

Electrical Specifications @ $T_A = +25^\circ\text{C}$

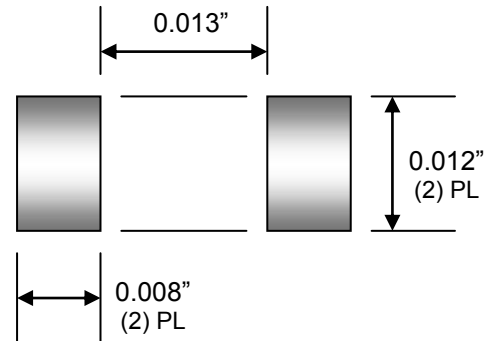
Parameter	Conditions	Units	Min.	Typ.	Max.
Total Capacitance (C_T)	-10 V, 1 MHz	pF	—	0.025	0.030
Series Resistance (R_S)	+10 mA, 1 GHz	Ω	—	5.2	7.0
Forward Voltage (V_F)	+10 mA	V	—	1.33	1.45
Reverse Voltage Current ³ (I_R)	$V_R = -50$ V	μA	—	—	10
Switching Speed ⁴ (T_{RISE}/T_{FALL})	10 GHz	ns	—	2	—

3. The max rated reverse voltage (V_R) is sourced and the resultant reverse leakage current (I_R), is measured to be $<10 \mu\text{A}$.
 4. Switching speed is measured between 10% and 90% or 90% to 10% RF voltage for a single series mounted diode, driver delay is not included.

Absolute Maximum Ratings

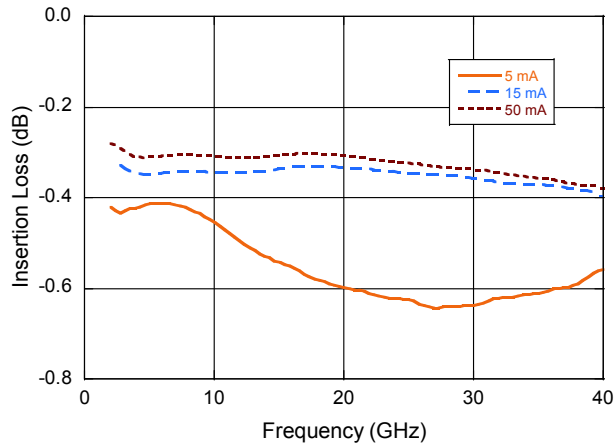
Parameter	Absolute Maximum
Reverse Voltage	50 V
CW Incident Power	23 dBm
RF & DC Dissipated Power	250 mW
Operating Temperature	-55°C to $+125^\circ\text{C}$
Storage Temperature	-55°C to $+150^\circ\text{C}$
Junction Temperature	$+175^\circ\text{C}$
Mounting Temperature	$+280^\circ\text{C}$ for 10 seconds

Circuit Pad Layout

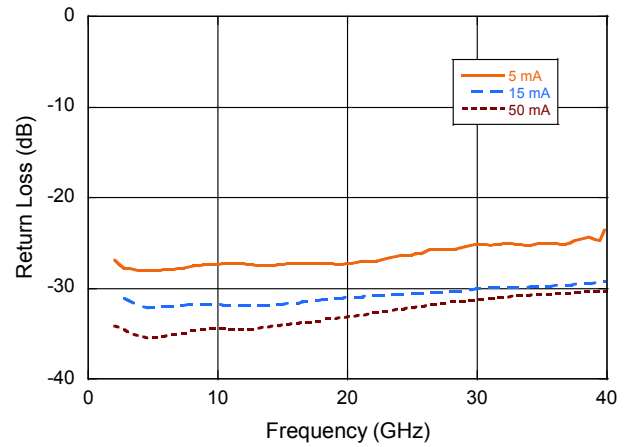


Typical Performance Curves

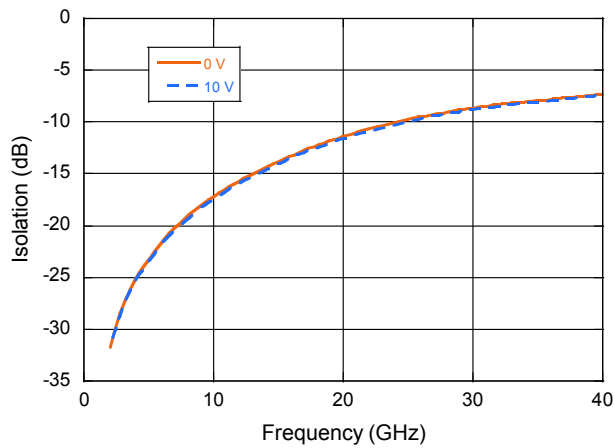
Insertion Loss



Return Loss



Isolation



Cleanliness

This device should be handled in a clean environment. The chip is resistant to solvents and may be cleaned using approved industry standard practices and chemicals.

Static Sensitivity

Gallium Arsenide PIN diodes are ESD sensitive and can be damaged by static electricity. Proper ESD handling techniques should be used in a static-free environment. These devices are rated Class 0 HBM per MIL-STD-883, method 3015.7.

General Handling

The die has a polymer layer which provides scratch protection for the junction area and the anode air bridge. Die can be handled with plastic tweezers or picked and placed with a #27 tip vacuum pencil.

Assembly Requirements

Electrically Conductive Silver Epoxy:

The MA4GP907 is designed to be inserted onto hard or soft substrates with the junction/pad side down. It can be mounted onto a silk-screened circuit using electrically conductive silver epoxy which is approximately 1 - 2 mils thick and cured at approximately 90°C to 150°C per manufacturer's schedule. For extended cure times, >30 minutes, temperatures must be kept below 200°C.

Solder Die Attached:

The MA4GP907 and the MA4AGP907 (AlGaAs) PIN diode, which both employ the same contact pad metalization scheme (T-W-Au), must use a solder that contains <30% Sn by weight for a reliable die attach to a circuit. An example is a eutectic 80Au/20Sn.

Tin rich solders (>30% Sn by weight) are not recommended as they will scavenge the gold on the contact pads, exposing the tungsten metalization beneath and creating a poor solder connection.

Note:

For an AlGaAs solderable PIN diode version (with Cu-Ni-Au contact pads) where both 60Sn/40Pb (non RoHS) and 96Sn/4Ag (RoHS) type solders can be used, please refer to MACOM's MADP-000907-14020.

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