HMC356* PRODUCT PAGE QUICK LINKS

Last Content Update: 02/23/2017

COMPARABLE PARTS

View a parametric search of comparable parts.

EVALUATION KITS

- HMC356LP3 Evaluation Board

DOCUMENTATION

Application Notes

- AN-1363: Meeting Biasing Requirements of Externally Biased RF/Microwave Amplifiers with Active Bias Controllers
- Broadband Biasing of Amplifiers General Application Note
- MMIC Amplifier Biasing Procedure Application Note
- Thermal Management for Surface Mount Components General Application Note

Data Sheet

- HMC356 Data Sheet

TOOLS AND SIMULATIONS

- HMC356 S-Parameter

REFERENCE MATERIALS

Quality Documentation

- Package/Assembly Qualification Test Report: 16L 3x3mm QFN Package (QTR: 11003 REV: 02)
- Package/Assembly Qualification Test Report: LP2, LP2C, LP3, LP3B, LP3C, LP3D, LP3F, LP3G (QTR: 2014-0364)
- Package/Assembly Qualification Test Report: Plastic Encapsulated QFN (QTR: 05006 REV: 02)
- Semiconductor Qualification Test Report: PHEMT-B (QTR: 2013-00233)

Technical Articles

- Active Multipliers & Dividers to Simplify Synthesizers

DESIGN RESOURCES

- HMC356 Material Declaration
- PCN-PDN Information
- Quality And Reliability
- Symbols and Footprints

DISCUSSIONS

View all HMC356 EngineerZone Discussions.

SAMPLE AND BUY

Visit the product page to see pricing options.

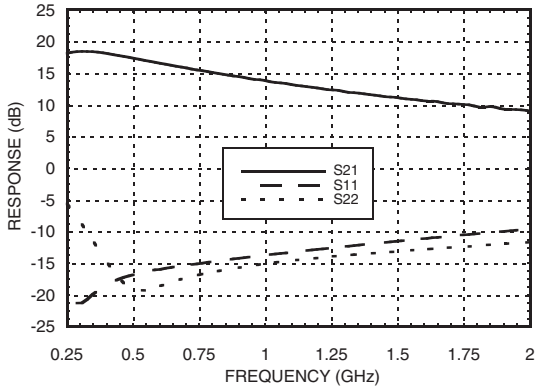
TECHNICAL SUPPORT

Submit a technical question or find your regional support number.

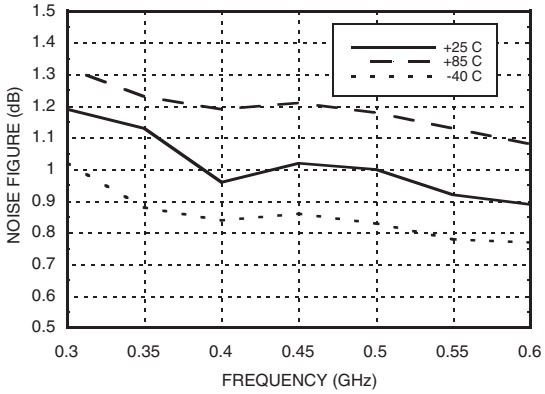
DOCUMENT FEEDBACK

Submit feedback for this data sheet.

