

SURFACE MOUNT ZENER DIODE

Features

- Planar Die Construction
- 500mW Power Dissipation
- General Purpose, Medium Current
- Ideally Suited for Automated Assembly Processes
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Notes 3 & 4)
- Qualified to AEC-Q101 Standards for High Reliability

Mechanical Data

- Case: SOD123
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Alloy 42 Leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208 \$\frac{1}{2}\$
- Polarity: Cathode Band
- Weight: 0.010 grams (Approximate)

SOD123



Top View

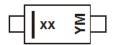
Ordering Information (Notes 5 & 6)

Part Number	Qualification	Case	Packaging
(Type Number)-7-F	Commercial	SOD123	3,000/Tape & Reel
(Type Number)Q-7-F	Automotive	SOD123	3,000/Tape & Reel
(Type Number)-13-F	Commercial	SOD123	10,000/Tape & Reel
(Type Number)Q-13-F	Automotive	SOD123	10,000/Tape & Reel

Notes:

- 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
- 2. See http://www.diodes.com for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
- 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
- 4. Product manufactured with Date Code V9 (week 33, 2008) and newer are built with Green Molding Compound. Product manufactured prior to Date Code V9 are built with Non-Green Molding Compound and may contain Halogens or Sb₂O₃ Fire Retardants.
- 5. For packaging details, go to our website at http://www.diodes.com.
- 6. For (Type Number), please see the Electrical Characteristics Table. Example: 6.2V Zener = BZT52C6V2Q-13-F.

Marking Information



xx = Product Type Marking Code (See Electrical Characteristics Table) YM = Date Code Marking

Y = Year (ex: E = 2017) M = Month (ex: 9 = September)

Date Code Key

Year	2013	2014	2015	2016	2017	 2020	2021	2022	2023	2024
Code	Α	В	С	D	Е	 Н	I	J	K	L

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	0	N	D



Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Single phase, half wave, 60Hz, resistive or inductive load.

For capacitance load, derate current by 20%.

Characteristic		Symbol	Value	Unit	
Forward Voltage	@ I _F = 10mA	V _F	0.9	V	

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 7) @TL = +75°C	P _D	500	mW
Power Dissipation (Note 8) @Ta = +25°C	P _D	370	mW
Thermal Resistance, Junction to Ambient Air (Note 8)	$R_{\theta JA}$	338	°C/W
Thermal Resistance, Junction to Lead (Note 9)	$R_{ heta JL}$	150	°C/W
Operating and Storage Temperature Range	$T_{J_i}T_{STG}$	-65 to +150	°C

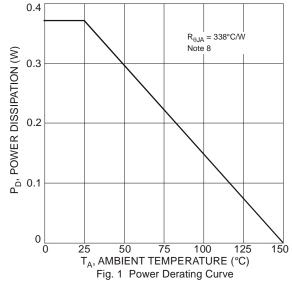
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Type Number	Marking Codes	Zener Voltage Range (Note 10)			Marking (Note 10) Impedance f = 1kHz				Maximum Reverse Current (Note 10)		Reverse Current (Note 10)		
			Vz @ Izt		I _{ZT}	Z _{ZT} @ I _{ZT}	Z _{ZK} @ I _{ZK}	Izk	IR	@ V _R			
		Nom (V)	Min (V)	Max (V)	mA	9	_	mA	uA	V	Min	Max	mA
BZT52C2V0	WY	2.0	1.91	2.09	5	100	600	1.0	150	1.0	-3.5	0	5
BZT52C2V4	WX	2.4	2.2	2.6	5	100	600	1.0	50	1.0	-3.5	0	5
BZT52C2V7	W1	2.7	2.5	2.9	5	100	600	1.0	20	1.0	-3.5	0	5
BZT52C3V0	W2	3.0	2.8	3.2	5	95	600	1.0	10	1.0	-3.5	0	5
BZT52C3V3	W3	3.3	3.1	3.5	5	95	600	1.0	5.0	1.0	-3.5	0	5
BZT52C3V6	W4	3.6	3.4	3.8	5	90	600	1.0	5.0	1.0	-3.5	0	5
BZT52C3V9	W5	3.9	3.7	4.1	5	90	600	1.0	3.0	1.0	-3.5	0	5
BZT52C4V3	W6	4.3	4.0	4.6	5	90	600	1.0	3.0	1.0	-3.5	0	5
BZT52C4V7	W7	4.7	4.4	5.0	5	80	500	1.0	3.0	2.0	-3.5	0.2	5
BZT52C5V1	W8	5.1	4.8	5.4	5	60	480	1.0	2.0	2.0	-2.7	1.2	5
BZT52C5V6	W9	5.6	5.2	6.0	5	40	400	1.0	1.0	2.0	-2	2.5	5
BZT52C6V2	WA	6.2	5.8	6.6	5	10	150	1.0	3.0	4.0	0.4	3.7	5
BZT52C6V8	WB	6.8	6.4	7.2	5	15	80	1.0	2.0	4.0	1.2	4.5	5
BZT52C7V5	WC	7.5	7.0	7.9	5	15	80	1.0	1.0	5.0	2.5	5.3	5
BZT52C8V2	WD	8.2	7.7	8.7	5	15	80	1.0	0.7	5.0	3.2	6.2	5
BZT52C9V1	WE	9.1	8.5	9.6	5	15	100	1.0	0.5	6.0	3.8	7.0	5
BZT52C10	WF	10	9.4	10.6	5	20	150	1.0	0.2	7.0	4.5	8.0	5
BZT52C11	WG	11	10.4	11.6	5	20	150	1.0	0.1	8.0	5.4	9.0	5
BZT52C12	WH	12	11.4	12.7	5	25	150	1.0	0.1	8.0	6.0	10.0	5
BZT52C13	WI	13	12.4	14.1	5	30	170	1.0	0.1	8.0	7.0	11.0	5
BZT52C15	WJ	15	13.8	15.6	5	30	200	1.0	0.1	10.5	9.2	13.0	5
BZT52C16	WK	16	15.3	17.1	5	40	200	1.0	0.1	11.2	10.4	14.0	5
BZT52C18	WL	18	16.8	19.1	5	45	225	1.0	0.1	12.6	12.4	16.0	5
BZT52C20	WM	20	18.8	21.2	5	55	225	1.0	0.1	14.0	14.4	18.0	5
BZT52C22	WN	22	20.8	23.3	5	55	250	1.0	0.1	15.4	16.4	-	5
BZT52C24	WO	24	22.8	25.6	5	70	250	1.0	0.1	16.8	18.4	-	5
BZT52C27	WP	27	25.1	28.9	2	80	300	0.5	0.1	18.9	21.4	-	2
BZT52C30	WQ	30	28.0	32.0	2	80	300	0.5	0.1	21.0	24.4	-	2
BZT52C33	WR	33	31.0	35.0	2	80	325	0.5	0.1	23.1	27.4	-	2
BZT52C36	WS	36	34.0	38.0	2	90	350	0.5	0.1	25.2	30.4	-	2
BZT52C39	WT	39	37.0	41.0	2	130	350	0.5	0.1	27.3	33.4	-	2
BZT52C43	WU	43	40.0	46.0	5	100	700	1.0	0.1	32.0	37.6	-	5
BZT52C47	WV	47	44.0	50.0	5	100	750	1.0	0.1	35.0	42.0	-	5
BZT52C51	WW	51	48.0	54.0	5	100	750	1.0	0.1	38.0	46.6	-	5

Notes: 7. $R_{\theta JL}$ =

- 7. $R_{\theta,JL} = 132^{\circ} C/W$ 8. Device mounted on FR-4 PCB with 1 inch copper pad layout.
- 9. Thermal Resistance measurement obtained via infrared scan method.
- 10. Short duration pulse test used to minimize self-heating effect.





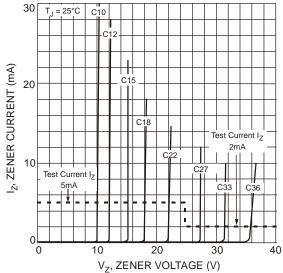


Fig. 3 Typical Zener Breakdown Characteristics

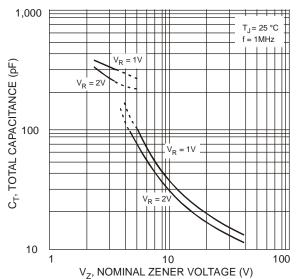


Fig. 5 Typical Total Capacitance vs. Nominal Zener Voltage

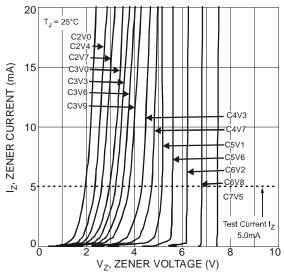


Fig. 2 Typical Zener Breakdown Characteristics

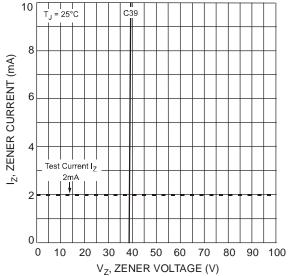


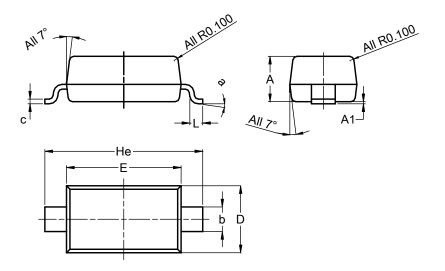
Fig. 4 Typical Zener Breakdown Characteristics



Package Outline Dimensions

Please see http://www.diodes.com/package-outlines.html for the latest version.

SOD123

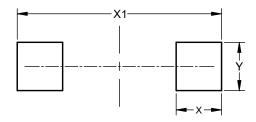


SOD123								
Dim	Min	Max	Тур					
Α	1.00	1.35	1.05					
A1	0.00	0.10	0.05					
b	0.52	0.62	0.57					
С	0.10	0.15	0.11					
D	1.40	1.70	1.55					
Е	2.55	2.85	2.65					
He	3.55	3.85	3.65					
٦	0.25	0.40	0.30					
а	00	8º						
All [Dimens	ions in	mm					

Suggested Pad Layout

Please see http://www.diodes.com/package-outlines.html for the latest version.

SOD123



Dimensions	Value (in mm)
Х	0.900
X1	4.050
Υ	0.950



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