HMC208AMS8 / 208AMS8E

v00.0411

GaAs MMIC SMT DOUBLE-BALANCED MIXER, 0.7 - 2.0 GHz

Typical Applications

The HMC208AMS8 / HMC208AMS8E is ideal for:

- Base Stations
- PCMCIA Transceivers
- Cable Modems
- Portable Wireless

Features

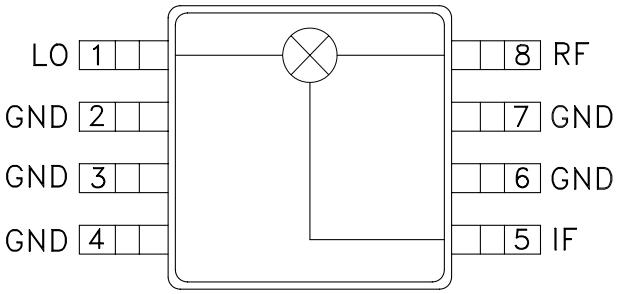
Ultra Small Package: MSOP8

Conversion Loss: 9 dB

LO / RF Isolation: 24 dB

Input IP3: +17 dBm

Functional Diagram



General Description

The HMC208AMS8 & HMC208AMS8E are ultra miniature double-balanced mixers in 8 lead plastic surface mount packages (MSOP). This passive MMIC mixer is constructed of GaAs Schottky diodes and novel planar transformer baluns on the chip. The device can be used as an upconverter, downconverter, biphase (de)modulator, or phase comparator. The consistent MMIC performance will improve system operation and assure regulatory compliance.

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

Parameter	LO = +13 dBm IF = 70 MHz			LO = +10 dBm IF = 70 MHz			Units
	Min.	Typ.	Max.	Min.	Typ.	Max.	
Frequency Range, RF & LO	0.7 - 2.0			0.8 - 1.2			GHz
Frequency Range, IF	DC - 0.5			DC - 0.5			GHz
Conversion Loss		9	10.5		8.5	10.5	dB
Noise Figure (SSB)		9	10.5		8.5	10.5	dB
LO to RF Isolation	20	24		32	40		dB
LO to IF Isolation	13	17		22	30		dB
RF to IF Isolation	10	14		17	22		dB
IP3 (Input)	13	17		12	16		dBm
1 dB Gain Compression (Input)	7	10		5	8		dBm

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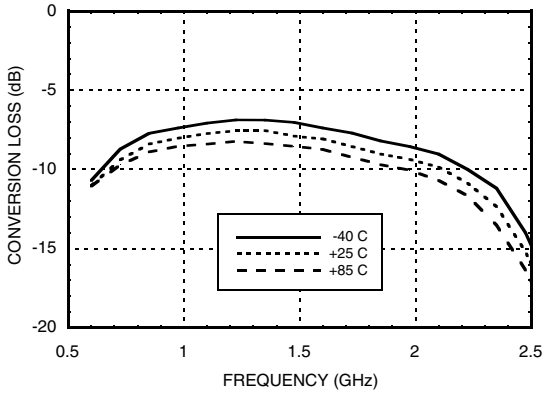
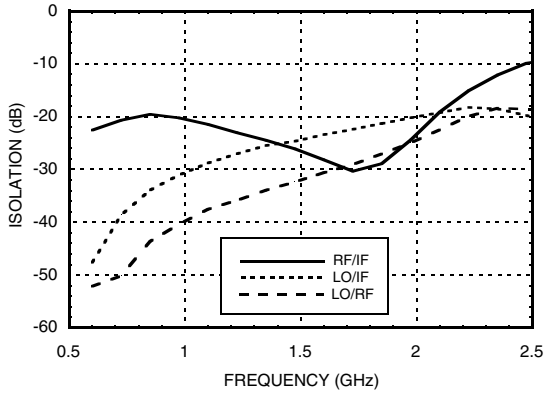
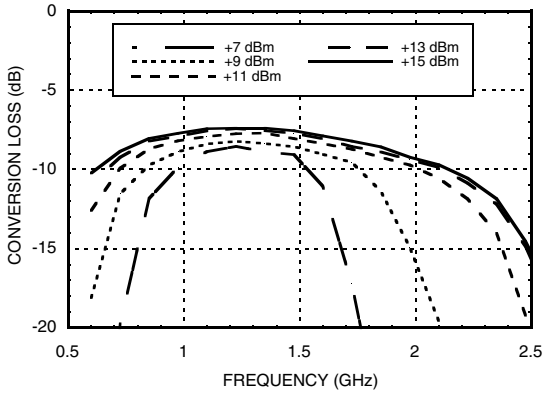
Conversion Loss vs Temperature @ LO = +13 dBm



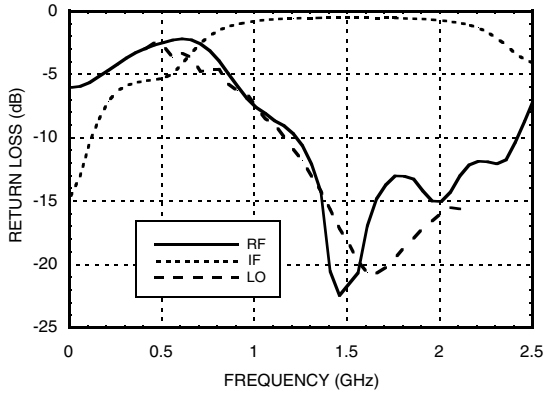
Isolation @ LO = +13 dBm



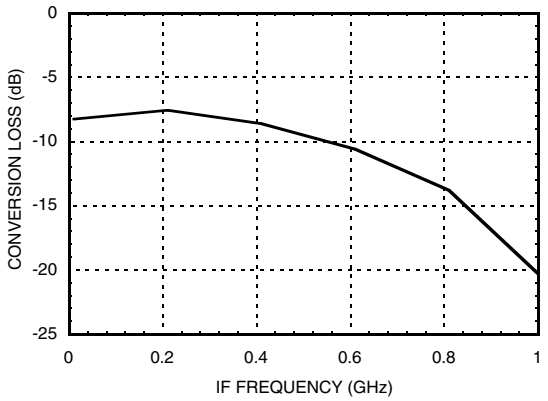
Conversion Loss vs. LO Drive



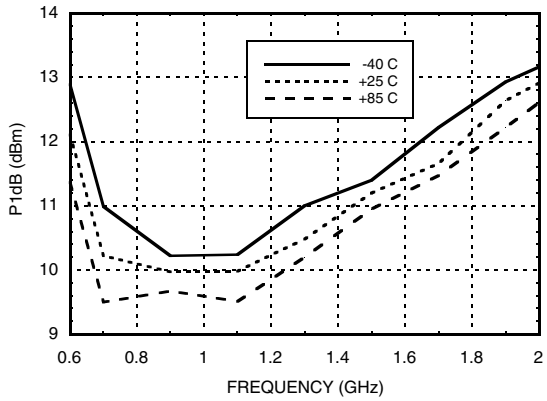
Return Loss @ LO = +13 dBm



IF Bandwidth @ LO = +13 dBm



P1dB vs. Temperature @ LO = +13 dBm



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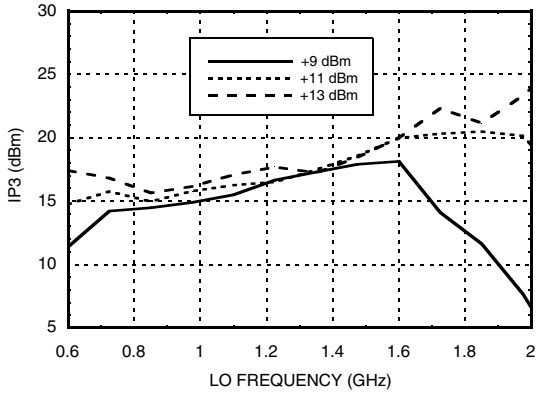
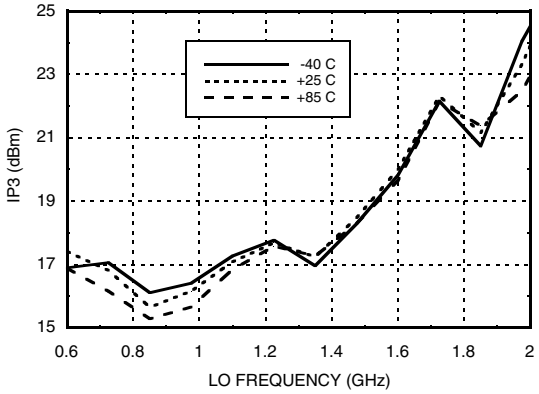
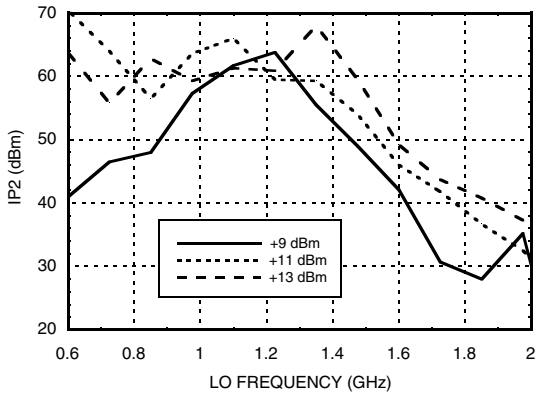
Input IP3 vs. LO Drive



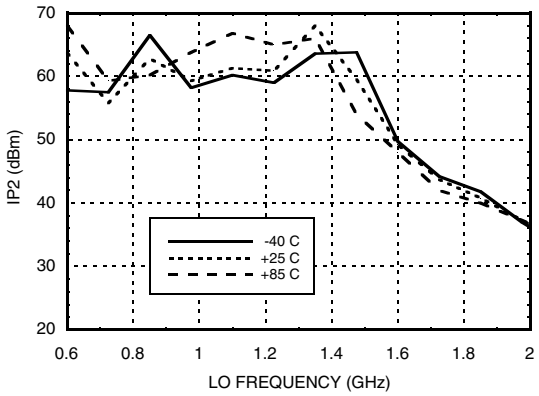
Input IP3 vs. Temperature @ LO = +13 dBm



Input IP2 vs. LO Drive



Input IP2 vs. Temperature @ LO = +13 dBm



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MxN Spurious Outputs

	nLO				
mRF	0	1	2	3	4
0	xx	2	28	16	51
1	12	0	43	45	29
2	73	64	69	61	78
3	68	>95	87	63	92
4	>95	>95	>95	>95	>95

RF = 0.9 GHz @ -10 dBm
LO = 0.97 GHz @ +13 dBm
All values in dBc relative to the IF

Harmonics of LO

LO Freq. (GHz)	nLO Spur at RF Port			
	1	2	3	4
0.7	49	47	41	73
0.9	44	50	39	68
1.1	38	50	50	97
1.3	37	52	47	85
1.5	32	80	58	90
1.7	29	58	63	99

LO = +13 dBm
Values in dBc below input LO level measured at RF Port.

Absolute Maximum Ratings

RF / Input	+13 dBm
LO Drive	+27 dBm
Storage Temperature	-65 to +150 °C
Operating Temperature	-40 to +85 °C
ESD Sensitivity (HBM)	Class 1A

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

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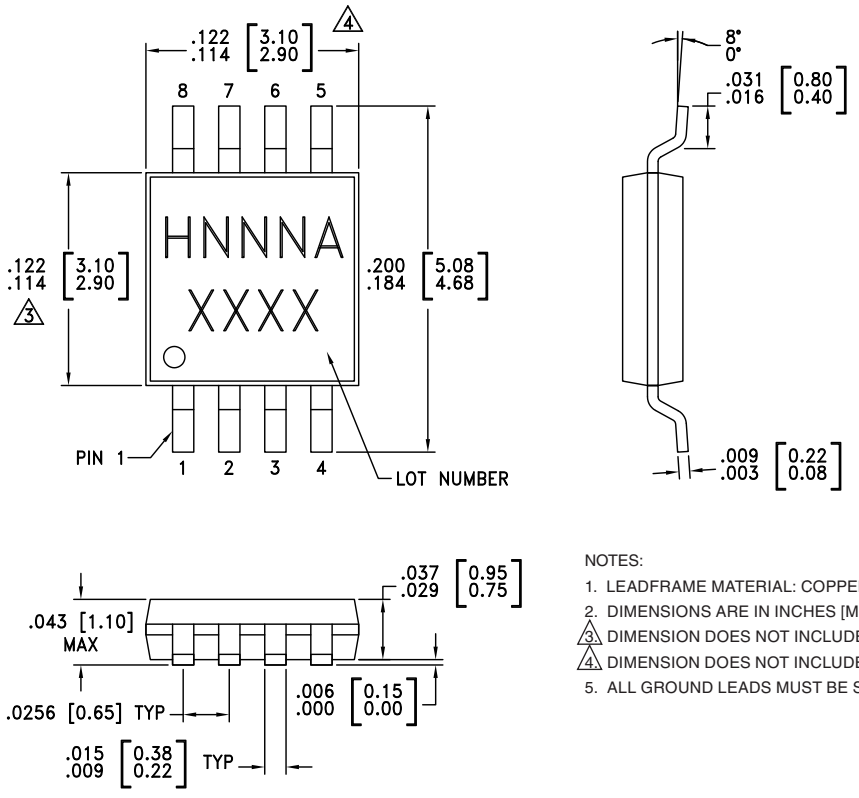
Outline Drawing



NOTES:

1. LEADFRAME MATERIAL: COPPER ALLOY
2. DIMENSIONS ARE IN INCHES [MILLIMETERS]
3. DIMENSION DOES NOT INCLUDE MOLDFLASH OF 0.15 mm PER SIDE.
4. DIMENSION DOES NOT INCLUDE MOLDFLASH OF 0.25 mm PER SIDE.
5. ALL GROUND LEADS MUST BE SOLDERED TO PCB RF GROUND.

Package Information

Part Number	Package Body Material	Lead Finish	MSL Rating	Package Marking [3]
HMC208AMS8	Low Stress Injection Molded Plastic	Sn/Pb Solder	MSL1 [1]	H208A XXXX
HMC208AMS8E	RoHS-compliant Low Stress Injection Molded Plastic	100% matte Sn	MSL1 [2]	H208A XXXX

[1] Max peak reflow temperature of 235 °C
[2] Max peak reflow temperature of 260 °C
[3] 4-Digit lot number XXXX

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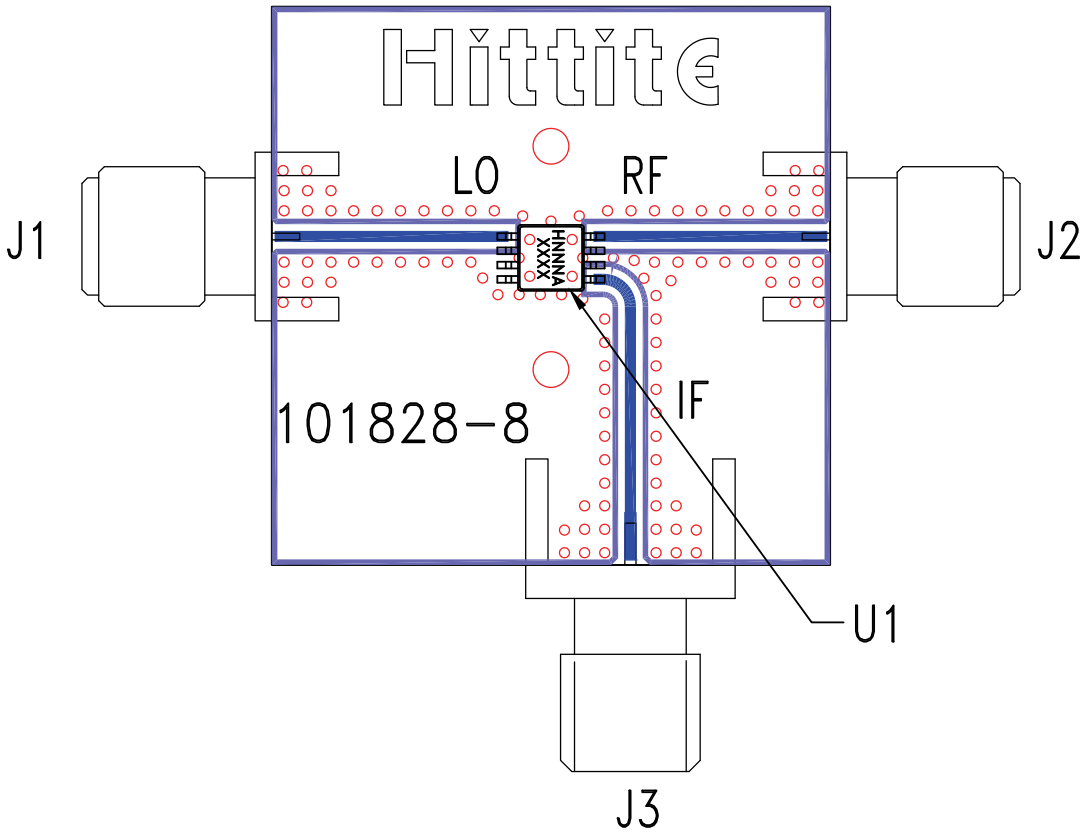
Evaluation PCB



List of Materials for Evaluation PCB 101830 [1]

Item	Description
J1 - J3	PCB Mount SMA RF Connector
U1	HMC208AMS8 / HMC208AMS8E Mixer
PCB [2]	101828 Evaluation Board

[1] Reference this number when ordering complete evaluation PCB

[2] Circuit Board Material: Rogers 4350

The circuit board used in the 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. A sufficient number of via holes should be used to connect the top and bottom ground planes. The evaluation circuit board shown is available from Hittite upon request.

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