GaAs MMIC SMT DOUBLE-BALANCED MIXER 4.5 - 6 GHz

FEBRUARY 2001 v01.0300

Features

ULTRA SMALL PACKAGE: < 1 mm High

IP3 (INPUT): +18 dBm

CONVERSION LOSS: 7 dB

LO/RF ISOLATION: 30 dB

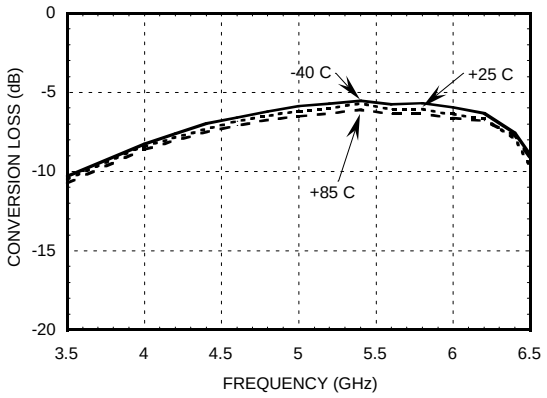
General Description

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 up, or downconverter, bi-phase (de)modulator or phase comparator for UNII & HIPERLAN 5.2 & 5.8 GHz applications. It is especially suited for PCMCIA transceivers and portable wireless applications because of its high dynamic input signal range, small size, and low cost. The consistent MMIC performance will improve system operation and assure regulatory compliance. The MSOP8 package is the smallest footprint available for a complete double-balanced mixer, 0.118" x 0.190" (3.0mm x 4.9mm). At a height of 0.040" (1.0mm) this is the *thinnest* mixer package available today.

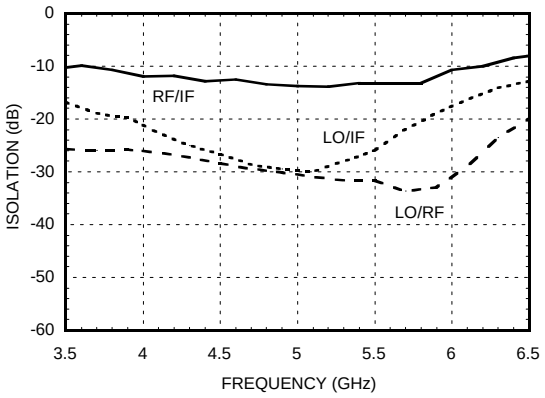
Guaranteed Performance, *As a Function of LO Drive, -40 to +85 deg C*

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	15 12	18 16		13 11	17 14		9 10	12 13		dBm
1 dB Gain Compression (Input)	7	10		5	9		4	7		dBm
Local Oscillator Drive Level			13			13			13	dBm

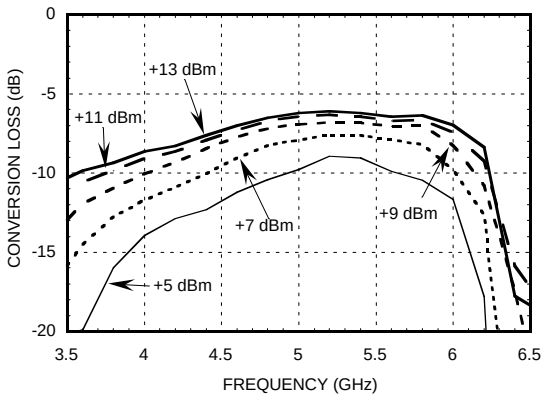
Conversion Loss vs. Temperature @ LO = +13 dBm



