

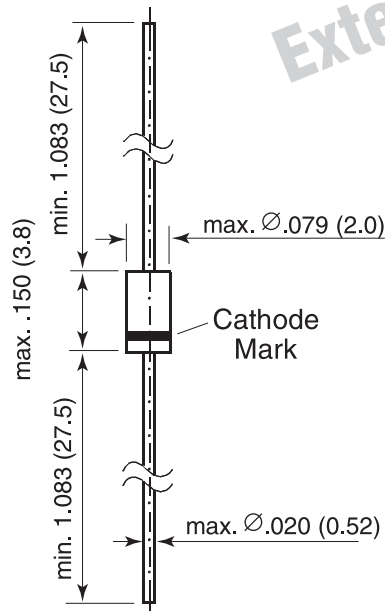
## Zener Diodes

**Vz Range** 0.8, 2.4 to 100V  
**Power Dissipation** 500mW



DO-204AH (DO-35 Glass)

Extended Voltage Range



Dimensions in inches and (millimeters)

### Features

- Silicon Planar Power Zener Diodes.
- The Zener voltages are graded according to the international E 24 standard. Standard Zener voltage tolerance is  $\pm 5\%$ . Replace suffix "C" with "B" for  $\pm 2\%$  tolerance. Other voltage tolerances and other Zener voltages are available upon request.

### Mechanical Data

**Case:** DO-35 Glass Case

**Weight:** approx. 0.13g

**Packaging Codes/Options:**

D7/10K per 13" reel (52mm tape), 20K/box

D8/10K per Ammo tape (52mm tape), 20K/box

## Maximum Ratings and Thermal Characteristics ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Zener Current (see Table "Characteristics")			
Power Dissipation at $T_{\text{amb}} = 25^\circ\text{C}$	$P_{\text{tot}}$	500 <sup>(1)</sup>	mW
Thermal Resistance Junction to Ambient Air	$R_{\theta\text{JA}}$	300 <sup>(1)</sup>	$^\circ\text{C}/\text{W}$
Junction Temperature	$T_j$	175	$^\circ\text{C}$
Storage Temperature Range	$T_s$	-55 to +175	$^\circ\text{C}$

**Note:** (1) Valid provided that leads at a distance of 3/8" from case are kept at ambient temperature.

## Electrical Characteristics (T<sub>A</sub> = 25°C unless otherwise noted) Maximum V<sub>F</sub> = 1.0 V at I<sub>F</sub> = 100 mA

