

Analog Devices Welcomes Hittite Microwave Corporation

NO CONTENT ON THE ATTACHED DOCUMENT HAS CHANGED



THIS PAGE INTENTIONALLY LEFT BLANK



GaAs MMIC HIGH IP3 DOUBLE-BALANCED MIXER, 1.5 - 3.8 GHz

Typical Applications

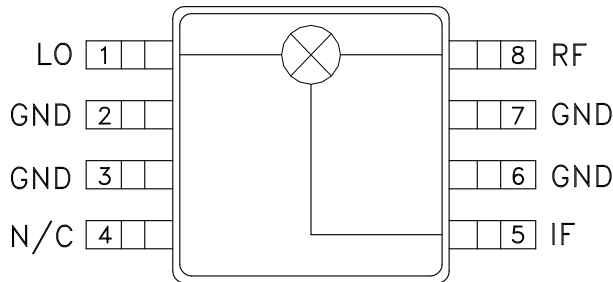
The HMC316MS8 / HMC316MS8E is ideal for:

- Cellular Basestations
- Cable Modems
- Fixed Wireless Access Systems
- WiMAX

Features

- Conversion Loss: 8 dB
- LO/RF Isolation: >35 dB
- Input IP3: +25 dBm
- Ultra Small Package: <1 mm High
- Included in the HMC-DK003 Designer's Kit

Functional Diagram



General Description

The HMC316MS8 & HMC316MS8E are miniature double balanced mixers in 8 lead plastic surface mount packages. 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, $T_A = +25^\circ C$, As a Function of LO Drive

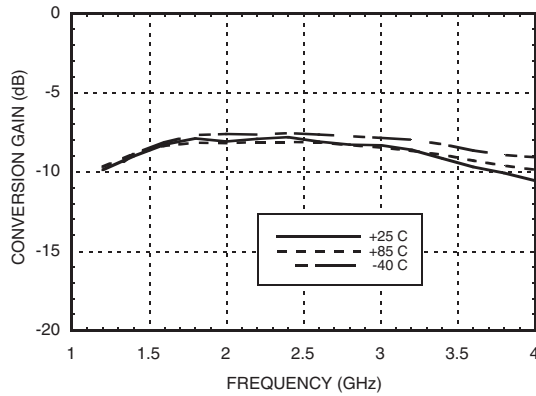
Parameter	LO = +15 dBm IF = 100 MHz			LO = +17 dBm IF = 100 MHz			LO = +19 dBm IF = 100 MHz			LO = +19 dBm IF = 500 MHz			Units
	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
Frequency Range, RF & LO	1.6 - 3.2			1.6 - 3.2			1.5 - 3.5			3.3 - 3.8			GHz
Frequency Range, IF	DC - 1.0			DC - 1.0			DC - 1.0			DC - 1.0			GHz
Conversion Loss		8	11		8	10		7.5	11		9.5		dB
Noise Figure (SSB)		8	11		8	10		7.5	11		9.5		dB
LO to RF Isolation	28	35		32	38		32	42			34		dB
LO to IF Isolation	22	27		24	28		26	30			40		dB
IP3 (Input)	20	25		19	25		19	25			25		dBm
1 dB Gain Compression (Input)	12.5	15.5		14	16		14.5	17			17		dBm

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

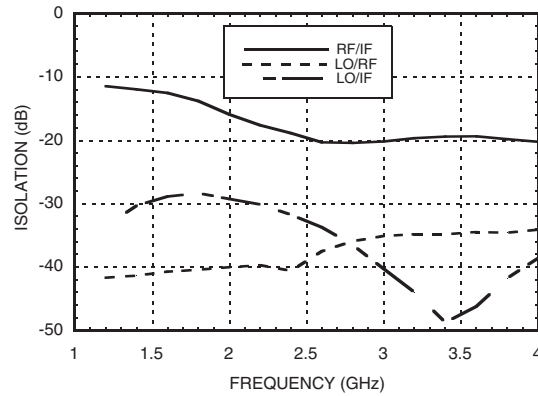


GaAs MMIC HIGH IP3 DOUBLE-BALANCED MIXER, 1.5 - 3.8 GHz

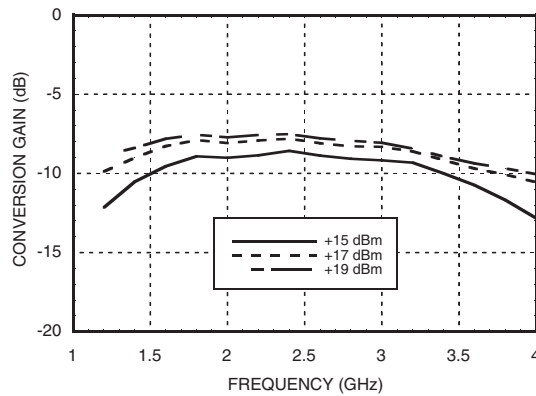
Conversion Gain vs. Temperature @ LO = +17 dBm



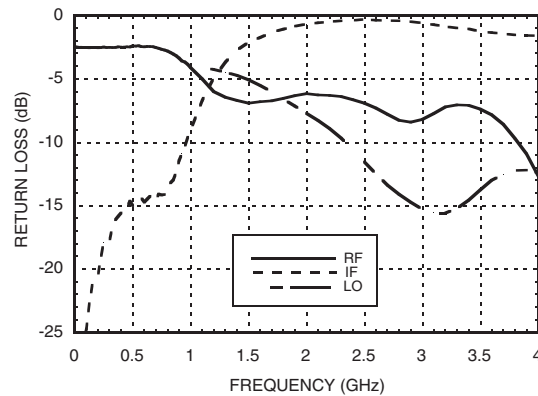
Isolation @ LO = +17 dBm



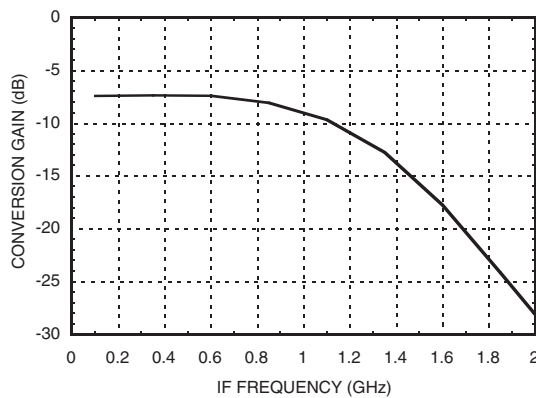
Conversion Gain vs. LO Drive



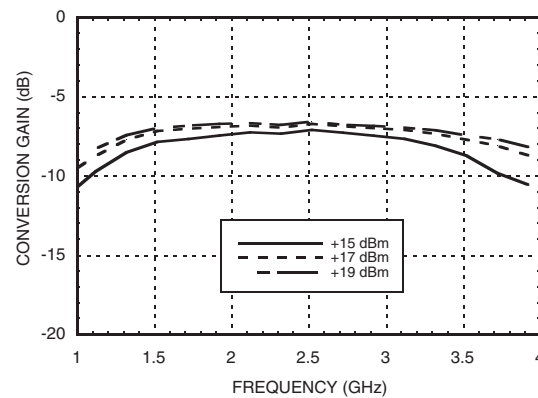
Return Loss @ LO = +17 dBm



If Bandwidth @ LO = +17 dBm



Upconverter Performance vs. LO Drive

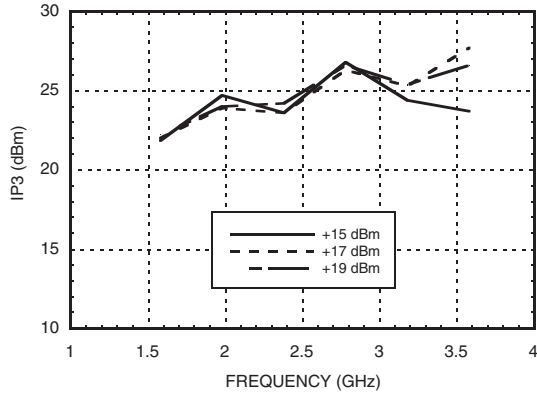




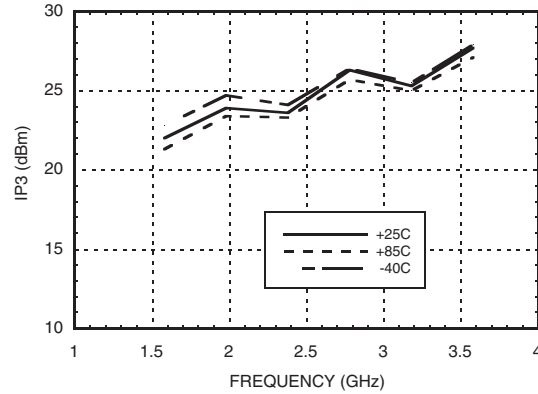
HMC316MS8 / 316MS8E

GaAs MMIC HIGH IP3 DOUBLE-BALANCED MIXER, 1.5 - 3.8 GHz

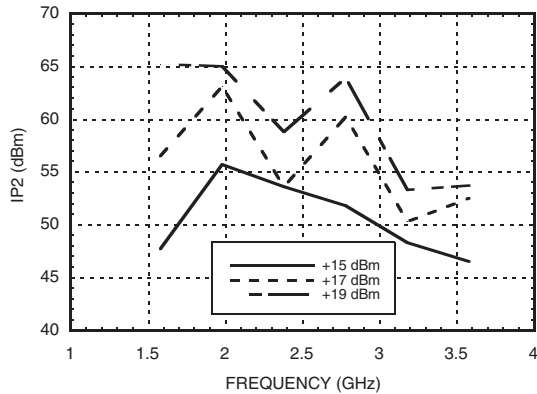
Input IP3 vs. LO Drive*



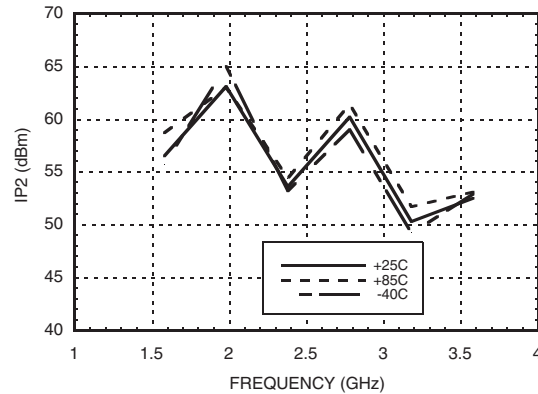
Input IP3 vs. Temperature @ LO = +17dBm*



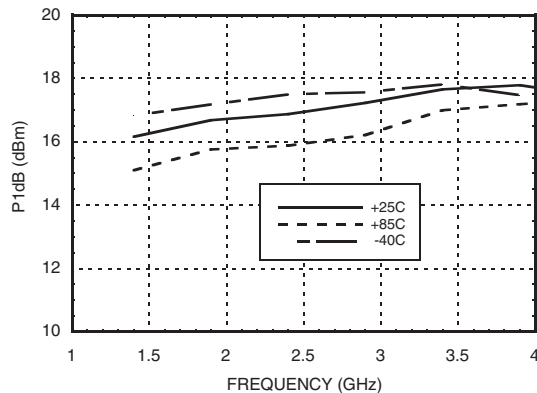
Input IP2 vs. LO Drive*



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



