0.5W SURFACE-MOUNT PRECISION ZENER DIODE

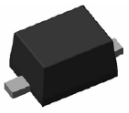
Features

- 500mW Power Dissipation on FR-4 PCB
- Very Tight Tolerance on V_Z
- Ideally Suited for Automated Assembly Processes
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please contact us or your local Diodes representative. https://www.diodes.com/quality/product-definitions/**

Mechanical Data

- Package: SOD323F
- Package Material: Molded Plastic, "Green Molding Compound". UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: Cathode Band
- Terminals: Finish – Matte Tin Annealed over Copper Alloy Leadframe. Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.004 grams (Approximate)

SOD323F



Top View

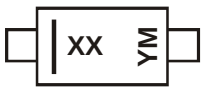
Ordering Information (Note 4)

Orderable Part Number	Package	Packing	
		Qty.	Carrier
DDZxx(x)xSF-7*	SOD323F	3,000	Tape & Reel

*Add "-7" to the appropriate type number in *Electrical Characteristics* table on pages 2 & 3. Example: DDZ10BSF-7.

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, go to our website at https://www.diodes.com/design/support/packaging/diodes-packaging/.

Marking Information



XX = Product Type Marking Code
(See *Electrical Characteristics* Table)
YM = Date Code Marking
Y = Year (ex: L = 2024)
M = Month (ex: 9 = September)

Date Code Key

Year	2010	-	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Code	X	-	L	M	N	P	R	S	T	U	V	W

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
Maximum Power Dissipation (Note 5)	P_D	500	mW
Thermal Resistance, Junction to Ambient Air (Note 5)	$R_{\theta JA}$	250	°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 6)			Maximum Zener Impedance f = 1kHz	Maximum Reverse Current (Note 7)	
		V_Z @ I_{ZT} (V)		I_{ZT} (mA)	Z_{ZT} @ I_{ZT} (Ω)	I_R (μA)	@ V_R (V)
		Min	Max				
DDZ2V4ASF	4C	2.33	2.52	20	100	120	1
DDZ2V4BSF	KD	2.43	2.63	20	100	120	1
DDZ2V7ASF	4E	2.54	2.75	20	110	120	1
DDZ2V7BSF	KE	2.69	2.91	20	110	120	1
DDZ3V0ASF	4F	2.85	3.07	20	120	50	1
DDZ3V0BSF	KF	3.01	3.22	20	120	50	1
DDZ3V3ASF	4G	3.16	3.38	20	130	20	1
DDZ3V3BSF	KG	3.32	3.53	20	130	20	1
DDZ3V6ASF	4H	3.45	3.69	20	130	10	1
DDZ3V6BSF	KH	3.60	3.84	20	130	10	1
DDZ3V9ASF	4J	3.74	4.01	20	130	10	1
DDZ3V9BSF	KJ	3.89	4.16	20	130	10	1
DDZ4V3ASF	4K	4.04	4.29	20	130	10	1
DDZ4V3BSF	KK	4.17	4.43	20	130	10	1
DDZ4V3CSF	YK	4.30	4.57	20	130	10	1
DDZ4V7ASF	4L	4.44	4.68	20	130	10	1
DDZ4V7BSF	KL	4.55	4.80	20	130	10	1
DDZ4V7CSF	YL	4.68	4.93	20	130	10	1
DDZ5V1ASF	4M	4.81	5.07	20	130	7.5	2
DDZ5V1BSF	KM	4.94	5.20	20	130	7.5	2
DDZ5V1CSF	YM	5.09	5.37	20	130	7.5	2
DDZ5V6ASF	4N	5.28	5.55	20	80	7.5	2
DDZ5V6BSF	KN	5.45	5.73	20	80	7.5	2
DDZ5V6CSF	YN	5.61	5.91	20	80	7.5	2
DDZ6V2ASF	4O	5.78	6.09	20	50	7.5	3
DDZ6V2BSF	KO	5.96	6.27	20	50	7.5	3
DDZ6V2CSF	YO	6.12	6.44	20	50	7.5	3
DDZ6V8ASF	4P	6.29	6.63	20	30	7.5	4
DDZ6V8BSF	KP	6.49	6.83	20	30	7.5	4
DDZ6V8CSF	YP	6.66	7.01	20	30	7.5	4
DDZ7V5ASF	4Q	6.85	7.22	20	30	7.5	4
DDZ7V5BSF	KQ	7.07	7.45	20	30	7.5	4
DDZ7V5CSF	YQ	7.29	7.67	20	30	7.5	4
DDZ8V2ASF	4R	7.53	7.92	20	30	7.5	7.15
DDZ8V2BSF	KR	7.78	8.19	20	30	7.5	7.39
DDZ8V2CSF	YR	8.03	8.45	20	30	7.5	7.63

Notes: 5. Device mounted on FR-4 PCB with 10mm x 10mm pad, board size 35mm x 25mm.
6. The zener voltage is measured < 40ms after power is supplied.
7. Short duration pulse test used to minimize self-heating effect.

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Electrical Characteristics (continued) (@T_A = +25°C, unless otherwise specified.)

Type Number	Marking Code	Zener Voltage Range (Note 6)			Maximum Zener Impedance f = 1kHz	Maximum Reverse Current (Note 7)	
		V_Z @ I_{ZT} (V)		I_{ZT} (mA)	Z_{ZT} @ I_{ZT} (Ω)	I_R (μA)	@ V_R (V)
		Min	Max				
DDZ9V1ASF	4S	8.29	8.73	20	30	7.5	7.88
DDZ9V1BSF	KS	8.57	9.01	20	30	7.5	8.14
DDZ9V1CSF	YS	8.83	9.30	20	30	7.5	8.39
DDZ10ASF	4T	9.12	9.59	20	30	7.5	8.66
DDZ10BSF	KT	9.41	9.90	20	30	7.5	8.94
DDZ10CSF	YT	9.70	10.20	20	30	7.5	9.22
DDZ10DSF	7T	9.94	10.44	20	30	7.5	9.44
DDZ11ASF	4U	10.18	10.71	10	30	0.07	9.67
DDZ11BSF	KU	10.50	11.05	10	30	0.07	9.98
DDZ11CSF	YU	10.82	11.38	10	30	0.07	10.28
DDZ12ASF	4V	11.13	11.71	10	35	0.07	10.60
DDZ12BSF	KV	11.44	12.03	10	30	0.07	10.90
DDZ12CSF	YV	11.74	12.35	10	35	0.07	11.20
DDZ13ASF	4W	12.11	12.75	10	35	0.07	11.50
DDZ13BSF	KW	12.55	13.21	10	35	0.07	11.90
DDZ13CSF	YW	12.99	13.66	10	35	0.07	12.30
DDZ15ASF	4X	13.44	14.13	10	40	0.07	12.80
DDZ15BSF	KX	13.89	14.62	10	40	0.07	13.20
DDZ15CSF	YX	14.35	15.09	10	40	0.07	13.60
DDZ16ASF	4Y	14.80	15.57	10	40	0.07	14.10
DDZ16BSF	KY	15.25	16.04	10	40	0.07	14.50
DDZ16CSF	YY	15.69	16.51	10	40	0.07	14.90
DDZ18ASF	4Z	16.22	17.06	10	45	0.07	15.40
DDZ18BSF	KZ	16.82	17.70	10	45	0.07	16.00
DDZ18CSF	YZ	17.42	18.33	10	45	0.07	16.50
DDZ20ASF	RJ	18.05	18.96	10	50	0.07	17.10
DDZ20BSF	ZJ	18.63	19.59	10	50	0.07	17.70
DDZ20CSF	PJ	19.23	20.22	10	50	0.07	17.70
DDZ20DSF	2J	19.72	20.72	10	50	0.07	18.70
DDZ22ASF	RK	20.15	21.20	5	55	0.07	19.10
DDZ22BSF	ZK	20.64	21.71	5	55	0.07	19.60
DDZ22CSF	PK	21.08	22.17	5	55	0.07	20.00
DDZ22DSF	2K	21.52	22.63	5	55	0.07	20.40
DDZ24ASF	RL	22.05	23.18	5	60	0.07	20.90
DDZ24BSF	ZL	22.61	23.77	5	60	0.07	21.50
DDZ24CSF	PL	23.12	24.31	5	60	0.07	22.00
DDZ24DSF	2L	23.63	24.85	5	60	0.07	22.40
DDZ27ASF	RM	24.26	25.52	5	70	0.07	23.00
DDZ27BSF	ZM	24.97	26.26	5	70	0.07	23.70
DDZ27CSF	PM	25.63	26.95	5	70	0.07	24.30
DDZ27DSF	2M	26.29	27.64	5	70	0.07	25.00
DDZ30ASF	RN	26.99	28.39	5	80	0.07	25.60
DDZ30BSF	ZN	27.70	29.13	5	80	0.07	26.00
DDZ30CSF	PN	28.36	29.82	5	55	0.07	26.90
DDZ30DSF	2N	29.02	30.51	5	80	0.07	27.60
DDZ33ASF	RO	29.68	31.22	5	80	0.07	28.20
DDZ33BSF	ZO	30.32	31.88	5	80	0.07	28.80
DDZ33CSF	PO	30.90	32.50	5	65	0.07	29.40
DDZ33DSF	2O	31.49	33.11	5	65	0.07	29.90
DDZ36ASF	RP	32.14	33.79	5	90	0.07	30.50
DDZ36BSF	ZP	32.79	34.49	5	90	0.07	31.20
DDZ36CSF	PP	33.40	35.13	5	75	0.07	31.70
DDZ36DSF	2P	34.01	35.77	5	90	0.07	32.30
DDZ39ASF	RQ	34.68	36.47	5	85	0.2	30.00
DDZ39BSF	ZQ	35.36	37.19	5	85	0.2	30.00
DDZ39CSF	PQ	36.00	37.85	5	85	0.2	30.00
DDZ39DSF	2Q	36.63	38.52	5	85	0.2	30.00

