1 W Surface Mount Zener Diode

SOD123W

Voltage	Power Dissipation
9.1 to 220 V	1 W

FEATURE

- Low profile package
- Ideal for automated placement
- Low leakage current
- High surge current and zener capability
- Low differential resistance
- Low forward voltage drop
- Solder dip 260 ºC, 10s
- AEC-Q101 qualified
- Component in accordance to RoHS 2011/65/EU and WEEE 2002/96/EC
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 ºC

AUTOMOTIVE GRADE Available

Pb

e3

RoHS COMPLIANT

MECHANICAL DATA

- **Case:** SOD123W. Epoxy meets UL 94V-0 flammability rating.
- **Polarity:** Color band denotes cathode end.
- **Terminals:** Matte tin plated leads, solderable per MIL-STD-750 Method 2026, J-STD-002 and JESD22-B102. Consumer grade, meets JESD 201 class 1A whisker test.
- **HE3 suffix** for high reliability grade, meets JESD 201 class 2 whisker test.

TYPICAL APPLICATIONS

Used for basic regulation functions in most electronic applications, Zener diodes offer a cheaper altenative to IC solutions.

Maximun Ratings and Electrical Characteristics at 25 °C

SYMBOL	TYPE NUMBER	VALUE	UNIT
V_F	Forward voltage at I_F = 0.2 A	1.2	V
P_{tot}	Power dissipation TL = 80 ºC TA = 25 ºC (Note 1)	2.3 1	W
P_{ZSM}	Non-Repetitive Peak Pulse Power Dissipation 100 µs square pulse (Note 2)	300	W
P_{RSM}	Non-Repetitive Peak Pulse Power Dissipation 10/1000 µs waveform (BZD27-C9V1W to BZD27-C100W) (Note 2)	150	W
P_{RSM}	Non-Repetitive Peak Pulse Power Dissipation 10/1000 µs waveform (BZD27-110W to BZD27-C220W) (Note 2)	100	W
R_{JA}	Thermal Resistance Junction to Ambient Air (Note 1)	180	ºC/W
R_{Jc}	Thermal Resistance Junction to Lead	30	ºC/W
T_j - T_{stg}	Operating and Storage Temperature Range	-65 to +150	ºC

Notes: 1. Mounted on Epoxy-Glass PCB with 3 x 3 mm Cu pads (≥40 µmthick)
2. T_j = 25 ºC Prior to surge

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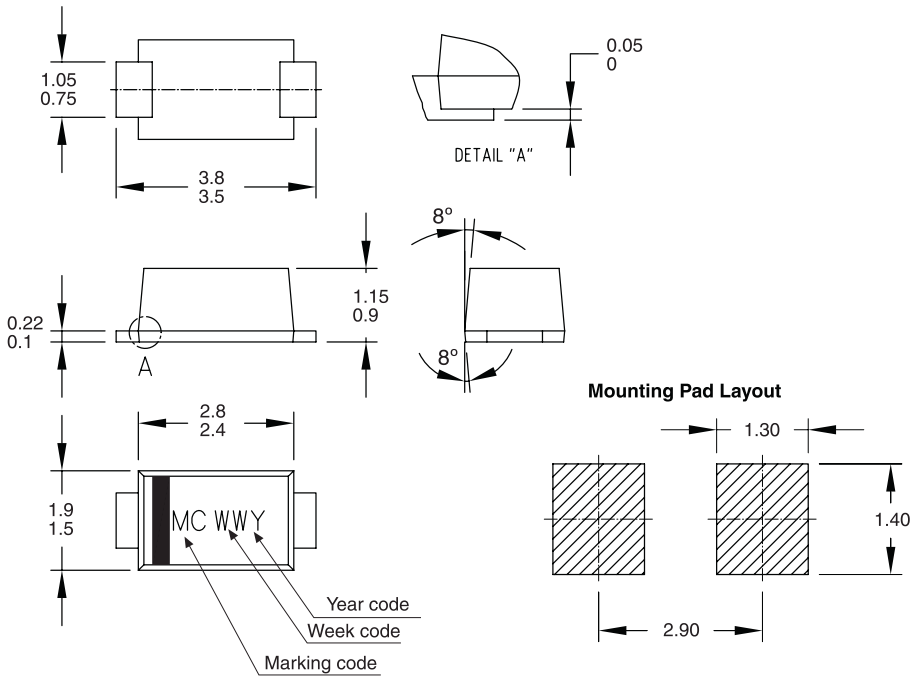
Ordering information

PREFERRED P/N	PACKAGE CODE	DELIVERY MODE	BASE QUANTITY	UNIT WEIGHT (g)
BZD27C11W TRTB	TRTB	13" diameter tape and reel	10,000	0.0165
BZD27C11W HE3 TRTB	TRTB	13" diameter tape and reel	10,000	0.0165

Package Outline Dimensions: (mm) SOD123W



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Rating and Characteristics (Ta 25 ºC unless otherwise noted)

Device	Device Marking Code	Working Voltage (Note 1)		Differential Resistance		Temperature Coefficient		Test	Reverse Current @ Reverse Voltage	
		V_Z @ I_{ZT}		r_{dif} @ I_Z		ALPH$_Z$ @ I_Z		Current	I_R	
		V				% / ºC		I_{ZT}	µA	V_R
		Min.	Max.	typ	Max.	Min.	Max.	mA	Max.	V
BZD27C9V1W	8X	8.5	9.6	2.0	4.0	0.03	0.08	50	10.0	5
BZD27C11W	6A	10.4	11.6	4.0	7	0.05	0.10	50	4.0	8.2
BZD27C12W	6B	11.4	12.7	4.0	7	0.05	0.10	50	3.0	9.1
BZD27C13W	6C	12.4	14.1	5.0	10	0.05	0.10	50	2.0	10
BZD27C14W	8Y	13.4	14.6	5.0	10	0.05	0.10	50	2.0	11
BZD27C15W	6D	13.8	15.6	5.0	10	0.05	0.10	25	1.0	11
BZD27C16W	6E	15.3	17.1	6.0	15	0.06	0.11	25	1.0	12
BZD27C18W	6F	16.8	19.1	6.0	15	0.06	0.11	25	1.0	13
BZD27C22W	7A	20.8	23.3	6.0	15	0.06	0.11	25	1.0	16
BZD27C24W	6G	22.8	25.6	7.0	15	0.06	0.11	25	1.0	18
BZD27C27W	6H	25.1	28.9	7.0	15	0.06	0.11	25	1.0	20
BZD27C30W	6I	28	32	8.0	15	0.06	0.11	25	1.0	22
BZD27C33W	6J	31	35	8.0	15	0.06	0.11	25	1.0	24
BZD27C36W	6K	34	38	21	40	0.06	0.11	10	1.0	27
BZD27C39W	6L	37	41	21	40	0.06	0.11	10	1.0	30
BZD27C43W	6M	40	46	24	45	0.07	0.12	10	1.0	33
BZD27C47W	6N	44	50	24	45	0.07	0.12	10	1.0	36
BZD27C51W	6O	48	54	25	45	0.07	0.12	10	1.0	39
BZD27C62W	6P	58	66	25	80	0.08	0.13	10	1.0	47
BZD27C68W	6O	64	72	25	80	0.08	0.13	10	1.0	51
BZD27C75W	6R	70	79	30	100	0.08	0.13	10	1.0	56
BZD27C82W	3Z	77	87	60	200	0,08	0,13	2	1	63
BZD27C100W	6S	94	106	60	200	0.09	0.13	5	1.0	75
BZD27C110W	6Y	104	116	80	250	0.09	0.13	5	1.0	82
BZD27C120W	6T	114	127	150	300	0.09	0.13	5	1.0	91
BZD27C150W	6Z	138	156	150	300	0.09	0.13	5	1.0	110
BZD27C160W	7B	153	171	150	350	0.09	0.13	5	1.0	120
BZD27C180W	6U	168	191	180	400	0.09	0.13	5	1.0	130
BZD27C200W	6V	188	212	350	750	0.09	0.13	5	1.0	150
BZD27C220W	6X	208	233	430	900	0.09	0.13	5	1.0	160

Notes: 1. Pulse test: tp :: 5ms.

- Electrical characteristics when used as voltage regulator diodes

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Rating and Characteristics (Ta 25 ºC unless otherwise noted)

Device	Rev. Breakdown Voltage	Test Current	Temperature Coefficient		Clamping Voltage		Reverse Current @ Stand-Off Voltage	
	V(BR)@Itest	Itest	$ALPH_Z$ @ Itest		Vc	@IRSM (Note 1)	I_R	@V_{WM}
	V	mA	% / ºc		V	A	µA	V
	Min.		typ	Max.	Max.		Max.	
BZD27C9V1W	8.5	50	0.03	0.08	13.3	11.3	10.0	5
BZD27C11W	10.4	50	0.05	0.10	15.7	9.6	4.0	8.2
BZD27C12W	11.4	50	0.05	0.10	17	8.8	3.0	9.1
BZD27C13W	12.4	50	0.05	0.10	18.9	7.9	2.0	10
BZD27C14W	13.4	50	0.05	0.10	19.9	7.6	2.0	11
BZD27C15W	13.8	50	0.05	0.10	20.9	7.2	1.0	11
BZD27C16W	15.3	25	0.06	0.11	22.9	6.6	1.0	12
BZD27C18W	16.8	25	0.06	0.11	25.6	5.9	1.0	13
BZD27C22W	20.8	25	0.06	0.11	31.0	4.8	1.0	16
BZD27C24W	22.8	25	0.06	0.11	33.8	4.4	1.0	18
BZD27C27W	25.1	25	0.06	0.11	38.1	3.9	1.0	20
BZD27C30W	28	25	0.06	0.11	42.2	3.6	1.0	22
BZD27C33W	31	25	0.06	0.11	46.2	3.2	1.0	24
BZD27C36W	34	10	0.06	0.11	50.1	3	1.0	27
BZD27C39W	37	10	0.06	0.11	54.1	2.8	1.0	30
BZD27C43W	40	10	0.07	0.12	60.7	2.5	1.0	33
BZD27C47W	44	10	0.07	0.12	65.5	2.3	1.0	36
BZD27C51W	48	10	0.07	0.12	70.8	2.1	1.0	39
BZD27C62W	58	10	0.08	0.13	86.5	1.7	1.0	47
BZD27C68W	64	10	0.08	0.13	94.4	1.6	1.0	51
BZD27C75W	70	10	0.08	0.13	103.5	1.5	1.0	56
BZD27C82W	77	2	0.08	0.13	113	1.33	1.0	63
BZD27C100W	94	5	0.09	0.13	139	1.1	1.0	75
BZD27C110W	104	5	0.09	0.13	150	1	1.0	82
BZD27C120W	114	5	0.09	0.13	167	0.9	1.0	91
BZD27C150W	138	5	0.09	0.13	187	0.73	1.0	110
BZD27C160W	153	5	0.09	0.13	205	0.48	1.0	120
BZD27C180W	168	5	0.09	0.13	252	0.6	1.0	130
BZD27C200W	188	5	0.09	0.13	278	0.54	1.0	150
BZD27C220W	208	5	0.09	0.13	301	0.49	1.0	160

Notes: 1. Non-repetitive peak reverse current in accordance with “IEC 60-1, Section 8” (10/1000 µs pulse)

- Electrical characteristics when used as protection diodes

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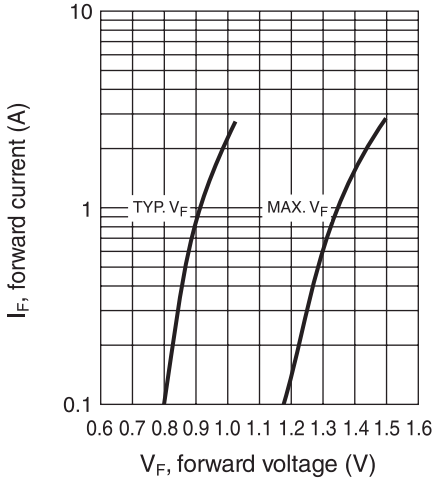
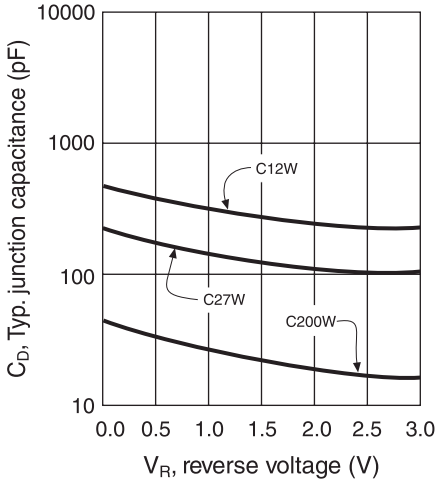
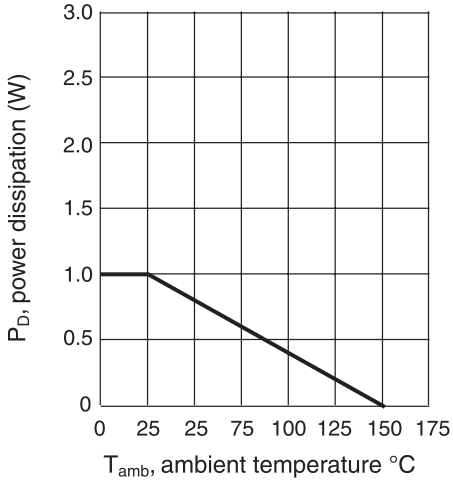
FORWARD CURRENT vs FORWARD VOLTAGE



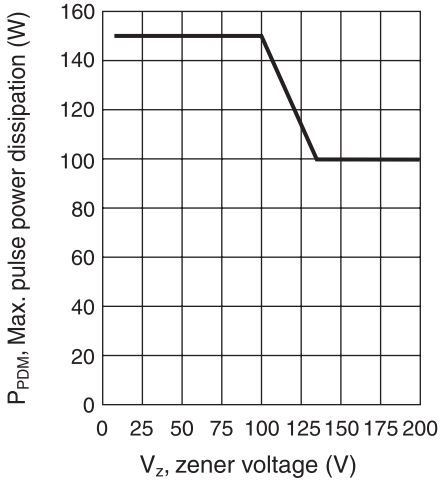
TYP. DIODE CAPACITANCE vs REVERSE VOLTAGE



POWER DISSIPATION vs AMBIENT TEMPERATURE



MAXIMUM PULSE POWER DISSIPATION vs ZENER VOLTAGE



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Revision History

DATE	REVISION	DESCRIPTION OF CHANGES
03-May-2013	0	Original Data Sheet
06-Feb-2014	1	Changed: Package Outline Dimensions, Add. BZD27C110W, Correct typing errors in electrical parameters
15-Oct-2014	2	Add. BZD27C150W
18-Feb-2016	3	Add. BZD27C22W and BZD27C160W
27-Jul-2016	4	Add. BZD27C9V1W and BZD27C14W
15-Feb-2018	5	Remove Tolerance Series ± 5%
18-Dec-2018	6	Include BZD27C82W reference

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All product, product specifications and data are subject to change without notice to improve reliability, function or design or otherwise.

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