

### Data Sheet

#### Description

This PIN diode chip is silicon dioxide or nitride passivated. The 5082-0012 has a planar construction. The fabrication processes are optimized for long term reliability and tightly controlled for uniformity in electrical performance.

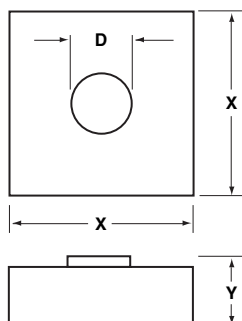
#### Features

- Low Series Resistance: 1.0  $\Omega$  Typical

#### Applications

This general purpose PIN diode is intended for low power switching applications such as duplexers, antenna switching matrices, digital phase shifters, time multiplex filters, TR switches, pulse and amplitude modulators, limiters, leveling circuits, and attenuators.

#### Outline



| DIMENSIONS          |               |
|---------------------|---------------|
| D<br>$\pm 0.03$ (1) | 0.10<br>(4)   |
| X<br>$\pm 0.05$ (2) | 0.38<br>(15)  |
| Y<br>$\pm 0.03$ (1) | 0.23<br>(9.0) |
| Top Contact         | Au. Cathode   |
| Bottom Contact      | Au. Anode     |

Dimensions in millimeters  
(1/1000 inch)

#### Maximum Ratings

Junction Operating and Storage

Temperature Range ..... -65°C to +150°C

Soldering Temperature ..... +425°C for 1 min. max.

#### Electrical Specifications at $T_A = 25^\circ\text{C}$

| Chip Part Number<br>5082-0012 | Nearest Equivalent Packaged Part No.<br>5082-3001 | Minimum Breakdown Voltage<br>$V_{BR}$ (V)     | Maximum Junction Capacitance<br>$C_j$ (pF) |
|-------------------------------|---|---|--|
|                               |   | 150   | 0.12                                       |
| Test Conditions               |   | $V_R = V_{BR}$<br>Measure<br>$I_R \leq 10$ mA | $V_R = 50$ V<br>$f = 1$ MHz                |

#### Typical Parameters

| Typical Series Resistance<br>$R_S$ ( $\Omega$ ) | Typical Lifetime<br>$\tau$ (ns) | Typical Reverse Recovery Time<br>$t_{rr}$ (ns) |
|---|---------------------------------|--|
| 1.0   | 400                             | 100  |
| $I_F = 100$ mA<br>$f = 100$ MHz                 | $I_F = 50$ mA<br>$I_R = 250$ mA | $I_F = 20$ mA<br>$V_R = 10$ V<br>90% Recovery  |

## **Assembly and Handling Procedures for PIN Chips**

### **1. Storage**

Devices should be stored in a dry nitrogen purged dessicator or equivalent.

### **2. Cleaning**

If required, surface contamination may be removed with electronic grade solvents. Typical solvents, such as freon (T.F. or T.M.C.), acetone, deionized water, and methanol, or their locally approved equivalents, can be used singularly or in combinations. Typical cleaning times per solvent are one to three minutes. DI water and methanol should be used (in that order) in the final cleans. Final drying can be accomplished by placing the cleaned dice on clean filter paper and drying with an infrared lamp for 5-10 minutes. Acids such as hydrofluoric (HF), nitric (HNO<sub>3</sub>) and hydrochloric (HCl) should not be used.

The effects of cleaning methods/solutions should be verified on small samples prior to submitting the entire lot.

Following cleaning, dice should be either used in assembly (typically within a few hours) or stored in clean containers in a reducing atmosphere or a vacuum chamber.

### **3. Die Attach**

#### **a. Eutectic**

AuSn preform with stage temperature of 310°C for one minute max. AuGe preform with stage temperature of 390°C for one minute max.

#### **b. Epoxy**

For epoxy die-attach, conductive silver-filled or gold-filled epoxies are recommended. This method can be used for all Avago PIN chips.

### **4. Wire Bonding**

Either ultrasonic or thermocompression bonding techniques can be employed. Suggested wire is pure gold, 0.7 to 1.5 mil diameter.

For product information and a complete list of distributors, please go to our web site:  
**[www.avagotech.com](http://www.avagotech.com)**

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