



THE DATASHEET OF BZX84B33Q-7-F

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**

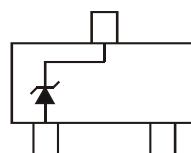
Mechanical Data

- 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). 
- Polarity: See Diagram
- Weight: 0.008 grams (Approximate)

SOT23



Top View



Device Schematic

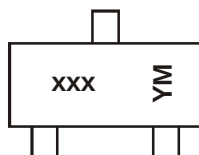
Ordering Information (Note 4)

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

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

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

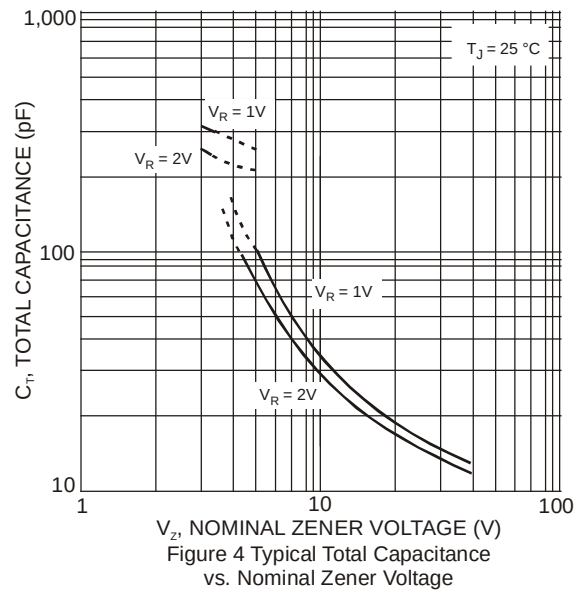
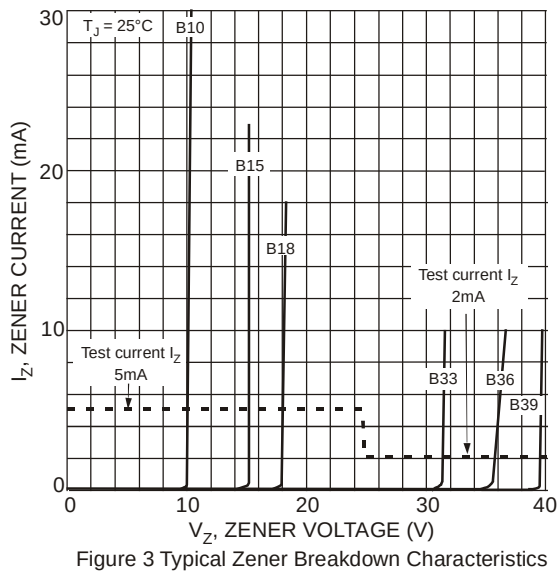
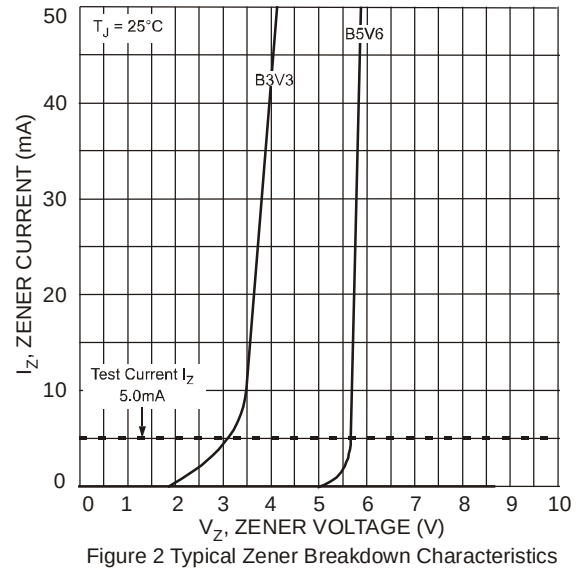
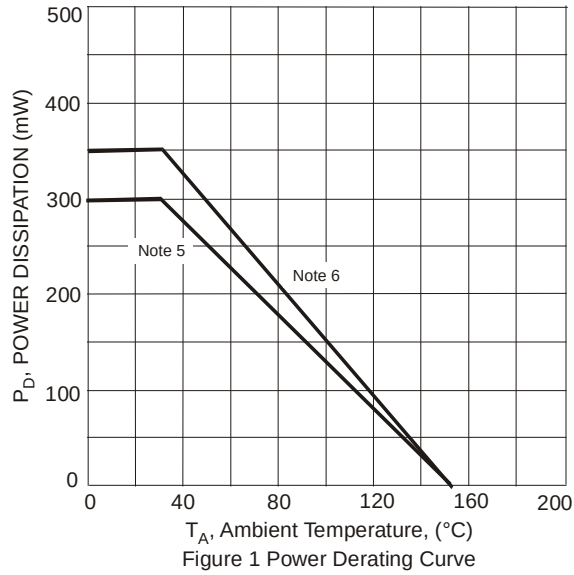
Thermal Characteristics

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 _{ΘJA}	417	°C/W
Thermal Resistance, Junction to Ambient Air (Note 6)	R _{ΘJA}	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	<u>K</u> ZC	2.7	2.65	2.75	5.0	100	600	1.0	20	1.0	-3.5	0
BZX84B3V0	<u>K</u> ZD	3.0	2.94	3.06	5.0	95	600	1.0	10	1.0	-3.5	0
BZX84B3V3	<u>K</u> ZE	3.3	3.23	3.37	5.0	95	600	1.0	5.0	1.0	-3.5	0
BZX84B3V6	<u>K</u> ZF	3.6	3.53	3.67	5.0	90	600	1.0	5.0	1.0	-3.5	0
BZX84B3V9	<u>K</u> ZG	3.9	3.82	3.98	5.0	90	600	1.0	3.0	1.0	-3.5	0
BZX84B4V3	<u>K</u> ZH	4.3	4.21	4.39	5.0	90	600	1.0	3.0	1.0	-3.5	0
BZX84B4V7	<u>K</u> Z1	4.7	4.61	4.79	5.0	80	500	1.0	3.0	2.0	-3.5	0.2
BZX84B5V1	<u>K</u> Z2	5.1	5	5.2	5.0	60	480	1.0	2.0	2.0	-2.7	1.2
BZX84B5V6	<u>K</u> Z3	5.6	5.49	5.71	5.0	40	400	1.0	1.0	2.0	-2.0	2.5
BZX84B6V2	<u>K</u> Z4	6.2	6.08	6.32	5.0	10	150	1.0	3.0	4.0	0.4	3.7
BZX84B6V8	<u>K</u> Z5	6.8	6.66	6.94	5.0	15	80	1.0	2.0	4.0	1.2	4.5
BZX84B7V5	<u>K</u> Z6	7.5	7.35	7.65	5.0	15	80	1.0	1.0	5.0	2.5	5.3
BZX84B8V2	<u>K</u> Z7	8.2	8.04	8.36	5.0	15	80	1.0	0.7	5.0	3.2	6.2
BZX84B9V1	<u>K</u> Z8	9.1	8.92	9.28	5.0	15	100	1.0	0.5	6.0	3.8	7.0
BZX84B10	<u>K</u> Z9	10	9.8	10.2	5.0	20	150	1.0	0.2	7.0	4.5	8.0
BZX84B11	<u>K</u> Y1	11	10.8	11.2	5.0	20	150	1.0	0.1	8.0	5.4	9.0
BZX84B12	<u>K</u> Y2	12	11.8	12.2	5.0	25	150	1.0	0.1	8.0	6.0	10.0
BZX84B13	<u>K</u> Y3	13	12.7	13.3	5.0	30	170	1.0	0.1	8.0	7.0	11.0
BZX84B15	<u>K</u> Y4	15	14.7	15.3	5.0	30	200	1.0	0.1	10.5	9.2	13.0
BZX84B16	<u>K</u> Y5	16	15.7	16.3	5.0	40	200	1.0	0.1	11.2	10.4	14.0
BZX84B18	<u>K</u> Y6	18	17.6	18.4	5.0	45	225	1.0	0.1	12.6	12.4	16.0
BZX84B20	<u>K</u> Y7	20	19.6	20.4	5.0	55	225	1.0	0.1	14.0	14.4	18.0
BZX84B22	<u>K</u> Y8	22	21.6	22.4	5.0	55	250	1.0	0.1	15.4	16.4	20.0
BZX84B24	<u>K</u> Y9	24	23.5	24.5	5.0	70	250	1.0	0.1	16.8	18.4	22.0
BZX84B27	<u>K</u> YA	27	26.5	27.5	2.0	80	300	0.5	0.1	18.9	21.4	25.3
BZX84B30	<u>K</u> YB	30	29.4	30.6	2.0	80	300	0.5	0.1	21.0	24.4	29.4
BZX84B33	<u>K</u> YC	33	32.3	33.7	2.0	80	325	0.5	0.1	23.1	27.4	33.4
BZX84B36	<u>K</u> YD	36	35.3	36.7	2.0	90	350	0.5	0.1	25.2	30.4	37.4
BZX84B39	<u>K</u> YE	39	38.2	39.8	2.0	130	350	0.5	0.1	27.3	33.4	41.2

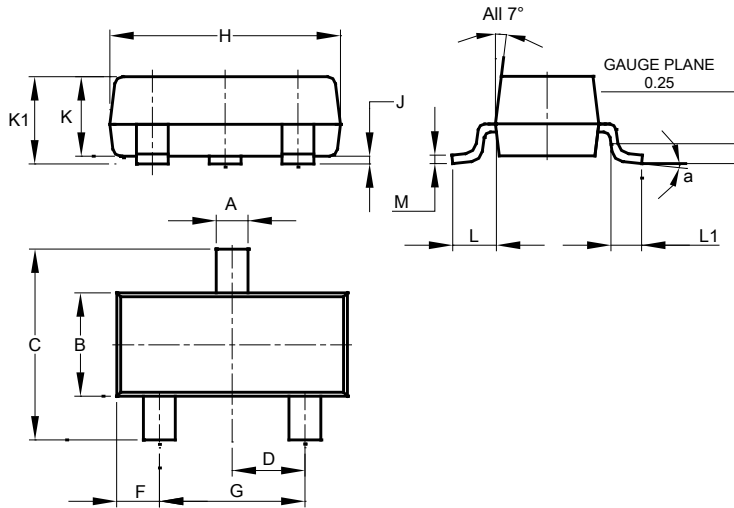
Notes: 5. Device mounted on FR-4 PCB with recommended pad layout, which can be found at <http://www.diodes.com>.
6. Valid provided the terminals are kept at ambient temperature.
7. Short duration pulse test used to minimize self-heating effect.



Package Outline Dimensions

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

SOT23

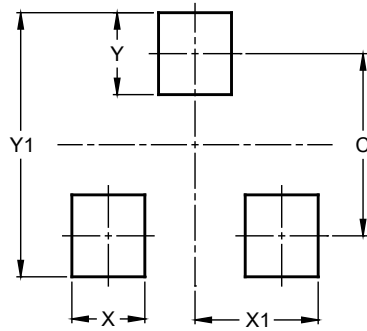


SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

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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