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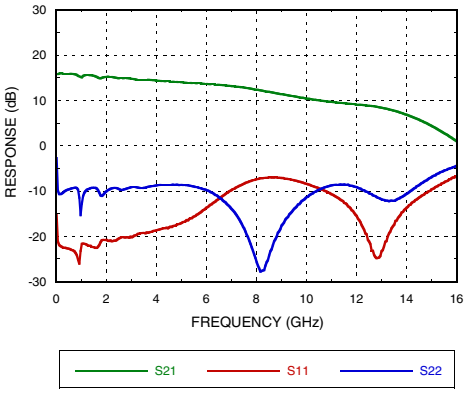
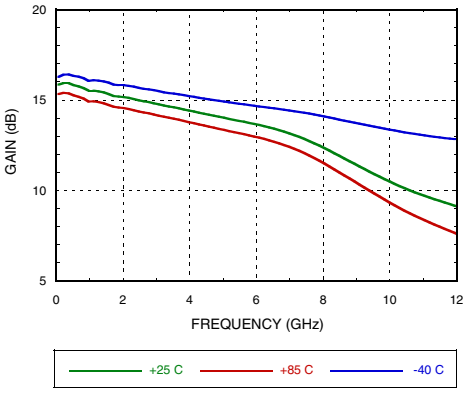
pHEMT GAIN BLOCK MMIC AMPLIFIER, DC - 10 GHz