Type y = C for 5% y = B for 2%	Dynamic resistance		Temp. coefficient of Zener Voltage at I <sub>Z</sub> = 5 mA α <sub>VZ</sub> (%/°C)		Reverse leakage current			Admissible Zener current <sup>(2)</sup> I <sub>ZM</sub> (mA)
	at I <sub>Z</sub> = 5 mA f = 1 kHz r <sub>ZJ</sub> (Ω)	at I <sub>Z</sub> = 1mA f = 1 kHz r <sub>ZJ</sub> (Ω)	min	max	at T <sub>amb</sub> = 25°C I <sub>R</sub> (nA)	at T <sub>amb</sub> = 150°C I <sub>R</sub> (μA)	at V <sub>R</sub> (V)	
BZX55 – y0V8 <sup>(3)</sup>	< 8	< 600	– 0.25	–	–	–	–	–
BZX55 – y2V4	< 85	< 600	– 0.08	– 0.06	< 50000	< 100	1	145
BZX55 – y2V7	< 85	< 600	– 0.08	– 0.06	< 10000	< 50	1	135
BZX55 – y3V0	< 85	< 600	– 0.08	– 0.06	< 4000	< 40	1	125
BZX55 – y3V3	< 85	< 600	– 0.08	– 0.05	< 2000	< 40	1	115
BZX55 – y3V6	< 85	< 600	– 0.08	– 0.04	< 2000	< 40	1	105
BZX55 – y3V9	< 85	< 600	– 0.07	– 0.03	< 2000	< 40	1	95
BZX55 – y4V3	< 75	< 600	– 0.04	– 0.01	< 1000	< 20	1	90
BZX55 – y4V7	< 60	< 600	– 0.03	+0.01	< 500	< 10	1	85
BZX55 – y5V1	< 35	< 550	– 0.02	+0.05	< 100	< 2	1	80
BZX55 – y5V6	< 25	< 450	– 0.01	+0.06	< 100	< 2	1	70
BZX55 – y6V2	< 10	< 200	0	+0.07	< 100	< 2	2	64
BZX55 – y6V8	< 8	< 150	+0.01	+0.08	< 100	< 2	3	58
BZX55 – y7V5	< 7	< 50	+0.01	+0.09	< 100	< 2	5	53
BZX55 – y8V2	< 7	< 50	+0.01	+0.09	< 100	< 2	6.2	47
BZX55 – y9V1	< 10	< 50	+0.02	+0.10	< 100	< 2	6.8	43
BZX55 – y10	< 15	< 70	+0.03	+0.11	< 100	< 2	7.5	40
BZX55 – y11	< 20	< 70	+0.03	+0.11	< 100	< 2	8.2	36
BZX55 – y12	< 20	< 90	+0.03	+0.11	< 100	< 2	9.1	32
BZX55 – y13	< 26	< 110	+0.03	+0.11	< 100	< 2	10	29
BZX55 – y15	< 30	< 110	+0.03	+0.11	< 100	< 2	11	27
BZX55 – y16	< 40	< 170	+0.03	+0.11	< 100	< 2	12	24
BZX55 – y18	< 50	< 170	+0.03	+0.11	< 100	< 2	13	21
BZX55 – y20	< 55	< 220	+0.03	+0.11	< 100	< 2	15	20
BZX55 – y22	< 55	< 220	+0.03	+0.11	< 100	< 2	16	18
BZX55 – y24	< 80	< 220	+0.04	+0.12	< 100	< 2	18	16
BZX55 – y27	< 80	< 220	+0.04	+0.12	< 100	< 2	20	14
BZX55 – y30	< 80	< 220	+0.04	+0.12	< 100	< 2	22	13
BZX55 – y33	< 80	< 220	+0.04	+0.12	< 100	< 2	24	12
BZX55 – y36	< 80	< 220	+0.04	+0.12	< 100	< 2	27	11
BZX55 – y39	< 90 <sup>(4)</sup>	< 500 <sup>(5)</sup>	+0.04	+0.12	< 100	< 5	30	10
BZX55 – y43	< 90 <sup>(4)</sup>	< 600 <sup>(5)</sup>	+0.04	+0.12	< 100	< 5	33	9.2
BZX55 – y47	< 110 <sup>(4)</sup>	< 700 <sup>(5)</sup>	+0.04	+0.12	< 100	< 5	36	8.5
BZX55 – y51	< 125 <sup>(4)</sup>	< 700 <sup>(5)</sup>	+0.04	+0.12	< 100	< 10	39	7.8
BZX55 – y56	< 135 <sup>(4)</sup>	< 1000 <sup>(5)</sup>	typ. +0.1 <sup>(4)</sup>		< 100	< 10	43	7.0
BZX55 – y62	< 150 <sup>(4)</sup>	< 1000 <sup>(5)</sup>	typ. +0.1 <sup>(4)</sup>		< 100	< 10	47	6.4
BZX55 – y68	< 200 <sup>(4)</sup>	< 1000 <sup>(5)</sup>	typ. +0.1 <sup>(4)</sup>		< 100	< 10	51	5.9
BZX55 – y75	< 250 <sup>(4)</sup>	< 1500 <sup>(5)</sup>	typ. +0.1 <sup>(4)</sup>		< 100	< 10	56	5.3
BZX55 – y82	< 300 <sup>(4)</sup>	< 2000 <sup>(5)</sup>	typ. +0.1 <sup>(4)</sup>		< 100	< 10	62	4.8
BZX55 – y91	< 450 <sup>(6)</sup>	< 5000 <sup>(7)</sup>	typ. +0.1 <sup>(4)</sup>		< 100	< 10	68	4.4
BZX55 – y100	< 450 <sup>(6)</sup>	< 5000 <sup>(7)</sup>	typ. +0.1 <sup>(4)</sup>		< 100	< 10	75	4.0

Notes: (1) Tested with pulses t<sub>p</sub> = 5 ms

(2) Valid provided that leads are kept at ambient temperature at a distance of 8 mm from case

(3) The BZX55–C0V8 is a silicon diode with operation in forward direction. Hence, the index of all parameters should be “F” instead of “Z”.

Connect the cathode lead to the negative pole.

