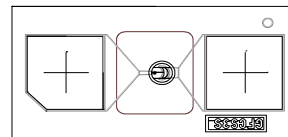


Solderable GaAs Flip Chip Schottky Diode

Rev. V3

Features

- Usable Past 80GHz
- Low Series Resistance
- Low Capacitance
- High Cutoff Frequency
- Silicon Nitride Passivation
- Polyimide Scratch Protection
- Lead Free (RoHS Compliant)
- Designed for Easy Circuit Insertion
- Available in Pocket Tape and Reel
- **Can be Mounted with Solder or Conductive Epoxy**



MADS-001317- 1500

Description and Applications

M/A-COM's MADS-001317-1500 single is a gallium arsenide flip chip Schottky barrier diode. This device is fabricated on OMCVD epitaxial material using a process designed for high device uniformity and extremely low parasitics. This diode is fully passivated with silicon nitride and has an additional layer of polyimide for scratch protection. The protective coating prevents damage to the junction during automated or manual handling. The flip chip configuration is suitable for pick and place insertion. This device can be attached with solder or conductive epoxy. The high cutoff frequency of this diode allows use through millimeter wave frequencies. Typical applications include single and double balanced mixers in PCN transceivers and radios, police radar detectors, and automotive radar detectors.

Ordering Information

| Part Number | Package |
|--------------------|----------------------|
| MADS-001317-1500AG | Gel Pack |
| MADS-001317-1500AP | Pocket Tape and Reel |

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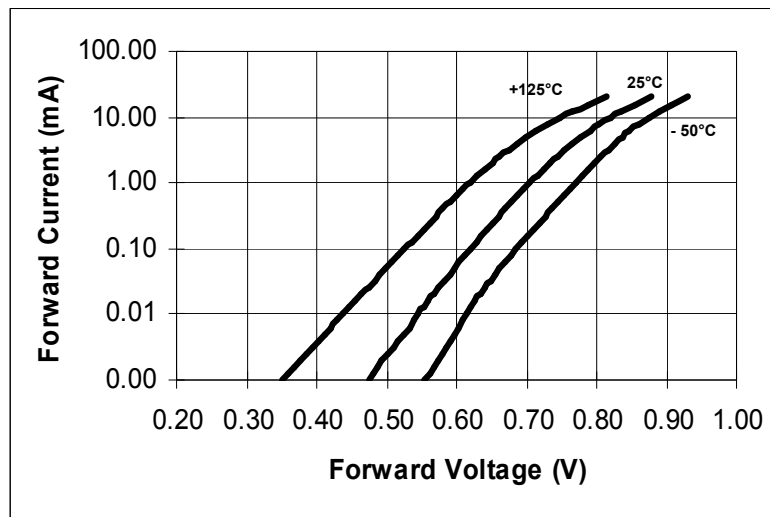
Electrical Specifications @ + 25 °C

| Parameters and Test Conditions | Symbol | Units | MADS-001317-1500 | | |
|---|--------|-------|------------------|------|------|
| | | | Min. | Typ. | Max. |
| Junction Capacitance at 0V at 1 MHz | Cj | pF | | .020 | |
| Total Capacitance at 0V at 1 MHz ¹ | Ct | pF | .030 | .045 | .060 |
| Dynamic Resistance at 9.5 - 10.5mA | Rs | Ohms | | 4 | 7 |
| Forward Voltage at +1mA | Vf1 | Volts | .60 | .70 | .80 |
| Reverse Breakdown Voltage at -10uA | Vbr | Volts | 4.5 | 7 | |

Notes:

1. Total capacitance is equivalent to the sum of junction capacitance Cj and parasitic capacitance Cp.

Forward Current vs Temperature



Absolute Maximum Ratings ¹

| Parameter | Absolute Maximum |
|---|-------------------|
| Operating Temperature | -65 °C to +125 °C |
| Storage Temperature | -65 °C to +150 °C |
| Incident LO Power | +20 dBm |
| Incident RF Power | +20 dBm . |
| Mounting Temperature | +260 °C |
| Electrostatic Discharge (ESD) Classification ² | Class 0 |

1. Operation of this device above any one of these parameters may cause permanent damage.
2. Human Body Model

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Mounting Techniques

Die attach for these devices is made simple through the use of surface mount die attach technology. This chip was designed to be inserted onto hard or soft substrates with the junction side down. This chip can be mounted with conductive epoxy or with solder.

