SURFACE MOUNT PRECISION ZENER DIODE

Features

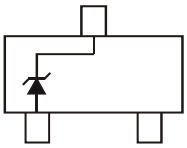
- Very Sharp Breakdown Characteristics
- 300mW Power Dissipation on FR-4 PCB
- Very Tight Tolerance on V_Z
- Ideally Suited for Automated Assembly Processes
- Very Low Leakage Current
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **An Automotive-Compliant Part is Available Under Separate Datasheet (DDZX5V1BQ)**

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: Finish - Matte Tin Annealed over Alloy 42 Leadframe. Solderable per MIL-STD-202, Method 208 e1
- Polarity: See Diagram
- Weight: 0.008 grams (Approximate)

SOT23

Top View



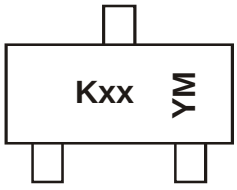
Device Schematic

Ordering Information (Note 4)

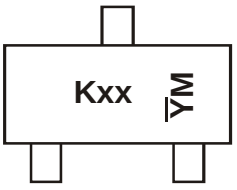
Part Number	Compliance	Case	Packaging
(Type Number)-7 (Note 5)	Standard	SOT23	3,000/Tape & Reel
(Type Number)-13 (Note 6)	Standard	SOT23	10,000/Tape & Reel

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/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.
5. Add "-7" to the appropriate type number in Electrical Characteristics Table. Example: 6.2V Zener = DDZX6V2B-7.
6. Add "-13" to the appropriate type number in Electrical Characteristics Table. Example: 10V Zener = DDZX10C-13. Please note: Not all voltages are available in 13" reel size. Please contact the Diodes Inc. Sales Department for assistance in ordering 13" reel size devices.

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	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Code	X	Y	Z	A	B	C	D	E	F	G	H

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 7)	P_D	300	mW
Thermal Resistance, Junction to Ambient Air (Note 7)	$R_{\theta JA}$	417	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +150	°C

Note: 7. Device mounted on FR-4 PCB with recommended pad layout, which can be found on our website at http://www.diodes.com.

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 9)	
		V_Z @ I_{ZT}		I_{ZT}	Z_{ZT} @ I_{ZT}	Z_{ZK} @ I_{ZK}	I_{ZK}	I_R	@ V_R
		Min (V)	Max (V)	mA	Ω		mA	µA	V
DDZX5V1B	KM	4.94	5.20	20	17	480	1	5	1.5
DDZX5V6B	KN	5.45	5.73	20	11	400	1	0.5	2.5
DDZX6V2B	KO	5.96	6.27	20	7	150	1	0.5	4.0
DDZX6V8C	YP	6.66	7.01	20	5	150	0.5	0.5	5.0
DDZX7V5C	YQ	7.29	7.67	20	6	120	0.5	0.5	6.0
DDZX8V2C	YR	8.03	8.45	20	8	120	0.5	0.5	6.5
DDZX9V1C	YS	8.83	9.30	20	8	120	0.5	0.5	7.0
DDZX10C	YT	9.70	10.20	20	8	120	0.5	0.1	8.0
DDZX11C	YU	10.82	11.38	10	10	120	0.5	0.1	8.4
DDZX12C	YV	11.74	12.35	10	12	110	0.5	0.1	9.1
DDZX13B	KW	12.55	13.21	10	14	110	0.5	0.1	10.0
DDZX14	GX	13.65	14.35	10	16	110	0.5	0.05	11.0
DDZX15	GY	14.80	15.57	10	18	150	0.5	0.05	12.0
DDZX16	YY	15.69	16.51	10	18	150	0.5	0.05	12.0
DDZX18C	YZ	17.42	18.33	10	23	150	0.5	0.05	14.0
DDZX20C	PJ	19.23	20.22	10	28	200	0.5	0.05	15.0
DDZX22D	2K	21.52	22.63	5	30	200	0.5	0.05	17.0
DDZX24C	PL	23.12	24.31	5	35	200	0.5	0.05	19.0
DDZX26	ZM	24.97	26.26	5	45	250	0.5	0.05	21.0
DDZX27D	2M	26.29	27.64	5	45	250	0.5	0.05	21.0
DDZX30D	2N	29.02	30.51	5	55	250	0.5	0.05	23.0
DDZX33	RP	32.14	33.79	5	75	250	0.5	0.05	27.0
DDZX36	ZQ	35.36	37.19	5	85	250	0.5	0.05	30.0
DDZX39F	5Q	38.02	39.98	5	85	250	0.5	0.05	30.0
DDZX43	ZR	42.14	43.86	5	90	—	—	0.05	33.0

Notes: 8. The zener voltage is measured <40ms after power is supplied.
9. Short duration pulse test used to minimize self-heating effect.

