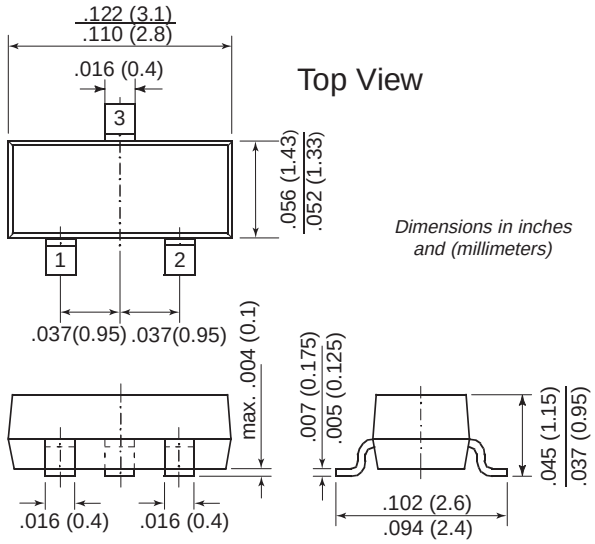
GENERAL SEMICONDUCTOR®

BZX84 Series

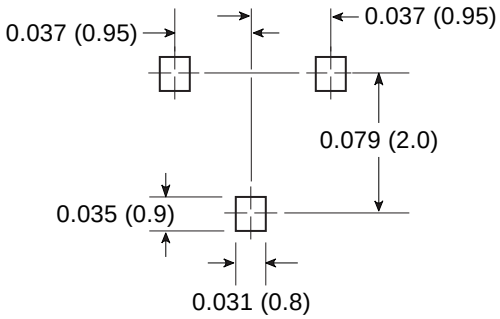
Zener Diodes

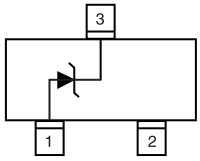
Vz Range 2.4 to 75V
Power Dissipation 300mW

TO-236AB (SOT-23)



Mounting Pad Layout





Mechanical Data

Case: SOT-23 Plastic Package

Weight: Approx. 0.008g

Packaging Codes/Options:

E8/10K per 13” reel (8mm tape), 30K box
E9/3K per 7” reel (8mm tape), 30K box

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 “C” with “B” for ±2% tolerance. Other voltage tolerances and other Zener voltages are available upon request.
- These diodes are also available in other case styles and other configurations including: the SOD-123 case with type designation BZT52 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.

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

Parameter	Symbol	Value	Unit
Zener Current	I_{ZM}	250	mA
Power Dissipation at T_{amb} = 25°C	P_{tot}	300(1)	mW
Thermal Resistance Junction to Ambient Air	$R_{\Theta JA}$	420(1)	°C/W
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_S	–65 to +150	°C

Notes: (1) Device on fiberglass substrate, see layout.

BZX84 Series

Zener Diodes

Electrical Characteristics (T_A = 25°C unless otherwise noted) Maximum V_F = 0.9V at I_F = 10mA

