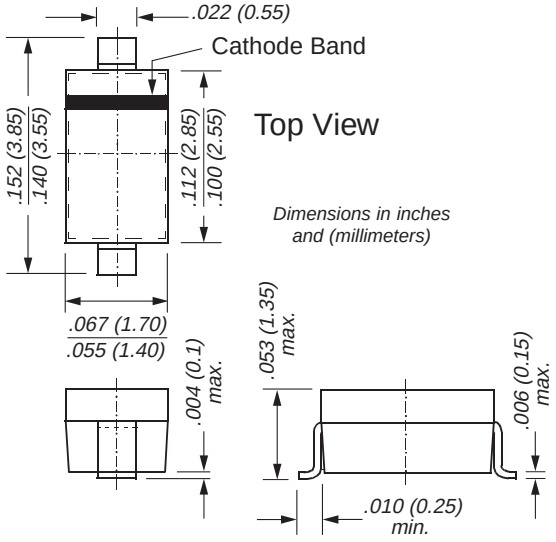
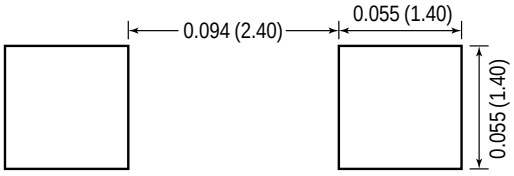
Zener Diodes

VZ Range 2.4 to 75
Power Dissipation 410mW

SOD-123



Mounting Pad Layout



Features

- Silicon Planar Power Zener Diodes
- The Zener voltages are graded according to the international E 24 standard. Standard Zener voltage tolerance is ±5%. Replace suffix “C” with “B” for ±2% tolerance. Other tolerances and other Zener voltages are available upon request.
- These diodes are also available in other case styles and other configurations including: the SOT-23 case with type designation BZX84 series, the dual zener diode common anode configuration in the SOT-23 case with type designation AZ23 series and the dual zener diode common cathode configuration in the SOT-23 case with type designation DZ23 series.

Mechanical Data

Case: SOD-123 Plastic Case

Weight: approx. 0.01g

Packaging Codes/Options:

D3 / 10K per 13” reel (8mm tape)
D4 / 3K per 7” reel (8mm tape)

Maximum Ratings and Thermal Characteristics (T_A = 25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Zener Current (see Table “Characteristics”)			
Power Dissipation at Tamb = 25°C	P_{tot}	410(1)	mW
Thermal Resistance Junction to Ambient Air	$R_{\Theta JA}$	300(2)	°C/W
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_S	–65 to +150	°C

Notes:
(1) Diode on Ceramic Substrate 0.7mm; 2.5mm^2 area
(2) Valid provided that electrodes are kept at ambient temperature

Electrical Characteristics (T_A = 25°C unless otherwise noted)

