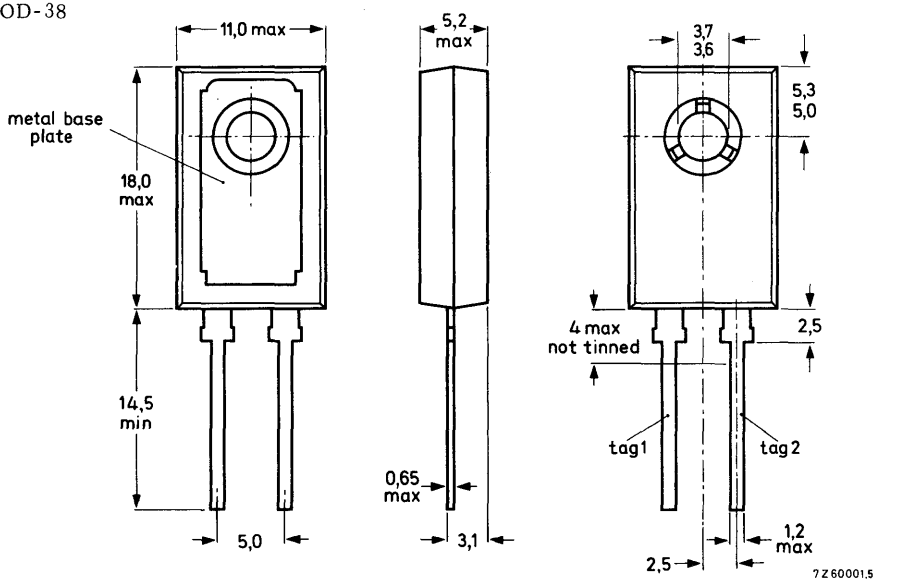
VOLTAGE REGULATOR DIODES

A range of voltage regulator diodes in plastic envelopes intended for use as voltage stabilizers in power supply circuits.
Normal and reverse polarity types are available: BZV15-C10(R) to C75(R).

QUICK REFERENCE DATA				
Working voltage range (5% range)	V_Z	nom.	10 to 75	V
Total power dissipation at T_{amb} = 25 °C	P_{tot}	max.	2,2	W
at T_{mb} = 82 °C	P_{tot}	max.	15	W
Junction temperature	T_j	max.	150	°C

MECHANICAL DATA Dimensions in mm

SOD-38



Net mass; 2,5 g

Accessories:
supplied with device : washer
available on request : 56316 (mica insulating washer)

Torque on screw: min. 0,95 Nm (9,5 kg cm)
max. 1,5 Nm (15 kg cm)

Tag 1 is connected to the metal base-plate, which should be mounted in contact with the heatsink used.

POLARITY OF CONNECTIONS

	BZV15-C10 to C75	BZV15-C10R to C75R
Base-plate:	cathode	anode
Tag 1 :	cathode	anode
Tag 2 :	anode	cathode

RATINGS Limiting values in accordance with the Absolute Maximum System (IEC 134)

Currents

Average forward current (averaged over any 20 ms period) at T_{mb} = 82 °C	$I_{F(AV)}$	max.	7,5	A
Repetitive peak forward current	I_{FRM}	max.	50	A

Power dissipation

Total power dissipation at T_{amb} = 25 °C (method a)	P_{tot}	max.	2,2	W
at T_{mb} = 82 °C	P_{tot}	max.	15	W
Non-repetitive peak reverse power dissipation T_{amb} = 25 °C; t = 1 ms (square pulse)	P_{ZSM}	max.	400	W

Temperatures

Storage temperature	T_{stg}	−55 to +	125	°C
Junction temperature	T_j	max.	150	°C

SOLDERING AND MOUNTING NOTES

1. The devices may be soldered directly into the circuit.
2. The maximum permissible temperature of the soldering iron or bath is 270 °C; contact with the joint must not exceed 3 seconds.
3. The devices should not be immersed in oil, and few potting resins are suitable for re-encapsulation. Advice on these materials is available on request.
4. Leads should not be bent less than 2,5 mm from the seal; exert no axial pull when bending.
5. Soldered joints must be at least 2,5 mm from the seal.
6. For good thermal contact heatsink compound should be used between base-plate and heatsink.

