HMC485AMS8GE

v00.0815

HIGH IP3 GaAs MMIC I/Q MIXER WITH INTEGRATED LO AMPLIFIER, 1.7 - 2.4 GHz

Typical Applications

The HMC485AMS8GE is ideal for:

- High Dynamic Range Infrastructure:
- GSM, GPRS & EDGE
- CDMA & W-CDMA
- Cable Modem Termination Systems

Features

Input Third-Order Intercept (IP3): 34 dBm

Conversion Loss: 9 dB

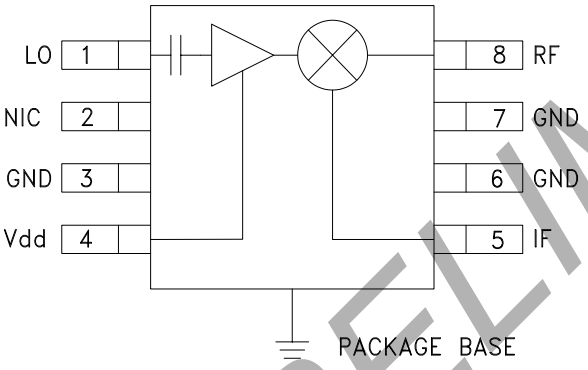
LO to RF Isolation: 10 dB

LO to IF Isolation: 25 dB

Single Positive Supply: 5 V at 45 mA

Ultra Small MSOP Package

Functional Diagram



General Description

The HMC485AMS8GE is a high dynamic range passive MMIC mixers with integrated LO amplifier in plastic surface mount 8 lead MiniSmall Outline Package (MSOP) covering 1.7 to 2.4 GHz. Excellent input IP3 performance of 34 dBm for downconversion and 27 dBm for upconversion is provided for 2.5 G & 3 G 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 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 HMC485AMS8GE input IP3 performance coupled with its high P1dB rivals traditional active FET mixers while offering a much smaller 14.8 mm^2 standard IC footprint.

Electrical Specifications, T_A = +25°C, LO = 0 dBm, IF = 200 MHz [1], Vdd = 5 V

Parameter	Min.	Typ.	Max	Units
RF Frequency Range	1.7		2.4	GHz
LO Frequency Range	1.4		2.35	GHz
IF Frequency Range	50		300	MHz
LO Drive Level	-2		4	dBm
Conversion Loss		9.5	11	dB
Noise Figure (SSB)		9.5	11	dB
LO to RF Isolation		10		dB
LO to IF Isolation		25		dB
Input Third-Order Intercept (IP3)	29	34		dBm
Supply Current		45		mA

[1] *Unless otherwise noted, all measurements performed as a downconverter with upper sideband selected and IF = 200 MHz.*

