VOLTAGE REGULATOR DIODES

Silicon planar voltage regulator diodes in hermetically sealed DO-41 glass envelopes intended for stabilization purposes. The series covers the normalized E24 (± 5%) range of nominal working voltages ranging from 3,6 V to 75 V.

QUICK REFERENCE DATA

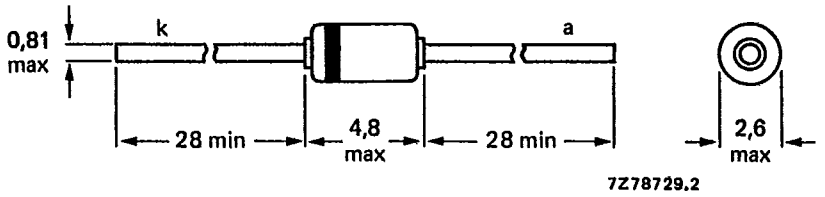
Working voltage range	V_Z	nom.	3,6 to 75	V
Total power dissipation	P_{tot}	max.	1,3	W*
Non-repetitive peak reverse power dissipation t_p = 100 μs; T_j = 25 °C	P_{ZSM}	max.	60	W
Junction temperature	T_j	max.	200	°C
Thermal resistance from junction to tie-point	$R_{th\ j\text{-}tp}$	=	110	K/W*

* If leads are kept at T_{tp} = 55 °C at 4 mm from body.

MECHANICAL DATA

Dimensions in mm

Fig. 1 DO-41 (SOD-66).



Cathode indicated by coloured band.

Products approved to CECC 50 005-010 available on request.

T-11-13

RATINGS

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

Working current (d.c.)	I_Z	limited by $P_{tot\,max}$	
Non-repetitive peak reverse current t_p = 10 ms; half sine-wave; T_{amb} = 25 °C	I_{ZSM}	see table below	
Repetitive peak forward current	I_{FRM}	max. 250	mA
Total power dissipation (see also Fig. 2)	P_{tot}	max. 1,30 max. 1	W* W**
Non-repetitive peak reverse power dissipation t_p = 100 μs; T_j = 25 °C	P_{ZSM}	max. 60	W
Storage temperature	T_{stg}	−65 to + 200	°C
Junction temperature	T_j	max. 200	°C

THERMAL RESISTANCE

From junction to tie-point	$R_{th\,j\text{-}tp}$	= 110	K/W*
From junction to ambient mounted on a printed-circuit board	$R_{th\,j\text{-}a}$	= 175	K/W**

BZV85–....	Non-repetitive peak reverse current I_{ZSM} (mA) max.
C3V6	2000
C3V9	1950
C4V3	1850
C4V7	1800
C5V1	1750
C5V6	1700
C6V2	1620
C6V8	1550
C7V5	1500
C8V2	1400
C9V1	1340
C10	1200
C11	1100
C12	1000
C13	900
C15	760
C16	700

BZV85–...	Non-repetitive peak reverse current I_{ZSM} (mA) max.
C18	600
C20	540
C22	500
C24	450
C27	400
C30	380
C33	350
C36	320
C39	296
C43	270
C47	246
C51	226
C56	208
C62	186
C68	171
C75	161

* If the temperature of the leads at 4 mm from the body are kept up to T_{tp} = 55 °C.
** Measured in still air up to T_{amb} = 25 °C and mounted on printed-circuit board with lead length of 10 mm and print copper area of 1 cm² per lead.

