MADS-011030-14280W

Schottky Zero Bias Detector Diode

Rev. V1

Features

- P-Type Schottky Diode
- Low Slope Resistance, 6.5 Ω
- Can be used Without External DC Bias
- Large Bondable Contact
- Can be Mounted with Solder or Conductive Epoxy
- RoHS Compliant*

Description

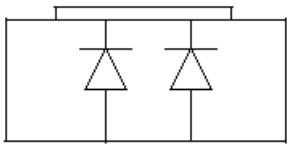
The MADS-011030-14280W is a zero bias detector diode (ZBD). This diode is a bondable die suitable for use in microstrip or stripline detector circuits. These chips can be used in automatic assembly processes due to their 2.5 x 10 mil rectangular gold contact and sturdy construction.

Ordering Information

Part Number	Package
MADS-011030-14280W	Waffle Pack

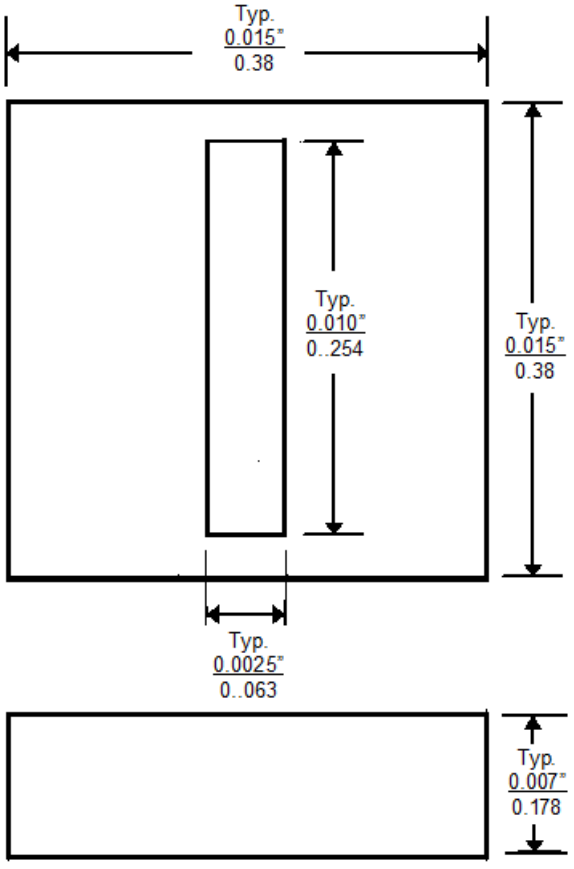
Functional Schematic

Top Contact



Full Area Anode

Chip Outline[1,2]



1. Topside metal (cathode contact) thickness: 10 microns Au (Typical)
2. Backside metal (anode contact) thickness: 0.1 micron Au (Typical)

* Restrictions on Hazardous Substances, European Union Directive 2011/65/EU.

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Electrical Specifications: T_A = +25°C

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Forward Voltage (V_F)	V_F @ 1 mA	mV	80	100	130
Voltage Breakdown (V_B)	V_B @ 1 mA	V	2.5	3.5	—
Slope Resistance (R_D)	R_D @ 9.5 - 10.5 mA	Ohms	—	6.5	10
Capacitance (C_T)	C_T @ -0.5 volts	pF	—	0.33	0.45

Absolute Maximum Ratings[3,4]

Parameter	Absolute Maximum
Reverse Voltage @ 25°C	2.5 Volts
Operating Temperature	-55°C to +125°C
Storage Temperature	-55°C to +150°C

3. Exceeding any one or combination of these limits may cause permanent damage to this device.
4. MACOM does not recommend sustained operation near these survivability limits.

Handling Procedures

Please observe the following precautions to avoid damage:

Static Sensitivity

These electronic devices are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these HBM Class 0 devices.

Die Handling and Mounting Information

Handling: All semiconductor chips should be handled with care in order to avoid damage or contamination from perspiration, salts, and skin oils. For individual die, the use of plastic tipped tweezers or vacuum pick up tools is strongly recommended. Bulk handling should ensure that abrasion and mechanical shock are minimized.

Die Attach: The die have Ti-Pt-Au back metal and gold plated contact metal. Die can be mounted with a gold-tin, eutectic solder preform or conductive silver epoxy.

Eutectic Die Attachment Using Hot Gas Die Bonder: An 80/20, gold tin eutectic solder perform is recommended with a work surface temperature of 255°C and a tool tip temperature of 220°C. When the hot gas is applied, the temperature at the tool tip should be approximately 290°C.

Eutectic Die Attachment Using Reflow Oven: See Application Note M541, “Bonding and Handling Procedures for Chip Diode Devices”.

Epoxy Die Attachment: A thin, controlled amount of electrically conductive silver epoxy should be applied at approximately a 1-2 mils thickness to minimize ohmic and thermal resistances. A thin epoxy fillet should be visible around the perimeter of the chip after placement to ensure full area coverage. Cure conductive epoxy per manufacturer’s schedule.

Wire Bonding: 0.001” diameter gold wire is recommended with a stage temperature of 150°C and minimal force. Ultrasonic energy should be adjusted to the minimum required. Automatic ball bonding can also be used.