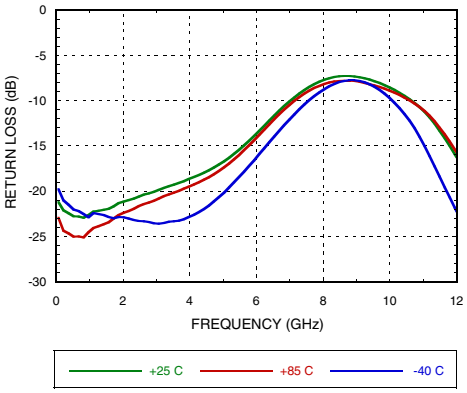
Broadband Gain & Return Loss



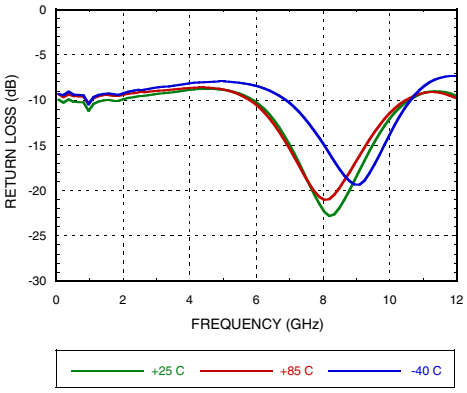
Gain vs. Temperature



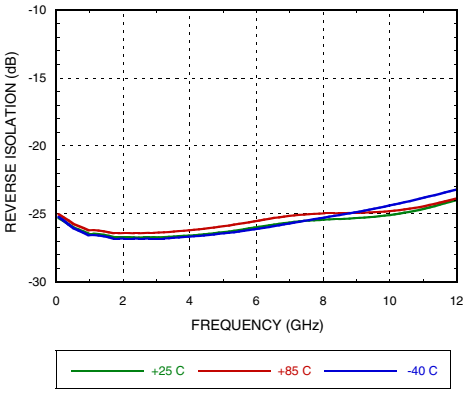
Input Return Loss vs. Temperature



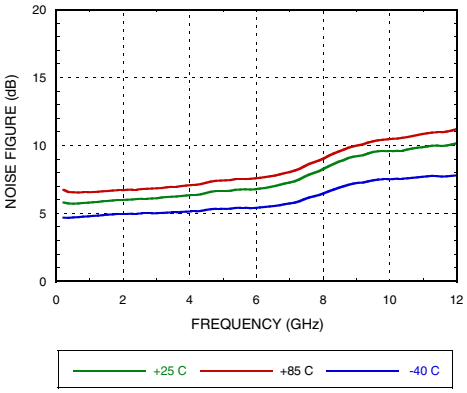
Output Return Loss vs. Temperature



Reverse Isolation vs. Temperature



Noise Figure vs. Temperature



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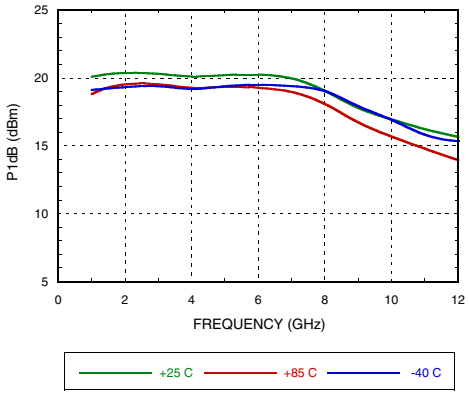
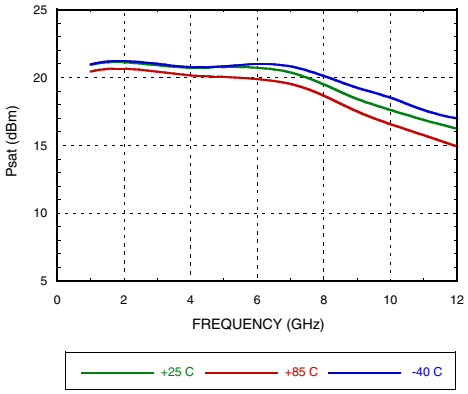
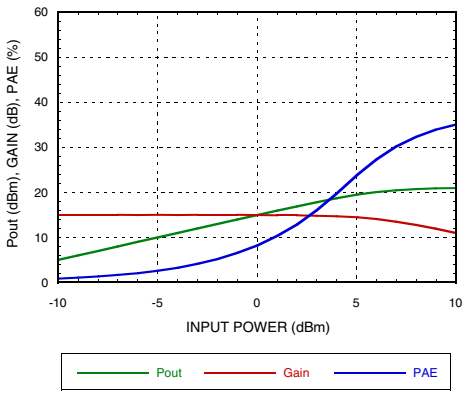
P1dB vs. Temperature



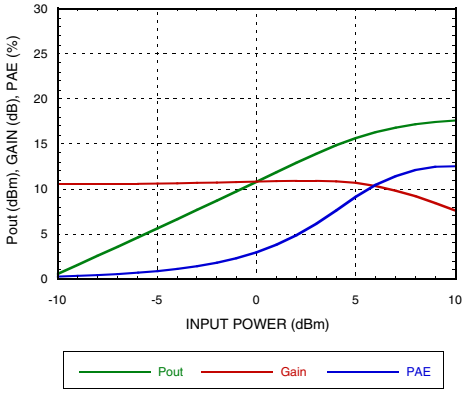
Psat vs. Temperature



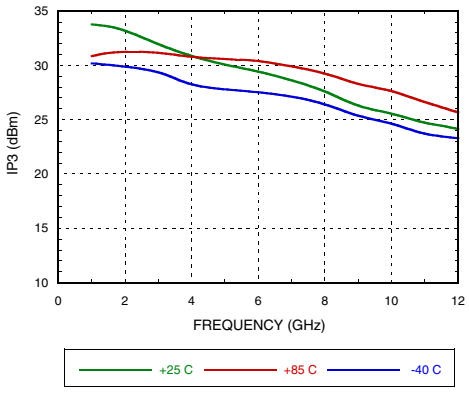
Power Compression @ 1 GHz



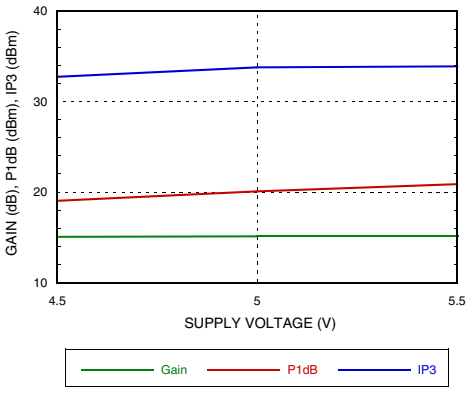
Power Compression @ 10 GHz



Output IP3 vs. Temperature [1]



Gain & Power vs. Supply Voltage @ 1 GHz



[1] +5 dBm / Tone Output Power

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Absolute Maximum Ratings

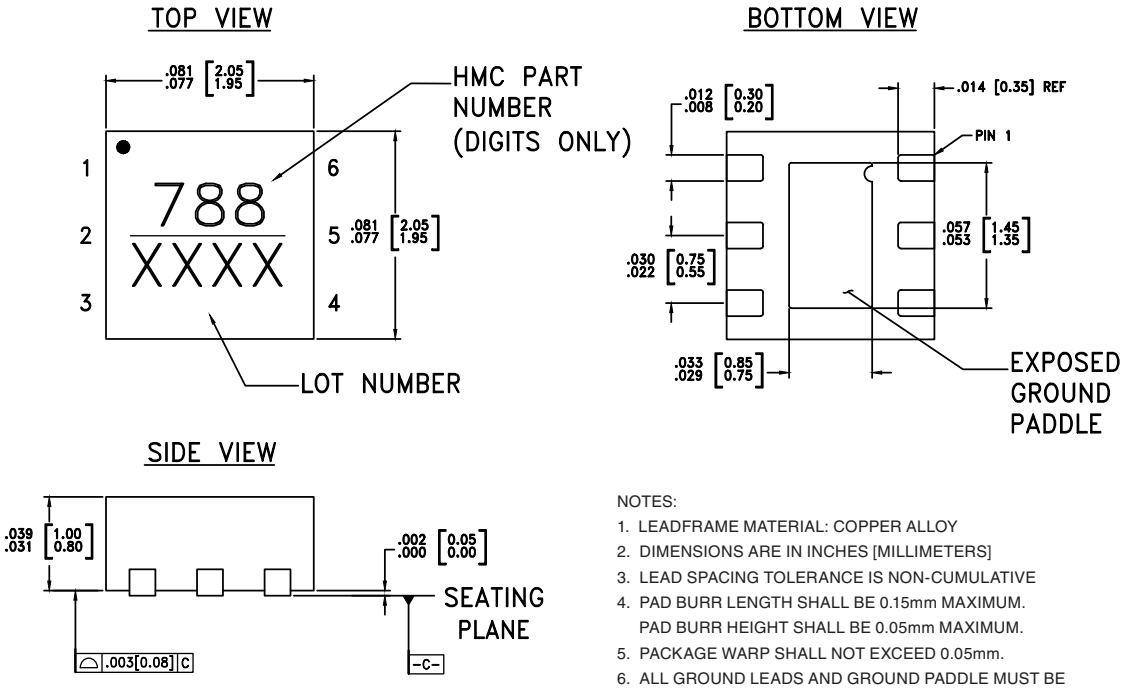
Collector Bias Voltage (Vcc)	+7V
RF Input Power (RFIN)(Vs = +5V)	+15 dBm
Junction Temperature	150 °C
Continuous Pdiss (T = 85 °C) (derate 10.4 mW/°C above 85 °C)	0.68 W
Thermal Resistance (junction to ground paddle)	96 °C/W
Storage Temperature	-65 to +150 °C
Operating Temperature	-40 to +85 °C
ESD Sensitivity (HBM)	Class 1A

Typical Supply Current

Vcc (V)	Icq (mA)
4.5	64
5.0	76
5.5	88

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 [1]
HMC788LP2E	RoHS-compliant Low Stress Injection Molded Plastic	100% matte Sn	MSL1 [2]	788 XXXX

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

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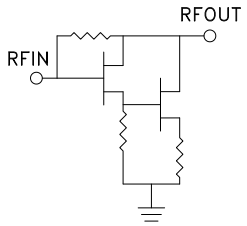
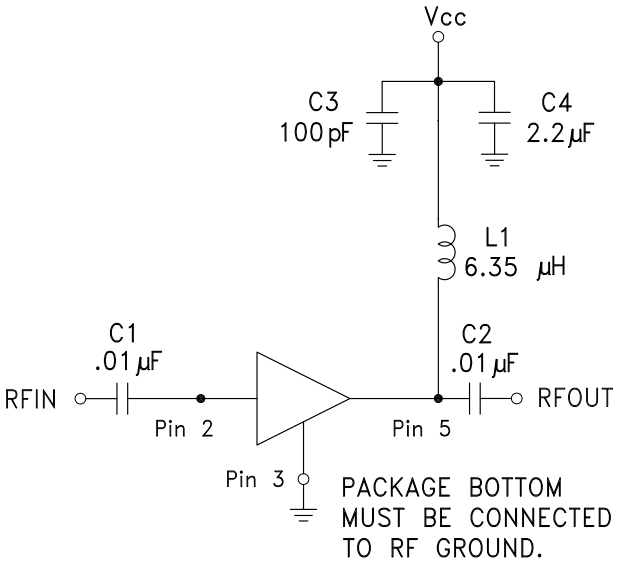
Pin Descriptions

Pin Number	Function	Description	Interface Schematic
1, 4, 6	N/C	The pins are not connected internally; however, all data shown herein was measured with these pins connected to RF/DC ground externally.	
2	RFIN	This pin is DC coupled. An off chip DC blocking capacitor is required.	
5	RFOUT	RF output and DC Bias for the output stage.	
3	GND	This pin and exposed ground paddle must be connected to RF/DC ground.	

Application Circuit



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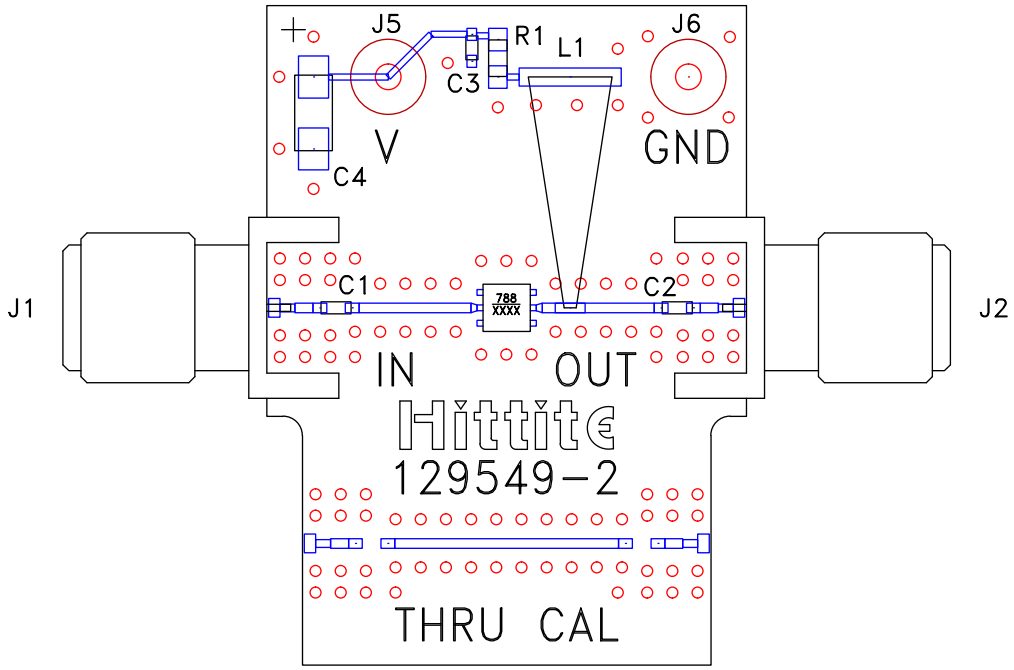
Evaluation PCB



List of Materials for Evaluation PCB 129550 [1]

Item	Description
J1 - J2	PC Mount SMA Connector
J5, J6	DC Pin
C1, C2	0.01 µF Capacitor, 0502 Pkg.
C3	100 pF Capacitor, 0402 Pkg.
C4	2.2 µF Case A Pkg.
R1	0 Ohm Resistor, 0402 Pkg.
L1	Inductor, Conical 6.35 µH
U1	HMC788LP2E
PCB [2]	129549 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 board should be mounted to an appropriate heat sink. The evaluation circuit board shown is available from Hittite upon request.

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