CHARACTERISTICS

T_j = 25 °C

Forward voltage at I_F = 50 mA V_F < 1,0 V

	working voltage V_Z (V) at I_{Ztest} = 5 mA		differential resistance r_{diff} (Ω) at I_{Ztest} = 5 mA		temperature coefficient S_Z (mV/K) at I_{Ztest} = 5 mA			differential resistance r_{diff} (Ω) at I_{Ztest} = 1 mA	
	min.	max.	typ.	max.	min.	typ.	max.	typ.	max.
BZV85–									
C2V4	2,20	2,60	70	100	−3,5	−1,6	0	275	600
C2V7	2,50	2,90	75	100	−3,5	−2,0	0	300	600
C3V0	2,80	3,20	80	95	−3,5	−2,1	0	325	600
C3V3	3,10	3,50	85	95	−3,5	−2,4	0	350	600
C3V6	3,40	3,80	85	90	−3,5	−2,4	0	375	600
C3V9	3,70	4,10	85	90	−3,5	−2,5	0	400	600
C4V3	4,00	4,60	80	90	−3,5	−2,5	0	410	600
C4V7	4,40	5,00	50	80	−3,5	−1,4	0,2	425	500
C5V1	4,80	5,40	40	60	−2,7	−0,8	1,2	400	480
C5V6	5,20	6,00	15	40	−2,0	1,2	2,5	80	400
C6V2	5,80	6,60	6	10	0,4	2,3	3,7	40	150
C6V8	6,40	7,20	6	15	1,2	3,0	4,5	30	80
C7V5	7,00	7,90	6	15	2,5	4,0	5,3	30	80
C8V2	7,70	8,90	6	15	3,2	4,6	6,2	40	80
C9V1	9,50	9,60	6	15	3,8	5,5	7,0	40	100
C10	9,40	10,60	8	20	4,5	6,5	8,0	50	150
C11	10,40	11,60	10	20	5,4	7,4	9,0	50	150
C12	11,40	12,70	10	25	6,0	8,4	10,0	50	150
C13	12,40	14,10	10	30	7,0	9,4	11,0	50	170
C15	13,80	15,60	10	30	9,2	11,4	13,0	50	200
C16	15,30	17,10	10	40	10,4	12,4	14,0	50	200
C18	16,80	19,10	10	45	12,4	14,4	16,0	50	225
C20	18,80	21,20	15	55	14,4	16,4	18,0	60	225
C22	20,80	23,30	20	55	16,4	18,4	20,0	60	250
C24	22,80	25,60	25	70	18,4	20,4	22,0	60	250
	at I_{Ztest} = 2 mA		at I_{Ztest} = 2 mA		at I_{Ztest} = 2 mA			at I_{Ztest} = 0,5 mA	
C27	25,10	28,90	25	80	21,4	23,4	25,3	65	300
C30	28,00	32,00	30	80	24,4	26,6	29,4	70	300
C33	31,00	35,00	35	80	27,4	29,7	33,4	75	325
C36	34,00	38,00	35	90	30,4	33,0	37,4	80	350
C39	37,00	41,00	40	130	33,4	36,4	41,2	80	350
C43	40,00	46,00	45	150	37,6	41,2	46,6	85	375
C47	44,00	50,00	50	170	42,0	46,1	51,8	85	375
C51	48,00	54,00	60	180	46,6	51,0	57,2	90	400
C56	52,00	60,00	70	200	52,2	57,0	63,8	100	425
C62	58,00	66,00	80	215	58,8	64,4	71,6	120	450
C68	64,00	72,00	90	240	65,6	71,7	79,8	150	475
C75	70,00	79,00	95	255	73,4	80,02	88,6	170	500

T-11-13

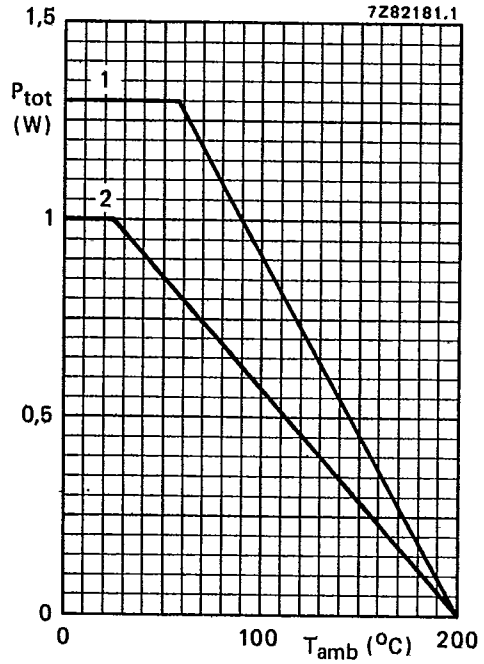


Fig. 2 Maximum permissible power dissipation versus ambient temperature.

