HMC316MS8

GaAs MMIC HIGH IP3 DOUBLE-BALANCED MIXER, 1.5 - 3.5 GHz

Typical Applications

The HMC316MS8 is ideal for:

- Cellular Basestations
- Cable Modems
- Fixed Wireless Access Systems

Features

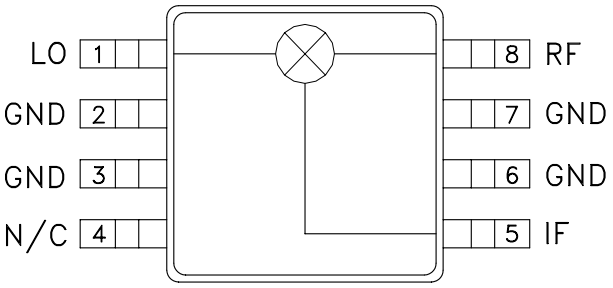
Conversion Loss: 8 dB

LO/RF Isolation: >35 dB

Input IP3: +25 dBm

Ultra Small Package: <1 mm High

Functional Diagram



General Description

The HMC316MS8 is a miniature double balanced mixer in an 8 lead plastic surface mount package. The passive GaAs schottky diode mixer implements planar on chip balun transformers, and requires no external components. The mixer can be used as an upconverter, downconverter, or modulator. At mid-band the mixer provides 7.5 dB conversion loss and +25 dBm IIP3 with LO drive levels of +19 dBm. The design was optimized for low cost high volume applications where high converter linearity is required.

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

Parameter	LO = +15 dBm IF = 100 MHz			LO = +17 dBm IF = 100 MHz			LO = +19 dBm IF = 100 MHz			Units
	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
Frequency Range, RF & LO	1.6 - 3.2			1.6 - 3.2			1.5 - 3.5			GHz
Frequency Range, IF	DC - 1.0			DC - 1.0			DC - 1.0			GHz
Conversion Loss		8	11		8	10		7.5	11	dB
Noise Figure (SSB)		8	11		8	10		7.5	11	dB
LO to RF Isolation	28	35		32	38		32	42		dB
LO to IF Isolation	22	27		24	28		26	30		dB
IP3 (Input)	20	25		19	25		19	25		dBm
1 dB Gain Compression (Input)	12.5	15.5		14	16		14.5	17		dBm

**Unless otherwise noted, all measurements performed as downconverter, IF= 100 MHz.*

For price, delivery, and to place orders, please contact Hittite Microwave Corporation:
12 Elizabeth Drive, Chelmsford, MA 01824 Phone: 978-250-3343 Fax: 978-250-3373
Order Online at www.hittite.com

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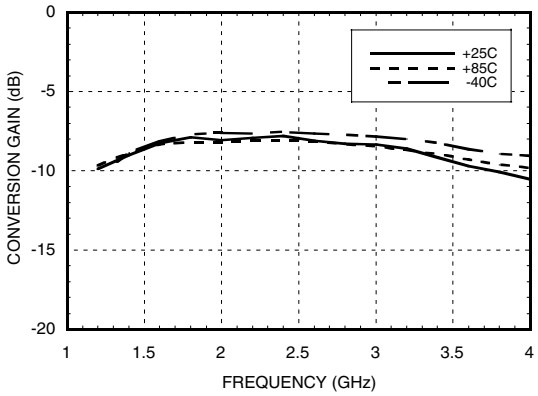
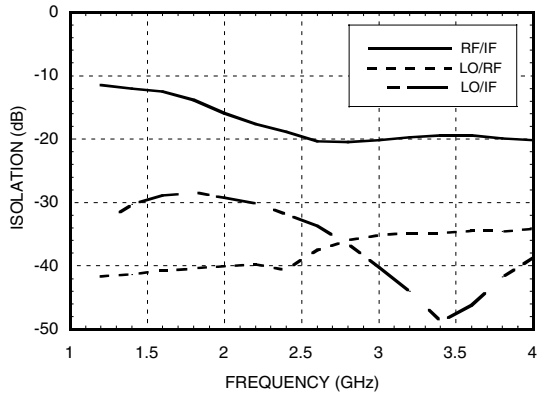
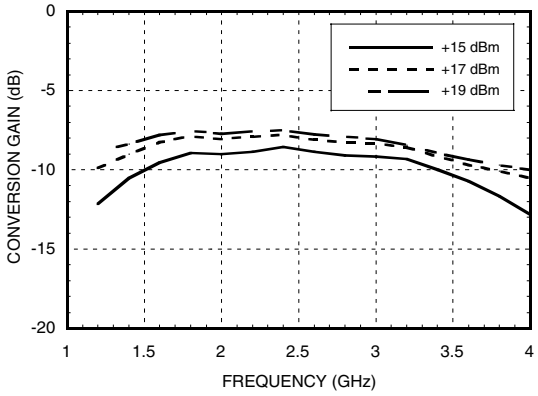
Conversion Gain vs. Temperature @ LO = +17 dBm



