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
- Polarity: Cathode Band
- Weight: 0.010 grams (Approximate)

SOD123

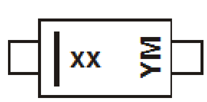
Top View

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 Sb_2O_3 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	A	B	C	D	E	…	H	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	O	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) @T_L = +75°C	P_D	500	mW
Power Dissipation (Note 8) @T_A = +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)	$R_{\theta JL}$	150	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +150	°C

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

Type Number	Marking Codes	Zener Voltage Range (Note 10)				Maximum Zener Impedance f = 1kHz			Maximum Reverse Current (Note 10)		Temperature Coefficient @ I_{ZTC} mV/°C		Test Current I_{ZTC}
		V_Z @ I_{ZT}			I_{ZT}	Z_{ZT} @ I_{ZT}	Z_{ZK} @ I_{ZK}	I_{ZK}	I_R	@ V_R			
		Nom (V)	Min (V)	Max (V)	mA	Ω		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. $R_{\theta JL}$ = 132°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.

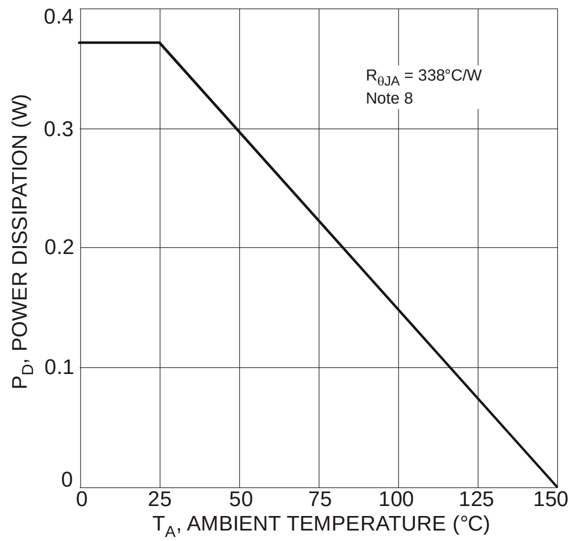


Fig. 1 Power Derating Curve

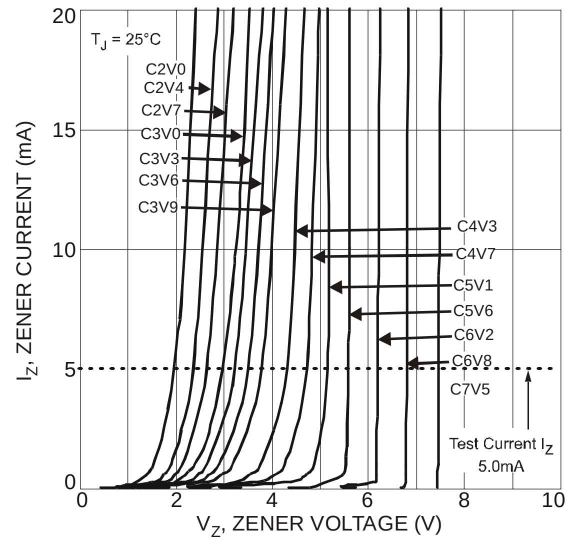


Fig. 2 Typical Zener Breakdown Characteristics

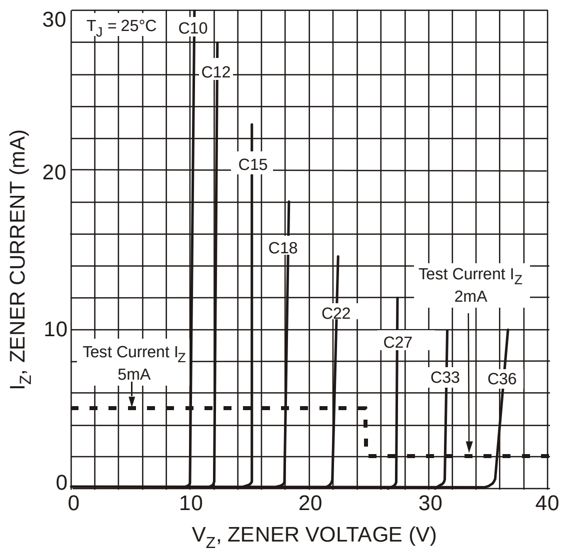


Fig. 3 Typical Zener Breakdown Characteristics

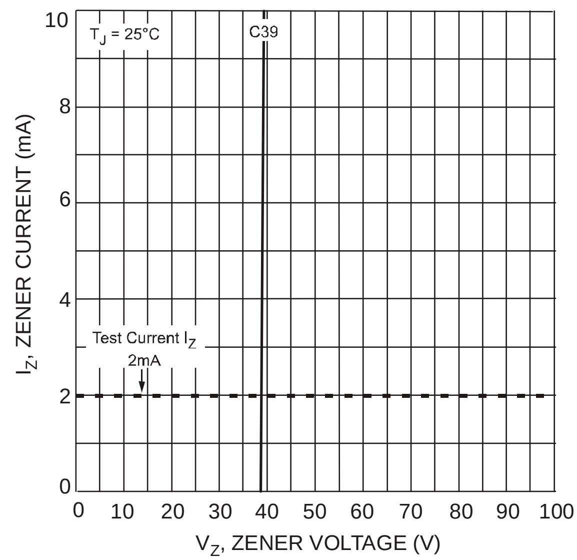


Fig. 4 Typical Zener Breakdown Characteristics

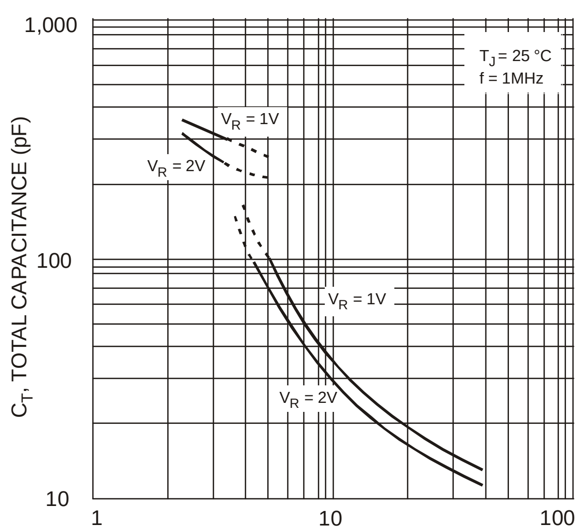
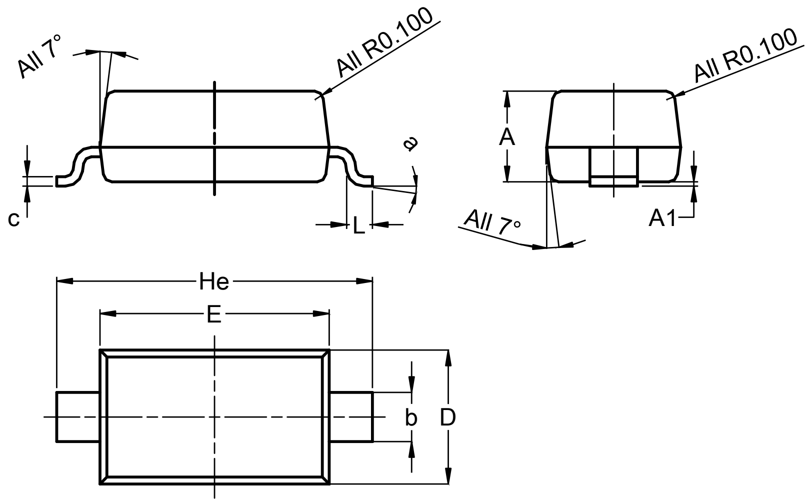


Fig. 5 Typical Total Capacitance vs. Nominal Zener Voltage

Package Outline Dimensions

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

SOD123

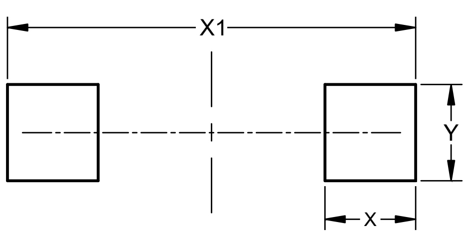


SOD123			
Dim	**Min**	**Max**	**Typ**
A	1.00	1.35	1.05
A1	0.00	0.10	0.05
b	0.52	0.62	0.57
c	0.10	0.15	0.11
D	1.40	1.70	1.55
E	2.55	2.85	2.65
He	3.55	3.85	3.65
L	0.25	0.40	0.30
a	0º	8º	--
All Dimensions in mm			

Suggested Pad Layout

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

SOD123



Dimensions	Value (in mm)
X	0.900
X1	4.050
Y	0.950

Mouser Electronics

Authorized Distributor

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Diodes Incorporated:

BZT52C3V9-7-F BZT52C16-7-F BZT52C12-7-F BZT52C5V1-7-F BZT52C8V2-7-F BZT52C5V6-7-F BZT52C3V6-7-F BZT52C6V8-7-F BZT52C15-7-F BZT52C6V2-7-F BZT52C11-7-F BZT52C3V0-7-F BZT52C3V3-7-F BZT52C18-7-F BZT52C10-7-F BZT52C3V3-7 BZT52C12-7 BZT52C8V2-7 BZT52C7V5-7 BZT52C10-7 BZT52C3V9-7 BZT52C11-7 BZT52C3V6-7 BZT52C9V1-7 BZT52C2V7-7 BZT52C33-7 BZT52C4V7-7 BZT52C4V3-7 BZT52C27-7 BZT52C5V6-7 BZT52C3V0-7 BZT52C2V4-7 BZT52C5V1-7 BZT52C24-7 BZT52C6V2-7 BZT52C20-7 BZT52C18-7 BZT52C16-7 BZT52C6V8-7 BZT52C15-7 BZT52C4V3-7-F BZT52C7V5-7-F BZT52C4V7-7-F BZT52C33-7-F BZT52C27-7-F BZT52C2V7-7-F BZT52C20-7-F BZT52C2V4-7-F BZT52C9V1-7-F BZT52C24-7-F BZT52C3V6-13-F BZT52C15-13-F BZT52C16-13-F BZT52C20-13-F BZT52C22-13-F BZT52C24-13-F BZT52C2V4-13-F BZT52C2V7-13-F BZT52C33-13-F BZT52C5V1-13-F BZT52C6V2-13-F BZT52C6V8-13-F BZT52C8V2-13-F BZT52C9V1-13-F BZT52C13-7 BZT52C13-7-F BZT52C22-7 BZT52C22-7-F BZT52C2V0-7 BZT52C2V0-7-F BZT52C30-7 BZT52C30-7-F BZT52C36-7 BZT52C36-7-F BZT52C39-7 BZT52C39-7-F BZT52C43-7 BZT52C43-7-F BZT52C47-7 BZT52C47-7-F BZT52C51-7 BZT52C51-7-F BZT52C12-13-F BZT52C5V6-13-F BZT52C27-13-F BZT52C39-13-F BZT52C4V7-13-F BZT52C3V9-13-F BZT52C11-13-F BZT52C12Q-13-F BZT52C3V3Q-7-F