

GaAs MMIC SMT DOUBLE-BALANCED MIXER, 4.5 - 6 GHz

Typical Applications

The HMC218MS8 is ideal for:

- UNII & HiperLAN
- Portable Wireless
- PCMCIA

Features

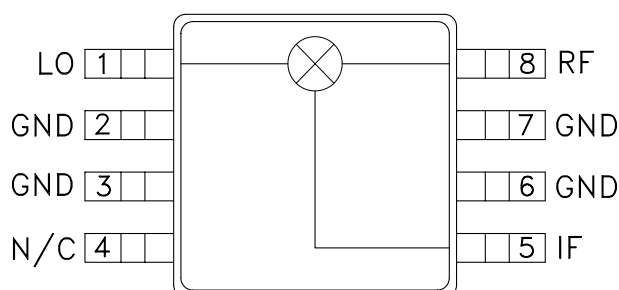
Ultra Small Package: <1 mm High

IP3 (Input): +18 dBm

Conversion Loss: 8 dB

LO / RF Isolation: 30 dB

Functional Diagram



General Description

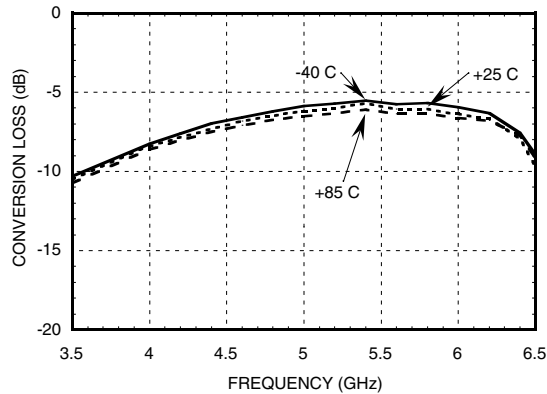
The HMC218MS8 is an ultra miniature double-balanced mixer in an 8 lead plastic surface mount package (MSOP). This passive MMIC mixer is constructed of GaAs Schottky diodes and novel planar transformer baluns on the chip. The device can be used as an upconverter, downconverter, bi-phase (de)modulator, or phase comparator. The consistent MMIC performance will improve system operation and assure regulatory compliance.

Electrical Specifications, $T_A = +25^\circ\text{C}$, As a Function of LO Drive

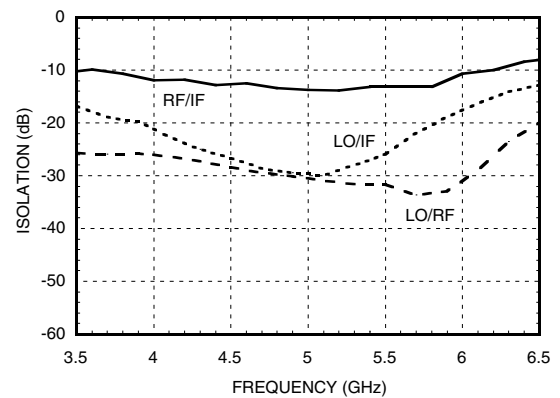
Parameter	LO = +13 dBm IF = 100 MHz			LO = +10 dBm IF = 100 MHz			LO = +7 dBm IF = 100 MHz			Units
	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
Frequency Range, RF & LO	4.5 - 6.0			4.5 - 6.0			4.7 - 5.9			GHz
Frequency Range, IF	DC - 1.6			DC - 1.6			DC - 1.5			GHz
Conversion Loss		6.5	8.5		8	9.5		8	9.5	dB
Noise Figure (SSB)		6.5	8.5		8	9.5		8	9.5	dB
LO to RF Isolation	25	30		25	30		23	28		dB
LO to IF Isolation	15	25		14	25		12	23		dB
IP3 (Input)	5.2 GHz 5.8 GHz	12 15	16 18	11 13	14 17		9 10	12 13		dBm
1 dB Gain Compression (Input)	7	10		5	9		4	7		dBm

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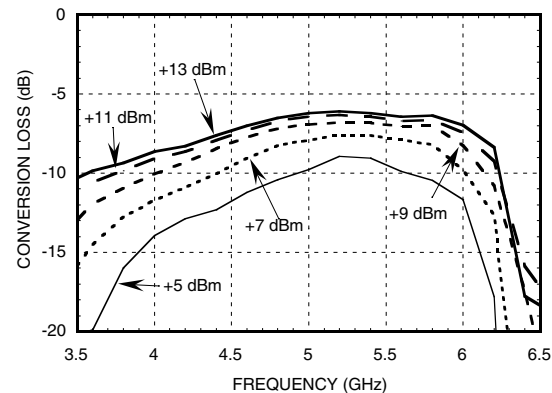
Conversion Loss vs. Temperature @ LO = +13 dBm