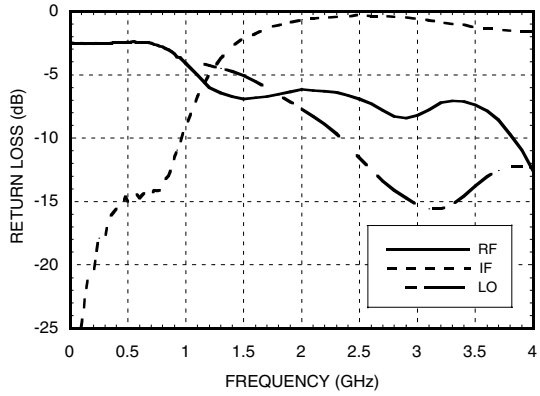
Isolation @ LO = +17 dBm



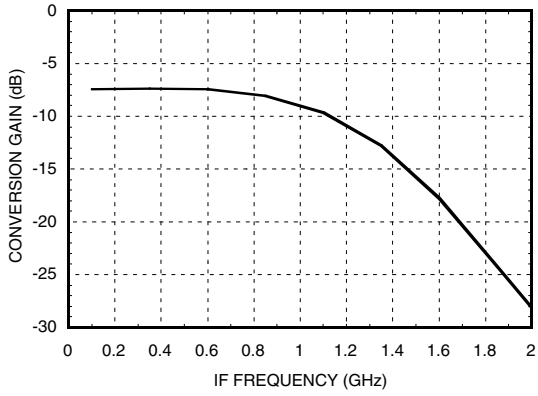
Conversion Gain vs. LO Drive



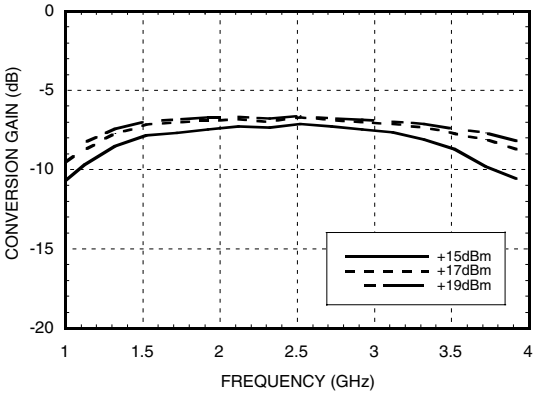
Return Loss @ LO = +17 dBm



If Bandwidth @ LO = +17 dBm



Upconverter Performance vs. LO Drive



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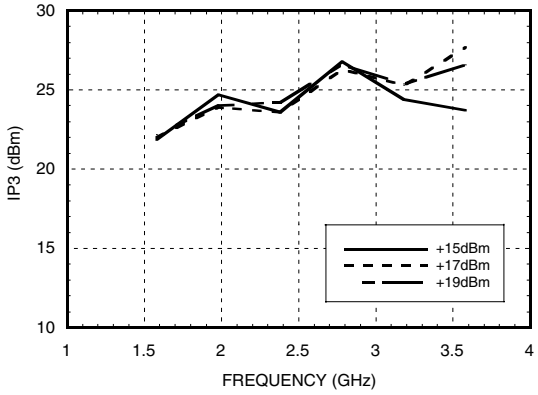
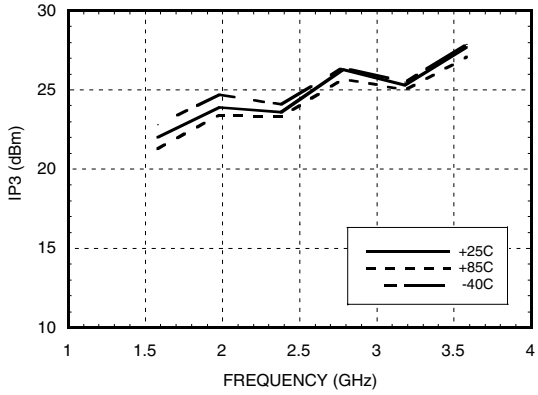
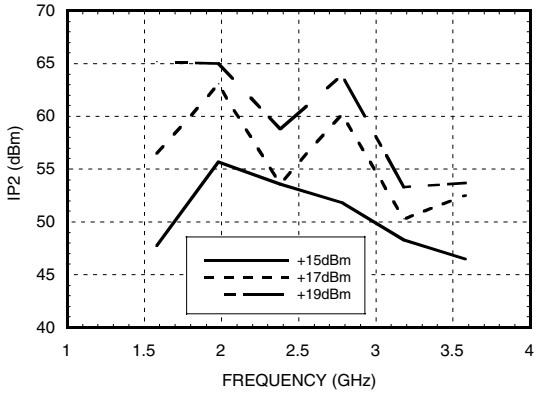
Input IP3 vs. LO Drive*



