THE DATASHEET OF

BZX384C11-E3-08

Small Signal Zener Diodes

DESIGN SUPPORT TOOLS

click logo to get started

3D Models Available

FEATURES

AUTOMOTIVE GRADE Available

Pb-free

e3

RoHS COMPLIANT

- Silicon planar Zener diodes
- The Zener voltages are graded according to the international E24 standard
- Standard Zener voltage tolerance is ± 5 %; replace “C” with “B” for ± 2 % tolerance
- AEC-Q101 qualified available
- ESD capability according to AEC-Q101:
  Human body model > 8 kV
  Machine model > 800 V
- Base P/N-E3 - RoHS-compliant, commercial grade
- Base P/N-HE3 - RoHS-compliant, AEC-Q101 qualified
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

PRIMARY CHARACTERISTICS		
PARAMETER	**VALUE**	**UNIT**
V_Z range nom.	2.4 to 75	V
Test current I_{ZT}	2; 5	mA
V_Z specification	Pulse current	
Circuit configuration	Single	

ORDERING INFORMATION			
DEVICE NAME	**ORDERING CODE**	**TAPED UNITS PER REEL**	**MINIMUM ORDER QUANTITY**
BZX384-series	BZX384C2V4-E3-08 to BZX384C75-E3-08	3000 (8 mm tape on 7" reel)	15 000/box
	BZX384B2V4-E3-08 to BZX384B75-E3-08		
	BZX384C2V4-HE3-08 to BZX384C75-HE3-08		
	BZX384B2V4-HE3-08 to BZX384B75-HE3-08		
	BZX384C2V4-E3-18 to BZX384C75-E3-18	10 000 (8 mm tape on 13" reel)	10 000/box
	BZX384B2V4-E3-18 to BZX384B75-E3-18		
	BZX384C2V4-HE3-18 to BZX384C75-HE3-18		
	BZX384B2V4-HE3-18 to BZX384B75-HE3-18		

PACKAGE				
PACKAGE NAME	**WEIGHT**	**MOLDING COMPOUND FLAMMABILITY RATING**	**MOISTURE SENSITIVITY LEVEL**	**SOLDERING CONDITIONS**
SOD-323	4.3 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	260 °C/10 s at terminals

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25 °C, unless otherwise specified)				
PARAMETER	**TEST CONDITION**	**SYMBOL**	**VALUE**	**UNIT**
Power dissipation	Device on fiberglass substrate	P_{tot}	200	mW
Thermal resistance junction to ambient air	Valid that electrodes are kept at ambient temperature	R_{thJA}	650	K/W
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	-65 to +150	°C
Operating temperature range		T_{op}	-55 to +150	°C

ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

PART NUMBER	MARKING CODE	ZENER VOLTAGE RANGE			TEST CURRENT		REVERSE LAEKAGE CURRENT		DYNAMIC RESISTANCE		TEMPERATURE COEFFICIENT OF ZENER VOLTAGE	
		V_Z at I_{ZT1}			I_{ZT1}	I_{ZT2}	I_R at V_R		Z_Z at I_{ZT1}	Z_{ZK} at I_{ZT2}	α_{VZ} at I_{ZT1}	
		V			mA		µA	V	Ω		10^{-4}/°C	
		MIN.	NOM.	MAX.			MAX.		TYP.	TYP.	MIN.	MAX.
BZX384C2V4	W1	2.2	2.4	2.6	5	1	50	1	70 (≤ 100)	275	-9	-4
BZX384C2V7	W2	2.5	2.7	2.9	5	1	20	1	75 (≤ 100)	300 (≤ 600)	-9	-4
BZX384C3V0	W3	2.8	3.0	3.2	5	1	10	1	80 (≤ 95)	325 (≤ 600)	-9	-3
BZX384C3V3	W4	3.1	3.3	3.5	5	1	5	1	85 (≤ 95)	350 (≤ 600)	-8	-3
BZX384C3V6	W5	3.4	3.6	3.8	5	1	5	1	85 (≤ 90)	375 (≤ 600)	-8	-3
BZX384C3V9	W6	3.7	3.9	4.1	5	1	3	1	85 (≤ 90)	400 (≤ 600)	-7	-3
BZX384C4V3	W7	4	4.3	4.6	5	1	3	1	80 (≤ 90)	410 (≤ 600)	-6	-1
BZX384C4V7	W8	4.4	4.7	5	5	1	3	2	50 (≤ 80)	425 (≤ 500)	-5	2
BZX384C5V1	W9	4.8	5.1	5.4	5	1	2	2	40 (≤ 60)	400 (≤ 480)	-3	4
BZX384C5V6	WA	5.2	5.6	6	5	1	1	2	15 (≤ 40)	80 (≤ 400)	-2	6
BZX384C6V2	WB	5.8	6.2	6.6	5	1	3	4	6 (≤ 10)	40 (≤ 150)	-1	7
BZX384C6V8	WC	6.4	6.8	7.2	5	1	2	4	6 (≤ 15)	30 (≤ 80)	2	7
BZX384C7V5	WD	7	7.5	7.9	5	1	1	5	6 (≤ 15)	30 (≤ 80)	3	7
BZX384C8V2	WE	7.7	8.2	8.7	5	1	0.7	5	6 (≤ 15)	40 (≤ 80)	4	7
BZX384C9V1	WF	8.5	9.1	9.6	5	1	0.5	6	6 (≤ 15)	40 (≤ 100)	5	8
BZX384C10	WG	9.4	10	10.6	5	1	0.2	7	8 (≤ 20)	50 (≤ 150)	5	8
BZX384C11	WH	10.4	11	11.6	5	1	0.1	8	10 (≤ 20)	50 (≤ 150)	5	9
BZX384C12	WI	11.4	12	12.7	5	1	0.1	8	10 (≤ 25)	50 (≤ 150)	6	9
BZX384C13	WK	12.4	13	14.1	5	1	0.1	8	10 (≤ 30)	50 (≤ 170)	7	9
BZX384C15	WL	13.8	15	15.6	5	1	0.05	0.7 $V_{Znom.}$	10 (≤ 30)	50 (≤ 200)	7	9
BZX384C16	WM	15.3	16	17.1	5	1	0.05	0.7 $V_{Znom.}$	10 (≤ 40)	50 (≤ 200)	8	9.5
BZX384C18	WN	16.8	18	19.1	5	1	0.05	0.7 $V_{Znom.}$	10 (≤ 45)	50 (≤ 225)	8	9.5
BZX384C20	WO	18.8	20	21.2	5	1	0.05	0.7 $V_{Znom.}$	15 (≤ 55)	60 (≤ 225)	8	10
BZX384C22	WP	20.8	22	23.3	5	1	0.05	0.7 $V_{Znom.}$	20 (≤ 55)	60 (≤ 250)	8	10
BZX384C24	WR	22.8	24	25.6	5	1	0.05	0.7 $V_{Znom.}$	25 (≤ 70)	60 (≤ 250)	8	10
BZX384C27	WS	25.1	27	28.9	2	0.5	0.05	0.7 $V_{Znom.}$	25 (≤ 80)	65 (≤ 300)	8	10
BZX384C30	WT	28	30	32	2	0.5	0.05	0.7 $V_{Znom.}$	30 (≤ 80)	70 (≤ 300)	8	10
BZX384C33	WU	31	33	35	2	0.5	0.05	0.7 $V_{Znom.}$	35 (≤ 80)	75 (≤ 325)	8	10
BZX384C36	WW	34	36	38	2	0.5	0.05	0.7 $V_{Znom.}$	35 (≤ 90)	80 (≤ 350)	8	10
BZX384C39	WX	37	39	41	2	0.5	0.05	0.7 $V_{Znom.}$	40 (≤ 130)	80 (≤ 350)	10	12
BZX384C43	WY	40	43	46	2	0.5	0.05	0.7 $V_{Znom.}$	45 (≤ 150)	85 (≤ 375)	10	12
BZX384C47	WZ	44	47	50	2	0.5	0.05	0.7 $V_{Znom.}$	50 (≤ 170)	85 (≤ 375)	10	12
BZX384C51	X1	48	51	54	2	0.5	0.05	0.7 $V_{Znom.}$	60 (≤ 180)	85 (≤ 400)	8	10
BZX384C56	X2	52	56	60	2	0.5	0.05	0.7 $V_{Znom.}$	70 (≤ 200)	100 (≤ 425)	10	12
BZX384C62	X3	58	62	66	2	0.5	0.05	0.7 $V_{Znom.}$	80 (≤ 215)	100 (≤ 450)	10	12
BZX384C68	X4	64	68	72	2	0.5	0.05	0.7 $V_{Znom.}$	90 (≤ 240)	150 (≤ 475)	10	12
BZX384C75	X5	70	75	79	2	0.5	0.05	0.7 $V_{Znom.}$	95 (≤ 255)	170 (≤ 500)	10	12

ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)													
PART NUMBER	**MARKING CODE**	**ZENER VOLTAGE RANGE**			**TEST CURRENT**		**REVERSE LEAKAGE CURRENT**		**DYNAMIC RESISTANCE**		**TEMPERATURE COEFFICIENT OF ZENER VOLTAGE**	
		V_Z at I_{ZT1}			I_{ZT1}	I_{ZT2}	I_R at V_R		Z_Z at I_{ZT1}	Z_{ZK} at I_{ZT2}	α_{VZ} at I_{ZT1}	
		V			mA		µA	V	Ω		10^{-4}/°C	
		MIN.	NOM.	MAX.			MAX.		TYP.	TYP.	MIN.	MAX.
BZX384B2V4	W1	2.35	2.4	2.45	5	1	50	1	70 (≤ 100)	275	-9	-4
BZX384B2V7	W2	2.65	2.7	2.75	5	1	20	1	75 (≤ 100)	300 (≤ 600)	-9	-3
BZX384B3V0	W3	2.94	3.0	3.06	5	1	10	1	80 (≤ 95)	325 (≤ 600)	-8	-3
BZX384B3V3	W4	3.23	3.3	3.37	5	1	5	1	85 (≤ 95)	350 (≤ 600)	-8	-3
BZX384B3V6	W5	3.53	3.6	3.67	5	1	5	1	85 (≤ 90)	375 (≤ 600)	-7	-3
BZX384B3V9	W6	3.82	3.9	3.98	5	1	3	1	85 (≤ 90)	400 (≤ 600)	-6	-1
BZX384B4V3	W7	4.21	4.3	4.39	5	1	3	1	80 (≤ 90)	410 (≤ 600)	-5	2
BZX384B4V7	W8	4.61	4.7	4.79	5	1	3	2	50 (≤ 80)	425 (≤ 500)	-3	4
BZX384B5V1	W9	5	5.1	5.2	5	1	2	2	40 (≤ 60)	400 (≤ 480)	-2	6
BZX384B5V6	WA	5.49	5.6	5.71	5	1	1	2	15 (≤ 40)	80 (≤ 400)	-1	7
BZX384B6V2	WB	6.08	6.2	6.32	5	1	3	4	6 (≤ 10)	40 (≤ 150)	2	7
BZX384B6V8	WC	6.66	6.8	6.94	5	1	2	4	6 (≤ 15)	30 (≤ 80)	3	7
BZX384B7V5	WD	7.35	7.5	7.65	5	1	1	5	6 (≤ 15)	30 (≤ 80)	4	7
BZX384B8V2	WE	8.04	8.2	8.36	5	1	0.7	5	6 (≤ 15)	40 (≤ 80)	5	8
BZX384B9V1	WF	8.92	9.1	9.28	5	1	0.5	6	6 (≤ 15)	40 (≤ 100)	5	8
BZX384B10	WG	9.8	10	10.2	5	1	0.2	7	8 (≤ 20)	50 (≤ 150)	5	9
BZX384B11	WH	10.8	11	11.2	5	1	0.1	8	10 (≤ 20)	50 (≤ 150)	6	9
BZX384B12	WI	11.8	12	12.2	5	1	0.1	8	10 (≤ 25)	50 (≤ 150)	7	9