Type y = C for 5% y = B for 2%	Marking Code	Dynamic Resistance at I_{ZT1} r_{zj} (Ω)	Temp. Coefficient of Zener Voltage at I_{ZT1} α_{VZ} (10^{-4}/°C)	Test Current I_{ZT1} (mA)	Dynamic Resistance at I_{ZT2} r_{zj} (Ω)	Test Current I_{ZT2} (mA)	Reverse Leakage Current	
							I_R (μA)	at V_R (V)
BZX84-y2V4	Z11	70 (≤100)	–9.0 … –4.0	5	275	1.0	50	1.0
BZX84-y2V7	Z12	75 (≤100)	–9.0 … –4.0	5	300 (≤600)	1.0	20	1.0
BZX84-y3	Z13	80 (≤95)	–9.0 … –3.0	5	325 (≤600)	1.0	10	1.0
BZX84-y3V3	Z14	85 (≤95)	–8.0 … –3.0	5	350 (≤600)	1.0	5.0	1.0
BZX84-y3V6	Z15	85 (≤90)	–8.0 … –3.0	5	375 (≤600)	1.0	5.0	1.0
BZX84-y3V9	Z16	85 (≤90)	–7.0 … –3.0	5	400 (≤600)	1.0	3.0	1.0
BZX84-y4V3	Z17	80 (≤90)	–6.0 … –1.0	5	410 (≤600)	1.0	3.0	1.0
BZX84-y4V7	Z1	50 (≤80)	–5.0 … +2.0	5	425 (≤500)	1.0	3.0	2.0
BZX84-y5V1	Z2	40 (≤60)	–3.0. … +4.0	5	400 (≤480)	1.0	2.0	2.0
BZX84-y5V6	Z3	15 (≤40)	–2.0 … +6.0	5	80 (≤400)	1.0	1.0	2.0
BZX84-y6V2	Z4	6.0 (≤10)	–1.0 … +7.0	5	40 (≤150)	1.0	3.0	4.0
BZX84-y6V8	Z5	6.0 (≤15)	+2.0 … +7.0	5	30 (≤80)	1.0	2.0	4.0
BZX84-y7V5	Z6	6.0 (≤15)	+3.0 … +7.0	5	30 (≤80)	1.0	1.0	5.0
BZX84-y8V2	Z7	6.0 (≤15)	+4.0 … +7.0	5	40 (≤80)	1.0	0.7	5.0
BZX84-y9V1	Z8	6.0 (≤15)	+5.0 … +8.0	5	40 (≤100)	1.0	0.5	6.0
BZX84-y10	Z9	8.0 (≤20)	+5.0 … +8.0	5	50 (≤150)	1.0	0.2	7.0
BZX84-y11	Y1	10 (≤20)	+5.0 … +9.0	5	50 (≤150)	1.0	0.1	8.0
BZX84-y12	Y2	10 (≤25)	+6.0 … +9.0	5	50 (≤150)	1.0	0.1	8.0
BZX84-y13	Y3	10 (≤30)	+7.0 … +9.0	5	50 (≤170)	1.0	0.1	8.0
BZX84-y15	Y4	10 (≤30)	+7.0 … +9.0	5	50 (≤200)	1.0	0.05	0.7 $V_{Znom.}$
BZX84-y16	Y5	10 (≤40)	+8.0 … +9.5	5	50 (≤200)	1.0	0.05	0.7 $V_{Znom.}$
BZX84-y18	Y6	10 (≤45)	+8.0 … +9.5	5	50 (≤225)	1.0	0.05	0.7 $V_{Znom.}$
BZX84-y20	Y7	15 (≤55)	+8.0 … +10	5	60 (≤225)	1.0	0.05	0.7 $V_{Znom.}$
BZX84-y22	Y8	20 (≤55)	+8.0 … +10	5	60 (≤250)	1.0	0.05	0.7 $V_{Znom.}$
BZX84-y24	Y9	25 (≤70)	+8.0 … +10	5	60 (≤250)	1.0	0.05	0.7 $V_{Znom.}$
BZX84-y27	Y10	25 (≤80)	+8.0 … +10	2	65 (≤300)	0.5	0.05	0.7 $V_{Znom.}$
BZX84-y30	Y11	30 (≤80)	+8.0 … +10	2	70 (≤300)	0.5	0.05	0.7 $V_{Znom.}$
BZX84-y33	Y12	35 (≤80)	+8.0 … +10	2	75 (≤325)	0.5	0.05	0.7 $V_{Znom.}$
BZX84-y36	Y13	35 (≤90)	+8.0 … +10	2	80 (≤350)	0.5	0.05	0.7 $V_{Znom.}$
BZX84-y39	Y14	40 (≤130)	+10 … +12	2	80 (≤350)	0.5	0.05	0.7 $V_{Znom.}$
BZX84-y43	Y15	45 (≤150)	+10 … +12	2	85 (≤375)	0.5	0.05	0.7 $V_{Znom.}$
BZX84-y47	Y16	50 (≤170)	+10 … +12	2	85 (≤375)	0.5	0.05	0.7 $V_{Znom.}$
BZX84-y51	Y17	60 (≤180)	+10 … +12	2	85 (≤400)	0.5	0.05	0.7 $V_{Znom.}$
BZX84-y56	Y18	70 (≤200)	+9.0 … +11	2	100 (≤425)	0.5	0.05	0.7 $V_{Znom.}$
BZX84-y62	Y19	80 (≤215)	+9.0 … +12	2	100 (≤450)	0.5	0.05	0.7 $V_{Znom.}$
BZX84-y68	Y20	90 (≤240)	+10 … +12	2	150 (≤475)	0.5	0.05	0.7 $V_{Znom.}$
BZX84-y75	Y21	95 (≤255)	+10 … +12	2	170 (≤500)	0.5	0.05	0.7 $V_{Znom.}$

Electrical Characteristics (T_A = 25°C unless otherwise noted) Maximum V_F = 0.9V at I_F = 10mA

Type ± 5% Tol.	Zener Voltage range[1] at I_{ZT1} V_Z (V) min.	max.	Test Current I_{ZT1} (mA)
BZX84-C2V4	2.20	2.60	5
BZX84-C2V7	2.50	2.90	5
BZX84-C3	2.80	3.20	5
BZX84-C3V3	3.10	3.50	5
BZX84-C3V6	3.40	3.80	5
BZX84-C3V9	3.70	4.10	5
BZX84-C4V3	4.00	4.60	5
BZX84-C4V7	4.40	5.00	5
BZX84-C5V1	4.80	5.40	5
BZX84-C5V6	5.20	6.00	5
BZX84-C6V2	5.80	6.60	5
BZX84-C6V8	6.40	7.20	5
BZX84-C7V5	7.00	7.90	5
BZX84-C8V2	7.70	8.70	5
BZX84-C9V1	8.50	9.60	5
BZX84-C10	9.4	10.6	5
BZX84-C11	10.4	11.6	5
BZX84-C12	11.4	12.7	5
BZX84-C13	12.4	14.1	5
BZX84-C15	13.8	15.6	5
BZX84-C16	15.3	17.1	5
BZX84-C18	16.8	19.1	5
BZX84-C20	18.8	21.2	5
BZX84-C22	20.8	23.3	5
BZX84-C24	22.8	25.6	5
BZX84-C27	25.1	28.9	2
BZX84-C30	28.0	32.0	2
BZX84-C33	31.0	35.0	2
BZX84-C36	34.0	38.0	2
BZX84-C39	37.0	41.0	2
BZX84-C43	40.0	46.0	2
BZX84-C47	44.0	50.0	2
BZX84-C51	48.0	54.0	2
BZX84-C56	52.0	60.0	2
BZX84-C62	58.0	66.0	2
BZX84-C68	64.0	72.0	2
BZX84-C75	70.0	79.0	2