Input P1dB vs. Temperature @ LO = +17 dBm



MxN Spurious Outputs

mRF	nLO				
	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.

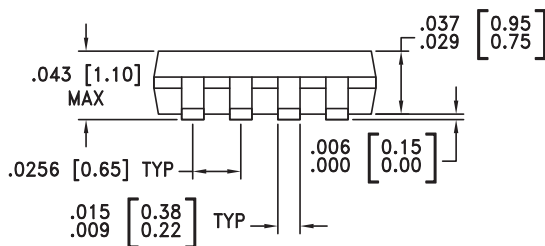
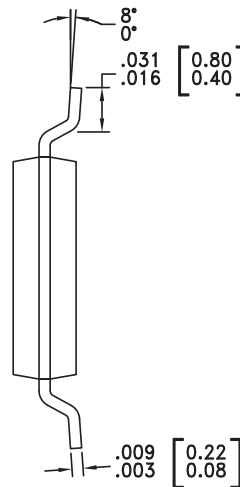
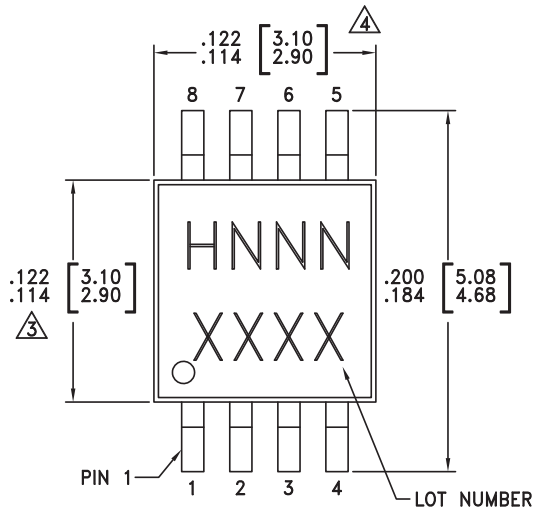
Absolute Maximum Ratings

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
ESD Sensitivity (HBM)	Class 1A



ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

Outline Drawing



NOTES:

- LEADFRAME MATERIAL: COPPER ALLOY
- DIMENSIONS ARE IN INCHES (MILLIMETERS).
- △ DIMENSION DOES NOT INCLUDE MOLDFLASH OF 0.15mm PER SIDE.
- △ DIMENSION DOES NOT INCLUDE MOLDFLASH OF 0.25mm PER SIDE.
- ALL GROUND LEADS MUST BE SOLDERED TO PCB RF GROUND.

Package Information

Part Number	Package Body Material	Lead Finish	MSL Rating	Package Marking ^[3]
HMC316MS8	Low Stress Injection Molded Plastic	Sn/Pb Solder	MSL1 ^[1]	H316 XXXX
HMC316MS8E	RoHS-compliant Low Stress Injection Molded Plastic	100% matte Sn	MSL1 ^[2]	H316 XXXX

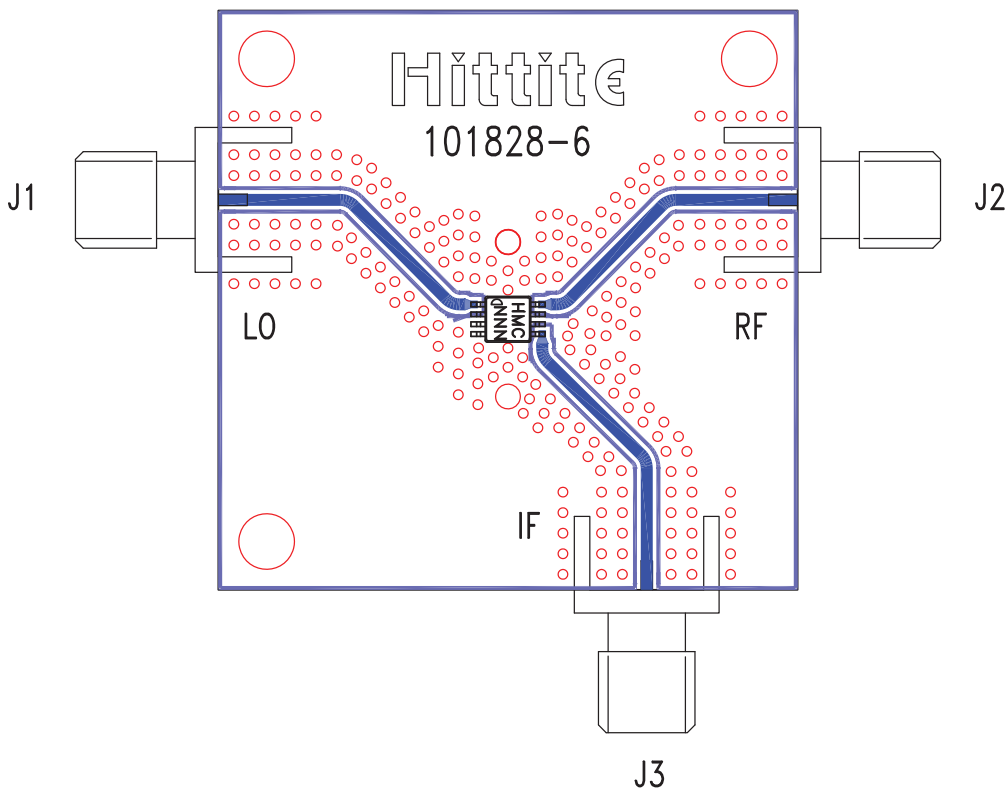
[1] Max peak reflow temperature of 235 °C

[2] Max peak reflow temperature of 260 °C

[3] 4-Digit lot number XXXX

For price, delivery, and to place orders, please contact Hittite Microwave Corporation:
20 Alpha Road, Chelmsford, MA 01824 Phone: 978-250-3343 Fax: 978-250-3373
Order On-line at www.hittite.com

Evaluation PCB



List of Materials for Evaluation PCB 101830 [1]

Item	Description
J1 - J3	PCB Mount SMA RF Connector
U1	HMC316MS8 / HMC316MS8E Mixer
PCB [2]	101828 Eval Board

[1] Reference this number when ordering complete evaluation PCB

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



MICROWAVE CORPORATION v02.0505



HMC316MS8 / 316MS8E

GaAs MMIC HIGH IP3 DOUBLE-BALANCED MIXER, 1.5 - 3.8 GHz

Notes:

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- Конкурентоспособные цены и скидки постоянным клиентам.
- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



Тел: +7 (812) 336 43 04 (многоканальный)

Email: org@lifeelectronics.ru