BZX384B13	WK	12.7	13	13.3	5	1	0.1	8	10 (≤ 30)	50 (≤ 170)	7	9
BZX384B15	WL	14.7	15	15.3	5	1	0.05	0.7 $V_{Znom.}$	10 (≤ 30)	50 (≤ 200)	8	9.5
BZX384B16	WM	15.7	16	16.3	5	1	0.05	0.7 $V_{Znom.}$	10 (≤ 40)	50 (≤ 200)	8	9.5
BZX384B18	WN	17.6	18	18.4	5	1	0.05	0.7 $V_{Znom.}$	10 (≤ 45)	50 (≤ 225)	8	10
BZX384B20	WO	19.6	20	20.4	5	1	0.05	0.7 $V_{Znom.}$	15 (≤ 55)	60 (≤ 225)	8	10
BZX384B22	WP	21.6	22	22.4	5	1	0.05	0.7 $V_{Znom.}$	20 (≤ 55)	60 (≤ 250)	8	10
BZX384B24	WR	23.5	24	24.5	5	1	0.05	0.7 $V_{Znom.}$	25 (≤ 70)	60 (≤ 250)	8	10
BZX384B27	WS	26.5	27	27.5	2	0.5	0.05	0.7 $V_{Znom.}$	25 (≤ 80)	65 (≤ 300)	8	10
BZX384B30	WT	29.4	30	30.6	2	0.5	0.05	0.7 $V_{Znom.}$	30 (≤ 80)	70 (≤ 300)	8	10
BZX384B33	WU	32.3	33	33.7	2	0.5	0.05	0.7 $V_{Znom.}$	35 (≤ 80)	75 (≤ 325)	8	10
BZX384B36	WW	35.3	36	36.7	2	0.5	0.05	0.7 $V_{Znom.}$	35 (≤ 90)	80 (≤ 350)	10	12
BZX384B39	WX	38.2	39	39.8	2	0.5	0.05	0.7 $V_{Znom.}$	40 (≤ 130)	80 (≤ 350)	10	12
BZX384B43	WY	42.1	43	43.9	2	0.5	0.05	0.7 $V_{Znom.}$	45 (≤ 150)	85 (≤ 375)	10	12
BZX384B47	WZ	46.1	47	47.9	2	0.5	0.05	0.7 $V_{Znom.}$	50 (≤ 170)	85 (≤ 375)	10	12
BZX384B51	X1	50	51	52	2	0.5	0.05	0.7 $V_{Znom.}$	60 (≤ 180)	85 (≤ 400)	10	12
BZX384B56	X2	54.9	56	57.1	2	0.5	0.05	0.7 $V_{Znom.}$	70 (≤ 200)	100 (≤ 425)	10	12
BZX384B62	X3	60.8	62	63.2	2	0.5	0.05	0.7 $V_{Znom.}$	80 (≤ 215)	100 (≤ 450)	10	12
BZX384B68	X4	66.6	68	69.4	2	0.5	0.05	0.7 $V_{Znom.}$	90 (≤ 240)	150 (≤ 475)	10	12
BZX384B75	X5	73.5	75	76.5	2	0.5	0.05	0.7 $V_{Znom.}$	95 (≤ 255)	170 (≤ 500)	10	12

TYPICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

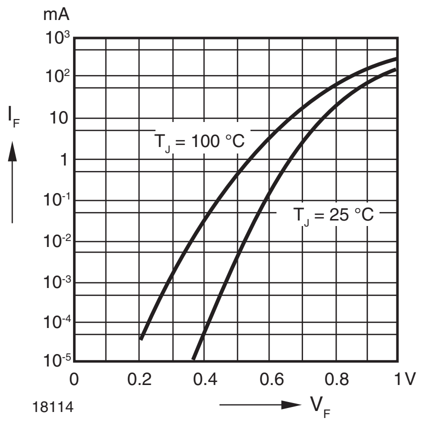


Fig. 1 - Forward characteristics

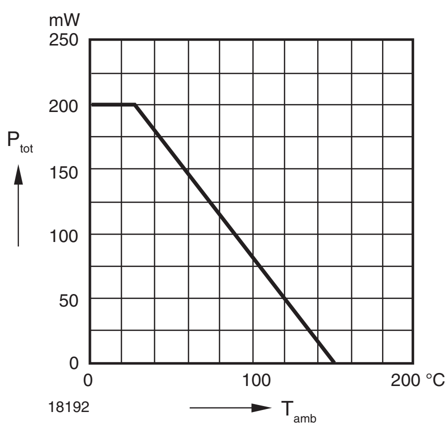


Fig. 2 - Admissible Power Dissipation vs. Ambient Temperature

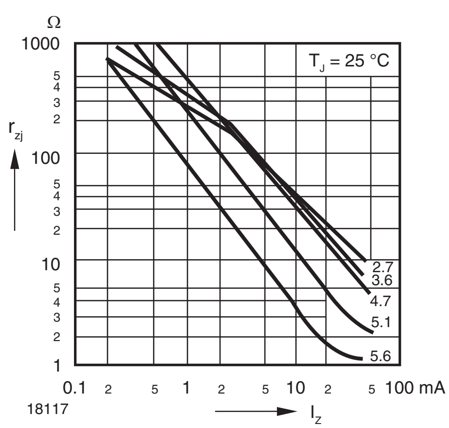


Fig. 3 - Dynamic Resistance vs. Zener Current

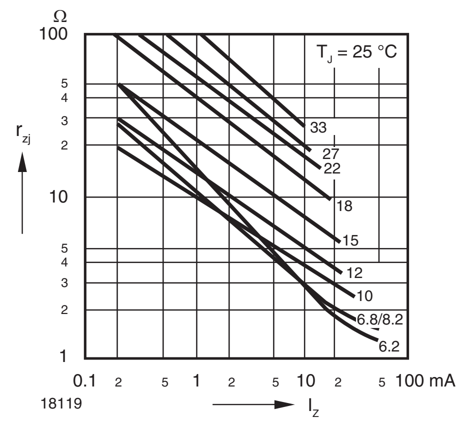


Fig. 4 - Dynamic Resistance vs. Zener Current

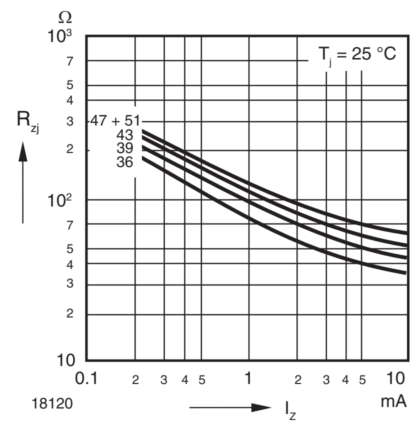


Fig. 5 - Dynamic Resistance vs. Zener Current

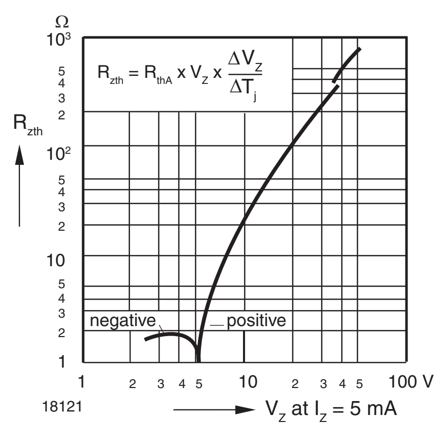


Fig. 6 - Thermal Differential Resistance vs. Zener Voltage

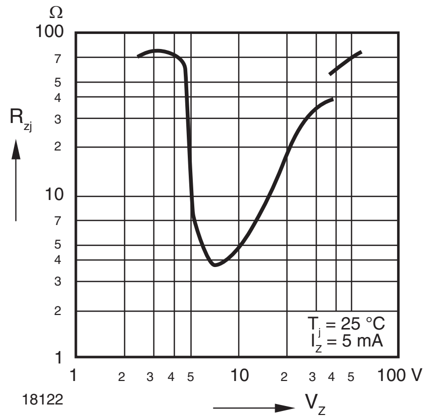


Fig. 7 - Dynamic Resistance vs. Zener Voltage

