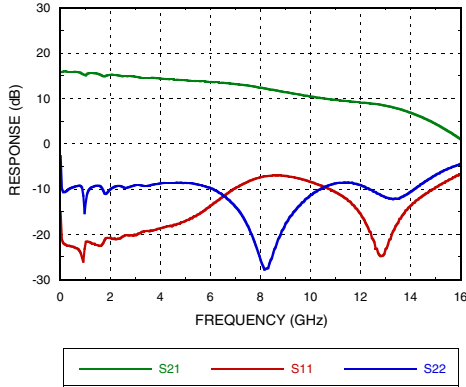


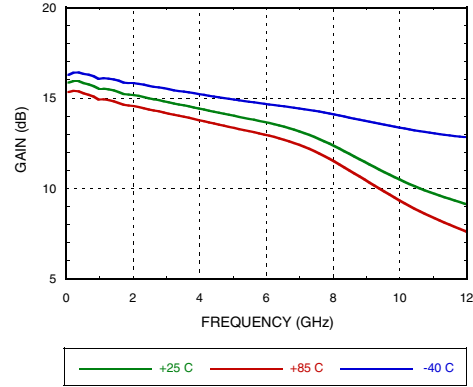


**pHEMT GAIN BLOCK
MMIC AMPLIFIER, DC - 10 GHz**

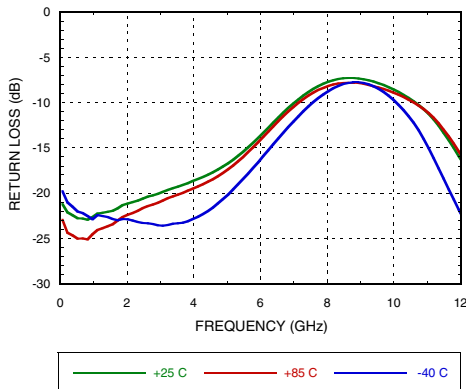
Broadband Gain & Return Loss



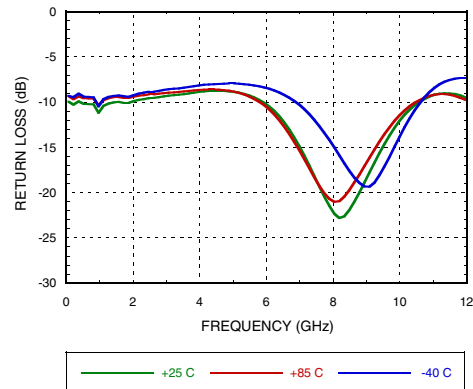
Gain vs. Temperature



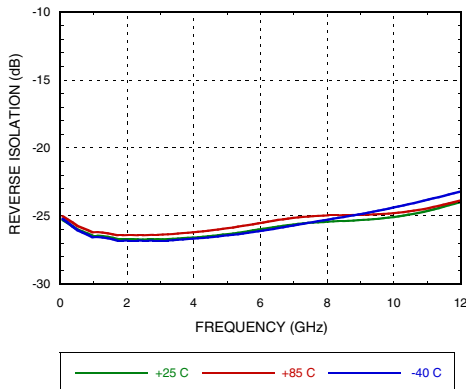
Input Return Loss vs. Temperature



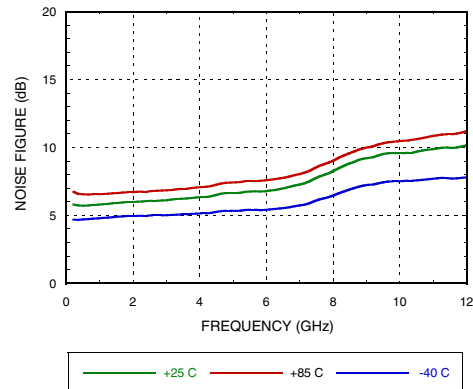
Output Return Loss vs. Temperature



Reverse Isolation vs. Temperature



Noise Figure vs. Temperature



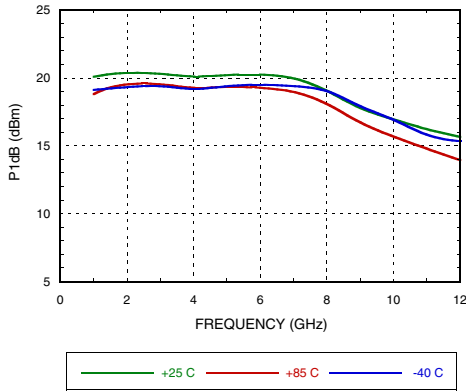
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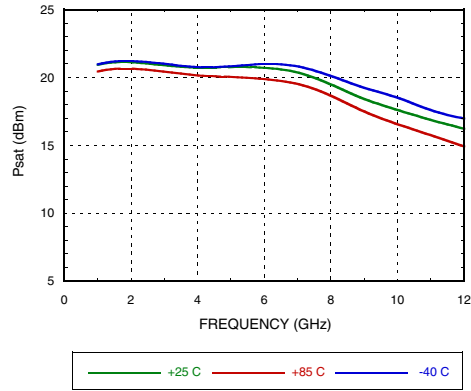


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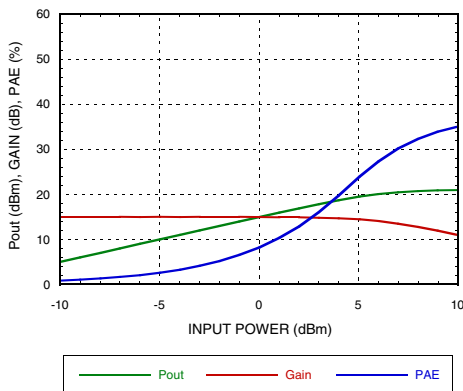
P1dB vs. Temperature



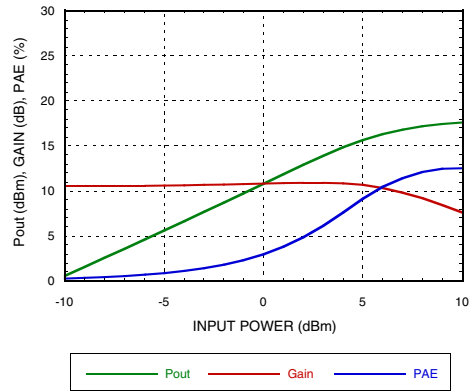
Psat vs. Temperature



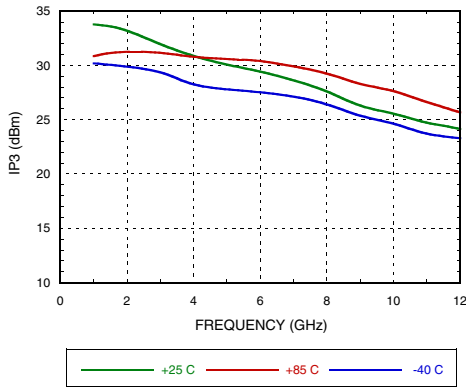
Power Compression @ 1 GHz



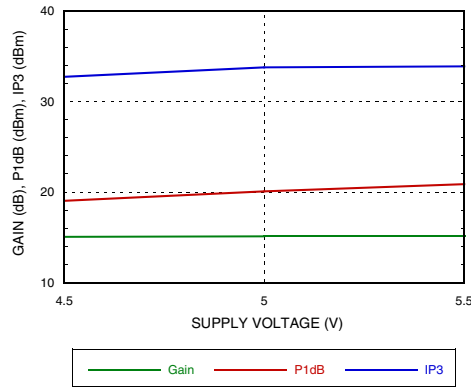
Power Compression @ 10 GHz



Output IP3 vs. Temperature [1]