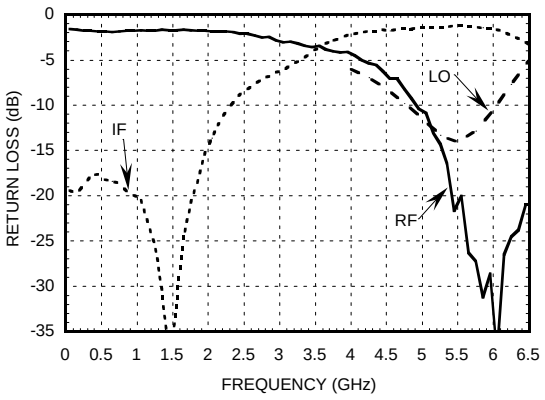
Isolation @ LO = +13 dBm



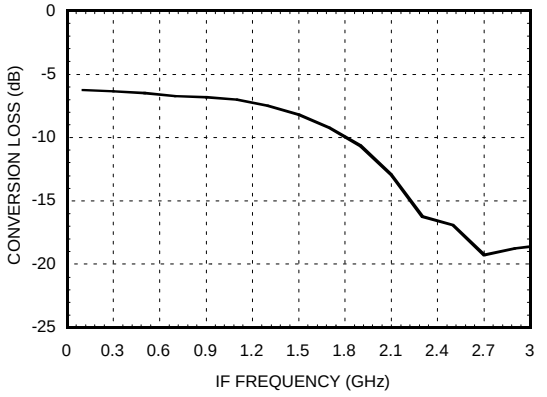
Conversion Loss vs. LO Drive



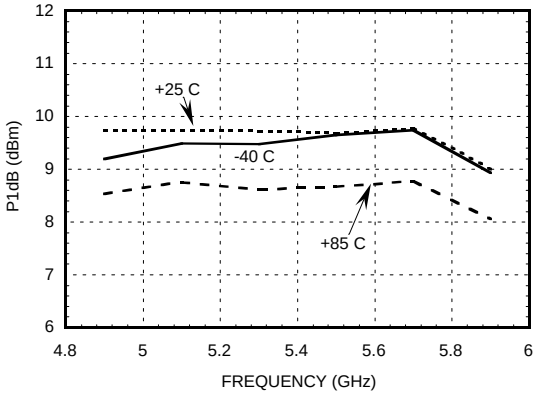
Return Loss @ LO = +13 dBm



IF Bandwidth @ LO = +13 dBm



P1dB vs. Temperature LO = +13 dBm



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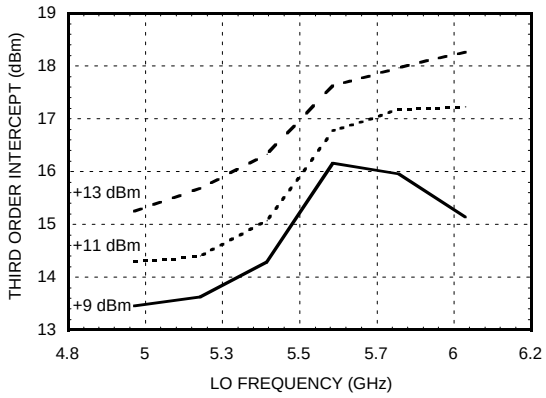
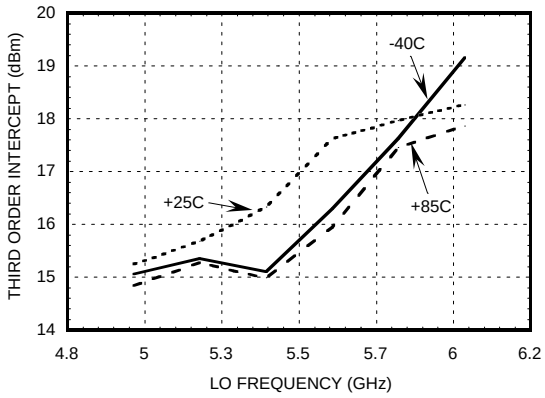
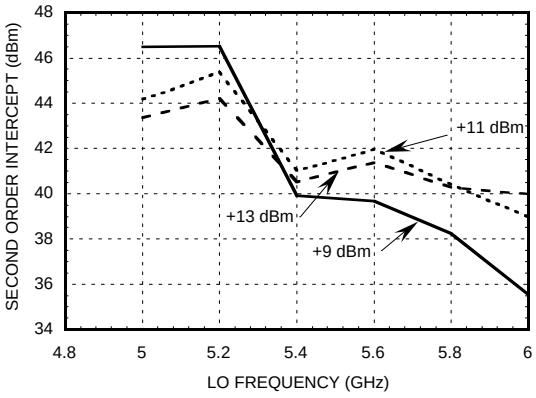
Input IP3 vs. LO Drive



