HMC485MS8G / 485MS8GE

v03.0507

HIGH IP3 GaAs MMIC MIXER with INTEGRATED LO AMPLIFIER, 1.7 - 2.4 GHz

Designer's Kit Available

OBSOLETE

Typical Applications

High Dynamic Range Infrastructure:

- GSM, GPRS & EDGE
- CDMA & W-CDMA
- Cable Modem Termination Systems

Features

+34 dBm Input IP3

Conversion Loss: 9 dB

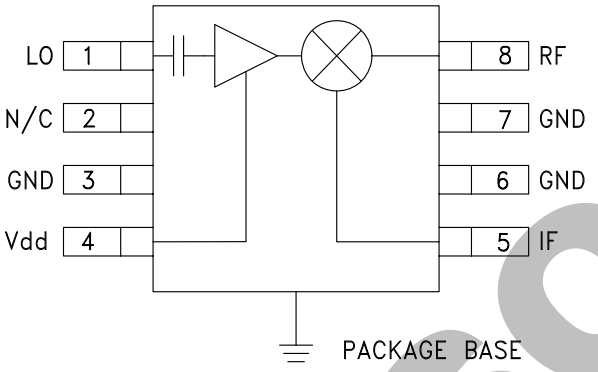
Low LO Drive: -2 to +4 dBm

Single Positive Supply: 5V @ 45 mA

Ultra Small MSOP Package: 14.8mm²

Included in the HMC-DK003 Designer's Kit

Functional Diagram



General Description

The HMC485MS8G & HMC485MS8GE are high dynamic range passive MMIC mixers with integrated LO amplifier in plastic surface mount 8 lead Mini Small Outline Packages (MSOP) covering 1.7 to 2.4 GHz. Excellent input IP3 performance of +34 dBm for down conversion and +27 dBm for up conversion is provided for 2.5G & 3G GSM/CDMA based UMTS or PCS applications at an LO drive of 0 dBm. With an input 1 dB compression of +19 dBm, the RF port will accept a wide range of input signal levels. Conversion loss is 9.2 dB typical. The 50 to 300 MHz IF frequency response will satisfy many UMTS/PCS transmit or receive frequency plans configured for low side LO. The HMC485MS8G(E) input IP3 performance coupled with its high P1dB rivals traditional active FET mixers while offering a much smaller 14.8mm² standard IC footprint.

Electrical Specifications, T_A = +25°C, LO = 0 dBm, IF = 200 MHz*, Vdd= 5V

Parameter	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max	Units
Frequency Range, RF	1.7 - 1.8			1.8 - 2.0			2.0 - 2.2			2.2 - 2.4			GHz
Frequency Range, LO	1.4 - 1.75			1.5 - 1.95			1.7 - 2.15			1.9 - 2.35			GHz
Frequency Range, IF	50 - 300			50 - 300			50 - 300			50 - 300			MHz
Conversion Loss		9.8	11		9.2	10.5		9	10		9.5	10.5	dB
Noise Figure (SSB)		9.8			9.2			9			9.5		dB
LO to RF Isolation		12			8			5			5		dB
LO to IF Isolation		7			10			13			12		dB
IP3 (Input)	27	31		29	34		29	33		29	32		dBm
1 dB Gain Compression (Input)	16	19		17	20		17	21		18.5	21.5		dBm
LO Input Drive Level (Typical)	-2 to +4			-2 to +4			-2 to +4			-2 to +4			dBm
Supply Current		45			45			45			45		mA

Unless otherwise noted, all measurements performed as a downconverter, with low side LO & IF = 200 MHz.

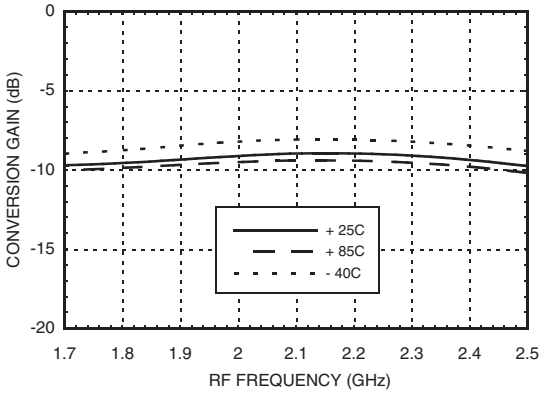
Information furnished by Analog Devices is believed to be accurate and reliable. However, no responsibility is assumed by Analog Devices for its use, nor for any infringements of patents or other rights of third parties that may result from its use. Specifications subject to change without notice. No license is granted by implication or otherwise under any patent or patent rights of Analog Devices. Trademarks and registered trademarks are the property of their respective owners.

For price, delivery, and to place orders: Analog Devices, Inc., One Technology Way, P.O. Box 9106, Norwood, MA 02062-9106
Phone: 781-329-4700 • Order online at www.analog.com
Application Support: Phone: 1-800-ANALOG-D

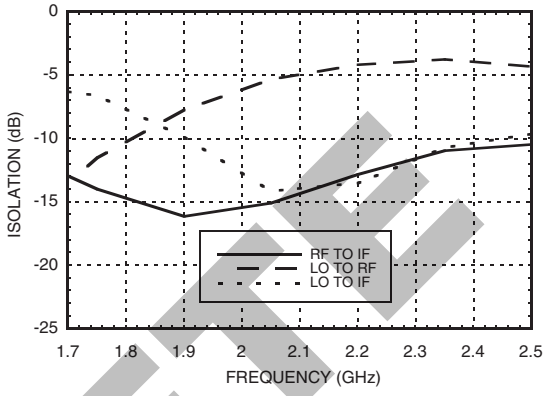
RoHS✓ EARTH FRIENDLY

HIGH IP3 GaAs MMIC MIXER with INTEGRATED LO AMPLIFIER, 1.7 - 2.4 GHz

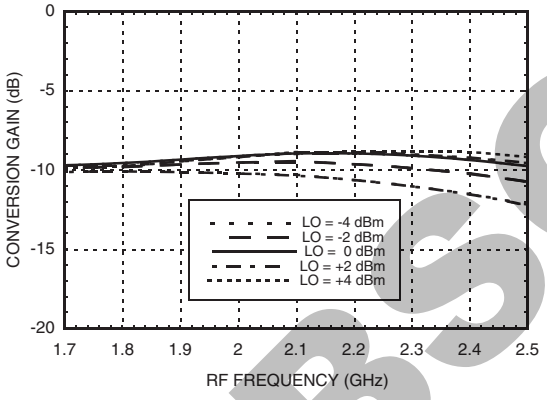
Conversion Gain vs. Temperature @ LO = 0 dBm