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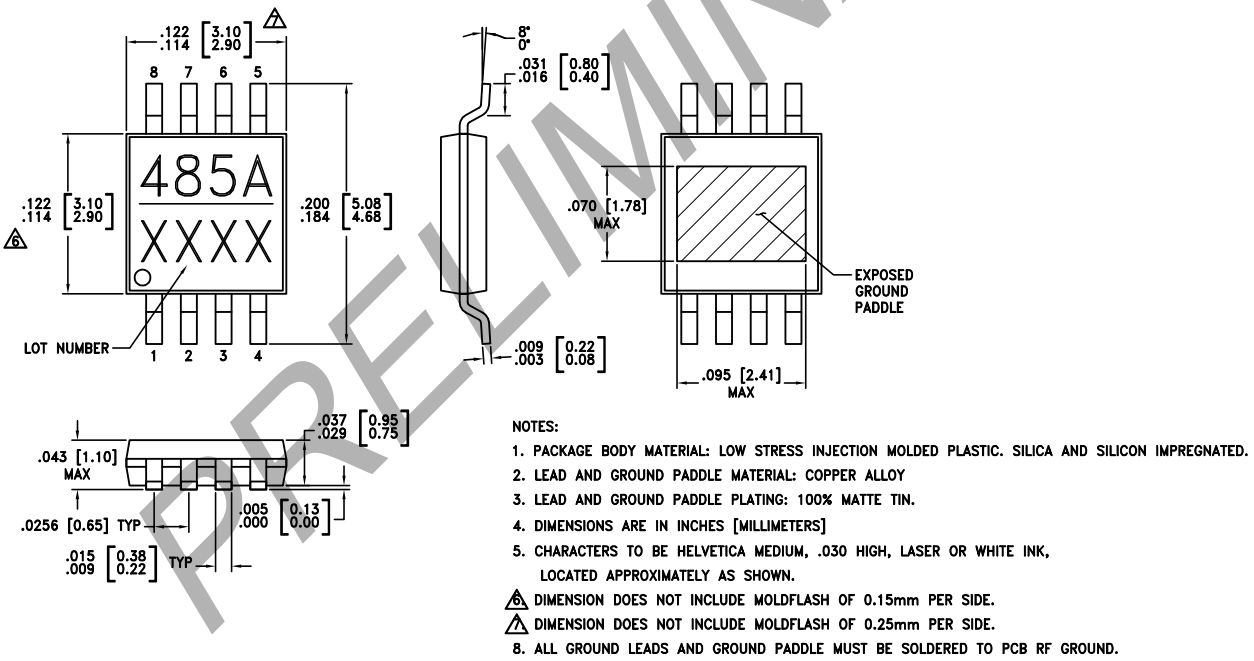
Absolute Maximum Ratings

Bias Supply (Vdd)	7 Vdc
RF Input Power	27 dBm
IF Input Power	27 dBm
LO Drive	10 dBm
IF DC Current	±40 mA
Channel Temperature	150 °C
Continuous Pdiss (T = 85°C) (derate (TBD) W / ° C above 85 °C	(TBD) mW
Thermal Resistance (R_{TH}) (junction to ground paddle)	(TBD) °C/W
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to 125°C
ESD Sensitivity (HBM)	TBD

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

Outline Drawing

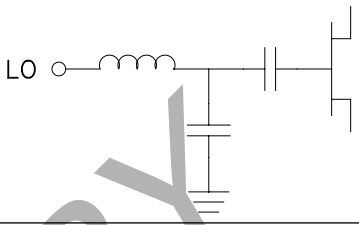
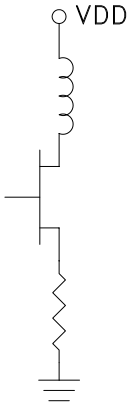
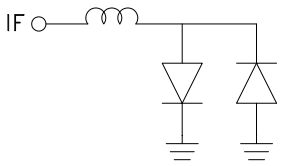
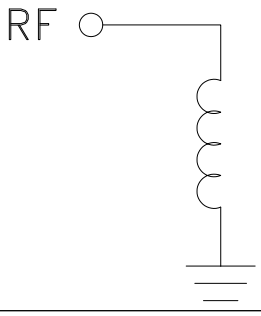