Gain & Power vs. Supply Voltage @ 1 GHz



[1] +5 dBm / Tone Output Power



pHEMT GAIN BLOCK MMIC AMPLIFIER, DC - 10 GHz

Absolute Maximum Ratings

| | |
|---|----------------|
| Collector Bias Voltage (Vcc) | +7V |
| RF Input Power (RFIN)(Vs = +5V) | +15 dBm |
| Junction Temperature | 150 °C |
| Continuous P _{diss} (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 |

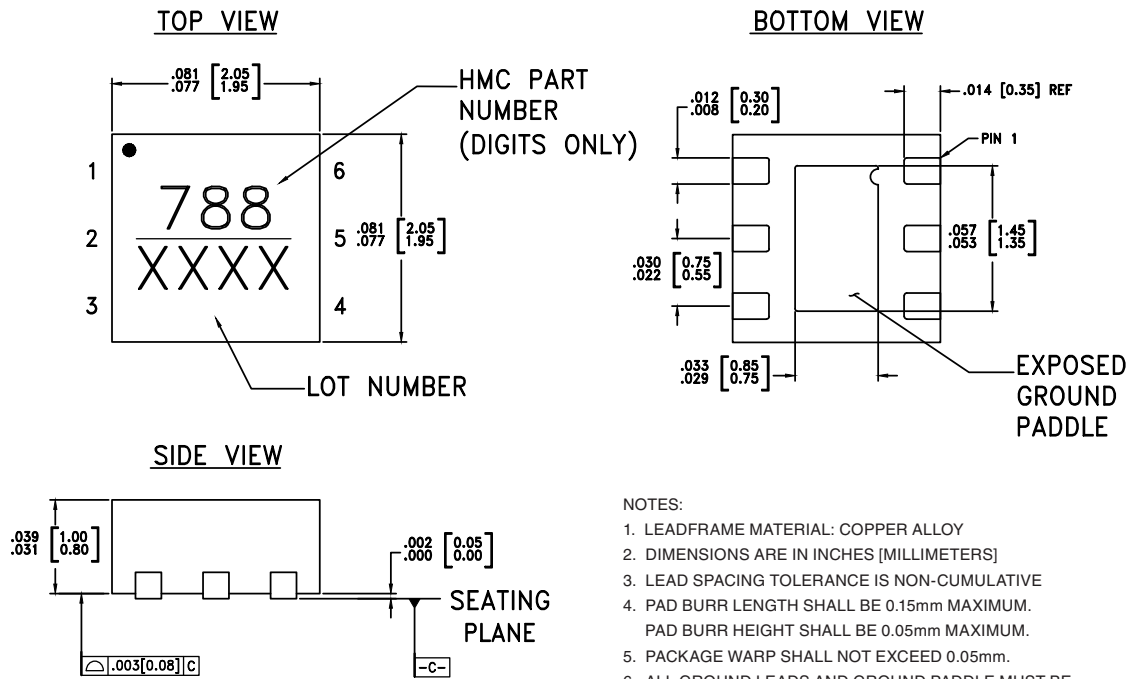
Typical Supply Current

| Vcc (V) | Ic _q (mA) |
|---------|----------------------|
| 4.5 | 64 |
| 5.0 | 76 |
| 5.5 | 88 |



ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

Outline Drawing



NOTES:

- LEADFRAME MATERIAL: COPPER ALLOY
- DIMENSIONS ARE IN INCHES [MILLIMETERS]
- LEAD SPACING TOLERANCE IS NON-CUMULATIVE
- PAD BURR LENGTH SHALL BE 0.15mm MAXIMUM.
PAD BURR HEIGHT SHALL BE 0.05mm MAXIMUM.
- PACKAGE WARP SHALL NOT EXCEED 0.05mm.
- ALL GROUND LEADS AND GROUND PADDLE MUST BE SOLDERED TO PCB RF GROUND.
- 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