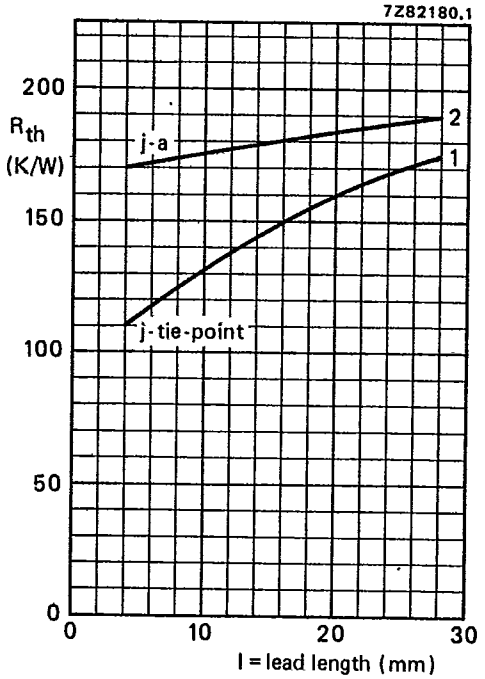
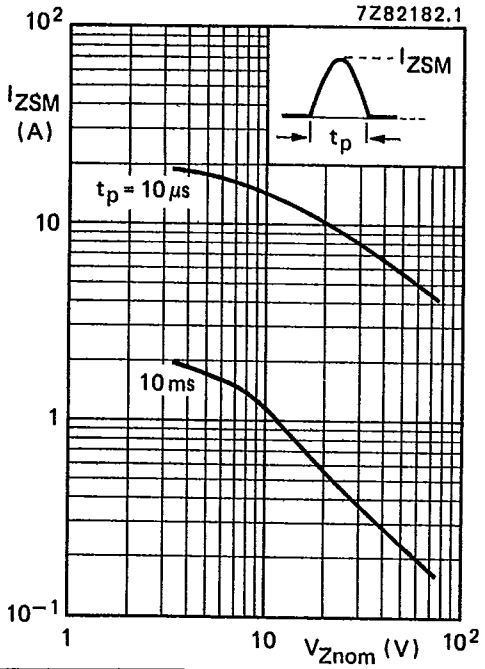


Fig. 3 Thermal resistance versus lead length.



Mounting methods (see Figs 2 and 3)

1. To tie-points (lead length = 4 mm in Fig. 2).
2. Mounted on a printed-circuit board (with lead length of 10 mm in Fig. 2) and print copper area of 1 cm² per lead.

Fig. 4 Half sine-wave; T_{amb} = 25 °C.

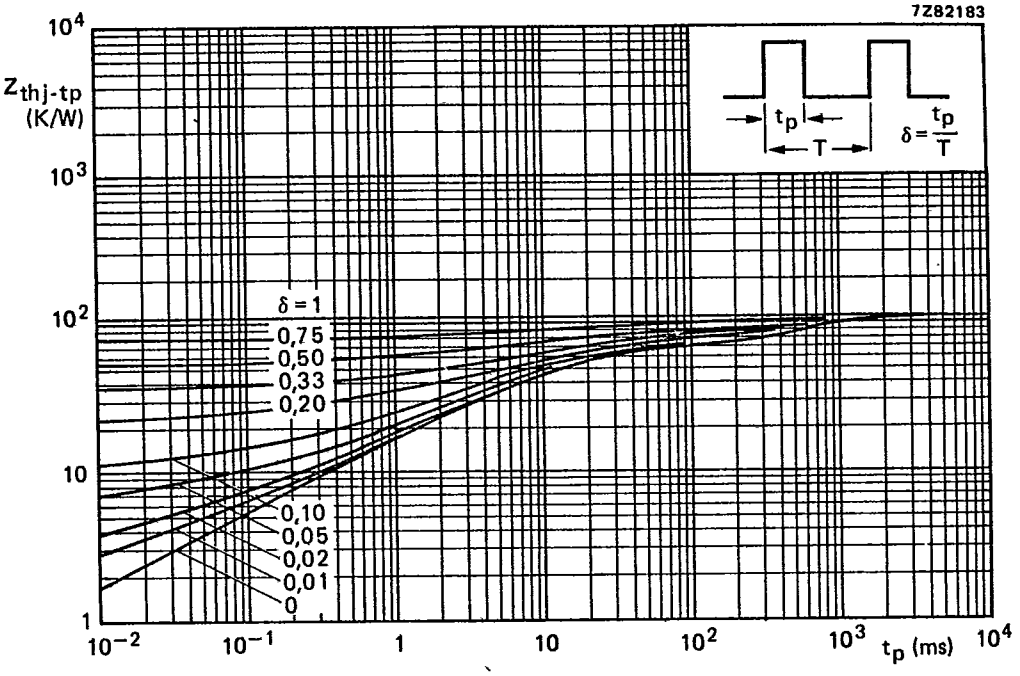


Fig. 5 Thermal impedance from junction to tie-point with a lead length of 4 mm.

T-11-13

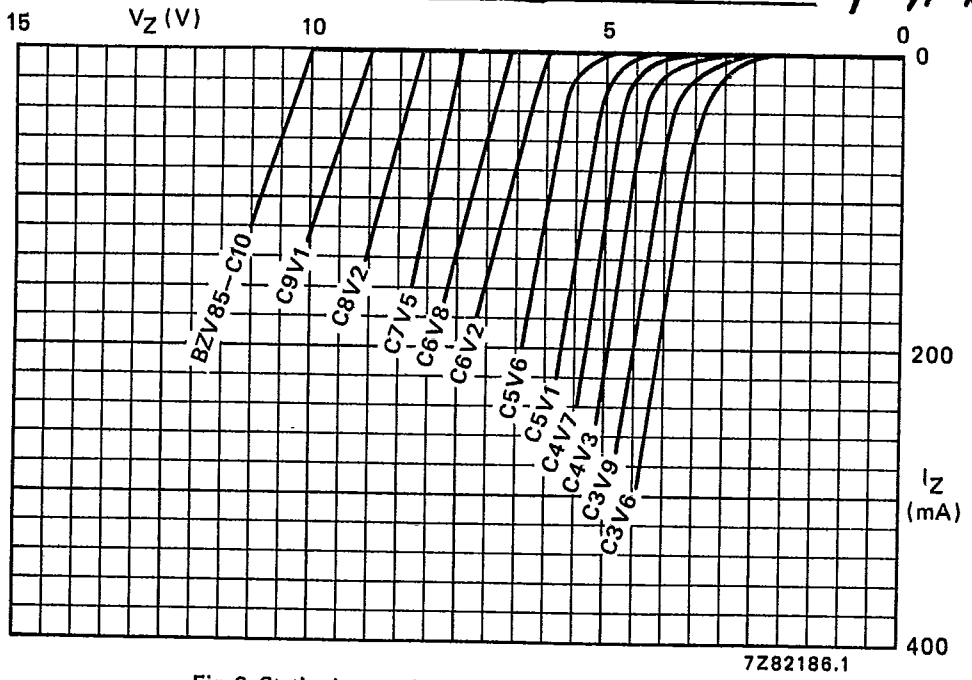


Fig. 6 Static characteristics; typical values; T_{amb} = 25 °C.

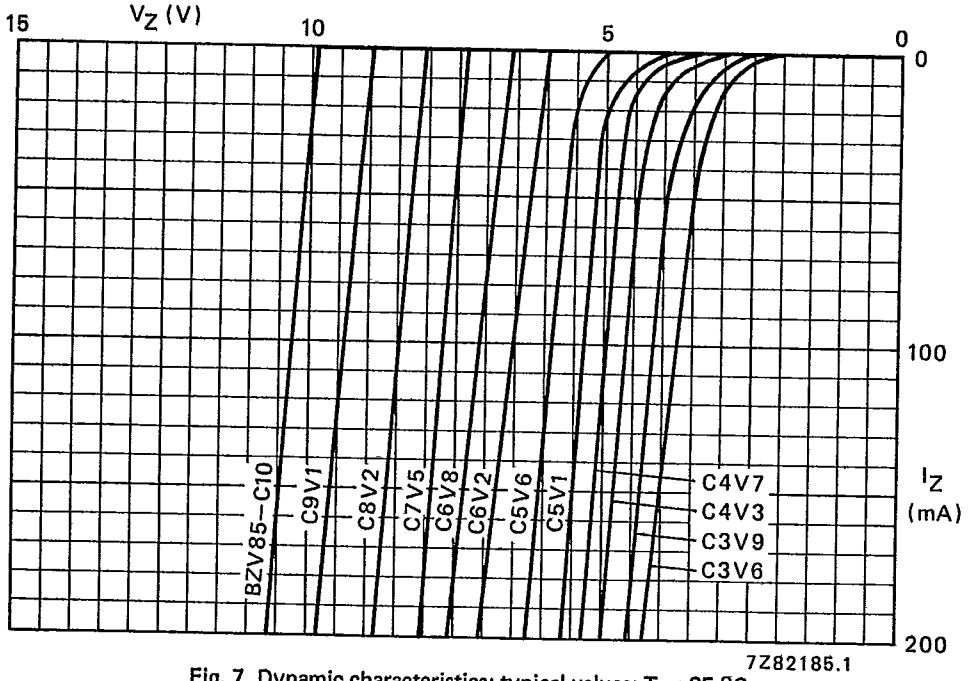


Fig. 7 Dynamic characteristics; typical values; T_j = 25 °C.

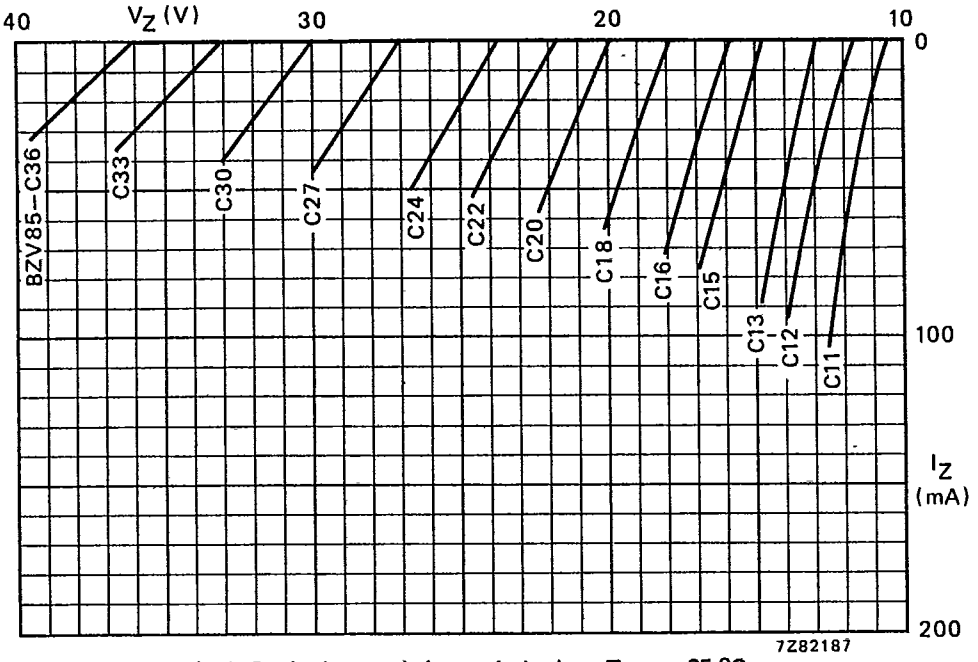


Fig. 8 Static characteristics; typical values; T_{amb} = 25 °C.

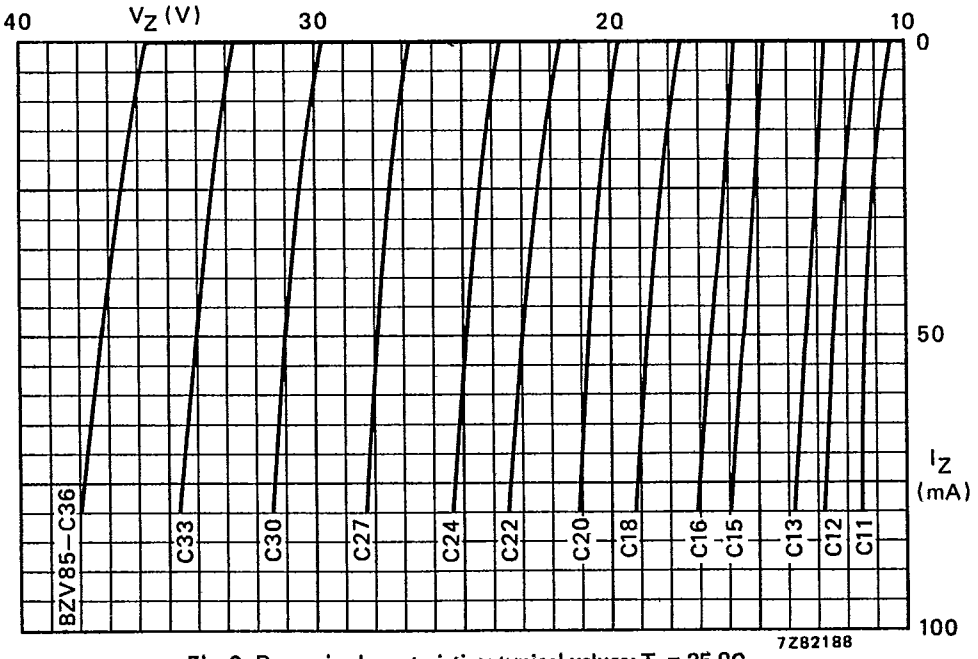


Fig. 9 Dynamic characteristics; typical values; T_j = 25 °C.

