Silicon Z-diodes

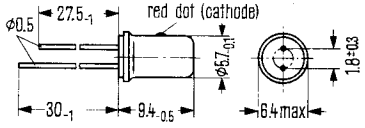
Silicon Z-diodes type BZY 83 and BZY 85 are available with 5% tolerance (C) and 10% tolerance (D). BZY 83 is provided with a metal case 1 A 2 DIN 41871 and may be operated in free air as well as mounted on a chassis with a cooling fin (heat sink). BZY 85 is provided with a glass case 51 A 2 DIN 41880 (DO-7). They are suitable for stabilizing and limiting voltages as well as for generating reference voltages at low power requirements. The cathode lead is marked by a red dot (BZY 83) or a colour ring (BZY 85).

Type	Order number
BZY 83/C4V7	Q60225-Y83-J1
BZY 83/C5V1	Q60225-Y83-J2
BZY 83/C5V6	Q60225-Y93-J3
BZY 83/C6V2	Q60225-Y83-J4
BZY 83/C6V8	Q60225-Y83-J5
BZY 83/C7V5	Q60225-Y83-J6
BZY 83/C8V2	Q60225-Y83-J7
BZY 83/C9V1	Q60225-Y83-J8
BZY 83/C10	Q60225-Y83-J9
BZY 83/C11	Q60225-Y83-J10
BZY 83/C12	Q60225-Y83-J11
BZY 83/C13	Q60225-Y83-J20
BZY 83/C15	Q60225-Y83-J13
BZY 83/C16	Q60225-Y83-J21
BZY 83/C18	Q60225-Y83-J15
BZY 83/C20	Q60225-Y83-J16
BZY 83/C22	Q60225-Y83-J17
BZY 83/C24	Q60225-Y83-J22
BZY 83/D1	Q60225-Y83-K1
BZY 83/D4V7	Q60225-Y83-K2
BZY 83/D5V6	Q60225-Y83-K3
BZY 83/D6V8	Q60225-Y83-K4
BZY 83/D8V2	Q60225-Y83-K5
BZY 83/D10	Q60225-Y83-K6
BZY 83/D12	Q60225-Y83-K7
BZY 83/D15	Q60225-Y83-K8
BZY 83/D18	Q60225-Y83-K9
BZY 83/D22	Q60225-Y83-K10
Heat sink	Q62901-B1

Type	Order number
■ BZY 85/C4V7	Q60225-Y85-J47
■ BZY 85/C5V1	Q60225-Y85-J51
■ BZY 85/C5V6	Q60225-Y85-J56
■ BZY 85/C6V2	Q60225-Y85-J62
■ BZY 85/C6V8	Q60225-Y85-J68
■ BZY 85/C7V5	Q60225-Y85-J75
■ BZY 85/C8V2	Q60225-Y85-J82
■ BZY 85/C9V1	Q60225-Y85-J91
■ BZY 85/C10	Q60225-Y85-J100
■ BZY 85/C11	Q60225-Y85-J110
■ BZY 85/C12	Q60225-Y85-J120
■ BZY 85/C13	Q60225-Y85-J936
■ BZY 85/C15	Q60225-Y85-J150
■ BZY 85/C16	Q60225-Y85-J937
■ BZY 85/C18	Q60225-Y85-J180
■ BZY 85/C20	Q60225-Y85-J200
■ BZY 85/C22	Q60225-Y85-J220
■ BZY 85/C24	Q60225-Y85-J938
■ BZY 85/D1	Q60225-Y85-K10
■ BZY 85/D4V7	Q60225-Y85-K47
■ BZY 85/D5V6	Q60225-Y85-K56
■ BZY 85/D6V8	Q60225-Y85-K68
■ BZY 85/D8V2	Q60225-Y85-K82
■ BZY 85/D10	Q60225-Y85-K100
■ BZY 85/D12	Q60225-Y85-K120
■ BZY 85/D15	Q60225-Y85-K150
■ BZY 85/D18	Q60225-Y85-K180
■ BZY 85/D22	Q60225-Y85-K220