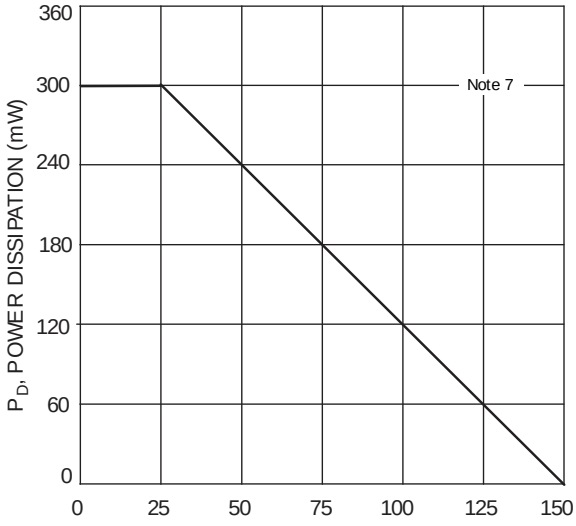


Fig. 1 Power Derating Curve

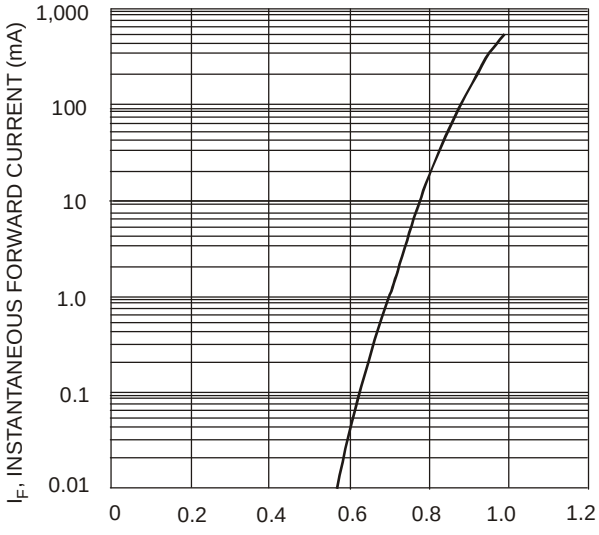


Fig. 2 Typical Forward Characteristics

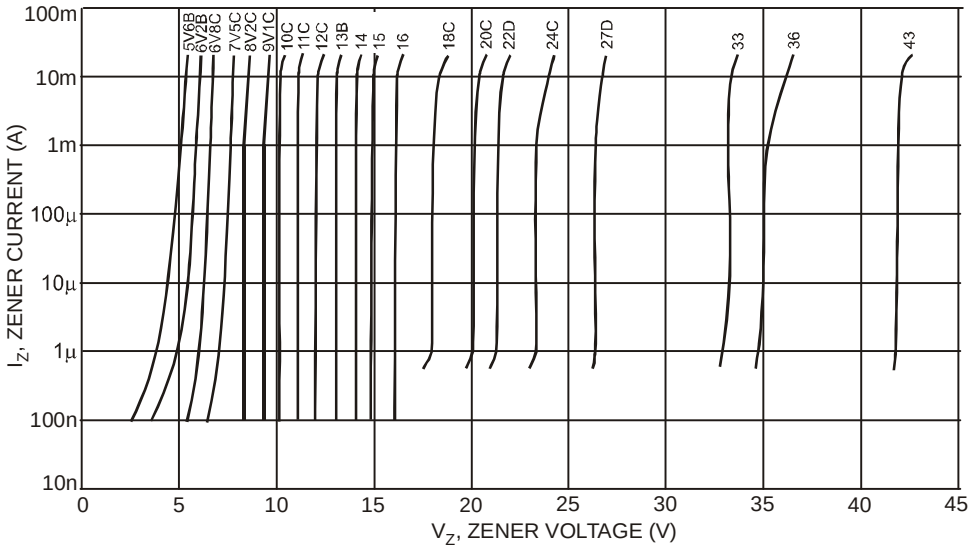


Fig. 3 Typical Zener Breakdown Characteristics

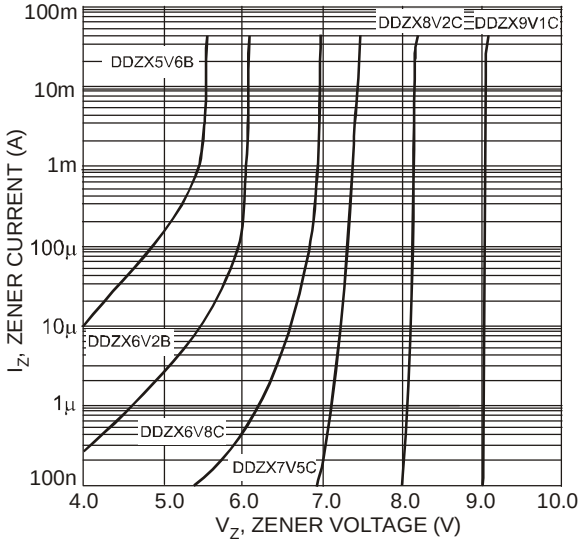


Fig. 4 Typical Zener Breakdown Characteristics
DDZX5V6B - DDZX9V1C