y = C for ± 5% y = B for ± 2% Type	Marking Code	Dynamic Resistance at I_Z = 5mA f = 1 kHz r_{zj} (Ω)	Dynamic Resistance at I_Z = 1mA f = 1kHz r_{zj} (Ω)	Temp. Coeff. of Zener Voltage at I_Z = 5mA α_{VZ} (10^{-4}/°C)	Reverse Voltage at I_R = 100nA V_R (V)	Admissible Zener current[4] at T_{amb} = 45°C I_Z (mA)	Admissible Zener current[4] at T_{amb} = 25°C I_Z (mA)
BZT52-y2V4	W1	85	600	– 9 … – 4	–	–	–
BZT52-y2V7	W2	75 (< 83)	< 500	– 9 … – 4	–	113	134
BZT52-y3	W3	80 (< 95)	< 500	– 9 … – 3	–	98	118
BZT52-y3V3	W4	80 (< 95)	< 500	– 8 … – 3	–	92	109W5
BZT52-y3V6	W5	80 (< 95)	< 500	– 8 … – 3	–	85	100
BZT52-y3V9	W6	80 (< 95)	< 500	– 7 … – 3	–	77	92
BZT52-y4V3	W7	80 (< 95)	< 500	– 6 … – 1	–	71	84
BZT52-y4V7	W8	70 (< 78)	< 500	– 5 … +2	–	64	76
BZT52-y5V1	W9	30 (< 60)	< 480	– 3 … +4	> 0.8	56	67
BZT52-y5V6	WA	10 (< 40)	< 400	– 2 … +6	> 1	50	59
BZT52-y6V2	WB	4.8 (< 10)	< 200	– 1 … +7	> 2	45	54
BZT52-y6V8	WC	4.5 (< 8)	< 150	+2 … +7	> 3	41	49
BZT52-y7V5	WD	4 (< 7)	< 50	+3 … +7	> 5	37	44
BZT52-y8V2	WE	4.5 (< 7)	< 50	+4 … +7	> 6	34	40
BZT52-y9V1	WF	4.8 (< 10)	< 50	+5 … +8	> 7	30	36
BZT52-y10	WG	5.2 (< 15)	< 70	+5 … +8	> 7.5	28	33
BZT52-y11	WH	6 (< 20)	< 70	+5 … +9	> 8.5	25	30
BZT52-y12	WI	7 (< 20)	< 90	+6 … +9	> 9	23	28
BZT52-y13	WK	9 (< 25)	< 110	+7 … +9	> 10	21	25
BZT52-y15	WL	11 (< 30)	< 110	+7 … +9	> 11	19	23
BZT52-y16	WM	13 (< 40)	< 170	+8 … +9.5	> 12	17	20
BZT52-y18	WN	18 (< 50)	< 170	+8 … +9.5	> 14	15	18
BZT52-y20	WO	20 (< 50)	< 220	+8 … +10	> 15	14	17
BZT52-y22	WP	25 (< 55)	< 220	+8 … +10	> 17	13	16
BZT52-y24	WR	28 (< 80)	< 220	+8 … +10	> 18	11	13
BZT52-y27	WS	30 (< 80)	< 250	+8 … +10	> 20	10	12
BZT52-y30	WT	35 (< 80)	< 250	+8 … +10	> 22.5	9	10
BZT52-y33	WU	40 (< 80)	< 250	+8 … +10	> 25	8	9
BZT52-y36	WW	40 (< 90)	< 250	+8 … +10	> 27	8	9
BZT52-y39	WX	50 (< 90)	< 300	+10 … +12	> 29	7	8
BZT52-y43	WY	60 (< 100)	< 700	+10 … +12	> 32	6	7
BZT52-y47	WZ	70 (< 100)	< 750	+10 … +12	> 35	5	6
BZT52-y51	X1	70 (< 100)	< 750	+10 … +12	> 38	5	6
BZT52-y56	X2	< 135[2]	< 1000[3]	typ. +10[2]	–	–	–
BZT52-y62	X3	< 150[2]	< 1000[3]	typ. +10[2]	–	–	–
BZT52-y68	X4	< 200[2]	< 1000[3]	typ. +10[2]	–	–	–
BZT52-y75	X5	< 250[2]	< 1500[3]	typ. +10[2]	–	–	–

Notes: (1) Tested with pulses t_p = 5 ms
(2) at I_Z = 2.5 mA
(3) at I_Z = 0.5 mA
(4) Valid provided that electrodes are kept at ambient temperature

Electrical Characteristics (T_A = 25°C unless otherwise noted)

Type ± 5% Tol.	Zener Voltage range(1) at I_{ZT1} V_Z (V) min.	max.	Test Current I_{ZT1} (mA)
BZT52-C2V4	2.20	2.60	5
BZT52-C2V7	2.50	2.90	5
BZT52-C3	2.80	3.20	5
BZT52-C3V3	3.10	3.50	5
BZT52-C3V6	3.40	3.80	5
BZT52-C3V9	3.70	4.10	5
BZT52-C4V3	4.00	4.60	5
BZT52-C4V7	4.40	5.00	5
BZT52-C5V1	4.80	5.40	5
BZT52-C5V6	5.20	6.00	5
BZT52-C6V2	5.80	6.60	5
BZT52-C6V8	6.40	7.20	5
BZT52-C7V5	7.00	7.90	5
BZT52-C8V2	7.70	8.70	5
BZT52-C9V1	8.50	9.60	5
BZT52-C10	9.4	10.6	5
BZT52-C11	10.4	11.6	5
BZT52-C12	11.4	12.7	5
BZT52-C13	12.4	14.1	5
BZT52-C15	13.8	15.6	5
BZT52-C16	15.3	17.1	5
BZT52-C18	16.8	19.1	5
BZT52-C20	18.8	21.2	5
BZT52-C22	20.8	23.3	5
BZT52-C24	22.8	25.6	5
BZT52-C27	25.1	28.9	5
BZT52-C30	28.0	32.0	5
BZT52-C33	31.0	35.0	5
BZT52-C36	34.0	38.0	5
BZT52-C39	37.0	41.0	5
BZT52-C43	40.0	46.0	5
BZT52-C47	44.0	50.0	5
BZT52-C51	48.0	54.0	5
BZT52-C56	52.0	60.0	2.5
BZT52-C62	58.0	66.0	2.5
BZT52-C68	64.0	72.0	2.5
BZT52-C75	70.0	79.0	2.5

