HMC553* PRODUCT PAGE QUICK LINKS

Last Content Update: 02/23/2017

COMPARABLE PARTS

View a parametric search of comparable parts.

EVALUATION KITS

- HMC553LC3B Evaluation Board

DOCUMENTATION

Data Sheet

- HMC553 Die Data Sheet
- HMC553LC3B Data Sheet

TOOLS AND SIMULATIONS

- HMC553 Die S-Parameters
- HMC553G S-Parameter
- HMC553LC3B S-Parameters

REFERENCE MATERIALS

Quality Documentation

- Package/Assembly Qualification Test Report: LC3, LC3B, LC3C (QTR: 2014-00376 REV: 01)
- Semiconductor Qualification Test Report: MESFET-B (QTR: 2013-00245)

DESIGN RESOURCES

- HMC553 Material Declaration
- PCN-PDN Information
- Quality And Reliability
- Symbols and Footprints

DISCUSSIONS

View all HMC553 EngineerZone Discussions.

SAMPLE AND BUY

Visit the product page to see pricing options.

TECHNICAL SUPPORT

Submit a technical question or find your regional support number.

DOCUMENT FEEDBACK

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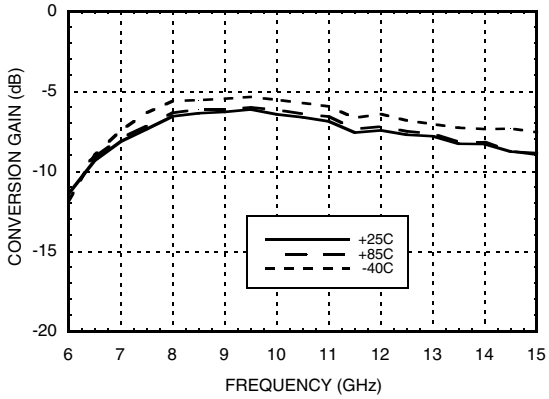
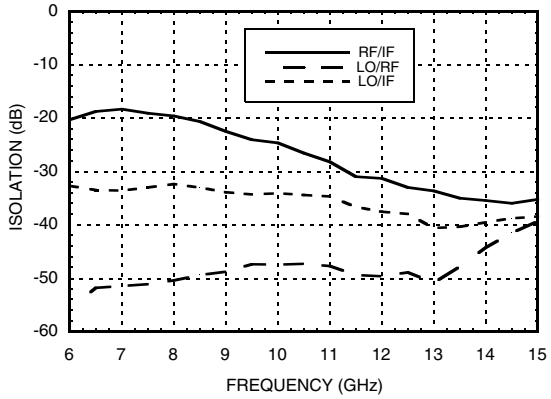
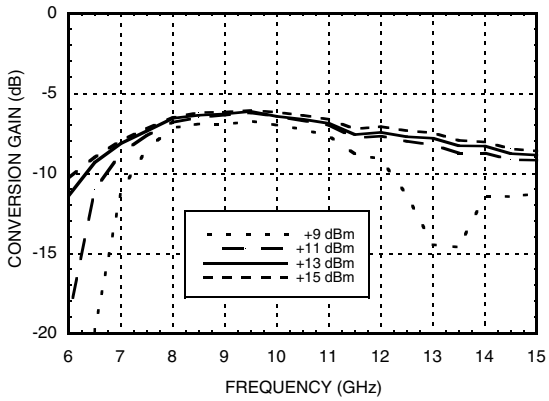
Conversion Gain vs. Temperature @ LO = +13 dBm



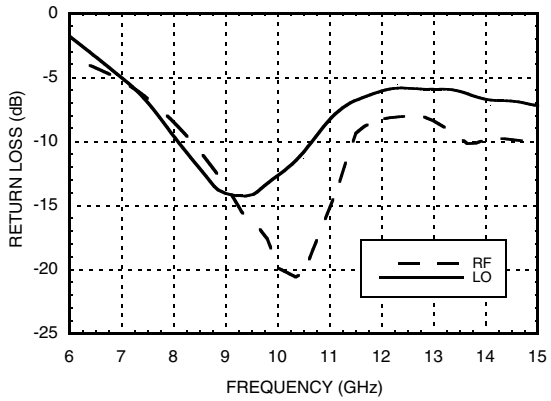
Isolation @ LO = +13 dBm



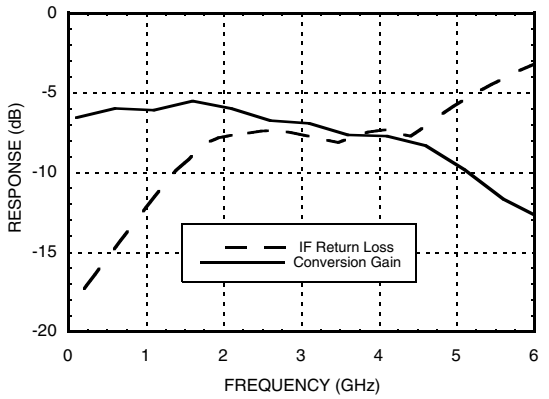
Conversion Gain vs. LO Drive



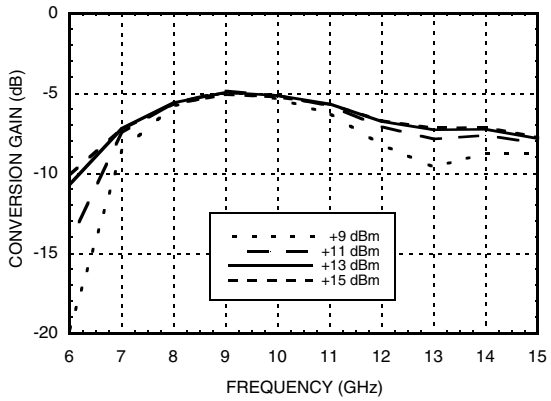
Return Loss @ LO = +13 dBm



IF Bandwidth @ LO = +13 dBm



Upconverter Performance Conversion Gain vs. LO Drive



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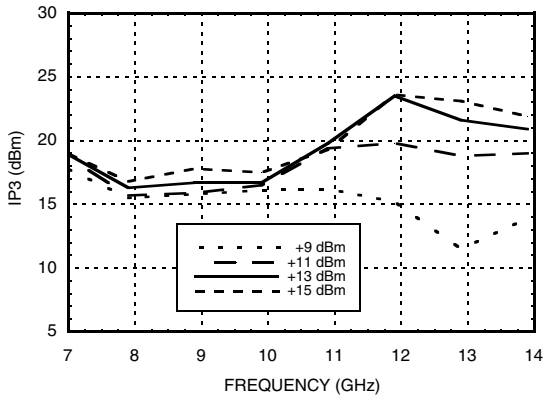
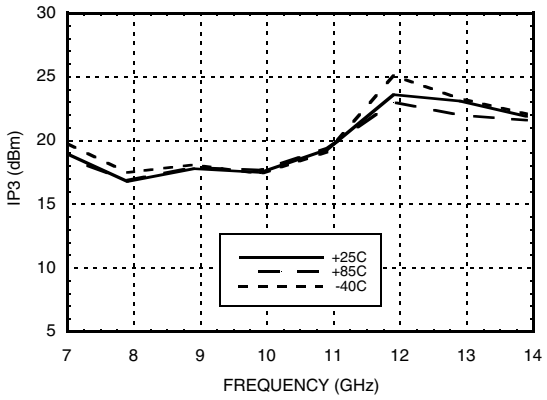
RoHS✓ EARTH FRIENDLY

GaAs MMIC FUNDAMENTAL MIXER, 7 - 14 GHz

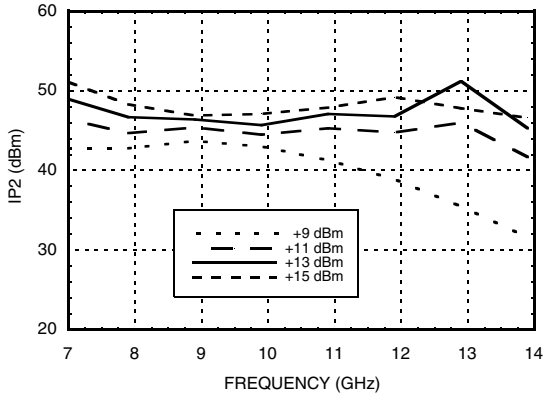
Input IP3 vs. LO Drive *



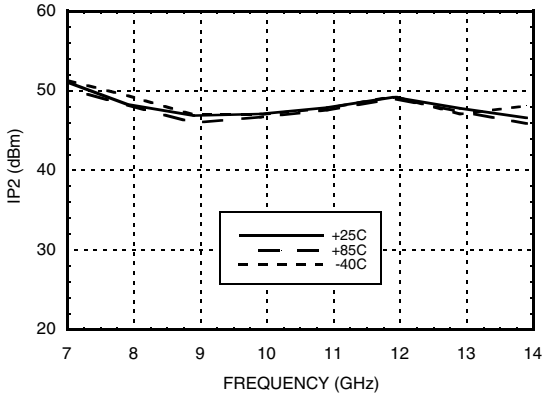
Input IP3 vs. Temperature @ LO = +13 dBm *



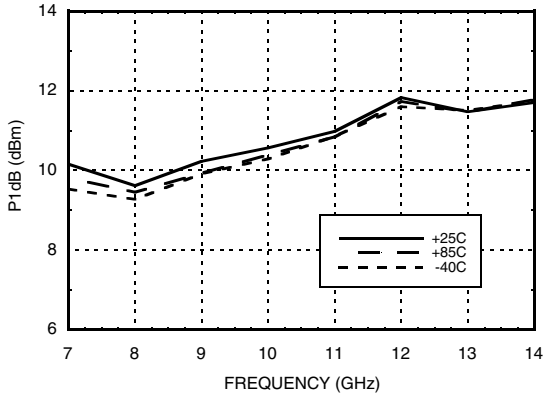
Input IP2 vs. LO Drive *



Input IP2 vs. Temperature @ LO = +13 dBm *



Input P1dB vs. Temperature @ LO = +13 dBm



MxN Spurious Outputs

	nLO				
mRF	0	1	2	3	4
0	xx	7	50	38	58
1	22	0	41	53	65
2	100	72	62	73	102
3	103	100	96	71	90
4	xx	105	101	104	111

RF = 10.1 GHz @ -10 dBm
LO = 10 GHz @ +13 dBm
All values in dBc below the IF output power level.

** Two-tone input power = -10 dBm each tone, 1 MHz spacing.*

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Absolute Maximum Ratings

RF / IF Input	+25 dBm
LO Drive	+25 dBm
Channel Temperature	150 °C
Continuous Pdiss (T = 85 °C) (derate 2.75 mW/°C above 85 °C)	178 mW
Thermal Resistance (channel to ground paddle)	364 °C/W
Storage Temperature	-65 to +150 °C
Operating Temperature	-40 to +85 °C
ESD Sensitivity (HBM)	Class 1C

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

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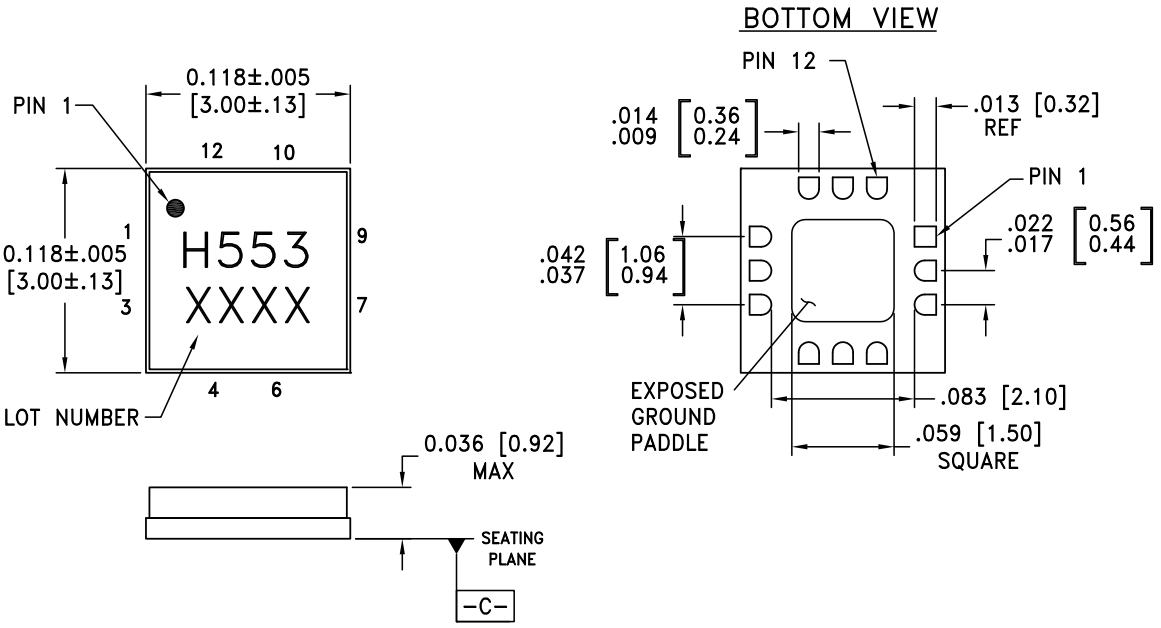
Outline Drawing



NOTES:

1. PACKAGE BODY MATERIAL: ALUMINA.
2. LEAD AND GROUND PADDLE PLATING:
   30-80 MICROINCHES GOLD OVER 50 MICROINCHES MINIMUM NICKEL.
3. DIMENSIONS ARE IN INCHES (MILLIMETERS).
4. LEAD SPACING TOLERANCE IS NON-CUMULATIVE.
5. CHARACTERS TO BE HELVETICA MEDIUM, .025 HIGH, BLACK INK,
   OR LASER MARK LOCATED APPROX. AS SHOWN.
6. PACKAGE WARP SHALL NOT EXCEED 0.05MM DATUM – C –
7. 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 [2]
HMC553LC3B	Alumina, White	Gold over Nickel	MSL3 [1]	H553 XXXX

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

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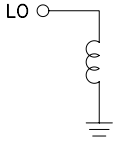
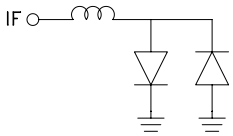
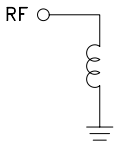
Pin Descriptions

Pin Number	Function	Description	Interface Schematic
1, 3, 4, 6, 7, 9	GND	Package bottom must also be connected to RF/DC ground.	
2	LO	This pin is DC coupled and matched to 50 Ohms.	
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 whose value has been chosen to pass the necessary IF frequency range. For operation to DC, this pin must not source or sink more than 2 mA of current or part non-function and possible part failure will result.	
8	RF	This pin is DC coupled and matched to 50 Ohms.	
10, 11, 12	N/C	No connection required. These pins may be connected to RF/DC ground without affecting performance.	

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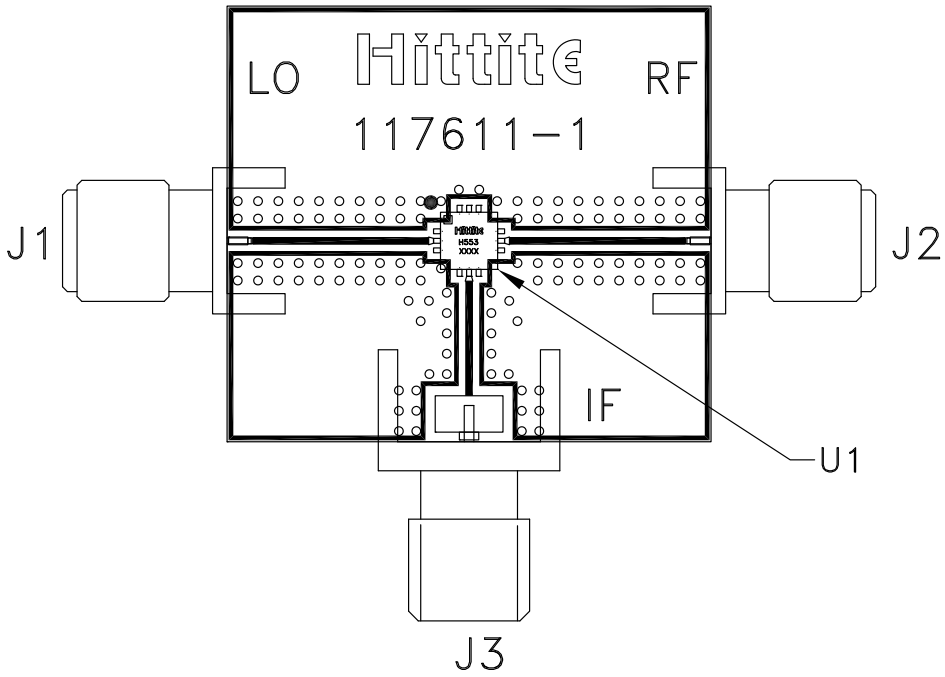
Evaluation PCB



List of Materials for Evaluation PCB 109952 [1]

Item	Description
J1 - J2	SRI SMA Connector
J3	Johnson SMA Connector
U1	HMC553LC3B Mixer
PCB [2]	117611 Evaluation PCB

[1] Reference this number when ordering complete evaluation PCB

[2] Circuit Board Material: Arlon 25 FR

The circuit board used in this 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.

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