(4) at I<sub>Z</sub> = 2.5 mA (5) at I<sub>Z</sub> = 0.5 mA

(6) at I<sub>Z</sub> = 1.0 mA (7) at I<sub>Z</sub> = 0.1 mA



## Electrical Characteristics (T<sub>A</sub> = 25°C unless otherwise noted) Maximum V<sub>F</sub> = 1.0V at I<sub>F</sub> = 100 mA

Type ± 5% Tol.	Zener Voltage range <sup>(1)</sup> at I <sub>ZT1</sub> V <sub>Z</sub> (V)		Test Current I <sub>ZT1</sub> (mA)
	min.	max.	
BZX55-C0V8 <sup>(3)</sup>	0.73	0.83	5.0
BZX55-C2V4	2.28	2.56	5.0
BZX55-C2V7	2.50	2.90	5.0
BZX55-C3V0	2.80	3.20	5.0
BZX55-C3V3	3.10	3.50	5.0
BZX55-C3V6	3.40	3.90	5.0
BZX55-C3V9	3.70	4.10	5.0
BZX55-C4V3	4.00	4.60	5.0
BZX55-C4V7	4.40	5.00	5.0
BZX55-C5V1	4.80	5.40	5.0
BZX55-C5V6	5.20	6.00	5.0
BZX55-C6V2	5.80	6.60	5.0
BZX55-C6V8	6.40	7.20	5.0
BZX55-C7V5	7.00	7.90	5.0
BZX55-C8V2	7.70	8.70	5.0
BZX55-C9V1	8.50	9.60	5.0
BZX55-C10	9.40	10.6	5.0
BZX55-C11	10.4	11.6	5.0
BZX55-C12	11.4	12.7	5.0
BZX55-C13	12.4	14.1	5.0
BZX55-C15	13.8	15.6	5.0
BZX55-C16	15.3	17.1	5.0
BZX55-C18	16.8	19.1	5.0
BZX55-C20	18.8	21.2	5.0
BZX55-C22	20.8	23.3	5.0
BZX55-C24	22.8	25.6	5.0
BZX55-C27	25.1	28.9	5.0
BZX55-C30	28.0	32.0	5.0
BZX55-C33	31.0	35.0	5.0
BZX55-C36	34.0	38.0	5.0
BZX55-C39	37.0	41.0	2.5
BZX55-C43	40.0	46.0	2.5
BZX55-C47	44.0	50.0	2.5
BZX55-C51	48.0	54.0	2.5
BZX55-C56	52.0	60.0	2.5
BZX55-C62	58.0	66.0	2.5
BZX55-C68	64.0	72.0	2.5
BZX55-C75	70.0	80.0	2.5
BZX55-C82	77.0	87.0	2.5
BZX55-C91	85.0	96.0	1.0
BZX55-C100	94.0	106	1.0