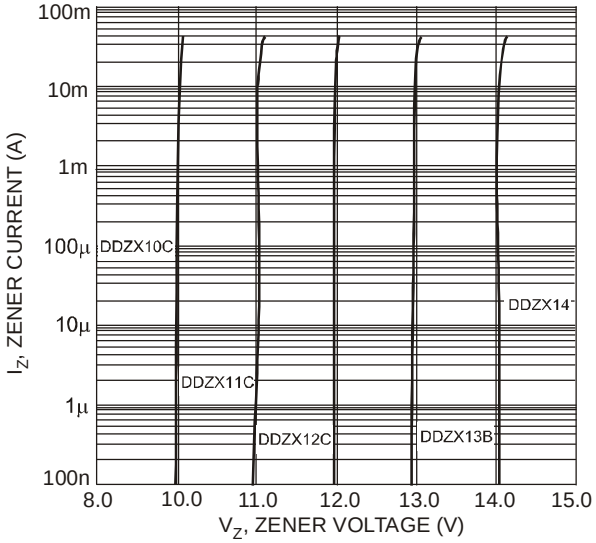


Fig. 5 Typical Zener Breakdown Characteristics
DDZX10C - DDZX14

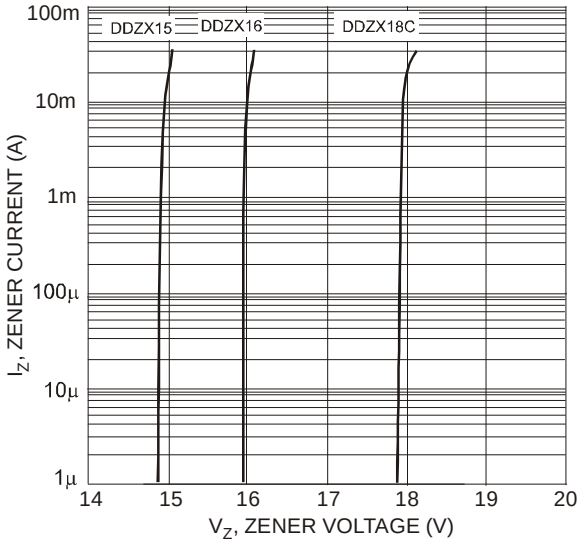


Fig. 6 Typical Zener Breakdown Characteristics
DDZX15 - DDZX18C

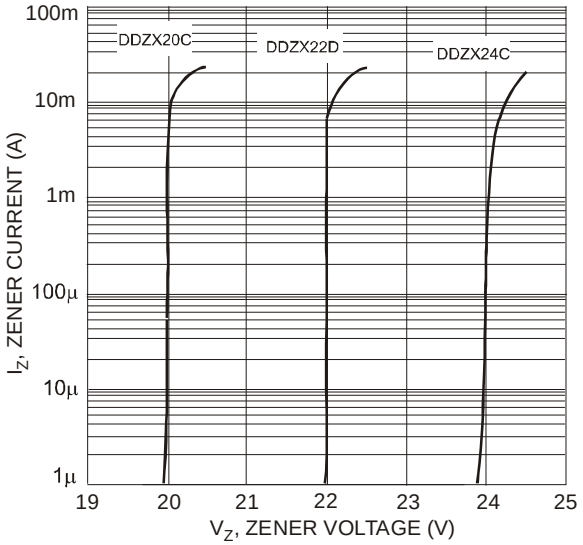


Fig. 7 Typical Zener Breakdown Characteristics
DDZX20C - DDZX24C

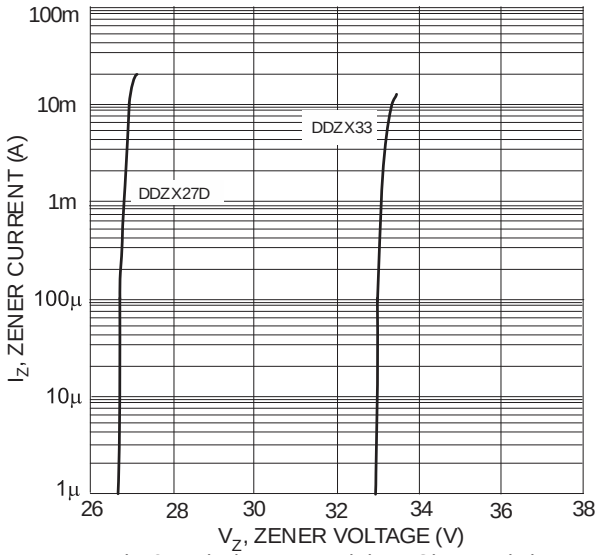


Fig. 8 Typical Zener Breakdown Characteristics
DDZX27D - DDZX33

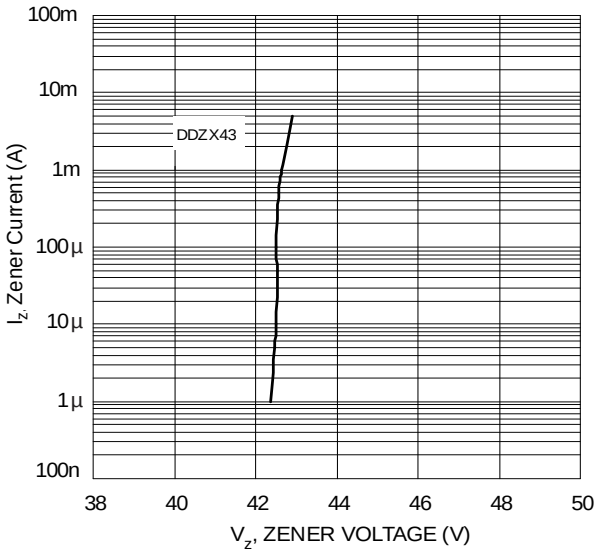


Fig.9 Typical Zener Breakdown Characteristics
DDZX43

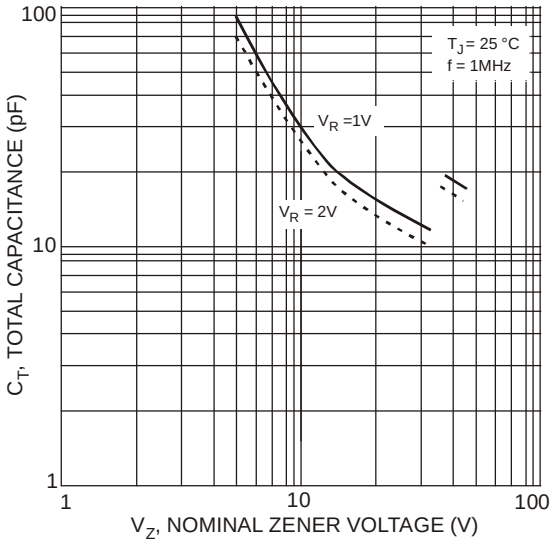


Fig. 10 Typical Total Capacitance
vs. Nominal Zener Voltage

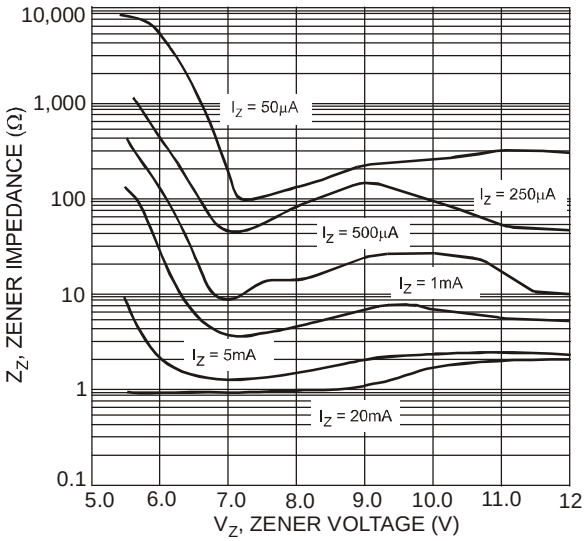


Fig. 11 Typical Zener Impedance Characteristics,
