

## Features

- $\pm 2\%$  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

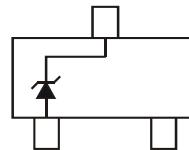
## Mechanical Data

- 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)

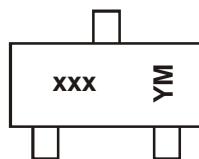
Part Number	Qualification	Case	Packaging
(Type Number)-7-F*	Standard	SOT23	3000/Tape & Reel
(Type Number)Q-7-F*	Automotive	SOT23	3000/Tape & Reel
(Type Number)-13-F*	Standard	SOT23	10000/Tape & Reel
(Type Number)Q-13-F*	Automotive	SOT23	10000/Tape & Reel

\*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) compliant.
2. See [http://www.diodes.com/quality/lead\\_free.html](http://www.diodes.com/quality/lead_free.html) 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, go to our website at <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: Z = 2012)  
 M = Month (ex: 9 = September)

### Date Code Key

Year	2012	2013	2014	2015	2016	2017	2018					
Code	Z	A	B	C	D	E	F					
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** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Forward Voltage @ $I_F = 10\text{mA}$	$V_F$	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** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Type Number (Note 7)	Marking Code	Zener Voltage Range (Note 8)			Maximum Zener Impedance $f = 1\text{KHz}$			Maximum Reverse Current (Note 8)		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
BZX84B2V7	<u>KZC</u>	2.7	2.65	2.75	5.0	100	600	1.0	20	1.0	-3.5 0
BZX84B3V0	<u>KZD</u>	3.0	2.94	3.06	5.0	95	600	1.0	10	1.0	-3.5 0
BZX84B3V3	<u>KZE</u>	3.3	3.23	3.37	5.0	95	600	1.0	5.0	1.0	-3.5 0
BZX84B3V6	<u>KZF</u>	3.6	3.53	3.67	5.0	90	600	1.0	5.0	1.0	-3.5 0
BZX84B3V9	<u>KZG</u>	3.9	3.82	3.98	5.0	90	600	1.0	3.0	1.0	-3.5 0
BZX84B4V3	<u>KZH</u>	4.3	4.21	4.39	5.0	90	600	1.0	3.0	1.0	-3.5 0
BZX84B4V7	<u>KZ1</u>	4.7	4.61	4.79	5.0	80	500	1.0	3.0	2.0	-3.5 0.2
BZX84B5V1	<u>KZ2</u>	5.1	5	5.2	5.0	60	480	1.0	2.0	2.0	-2.7 1.2
BZX84B5V6	<u>KZ3</u>	5.6	5.49	5.71	5.0	40	400	1.0	1.0	2.0	-2.0 2.5
BZX84B6V2	<u>KZ4</u>	6.2	6.08	6.32	5.0	10	150	1.0	3.0	4.0	0.4 3.7
BZX84B6V8	<u>KZ5</u>	6.8	6.66	6.94	5.0	15	80	1.0	2.0	4.0	1.2 4.5
BZX84B7V5	<u>KZ6</u>	7.5	7.35	7.65	5.0	15	80	1.0	1.0	5.0	2.5 5.3
BZX84B8V2	<u>KZ7</u>	8.2	8.04	8.36	5.0	15	80	1.0	0.7	5.0	3.2 6.2
BZX84B9V1	<u>KZ8</u>	9.1	8.92	9.28	5.0	15	100	1.0	0.5	6.0	3.8 7.0
BZX84B10	<u>KZ9</u>	10	9.8	10.2	5.0	20	150	1.0	0.2	7.0	4.5 8.0
BZX84B11	<u>KY1</u>	11	10.8	11.2	5.0	20	150	1.0	0.1	8.0	5.4 9.0
BZX84B12	<u>KY2</u>	12	11.8	12.2	5.0	25	150	1.0	0.1	8.0	6.0 10.0
BZX84B13	<u>KY3</u>	13	12.7	13.3	5.0	30	170	1.0	0.1	8.0	7.0 11.0
BZX84B15	<u>KY4</u>	15	14.7	15.3	5.0	30	200	1.0	0.1	10.5	9.2 13.0
BZX84B16	<u>KY5</u>	16	15.7	16.3	5.0	40	200	1.0	0.1	11.2	10.4 14.0
BZX84B18	<u>KY6</u>	18	17.6	18.4	5.0	45	225	1.0	0.1	12.6	12.4 16.0
BZX84B20	<u>KY7</u>	20	19.6	20.4	5.0	55	225	1.0	0.1	14.0	14.4 18.0
BZX84B22	<u>KY8</u>	22	21.6	22.4	5.0	55	250	1.0	0.1	15.4	16.4 20.0
BZX84B24	<u>KY9</u>	24	23.5	24.5	5.0	70	250	1.0	0.1	16.8	18.4 22.0
BZX84B27	<u>KYA</u>	27	26.5	27.5	2.0	80	300	0.5	0.1	18.9	21.4 25.3
BZX84B30	<u>KYB</u>	30	29.4	30.6	2.0	80	300	0.5	0.1	21.0	24.4 29.4
BZX84B33	<u>KYC</u>	33	32.3	33.7	2.0	80	325	0.5	0.1	23.1	27.4 33.4
BZX84B36	<u>KYD</u>	36	35.3	36.7	2.0	90	350	0.5	0.1	25.2	30.4 37.4
BZX84B39	<u>KYE</u>	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 PC board with recommended pad layout, which can be found on our website at <http://www.diodes.com>.