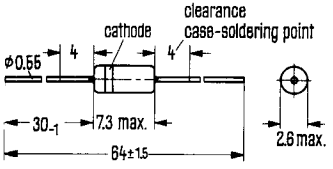
■ Not for new development

BZY 83

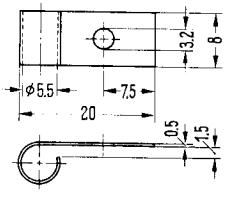


Weight approx. 1 g Dimensions in mm

BZY 85



Weight approx. 0.2 g Dimensions in mm



heat sink

Maximum ratings

		BZY 83	BZY 85	
Forward current	I_F	200	200	mA
Maximum current	i_{FM}	300	300	mA
Junction temperature	T_j	150	150	°C
Ambient temperature	T_{amb}	−55 to +125	−55 to +150	°C
Total power dissipation (T_{amb} = 45 °C)	P_{tot}	300 [1])	–	mW
Total power dissipation (T_{amb} = 25 °C)	P_{tot}	250	400 [2])	mW
Thermal resistance				
between junction and static ambient air	R_{thJamb}	<500	<310 [2])	K/W
between junction and case	$R_{thJcase}$	<250	–	K/W
When mounted on a chassis of sheet aluminium 12 cm² in area with cooling fin (heat sink)	R_{thL}	<350	–	K/W

Static characteristic (T_{amb} = 25 °C)

Forward voltage (I_F = 100 mA)	V_F	0.8 (<1.0)*	0.9 (<1.0)*	V

Current and voltage data see following table

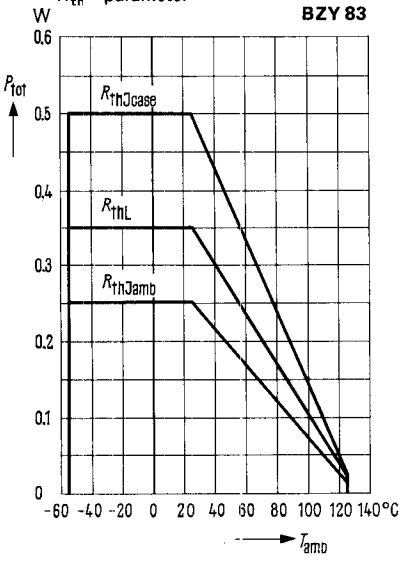
[1]) When mounted on a chassis of sheet aluminium 12 cm² in area with cooling fin (heat sink) R_{thL} = 350 K/W
[2]) clearance case soldering point 4 mm (T_{case} = max. 25 °C)
* AQL = 0.65%