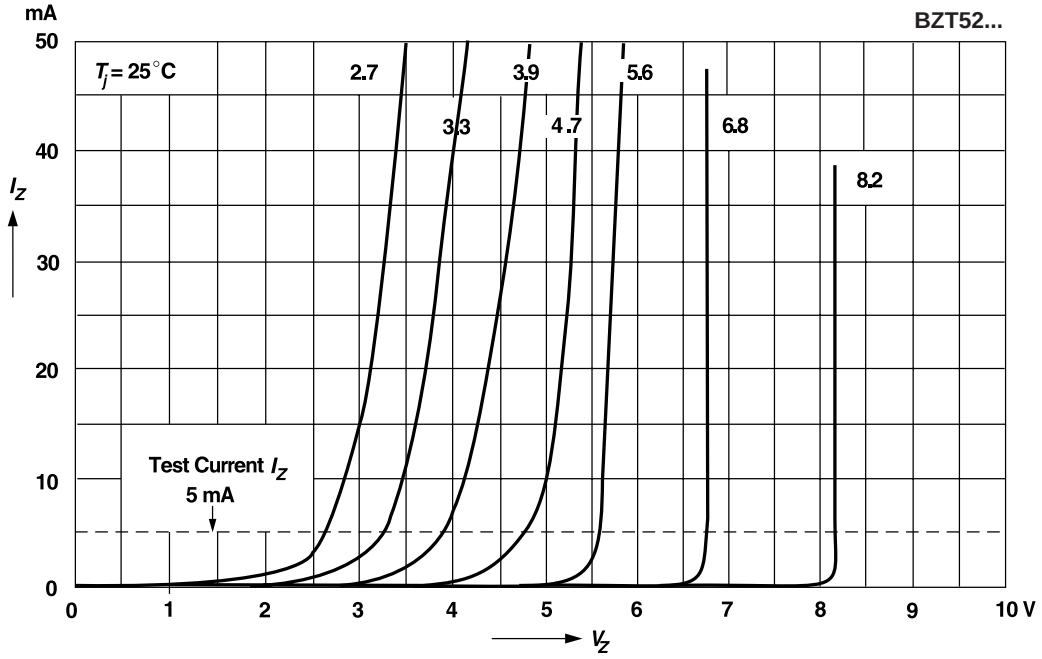
Type ± 2% Tol.	Zener Voltage range(1) at I_{ZT1} V_Z (V) min.	max.	Test Current I_{ZT1} (mA)
BZT52-B2V4	2.35	2.45	5
BZT52-B2V7	2.65	2.75	5
BZT52-B3	2.94	3.06	5
BZT52-B3V3	3.23	3.37	5
BZT52-B3V6	3.53	3.67	5
BZT52-B3V9	3.82	3.98	5
BZT52-B4V3	4.21	4.39	5
BZT52-B4V7	4.61	4.79	5
BZT52-B5V1	5.00	5.20	5
BZT52-B5V6	5.49	5.71	5
BZT52-B6V2	6.08	6.32	5
BZT52-B6V8	6.66	6.94	5
BZT52-B7V5	7.35	7.65	5
BZT52-B8V2	8.04	8.36	5
BZT52-B9V1	8.92	9.28	5
BZT52-B10	9.80	10.2	5
BZT52-B11	10.8	11.2	5
BZT52-B12	11.8	12.2	5
BZT52-B13	12.7	13.3	5
BZT52-B15	14.7	15.3	5
BZT52-B16	15.7	16.3	5
BZT52-B18	17.6	18.4	5
BZT52-B20	19.6	20.4	5
BZT52-B22	21.6	22.4	5
BZT52-B24	23.5	24.5	5
BZT52-B27	26.5	27.5	5
BZT52-B30	29.4	30.6	5
BZT52-B33	32.3	33.7	5
BZT52-B36	35.3	36.7	5
BZT52-B39	38.2	39.8	5
BZT52-B43	42.1	43.9	5
BZT52-B47	46.1	47.9	5
BZT52-B51	50.0	52.0	5
BZT52-B56	54.9	57.1	2.5
BZT52-B62	60.8	63.2	2.5
BZT52-B68	66.6	69.4	2.5
BZT52-B75	73.5	76.5	2.5