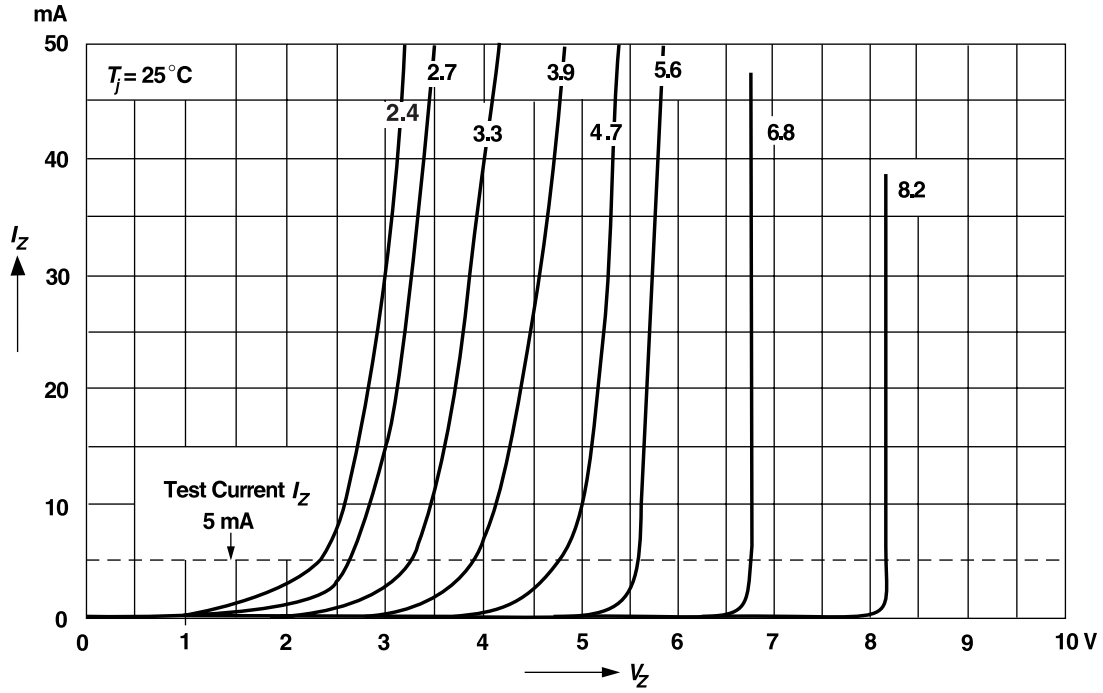
Type ± 2% Tol.	Zener Voltage range[1] at I_{ZT1} V_Z (V) min.	max.	Test Current I_{ZT1} (mA)
BZX84-B2V4	2.35	2.45	5
BZX84-B2V7	2.65	2.75	5
BZX84-B3	2.94	3.06	5
BZX84-B3V3	3.23	3.37	5
BZX84-B3V6	3.53	3.67	5
BZX84-B3V9	3.82	3.98	5
BZX84-B4V3	4.21	4.39	5
BZX84-B4V7	4.61	4.79	5
BZX84-B5V1	5.00	5.20	5
BZX84-B5V6	5.49	5.71	5
BZX84-B6V2	6.08	6.32	5
BZX84-B6V8	6.66	6.94	5
BZX84-B7V5	7.35	7.65	5
BZX84-B8V2	8.04	8.36	5
BZX84-B9V1	8.92	9.28	5
BZX84-B10	9.80	10.2	5
BZX84-B11	10.8	11.2	5
BZX84-B12	11.8	12.2	5
BZX84-B13	12.7	13.3	5
BZX84-B15	14.7	15.3	5
BZX84-B16	15.7	16.3	5
BZX84-B18	17.6	18.4	5
BZX84-B20	19.6	20.4	5
BZX84-B22	21.6	22.4	5
BZX84-B24	23.5	24.5	5
BZX84-B27	26.5	27.5	2
BZX84-B30	29.4	30.6	2
BZX84-B33	32.3	33.7	2
BZX84-B36	35.3	36.7	2
BZX84-B39	38.2	39.8	2
BZX84-B43	42.1	43.9	2
BZX84-B47	46.1	47.9	2
BZX84-B51	50.0	52.0	2
BZX84-B56	54.9	46.9	2
BZX84-B62	60.8	63.2	2
BZX84-B68	66.6	69.4	2
BZX84-B75	73.5	76.5	2

