

## Schottky Zero Bias Detector Diode Chip

V1

### Features

- P-Type Schottky Diode
- Can be used Without External DC Bias
- Large Bondable Contact
- RoHs Compliant
- Available in Chip Form (ODS-1419)
- Can be Mounted with Solder or Conductive Epoxy.

### Description

M/A-COM Technology Solutions' MADS-011010-1419 Zero Bias Detector Diode (ZBD) is suitable for use in microstrip or stripline detector circuits. These chips can be used in automatic assembly processes due to their 2.6 x 5.7 mil rectangular gold contact and sturdy construction.

### Absolute Maximum Ratings <sup>1,2</sup>

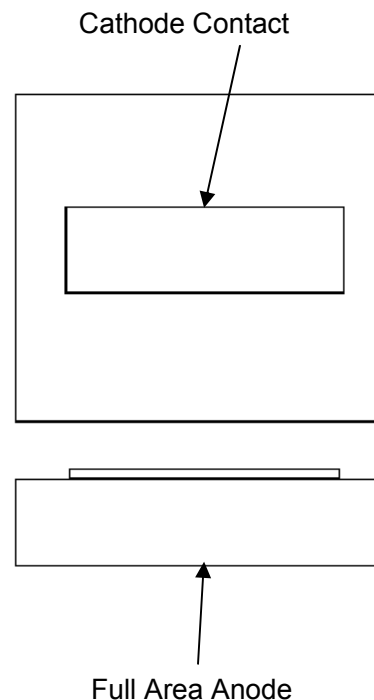
Operating Temperature	-55°C to +125°C
Storage Temperature	-55°C to +150°C
Reverse Voltage @ 25 °C	1.5 Volts
Maximum Mounting Temperature	+320C for 10 sec.
ESD Classification <sup>3</sup>	Class 0

1. Exceeding any one or combination of these limits may cause permanent damage to this device.
2. M/A-COM does not recommend sustained operation near these survivability limits.
3. Human Body Model

### Ordering Information

Part Number	Package
MAVR-011010-14190G	Gel Pack

### Chip Layout ( ODS- 1419 )



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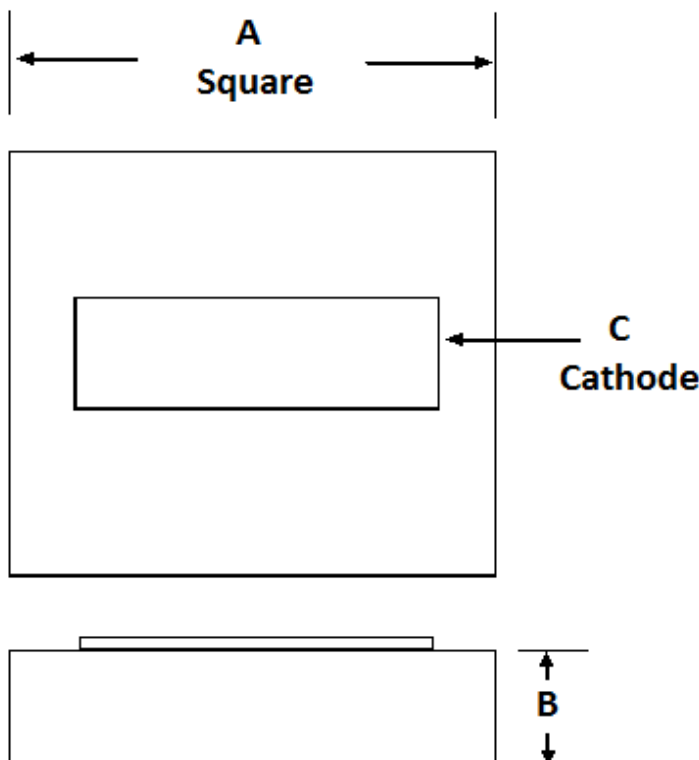
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**Electrical Specifications @ T<sub>A</sub> = +25 °C**

Parameter	Condition	Symbol	Specification
Breakdown Voltage	I <sub>R</sub> = 100μA	V <sub>B</sub>	1.5 V min.
Forward Voltage	I <sub>F</sub> = .1 mA	V <sub>F</sub>	60 - 120mV max.
Forward Voltage	I <sub>F</sub> = 1 mA	V <sub>F</sub>	150 - 220mV max.
Total Capacitance	V <sub>R</sub> = .5 V f = 1 MHz	C <sub>T</sub>	0.15 pF Typical.
Dynamic Resistance	I <sub>F</sub> = 9.5 -10.5mA	R <sub>D</sub>	40 Ohms max.

**Chip Dimensions (ODS - 1419)**



Dimension	Mils	mm
A	10.5 +/- 1.0	0.266 +/- 0.025
B	7 +/- 1.0	0.177 +/- 0.025
C	2.6 X 5.7	.066 X .144

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

2 \* Specifications are subject to change without prior notification

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## 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 preform 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. The chip should not be exposed to temperature greater than 320°C for more than 10 seconds.

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

**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.

**See Application Note M541, “Bonding and Handling Procedures for Chip Diode Devices” for more detailed handling and assembly instructions at following link:**

<http://www.macom.com/Application%20Notes/pdf/m541.pdf>