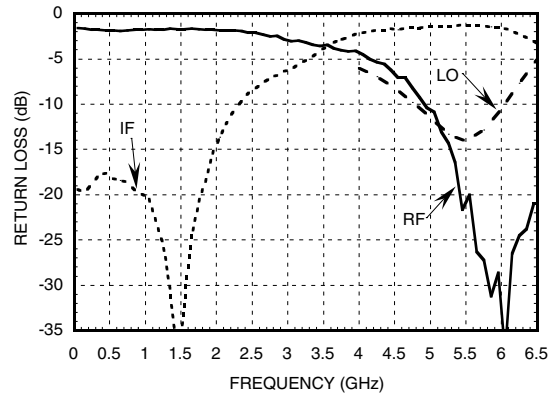
Isolation @ LO = +13 dBm



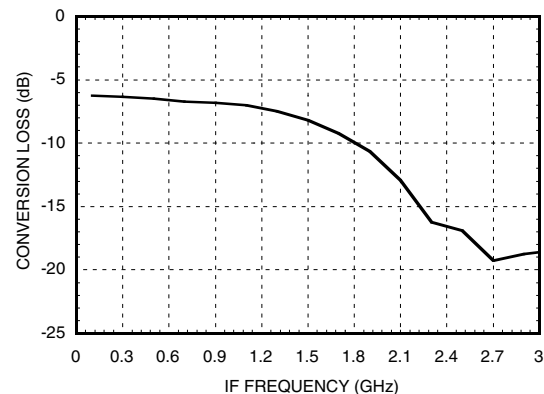
Conversion Loss vs. LO Drive



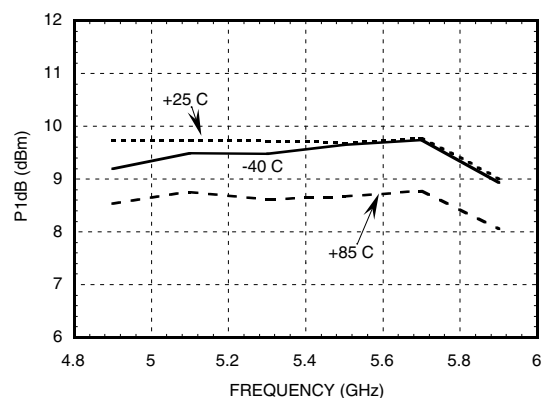
Return Loss @ LO = +13 dBm



IF Bandwidth @ LO = +13 dBm

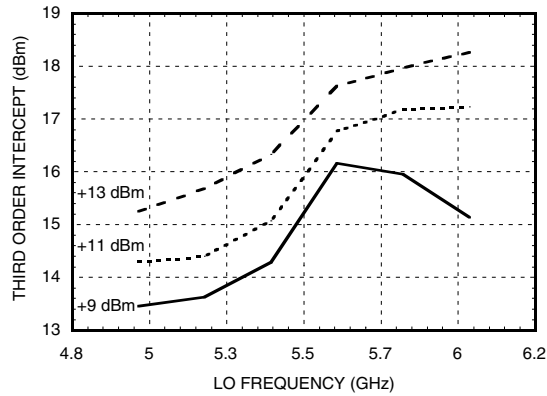


P1dB vs. Temperature LO = +13 dBm

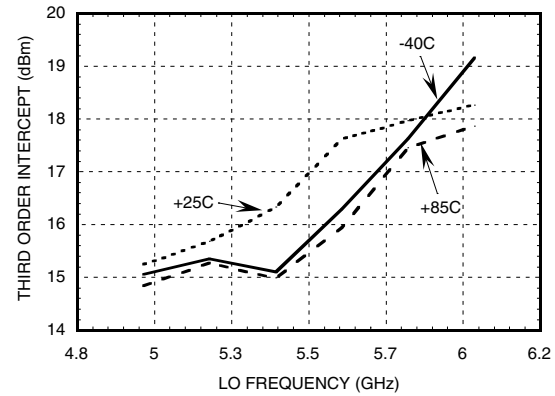


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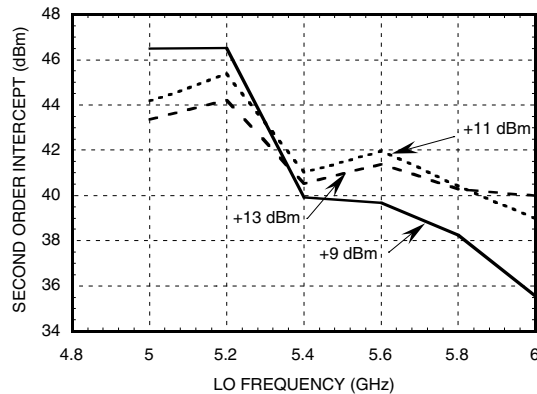
Input IP3 vs. LO Drive