THERMAL RESISTANCE

From junction to mounting base	$R_{th\ j\text{-}mb}$	=	4,5	°C/W
Transient thermal impedance; t = 1 ms	$Z_{th\ j\text{-}mb}$	=	0,3	°C/W

Influence of mounting method

1. Heatsink operation

From mounting base to heatsink

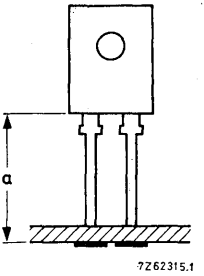
a. With heatsink compound	$R_{th\ mb\text{-}h}$	=	1,5	°C/W
b. With heatsink compound and 56316 mica washer	$R_{th\ mb\text{-}h}$	=	2,7	°C/W
c. Without heatsink compound	$R_{th\ mb\text{-}h}$	=	2,7	°C/W
d. Without heatsink compound with 56316 mica washer	$R_{th\ mb\text{-}h}$	=	5	°C/W

2. Free air operation

The quoted values of $R_{th\ j\text{-}a}$ should be used only when no other leads run to the tie-points.

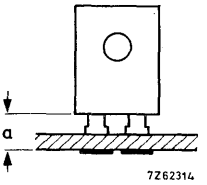
From junction to ambient in free air mounted on a printed circuit board at a = maximum lead length and with a copper laminate

a. > 1 cm^2 — $R_{th\ j\text{-}a}$ = 50 °C/W
b. < 1 cm^2 — $R_{th\ j\text{-}a}$ = 55 °C/W



at a lead-length a = 3 mm and with a copper laminate

c. > 1 cm^2 — $R_{th\ j\text{-}a}$ = 55 °C/W
d. < 1 cm^2 — $R_{th\ j\text{-}a}$ = 60 °C/W



CHARACTERISTICS

T_j = 25 °C unless otherwise specified

Forward voltage at I_F = 10 A

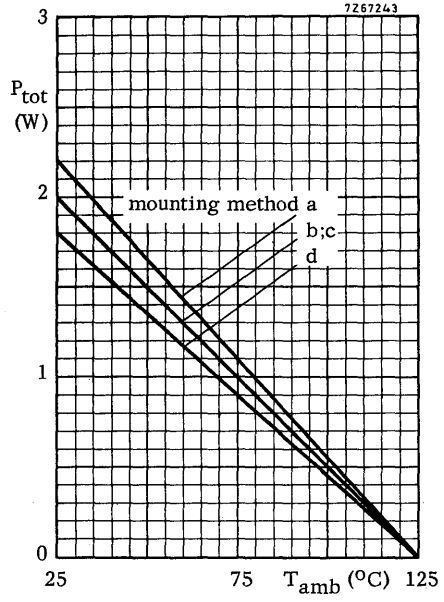
V_F < 1,5 V

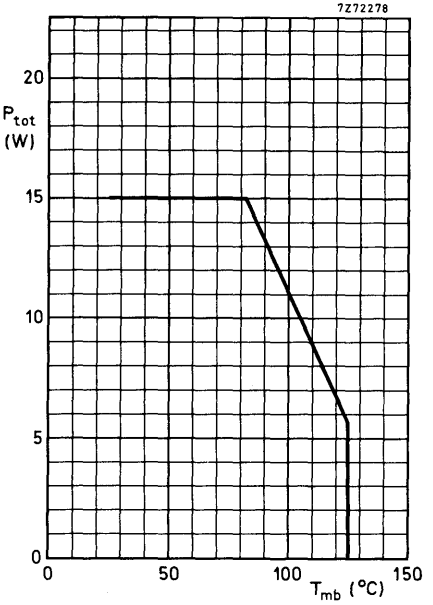
Reverse current at $V_R = \frac{2}{3} V_{Znom}$