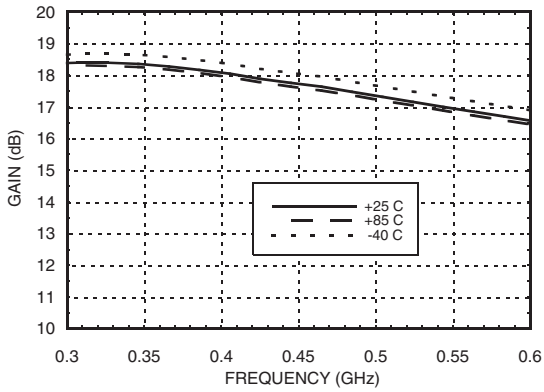
Broadband Gain & Return Loss



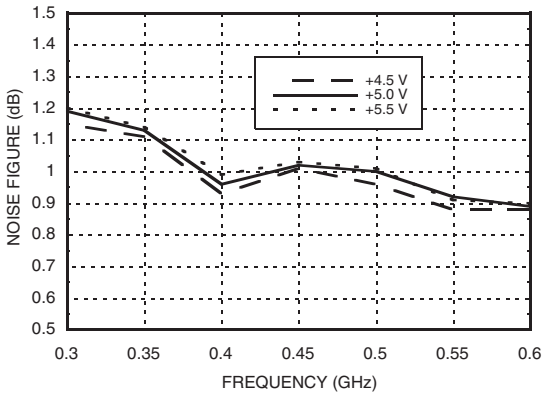
Noise Figure vs. Temperature



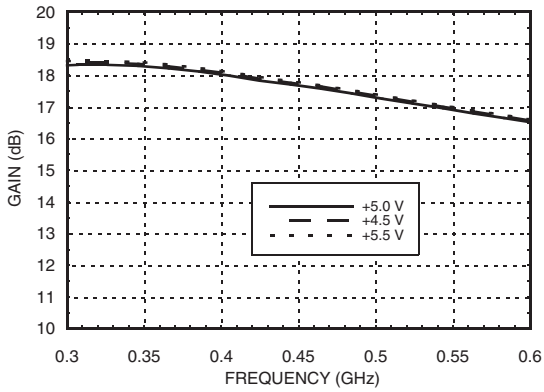
Gain vs. Temperature



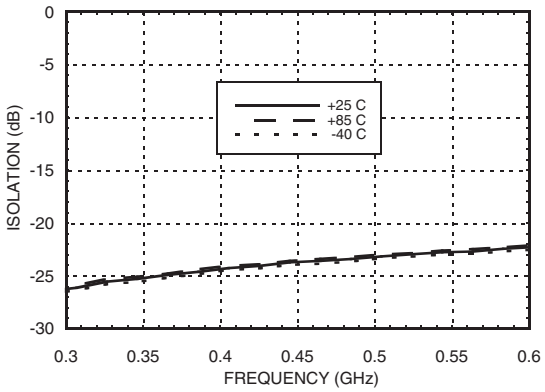
Noise Figure vs. Vdd



Gain vs. Vdd



Reverse Isolation



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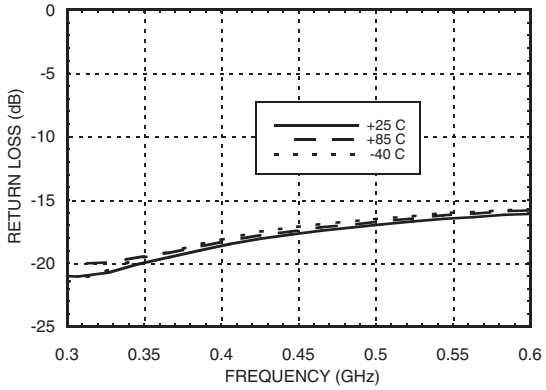
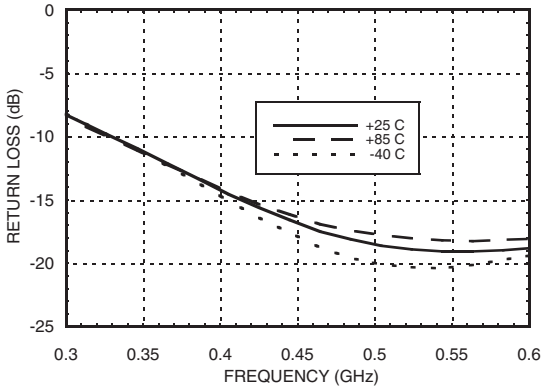
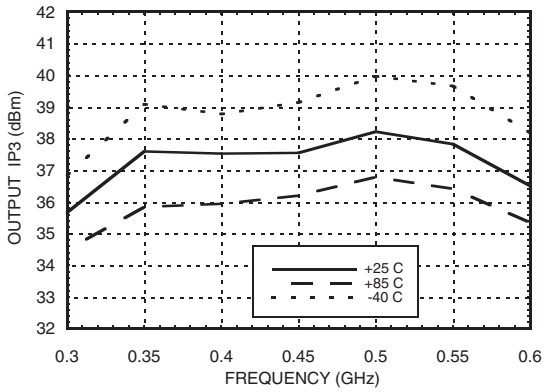
Input Return Loss vs. Temperature