Notes: (1) Measured with pulses t_p = 5 ms

Ratings and Characteristic Curves (TA = 25°C unless otherwise noted)

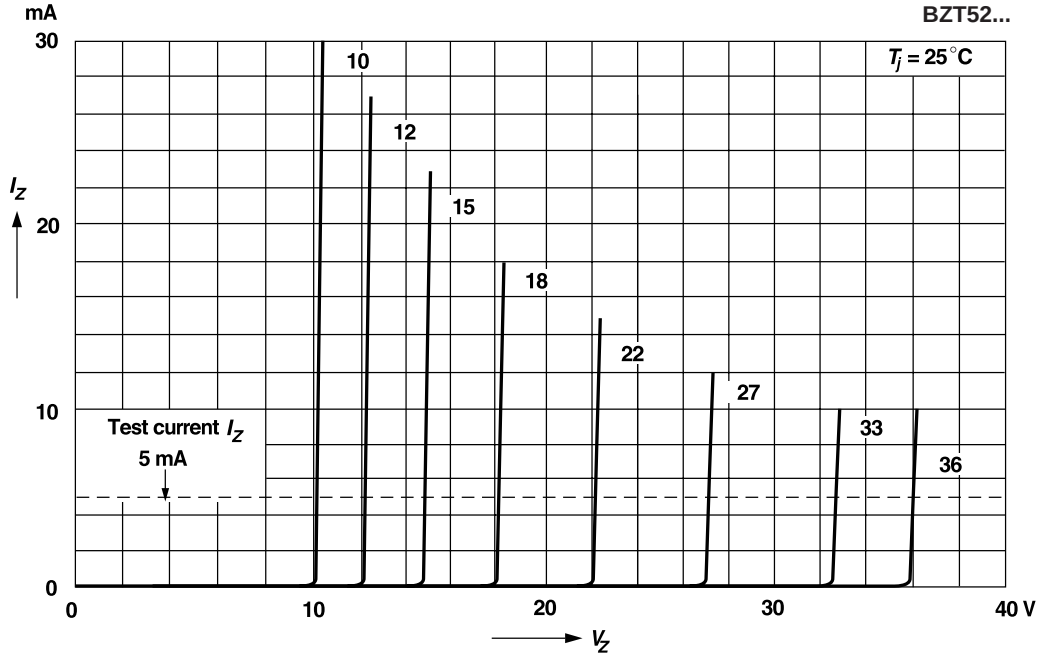
Breakdown characteristics

T_j = constant (pulsed)



Breakdown characteristics

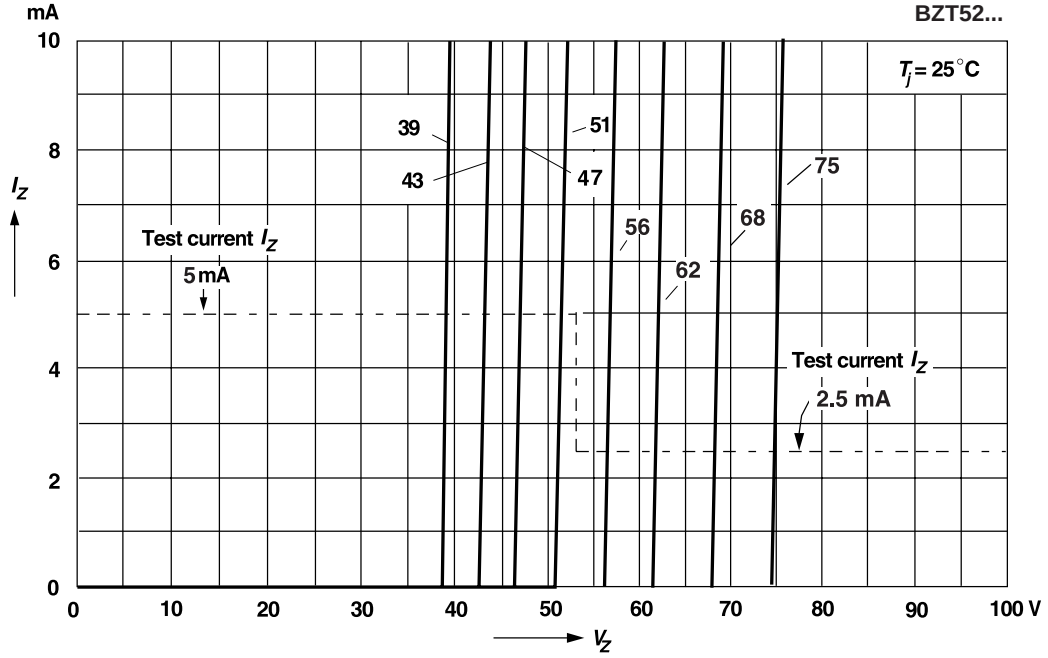
T_j = constant (pulsed)



