HMC188MS8

GaAs MMIC SMT PASSIVE FREQUENCY DOUBLER, 1.25 - 3.0 GHz INPUT

Typical Applications

The HMC188MS8 is suitable for:

- Wireless Local Loop
- LMDS, VSAT, and Pt to Pt Radios
- UNII & HiperLAN
- Test Equipment

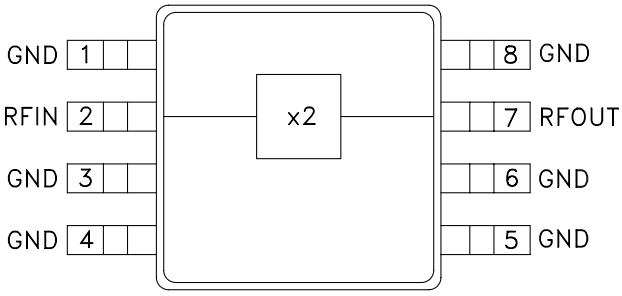
Features

Conversion Loss: 15 dB

Fo, 3Fo, 4Fo Isolation: 45 dB

Input Drive Level: 10 to 20 dBm

Functional Diagram



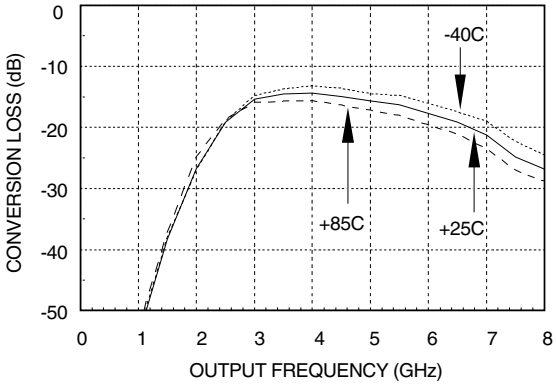
General Description

The HMC188MS8 is a miniature frequency doubler in a plastic 8-lead MSOP package. The suppression of undesired fundamental and higher order harmonics is 45 dB typical with respect to input signal levels. The doubler uses the same diode/balun technology used in Hittite MMIC mixers. The doubler is ideal for high volume applications where frequency doubling of a lower frequency is more economical than directly generating a higher frequency. The passive Schottky diode doubler technology contributes no measurable additive phase noise onto the multiplied signal.

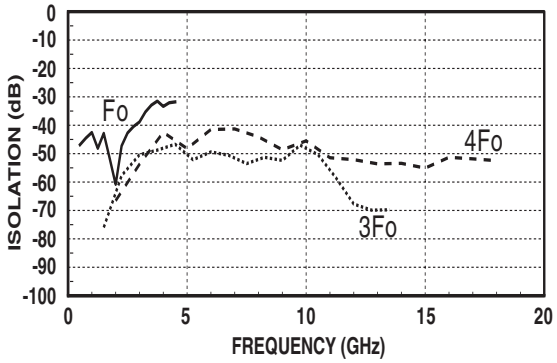
Electrical Specifications, T_A = +25° C, As a Function of Drive Level

	Input = +10 dBm			Input = +15 dBm			Input = +20 dBm			
Parameter	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency Range, Input	1.75 - 2.75			1.5 - 2.5			1.25 - 3.0			GHz
Frequency Range, Output	3.5 - 5.5			3.0 - 5.0			2.5 - 6.0			GHz
Conversion Loss		19	22		15	18		16	19	dB
FO Isolation (with respect to input level)				35	45					dB
3FO Isolation (with respect to input level)				43	50					dB
4FO Isolation (with respect to input level)				38	45					dB

Conversion Loss @ +15 dBm Drive Level

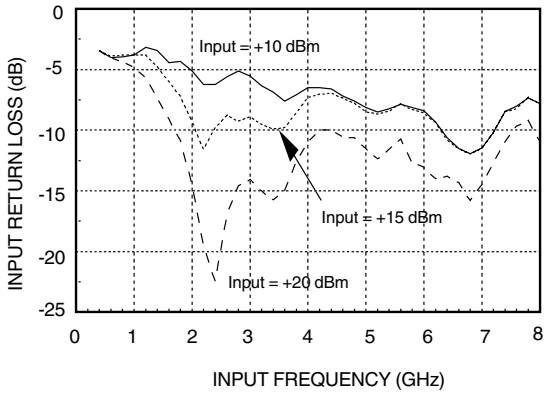


Isolation @ +15 dBm Drive Level*

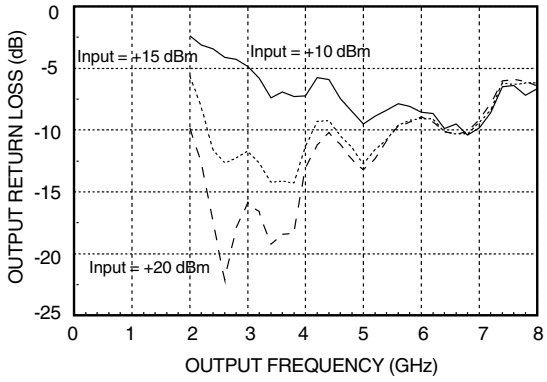


*With respect to input level

Input Return Loss vs. Drive Level

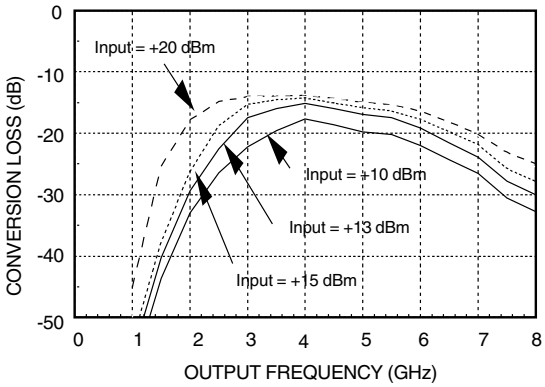


Output Return Loss vs. Drive Level



Note: Output return loss measured at 2fo, with +10dBm, +15 dBm, and +20 dBm drive levels on input of doubler.

Conversion Loss vs. Drive Level



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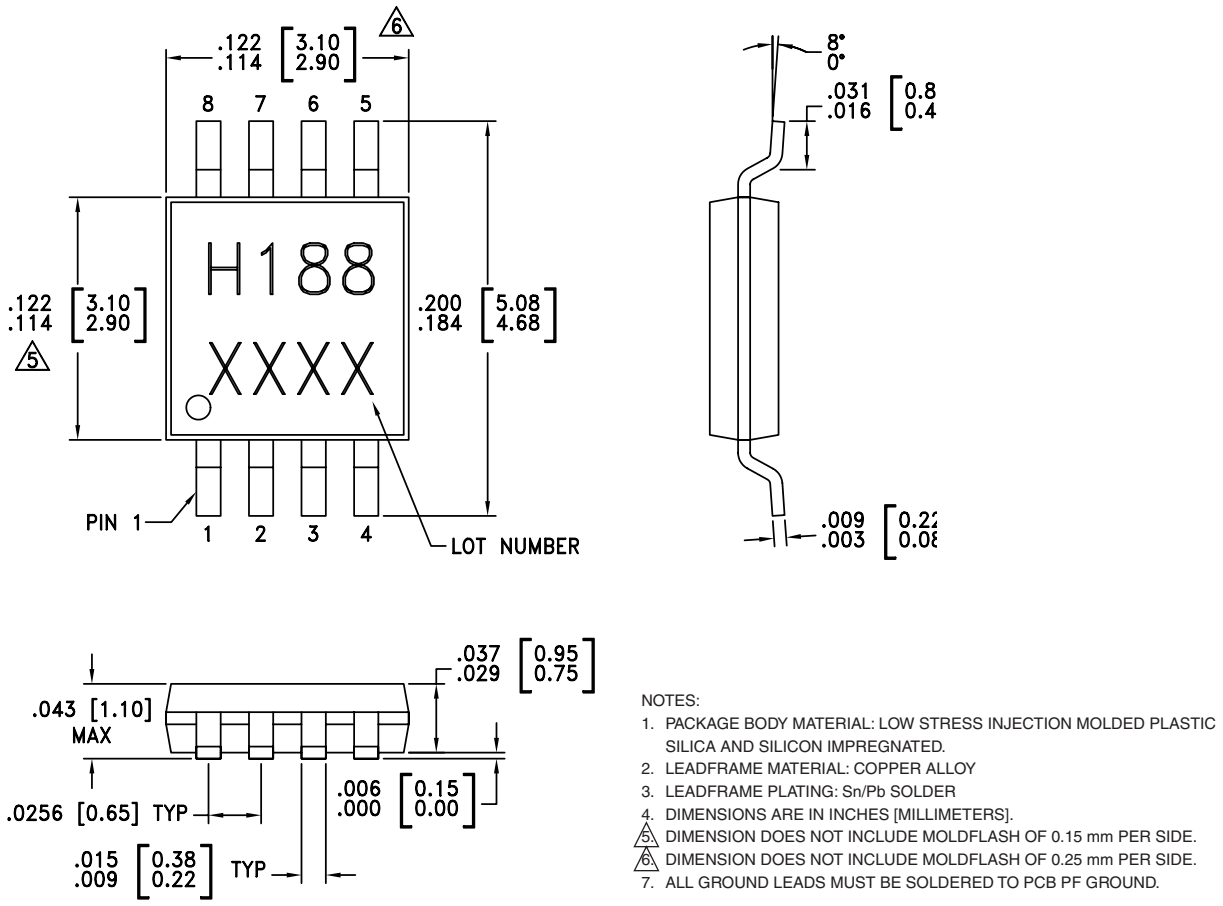
Absolute Maximum Ratings

Input Drive	+27 dBm
Storage Temperature	-65 to +150 °C
Operating Temperature	-40 to +85 °C

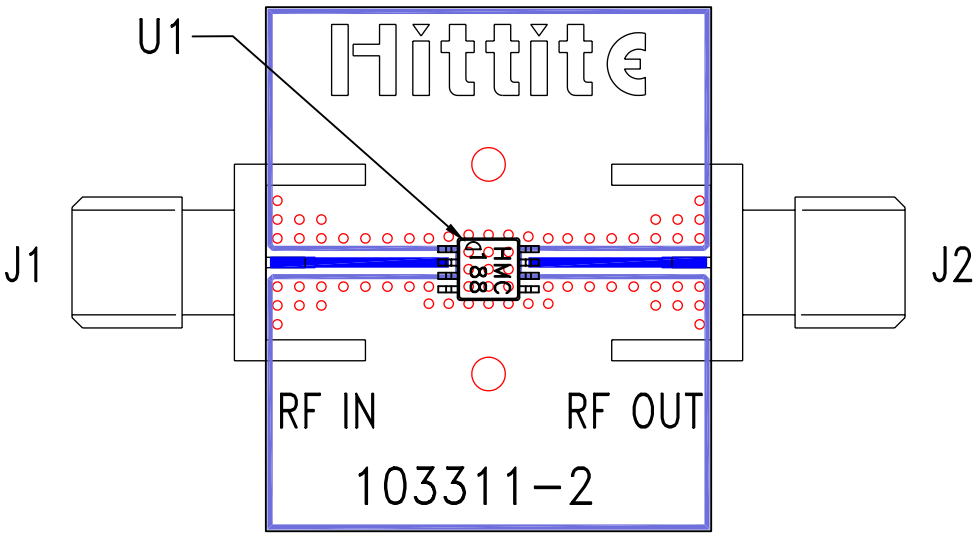
Outline Drawing



NOTES:

1. PACKAGE BODY MATERIAL: LOW STRESS INJECTION MOLDED PLASTIC SILICA AND SILICON IMPREGNATED.
2. LEADFRAME MATERIAL: COPPER ALLOY
3. LEADFRAME PLATING: Sn/Pb SOLDER
4. DIMENSIONS ARE IN INCHES [MILLIMETERS].
5. DIMENSION DOES NOT INCLUDE MOLDFLASH OF 0.15 mm PER SIDE.
6. DIMENSION DOES NOT INCLUDE MOLDFLASH OF 0.25 mm PER SIDE.
7. ALL GROUND LEADS MUST BE SOLDERED TO PCB PF GROUND.

Evaluation PCB



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

List of Materials

Item	Description
J1 - J3	PC Mount SMA Connector
C1	1,000 pF Capacitor, 0603 Pkg.
U1	HMC443LP4, x4 Active Multiplier
PCB*	104610 Eval Board
* Circuit Board Material: Rogers 4350	