BZX84C2V4 - BZX84C51

350mW SURFACE MOUNT ZENER DIODE

Features

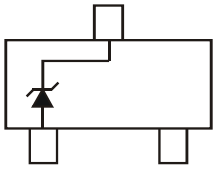
- Planar Die Construction
- 350mW Power Dissipation
- Zener Voltages from 2.4V - 51V
- Ideally Suited for Automated Assembly Processes
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

- Case: SOT23
- Case Material: Molded Plastic.
  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 e3
- Polarity: See Diagram
- Weight: 0.008 grams (Approximate)

SOT23

Top View



Device Schematic

Ordering Information (Note 5)

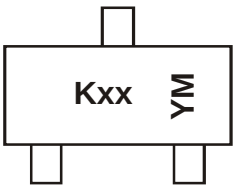
Part Number	Compliance	Case	Packaging
(Type Number)-7-F	Standard	SOT23	3,000/Tape & Reel
(Type Number)Q-7-F	Automotive	SOT23	3,000/Tape & Reel
(Type Number)-13-F	Standard	SOT23	10,000/Tape & Reel
(Type Number)Q-13-F	Automotive	SOT23	10,000/Tape & Reel

Datasheet Directory

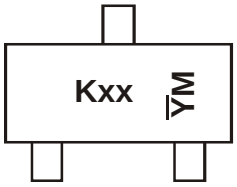
*For (Type Number), please see the Electrical Characteristics Table. Example: 6.2V Zener = BZX84C6V2-7-F.

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. BZX84C2V4-BZX84C39 products manufactured with Date Code OW (week 42, 2009) and newer are built with Green Molding Compound. BZX84C2V4-BZX84C39 products manufactured prior to Date Code OW are built with Non-Green Molding Compound and may contain Halogens or Sb_2O_3 Fire Retardants. BZX84C43-BZX84C51 products manufactured with Date Code V9 (week 33, 2008) and newer are built with Green Molding Compound. BZX84C43-BZX84C51 products 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/products/packages.html.

Marking Information



xx = Product Type Marking Code
(See Electrical Characteristics Table)
YM = Date Code Marking for Shanghai Assembly / Test site
Y = Year (ex: Z = 2012)
M = Month (ex: 9 = September)



xx = Product Type Marking Code
(See Electrical Characteristics Table)
$\overline{Y}M$ = Date Code Marking for Chengdu Assembly / Test site
$\overline{Y}$ = Year (ex: Z = 2012)
M = Month (ex: 9 = September)

Date Code Key

Year	1998	…	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Code	J	…	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J