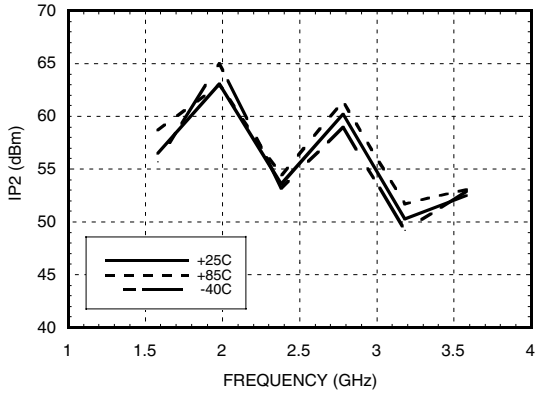
Input IP3 vs. Temperature @ LO = +17dBm*



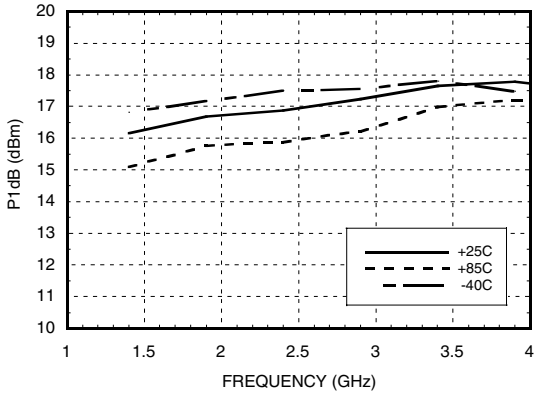
Input IP2 vs. LO Drive*



Input IP2 vs. Temperature @ LO = +17 dBm*



Input P1dB vs. Temperature @ LO = +17 dBm



MxN Spurious Outputs

	nLO				
mRF	0	1	2	3	4
0	xx	-8	3.6	1.1	29
1	10	0	22	44	48
2	71	72	77	60	85
3	>110	>110	>110	91	91
4	>110	>110	>110	>110	>110

RF = 2.08 GHz @ -10 dBm
LO = 1.9 GHz @ +17 dBm
All values in dBc relative to the IF output power.