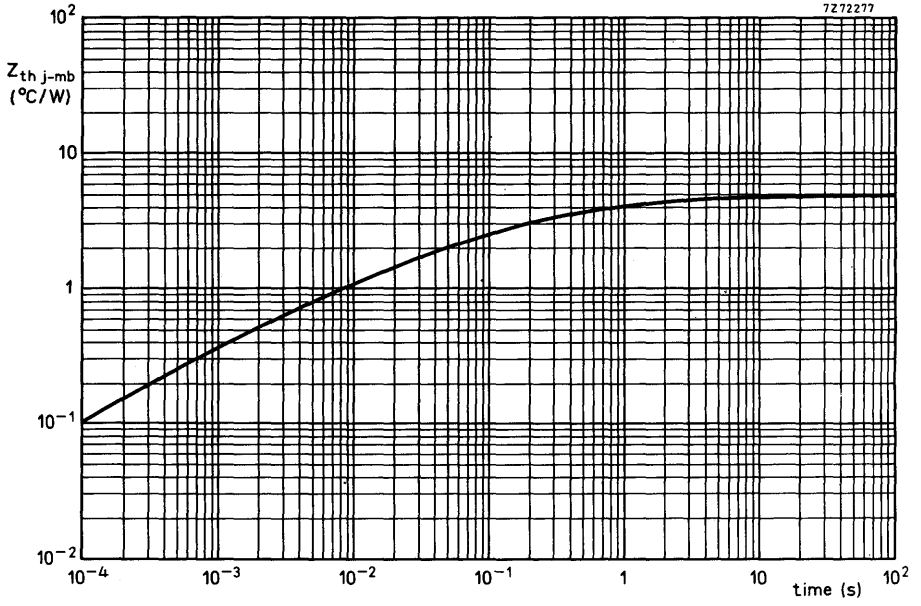
I_R < 50 μA

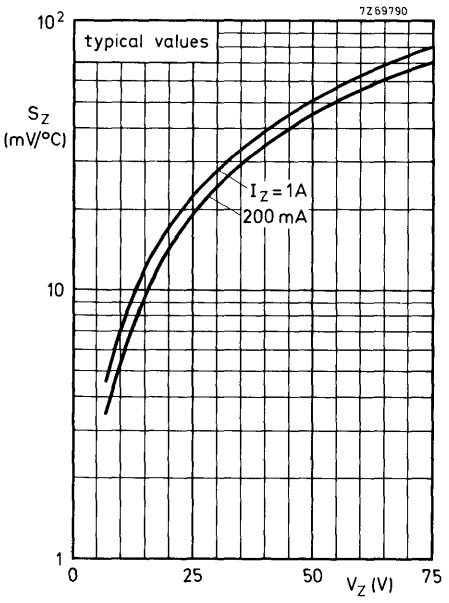
	Working voltage V_Z (V) [1]		Differential resistance r_{diff} (Ω) [1]	Temperature coefficient S_Z (mV/°C)[1]
	at I_Z = 1 A		**at I_Z = 1 A**	**at I_Z = 1 A**
BZV15-..	min.	max.	max.	typ.
C10(R)	9,4	10,6	0,5	9
C11(R)	10,4	11,6	1,0	9,9
C12(R)	11,4	12,7	1,0	10,8
C13(R)	12,4	14,1	1,0	11,7
C15(R)	13,8	15,6	1,2	13,5
	at I_Z = 0,5 A		**at I_Z = 0,5 A**	**at I_Z = 0,5 A**
C16(R)	15,3	17,1	1,2	14,4
C18(R)	16,8	19,1	1,5	16,2
C20(R)	18,8	21,2	1,5	15
C22(R)	20,8	23,3	1,8	16,5
C24(R)	22,7	25,9	2,0	19,2
C27(R)	25,1	28,9	2,0	22,1
C30(R)	28	32	2,5	25,5
C33(R)	31	35	3,0	29
	at I_Z = 0,2 A		**at I_Z = 0,2 A**	**at I_Z = 0,2 A**
C36(R)	34	38	4,0	32,4
C39(R)	37	41	5,0	35,1
C43(R)	40	46	6,5	39,6
C47(R)	44	50	7,0	43,7
C51(R)	48	54	7,5	47,4
C56(R)	52	60	8,0	52,6
C62(R)	58	66	9,0	58,3
C68(R)	64	72	10,0	63,9
C75(R)	70	79	10,5	71,3