DDZX5V6B - DDZX12C

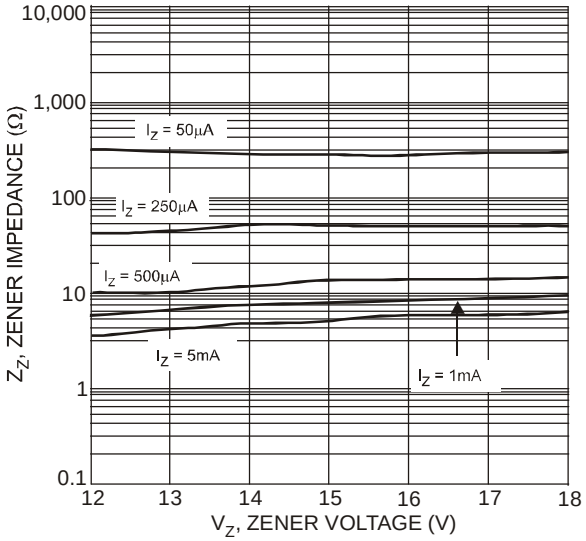


Fig. 12 Typical Zener Impedance Characteristics, DDZX12C - DDZX18C

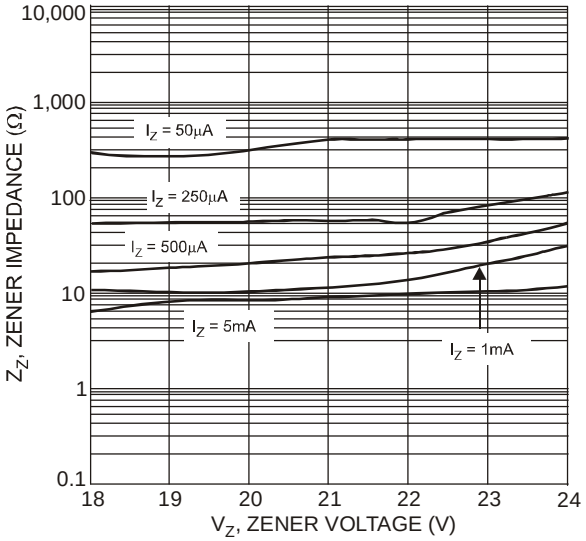


Fig. 13 Typical Zener Impedance Characteristics, DDZX18C - DDZX24C

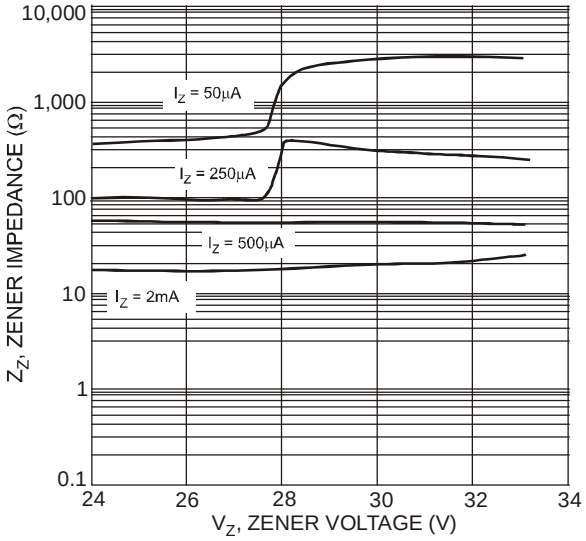


Fig. 14 Typical Zener Impedance Characteristics, DDZX24C - DDZX33