Solder Die Attach:

This device can be mounted with Sn63/Pb37 or RoHS compliant solder. Typical reflow profiles are provided on M/A-Com application note M538, "Surface Mounting Instructions" which can be found @ www.macomtech.com

Epoxy Die Attach:

This device can also be attached with conductive epoxy. The assembly can be preheated to 125 - 150°C. Use a minimum amount of epoxy. Cure epoxy as per manufacturer's instructions.

Handling Procedures

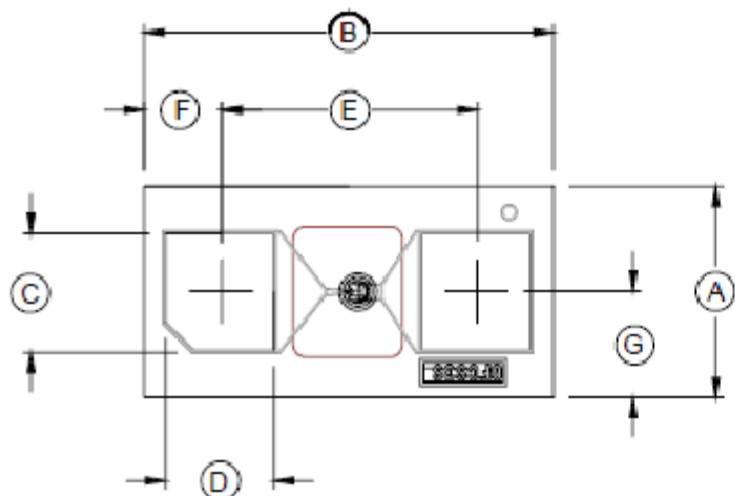
The following precautions should be observed to avoid damaging these chips:

- Cleanliness:** The chips should be handled in a clean environment. Do not attempt to clean die after installation.
- Static Sensitivity:** Schottky barrier diodes are ESD sensitive and can be damaged by static electricity. Proper ESD techniques should be used when handling these devices.
- General Handling:** The protective polymer coating on the active areas of these die provides scratch protection, particularly for the metal air bridge which contacts the anode. Die can be handled with tweezers or vacuum pickups and are suitable for use with automatic pick-and-place equipment.

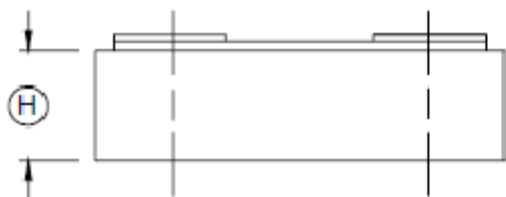
Solderable GaAs Flip Chip Schottky Diode

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Flip Chip Outline Drawing



Case Style 1500



| DIM. | INCHES | | MILLIMETERS | |
|------|--------|--------|-------------|-------|
| | MIN. | MAX. | MIN. | MAX. |
| A | 0.015 | 0.017 | 0.381 | 0.431 |
| B | 0.029 | 0.031 | 0.736 | 0.787 |
| C | 0.008 | 0.009 | 0.203 | 0.228 |
| D | 0.007 | 0.008 | 0.178 | 0.203 |
| E | 0.016 | 0.017 | 0.406 | 0.431 |
| F | 0.006 | 0.007 | 0.152 | 0.178 |
| G | 0.0075 | 0.0085 | 0.190 | 0.216 |
| H | 0.0075 | 0.0085 | 0.190 | 0.216 |

1. Pad finish is .2 microns of gold over 4 microns of nickel.