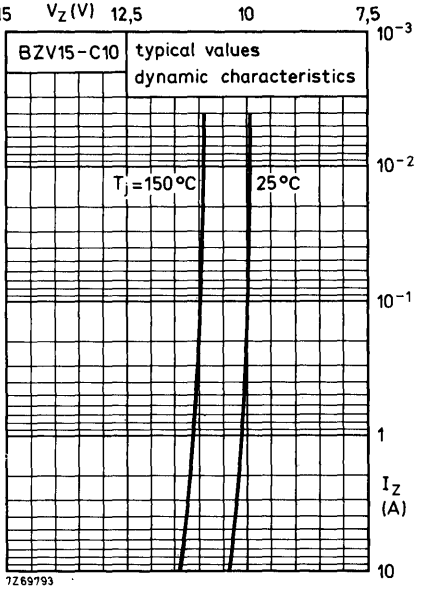
1) Measured by a pulse method with $t_p \leq 100$ μs, duty cycle $\delta \leq 0,001$ and $T_j \approx 25$ °C.

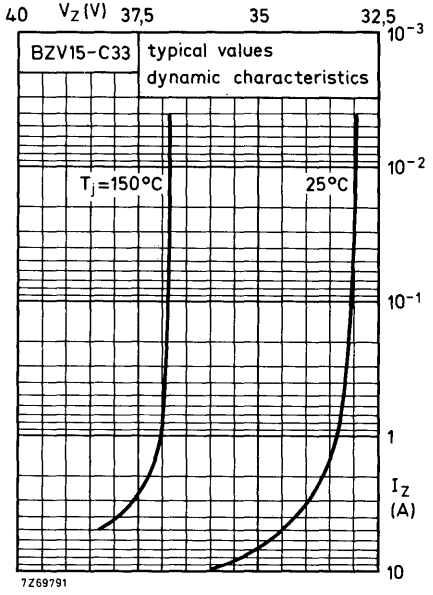

7Z67243
3
P_{tot} (W)
2
1
0
mounting method a
b;c
d
25
75
T_{amb} (°C)
125

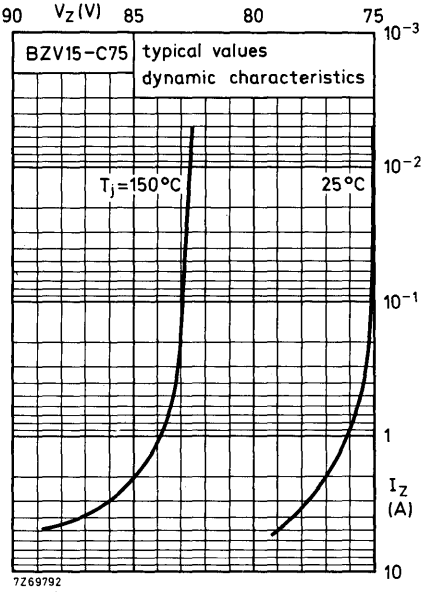

7Z72278
20
P_{tot} (W)
15
10
5
0
0
50
100
150
T_{mb} (°C)


7Z72277
10^2
$Z_{th\ j\text{-}mb}$ (°C/W)
10
1
10^{-1}
10^{-2}
10^{-4}
10^{-3}
10^{-2}
10^{-1}
1
10
10^2
time (s)


7Z69790
typical values
S_Z (mV/°C)
10^2
10
1
I_Z = 1A
200 mA
0
25
50
75
V_Z (V)


15
V_Z (V)
12,5
10
7,5
BZV15-C10
typical values
dynamic characteristics
T_j = 150 °C
25 °C
10^{-3}
10^{-2}
10^{-1}
1
10
I_Z (A)
7Z69793


40
V_Z (V)
37,5
35
32,5
BZV15-C33
typical values
dynamic characteristics
T_j = 150 °C
25 °C
10^{-3}
10^{-2}
10^{-1}
1
10
I_Z (A)
7Z69791


90
V_Z (V)
85
80
75
BZV15-C75
typical values
dynamic characteristics
T_j = 150 °C
25 °C
10^{-3}
10^{-2}
10^{-1}
1
10
I_Z (A)
7Z69792