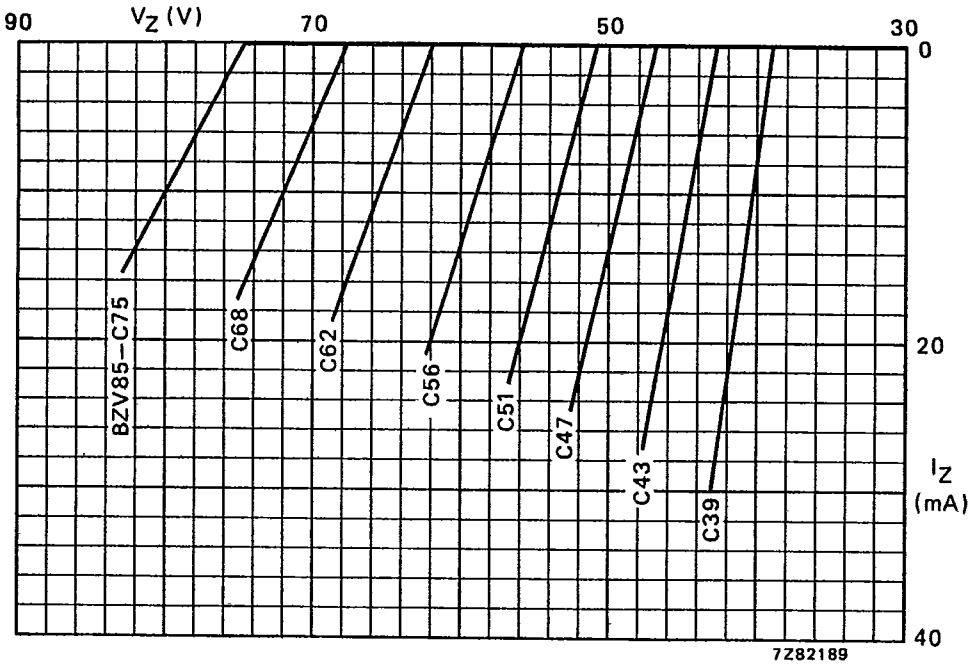


Fig. 10 Static characteristics; typical values; T_{amb} = 25 °C.

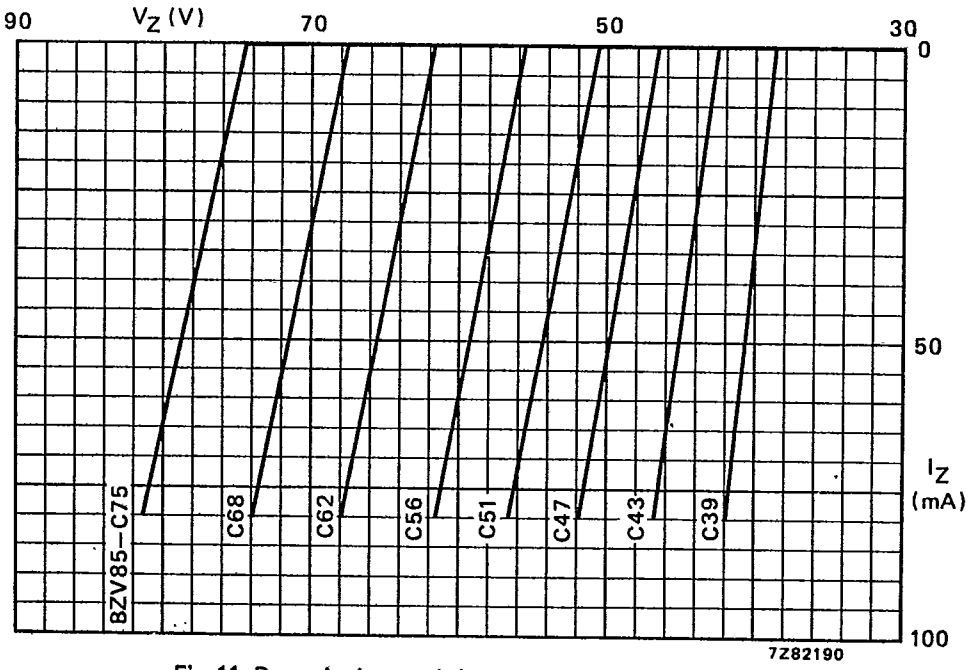


Fig. 11 Dynamic characteristics; typical values; T_j = 25 °C.

