



# 0.5W, 250µA I<sub>ZT</sub> , Bare Die Zener Diode

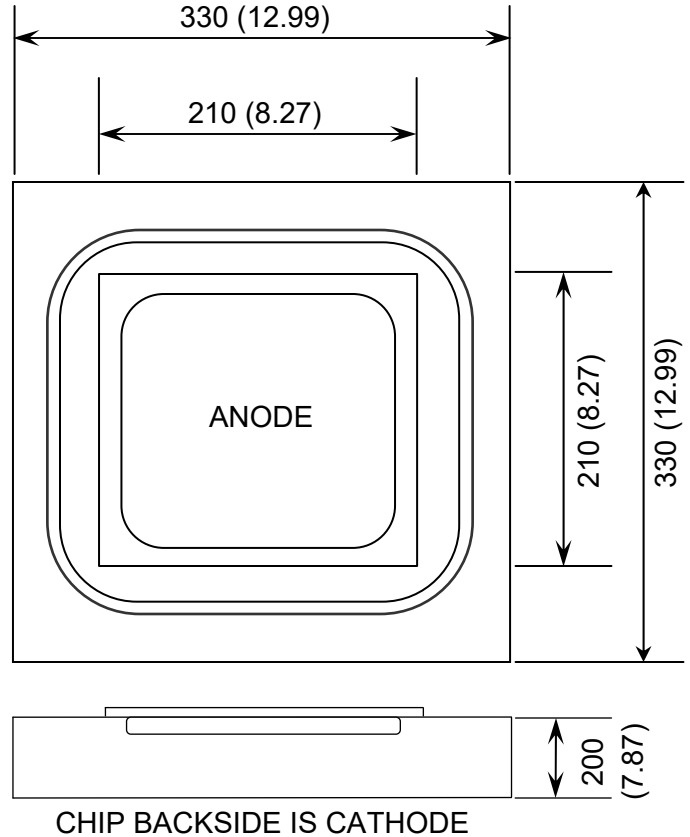
Rev 1.0  
07/07/17

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 - MIL-STD-750 /2073 Visual Inspection
- “H” - MIL-STD-750 /2073 Visual Inspection  
+ MIL-PRF-38534 Class H LAT
- “K” - MIL-STD-750 /2073 Visual Inspection  
+ MIL-PRF-38534 Class K LAT

LAT = Lot Acceptance Test.

For further information on LAT process flows see below.

[www.siliconsupplies.com/quality/bare-die-lot-qualification](http://www.siliconsupplies.com/quality/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
- Tighter V<sub>Z</sub> tolerances:  
2% - B grade, 1% - A grade – Specific request

## Mechanical Specification

Die Size (Unsawn)	330 x 330 12.99 x 12.99	µm mils
Anode Pad Size	210 x 210 8.27 x 8.27	µm mils
Die Thickness	200 7.87	µm mils
Top Metal Composition	Al	
Back Metal Composition	Au	





# 0.5W, 250 $\mu$ A I<sub>ZT</sub> , Bare Die Zener Diode

Rev 1.0

07/07/17

## Absolute Maximum Ratings<sup>1</sup> T<sub>A</sub> = 25°C unless otherwise stated

PARAMETER	SYMBOL	VALUE	UNIT
Power Dissipation <sup>2</sup>	P <sub>TOT</sub>	500	mW
Junction Temperature	T <sub>J</sub>	175	°C
Storage Temperature Range	T <sub>S</sub>	-65 to +200	°C
Forward Voltage @ I <sub>F</sub> = 200mA	V <sub>F</sub>	1.5	V