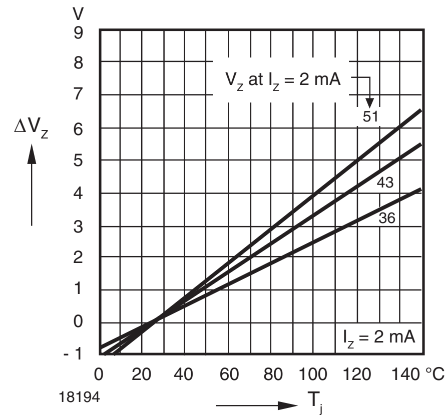


Fig. 10 - Change of Zener Voltage vs. Junction Temperature

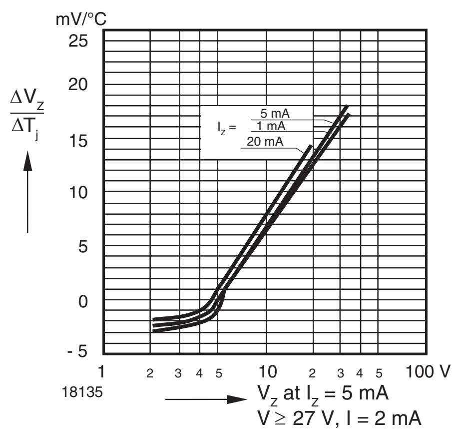


Fig. 8 - Temperature Dependence of Zener Voltage vs. Zener Voltage

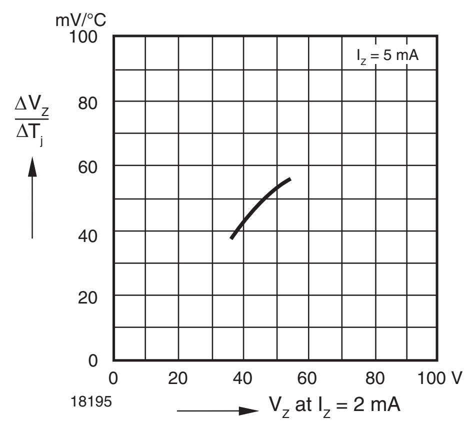


Fig. 11 - Temperature Dependence of Zener Voltage vs. Zener Voltage

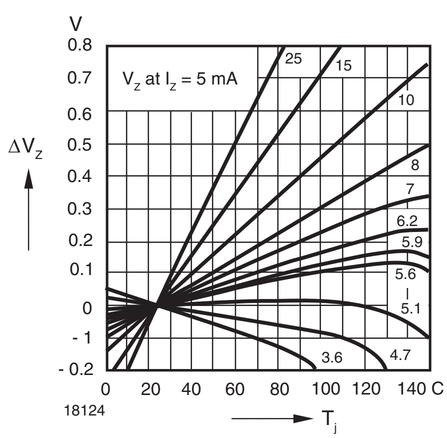


Fig. 9 - Change of Zener Voltage vs. Junction Temperature

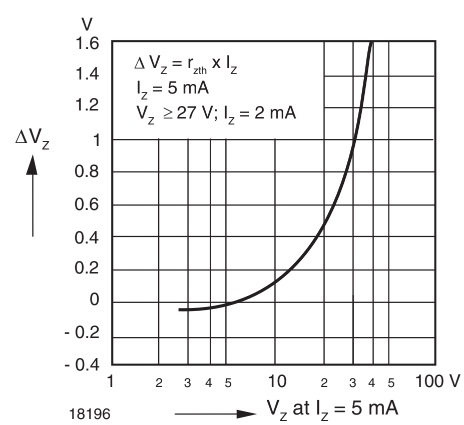


Fig. 12 - Change of Zener Voltage from Turn-on up to the Point of Thermal Equilibrium vs. Zener Voltage

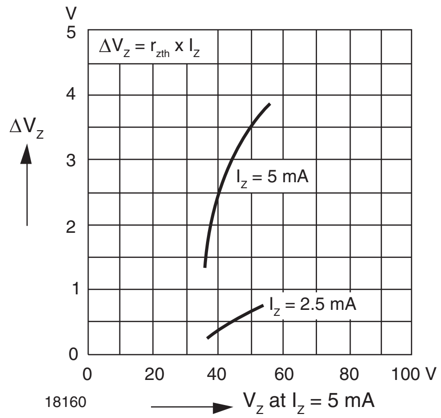


Fig. 13 - Change of Zener Voltage from Turn-on up to the Point of Thermal Equilibrium vs. Zener Voltage

