BD3	g	a	k



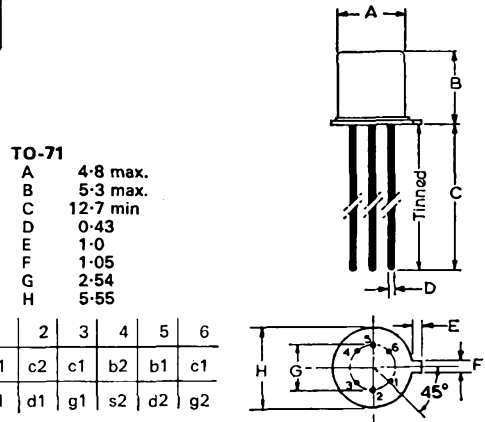
BE



BF

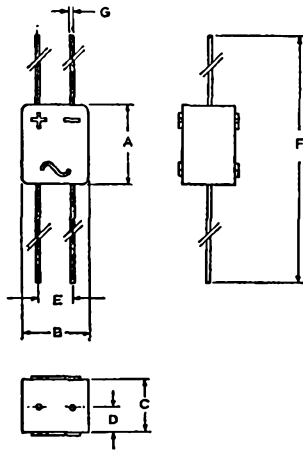


BG



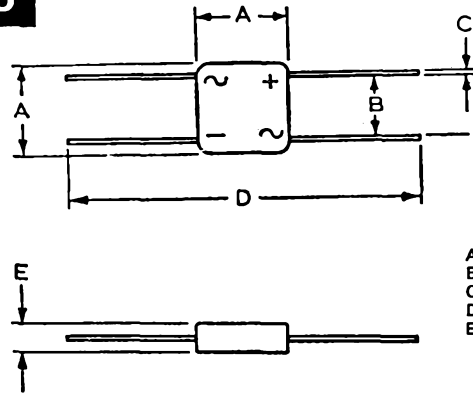
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BH



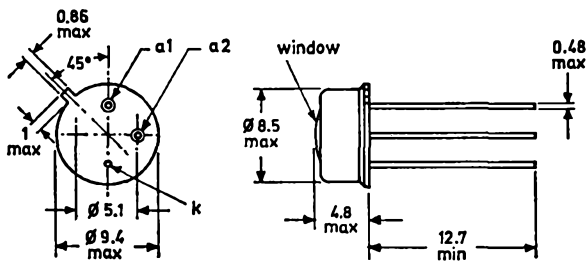
	BH1	BH2	BH3
A	12	20	12
B	10	19	10
C	8	15	8
D	4	7.5	4
E	5	10	5
F	58	60	58
G	0.75	1.0	1.1

BJ

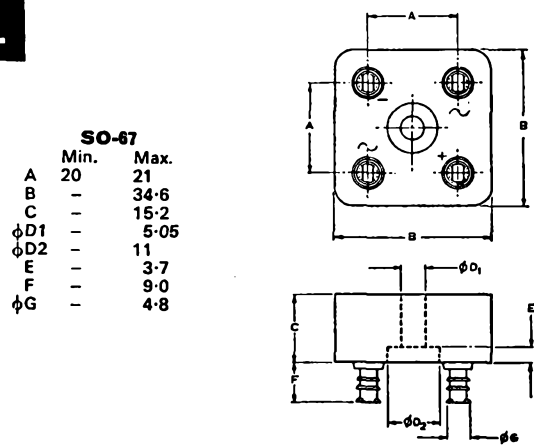


	Nom.
A	15
B	10.2
C	0.75
D	58.4
E	5.8

BK



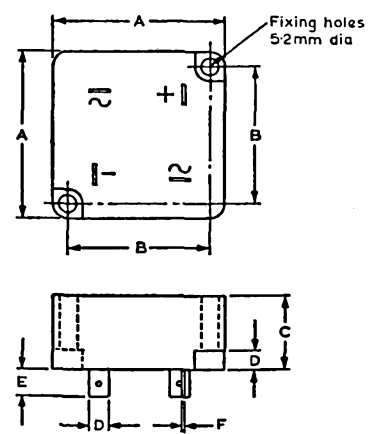
BL



SO-67

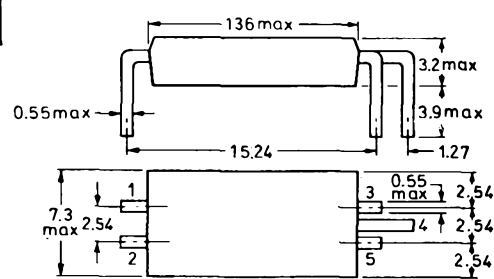
	Min.	Max.
A	20	21
B	-	34.6
C	-	15.2
φD1	-	5.05
φD2	-	11
E	-	3.7
F	-	9.0
φG	-	4.8