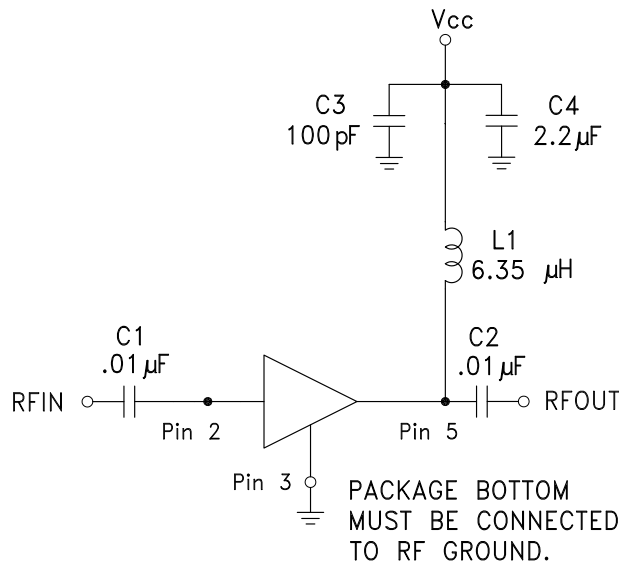


pHEMT GAIN BLOCK MMIC AMPLIFIER, DC - 10 GHz

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. | |

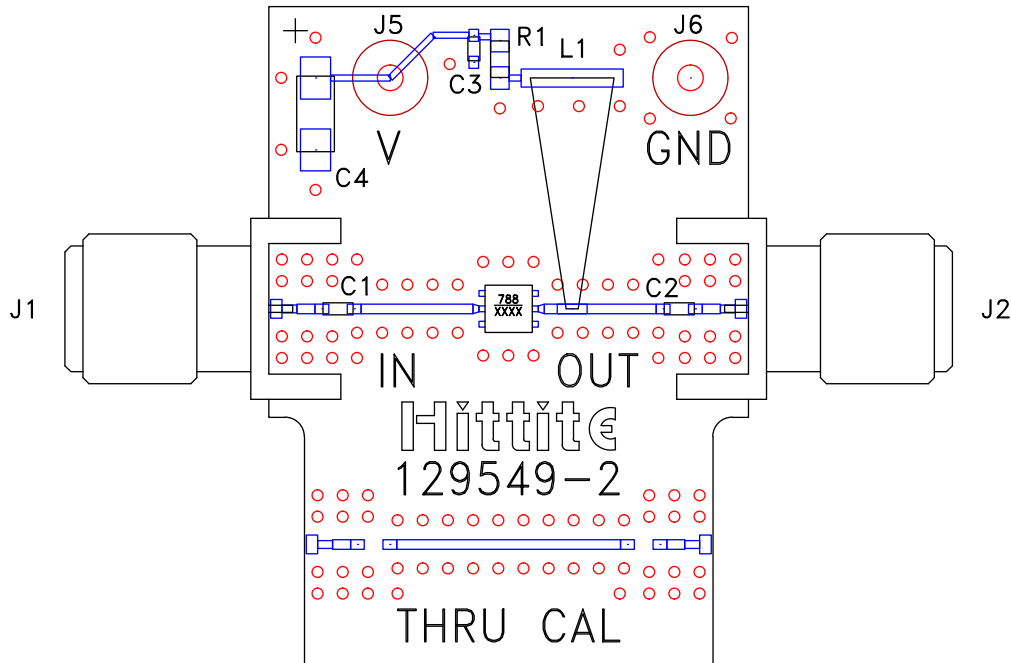
Application Circuit





**pHEMT GAIN BLOCK
MMIC AMPLIFIER, DC - 10 GHz**

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 μ F Capacitor, 0502 Pkg. |
| C3 | 100 pF Capacitor, 0402 Pkg. |
| C4 | 2.2 μ F Case A Pkg. |
| R1 | 0 Ohm Resistor, 0402 Pkg. |
| L1 | Inductor, Conical 6.35 μ H |
| 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.