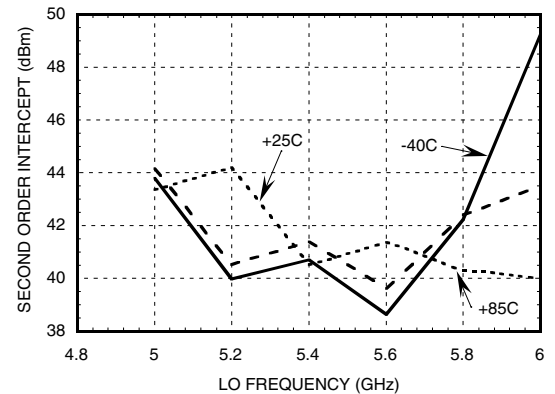
Input IP3 vs. Temperature @ LO = +13 dBm



Input IP2 vs. Drive



Input IP2 vs. Temperature @ LO = +13 dBm



MxN Spurious Outputs

mRF	nLO				
	0	1	2	3	4
0	xx	0	15	23	36
1	10	0	34	27	59
2	67	61	56	59	68
3	97	82	81	60	77
4	>105	>105	>105	>105	96

RF = 5.15 GHz @ -10 dBm
LO = 5.25 GHz @ +13 dBm
All values in dBc relative to the IF

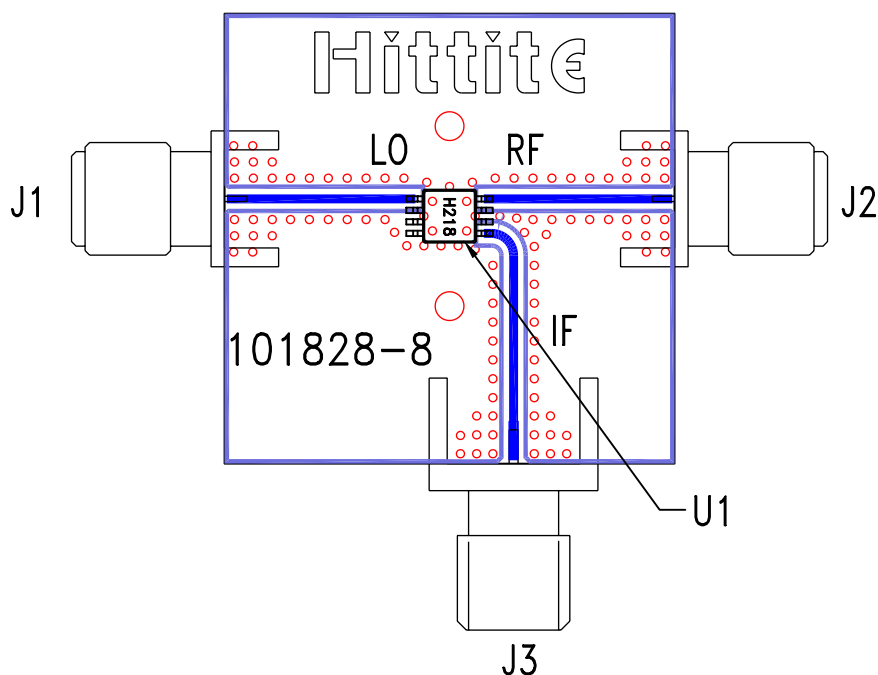
Harmonics of LO

LO Freq. (GHz)	nLO Spur at RF Port			
	1	2	3	4
5.0	31	30	57	68
5.2	31	32	59	69
5.4	32	35	62	73
5.6	32	35	64	76
5.8	33	35	65	76
6.0	33	32	64	68

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

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Evaluation Circuit Board



List of Material

Item	Description
J1 - J3	PC Mount SMA RF Connector
U1	HMC218MS8 Mixer
PCB*	101828 Evaluation Board
* Circuit Board Material: Rogers 4350	

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. 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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Notes: