

Transistors

silicon plastic-encapsulated transistors

book 1 parts 1 and 2

Type No.	V_{CB0}	V_{CE0}	Maximum Ratings		T_j	P_{tot}	I_{FE}	I_C	f_T	$V_{CE(sat)}$	I_C	I_B	Special Features		
N-P-N	(V)	(V)	I_{CM}	$I_{C(AV)}$	(°C)	$T_{mb=25^{\circ}C}$	min.	at I_C	min.	max.	at I_C	(mA)			
P-N-P	(V)	(V)	(A)	(A)	(°C)	(W)	max.	(mA)	(MHz)	(V)	(A)	(mA)			
Outline TO-126 Drawing Reference BE															
BF469	BF470	250	250	0.1	0.03	150	1.8	50	—	25	60	—	—	—	Class B video output
BF457		160	160	0.3	0.1	150	6.0	26	—	30	90*	1.0	0.03	6	Class A video output
BF458		250	250												
BF468		300	300												
BD232		500	300	1	0.25	125	7.0	25	150	50	20*	1.0	0.15	15	Line-driver in tv receivers
BD135	BD136	45	45	1.5	1	150	8.0	40	250	150	250* 75*	0.5	0.5	50	
BD137	BD138	60	60	1.5	1	150	8.0	40	160	150	250* 75*	0.5	0.5	50	
BD139	BD140	100	80	1.5	1	150	8.0	40	160	150	250* 75*	0.5	0.5	50	
BD226	BD227	45	45	3	1.5	150	12.5	40	250	150	125* 50*	0.8	1	100	
BD228	BD229	60	60	3	1.5	150	12.5	40	180	150	125* 50*	0.8	1	100	
BD230	BD231	100	80	3	1.5	150	12.5	40	160	150	125* 50*	0.8	1	100	
BD131	BD132	70 45	45	6	3	150	15	40	—	500	60	0.3	0.5	50	
BD133		90	60	6	3	150	15	40	—	500	60	0.7	2	200	
BDX36		100††	60	10	5	150	15	45	460	500	100*	0.9	5	500	
BDX36		120††	60									0.7			
BDX37		120††	80									0.9			
BUX86		800††	400	1	0.5	150	20	50*	—	50	20*	3.0	0.2	20	
BUX87		1000††	450												
BD233	BD234	45	45	6	2	150	25	25	—	1A	3.0	0.6	1.0	100	
BD235	BD236	60	60												
BD237	BD238	100	80												
BD433	BD434	22	22	7	4	150	36	50	—	2A	3.0	0.5	2	200	
BD435	BD436	32	32					50				0.5	2	200	
BD437	BD438	45	45					40				0.7	3	300	
Outline TO-220 Drawing Reference BF1															
BUX84		800††	400	3	2	150	40	50*	—	100	20*	3.0	1	200	
BUX85		1000††	450												
BD201	BD202	60	45	12	8	150	60	30	—	3A	3.0	1.0	3	300	
BD203	BD204	60	60							2A					
BDX77		100	80	12	8	150	60	30	—	2A	3.0	1.0	3	300	
	BDX78	80													

*Typical

†† V_{CB0M}

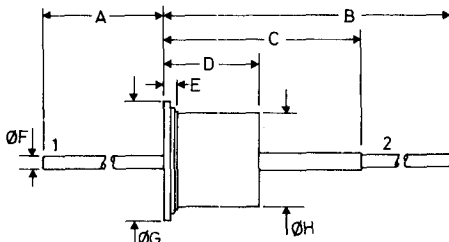
†† $V_{CESM}^{max.}$

OUTLINES and DIMENSIONS (millimetres)

A

B.S.3934 SO-16

DO-1
DO-2
DO-3

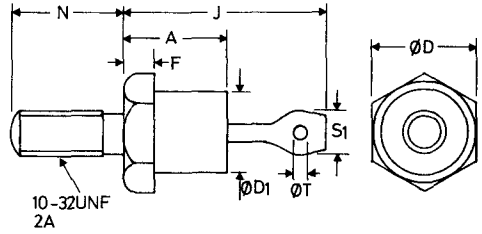


	1	2	A	B	C	D	E	ØF	ØG	ØH
	min.	min.	min.	min.	min.	max.	max.	max.	max.	max.
A1	a	k	35	51	17	7.7	1.6	1.1	9.6	7.1
A2	k	a	35	49	17	8.5	1.9	1.1	9.7	7.1
A3	k	a	35	51	17	7.7	1.6	1.1	9.6	7.1

B

B.S.3934 SO-10

DO-4



A 10.3 max.
ØD 11.1 max.
ØD1 9.3 max.
F 3.2

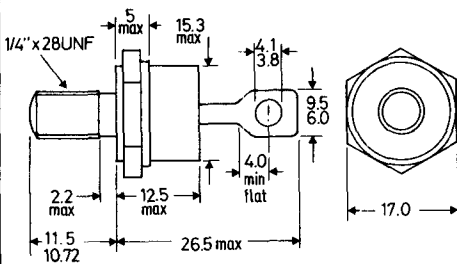
J 20.3 max.
N 11.5 max.
S1 4.8 max.
ØT 1.6 min.

	Stud	Eyelet
B1	k	a
B2	a	k

C

B.S.3934 SO-13

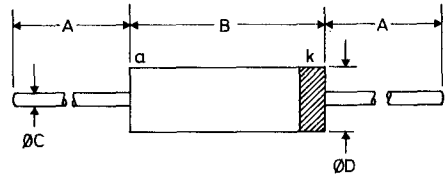
DO-5



	Stud	Eyelet
C1	k	a
C2	a	k

D

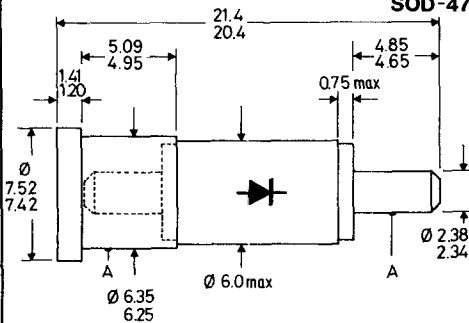
DO-7
DO-14
DO-15



		A	B	ØC	ØD
		min.	max.	nom.	max.
D1	DO-7	25.4	7.6	0.52	2.5
D2	DO-14	25.4	7.6	0.5	3.3
D3	DO-15	25.4	6.4	0.8	3.2

E

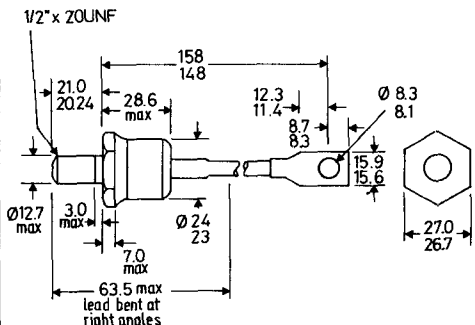
DO-22
SOD-47



A = concentricity tolerance = ± 0.20

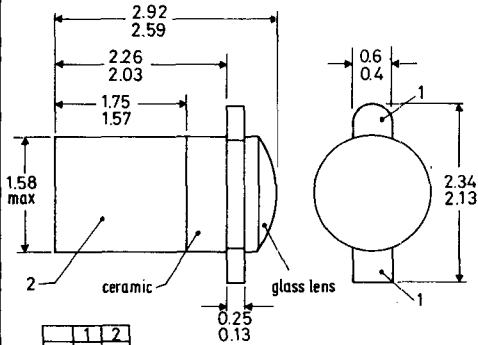
F

DO-30



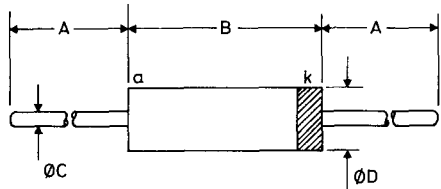
BZW86 Blue sleeve - anode to eyelet
BZW86R Red sleeve - anode to stud

These drawings give limited information for quick reference purposes. For equipment design more complete information should be obtained from individual data sheets in the Technical Handbook or from standard B.S. or JEDEC outline drawings.

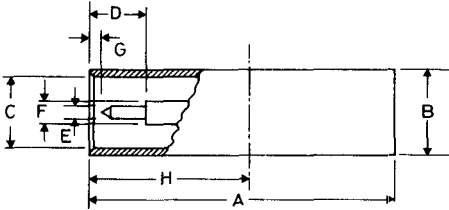
G**DO-31**

	1	2
G1	k	a
G2	e	c

For LED's the overall length = 3.60/2.97

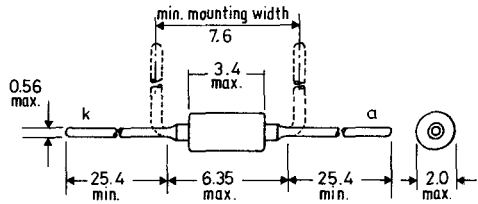
H**DO-35**

A	B	ØC	ØD
min.	max.	max.	max.
25.4	4.25	0.56	1.85

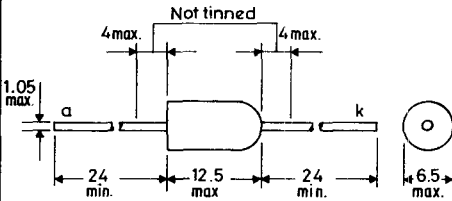
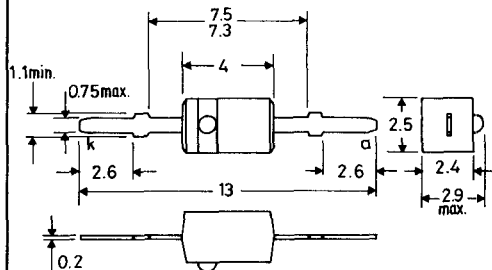
J**DO-37
SOD-49**

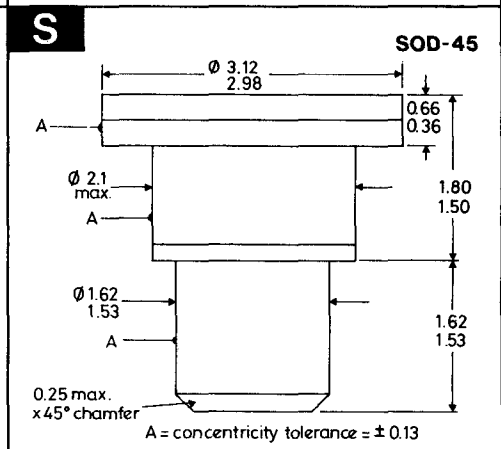
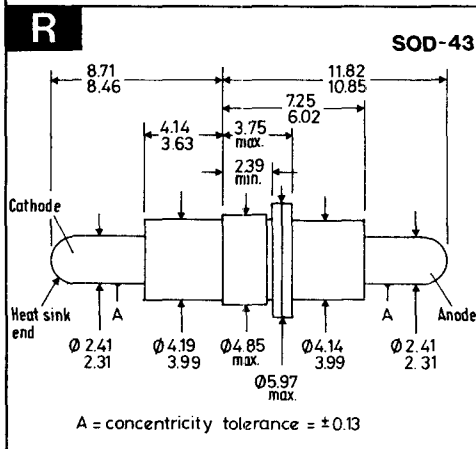
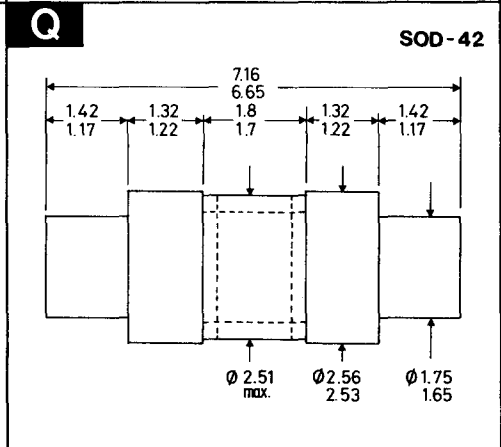
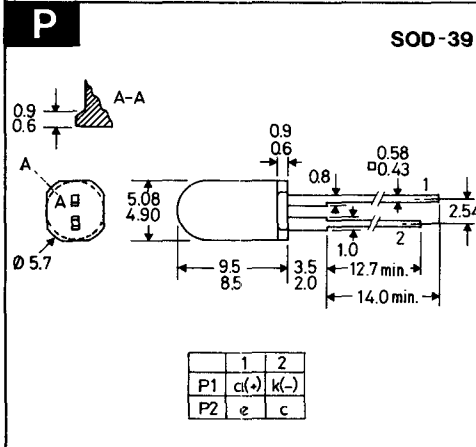
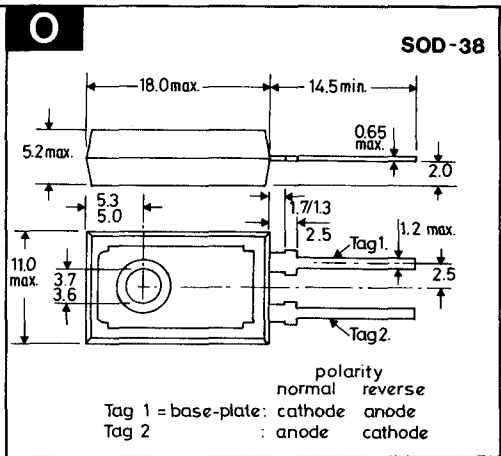
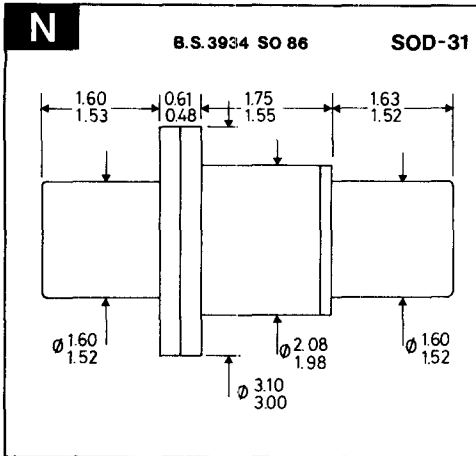
A	19.43/18.67	ØE	0.84/0.79
ØB*	5.59/5.49	ØF	1.57/1.52
ØC	4.80/4.72	G	0.71/0.15
D	3.73 min.	H	10.32 nom.