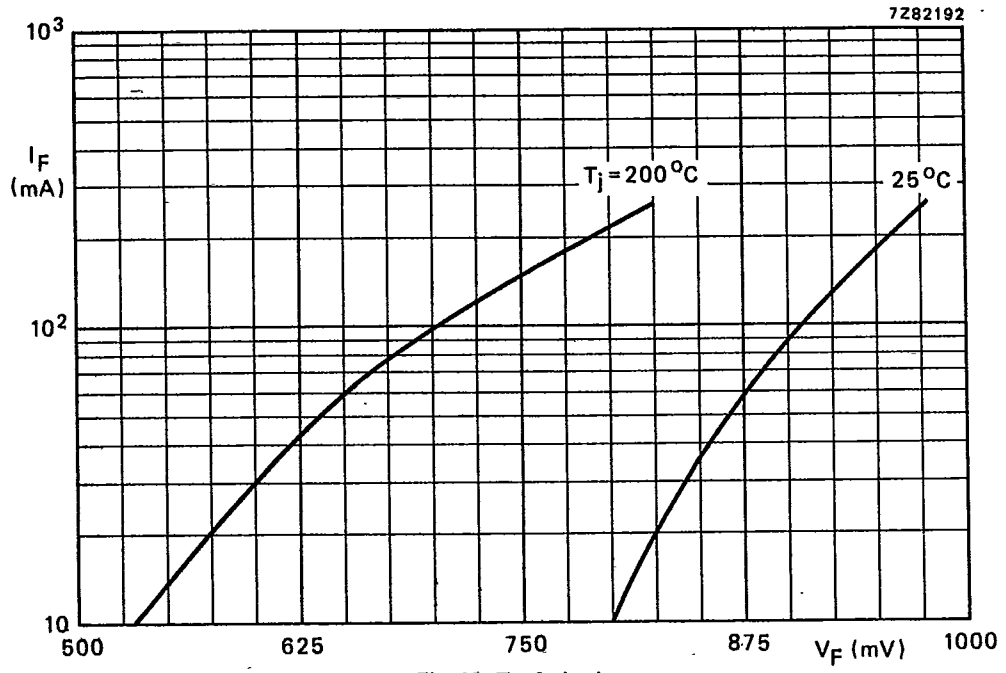


Fig. 12 Typical values.

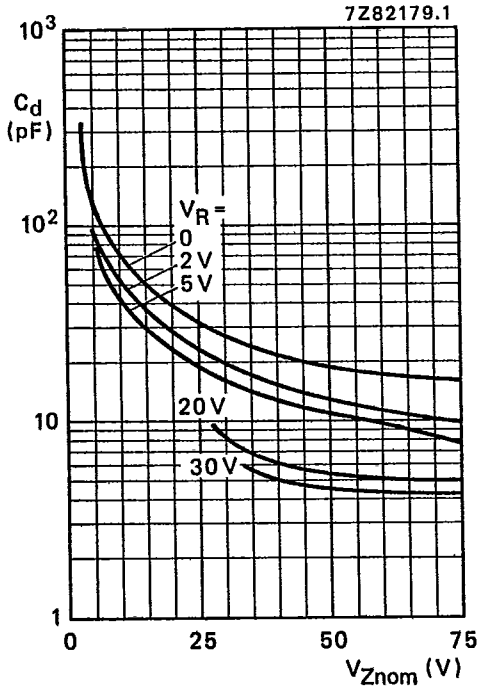


Fig. 13 f = 1 MHz; T_j = 25 °C; typical values.

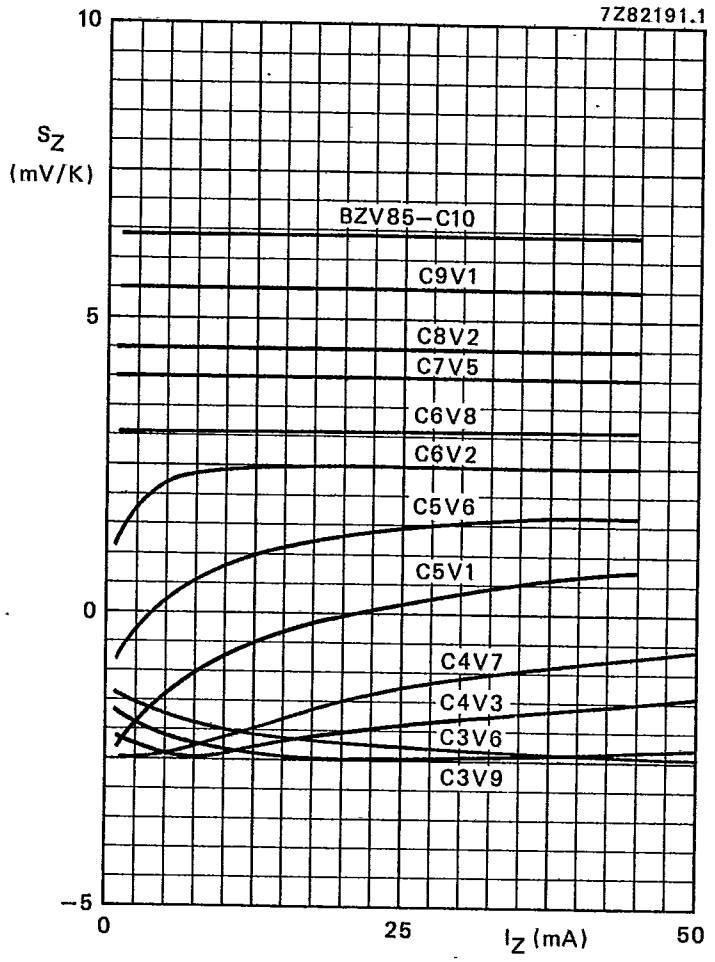


Fig. 14 T_j = 25 °C to 150 °C; typical values.

For types above 7,5 V the temperature coefficient is independent of current and can be read from the CHARACTERISTICS.