** Two-tone input power = 0 dBm each tone, 1 MHz spacing.*

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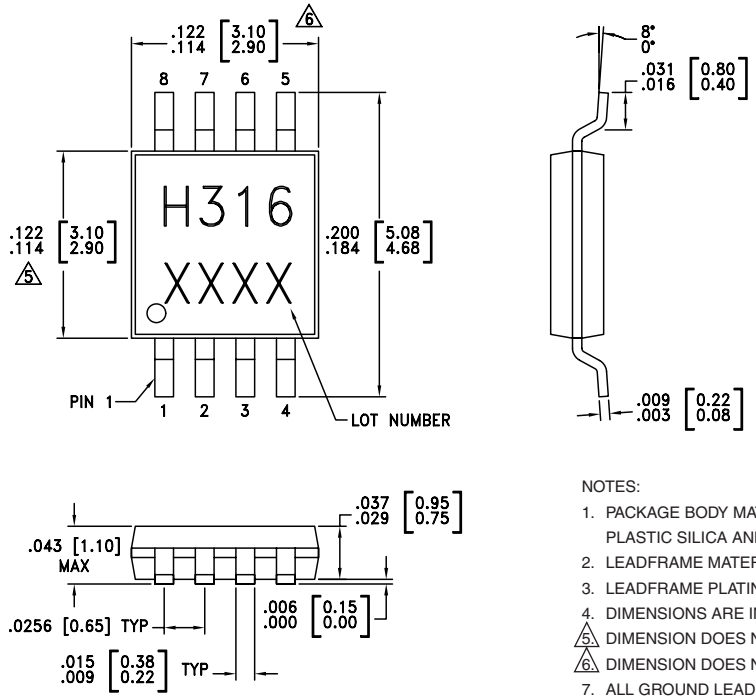
Absolute Maximum Ratings

RF / IF Input	+22 dBm
LO Drive	+27 dBm
Storage Temperature	-65 to +150 °C
Operating Temperature	-40 to +85 °C
IF DC Current	±18 mA

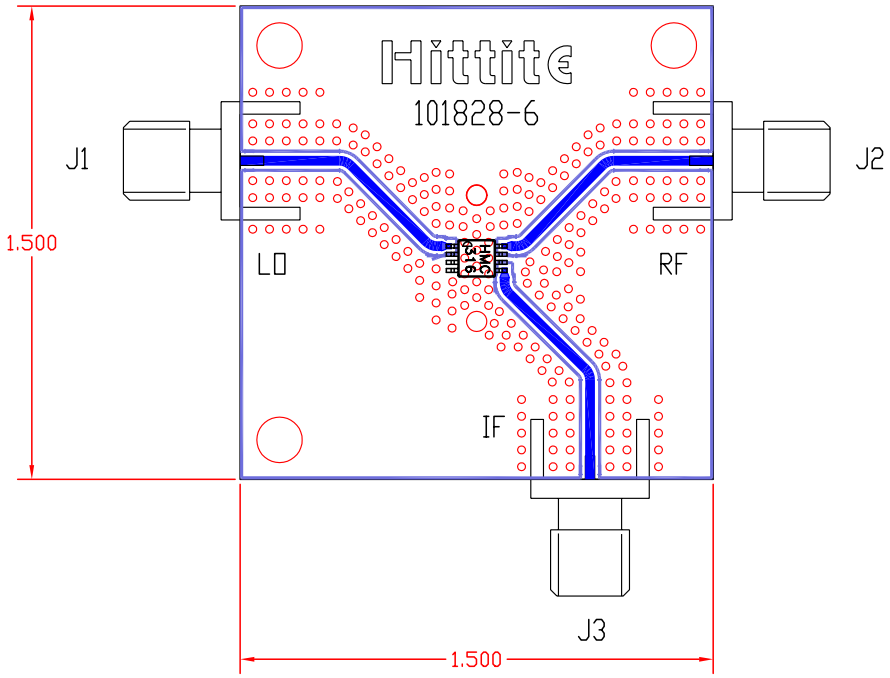
Outline Drawing



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 0.15mm PER SIDE.
6. DIMENSION DOES NOT INCLUDE MOLDFLASH OF 0.25mm PER SIDE.
7. ALL GROUND LEADS MUST BE SOLDERED TO PCB RF GROUND.

Evaluation PCB



List of Materials

Item	Description
J1 - J3	PC Mount SMA RF Connector
U1	HMC316MS8 Mixer
PCB*	101828 Eval Board
* Ciruit Board Material: Rogers 4350	

Notes: