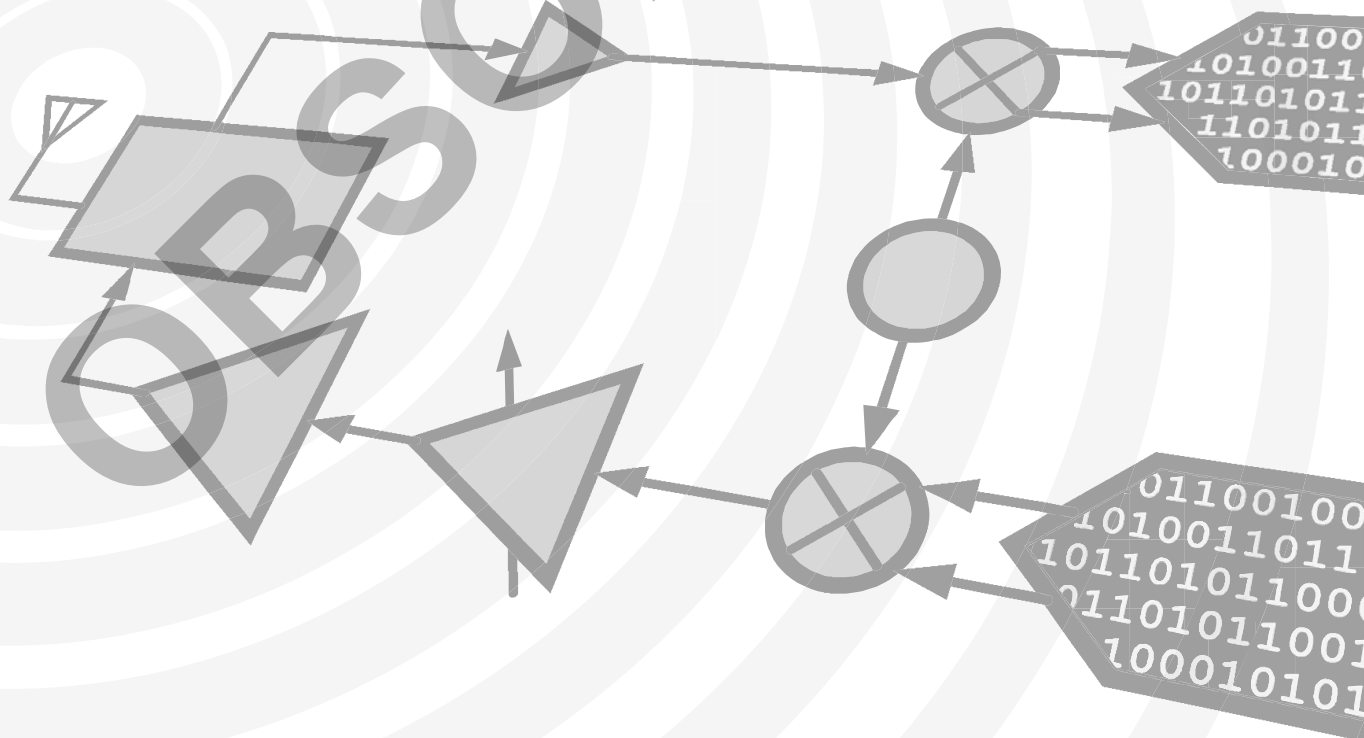


Analog Devices Welcomes Hittite Microwave Corporation

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OBSOLETE



MICROWAVE CORPORATION

v01.0710



HMC483MS8G / 483MS8GE

**HIGH IP3 GaAs MMIC MIXER with
INTEGRATED LO AMPLIFIER, 0.7 - 1.5 GHz**

Typical Applications

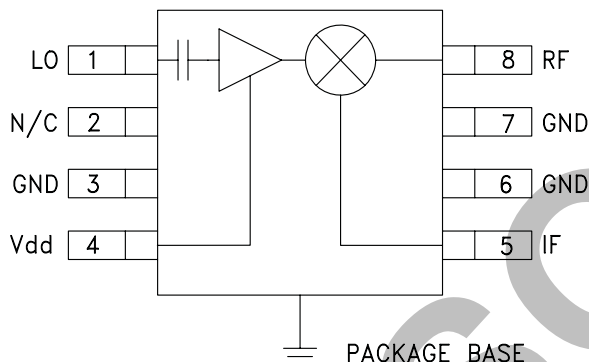
The HMC483MS8G / HMC483MS8GE is ideal for:

- Cellular/3G
- GSM, GPRS & EDGE
- CDMA & WCDMA
- Cable Modem Termination Systems

Features

- +33 dBm Input IP3
- Conversion Loss: 9 dB
- Low LO Drive: -4 to +4 dBm
- Single Positive Supply: 5V @ 50 mA
- Ultra Small MSOP Package: 14.8mm²
- Included in the HMC-DK003 Designer's Kit

Functional Diagram



General Description

The HMC483MS8G & HMC483MS8GE are high dynamic range passive MMIC mixers with integrated LO amplifiers in plastic surface mount 8 lead Mini Small Outline Packages (MSOP) covering 0.7 to 1.5 GHz. Excellent input IP3 performance of +33 dBm for down conversion and +30 dBm for up conversion is provided for 2.5G & 3G GSM/CDMA applications at an LO drive of 0 dBm. With an input 1 dB compression of +24 dBm, the RF port will accept a wide range of input signal levels. Conversion loss is 9 dB typical. The DC to 350 MHz IF frequency response will satisfy GSM/CDMA transmit or receive frequency plans configured for low side LO. The HMC483MS8G(E) are pin for pin compatible with the HMC485MS8G(E) which are 1.7 - 2.2 GHz mixers with LO amplifiers.

Electrical Specifications, $T_A = +25^\circ\text{C}$, LO = 0 dBm, IF = 70 MHz*, Vdd = 5V

Parameter	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency Range, RF & LO		0.8 - 1.1		0.7 - 1.5			GHz
Frequency Range, IF		DC - 350		DC - 350			MHz
Conversion Loss		8.5	10.5		9	12	dB
Noise Figure (SSB)		8.5	10.5		9	12	dB
LO to RF Isolation	10	20		6	14		dB
LO to IF Isolation	6	10		6	13		dB
IP3 (Input)		33			33		dBm
1 dB Gain Compression (Input)		24			23		dBm
LO Input Drive Level (Typical)		-4 to +4		-4 to +4			dBm
Supply Current		50			50		mA

*Unless otherwise noted, all measurements performed as a downconverter.

For price, delivery and to place orders: Hittite Microwave Corporation, 20 Alpha Road, Chelmsford, MA 01824

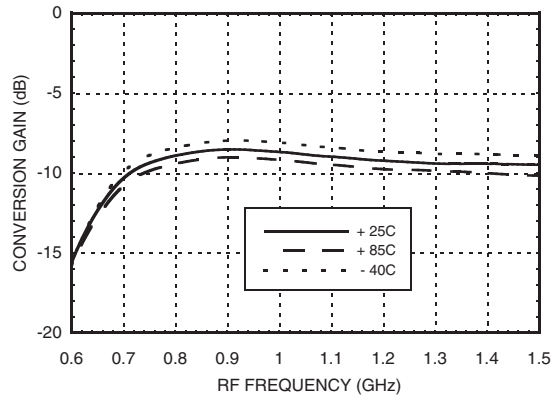
Phone: 978-250-3343 Fax: 978-250-3373 Order On-line at www.hittite.com

Application Support: Phone: 978-250-3343 or apps@hittite.com

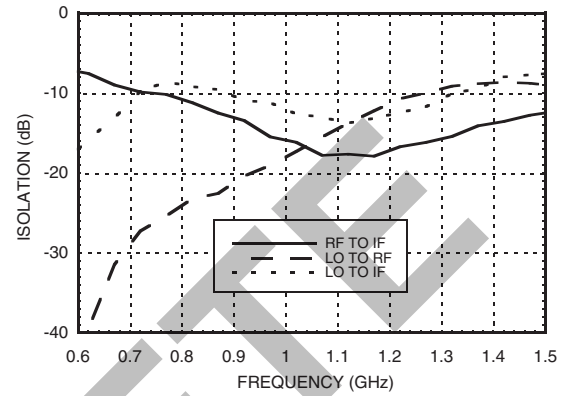
HMC483MS8G / 483MS8GE

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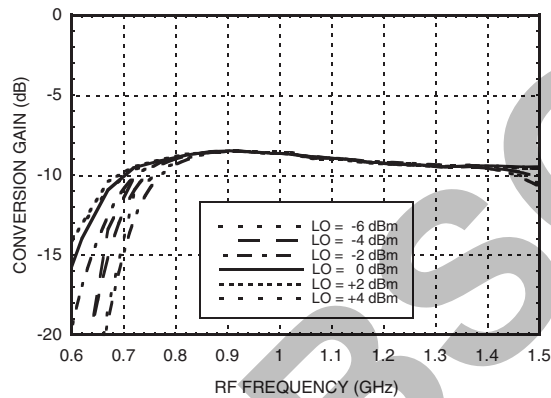
Conversion Gain vs. Temperature