*These tolerances apply only over H

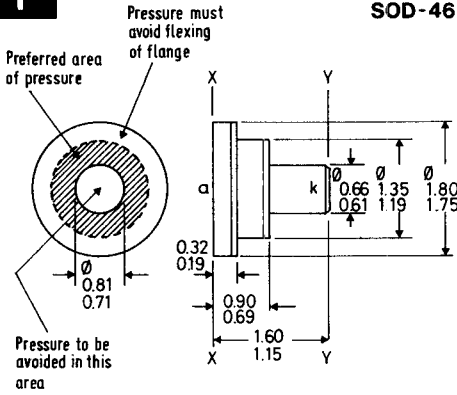
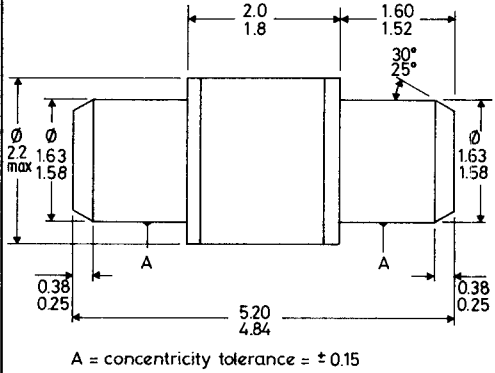
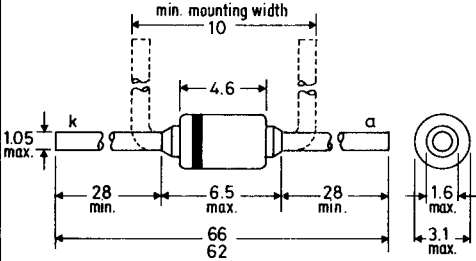
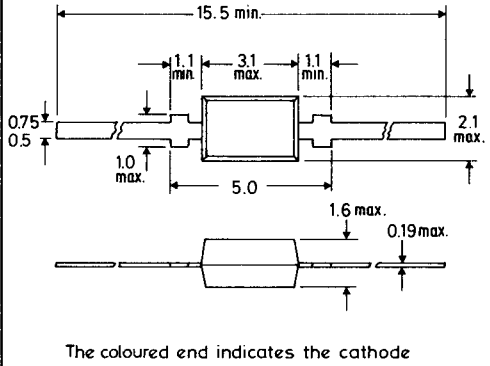
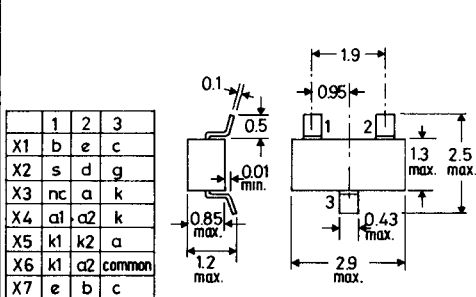
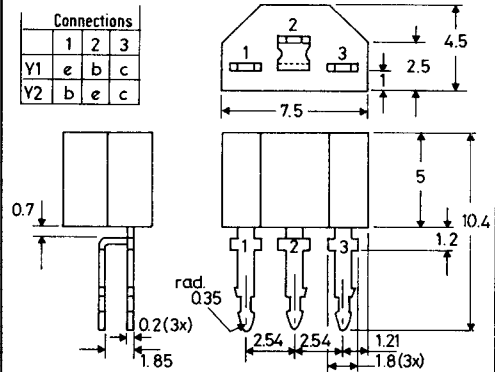
K**SOD-17**

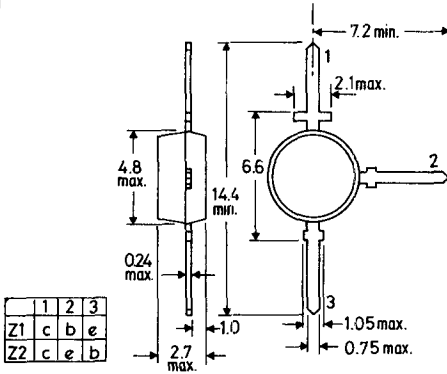
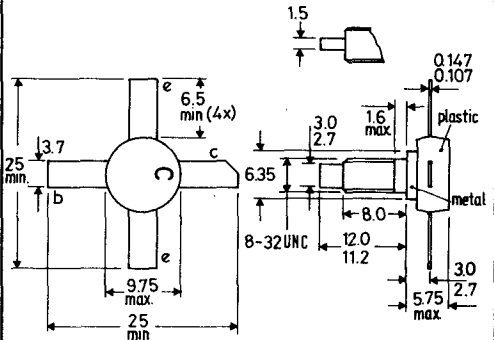
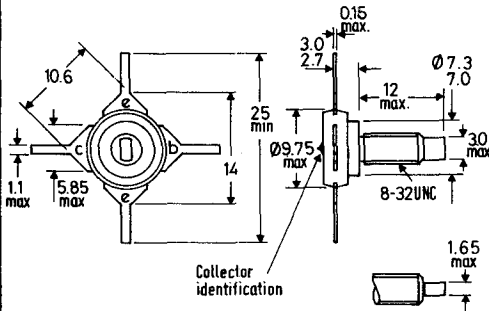
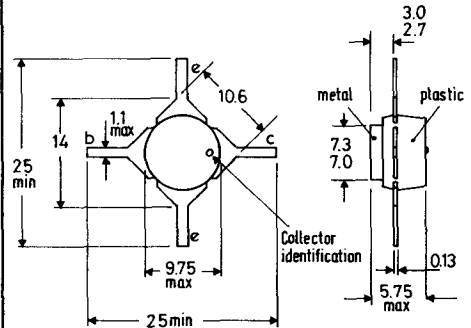
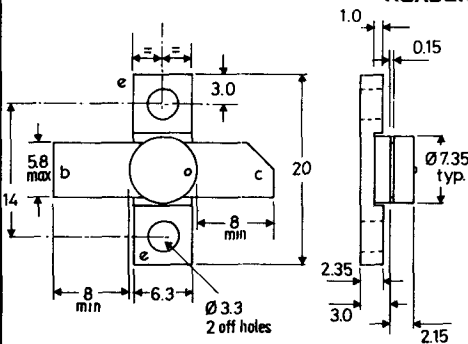
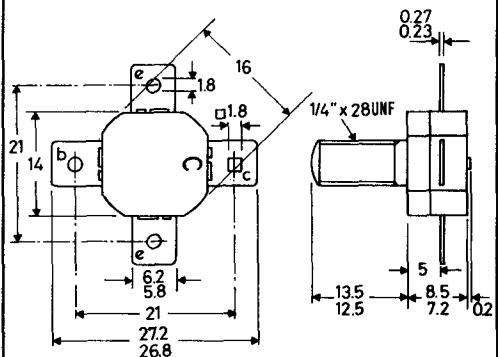
Cathode indicated by the broad band of colour code