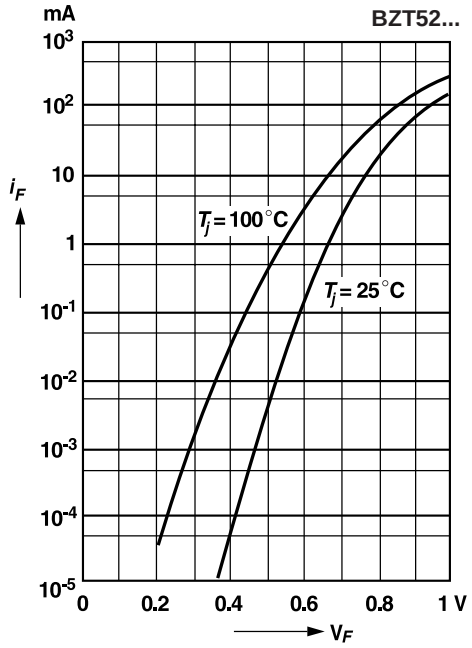
Ratings and Characteristic Curves (TA = 25°C unless otherwise noted)

Breakdown characteristics

T_j = constant (pulsed)

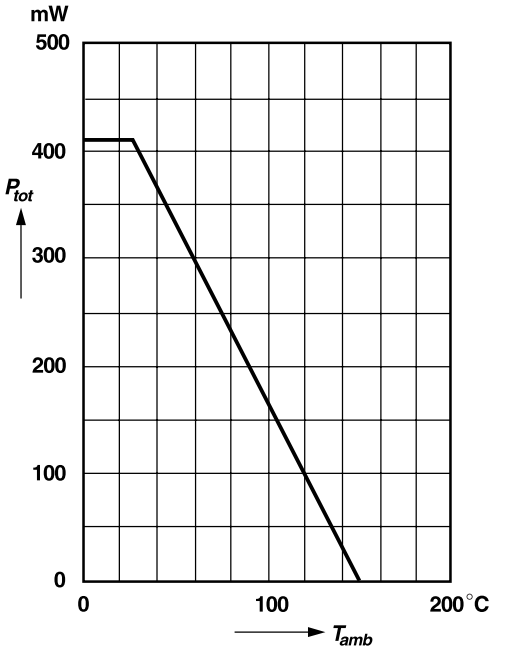


Forward characteristics



Admissible power dissipation versus ambient temperature

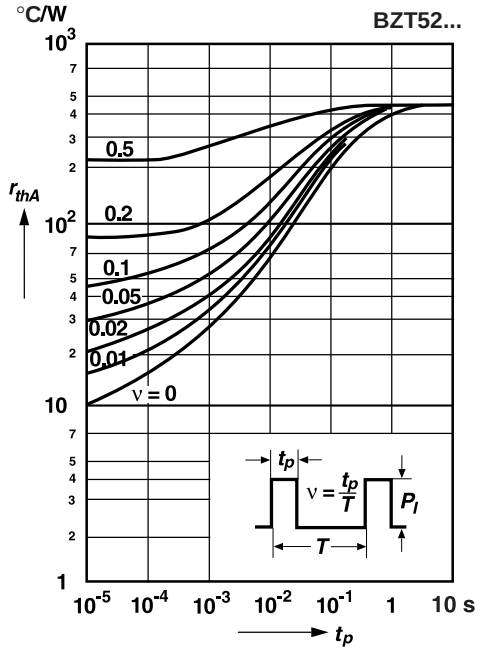
For conditions, see footnote in table "Absolute Maximum Ratings"