BM



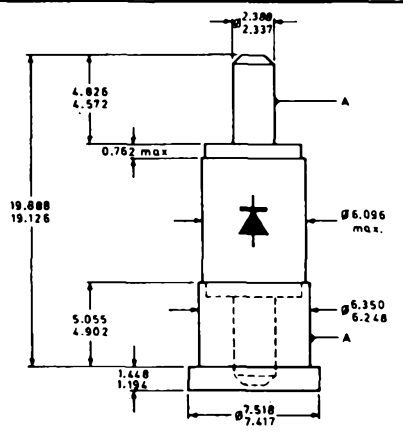
	Nom.
A	57.1
B	47.6
C	25.4
D	6.4
E	9.0
F	0.8

BN



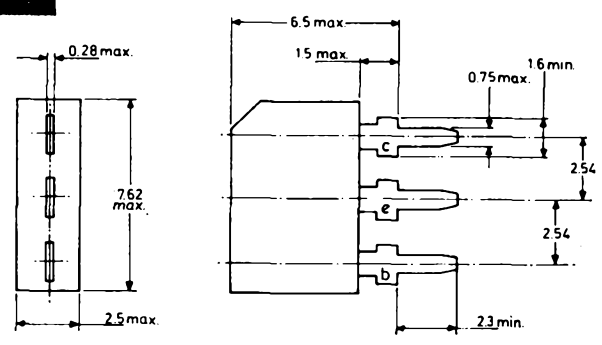
Pin	1	2	3	4	5
BN1	a	k	b	c	e
BN2	k	a	e	omitted	c

BO



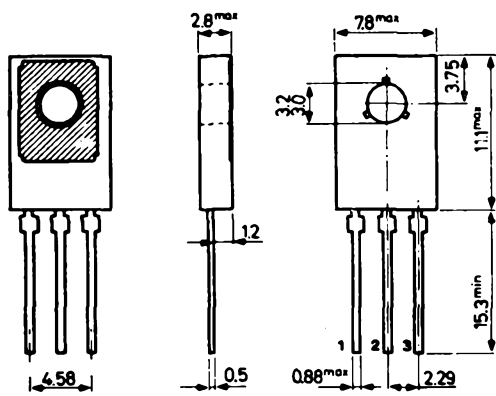
A = concentricity tolerance = ±0.18

BP



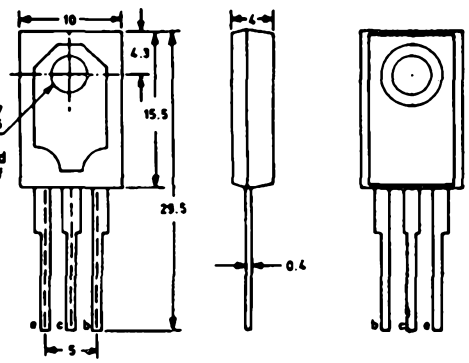
BY

TO-126
connections
1 | 2 | 3
e | c | b

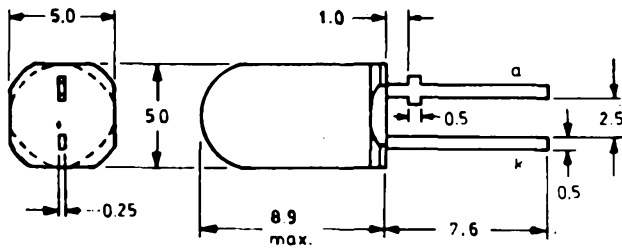


BZ

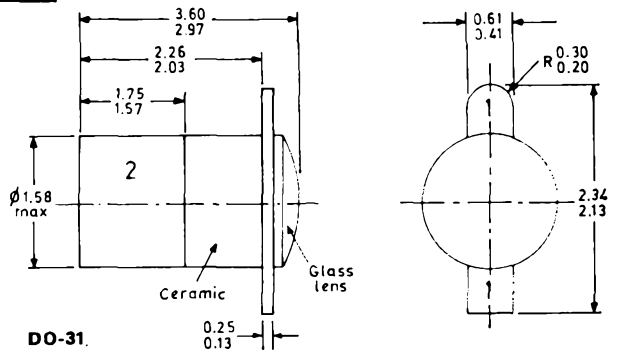
Collector connected to metal part of mounting surface



CA

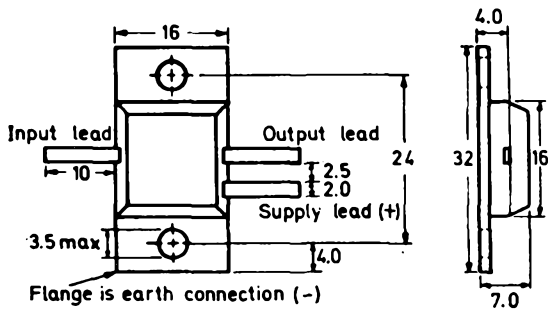


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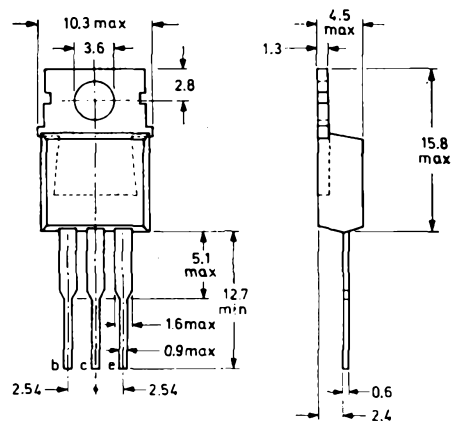


DO-31.
1—cathode
2—anode

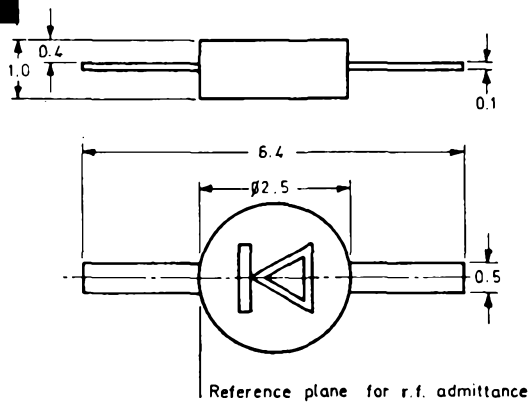
CC



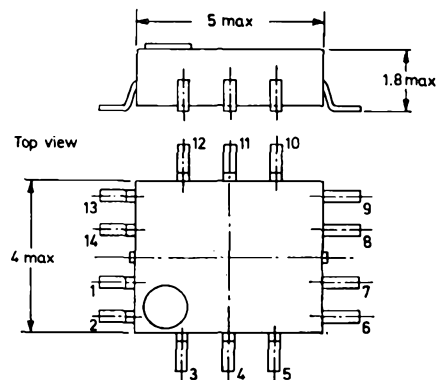
CD



CE



CF



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Birmingham 021-236 8541 : Gothic Electronic Components Ltd., Beacon House, Hampton St., Birmingham 19

Birmingham 021-784 2485 : Hawnt Electronics Ltd., Firwood Road, Birmingham B33 0TQ

Bristol 0272 294313 : Black Arrow Electronics Ltd., Wirelect House, 122/123 St. Thomas St., Bristol BS1 6JW

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Leeds 0532 636311 : Farnell Electronic Components Ltd., Canal Road, Leeds LS12 2TU

Leicester 0533 768561 : Townsend-Coates Ltd., Coleman Road, Leicester LE5 4LP

London 01-237 0404 : Edmundson Electronic Components Ltd., Cowley House, 30/50 Ossory Road, London SE1 5AN

Reading 0734 582211 : Celdis Ltd., 37/39 Loverock Road, Reading, Berkshire RG3 1ED

Rochdale 0706 47411 : Swift Hardman Ltd., P.O. Box 23, Hardale House, Baillie St., Rochdale, Lancs. OL16 1JE