



0.5W, 50 μ A I_{ZT} , Bare Die Zener Diode

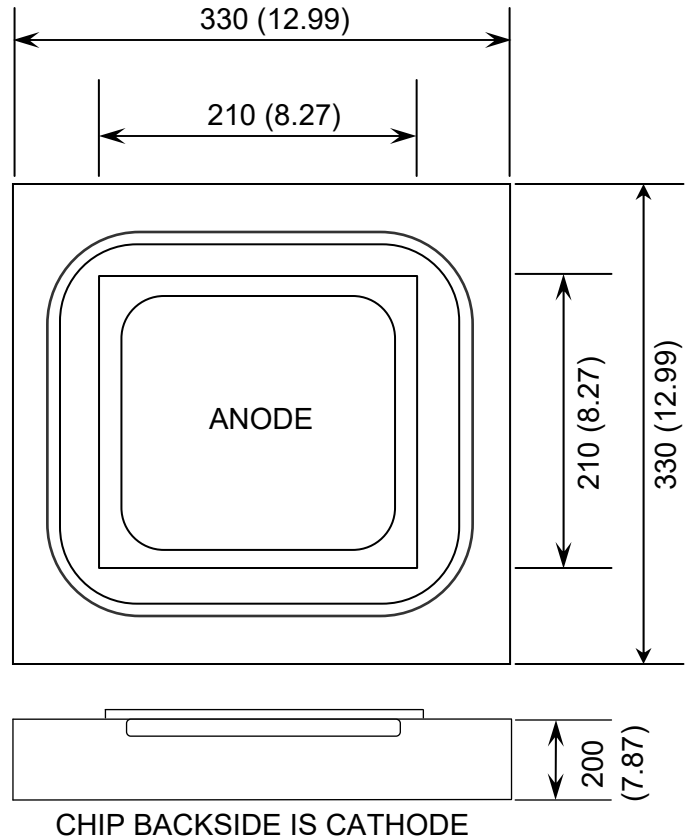
Rev 1.0
27/1/21

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 μ m (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

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_Z tolerances:
2% - B grade, 1% - A grade – Specific request

Mechanical Specification

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





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Absolute Maximum Ratings¹ 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 +200 | °C |
| Forward Voltage @ I _F = 200mA | V _F | 1.5 | V |

Electrical Characteristics T_A = 25°C unless otherwise stated

| DEVICE | ZENER VOLTAGE RANGE | | | TEST CURRENT | REVERSE LEAKAGE CURRENT | | | MAXIMUM VOLTAGE REGULATION ³ | MAXIMUM DC ZENER CURRENT |
|--------|----------------------------------|------|-------|-----------------|---------------------------------|-----|------|---|--------------------------|
| | V _Z @ I _{ZT} | | | I _{ZT} | I _R @ V _R | | | ΔV _Z | I _{ZM} |
| | V | | | μA | μA | V | V | mA | |
| | Min. | Nom. | Max. | | | | | | |
| 1N4678 | 1.71 | 1.8 | 1.89 | 50 | 7.5 | 1 | 0.70 | 120.0 | |
| 1N4679 | 1.9 | 2 | 2.1 | 50 | 5.0 | 1 | 0.70 | 110.0 | |
| 1N4680 | 2.09 | 2.2 | 2.31 | 50 | 4.0 | 1 | 0.75 | 100.0 | |
| 1N4681 | 2.28 | 2.4 | 2.52 | 50 | 2.0 | 1 | 0.80 | 95.0 | |
| 1N4682 | 2.565 | 2.7 | 2.835 | 50 | 1.0 | 1 | 0.80 | 90.0 | |
| 1N4683 | 2.85 | 3 | 3.15 | 50 | 0.8 | 1 | 0.90 | 85.0 | |
| 1N4684 | 3.135 | 3.3 | 3.465 | 50 | 7.5 | 1.5 | 0.95 | 80.0 | |
| 1N4685 | 3.42 | 3.6 | 3.78 | 50 | 7.5 | 2 | 0.95 | 75.0 | |
| 1N4686 | 3.705 | 3.9 | 4.095 | 50 | 5.0 | 2 | 0.97 | 70.0 | |
| 1N4687 | 4.085 | 4.3 | 4.515 | 50 | 4.0 | 2 | 0.99 | 65.0 | |
| 1N4688 | 4.465 | 4.7 | 4.935 | 50 | 10 | 3 | 0.99 | 60.0 | |
| 1N4689 | 4.845 | 5.1 | 5.355 | 50 | 10 | 3 | 0.97 | 55.0 | |
| 1N4690 | 5.32 | 5.6 | 5.88 | 50 | 10 | 4 | 0.96 | 50.0 | |
| 1N4691 | 5.89 | 6.2 | 6.51 | 50 | 10 | 5 | 0.95 | 45.0 | |
| 1N4692 | 6.46 | 6.8 | 7.14 | 50 | 10 | 5.1 | 0.90 | 35.0 | |
| 1N4693 | 7.125 | 7.5 | 7.875 | 50 | 10 | 5.7 | 0.75 | 31.8 | |
| 1N4694 | 7.79 | 8.2 | 8.61 | 50 | 1.0 | 6.2 | 0.50 | 29.0 | |
| 1N4695 | 8.265 | 8.7 | 9.135 | 50 | 1.0 | 6.6 | 0.10 | 27.4 | |
| 1N4696 | 8.645 | 9.1 | 9.555 | 50 | 1.0 | 6.9 | 0.08 | 26.2 | |
| 1N4697 | 9.5 | 10 | 10.5 | 50 | 1.0 | 7.6 | 0.10 | 24.8 | |
| 1N4698 | 10.45 | 11 | 11.55 | 50 | 0.05 | 8.4 | 0.11 | 21.6 | |
| 1N4699 | 11.4 | 12 | 12.6 | 50 | 0.05 | 9.1 | 0.12 | 20.4 | |
| 1N4700 | 12.35 | 13 | 13.65 | 50 | 0.05 | 9.8 | 0.13 | 19.0 | |