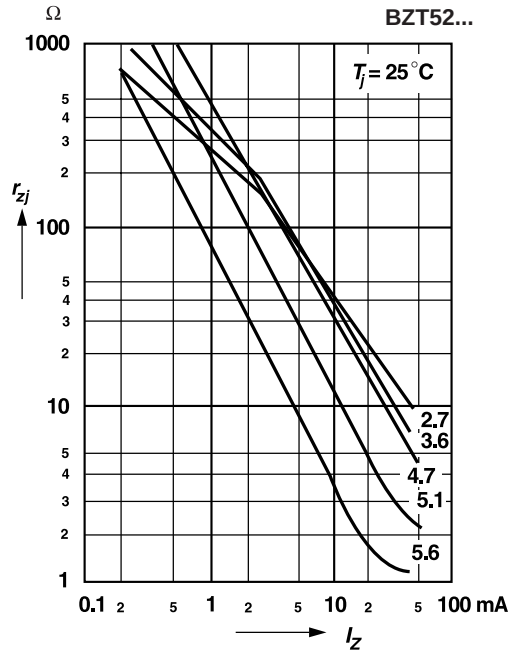
Ratings and Characteristic Curves (TA = 25°C unless otherwise noted)

Pulse thermal resistance versus pulse duration

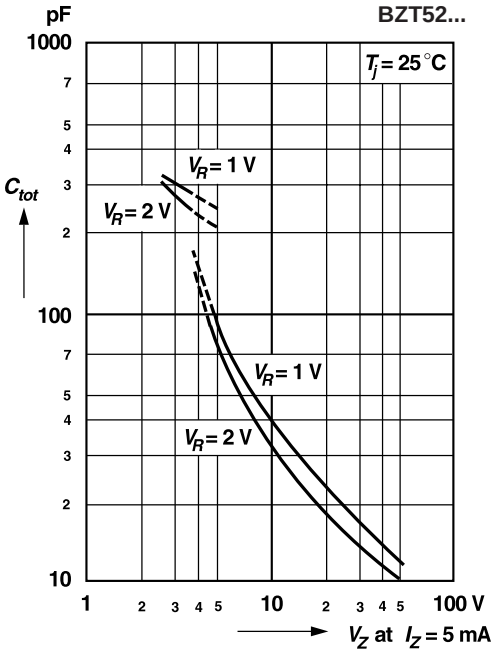
For conditions, see footnote in table "Absolute Maximum Ratings"