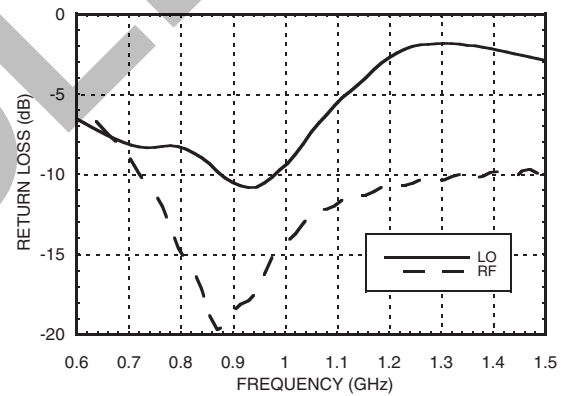
Isolation



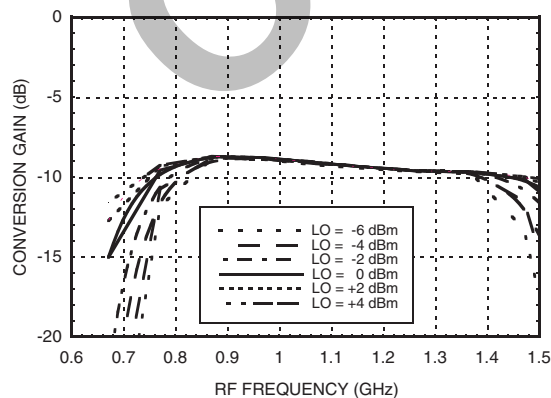
Conversion Gain vs. LO Drive



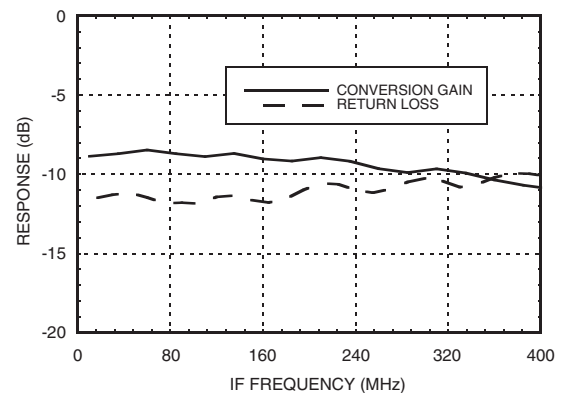
Return Loss



**Upconverter Performance
Conversion Gain**

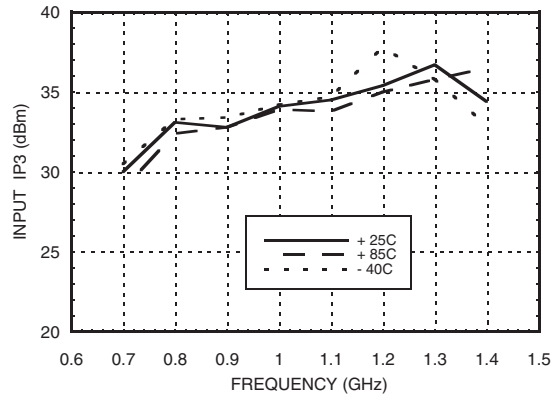


IF Bandwidth

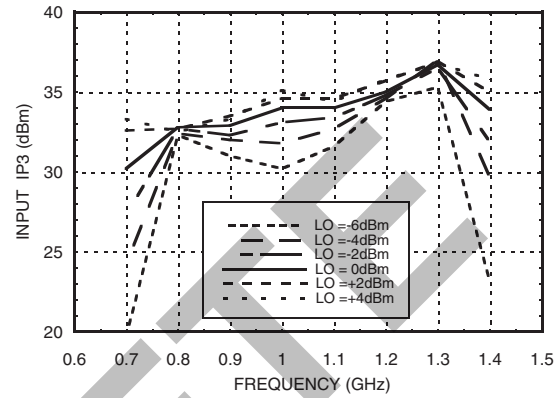


*Unless otherwise noted, all measurements performed as a downconverter, with low side LO & IF = 70 MHz.

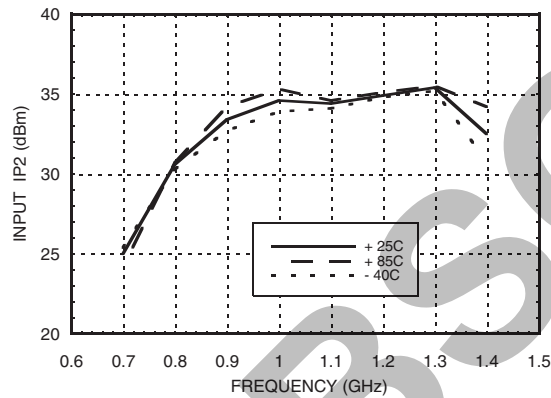
Input IP3 vs. Temperature



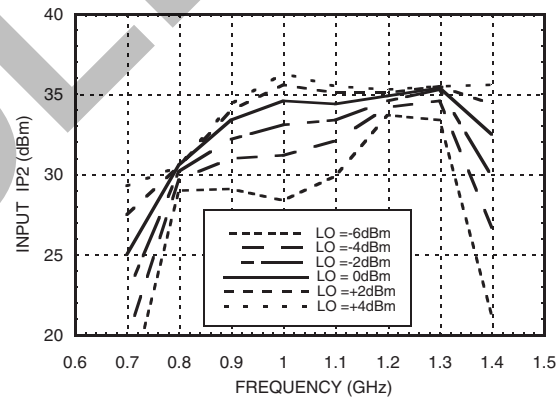
Input IP3 vs. LO Drive



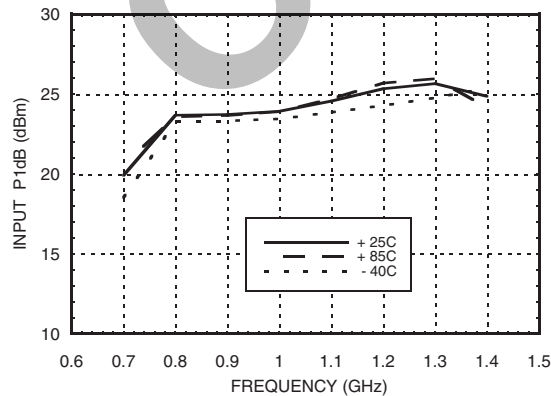
Input IP2 vs. Temperature



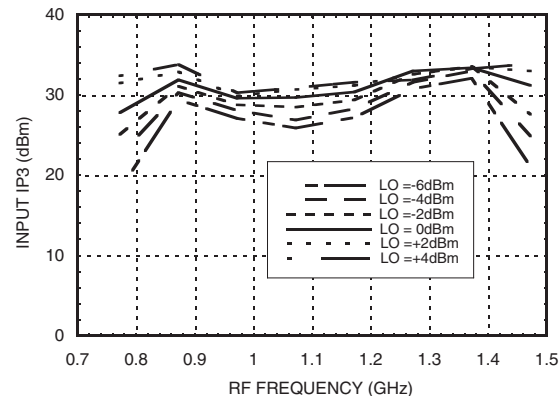
Input IP2 vs. LO Drive



Input P1dB vs. Temperature



Upconverter IP3 vs. LO Drive



HMC483MS8G / 483MS8GE

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MxN Spurious Outputs

mRF	nLO				
	0	1	2	3	4
0	xx	-9	24	3	16
1	4	0	30	15	28
2	66	71	50	61	61
3	83	95	103	89	95
4	106	105	103	108	108

RF Freq = 0.87 GHz @ -10 dBm
LO Freq = 0.8 GHz @ 0 dBm
All values in dBc Relative to the IF power level.

Harmonics of LO

LO Freq GHz	nLO Spur at RF Port			
	1	2	3	4
0.7	21	23	24	25
0.8	15	23	18	43
0.9	12	26	23	39
1	9	22	33	32
1.1	6	22	42	27
1.2	3	21	25	26

LO power = 0 dBm
All values in dBc below input LO level measured at RF port.

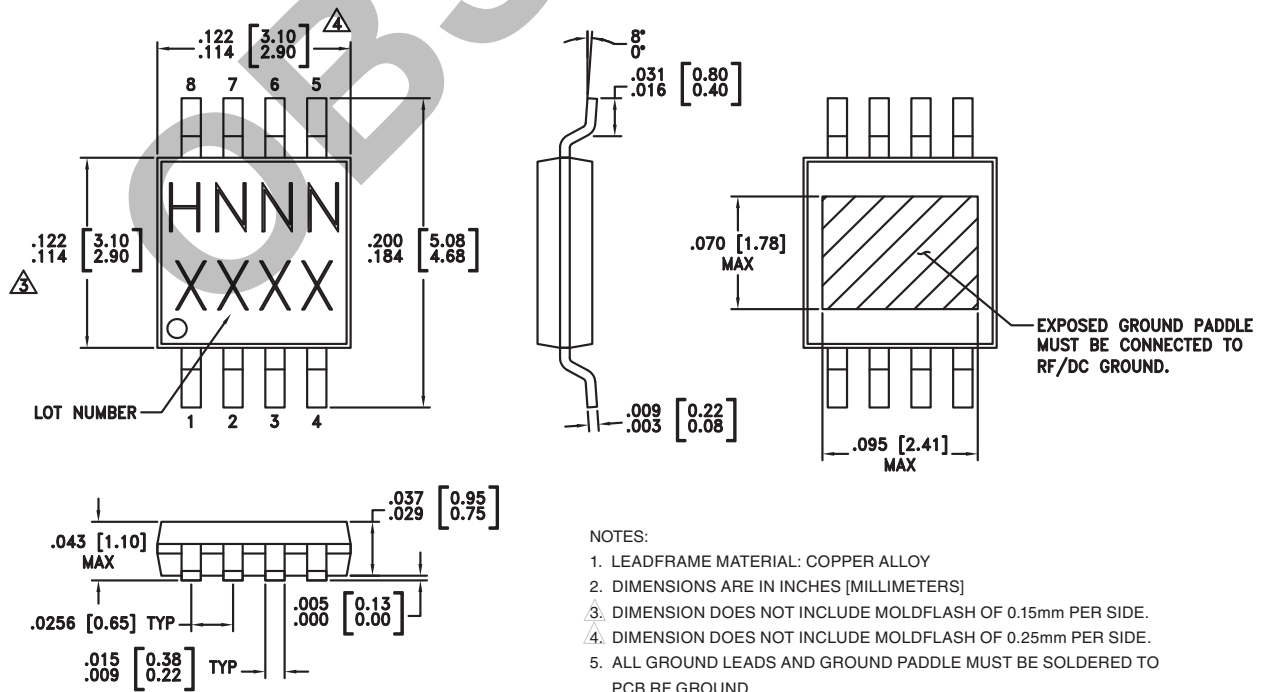
Absolute Maximum Ratings

RF/IF Input	+27 dBm
LO Drive	+10 dBm
Bias Supply (Vdd)	+7 Vdc
Channel Temperature	150 °C
Continuous P _{diss} (T = 85°C) (Derate 8.95 mW/°C above 85°C)	0.58 W
Thermal Resistance (R _{TH}) (Channel to ground paddle)	111.7 °C/W
Storage Temperature	-65 to +150 °C
Operating Temperature	-40 to +85 °C
IF DC Current	±40 mA
ESD Sensitivity (HBM)	Class 1B



**ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS**

Outline Drawing





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Package Information

Part Number	Package Body Material	Lead Finish	MSL Rating	Package Marking ^[3]
HMC483MS8G	Low Stress Injection Molded Plastic	Sn/Pb Solder	MSL1 ^[1]	H483 XXXX
HMC483MS8GE	RoHS-compliant Low Stress Injection Molded Plastic	100% matte Sn	MSL1 ^[2]	H483 XXXX

[1] Max peak reflow temperature of 235 °C

[2] Max peak reflow temperature of 260 °C

[3] 4-Digit lot number XXXX

Pin Descriptions

Pin Number	Function	Description	Interface Schematic
1	LO	This pin is AC coupled and matched to 50 Ohms.	
2	N/C	Not connected. This pin may be connected to RF/DC ground without affecting performance.	
3, 6, 7	GND	This pin and the ground paddle must be connected to RF ground.	
4	Vdd	Power supply for LO amplifier. An external RF bypass capacitor is required.	
5	IF	This pin is DC coupled. For applications not requiring operation to DC this port should be DC blocked externally using a series capacitor. Choose value of capacitor to pass IF frequency desired. For operation to DC, this pin must not sink/source more than 40 mA of current or failure may result.	
8	RF	This pin is DC coupled and matched to 50 Ohms.	

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Phone: 978-250-3343 Fax: 978-250-3373 Order On-line at www.hittite.com

Application Support: Phone: 978-250-3343 or apps@hittite.com

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