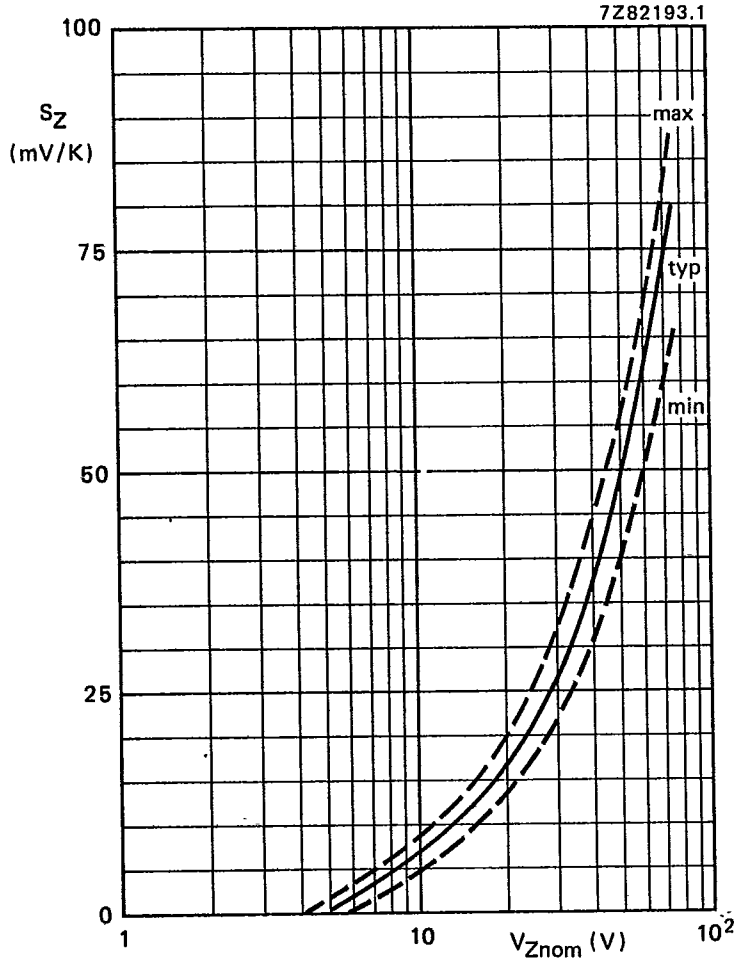


Fig. 15 $I_Z = I_{Ztest}$; T_j = 25 °C to 150 °C.

T-11-13

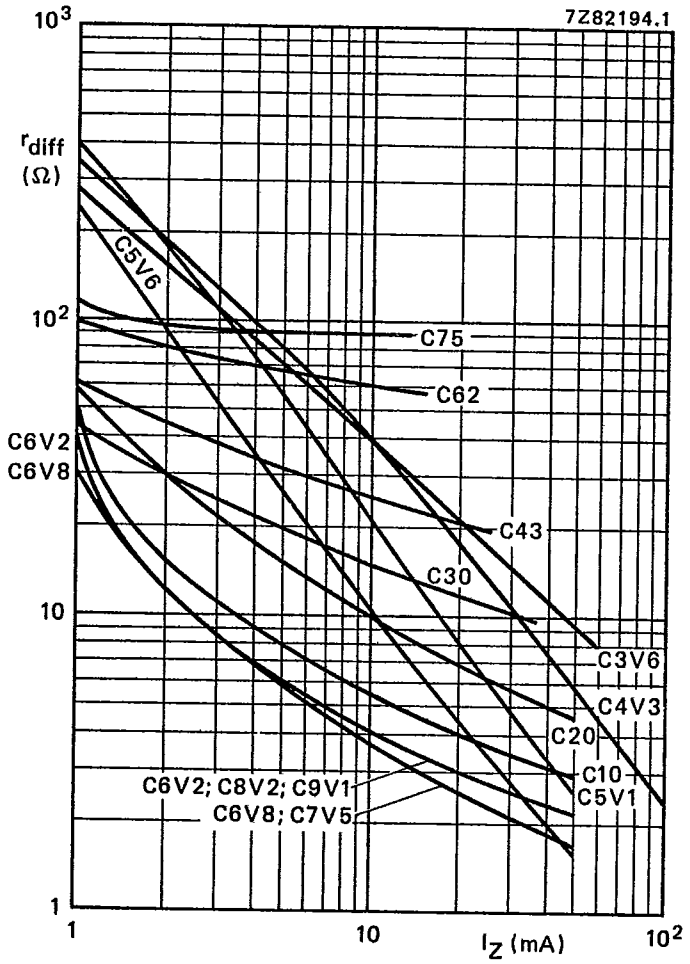


Fig. 16 f = 1 kHz; T_j = 25 °C; typical values.