Delivery program BZY 83

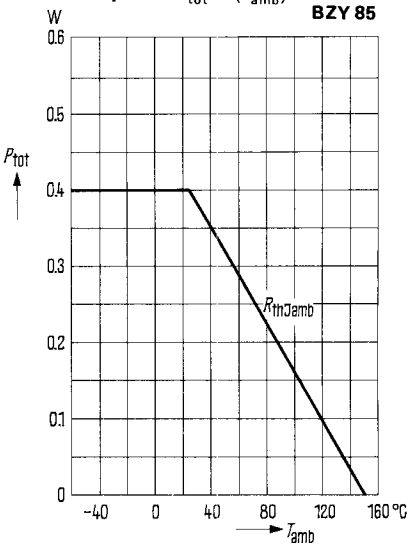
Type	Nominal voltage (V)	I_{ztest} = 5 mA V_Z-range *) (V)	r_{zdyn} *) (Ω)	r_{Zstat} (Ω)	I_R *) at V_R = 1 V (nA)	V_R *) at I_R = 1 μA (V)	I_{Zmax} [1]) T_{amb} = 45 °C (mA)
BZY 83/C4V7	4.7	4.4 to 5.0	66<90	66	<500	>1	52
BZY 83/C5V1	5.1	4.8 to 5.4	48<75	48	<500	>1	48
BZY 83/C5V6	5.6	5.2 to 6.0	20<60	20	<500	>1	43.5
BZY 83/C6V2	6.2	5.8 to 6.6	8<40	11	<500	>1	39.5
BZY 83/C6V8	6.8	6.4 to 7.2	3.5<8	9	<100	>1.5	36
BZY 83/C7V5	7.5	7.0 to 7.9	3.5<6	10	<100	>1.5	33
BZY 83/C8V2	8.2	7.7 to 8.7	4<7	14	<100	>3	30
BZY 83/C9V1	9.1	8.5 to 9.6	5.5<10	18	<100	>3	27
BZY 83/C10	10	9.4 to 10.6	7<15	24	<100	>4.5	24.5
BZY 83/C11	11	10.4 to 11.6	9.5<20	31	<100	>4.5	22
BZY 83/C12	12	11.4 to 12.7	12<30	39	<100	>6.5	20.2
BZY 83/C13	13	12.4 to 14.1	17<30	54	<100	>6.5	18.4
BZY 83/C15	15	13.8 to 15.6	24<55	70	<100	>9.5	16.8
BZY 83/C16	16	15.3 to 17.1	34<75	92	<100	>9.5	15.3
BZY 83/C18	18	16.8 to 19.1	47<110	120	<100	>9.5	13.6
BZY 83/C20	20	18.8 to 21.2	70<150	160	<100	>9.5	12.3
BZY 83/C22	22	20.8 to 23.3	95<170	205	<100	>11.5	11.3
BZY 83/C24	24	22.8 to 25.6	120<200	250	<100	>11.5	10.2
BZY 83/D1 [2])	0.7	0.62 to 0.78	8	–	–	>1	200
BZY 83/D4V7	4.7	4.1 to 5.2	66<90	66	<500	>1	49
BZY 83/D5V6	5.6	5.0 to 6.3	20<75	20	<500	>1	41
BZY 83/D6V8	6.8	6.0 to 7.5	3.5<15	9	<100	>1.5	35
BZY 83/D8V2	8.2	7.3 to 9.2	4<10	14	<100	>3	28.2
BZY 83/D10	10	8.8 to 11.0	7<15	24	<100	>4.5	23.5
BZY 83/D12	12	10.7 to 13.4	12<30	39	<100	>6.5	19
BZY 83/D15	15	13 to 16.5	24<55	70	<100	>9.5	15.6
BZY 83/D18	18	16 to 20	47<100	120	<100	>9.5	13
BZY 83/D22	22	19.6 to 24.4	95<200	205	<100	–	10.6

[1]) When mounted on a chassis of sheet aluminium 12 cm² in area with cooling fin (heat sink)
[2]) The BZY 83 D1 is a diode with very small tolerances to be used in forward direction. The cathode is marked by a red dot and has to be connected with the minus pole of the voltage supply
* AQL = 0.65%

Total permissible power dissipation $P_{tot} = f(T_{amb})$
R_{th} = parameter

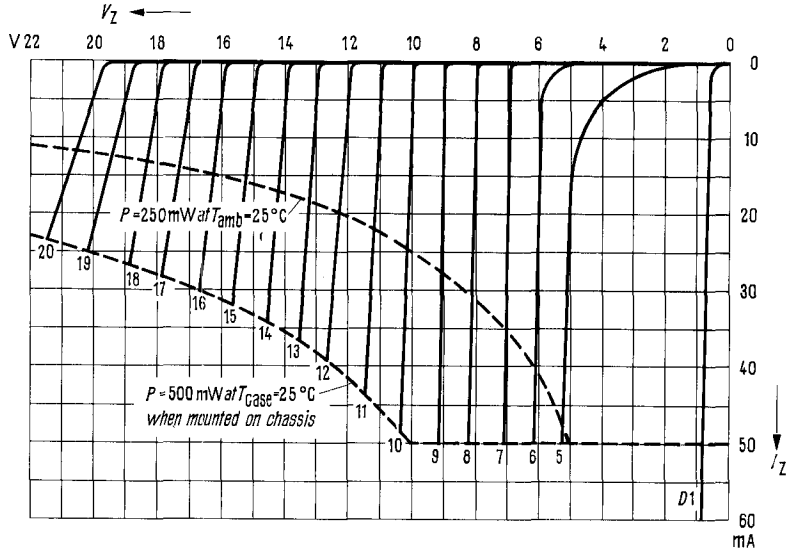


Total permissible power dissipation $P_{tot} = f(T_{amb})$



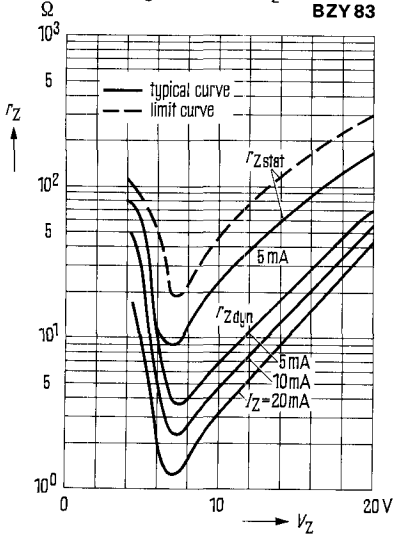
Characteristics within the Z-range (mean values) $V_Z = f(I_Z)$; ($T_{amb} = 25$ °C)

BZY 83



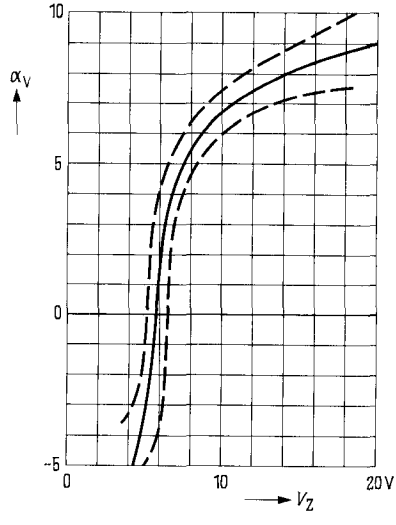
Static and dynamic Z-resistance $r_Z = f(V_Z)$
$T_{amb} = 25$ °C; measured at $f = 50$ Hz
measuring current $0.1 \cdot I_Z$

BZY 83

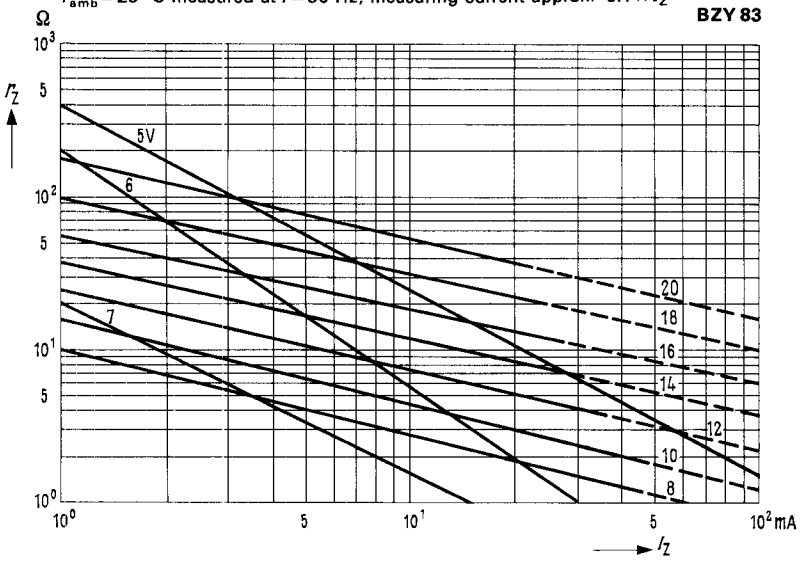


Relative temperature coefficient of the Z-voltage $\alpha_V = f(V_Z)$

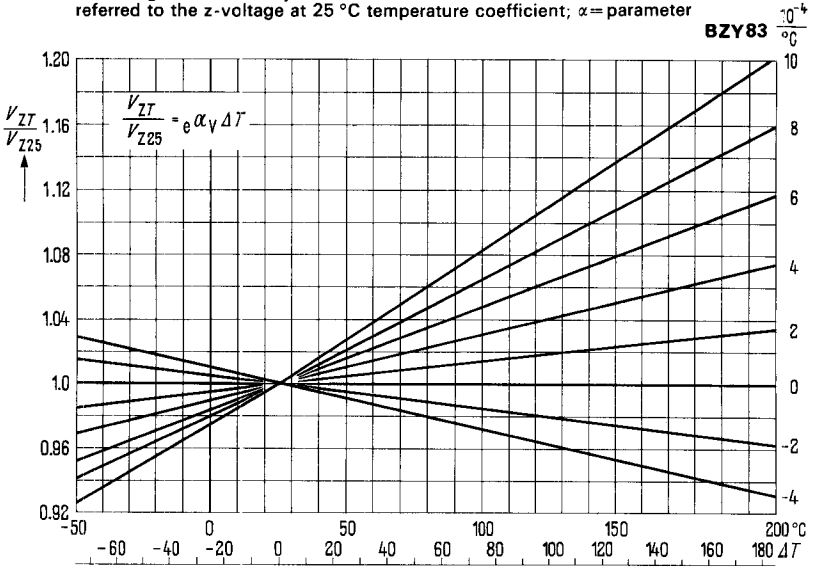
BZY 83



Typical Z-resistance $r_z = f(I_z)$ V_z = parameter
T_{amb} = 25 °C measured at f = 50 Hz; measuring current approx. 0.1 × I_z