L**SOD-18****M****SOD-23**

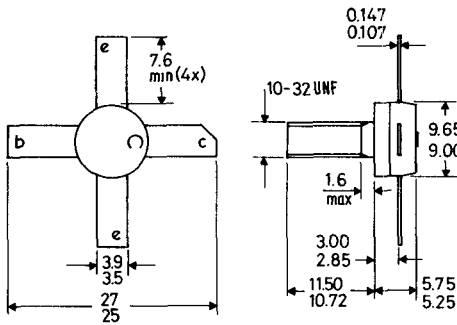
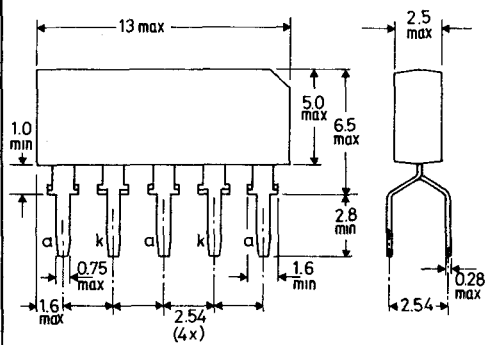
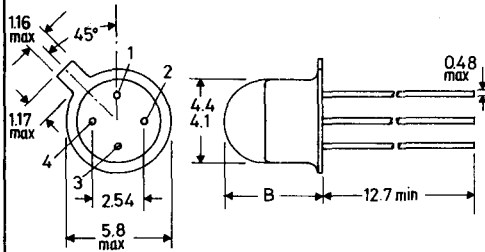


These drawings give limited information for quick reference purposes. For equipment design more complete information should be obtained from individual data sheets in the Technical Handbook or from standard B.S. or JEDEC outline drawings.

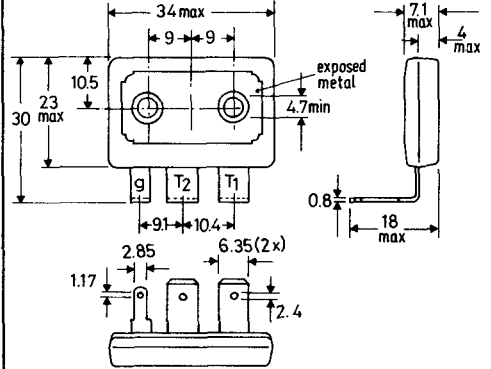
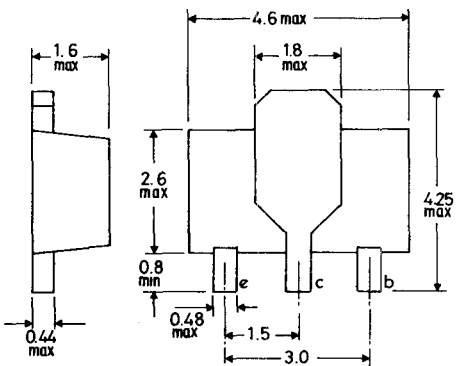
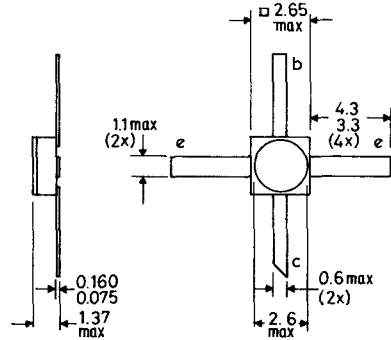
T**SOD-46****U****SOD-50****V****SOD-51****W****SOD-52****X****SOT-23****Y****SOT-25**

Z**SOT-37****AC****SOT-48/2****AD****SOT-48/3****AE****SOT-48/4****AF****SOT-48
HEADER****AG****SOT-55**

These drawings give limited information for quick reference purposes. For equipment design more complete information should be obtained from individual data sheets in the Technical Handbook or from standard B.S. or JEDEC outline drawings.

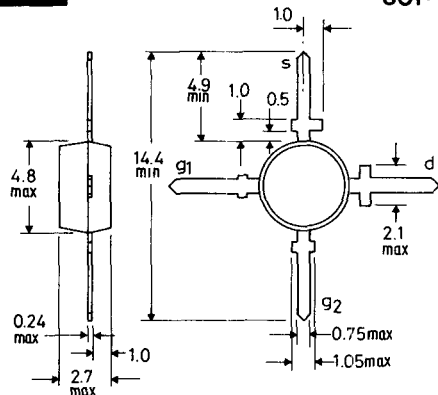
AH**SOT-56****AJ****SOT-60****AK****SOT-70**

	1	2	3	4	B max
AK1	a	—	k	—	5.08
AK2	e	b	c	—	4.5
AK3	Vp	IP	GND	OP	5.08

AL**SOT-80****AM****SOT-89****AN****SOT-100**

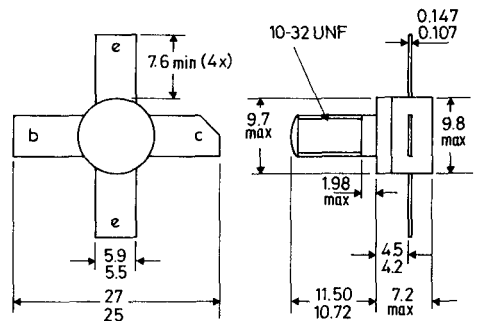
AO

SOT-103



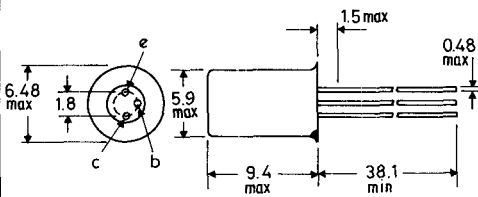
AP

SOT-105



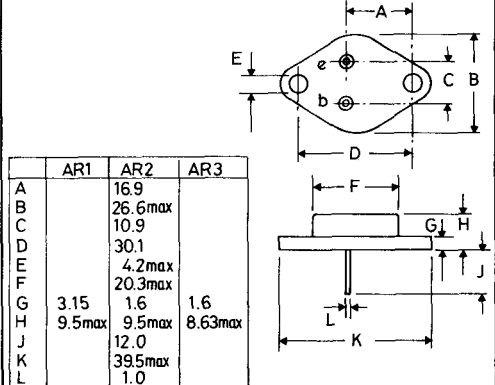
AQ

B.S.3934 SO-21/SB3-10 TO-1



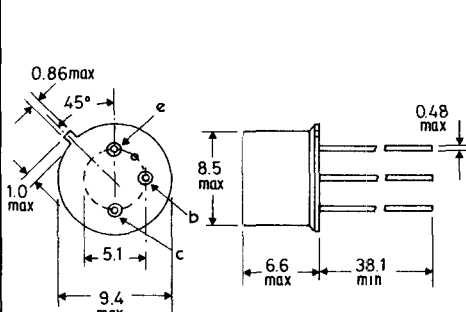
AR

B.S.3934 SO-5B/SB2-2 TO-3



AS

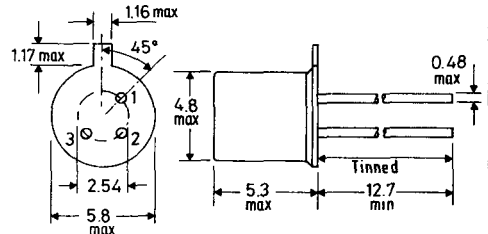
B.S.3934 SO-3/SB3-3B TO-5



AS1: collector connected to case
AS2: base connected to case

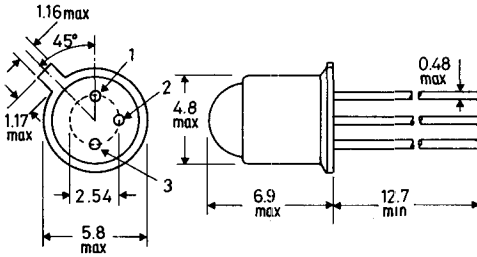
AT

B.S.3934 SO-12A/SB3-6A TO-18

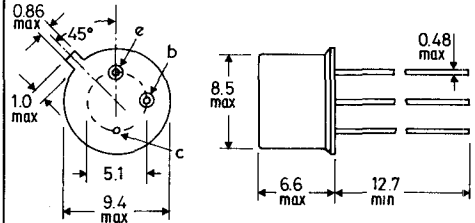


	1	2	3
AT1	e	b	c + env.
AT2	s	d	g + env.
AT3	d	g	s + env.
AT4	k	-	a
AT5	a	-	k
AT6	k	-	a

These drawings give limited information for quick reference purposes. For equipment design more complete information should be obtained from individual data sheets in the Technical Handbook or from standard B.S. or JEDEC outline drawings.

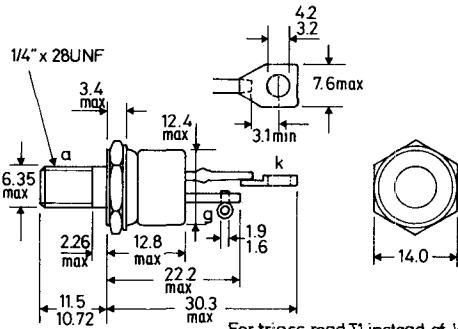
AU**TO-18**
(with lens)

	1	2	3
AU1	a	a	k
AU2	e	b	c+case
AU3	k	-	a

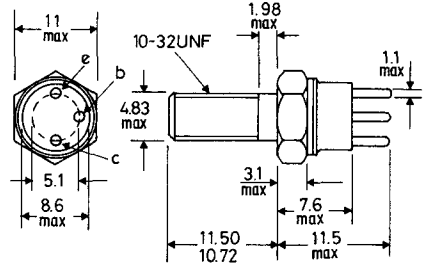
AV**B.S.3934 SO-3/SB3-3A TO-39**

AV1: b+case
 AV2: case isolated
 AV3: c+case
 AV4: e.cathode
 b.gate
 c.anode+case

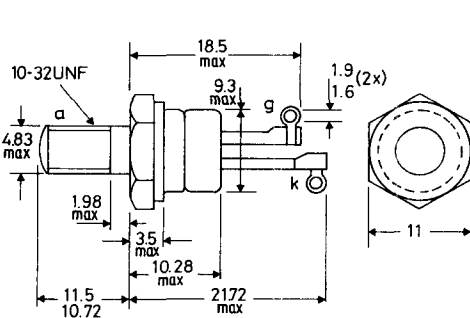
AV5: e.b. cell connections
 c. metal case
 AV6: red spot indicates
 +ve connection

AW**B.S.3932 SO-36 TO-48**

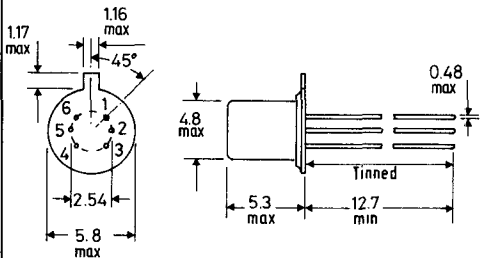
For triacs read T1 instead of k
 T2 instead of a

AX**TO-60**

Emitter connected to envelope

AY**B.S.3934 SO-35A TO-64**

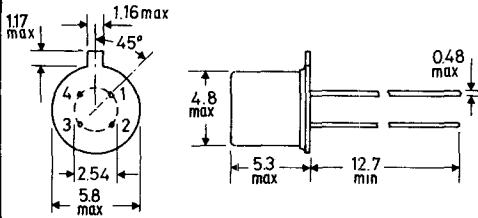
For triacs read T1 instead of k
 T2 instead of a

AZ**TO-71**

Pin	1	2	3	4	5	6
AZ1	e1	e2	c2	b2	b1	c1
AZ2	s1	d1	g1	s2	d2	g2

BA

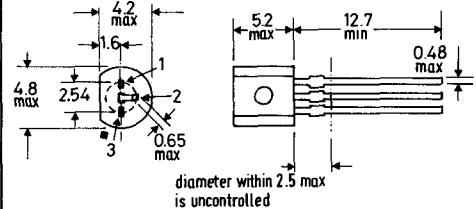
B.S.3934 SO-12A/SB4-3 TO-72



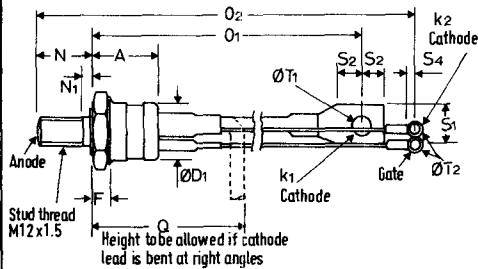
	1	2	3	4
BA1	b	e	c	s+envelope
BA2	e	b	c	s+envelope
BA3	s	d	g	screen+envelope
BA4	d	g	g	s+b+envelope
BA5	d	s	g	b+envelope
BA6	k	gk	ga	a

BBTO-92
variant

Pin	1	2	3
BB1	e	b	c
BB2	b	e	c
BB3	d	s	g
BB4	g	a	k
BB5	b	c	e

**BC**

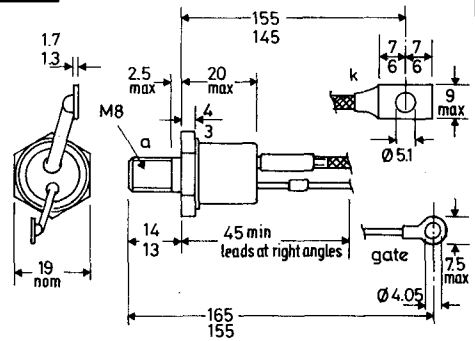
B.S.3934 SO-30C TO-94



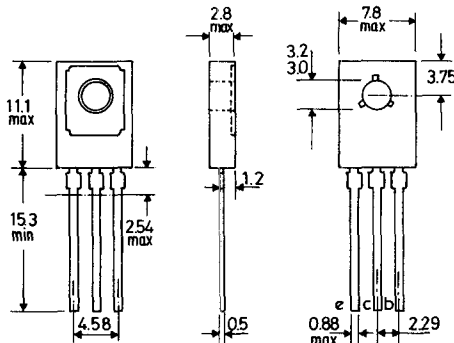
A	28.5max	O1	158 max	S4	3.8 min
ØD1	24.1max	O2	190max	ØT1	8.3max
F	8.9max	Q	63.5max	ØT2	4.2max
N	21.0max	S1	16.5max		
N1	3.0max	S2	9.6min		

BD

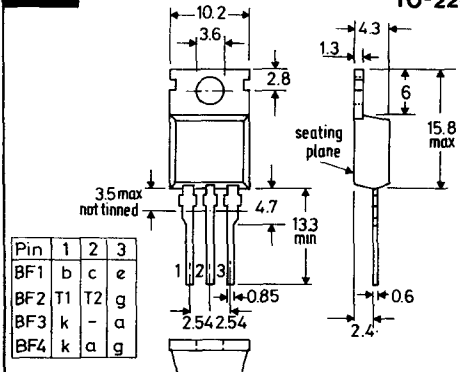
TO-103

For triacs read T1 instead of k
T2 instead of a**BE**

TO-126

**BF**

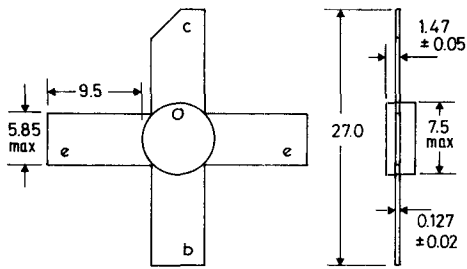
TO-220



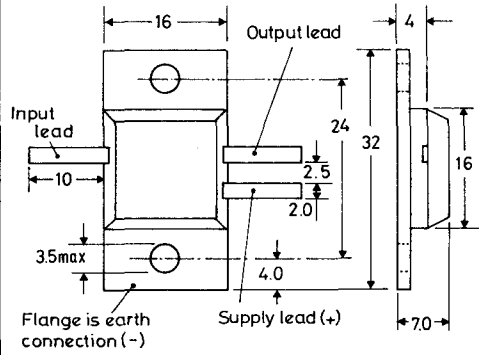
Pin	1	2	3
BF1	b	c	e
BF2	T1	T2	g
BF3	k	-	a
BF4	k	a	g

These drawings give limited information for quick reference purposes. For equipment design more complete information should be obtained from individual data sheets in the Technical Handbook or from standard B.S. or JEDEC outline drawings.

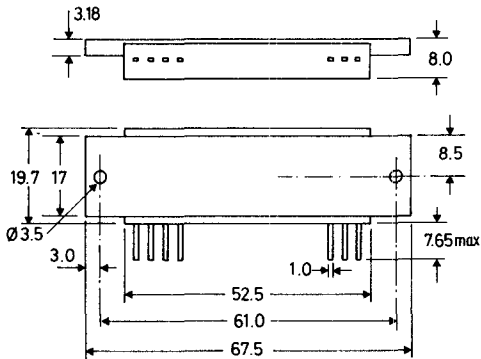
BG



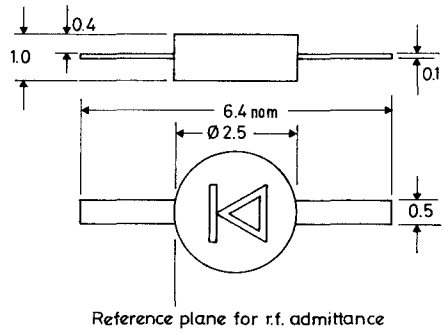
BH



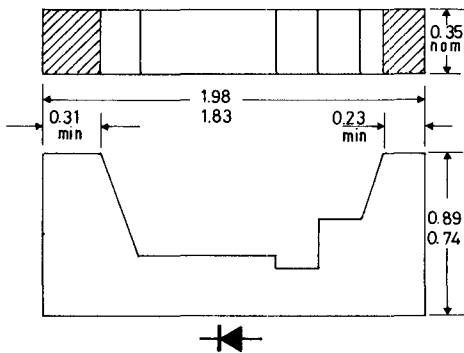
BJ



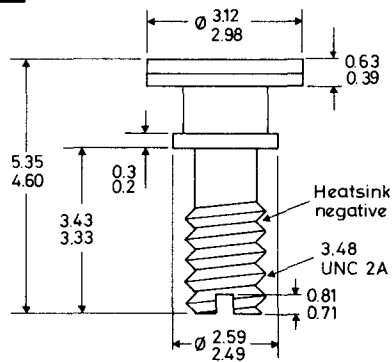
BK



BL



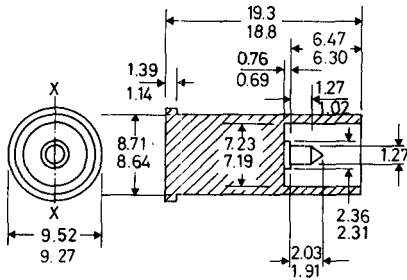
BM



BN

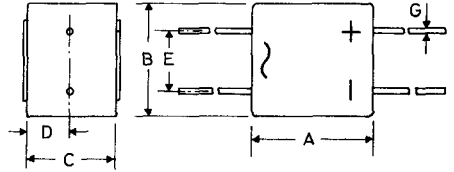
B.S.3934

SO-26

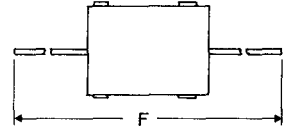


(All dimensions max.)

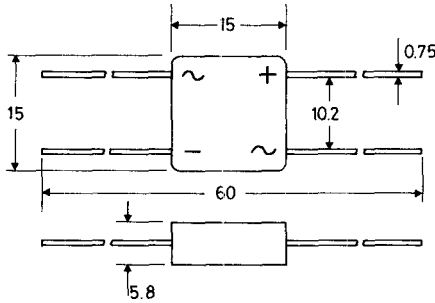
BO



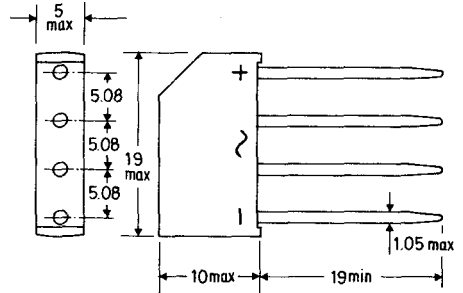
	BO1	BO2	BO3
A	12	20	12
B	10	19	10
C	8	15	8
D	4	7.5	4
E	5	10	5
F	58	60	48
G	0.75	1.0	1.1



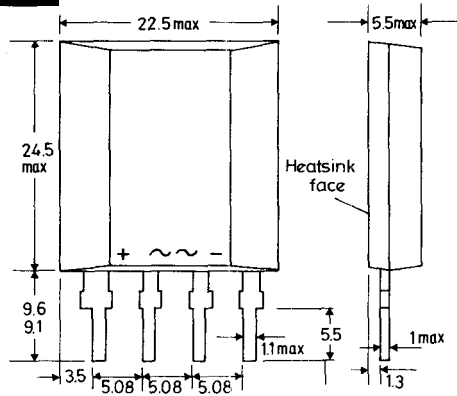
BP



BQ

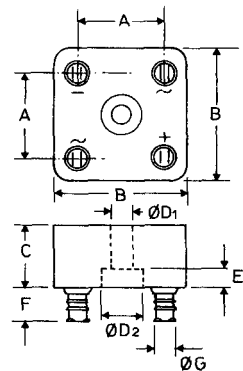


BR



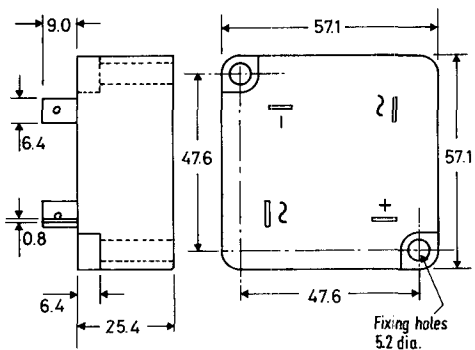
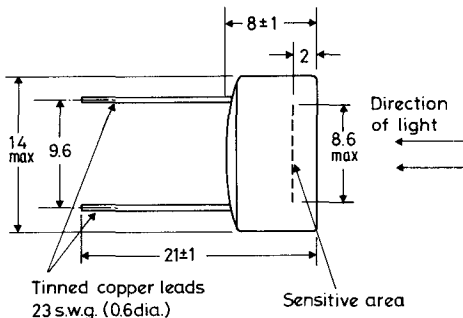
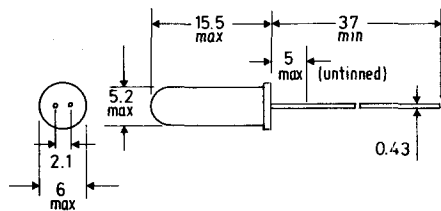
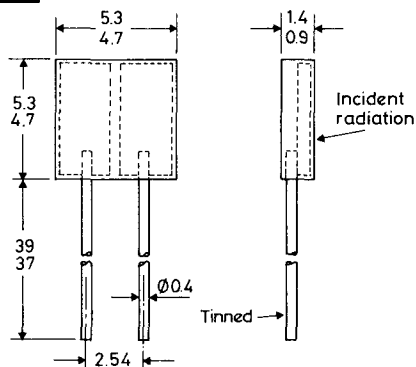
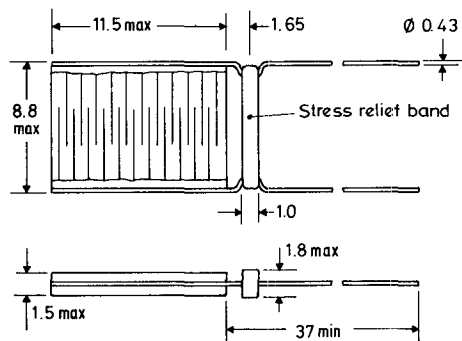
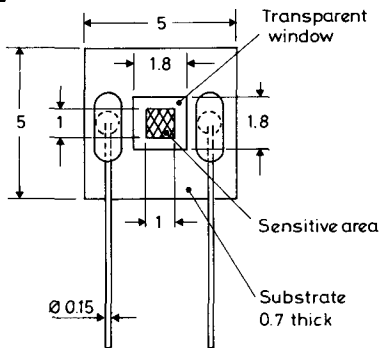
BS

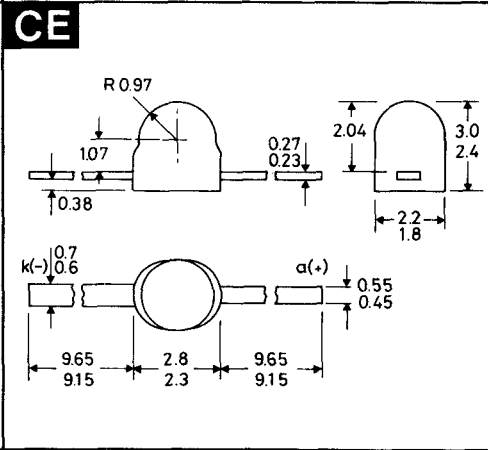
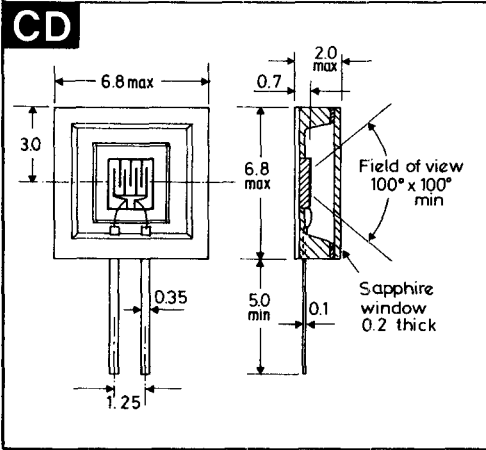
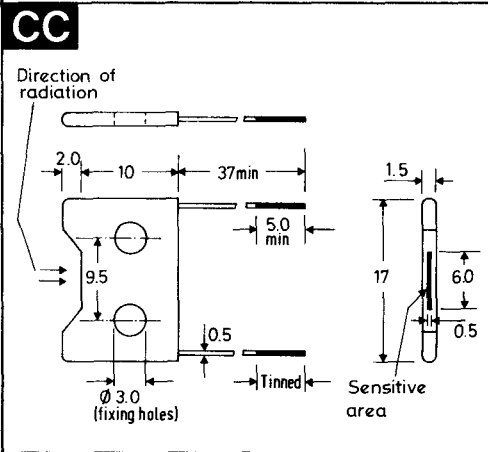
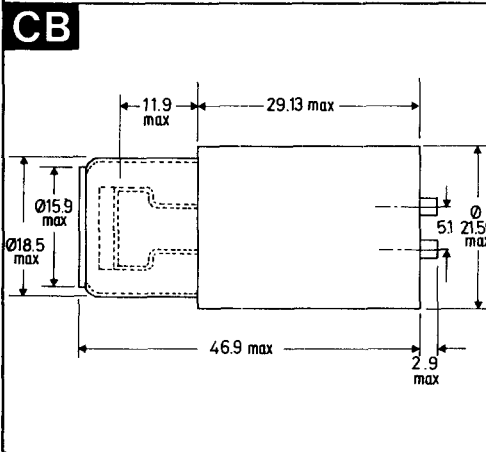
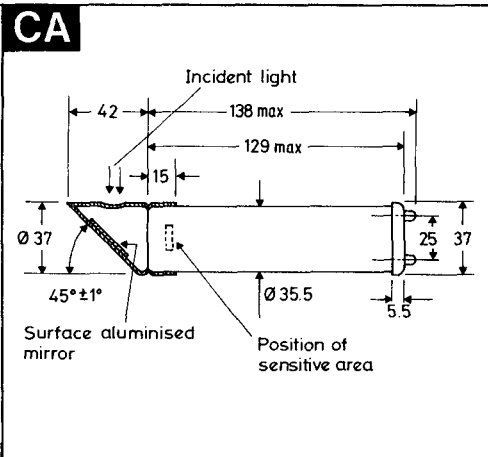
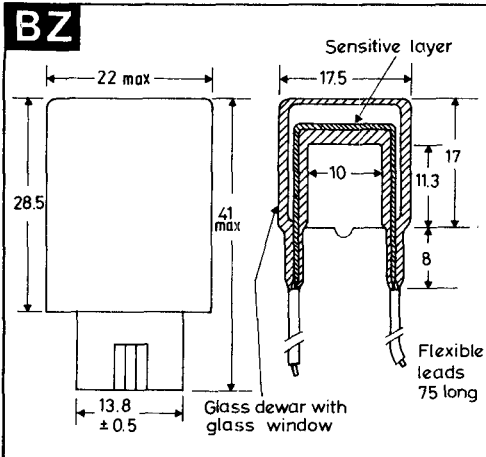
B.S.3934 SO-67