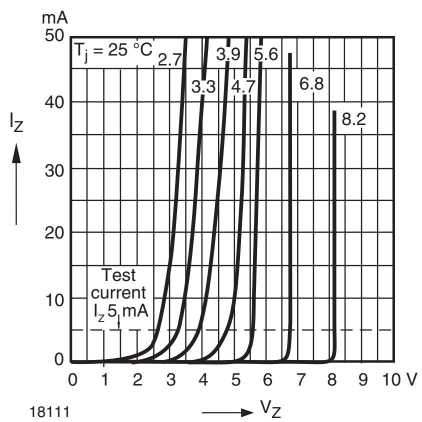


Fig. 14 - Breakdown Characteristics

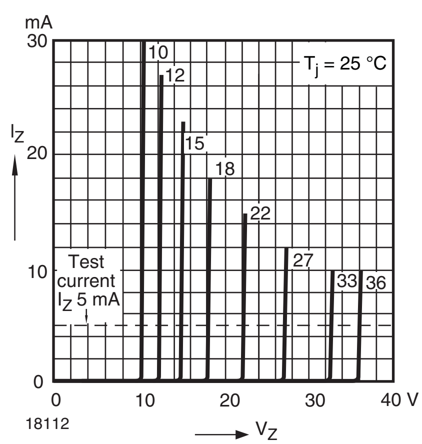


Fig. 15 - Breakdown Characteristics

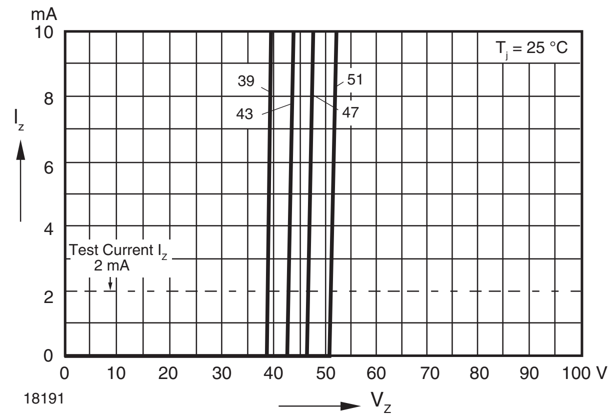
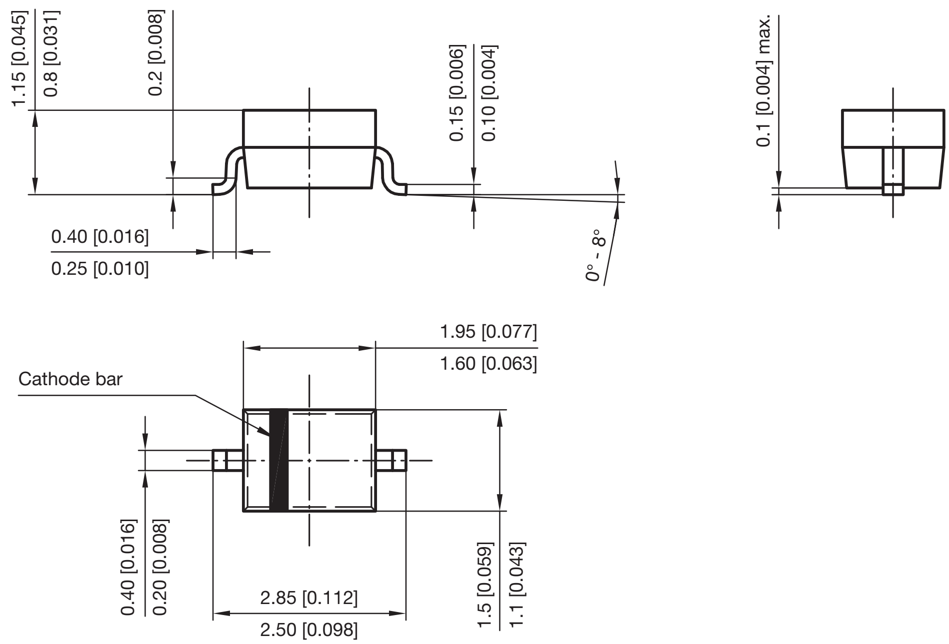
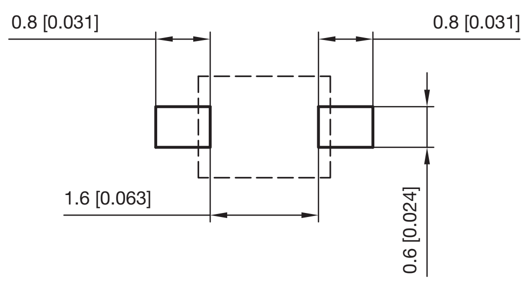


Fig. 16 - Breakdown Characteristics

PACKAGE DIMENSIONS in millimeters (inches): **SOD-323**



Footprint recommendation:



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