0.5W Zener Diode - 1N5538B to 1N5546B

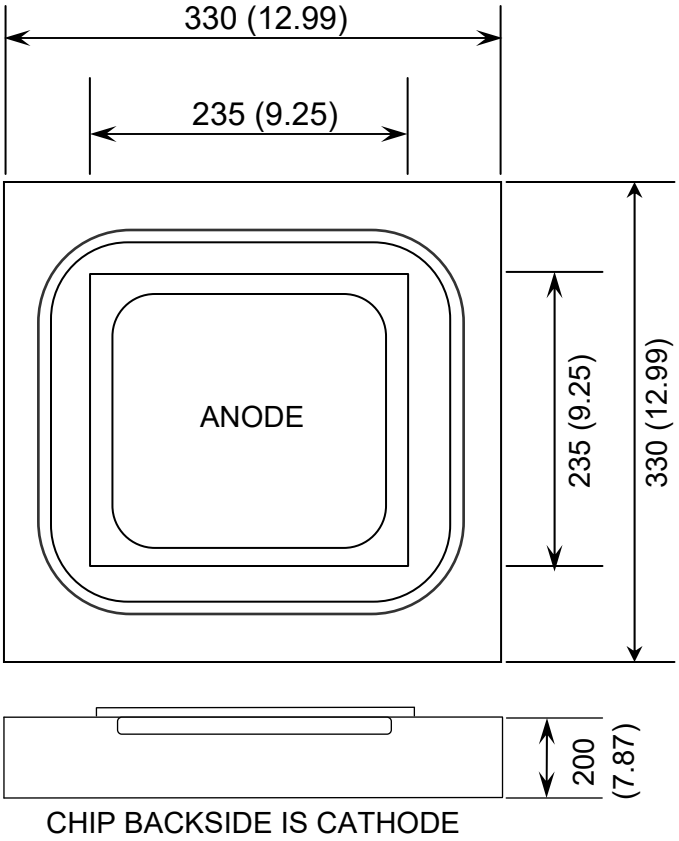
Rev 1.0
05/04/19

Silicon Planar Zener diode in bare die form – 5% tolerance

Features:

- Sharp Reverse Characteristics
- Low Reverse Current Levels
- High Reliability Gold Back Metal
- High Reliability Tested Grades.

Die Dimensions in µm (mils)



Ordering Information

The following part suffixes apply:

- No suffix - Commercial grade die
- "**H**"– Hi-rel grade die + MIL-STD-38534 Class H LAT
- "**K**" – Hi-rel grade die + MIL-STD-38534 Class K LAT.

LAT = Lot acceptance Test.

For information on Hi-Rel LAT flows please see below.

www.siliconsupplies.com\bare-die-lot-qualification

Supply Formats:

- Default – Die in Waffle Pack (400 per tray capacity)
- Sawn Wafer on Tape – By specific request
- Unsawn Wafer – By specific request
- With additional electrical selection – By specific request

Mechanical Specification

Die Size (Unsawn)	330 x 330 12.99 x 12.99	µm mils
Anode Pad Size	235 x 235 9.25 x 9.25	µm mils
Die Thickness	200 7.87	µm mils
Top Metal Composition	Al	
Back Metal Composition	AuAs	

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Absolute Maximum Ratings[1] T_A = 25°C unless otherwise stated

PARAMETER	SYMBOL	VALUE	UNIT
Power Dissipation[2]	P_{TOT}	500	mW
Junction Temperature	T_J	175	°C
Storage Temperature Range	T_S	-65 to +175	°C
Forward Voltage @ I_F = 200mA	V_F	1.1	V