	BS1	BS2
	typ.	max.
A	23	21
B	35	34.6
C	17	15.2
ØD1	5	5.05
ØD2	11	11
E	5	3.7
F	9	9
ØG	4.8	4.8

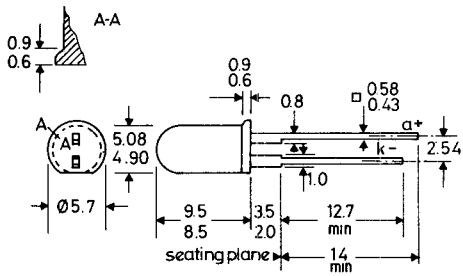
These drawings give limited information for quick reference purposes. For equipment design more complete information should be obtained from individual data sheets in the Technical Handbook or from standard B.S. or JEDEC outline drawings.

BT**BU****BV****BW****BX****BY**

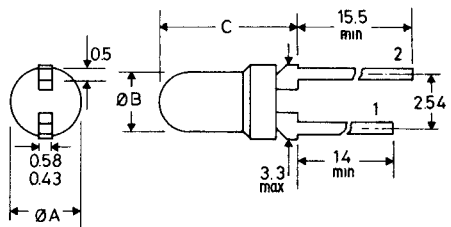


These drawings give limited information for quick reference purposes. For equipment design more complete information should be obtained from individual data sheets in the Technical Handbook or from standard B.S. or JEDEC outline drawings.

CF

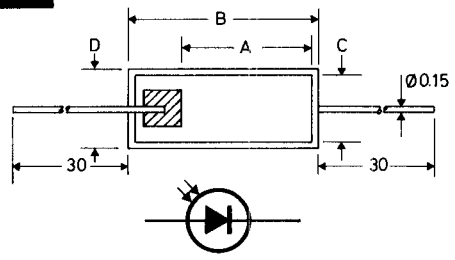


CG



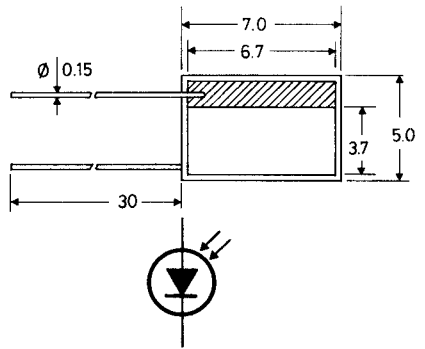
	1	2	$\varnothing A$	$\varnothing B$	C
CG1	k^-	a^+	3.0-3.17	2.4-2.6	5.8-6.3
CG2	a^+	k^-	3.0-3.17	2.4-2.6	5.8-6.3
CG3	k^-	a^+	3.3 max	2.65-3.17	4.8-6.3

CH

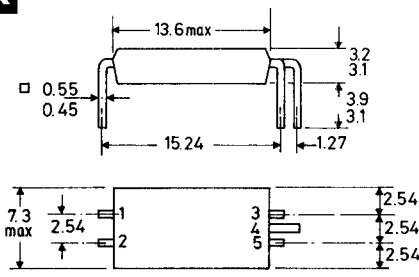


	CH1	CH2
A	2.2	3.5
B	3.35	4.55
C	0.95	1.85
D	1.25	2.15

CJ

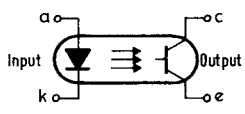
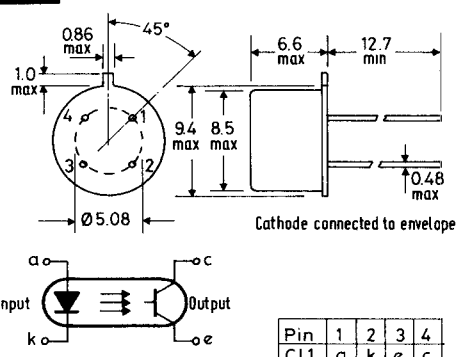


CK



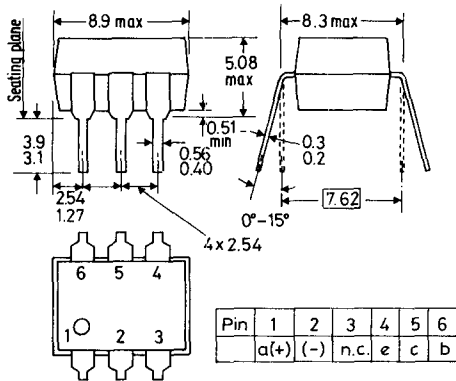
Pin	1	2	3	4	5
CK1	a	k	b	c	e
CK2	k	a	e	omitted	c

CL

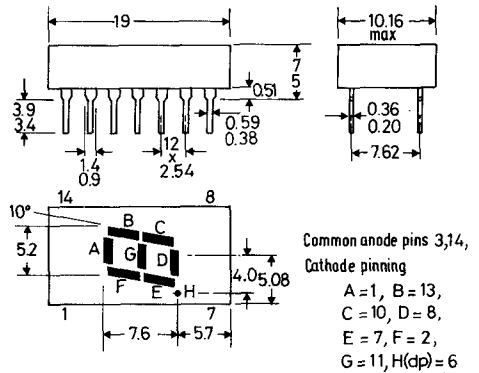


Pin	1	2	3	4
CL1	a	k	e	c
CL2	e	c	a	k

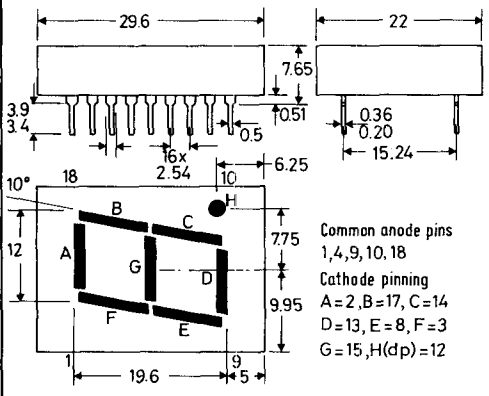
CM



CN



CO



These drawings give limited information for quick reference purposes. For equipment design more complete information should be obtained from individual data sheets in the Technical Handbook or from standard B.S. or JEDEC outline drawings.