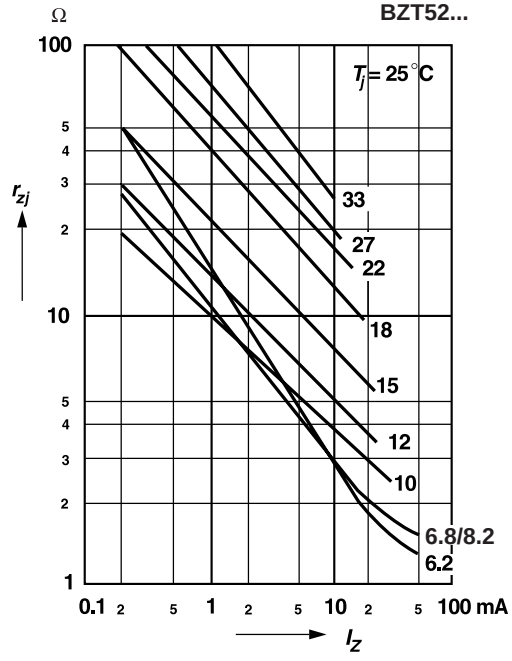
Dynamic resistance versus Zener current



Capacitance versus Zener voltage

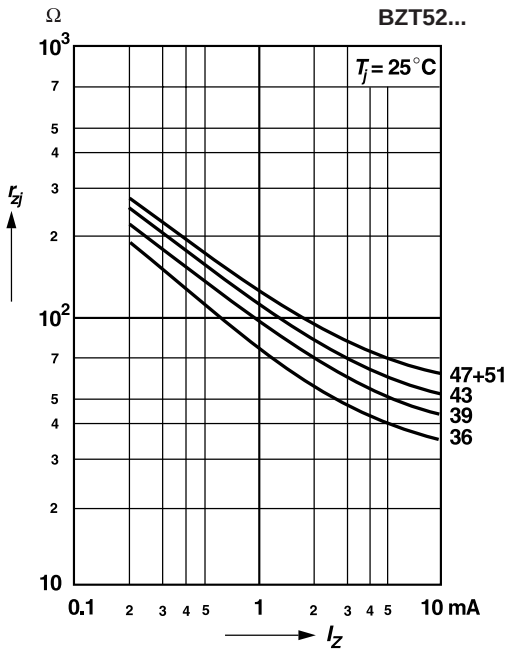


Dynamic resistance versus Zener current



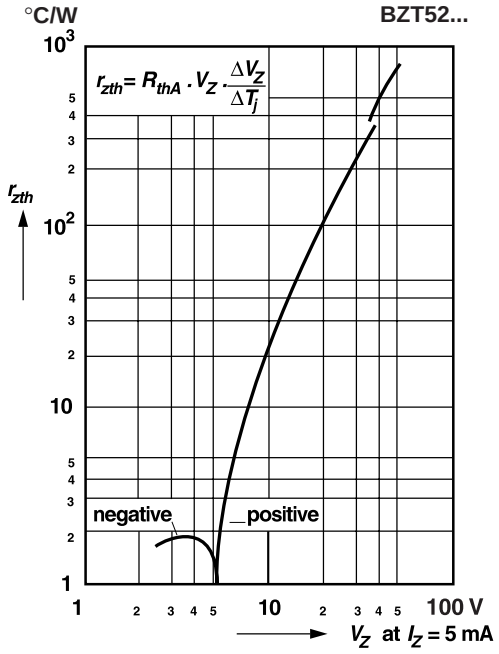
Ratings and Characteristic Curves (T_A = 25°C unless otherwise noted)

Dynamic resistance versus Zener current

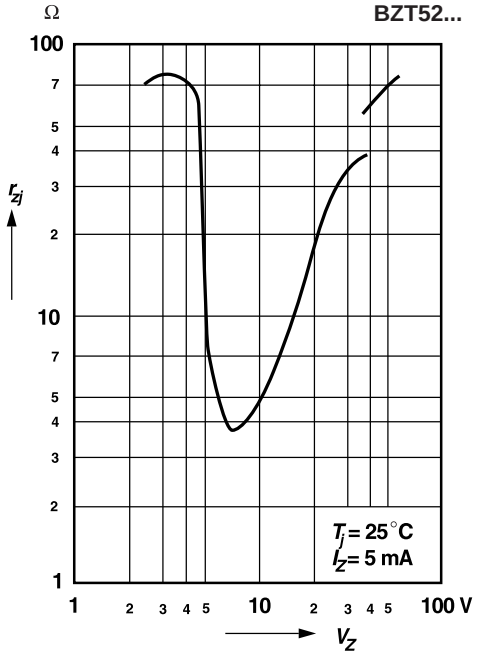


Thermal differential resistance versus Zener voltage

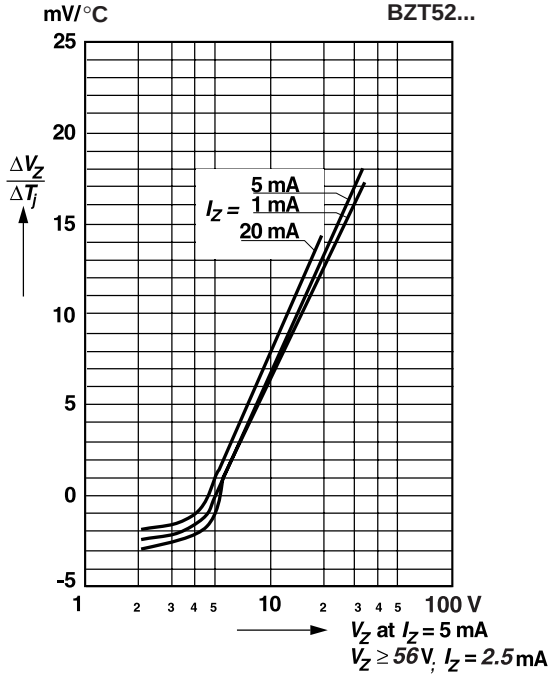
For conditions, see footnote in table "Absolute Maximum Ratings"



