THE DATASHEET OF

BZX84B12-7-F

www.win-source.net 0086-755-83957316

BZX84B2V7 - BZX84B39

350mW SURFACE MOUNT PRECISION ZENER DIODE

Features

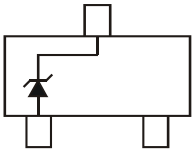
- ±2% Tolerance on V_Z
- 350mW Power Dissipation
- Zener Voltages from 2.7V - 39V
- Ideally Suited for Automated Assembly Processes
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

- Case: SOT23
- Case Material: Molded Plastic "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Solderable per MIL-STD-202, Method 208 Lead-Free Plating (Matte Tin Finish Annealed over Alloy 42 Leadframe). (e3)
- Polarity: See Diagram
- Weight: 0.008 grams (Approximate)

SOT23

Top View



Device Schematic

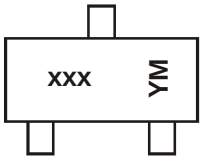
Ordering Information (Note 4)

Part Number	Qualification	Case	Packaging
(Type Number)-7-F*	Standard	SOT23	3000/Tape & Reel
(Type Number)Q-7-F*	Automotive	SOT23	3000/Tape & Reel
(Type Number)-13-F*	Standard	SOT23	10,000/Tape & Reel
(Type Number)Q-13-F*	Automotive	SOT23	10,000/Tape & Reel

*For (Type Number), please see the Electrical Characteristics Table. Example: 7.5V Zener = BZX84B7V5-7-F.

Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
2. See https://www.diodes.com/quality/lead-free/ 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. For packaging details, see http://www.diodes.com/products/packages.html.

Marking Information



xxx = Product Type Marking Code
(See Electrical Characteristics Table)
YM = Date Code Marking
Y = Year (ex: F = 2018)
M = Month (ex: 9 = September)

Date Code Key

Year	2012	2013	…	2018	2019	2020	2021
Code	Z	A	…	F	G	H	I

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

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

Characteristic	Symbol	Value	Unit
Forward Voltage @ I_F = 10mA	V_F	0.9	V

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	300	mW
Power Dissipation (Note 6)	P_D	350	mW
Thermal Resistance, Junction to Ambient Air (Note 5)	$R_{\Theta JA}$	417	°C/W
Thermal Resistance, Junction to Ambient Air (Note 6)	$R_{\Theta JA}$	357	°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 Code	Zener Voltage Range (Note 7)				Maximum Zener Impedance f = 1KHz			Maximum Reverse Current (Note 7)		Temperature Coefficient @ I_{ZT}	
		V_Z @ I_{ZT}			I_{ZT}	Z_{ZT} @ I_{ZT}	Z_{ZK} @ I_{ZK}		I_R	V_R	Min	Max
		Nom (V)	Min (V)	Max (V)	(mA)	(Ω)	(Ω)	(mA)	(μA)	(V)	mV/°C	mV/°C
BZX84B2V7	KZC	2.7	2.65	2.75	5.0	100	600	1.0	20	1.0	-3.5	0
BZX84B3V0	KZD	3.0	2.94	3.06	5.0	95	600	1.0	10	1.0	-3.5	0
BZX84B3V3	KZE	3.3	3.23	3.37	5.0	95	600	1.0	5.0	1.0	-3.5	0
BZX84B3V6	KZF	3.6	3.53	3.67	5.0	90	600	1.0	5.0	1.0	-3.5	0
BZX84B3V9	KZG	3.9	3.82	3.98	5.0	90	600	1.0	3.0	1.0	-3.5	0
BZX84B4V3	KZH	4.3	4.21	4.39	5.0	90	600	1.0	3.0	1.0	-3.5	0
BZX84B4V7	KZ1	4.7	4.61	4.79	5.0	80	500	1.0	3.0	2.0	-3.5	0.2
BZX84B5V1	KZ2	5.1	5	5.2	5.0	60	480	1.0	2.0	2.0	-2.7	1.2
BZX84B5V6	KZ3	5.6	5.49	5.71	5.0	40	400	1.0	1.0	2.0	-2.0	2.5
BZX84B6V2	KZ4	6.2	6.08	6.32	5.0	10	150	1.0	3.0	4.0	0.4	3.7
BZX84B6V8	KZ5	6.8	6.66	6.94	5.0	15	80	1.0	2.0	4.0	1.2	4.5
BZX84B7V5	KZ6	7.5	7.35	7.65	5.0	15	80	1.0	1.0	5.0	2.5	5.3
BZX84B8V2	KZ7	8.2	8.04	8.36	5.0	15	80	1.0	0.7	5.0	3.2	6.2
BZX84B9V1	KZ8	9.1	8.92	9.28	5.0	15	100	1.0	0.5	6.0	3.8	7.0
BZX84B10	KZ9	10	9.8	10.2	5.0	20	150	1.0	0.2	7.0	4.5	8.0
BZX84B11	KY1	11	10.8	11.2	5.0	20	150	1.0	0.1	8.0	5.4	9.0
BZX84B12	KY2	12	11.8	12.2	5.0	25	150	1.0	0.1	8.0	6.0	10.0
BZX84B13	KY3	13	12.7	13.3	5.0	30	170	1.0	0.1	8.0	7.0	11.0
BZX84B15	KY4	15	14.7	15.3	5.0	30	200	1.0	0.1	10.5	9.2	13.0
BZX84B16	KY5	16	15.7	16.3	5.0	40	200	1.0	0.1	11.2	10.4	14.0
BZX84B18	KY6	18	17.6	18.4	5.0	45	225	1.0	0.1	12.6	12.4	16.0
BZX84B20	KY7	20	19.6	20.4	5.0	55	225	1.0	0.1	14.0	14.4	18.0
BZX84B22	KY8	22	21.6	22.4	5.0	55	250	1.0	0.1	15.4	16.4	20.0
BZX84B24	KY9	24	23.5	24.5	5.0	70	250	1.0	0.1	16.8	18.4	22.0
BZX84B27	KYA	27	26.5	27.5	2.0	80	300	0.5	0.1	18.9	21.4	25.3
BZX84B30	KYB	30	29.4	30.6	2.0	80	300	0.5	0.1	21.0	24.4	29.4
BZX84B33	KYC	33	32.3	33.7	2.0	80	325	0.5	0.1	23.1	27.4	33.4
BZX84B36	KYD	36	35.3	36.7	2.0	90	350	0.5	0.1	25.2	30.4	37.4
BZX84B39	KYE	39	38.2	39.8	2.0	130	350	0.5	0.1	27.3	33.4	41.2

Notes:
5. Device mounted on FR-4 PCB with recommended pad layout, which can be found at http://www.diodes.com.
6. Valid provided the terminals are kept at ambient temperature.
7. Short duration pulse test used to minimize self-heating effect.

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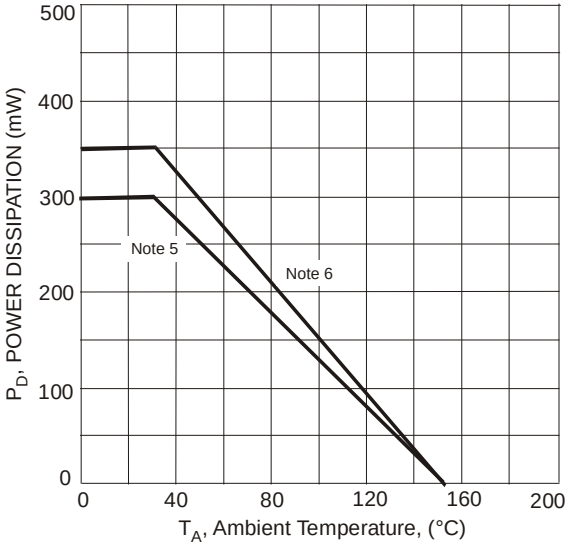

Figure 1 Power Derating Curve

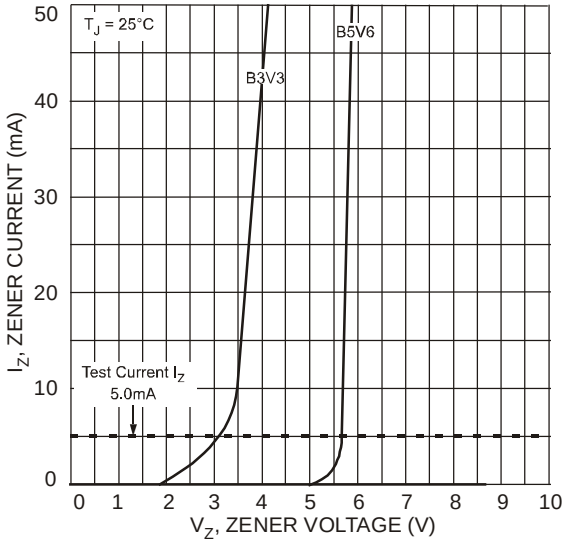

Figure 2 Typical Zener Breakdown Characteristics

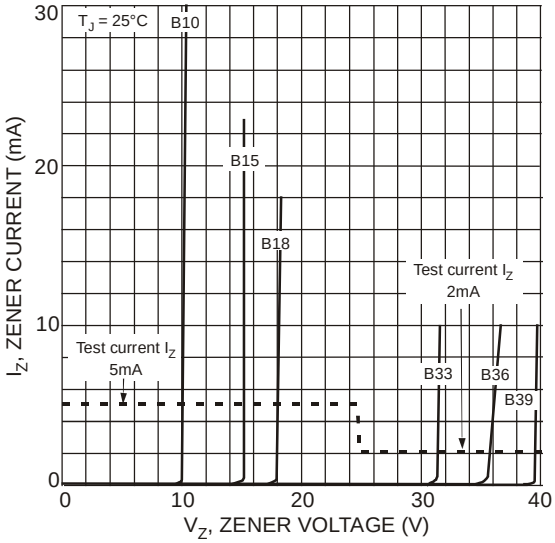

Figure 3 Typical Zener Breakdown Characteristics

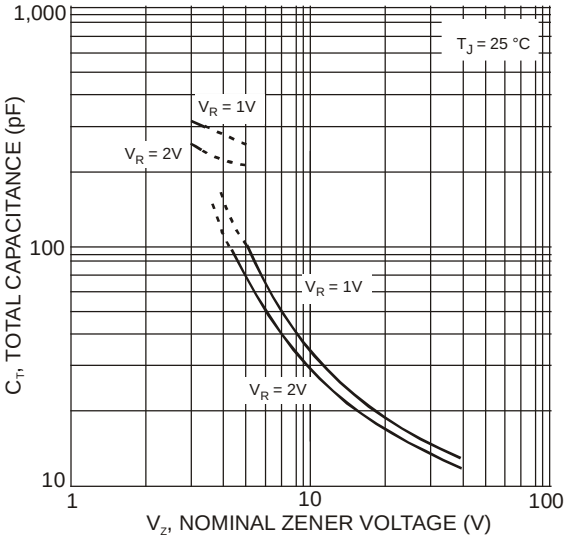

Figure 4 Typical Total Capacitance
vs. Nominal Zener Voltage

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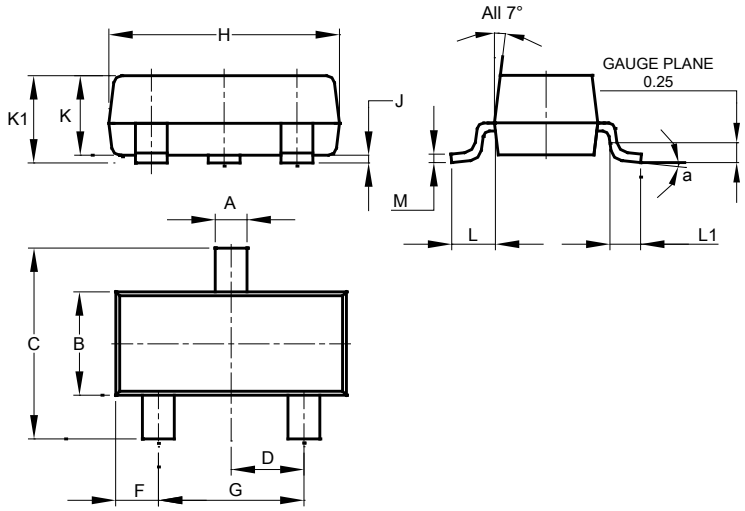
Package Outline Dimensions

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

SOT23

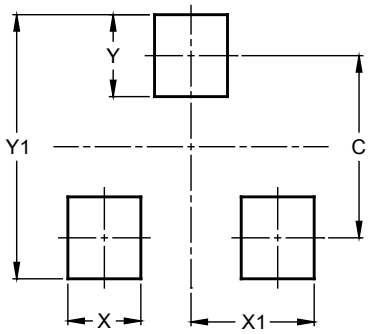


SOT23			
Dim	**Min**	**Max**	**Typ**
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

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

SOT23



Dimensions	Value (in mm)
C	2.0
X	0.8
X1	1.35
Y	0.9
Y1	2.9

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