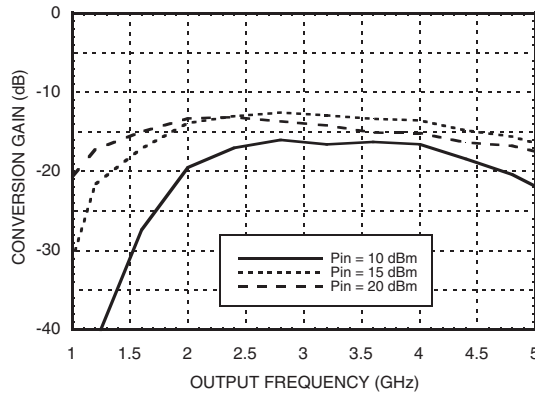
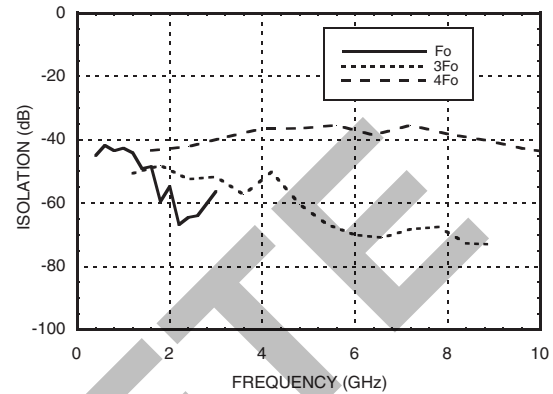
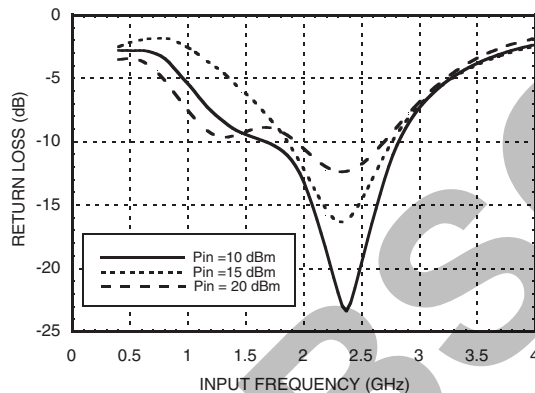
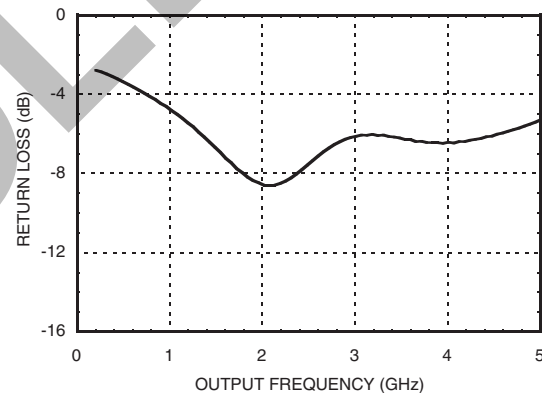