Electrical Characteristics T_A = 25°C unless otherwise stated

DEVICE	ZENER VOLTAGE RANGE	TEST CURRENT	REVERSE LEAKAGE CURRENT		ZENER[3] IMPEDANCE	ZENER REG[4]	LOW V_Z CURRENT	MAX CURRENT	NOISE DENSITY
	V_Z @ I_{ZT}	I_{ZT}	I_R @ V_R		Z_{ZT} @ I_{ZT}	ΔV_Z	I_{ZL}	I_{ZM}	N_D @ 250µA
	V	mA	µA	V	Ω	V	mA	mA	µV/√Hz
	Nom.		Max.		Max.	Typ.	Typ.	Max.	Max.
1N5518B	3.3	20	5.0	1.0	26	0.90	2.0	115	0.5
1N5519B	3.6	20	3.0	1.0	24	0.90	2.0	105	0.5
1N5520B	3.9	20	1.0	1.0	22	0.85	2.0	98	0.5
1N5521B	4.3	20	3.0	1.5	18	0.75	2.0	88	0.5
1N5522B	4.7	10	2.0	2.0	22	0.60	1.0	81	0.5
1N5523B	5.1	5.0	2.0	2.5	26	0.65	0.25	75	0.5
1N5524B	5.6	3.0	2.0	3.5	30	0.30	0.25	68	1.0
1N5525B	6.2	1.0	1.0	5.0	30	0.20	0.01	61	1.0
1N5526B	6.8	1.0	1.0	6.2	30	0.10	0.01	56	1.0
1N5527B	7.5	1.0	0.5	6.8	35	0.05	0.01	51	2.0
1N5528B	8.2	1.0	0.5	7.5	40	0.05	0.01	46	4.0
1N5529B	9.1	1.0	0.1	8.2	45	0.05	0.01	42	4.0
1N5530B	10.0	1.0	0.05	9.1	60	0.10	0.01	38	4.0
1N5531B	11.0	1.0	0.05	9.9	80	0.20	0.01	35	5.0
1N5532B	12.0	1.0	0.05	10.8	90	0.20	0.01	32	10
1N5533B	13.0	1.0	0.01	11.7	90	0.20	0.01	29	15
1N5534B	14.0	1.0	0.01	12.6	100	0.20	0.01	27	20
1N5535B	15.0	1.0	0.01	13.5	100	0.20	0.01	25	20
1N5536B	16.0	1.0	0.01	14.4	100	0.20	0.01	24	20
1N5537B	17.0	1.0	0.01	15.3	100	0.20	0.01	22	20
1N5538B	18.0	1.0	0.01	16.2	100	0.20	0.01	21	20
1N5539B	19.0	1.0	0.01	17.1	100	0.20	0.01	20	20

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DEVICE	ZENER VOLTAGE RANGE[3]	TEST CURRENT	REVERSE LEAKAGE CURRENT		ZENER[4] IMPEDANCE	ZENER REG[5]	LOW V_Z CURRENT	MAX CURRENT	NOISE DENSITY
	V_Z @ I_{ZT}	I_{ZT}	I_R @ V_R		Z_{ZT} @ I_{ZT}	ΔV_Z	I_{ZL}	I_{ZM}	N_D @ 250µA
	V	mA	µA	V	Ω	V	mA	mA	µV/√Hz
	Nom.		Max.		Max.	Typ.	Typ.	Max.	Max.
1N5540B	20.0	1.0	0.01	18.0	100	0.20	0.01	19	20
1N5541B	22.0	1.0	0.01	19.8	100	0.25	0.01	17	20
1N5542B	24.0	1.0	0.01	21.6	100	0.30	0.01	16	20
1N5543B	25.0	1.0	0.01	22.4	100	0.35	0.01	15	20
1N5544B	28.0	1.0	0.01	25.2	100	0.40	0.01	14	20
1N5545B	30.0	1.0	0.01	27.0	100	0.45	0.01	13	20
1N5546B	33.0	1.0	0.01	29.7	100	0.50	0.01	12	20

1. Operation above the absolute maximum rating may cause device failure. Operation at the absolute maximum ratings, for extended periods, may reduce device reliability. **2.** Assembled in DO-35 package. Performance in die form subject to assembly heat sinking and die attach methods. **3.** No Suffix type numbers are ±20% with guaranteed limits for only V_Z, I_R, and V_F. Units with "A" suffix are ±10% with guaranteed limits for V_Z, I_R, and V_F. Units with guaranteed limits for all six parameters are indicated by a "B" suffix for +5.0% units, "C" suffix for +2.0% and "D" suffix for +1.0% **4.** Zener impedance is derived by superimposing on I_{ZT} a 60Hz rms AC current equal to 10% of I_{ZT} **5.** ΔV_Z is the maximum difference between V_Z @ I_{ZT} and V_Z at I_{ZL} measured with the device junction in thermal equilibrium at an ambient temperature of +25° ± 3°C.

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