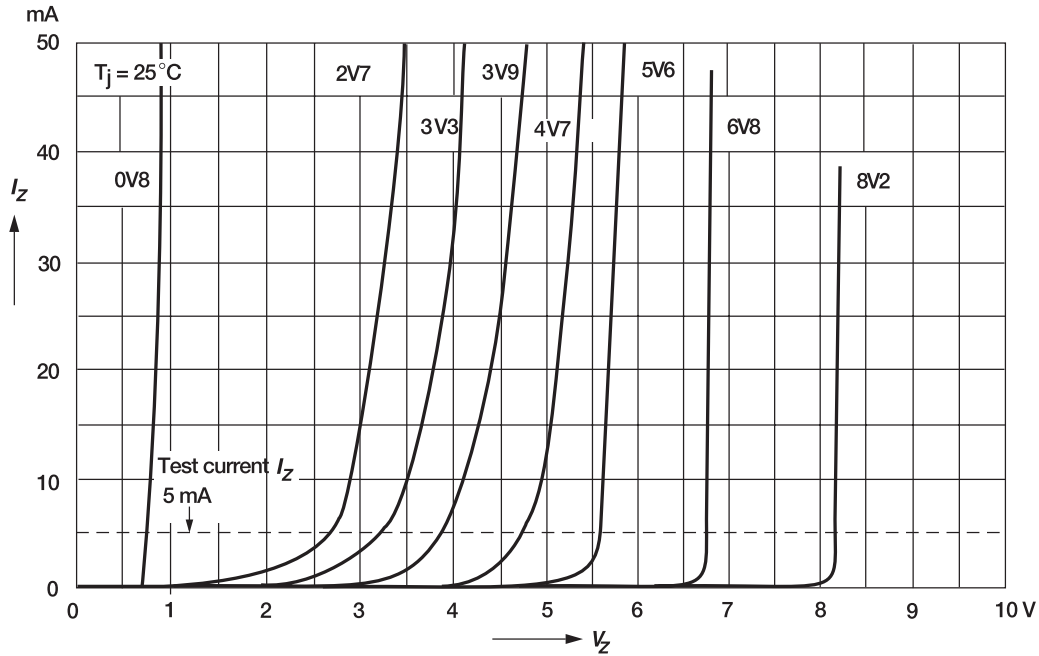
Type ± 2% Tol.	Zener Voltage range <sup>(1)</sup> at I <sub>ZT1</sub> V <sub>Z</sub> (V)		Test Current I <sub>ZT1</sub> (mA)
	min.	max.	
BZX55-B0V8 <sup>(3)</sup>	0.78	0.82	5.0
BZX55-B2V7	2.35	2.45	5.0
BZX55-B3	2.65	2.75	5.0
BZX55-B3V0	2.94	3.06	5.0
BZX55-B3V3	3.23	3.37	5.0
BZX55-B3V6	3.53	3.67	5.0
BZX55-B3V9	3.82	3.98	5.0
BZX55-B4V3	4.21	4.39	5.0
BZX55-B4V7	4.61	4.79	5.0
BZX55-B5V1	5.00	5.20	5.0
BZX55-B5V6	5.49	5.71	5.0
BZX55-B6V2	6.08	6.32	5.0
BZX55-B6V8	6.66	6.94	5.0
BZX55-B7V5	7.35	7.65	5.0
BZX55-B8V2	8.04	8.36	5.0
BZX55-B9V1	8.92	9.28	5.0
BZX55-B10	9.80	10.2	5.0
BZX55-B11	10.8	11.2	5.0
BZX55-B12	11.8	12.2	5.0
BZX55-B13	12.7	13.3	5.0
BZX55-B15	14.7	15.3	5.0
BZX55-B16	15.7	16.3	5.0
BZX55-B18	17.6	18.4	5.0
BZX55-B20	19.6	20.4	5.0
BZX55-B22	21.6	22.4	5.0
BZX55-B24	23.5	24.5	5.0
BZX55-B27	26.5	27.5	5.0
BZX55-B30	29.4	30.6	5.0
BZX55-B33	32.3	33.7	5.0
BZX55-B36	35.3	36.7	5.0
BZX55-B39	38.2	39.8	2.5
BZX55-B43	42.1	43.9	2.5
BZX55-B47	46.1	47.9	2.5
BZX55-B51	50.0	52.0	2.5
BZX55-B56	54.9	57.1	2.5
BZX55-B62	60.8	63.2	2.5
BZX55-B68	66.6	69.4	2.5
BZX55-B75	73.5	76.5	2.5
BZX55-B82	80.4	83.6	2.5
BZX55-B91	89.2	92.8	1.0
BZX55-B100	98.0	102	1.0

**Notes:** (1) Measured with pulses t<sub>p</sub> = 5 ms  
 (3) The BZX55-C0V8 is a silicon diode with operation in forward direction. Hence, the index of all parameters should be "F" instead of "Z". Connect the cathode lead to the negative pole.

