

# Analog Devices Welcomes Hittite Microwave Corporation

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## GaAs MMIC SMT DOUBLE-BALANCED MIXER, 1.6 - 3.4 GHz

### Typical Applications

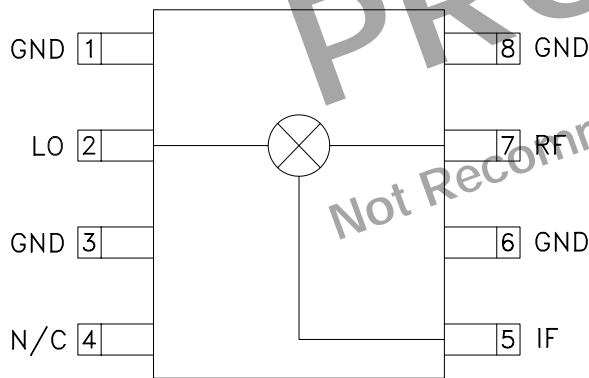
The HMC147S8 is ideal for:

- Base Stations
- Portable Wireless

### Features

- Conversion Loss: 8.6 dB
- LO / IF Isolation: 26 dB
- LO / RF Isolation: 30 dB

### Functional Diagram



### General Description

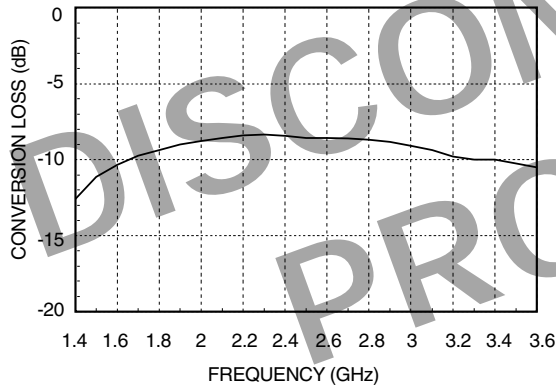
The HMC147S8 is a miniature double-balanced mixer in a plastic surface mount Small-Outline IC (SOIC) package. The device can be used as an upconverter or downconverter. The mixer provides exceptional isolation and intermodulation performance for applications in high signal density environments. This device can also be used as a biphaser modulator/demodulator, or Phase Comparator. This mixer is functionally equivalent to the HMC175MS8.

### Electrical Specifications, $T_A = +25^\circ C$ , LO Drive = +13 dBm

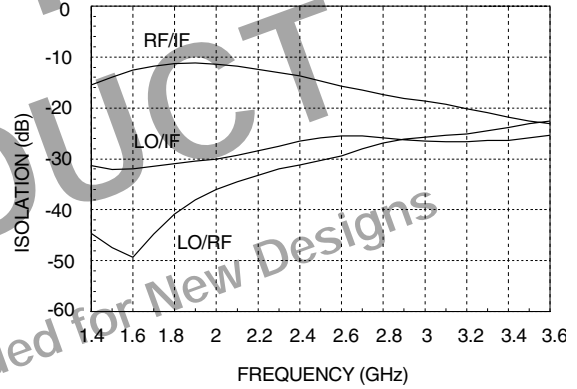
Parameter	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency Range, RF & LO	1.85 - 2.2			2.2 - 2.6			GHz
Frequency Range, IF	DC - 1.0			DC - 1.0			GHz
Conversion Loss		9	10		8.6	10	dB
Noise Figure (SSB)		9	10		8.6	10	dB
LO to RF Isolation	29	33		26	30		dB
LO to IF Isolation	24	28		22	26		dB
IP3 (Input)	15	18		15	18		dBm
1 dB Gain Compression (Input)	8	11		8	11		dBm

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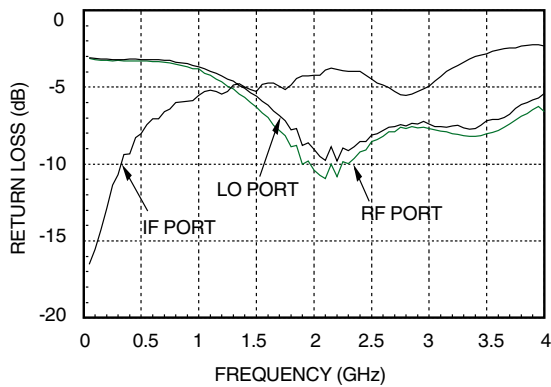
**Conversion Loss**