## Electrical Characteristics T<sub>A</sub> = 25°C unless otherwise stated

DEVICE	ZENER VOLTAGE RANGE			TEST CURRENT	REVERSE LEAKAGE CURRENT			DYNAMIC RESISTANCE <sup>3</sup>	MAXIMUM DC ZENER CURRENT
	V <sub>Z</sub> @ I <sub>ZT</sub>			I <sub>ZT</sub>	I <sub>R</sub> @ V <sub>R</sub>			Z <sub>Z</sub> @ I <sub>ZT</sub>	I <sub>ZM</sub>
	V			μA	μA	V	Ω	mA	
	Min.	Nom.	Max.						
1N4099	6.46	6.8	7.14	250	10	5.17	200	56.0	
1N4100	7.13	7.5	7.88	250	10	5.70	200	51.0	
1N4101	7.79	8.2	8.61	250	1	6.24	200	46.0	
1N4102	8.27	8.7	9.14	250	1	6.61	200	44.0	
1N4103	8.65	9.1	9.56	250	1	6.92	200	42.0	
1N4104	9.50	10	10.50	250	1	7.60	200	38.0	
1N4105	10.45	11	11.55	250	0.05	8.44	200	35.0	
1N4106	11.40	12	12.60	250	0.05	9.12	200	32.0	
1N4107	12.35	13	13.65	250	0.05	9.87	200	29.0	
1N4108	13.30	14	14.70	250	0.05	10.65	200	27.0	
1N4109	14.25	15	15.75	250	0.05	11.40	100	25.0	
1N4110	15.20	16	16.80	250	0.05	12.15	100	24.0	
1N4111	16.15	17	17.85	250	0.05	12.92	100	22.0	
1N4112	17.10	18	18.90	250	0.05	13.67	100	21.0	
1N4113	18.05	19	19.95	250	0.05	14.44	150	20.0	
1N4114	19.00	20	21.00	250	0.01	15.20	150	19.0	
1N4115	20.90	22	23.10	250	0.01	16.72	150	17.0	
1N4116	22.80	24	25.20	250	0.01	18.25	150	16.0	
1N4117	23.75	25	26.25	250	0.01	19.00	150	15.0	
1N4118	25.65	27	28.35	250	0.01	20.46	150	14.0	
1N4119	26.60	28	29.40	250	0.01	21.28	200	14.0	
1N4120	28.50	30	31.50	250	0.01	22.80	200	13.0	





# 0.5W, 250 $\mu$ A $I_{ZT}$ , Bare Die Zener Diode

Rev 1.0  
07/07/17

## Electrical Characteristics $T_A = 25^\circ\text{C}$ unless otherwise stated

DEVICE	ZENER VOLTAGE RANGE			TEST CURRENT	REVERSE LEAKAGE CURRENT			DYNAMIC RESISTANCE <sup>3</sup>	MAXIMUM DC ZENER CURRENT
	$V_Z @ I_{ZT}$			$I_{ZT}$	$I_R @ V_R$			$Z_Z @ I_{ZT}$	$I_{ZM}$
	V			$\mu\text{A}$	$\mu\text{A}$	V	$\Omega$	mA	
	Min.	Nom.	Max.						
1N4121	31.35	33	34.65	250	0.01	25.08	200	12.0	
1N4122	34.20	36	37.80	250	0.01	27.38	200	11.0	
1N4123	37.05	39	40.95	250	0.01	29.65	200	9.8	
1N4124	40.85	43	45.15	250	0.01	32.65	250	8.9	
1N4125	44.65	47	49.35	250	0.01	35.75	250	8.1	
1N4126	48.45	51	53.55	250	0.01	38.76	300	7.5	
1N4127	53.20	56	58.80	250	0.01	42.6	300	6.7	
1N4128	57.00	60	63.00	250	0.01	45.6	400	6.4	
1N4129	58.90	62	65.10	250	0.01	47.1	500	6.1	
1N4130	64.60	68	71.40	250	0.01	51.68	700	5.6	
1N4131	71.25	75	78.75	250	0.01	57	700	5.1	

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. Zener impedance is derived by superimposing on  $I_{ZT}$  a 60Hz rms AC current equal to 10% of  $I_{ZT}$ .

**DISCLAIMER:** The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device, Silicon Supplies Ltd hereby disclaims any and all warranties and liabilities of any kind.

**LIFE SUPPORT POLICY:** Silicon Supplies Ltd components may be used in life support devices or systems only with the express written approval of Silicon Supplies Ltd, if a failure of such components can reasonably be expected to cause the failure of that life support device or system or to affect the safety or effectiveness of that device or system. Life support devices or systems are intended to be implanted in the human body or to support and/or maintain and sustain and/or protect human life. If they fail, it is reasonable to assume that the health of the user or other persons may be endangered.