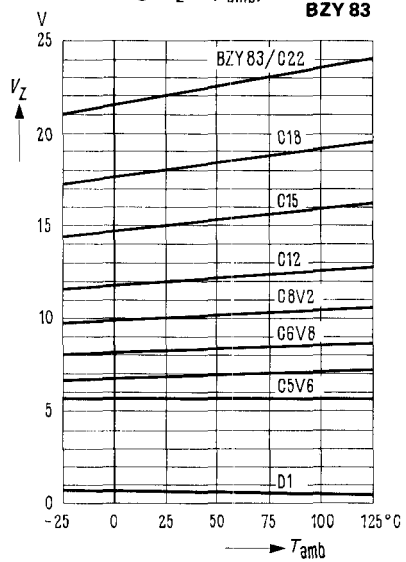


Z-voltage versus temperature
referred to the z-voltage at 25 °C temperature coefficient; α = parameter



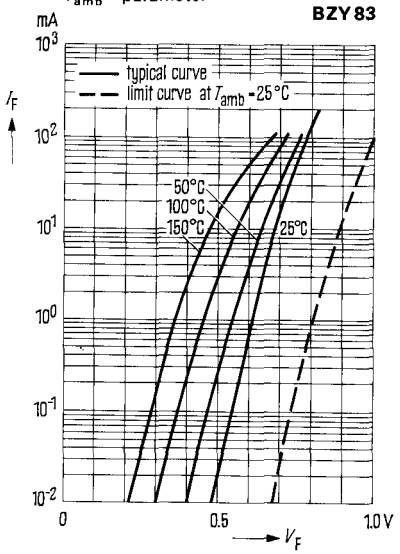
Z-Voltage $V_Z = f(T_{amb})$

BZY 83



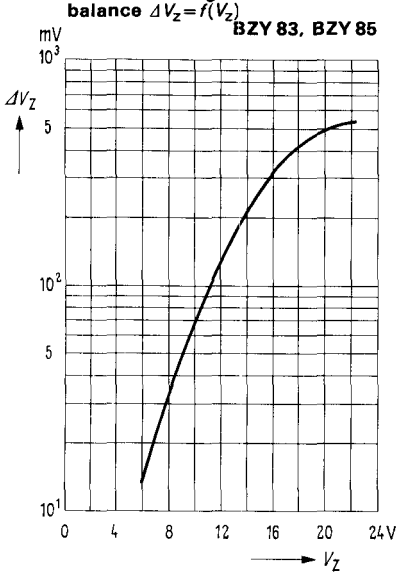
Forward characteristics $I_F = f(V_F)$
T_{amb} = parameter

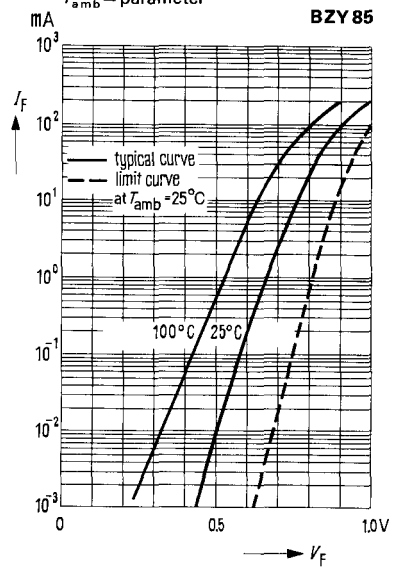
BZY 83



Alteration of the Z-voltage from the switching moment to the reaching of the thermal balance $\Delta V_Z = f(V_Z)$

BZY 83, BZY 85



Forward characteristics $I_F = f(V_F)$
T_{amb} = parameter

BZY 85