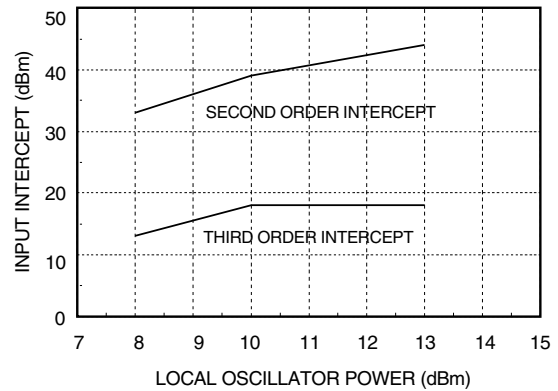
**Isolation**



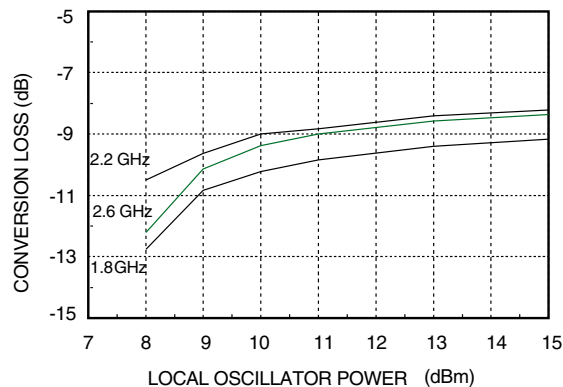
**Return Loss**



**Intermodulation Intercept @ 2 GHz**



**Conversion Loss vs LO Power**

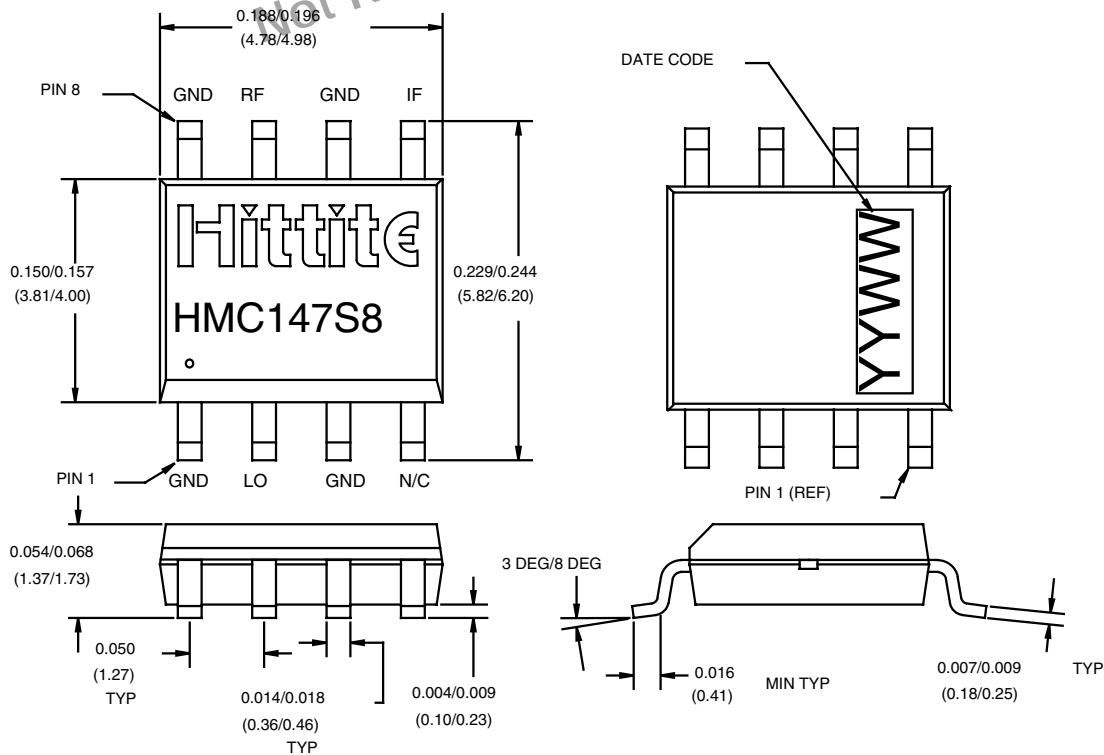


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### Absolute Maximum Ratings

LO Drive	+27 dBm
Storage Temperature	-65 to +150 deg C
Operating Temperature	-40 to +85 deg C

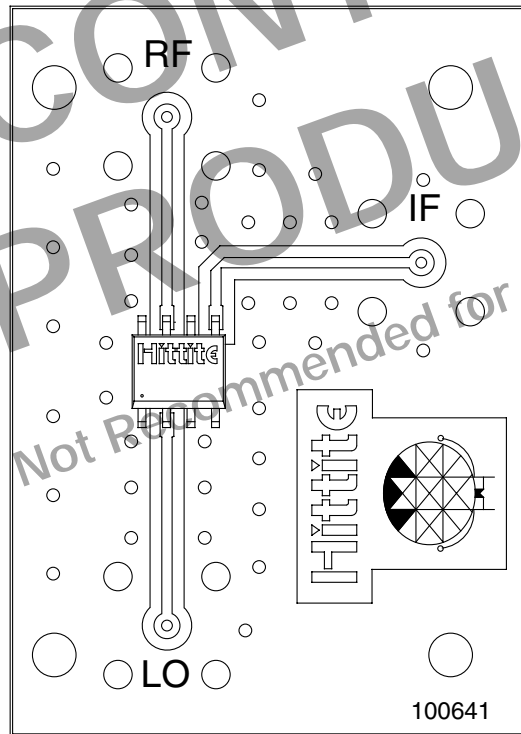
### Outline Drawing



1. MATERIAL:
  - A) PACKAGE BODY - LOW STRESS INJECTION-MOLDED PLASTIC, SILICA & SILICONE IMPREGNATED.
  - B) LEADFRAME MATERIAL: COPPER ALLOY
2. PLATING: LEAD-TIN SOLDER PLATE
3. DIMENSIONS ARE IN INCHES (MILLIMETERS). UNLESS OTHERWISE SPECIFIED TOL. ARE ±0.005 (±0.13).

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**Evaluation Circuit Board**



PC MOUNT SMA CONNECTORS  
IN THREE PLACES

The circuit board used in the final application should use RF circuit design techniques. Signal lines should have 50 ohm impedance while the package ground leads should be connected directly to the ground plane similar to that shown above. The evaluation circuit board as shown is available from Hittite upon request.