## Ratings and Characteristic Curves ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

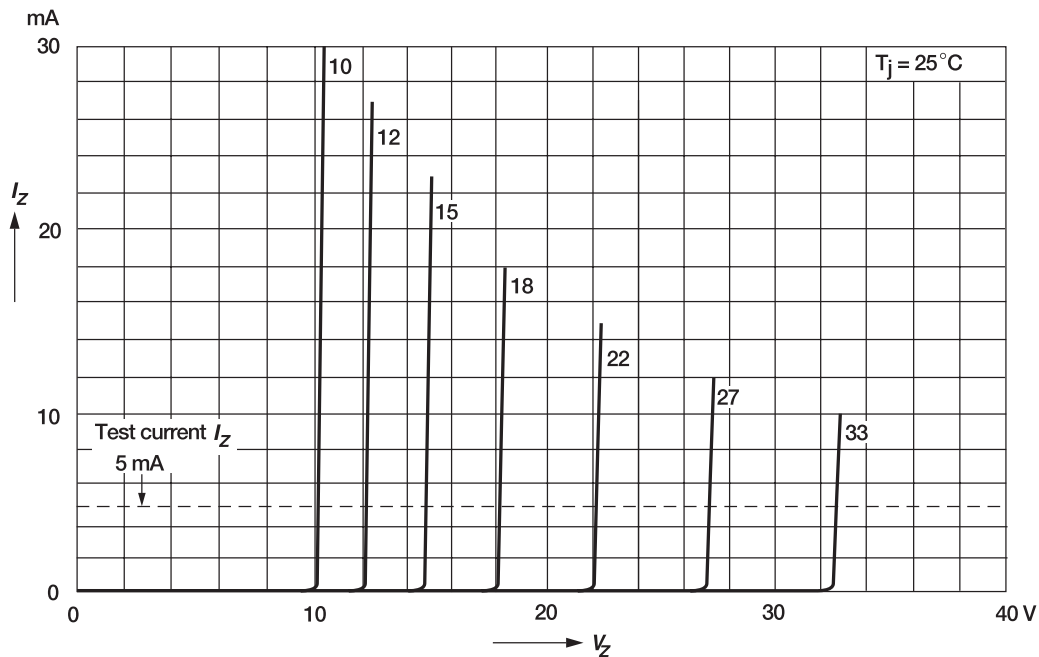
### Breakdown characteristics

at  $T_j = \text{constant}$  (pulsed)



### Breakdown characteristics

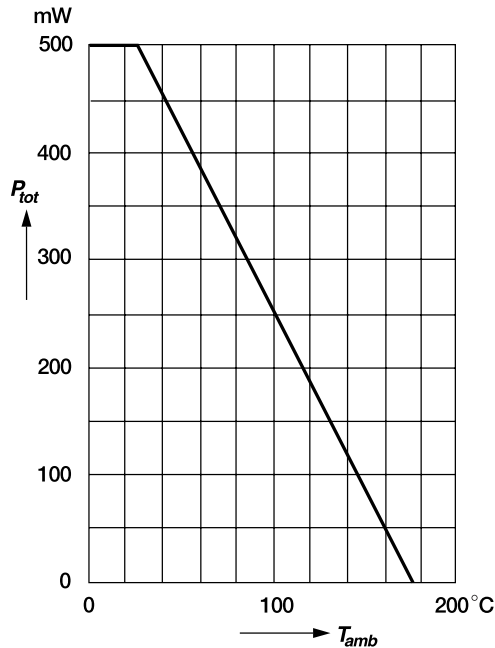
at  $T_j = \text{constant}$  (pulsed)



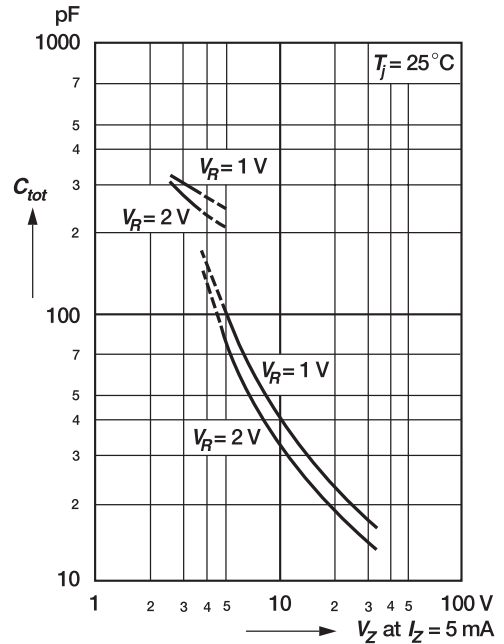
## Ratings and Characteristic Curves ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

### Admissible power dissipation versus ambient temperature

Valid provided that leads are kept ambient temperature at a distance of 8 mm from case.

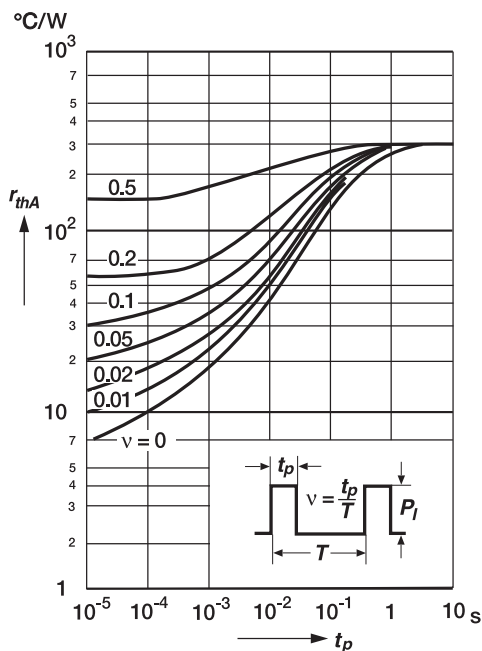


### Capacitance versus Zener voltage

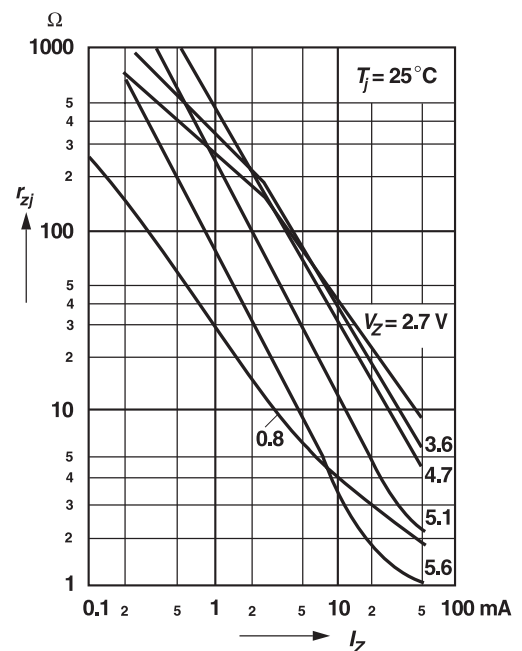


### Pulse thermal resistance versus pulse duration

Valid provided that leads are kept at ambient temperature at a distance of 8 mm from case.

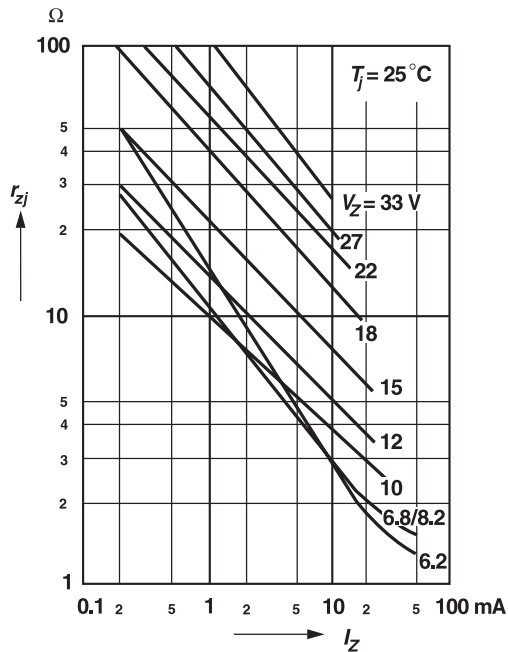


### Dynamic resistance versus Zener current



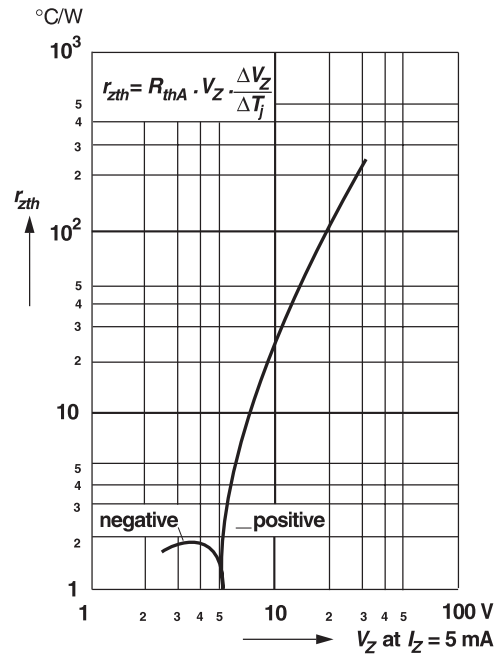
## Ratings and Characteristic Curves ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