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

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

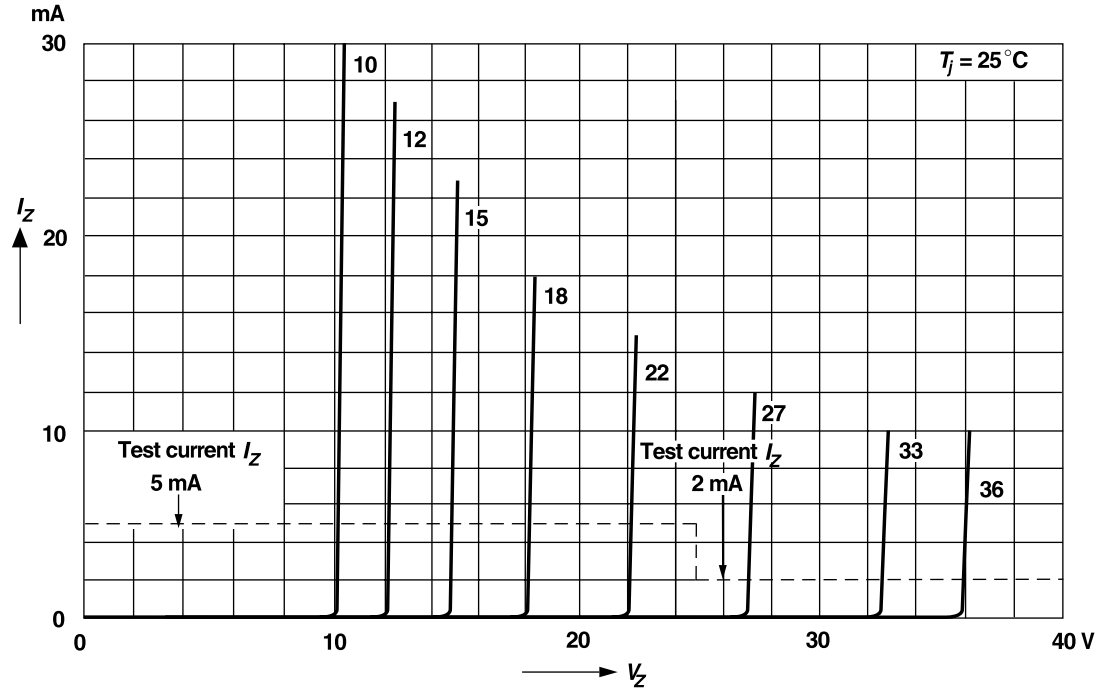
Breakdown characteristics

T_j = constant (pulsed)



Breakdown characteristics

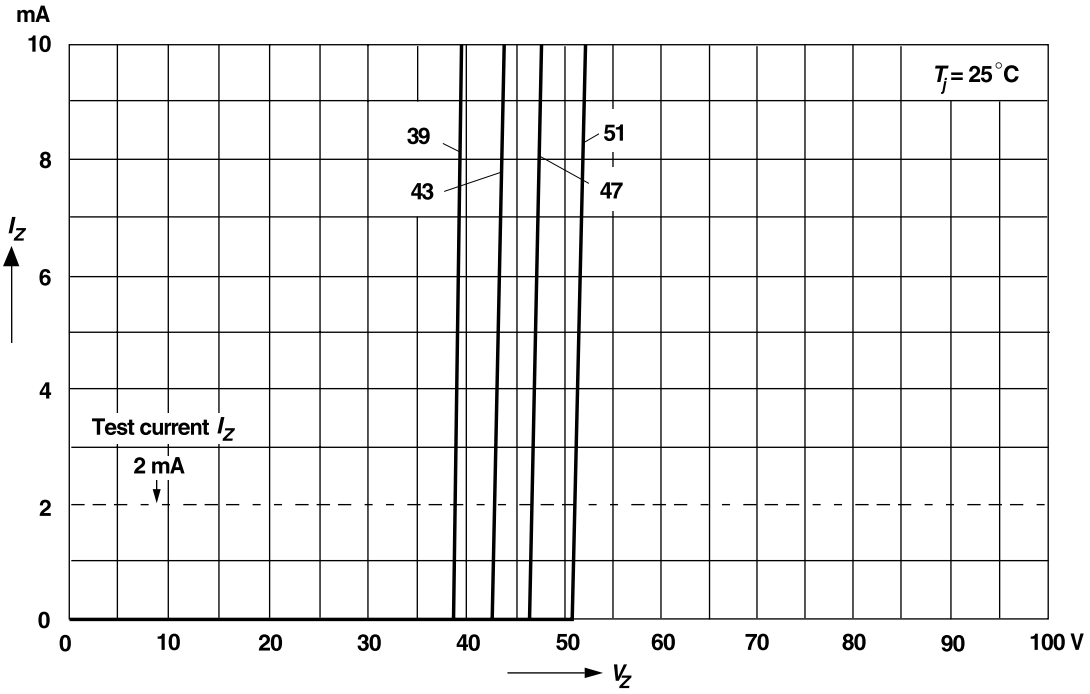
T_j = constant (pulsed)