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

| DEVICE | ZENER VOLTAGE RANGE ³ | | | TEST CURRENT | REVERSE LEAKAGE CURRENT | | MAXIMUM VOLTAGE REGULATION ⁴ | MAXIMUM DC ZENER CURRENT |
|--------|----------------------------------|------|-------|---------------|-------------------------|------|---|--------------------------|
| | $V_Z @ I_{ZT}$ | | | I_{ZT} | $I_R @ V_R$ | | ΔV_Z | I_{ZM} |
| | V | | | μA | μA | V | V | mA |
| | Min. | Nom. | Max. | | | | | |
| 1N4701 | 13.3 | 14 | 14.7 | 50 | 0.05 | 10.6 | 0.14 | 17.5 |
| 1N4702 | 14.25 | 15 | 15.75 | 50 | 0.05 | 11.4 | 0.15 | 16.3 |
| 1N4703 | 15.2 | 16 | 16.8 | 50 | 0.05 | 12.1 | 0.16 | 15.4 |
| 1N4704 | 16.15 | 17 | 17.85 | 50 | 0.05 | 12.9 | 0.17 | 14.5 |
| 1N4705 | 17.1 | 18 | 18.9 | 50 | 0.05 | 13.6 | 0.18 | 13.2 |
| 1N4706 | 18.05 | 19 | 19.95 | 50 | 0.05 | 14.4 | 0.19 | 12.5 |
| 1N4707 | 19 | 20 | 21 | 50 | 0.01 | 15.2 | 0.20 | 11.9 |
| 1N4708 | 20.9 | 22 | 23.1 | 50 | 0.01 | 16.7 | 0.22 | 10.8 |
| 1N4709 | 22.8 | 24 | 25.2 | 50 | 0.01 | 18.2 | 0.24 | 9.9 |
| 1N4710 | 23.75 | 25 | 26.25 | 50 | 0.01 | 19.0 | 0.25 | 9.5 |
| 1N4711 | 25.65 | 27 | 28.35 | 50 | 0.01 | 20.4 | 0.27 | 8.8 |
| 1N4712 | 26.6 | 28 | 29.4 | 50 | 0.01 | 21.2 | 0.28 | 8.5 |
| 1N4713 | 28.5 | 30 | 31.5 | 50 | 0.01 | 22.8 | 0.30 | 7.9 |
| 1N4714 | 31.35 | 33 | 34.65 | 50 | 0.01 | 25.0 | 0.33 | 7.2 |
| 1N4715 | 34.2 | 36 | 37.8 | 50 | 0.01 | 27.3 | 0.36 | 6.6 |
| 1N4716 | 37.05 | 39 | 40.95 | 50 | 0.01 | 29.8 | 0.39 | 6.1 |
| 1N4717 | 40.85 | 43 | 45.15 | 50 | 0.01 | 32.6 | 0.43 | 5.5 |

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 voltage is read using a pulse measurement, 10 milliseconds maximum.
4. $V_Z @ 100\mu\text{A}$ minus $V_Z @ 10\mu\text{A}$.

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