**Dynamic resistance versus Zener current**

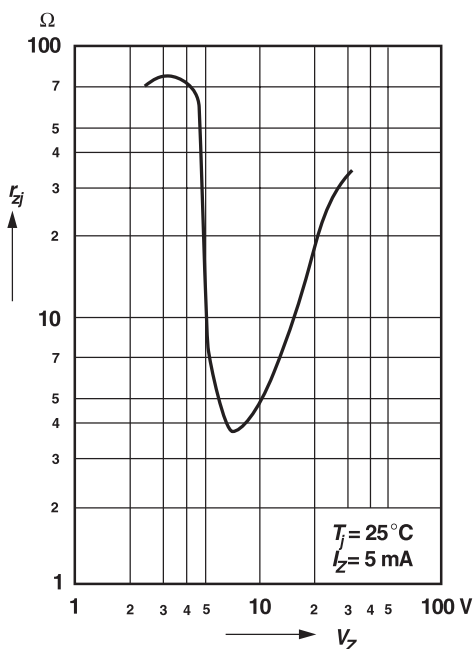


**Thermal differential resistance versus Zener voltage**

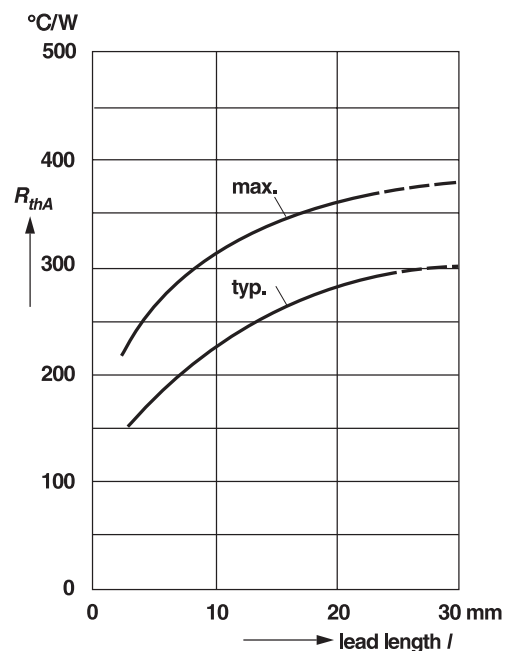
Valid provided that leads are kept at ambient temperature at a distance of 8 mm from case.



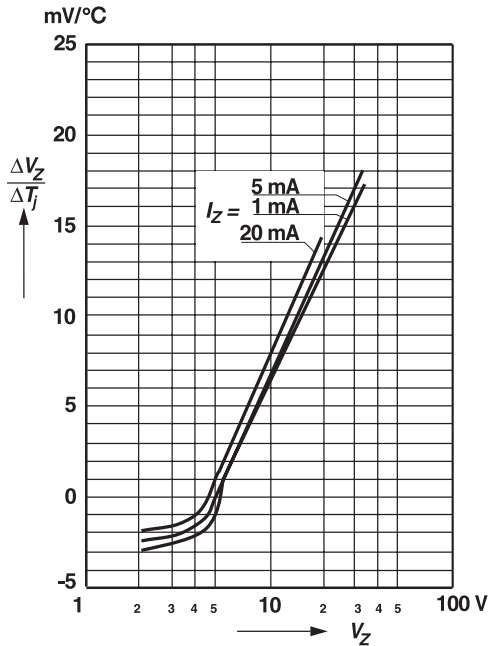
**Dynamic resistance versus Zener voltage**



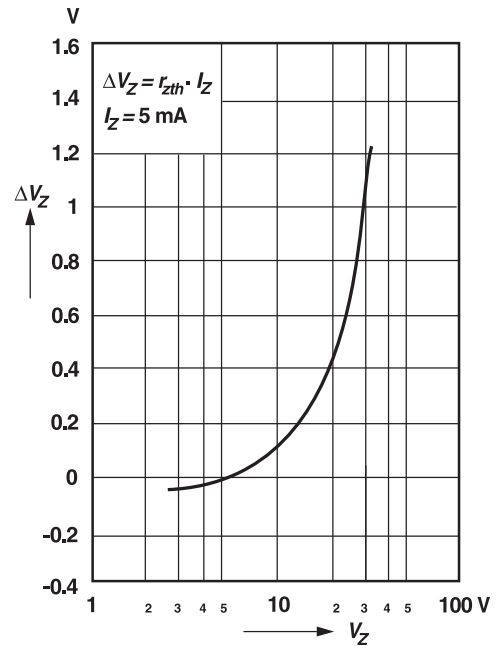
**Thermal resistance versus lead length**



Temperature dependence of Zener voltage versus Zener voltage



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



Change of Zener voltage versus junction temperature