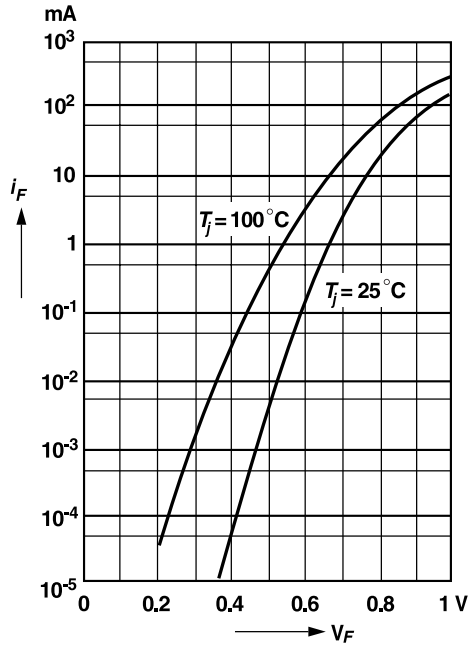
Ratings and Characteristic Curves (TA = 25°C unless otherwise noted)

Breakdown characteristics

T_j = constant (pulsed)

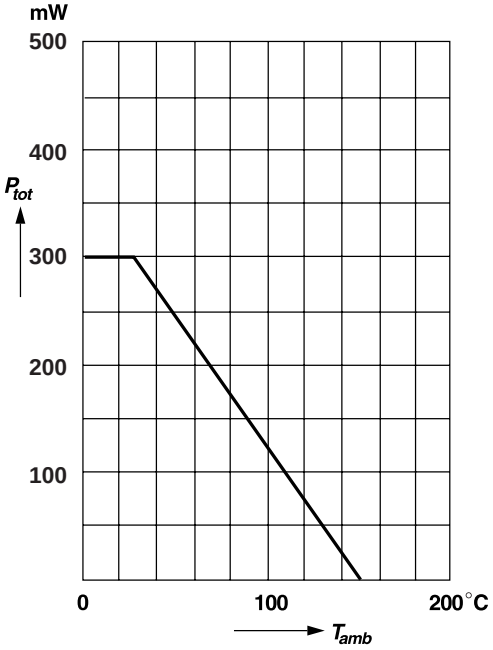


Forward characteristics



Admissible power dissipation versus ambient temperature

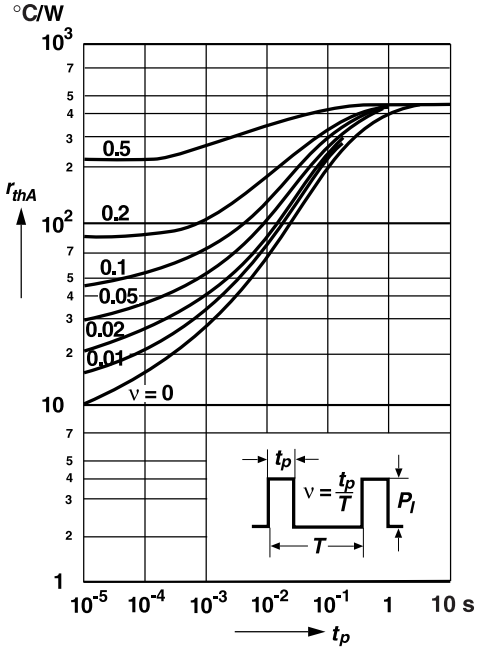
For conditions, see footnote in table "Absolute Maximum Ratings"



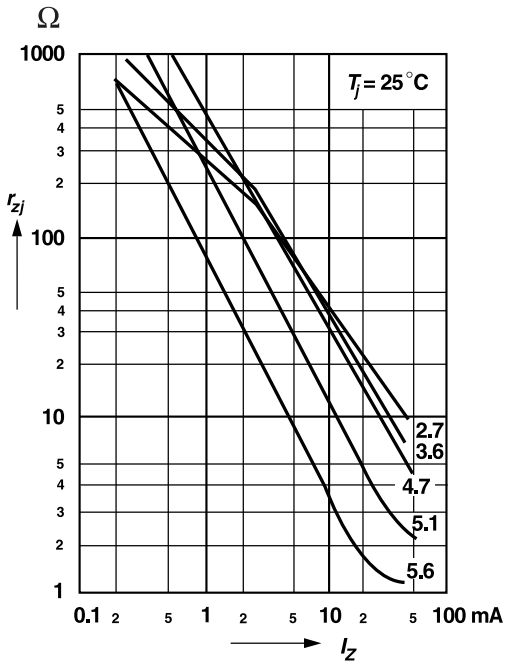
Ratings and Characteristic Curves (TA = 25°C unless otherwise noted)

Pulse thermal resistance versus pulse duration

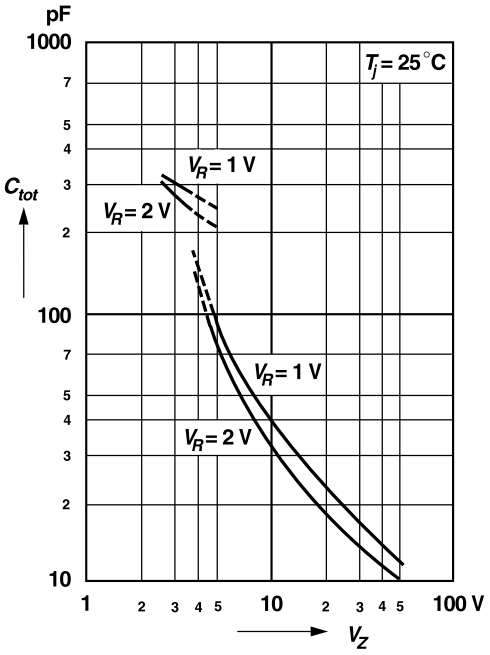
For conditions, see footnote in table "Absolute Maximum Ratings"



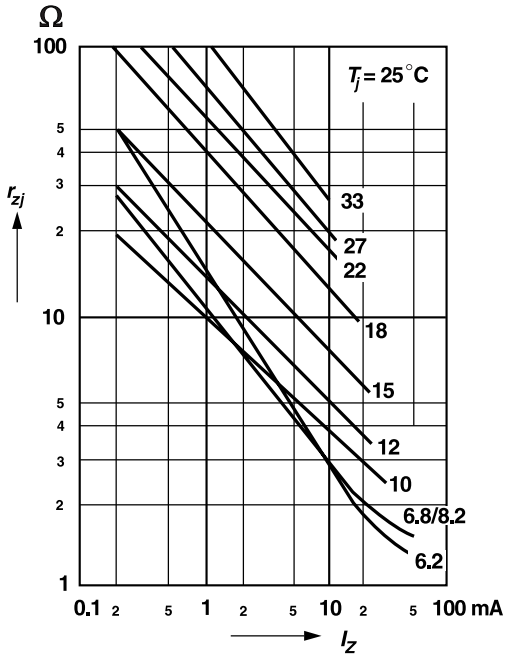
Dynamic resistance versus Zener current



Capacitance versus Zener voltage

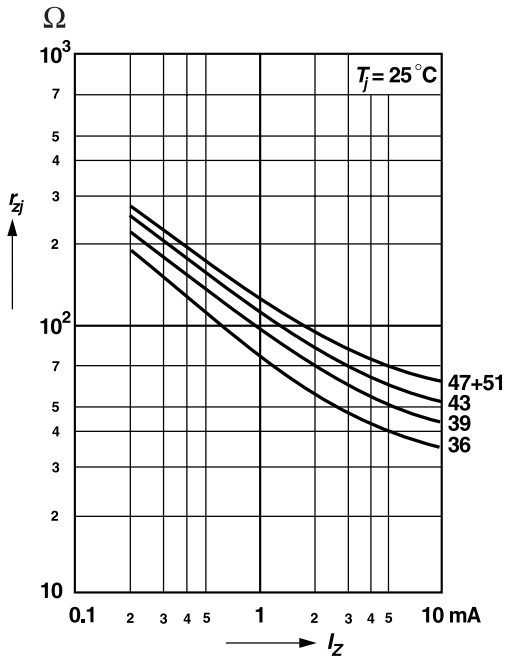


Dynamic resistance versus Zener current



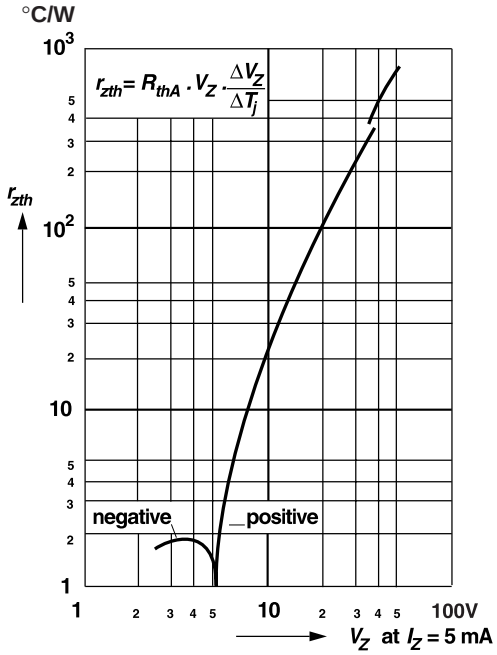
Ratings and Characteristic Curves (TA = 25°C unless otherwise noted)

Dynamic resistance versus Zener current

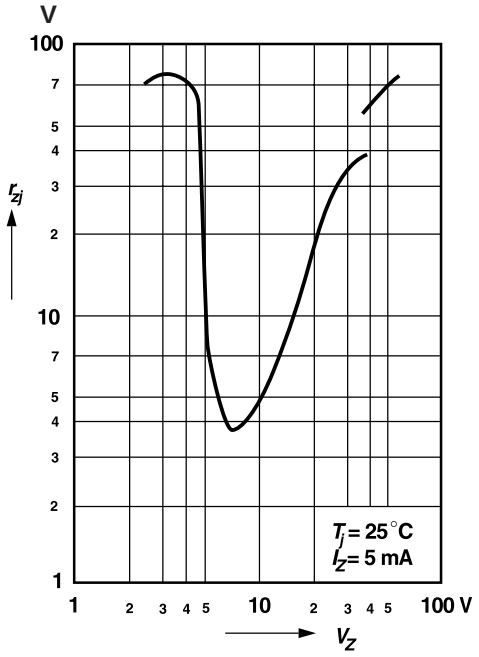


Thermal differential resistance versus Zener voltage

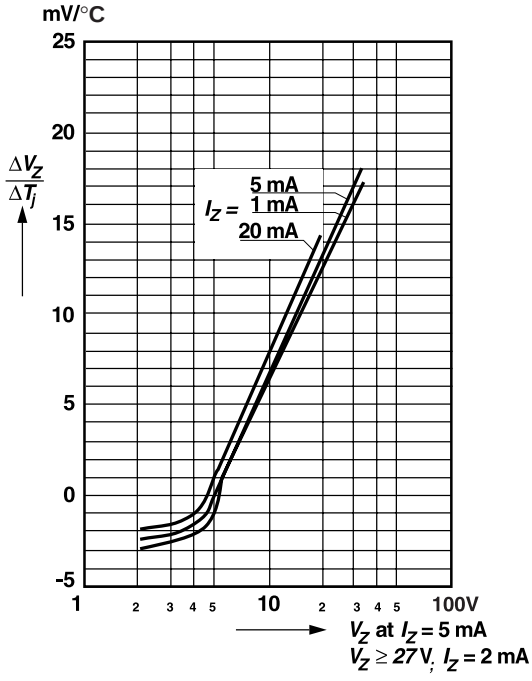
For conditions, see footnote in table "Absolute Maximum Ratings"



Dynamic resistance versus Zener voltage

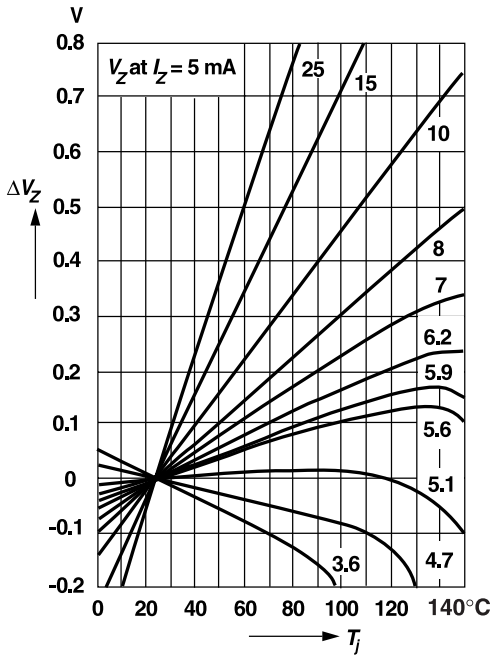


Temperature dependence of Zener voltage versus Zener voltage

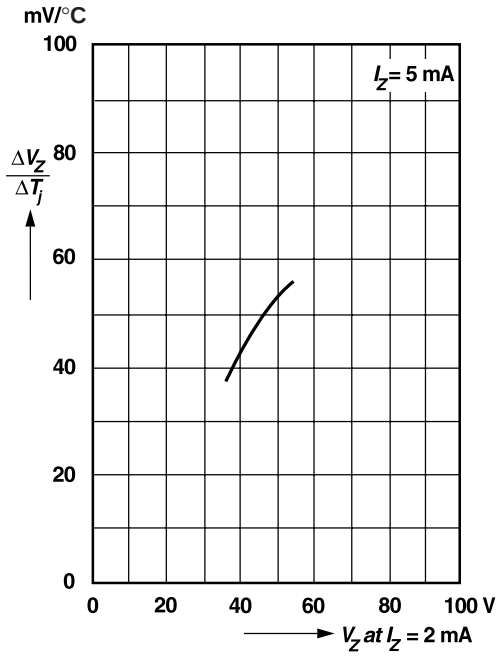


Ratings and Characteristic Curves (TA = 25°C unless otherwise noted)

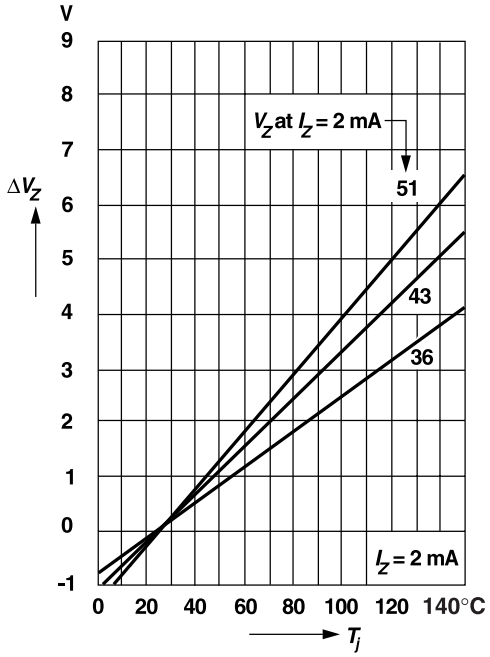
Change of Zener voltage versus junction temperature



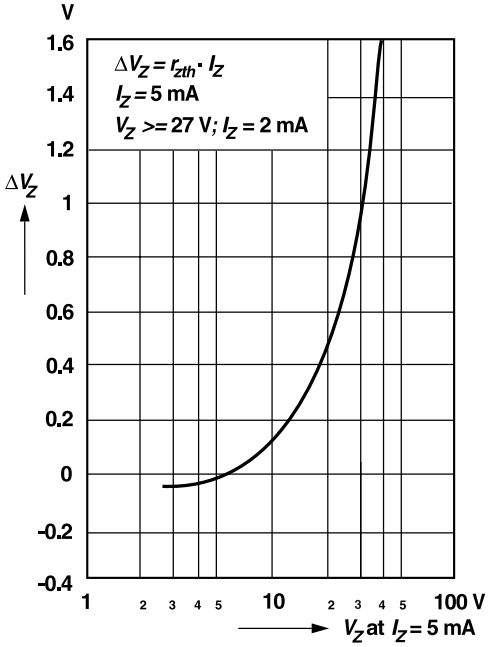
Temperature dependence of Zener voltage versus Zener voltage



Change of Zener voltage versus junction temperature

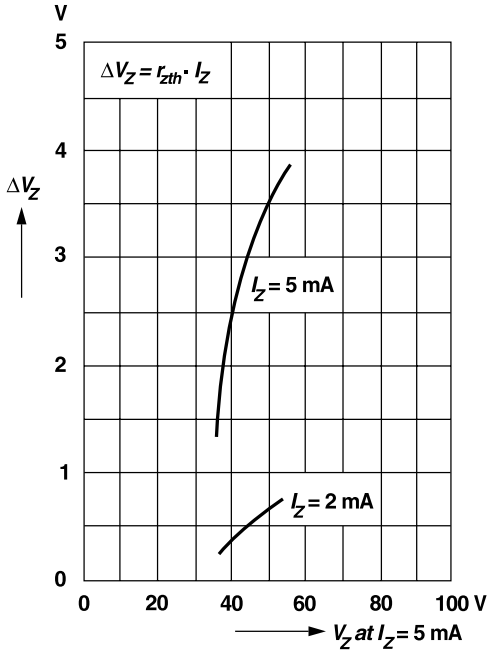


Change of Zener voltage from turn-on up to the point of thermal equilibrium versus Zener voltage

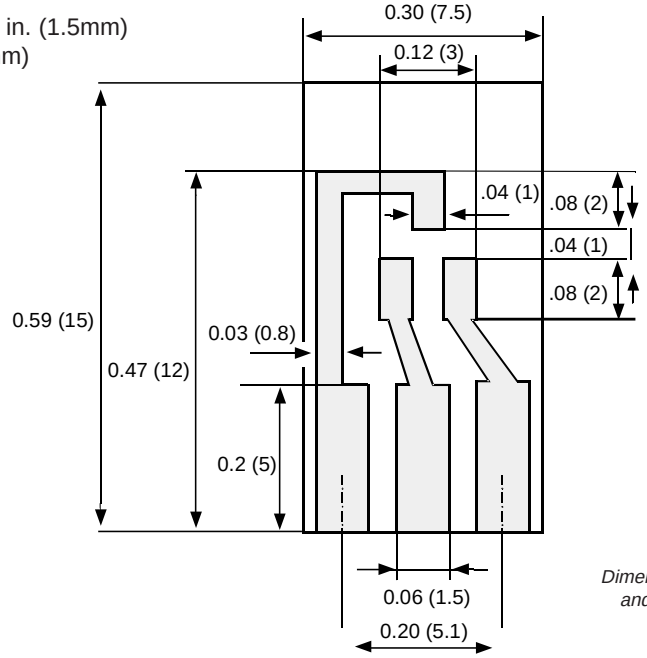


Ratings and Characteristic Curves (TA = 25°C unless otherwise noted)

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



Layout for $R_{\Theta JA}$ test
Thickness: Fiberglass 0.059 in. (1.5mm)
Copper leads 0.012 in. (0.3mm)



Dimensions in inches and (millimeters)