**GaAs MMIC PASSIVE FREQUENCY  
DOUBLER, 0.7 - 2.4 GHz INPUT**
**Conversion Gain vs. Drive Level**

**Isolation @ +15 dBm Drive Level\***


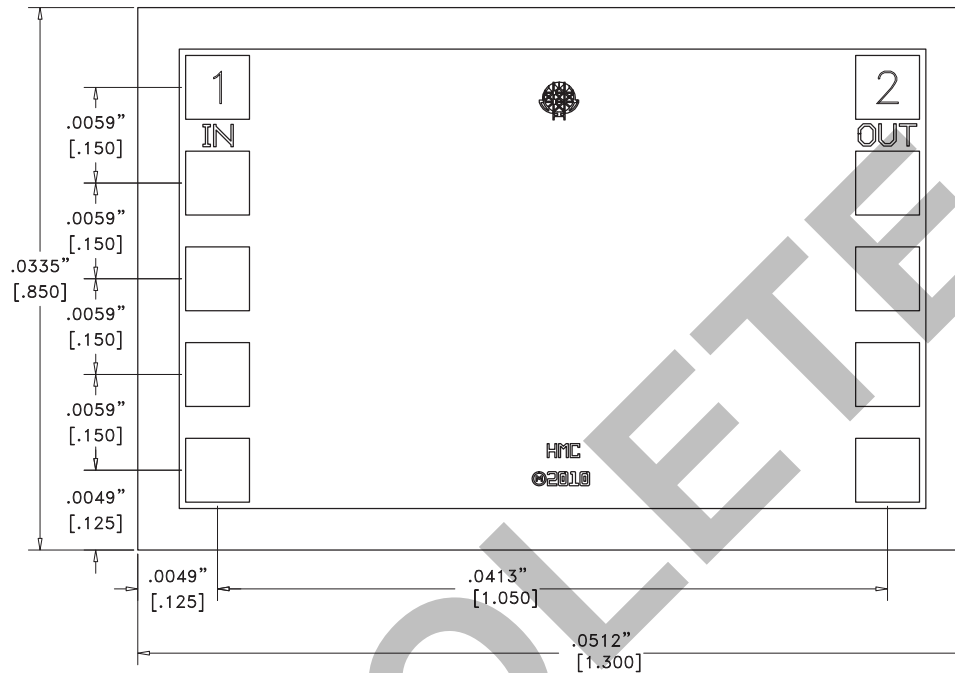
\*With respect to input level

**Input Return Loss vs. Drive Level**

**Output Return Loss @ +15 Drive Level**

**Absolute Maximum Ratings**

Input Drive	+27 dBm
Storage Temperature	-65 to +150 °C
Operating Temperature	-55 to +85 °C



**ELECTROSTATIC SENSITIVE DEVICE  
OBSERVE HANDLING PRECAUTIONS**

**GaAs MMIC PASSIVE FREQUENCY  
DOUBLER, 0.7 - 2.4 GHz INPUT**
**Outline Drawing**

**Die Packaging Information** <sup>[1]</sup>

Standard	Alternate
WP-13 (Waffle Pack)	[2]

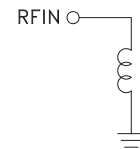
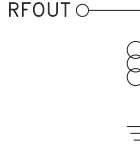

[1] Refer to the "Packaging Information" section for die packaging dimensions.

[2] For alternate packaging information contact Hittite Microwave Corporation.

**NOTES:**

1. ALL UNLABELED PADS MUST BE BONDED TO GROUND (8 TOTAL).
2. ALL DIMENSIONS IN INCHES [MILLIMETERS]
3. ALL TOLERANCES ARE  $\pm 0.001$  [0.025]
4. DIE THICKNESS IS  $\pm 0.005$  [0.127]
5. BOND PADS ARE  $\pm 0.004$  [0.100] SQUARE
6. EQUALLY SPACED AT  $\pm 0.006$  [0.150] CENTERS
7. BACKSIDE METALLIZATION: NONE
8. BOND PAD METALLIZATION: GOLD

**Pad Description**

Pad Number	Function	Description	Interface Schematic
1	RFIN	DC coupled and matched to 50 Ohm.	
2	RFOUT	DC coupled and matched to 50 Ohm.	
Die Bottom	GND	Die bottom must be connected to RF/DC ground.	

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**GaAs MMIC PASSIVE FREQUENCY  
DOUBLER, 0.7 - 2.4 GHz INPUT****Handling Precautions**

Follow these precautions to avoid permanent damage.

**Storage:** All bare die are placed in either Waffle or Gel based ESD protective containers, and then sealed in an ESD protective bag for shipment. Once the sealed ESD protective bag has been opened, all die should be stored in a dry nitrogen environment.

**Cleanliness:** Handle the chips in a clean environment. DO NOT attempt to clean the chip using liquid cleaning systems.

**Static Sensitivity:** Follow ESD precautions to protect against ESD strikes.

**Transients:** Suppress instrument and bias supply transients while bias is applied. Use shielded signal and bias cables to minimize inductive pick-up.

**General Handling:** Handle the chip along the edges with a vacuum collet or with a sharp pair of bent tweezers. The surface of the chip may have fragile air bridges and should not be touched with vacuum collet, tweezers, or fingers.

**Mounting**

The chip is back-metallized and can be die mounted with AuSn eutectic preforms or with electrically conductive epoxy. The mounting surface should be clean and flat.

**Epoxy Die Attach:**

Apply a minimum amount of epoxy to the mounting surface so that a thin epoxy fillet is observed around the perimeter of the chip once it is placed into position.

Cure epoxy per the manufacturer's schedule.

**Wire Bonding**

Ball or wedge bond with 1.0 diameter pure gold wire. Thermosonic wirebonding 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. Use the minimum level of ultrasonic energy to achieve reliable wirebonds. Wirebonds should be started on the chip and terminated on the package. RF bonds should be as short as possible.