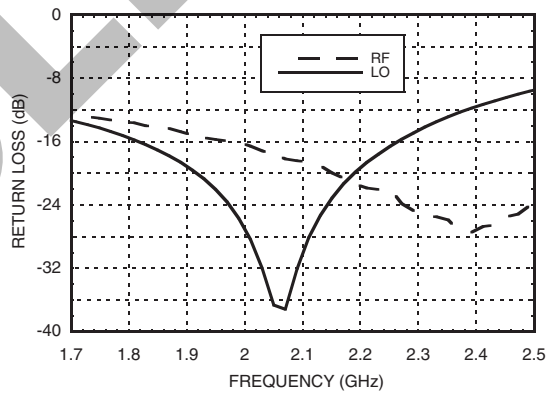
Isolation @ LO = 0 dBm



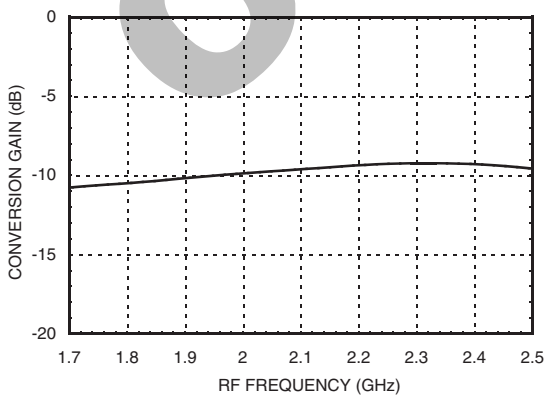
Conversion Gain vs. LO Drive



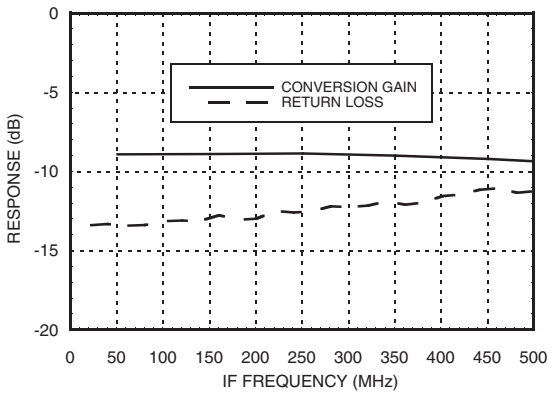
Return Loss @ LO = 0 dBm



Upconverter Performance Conversion Gain @ LO = 0 dBm



IF Bandwidth @ LO = 0 dBm



*Unless otherwise noted, all measurements performed as a downconverter, with low side LO & IF = 200 MHz.

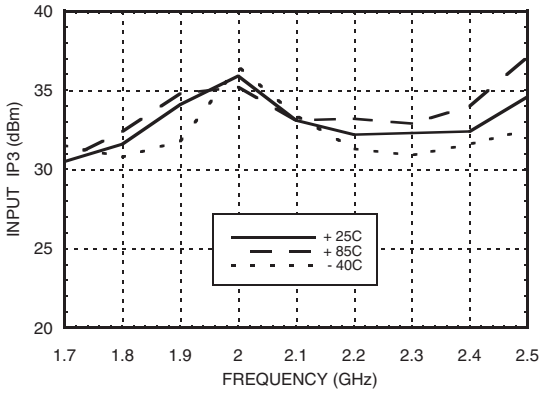
OBSOLETE

Information furnished by Analog Devices is believed to be accurate and reliable. However, no responsibility is assumed by Analog Devices for its use, nor for any infringements of patents or other rights of third parties that may result from its use. Specifications subject to change without notice. No license is granted by implication or otherwise under any patent or patent rights of Analog Devices. Trademarks and registered trademarks are the property of their respective owners.

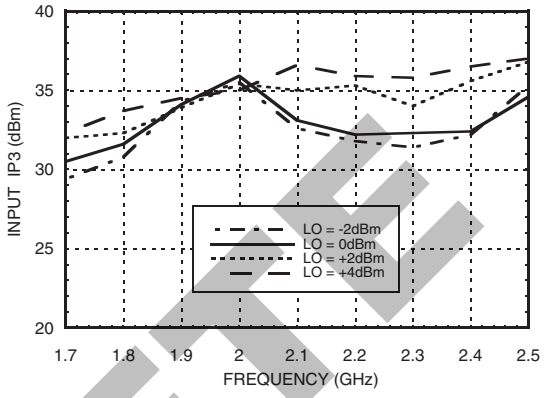
For price, delivery, and to place orders: Analog Devices, Inc., One Technology Way, P.O. Box 9106, Norwood, MA 02062-9106
Phone: 781-329-4700 • Order online at www.analog.com
Application Support: Phone: 1-800-ANALOG-D

HIGH IP3 GaAs MMIC MIXER with INTEGRATED LO AMPLIFIER, 1.7 - 2.4 GHz

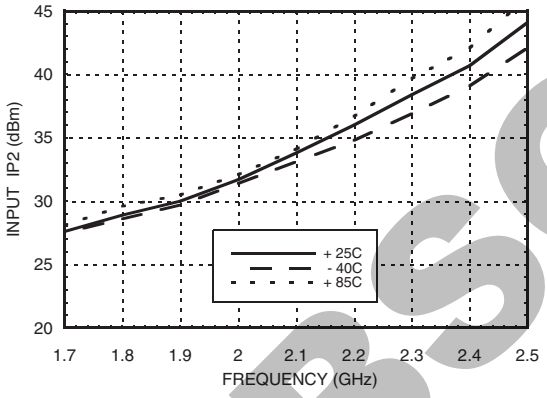
Input IP3 vs. Temperature @ LO= 0 dBm



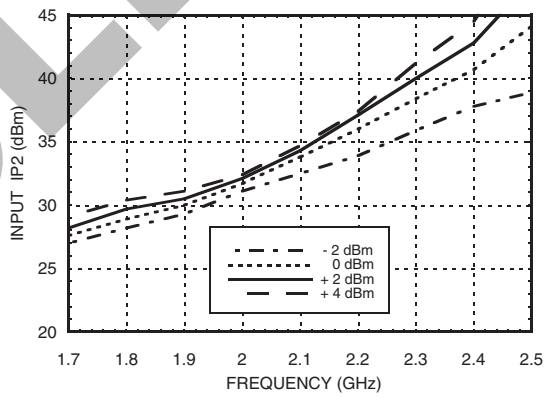
Input IP3 vs. LO Drive



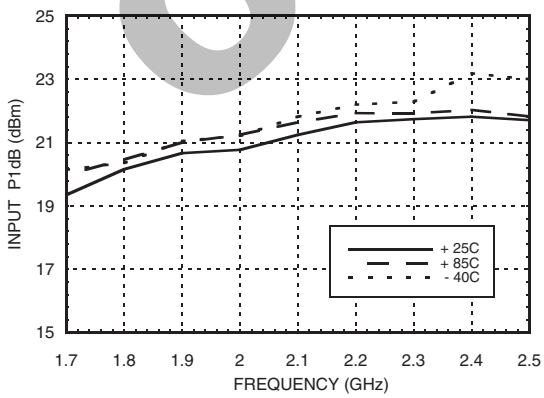
Input IP2 vs. Temperature @ LO= 0 dBm



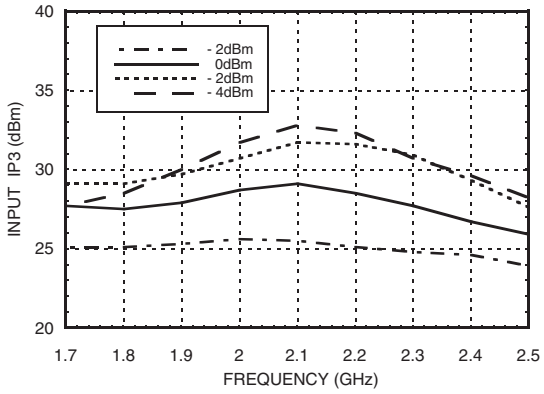
Input IP2 vs. LO Drive @ IF= 200 MHz



Input P1dB vs. Temperature @ LO= 0 dBm



Upconverter IP3 vs. LO Drive, IF= 200 MHz



OBSOLETE

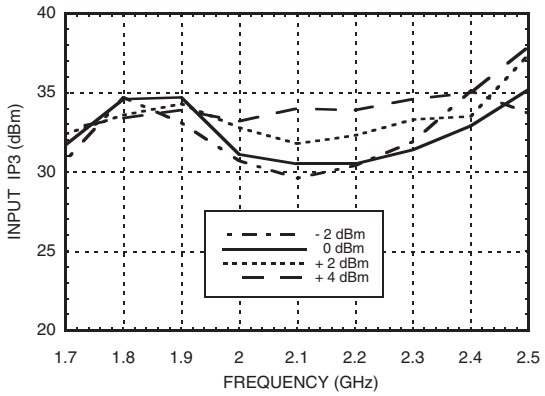
Information furnished by Analog Devices is believed to be accurate and reliable. However, no responsibility is assumed by Analog Devices for its use, nor for any infringements of patents or other rights of third parties that may result from its use. Specifications subject to change without notice. No license is granted by implication or otherwise under any patent or patent rights of Analog Devices. Trademarks and registered trademarks are the property of their respective owners.

For price, delivery, and to place orders: Analog Devices, Inc., One Technology Way, P.O. Box 9106, Norwood, MA 02062-9106
Phone: 781-329-4700 • Order online at www.analog.com
Application Support: Phone: 1-800-ANALOG-D

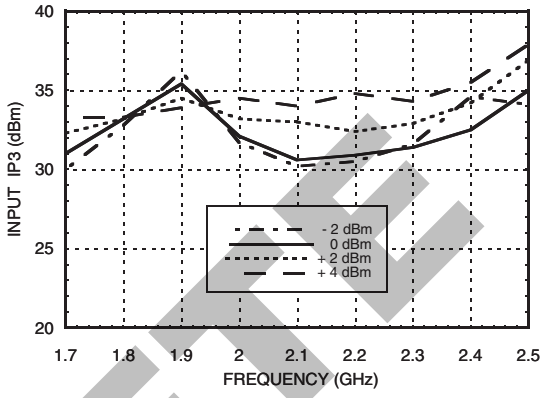
RoHS✓ EARTH FRIENDLY

HIGH IP3 GaAs MMIC MIXER with INTEGRATED LO AMPLIFIER, 1.7 - 2.4 GHz

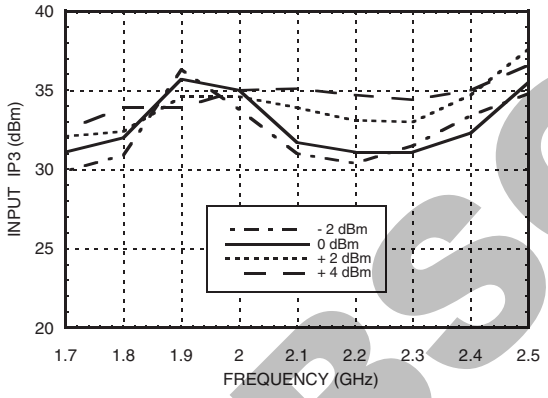
Input IP3 vs. LO Drive, IF= 70 MHz



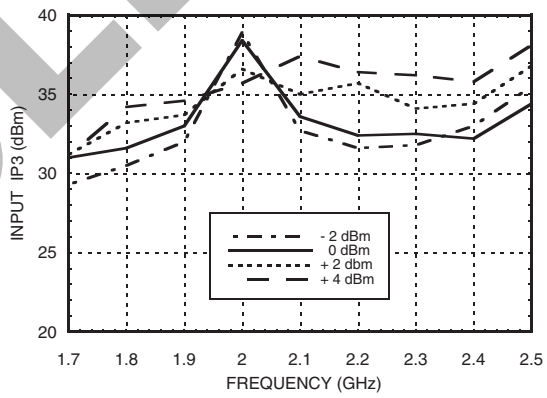
Input IP3 vs. LO Drive, IF= 120 MHz



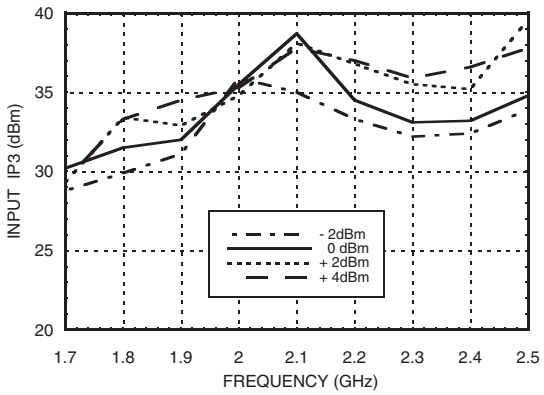
Input IP3 vs. LO Drive, IF= 170 MHz



Input IP3 vs. LO Drive, IF= 247 MHz



Input IP3 vs. LO Drive, IF= 297 MHz



OBSOLETE

Information furnished by Analog Devices is believed to be accurate and reliable. However, no responsibility is assumed by Analog Devices for its use, nor for any infringements of patents or other rights of third parties that may result from its use. Specifications subject to change without notice. No license is granted by implication or otherwise under any patent or patent rights of Analog Devices. Trademarks and registered trademarks are the property of their respective owners.

For price, delivery, and to place orders: Analog Devices, Inc., One Technology Way, P.O. Box 9106, Norwood, MA 02062-9106
Phone: 781-329-4700 • Order online at www.analog.com
Application Support: Phone: 1-800-ANALOG-D

MxN Spurious Outputs

	nLO				
mRF	0	1	2	3	4
0	xx	-1.	19	15	15
1	4	0	30	25	44
2	54	69	39	56	55
3	75	82	83	74	72
4	78	82	83	83	82

RF Freq = 1.9 GHz @ 0 dBm
LO Freq = 1.7 GHz @ 0 dBm
All values in dBc Relative to the IF power level.

Harmonics of LO

	nLO Spur at RF Port			
LO Freq GHz	1	2	3	4
1.5	19	15	35	24
1.6	17	15	33	24
1.7	14	14	29	23
1.8	10	15	25	24
1.9	8	20	22	23
2	6	20	22	24

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

OBSOLETE

Information furnished by Analog Devices is believed to be accurate and reliable. However, no responsibility is assumed by Analog Devices for its use, nor for any infringements of patents or other rights of third parties that may result from its use. Specifications subject to change without notice. No license is granted by implication or otherwise under any patent or patent rights of Analog Devices. Trademarks and registered trademarks are the property of their respective owners.

For price, delivery, and to place orders: Analog Devices, Inc., One Technology Way, P.O. Box 9106, Norwood, MA 02062-9106
Phone: 781-329-4700 • Order online at www.analog.com
Application Support: Phone: 1-800-ANALOG-D

RoHS✓ EARTH FRIENDLY

HIGH IP3 GaAs MMIC MIXER with INTEGRATED LO AMPLIFIER, 1.7 - 2.4 GHz

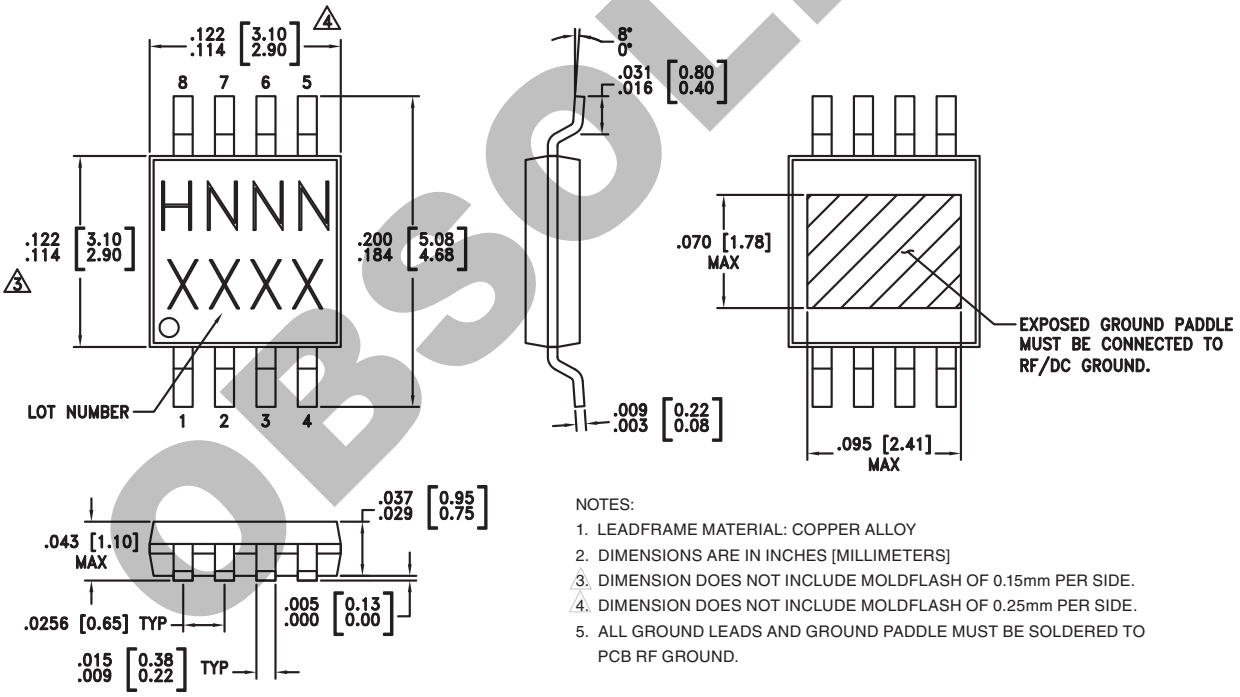
Absolute Maximum Ratings

RF/IF Input	+27 dBm
LO Drive	+10 dBm
Bias Supply (Vdd)	+7 Vdc
Channel Temperature	150 °C
Continuous Pdiss (T = 85°C) (Derate 13.2 mW/°C above 85°C)	0.85 W
Storage Temperature	-65 to +150 °C
Operating Temperature	-40 to +85 °C
IF DC Current	±40 mA
ESD Sensitivity (HBM)	Class 1A

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

OBSOLETE

Outline Drawing



NOTES:

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

Package Information

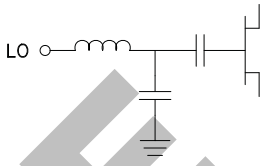
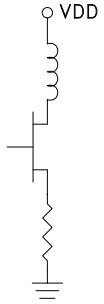
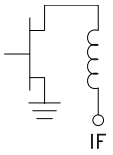
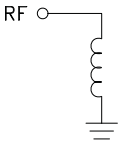
Part Number	Package Body Material	Lead Finish	MSL Rating	Package Marking [3]
HMC485MS8G	Low Stress Injection Molded Plastic	Sn/Pb Solder	MSL1 [1]	H485 XXXX
HMC485MS8GE	RoHS-compliant Low Stress Injection Molded Plastic	100% matte Sn	MSL1 [2]	H485 XXXX

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

Information furnished by Analog Devices is believed to be accurate and reliable. However, no responsibility is assumed by Analog Devices for its use, nor for any infringements of patents or other rights of third parties that may result from its use. Specifications subject to change without notice. No license is granted by implication or otherwise under any patent or patent rights of Analog Devices. Trademarks and registered trademarks are the property of their respective owners.

For price, delivery, and to place orders: Analog Devices, Inc., One Technology Way, P.O. Box 9106, Norwood, MA 02062-9106
Phone: 781-329-4700 • Order online at www.analog.com
Application Support: Phone: 1-800-ANALOG-D

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.	
3, 6, 7	GND	This pin must be connected to RF ground.	
4	Vdd	Power supply for LO amplifier. An external RF bypass capacitor is required.	
5	IF Port	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 Port	This pin is DC coupled and matched to 50 Ohms.	