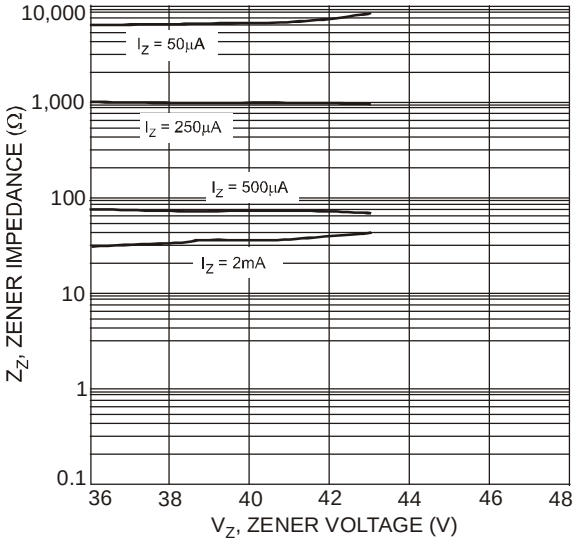


Fig. 15 Typical Zener Impedance Characteristics, DDZX36 - DDZX43

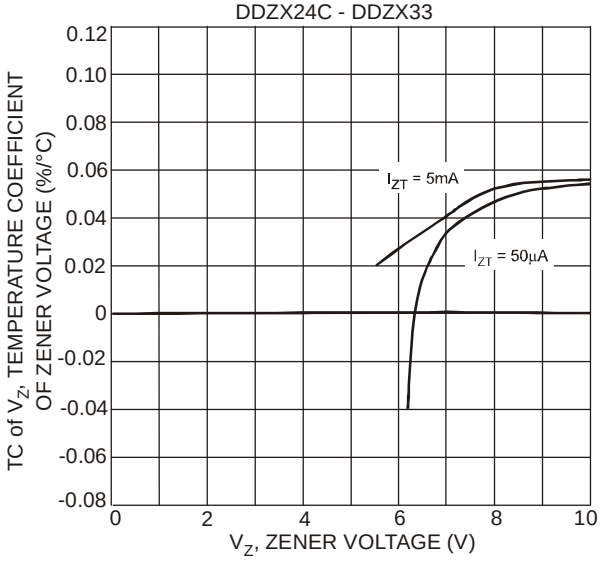


Fig. 16 Typical Temperature Coefficient of Zener Voltage vs. Zener Voltage, DDZX6V2B-DDZX10C

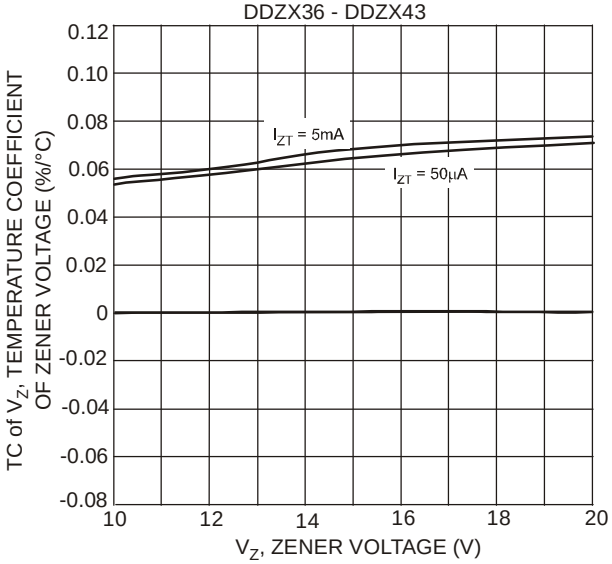


Fig. 17 Typical Temperature Coefficient of Zener Voltage vs. Zener Voltage, DDZX10C-DDZX20C

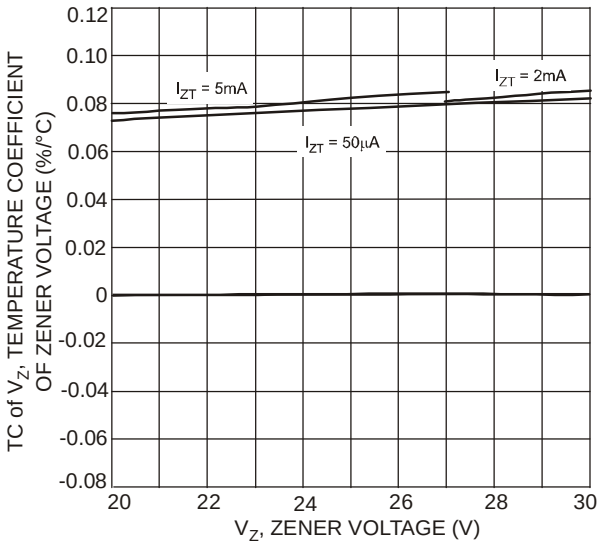


Fig. 18 Typical Temperature Coefficient of Zener Voltage vs. Zener Voltage, DDZX20C-DDZX30D

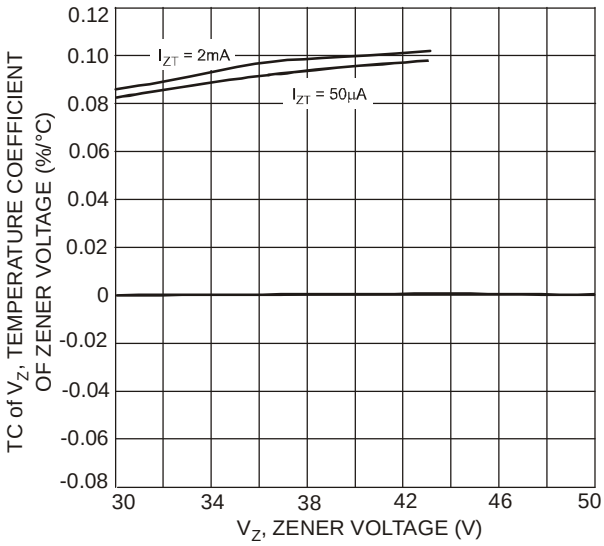
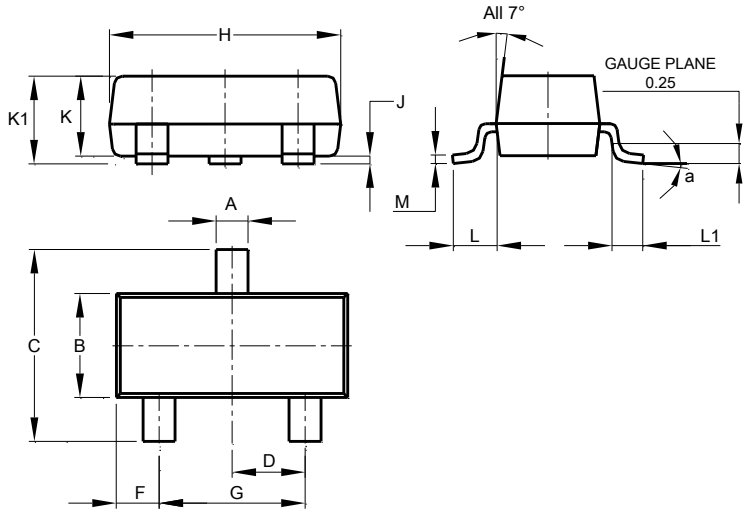


Fig. 19 Typical Temperature Coefficient of Zener Voltage vs. Zener Voltage, DDZX30D-DDZX43

Package Outline Dimensions

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

SOT23

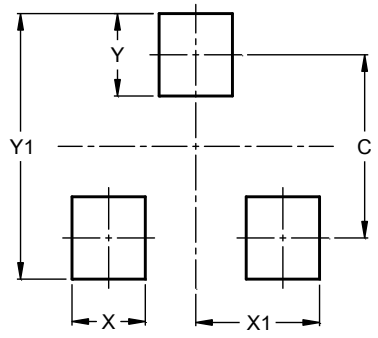


SOT23			
Dim	**Min**	**Max**	**Typ**
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

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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1. are intended to implant into the body, or

2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.

B. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or to affect its safety or effectiveness.

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