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 6)	P_D	300	mW
Power Dissipation (Note 7)	P_D	350	mW
Thermal Resistance, Junction to Ambient Air (Note 6)	$R_{\theta JA}$	417	°C/W
Thermal Resistance, Junction to Ambient Air (Note 7)	$R_{\theta JA}$	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 8)				Maximum Zener Impedance f = 1KHz			Maximum Reverse Current (Note 8)		Temperature Coefficient @ I_{ZT} mV/°C	
		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)		
BZX84C2V4	ZB	2.4	2.2	2.6	5.0	100	600	1.0	50	1.0	-3.5	0
BZX84C2V7	ZC	2.7	2.5	2.9	5.0	100	600	1.0	20	1.0	-3.5	0
BZX84C3V0	ZD	3.0	2.8	3.2	5.0	95	600	1.0	10	1.0	-3.5	0
BZX84C3V3	ZE	3.3	3.1	3.5	5.0	95	600	1.0	5.0	1.0	-3.5	0
BZX84C3V6	ZF	3.6	3.4	3.8	5.0	90	600	1.0	5.0	1.0	-3.5	0
BZX84C3V9	ZG	3.9	3.7	4.1	5.0	90	600	1.0	3.0	1.0	-3.5	0
BZX84C4V3	ZH	4.3	4.0	4.6	5.0	90	600	1.0	3.0	1.0	-3.5	0
BZX84C4V7	Z1	4.7	4.4	5.0	5.0	80	500	1.0	3.0	2.0	-3.5	0.2
BZX84C5V1	Z2	5.1	4.8	5.4	5.0	60	480	1.0	2.0	2.0	-2.7	1.2
BZX84C5V6	Z3	5.6	5.2	6.0	5.0	40	400	1.0	1.0	2.0	-2.0	2.5
BZX84C6V2	Z4	6.2	5.8	6.6	5.0	10	150	1.0	3.0	4.0	0.4	3.7
BZX84C6V8	Z5	6.8	6.4	7.2	5.0	15	80	1.0	2.0	4.0	1.2	4.5
BZX84C7V5	Z6	7.5	7.0	7.9	5.0	15	80	1.0	1.0	5.0	2.5	5.3
BZX84C8V2	Z7	8.2	7.7	8.7	5.0	15	80	1.0	0.7	5.0	3.2	6.2
BZX84C9V1	Z8	9.1	8.5	9.6	5.0	15	100	1.0	0.5	6.0	3.8	7.0
BZX84C10	Z9	10	9.4	10.6	5.0	20	150	1.0	0.2	7.0	4.5	8.0
BZX84C11	Y1	11	10.4	11.6	5.0	20	150	1.0	0.1	8.0	5.4	9.0
BZX84C12	Y2	12	11.4	12.7	5.0	25	150	1.0	0.1	8.0	6.0	10.0
BZX84C13	Y3	13	12.4	14.1	5.0	30	170	1.0	0.1	8.0	7.0	11.0
BZX84C15	Y4	15	13.8	15.6	5.0	30	200	1.0	0.1	10.5	9.2	13.0
BZX84C16	Y5	16	15.3	17.1	5.0	40	200	1.0	0.1	11.2	10.4	14.0
BZX84C18	Y6	18	16.8	19.1	5.0	45	225	1.0	0.1	12.6	12.4	16.0
BZX84C20	Y7	20	18.8	21.2	5.0	55	225	1.0	0.1	14.0	14.4	18.0
BZX84C22	Y8	22	20.8	23.3	5.0	55	250	1.0	0.1	15.4	16.4	-
BZX84C24	Y9	24	22.8	25.6	5.0	70	250	1.0	0.1	16.8	18.4	-
BZX84C27	YA	27	25.1	28.9	2.0	80	300	0.5	0.1	18.9	21.4	-
BZX84C30	YB	30	28.0	32.0	2.0	80	300	0.5	0.1	21.0	24.4	-
BZX84C33	YC	33	31.0	35.0	2.0	80	325	0.5	0.1	23.1	27.4	-
BZX84C36	YD	36	34.0	38.0	2.0	90	350	0.5	0.1	25.2	30.4	-
BZX84C39	YE	39	37.0	41.0	2.0	130	350	0.5	0.1	27.3	33.4	-
BZX84C43	YF	43	40.0	46.0	2.0	150	375	0.5	0.1	30.1	37.6	-
BZX84C47	YG	47	44.0	50.0	2.0	170	375	0.5	0.1	32.9	42.0	-
BZX84C51	YH	51	48.0	54.0	2.0	180	400	0.5	0.1	35.7	46.6	-

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

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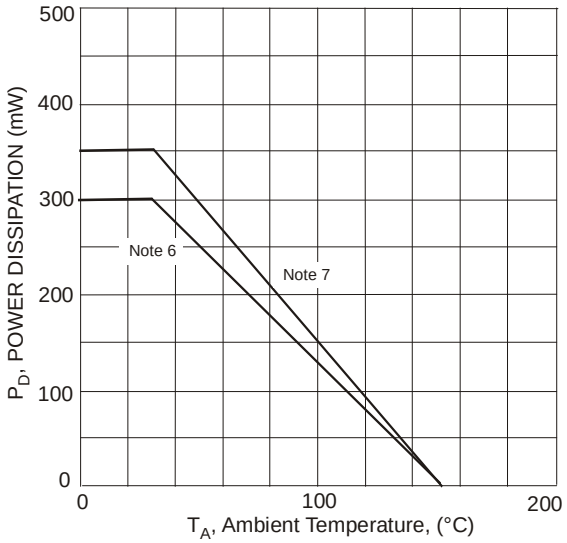

Fig. 1 Power Derating Curve

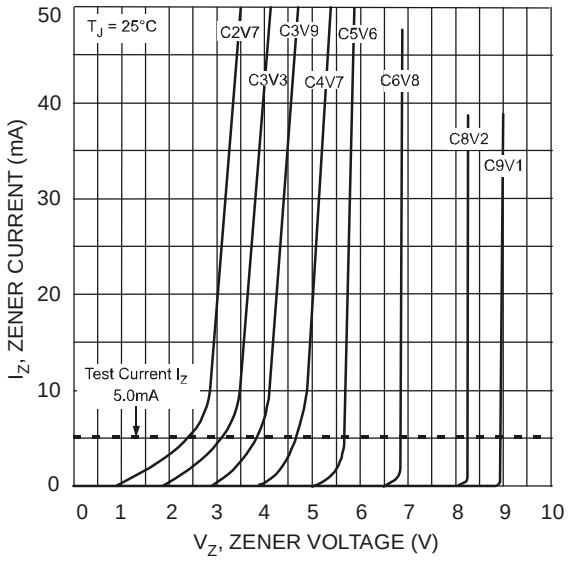

Fig. 2 Typical Zener Breakdown Characteristics

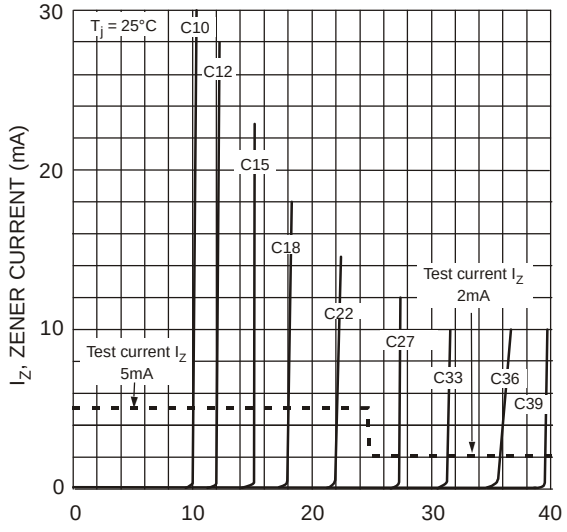

Fig. 3 Typical Zener Breakdown Characteristics

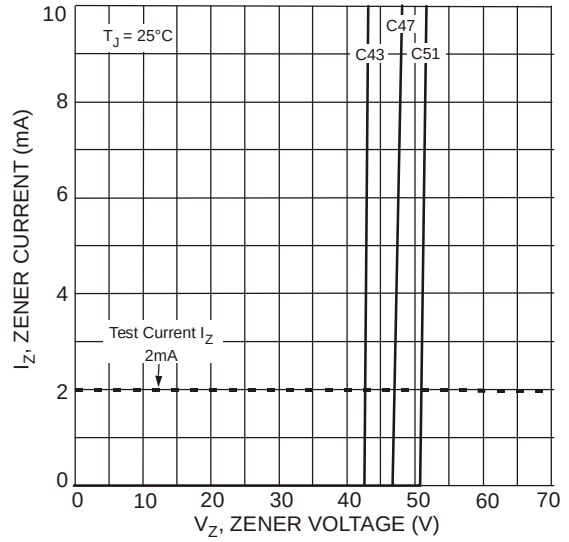

Fig. 4 Typical Zener Breakdown Characteristics

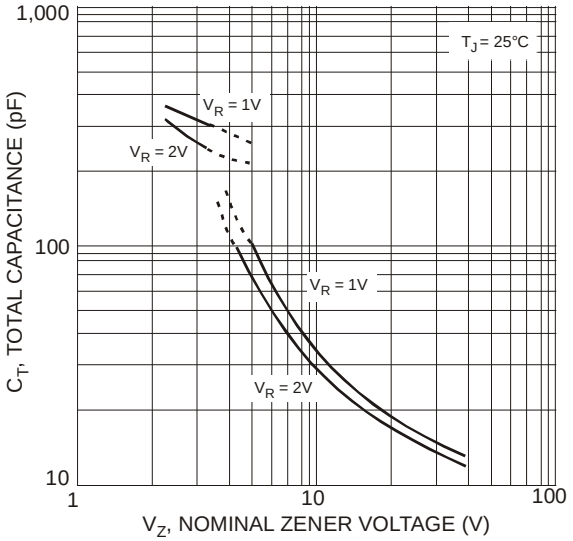

Fig. 5 Typical Total Capacitance vs. Nominal Zener Voltage

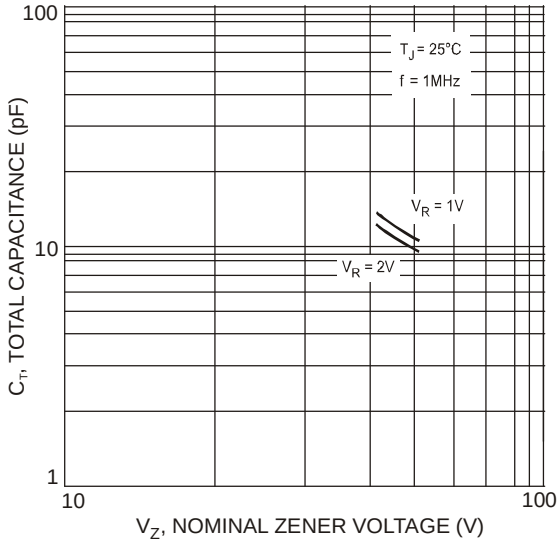

Fig. 6 Typical Total Capacitance vs. Nominal Zener Voltage

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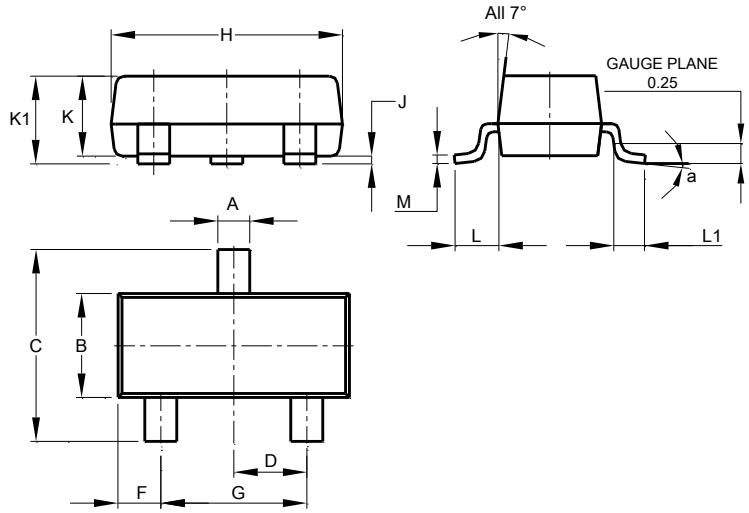
Package Outline Dimensions

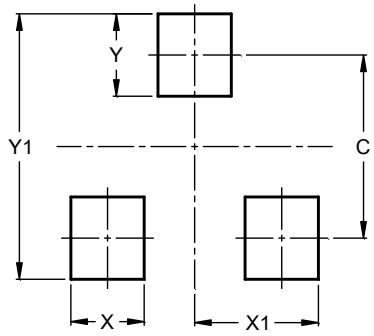
Please see http://www.diodes.com/package-outlines.html for the latest version.



SOT23			
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.



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

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