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Wide Band GaAs MMIC Amplifier
0.2 - 3.0 GHz

MAAM02350

V 2.00

Features

- 19 dB Typical Gain[1]
- +14 dBm Typical Output Power
- 3.7 dB Typical Noise Figure[1]

Electrical Specifications @ T_A = +25°C

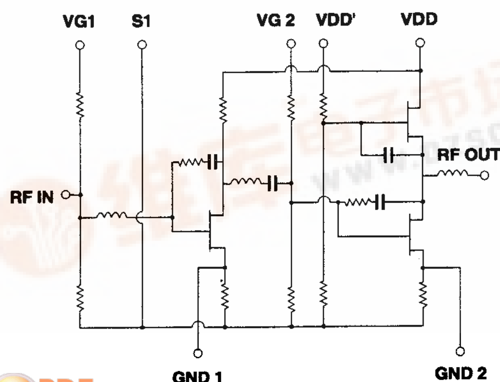
Parameter		
Frequency Range		0.2 – 3.0 GHz
Gain[1]	19.0 dB Typ	17.0 dB Min
Gain Flatness		±0.5 dB Typ
Noise Figure[1]	4.1 dB Max	3.7 dB Typ
VSWR[1]	Input Output	1.8:1 Typ 1.5:1 Typ
Ouput Power at 1 dB Gain Compression		+14 dBm Typ
Third Order Intercept		+24 dBm Typ
Reverse Isolation		+35 dB Typ
Impedance		50 Ω Typ
Bias Voltage Bias Current		Vdd = +6 Vdc Idd = 65mA Typ, 100mA Max

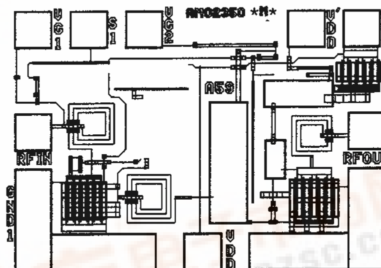
Maximum Ratings

Parameter	Rating
Voltage	+7 Volts
Input Power	+20 dBm
Storage Temperature	–65°C to +150°C
Operating Temperature	–55°C to +125°C

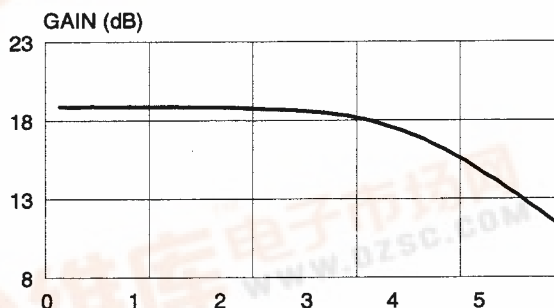
1. 100% on-wafer tested.

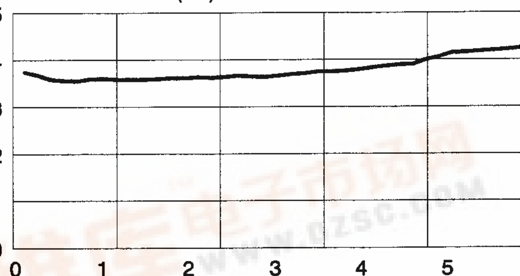
Schematic

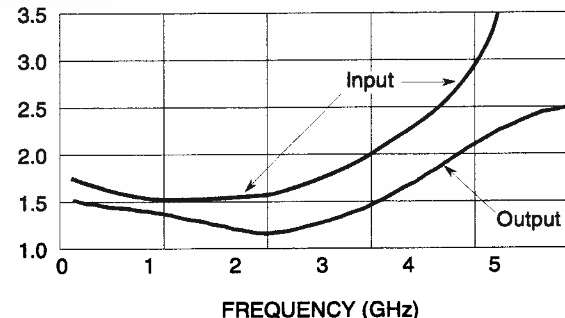




Typical Performance







FREQUENCY (GHz)

Specifications Subject to Change Without Notice.

M/A-COM, Inc.

Handling

Permanent damage to the MAAM02350 may occur if the following precautions are not adhered to:

A. Cleanliness — The MAAM02350 should be handled in a clean environment. DO NOT attempt to clean assembly after the MAAM02350 is installed.

B. Static Sensitivity — All die handling equipment and personnel should comply with DOD-STD-1686 Class I.

C. Transients — Avoid instrument and power supply transients while bias is connected to the MAAM02350. Use shielded signal and bias cables to minimize inductive pick-up.

D. General Handling — DO NOT touch the surface of the die. It is recommended that the MAAM02350 die be handled along the long side with a sharp pair of tweezers.

Mounting

The MAAM02350 is back-metallized with Pd/Ni/Au(100/1,000/30,000Å) metallization. It can be die-mounted using Au/Sn eutectic preforms or epoxy.The attachment surface should be clean and flat.

Eutectic Die Attach:

A. An 80/20 Au/Sn preform is recommended with a work surface temperature of approximately 255°C and a tool temperature of 265°C. When hot 95/5 nitrogen/hydrogen gas is applied, solder temperature should be approximately 290°C.

B. DO NOT expose the MAAM02350 to a temperature greater than 320°C for more than 20 seconds. No more than 3 seconds of scrubbing should be required for attachment.

Epoxy Die Attach:

A. Apply a minimum amount of epoxy and place the MAAM02350 into position. A thin epoxy fillet should be visible around the perimeter of the die.

B. Cure epoxy per manufacturer's recommended schedule.

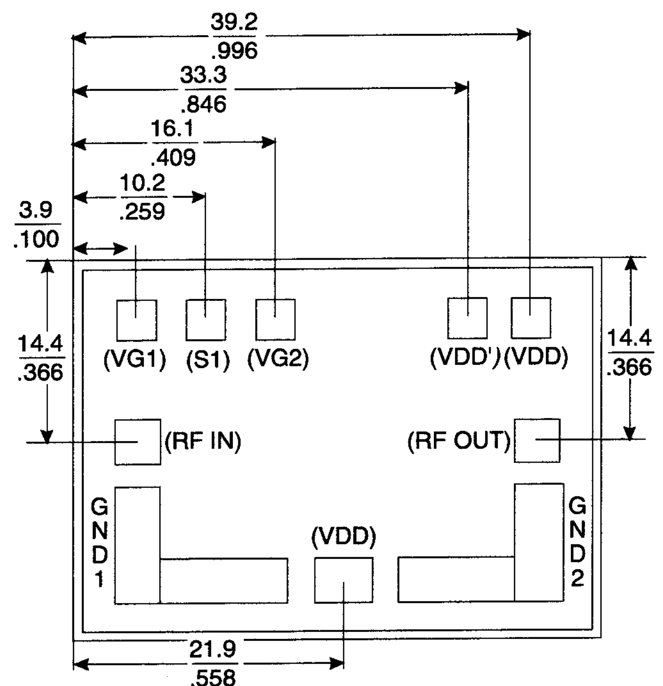
Bonding

A. Ball or wedge bond with 1.0 mil diameter gold wire or 3.0 mil x 0.5 mil ribbon. Thermosonic bonding with a nominal stage temperature of 150°C and a ball bonding force of 40 to 50 grams or wedge bonding force of 18 to 22 grams is recommended. Ultrasonic energy and time should be adjusted to the minimum levels necessary to achieve reliable bonds.

B. Bonds should be started on the die and terminated on the package. RF bonds should be as short as possible; at least three and no more than four bond wires from ground pads to package are recommended.

C. Bonding Pads are 4.0 x 4.0 mils.

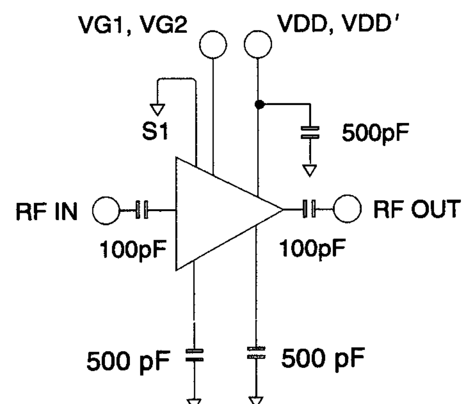
Outline



0.044 in. x 0.032 in. x 0.004 in.

All dimensions are mils/mm.

Typical Bias Configuration



1. Self-bias operation is obtained by connecting +6 volts to both VDD and VDD pads, grounding pad S1, and connecting pads GND1 and GND2 to separate bypass 500pF MOS capacitors.