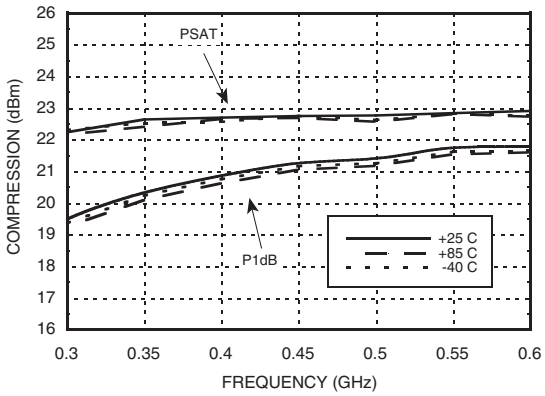
Output Return Loss vs. Temperature



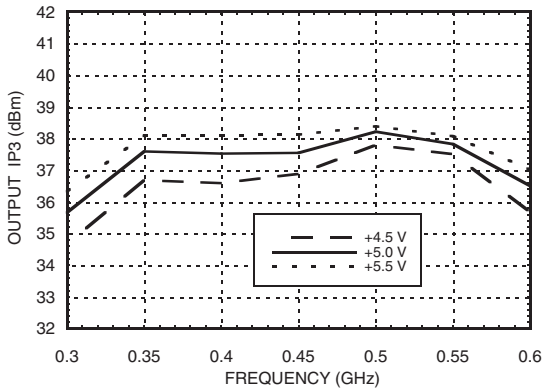
Output IP3 vs. Temperature



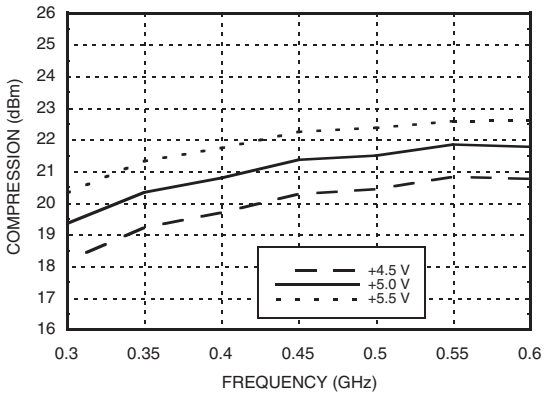
P1dB & Psat vs. Temperature



Output IP3 vs. Vdd



P1dB vs. Vdd



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Absolute Maximum Ratings

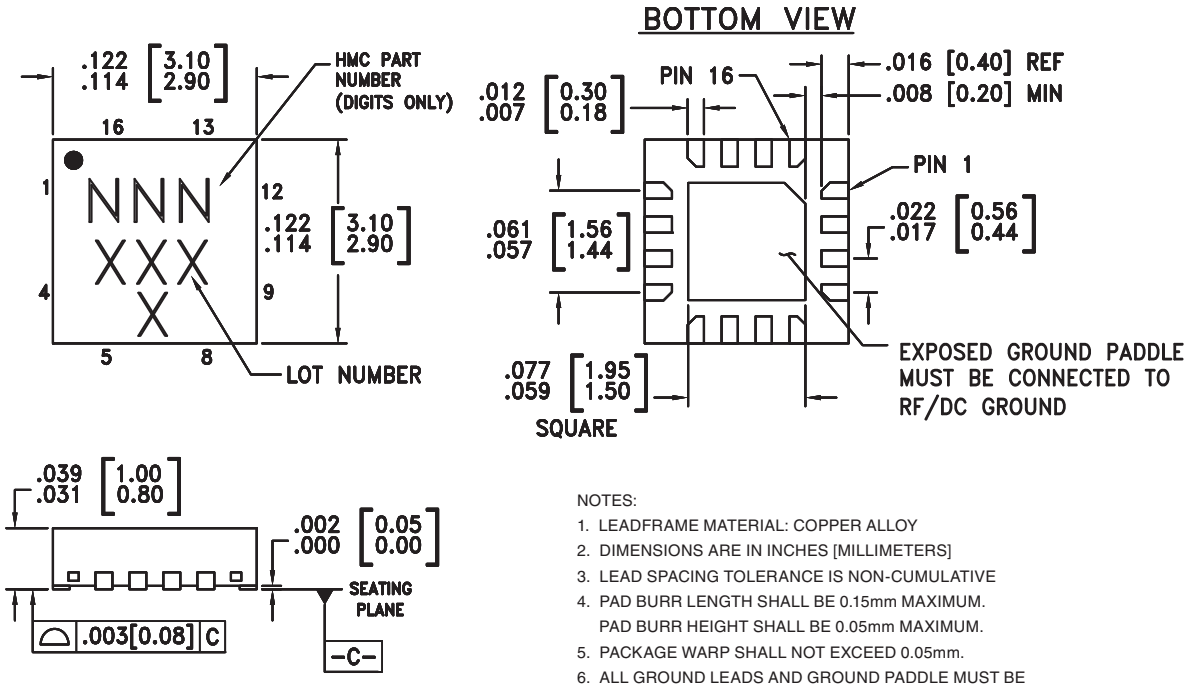
Drain Bias Voltage (Vdd)	+8.0 Vdc
RF Input Power (RFIN)(Vdd = +5.0 Vdc)	+15 dBm
Channel Temperature	150 °C
Continuous Pdiss (T = 85 °C) (derate 14 mW/°C above 85 °C)	0.910 W
Thermal Resistance (channel to ground paddle)	71.4 °C/W
Storage Temperature	-65 to +150 °C
Operating Temperature	-40 to +85 °C

Typical Supply Current vs. Vdd

Vdd (Vdc)	Idd (mA)
+4.5	103
+5.0	104
+5.5	105

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

Outline Drawing



NOTES:

1. LEADFRAME MATERIAL: COPPER ALLOY
2. DIMENSIONS ARE IN INCHES [MILLIMETERS]
3. LEAD SPACING TOLERANCE IS NON-CUMULATIVE
4. PAD BURR LENGTH SHALL BE 0.15mm MAXIMUM. PAD BURR HEIGHT SHALL BE 0.05mm MAXIMUM.
5. PACKAGE WARP SHALL NOT EXCEED 0.05mm.
6. ALL GROUND LEADS AND GROUND PADDLE MUST BE SOLDERED TO PCB RF GROUND.
7. REFER TO HITTITE APPLICATION NOTE FOR SUGGESTED LAND PATTERN.

Package Information

Part Number	Package Body Material	Lead Finish	MSL Rating	Package Marking [3]
HMC356LP3	Low Stress Injection Molded Plastic	Sn/Pb Solder	MSL1 [1]	356 XXXX
HMC356LP3E	RoHS-compliant Low Stress Injection Molded Plastic	100% matte Sn	MSL1 [2]	356 XXXX

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

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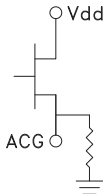
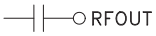
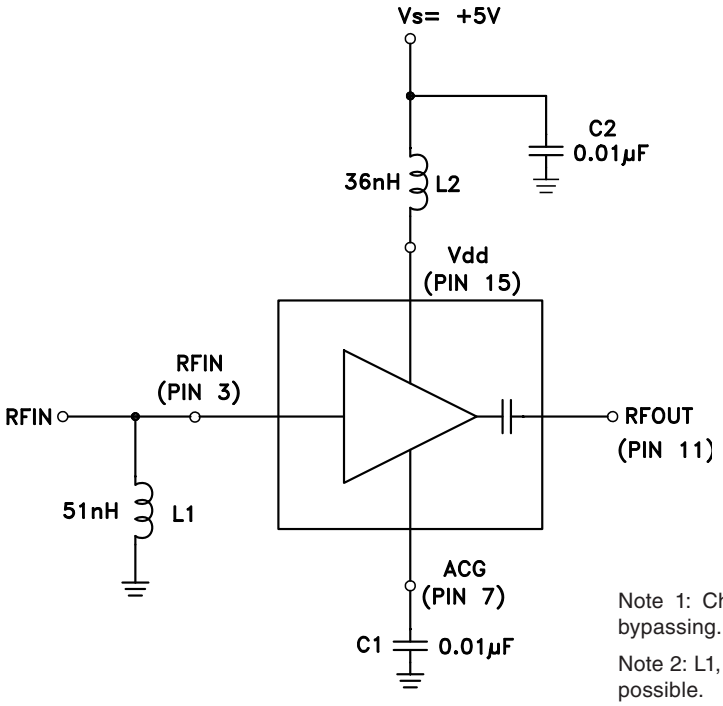
Pin Descriptions

Pin Number	Function	Description	Interface Schematic
1, 5, 8, 9, 10, 12, 13, 14	N/C	No connection necessary. These pins may be connected to RF/DC ground.	
2, 4, 6,16	GND	These pins and package ground paddle must be connected to RF/DC ground.	
3	RFIN	This pin is matched to 50 Ohms with a 51 nH inductor to ground. See Application Circuit.	
7	ACG	AC Ground - An external capacitor of 0.01µF to ground is required for low frequency bypassing. See Application Circuit for further details.	
11	RFOUT	This pin is AC coupled and matched to 50 Ohms.	
15	Vdd	Power supply voltage. Choke inductor and bypass capacitor are required. See application circuit.	

Application & Evaluation PCB Circuit



Note 1: Choose value of capacitor C1 for low frequency bypassing. A 0.01 µF ±10% capacitor is recommended.

Note 2: L1, L2 and C1 should be located as close to pins as possible.

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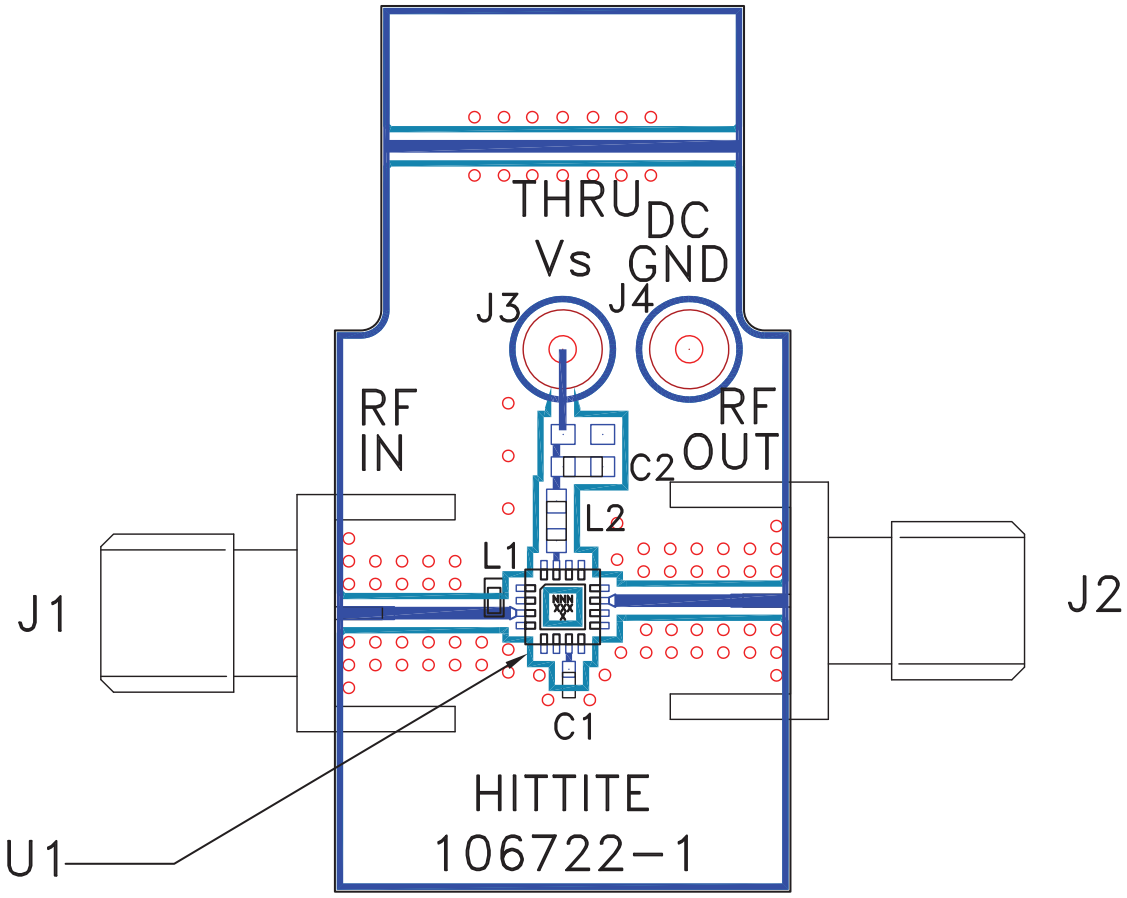
Evaluation PCB



List of Materials for Evaluation PCB 107795 [1]

Item	Description
J1 - J2	PCB Mount SMA RF Connector
J3 - J4	DC Pin
C1	10,000 pF Capacitor, 0402 Pkg.
C2	10,000 pF Capacitor, 0603 Pkg.
L1	51 nH Inductor, 0402 Pkg.
L2	36 nH Inductor, 0603 Pkg.
U1	HMC356LP3 / HMC356LP3E Amplifier
PCB [2]	106722 Evaluation PCB

[1] Reference this number when ordering complete evaluation PCB

[2] Circuit Board Material: Rogers 4350

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 Hittite upon request.

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