Dynamic resistance versus Zener voltage

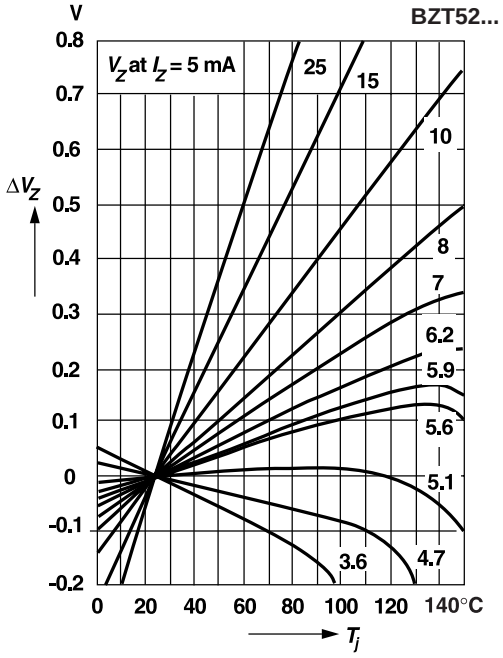


Temperature dependence of Zener voltage versus Zener voltage

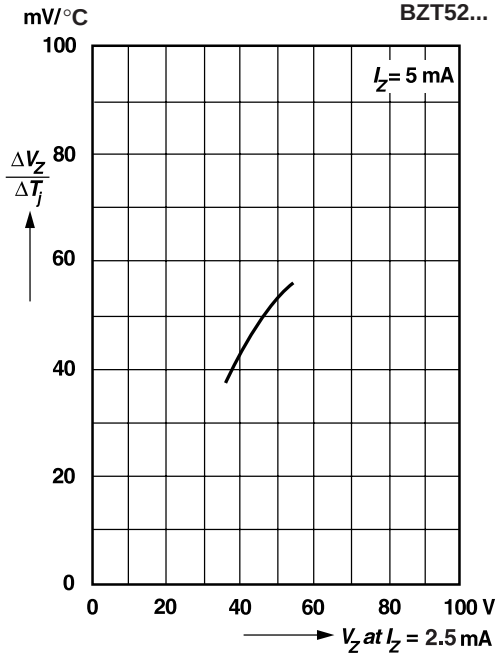


Ratings and Characteristic Curves (TA = 25°C unless otherwise noted)

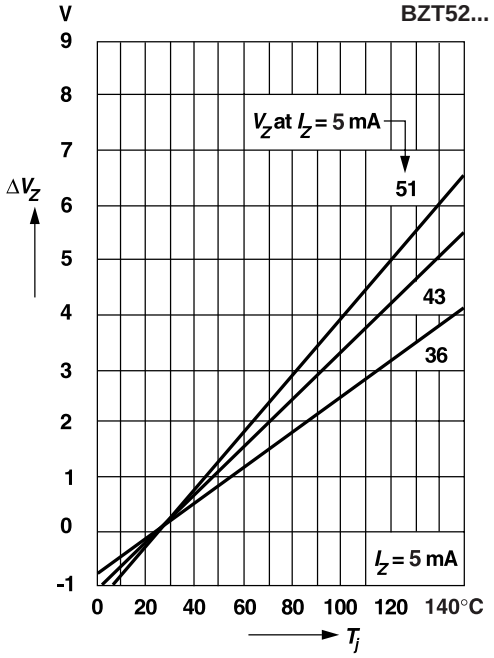
Change of Zener voltage versus junction temperature



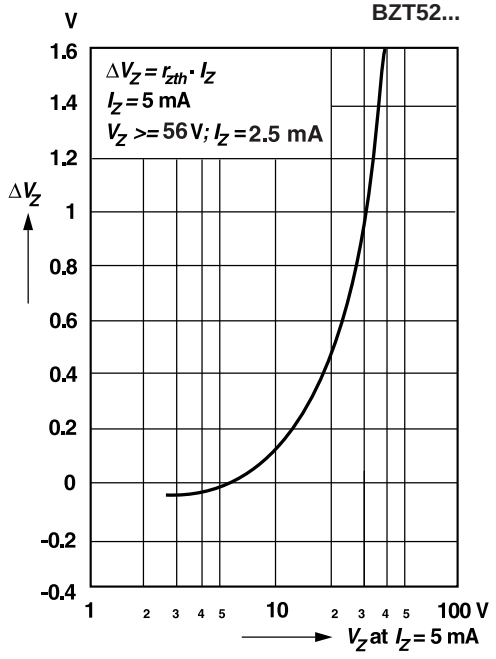
Temperature dependence of Zener voltage versus Zener voltage



Change of Zener voltage versus junction temperature



Change of Zener voltage from turn-on up to the point of thermal equilibrium versus Zener voltage



Ratings and Characteristic Curves (TA = 25°C unless otherwise noted)

Change of Zener voltage from turn-on up to the point of thermal equilibrium versus Zener voltage