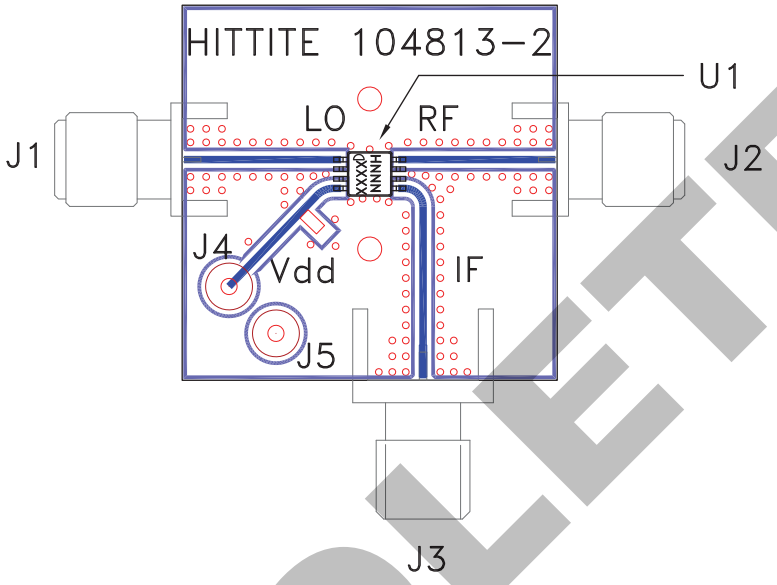
OBSOLETE

Information furnished by Analog Devices is believed to be accurate and reliable. However, no responsibility is assumed by Analog Devices for its use, nor for any infringements of patents or other rights of third parties that may result from its use. Specifications subject to change without notice. No license is granted by implication or otherwise under any patent or patent rights of Analog Devices. Trademarks and registered trademarks are the property of their respective owners.

For price, delivery, and to place orders: Analog Devices, Inc., One Technology Way, P.O. Box 9106, Norwood, MA 02062-9106
Phone: 781-329-4700 • Order online at www.analog.com
Application Support: Phone: 1-800-ANALOG-D

RoHS✓ EARTH FRIENDLY

Evaluation PCB



List of Materials for Evaluation PCB 105188 [1]

Item	Description
J1 - J3	PCB Mount SMA RF Connector
J4 - J5	DC Pin
C1	10,000 pF Chip Capacitor, 0603 Pkg.
U1	HMC485MS8G / HMC485MS8GE Mixer
PCB [2]	104813 Evaluation Board, 1.0" x 1.0"

[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 and exposed paddle 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.

OBSOLETE

Information furnished by Analog Devices is believed to be accurate and reliable. However, no responsibility is assumed by Analog Devices for its use, nor for any infringements of patents or other rights of third parties that may result from its use. Specifications subject to change without notice. No license is granted by implication or otherwise under any patent or patent rights of Analog Devices. Trademarks and registered trademarks are the property of their respective owners.

For price, delivery, and to place orders: Analog Devices, Inc., One Technology Way, P.O. Box 9106, Norwood, MA 02062-9106
Phone: 781-329-4700 • Order online at www.analog.com
Application Support: Phone: 1-800-ANALOG-D

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for RF Mixer ***category:***

Click to view products by Analog Devices ***manufacturer:***

Other Similar products are found below :

M80C HMC337-SX F1763EVBI mamx-009646-23dbml HMC339-SX F1751NBGI CSM5T CHR3664-QEG NJM2552V-TE1 HMC220BMS8GE HMC8192-SX LTC5569IUF#PBF HMC220BMS8GETR MAX2055EUP+TD M85C M74C CSM4TH HMC8191-SX CMD251C3 MD-174-PIN CMD253C3 HMC8192LG HMC553AG-SX HMC521A-SX HMC521ACHIPS HMC558A HMC553AG HMC8191 MAMX-011023-SMB EMRS-1TR ADL5355ACPZ-R7 HMC399MS8TR HMC141LH5 HMC333TR HMC214MS8TR HMC175MS8TR HMC1043LC3TR F0552NLGI F1701NBGI F0502NLGI F1763NBGI MDS-189-PIN MAX2042AETP+ MAX2032ETP+ MAX2043ETX+ CSM2-13 CSM4T HMC1056LP4BETR LTC5510IUF#PBF LTC5553IUDB#TRMPBF