Notes: 6. The zener voltage is measured < 40ms after power is supplied.
7. Short duration pulse test used to minimize self-heating effect.

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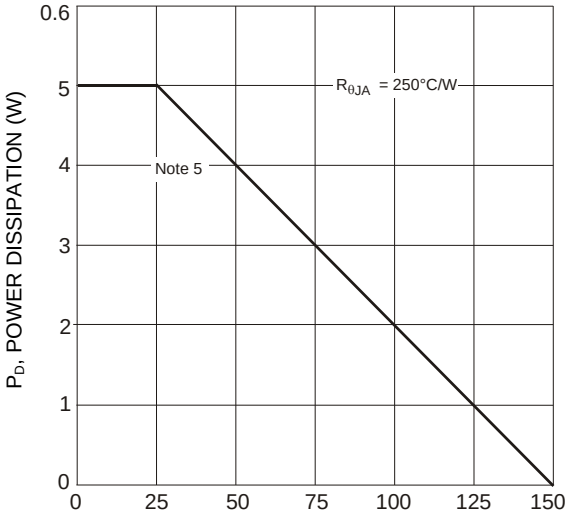

Fig. 1 Power Derating Curve

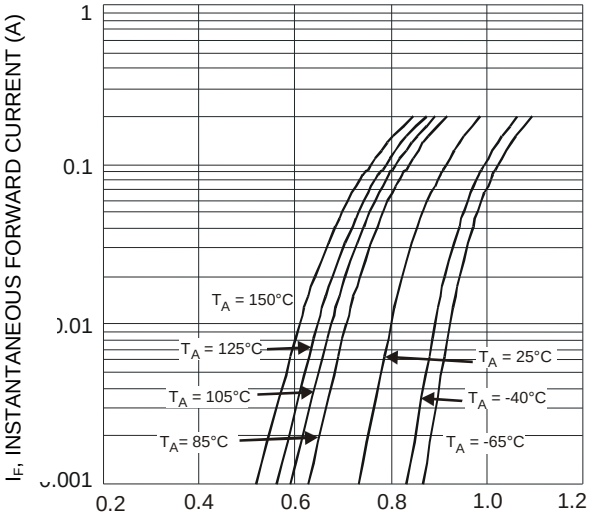

Fig. 2 Typical Forward Characteristics

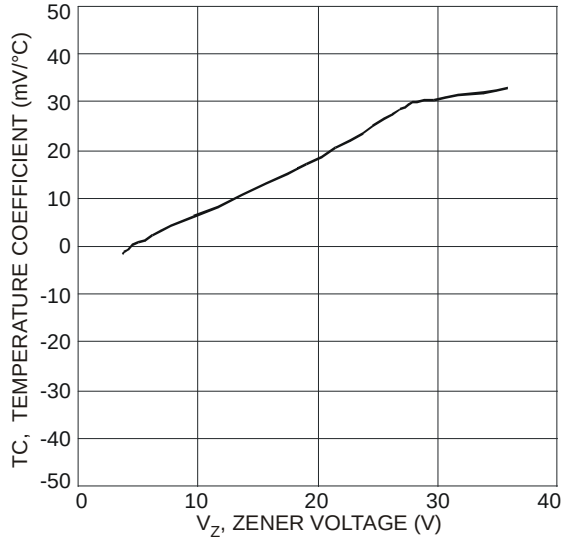

Fig. 3 Temperature Coefficient vs. Zener Voltage

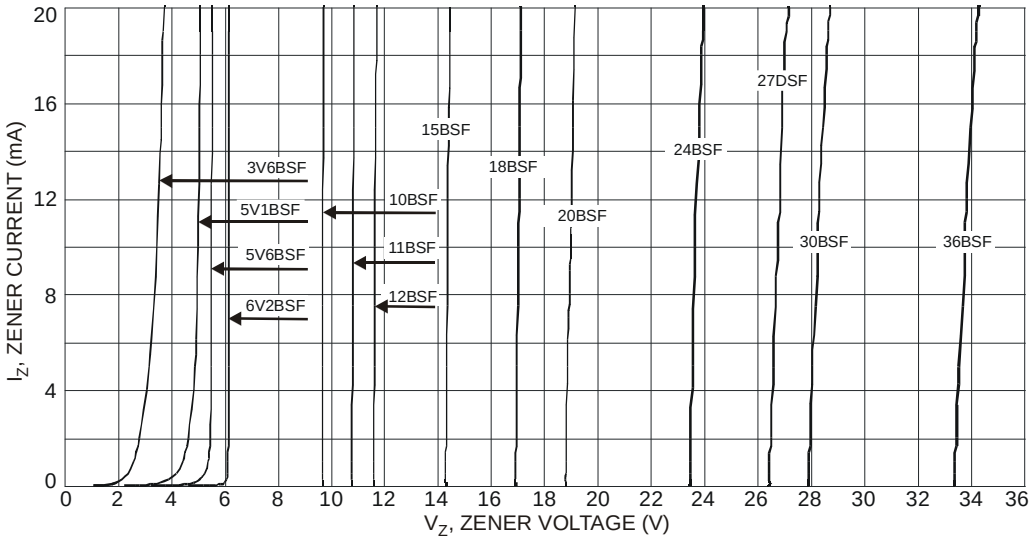

Fig. 4 Typical Zener Breakdown Characteristics

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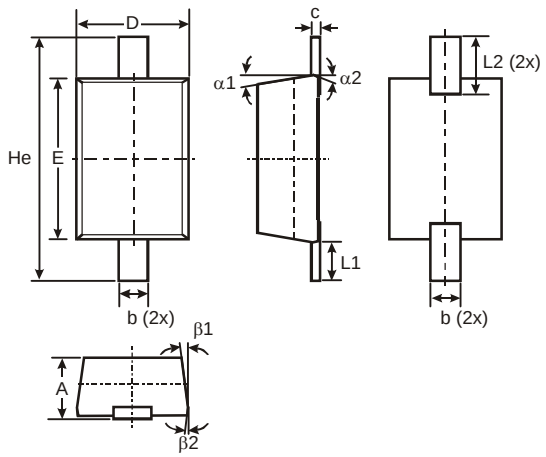
Package Outline Dimensions

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

SOD323F

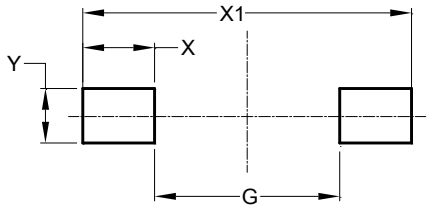


SOD323F			
Dim	**Min**	**Max**	**Typ**
A	0.60	0.75	-
b	0.25	0.35	-
c	0.05	0.26	-
D	1.15	1.35	1.25
E	1.60	1.80	1.70
He	2.30	2.70	2.50
L1	0.30	0.50	0.40
L2	0.41	0.61	0.51
α1	-	-	7°
α2	-	-	3°
β1	-	-	7°
β2	-	-	3°
All Dimensions in mm			

Suggested Pad Layout

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

SOD323F



Dimensions	Value (in mm)
G	1.280
X	0.710
X1	2.700
Y	0.403

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