Package Information

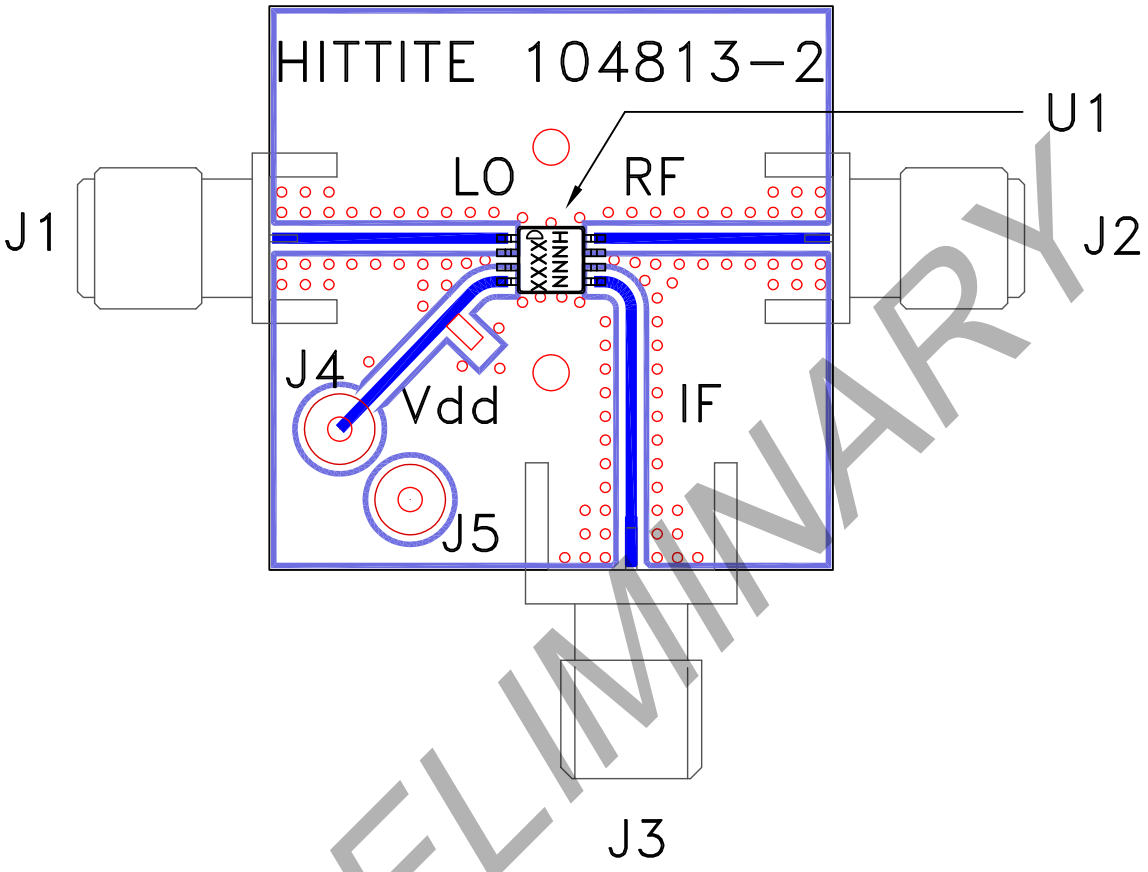
Part Number	Package Body Material	Lead Finish	MSL Rating [2]	Package Marking [1]
HMC485AMS8GE	RoHS-compliant Low Stress Injection Molded Plastic	100% matte Sn	MSL1	H485A XXXX

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

Pin Descriptions

Pin Number	Function	Description	Pin Schematic
1	LO	Local Oscillator Port. This pin is ac-coupled and matched to 50 Ohms.	
2	NIC	No Internal Connection. These pins are not connected internally.	
3, 6, 7	GND	Ground Connect. Connect these pins and package bottom to RF/dc ground.	
4	Vdd	Power supply for the LO amplifier. An external bypass capacitor is required.	
5	IF	Intermediate Frequency Port. This pin is dc-coupled. For applications not requiring operation to dc, block this pin externally using a series capacitor with a value chosen to pass the necessary IF frequency range. For operation to dc, this pin must not source or sink more than 40 mA of current or device non-functionality or device failure may result.	
8	RF	Radio Frequency port. This pin is dc-coupled and matched to 50 Ohms.	

Evaluation PCB



Evaluation Order Information

Item	Contents	Part Number
Evaluation PCB Only	HMC485AMS8GE Evaluation PCB	EV1HMC485AMS8G [1]

[1] Reference this number when ordering Evaluation PCB Only

List of Materials for Evaluation

Item	Description
J1 - J3	PCB Mount SMA RF Connector
J4 - J5	DC Pin
C1	10,000 pF Chip Capacitor, 0603 Pkg.
U1	HMC485AMS8GE Mixer
PCB [1]	104813 Evaluation Board

[1] Circuit Board Material: Rogers 4350 or Arlon 25FR

The circuit board used in the 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 Analog Devices upon request.