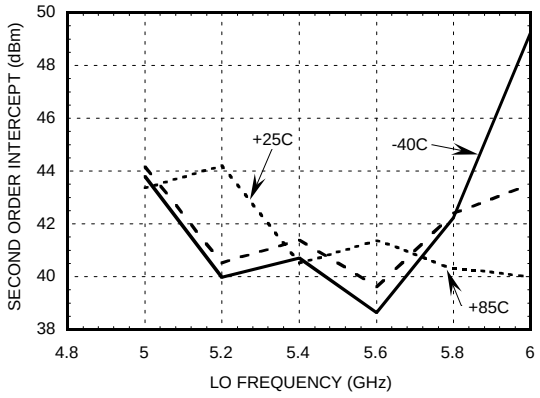
Input IP3 vs. Temperature @ LO = +13 dBm



Input IP2 vs. Drive



Input IP2 vs. Temperature @ LO = +13 dBm



MXN Spurious Outputs

	nLO				
mRF	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

	nLO Spur at RF Port			
LO Frequency (GHz)	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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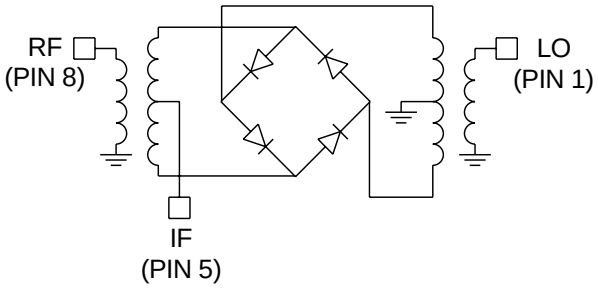
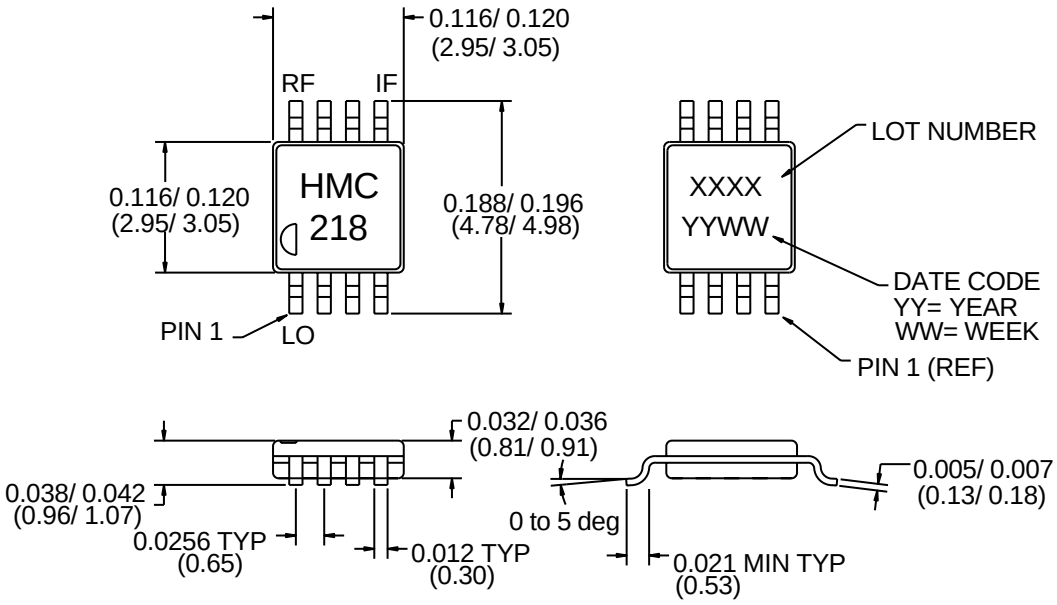
Schematic



Absolute Maximum Ratings

RF / IF Input	+13 dBm
LO Drive	+27 dBm
Storage Temperature	-65 to +150 deg C
Operating Temperature	-55 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)
4. ALL UNLABELED LEADS ARE GROUND