6. Valid provided the terminals are kept at ambient temperature.

7. For inquiries on alternate nominal Zener voltages, please contact your Diodes Inc. sales representative for availability and minimum order details.

8. Short duration pulse test used to minimize self-heating effect.

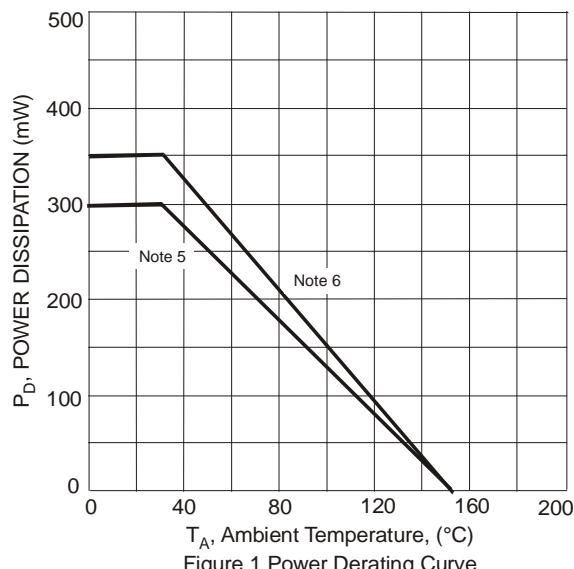


Figure 1 Power Derating Curve

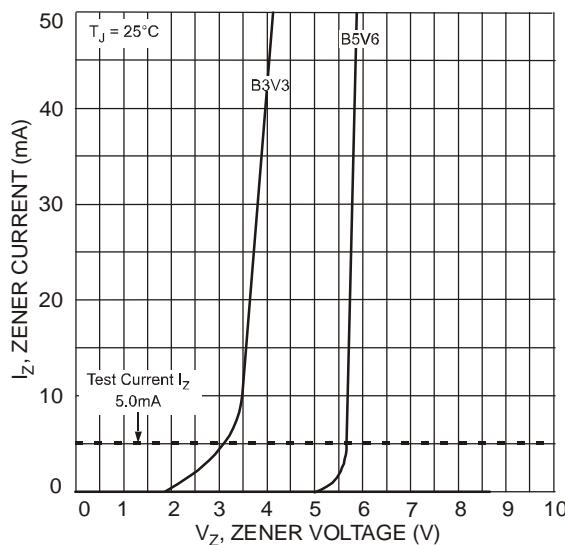


Figure 2 Typical Zener Breakdown Characteristics

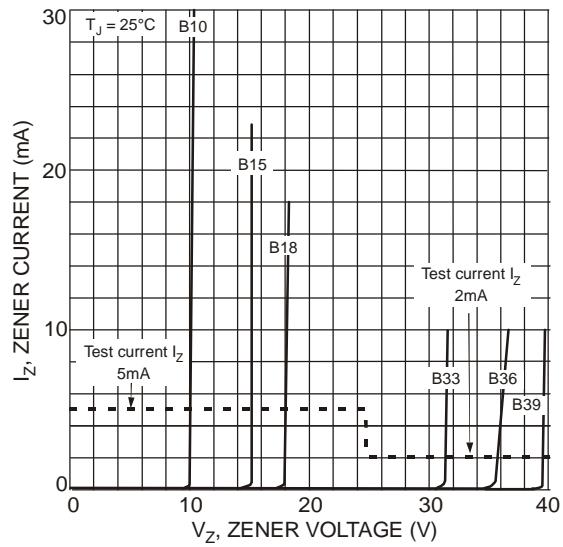


Figure 3 Typical Zener Breakdown Characteristics

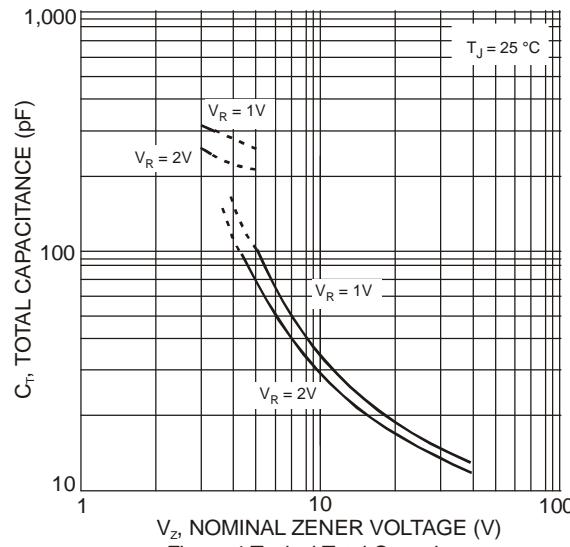
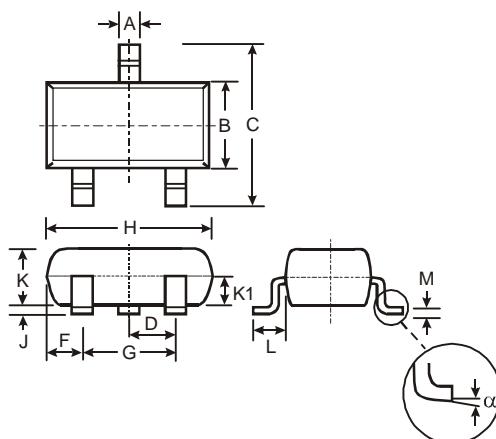


Figure 4 Typical Total Capacitance vs. Nominal Zener Voltage

## Package Outline Dimensions

Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.

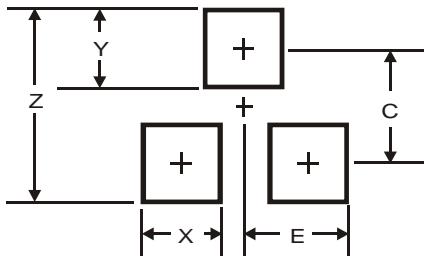


SOT23			
Dim	Min	Max	Typ
<b>A</b>	0.37	0.51	0.40
<b>B</b>	1.20	1.40	1.30
<b>C</b>	2.30	2.50	2.40
<b>D</b>	0.89	1.03	0.915
<b>F</b>	0.45	0.60	0.535
<b>G</b>	1.78	2.05	1.83
<b>H</b>	2.80	3.00	2.90
<b>J</b>	0.013	0.10	0.05
<b>K</b>	0.903	1.10	1.00
<b>K1</b>	-	-	0.400
<b>L</b>	0.45	0.61	0.55
<b>M</b>	0.085	0.18	0.11
<b>alpha</b>	0°	8°	-

All Dimensions in mm

## Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



Dimensions	Value (in mm)
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

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