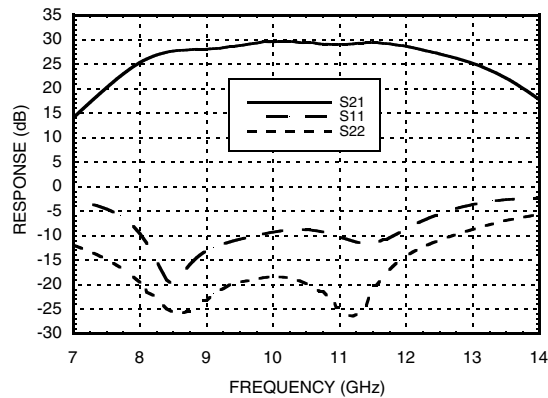
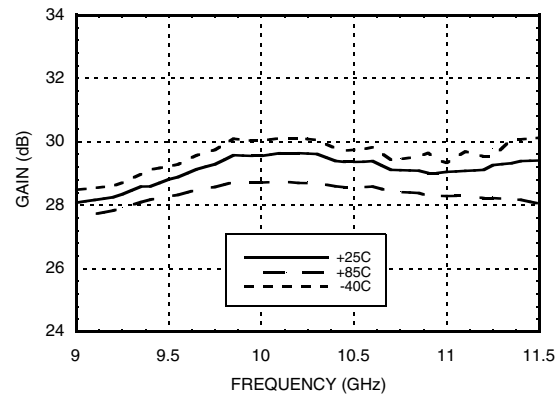


GaAs pHEMT MEDIUM POWER AMPLIFIER, 9.5 - 11.5 GHz

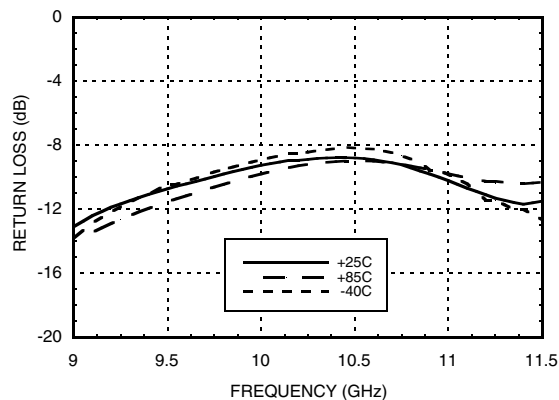
Broadband Gain & Return Loss



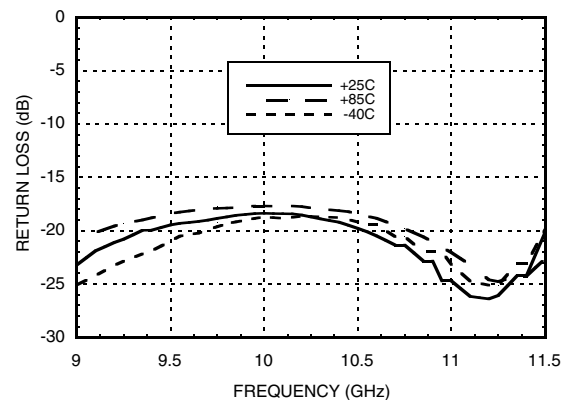
Gain vs. Temperature



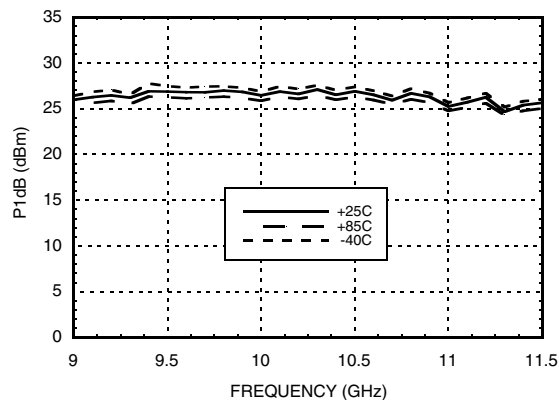
Input Return Loss vs. Temperature



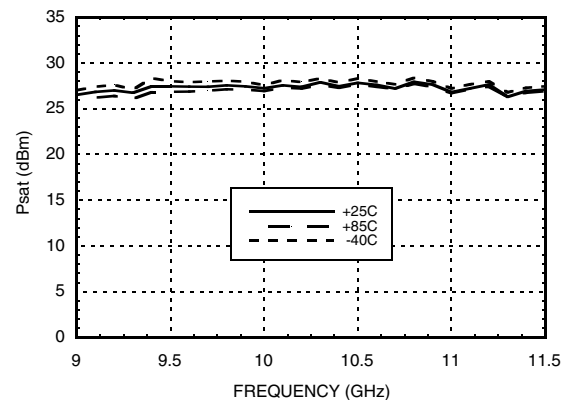
Output Return Loss vs. Temperature



P1dB vs. Temperature



Psat vs. Temperature





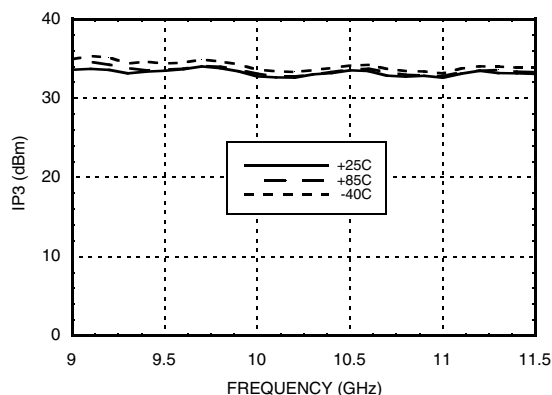
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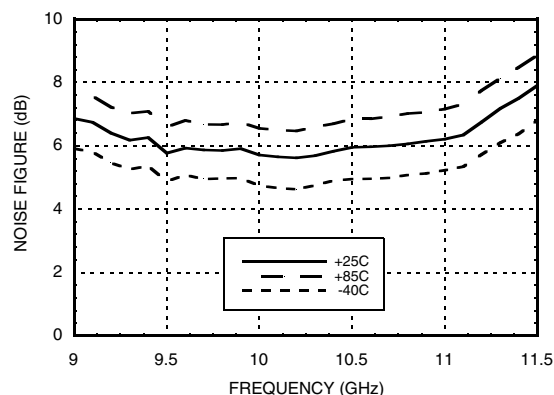
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GaAs pHEMT MEDIUM POWER AMPLIFIER, 9.5 - 11.5 GHz

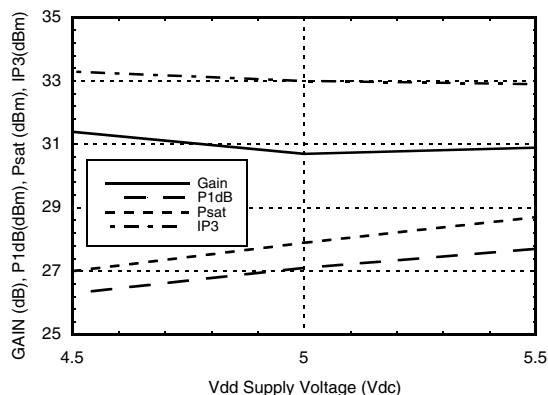
Output IP3 vs. Temperature



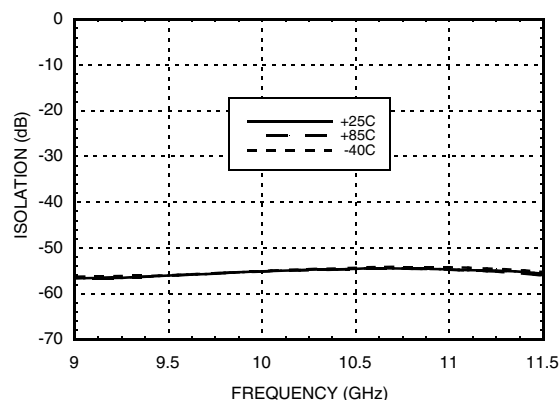
Noise Figure vs. Temperature



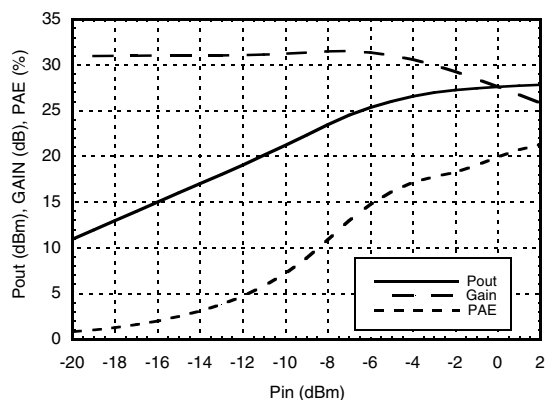
**Gain, Power & Output IP3
vs. Supply Voltage @ 10.3 GHz**



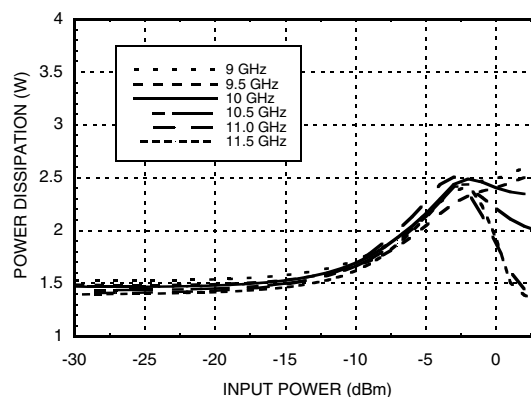
Reverse Isolation vs. Temperature

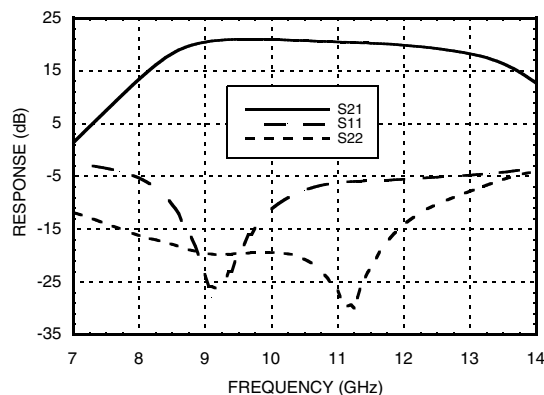
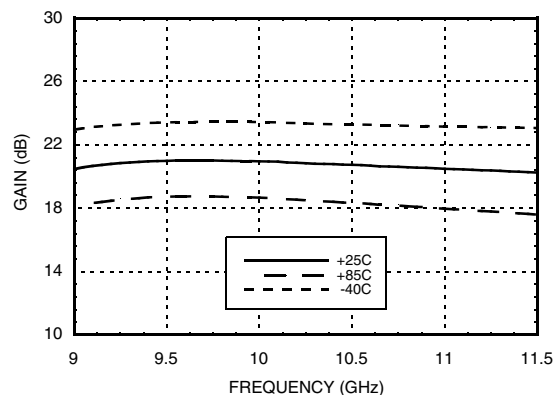
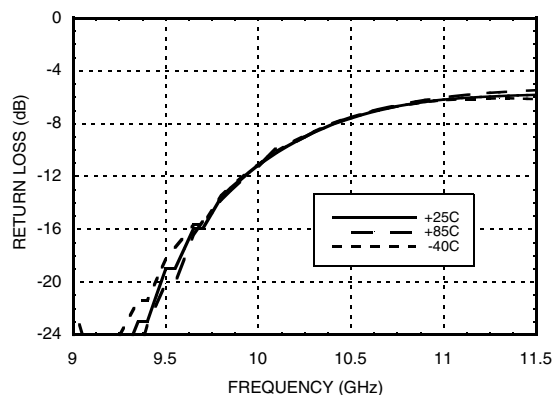
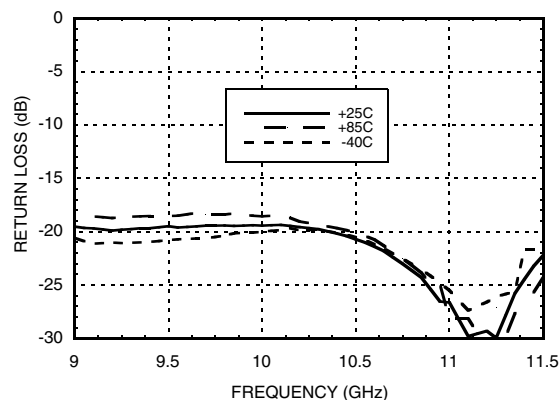


Power Compression @ 10.3 GHz



Power Dissipation



**GaAs pHEMT MEDIUM
POWER AMPLIFIER, 9.5 - 11.5 GHz**
**Low Gain Mode,
Broadband Gain & Return Loss**

Low Gain Mode, Gain vs. Temperature

**Low Gain Mode,
Input Return Loss vs. Temperature**

**Low Gain Mode,
Output Return Loss vs. Temperature**




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HMC608LC4

**GaAs pHEMT MEDIUM
POWER AMPLIFIER, 9.5 - 11.5 GHz**
Absolute Maximum Ratings

Drain Bias Voltage (Vdd1, Vdd2, Vdd3)	7 Vdc
Gate Bias Voltage (Vgg)	-4.0 to -1.0 Vdc
RF Input Power (RFIN)(Vdd = +5Vdc)	+10 dBm
Channel Temperature	175 °C
Continuous P _{diss} (T= 85 °C) (derate 22.18 mW/°C above 85 °C)	2 W
Thermal Resistance (channel to ground paddle)	45 °C/W
Storage Temperature	-65 to +150 °C
Operating Temperature	-40 to +85 °C

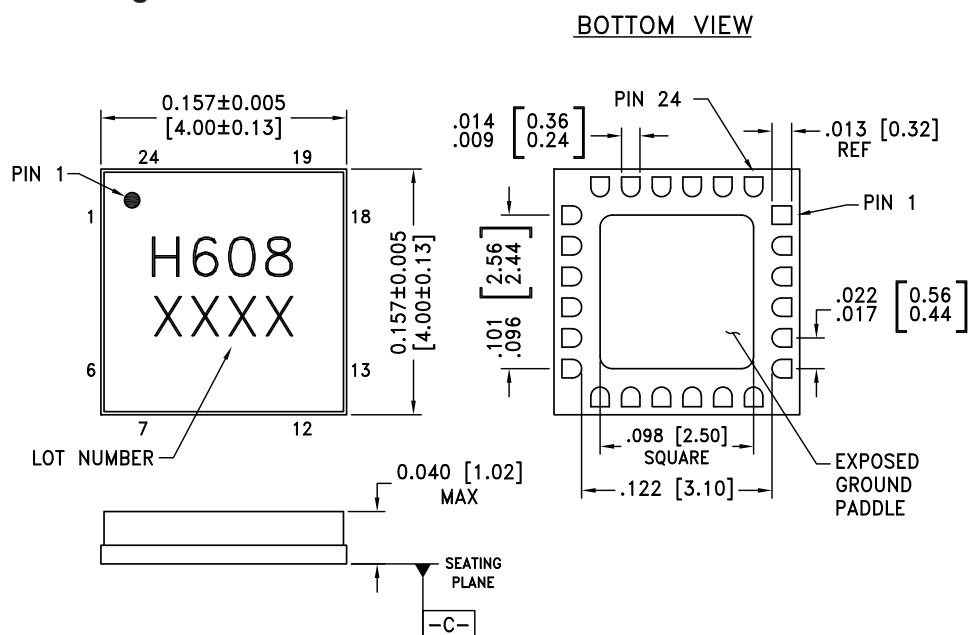
Typical Supply Current vs. Vdd

Vdd (Vdc)	Idd (mA)
+4.5	300
+5.0	310
+5.5	325

Note: Amplifier will operate over full voltage ranges shown above. Vgg adjusted to achieve Idd= 310 mA at +5V.



**ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS**

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 \overline{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]
HMC608LC4	Alumina, White	Gold over Nickel	MSL3 ^[1]	H608 XXXX

[1] Max peak reflow temperature of 260 °C

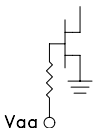

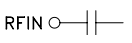
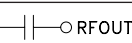
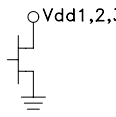
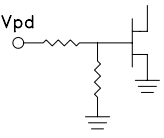
[2] 4-Digit lot number XXXX

For price, delivery and to place orders: Hittite Microwave Corporation, 2 Elizabeth Drive, Chelmsford, MA 01824

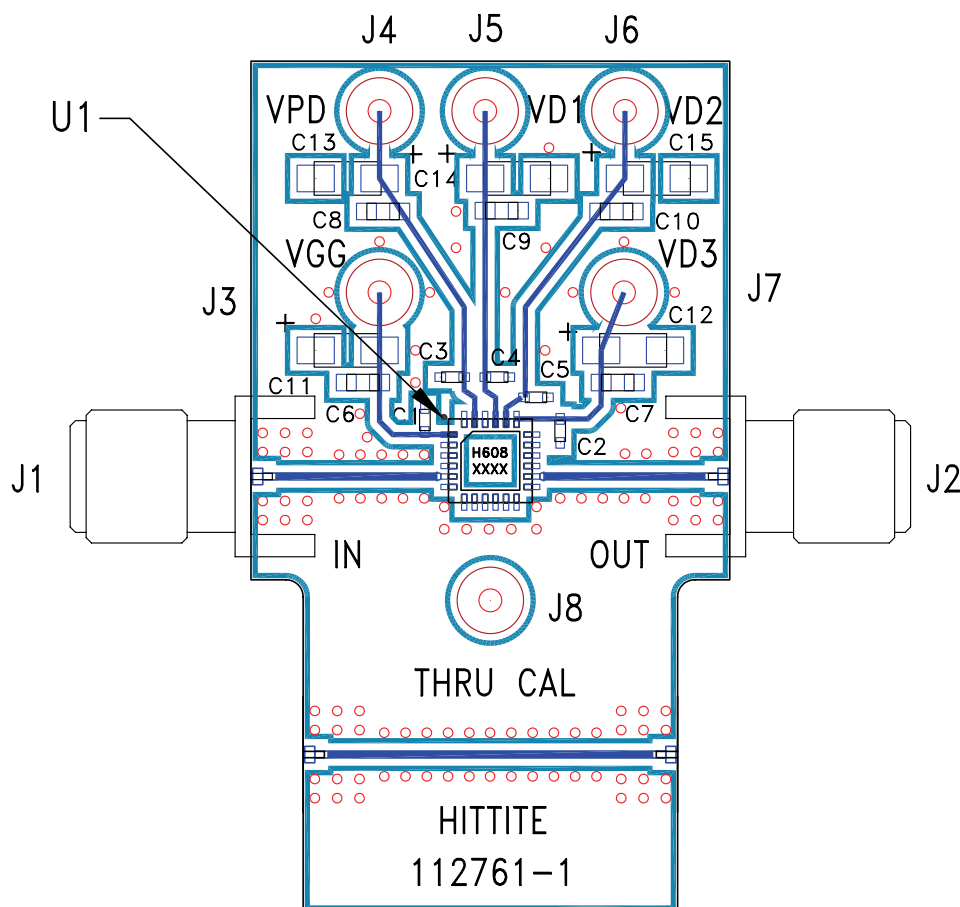
Phone: 978-250-3343 Fax: 978-250-3373 Order On-line at www.hittite.com

Application Support: Phone: 978-250-3343 or apps@hittite.com

Pin Descriptions

Pin Number	Function	Description	Interface Schematic
1	V _{gg}	Gate control for amplifier. Adjust to achieve I _d of 310 mA. Please follow "MMIC Amplifier Biasing Procedure" Application Note. External bypass capacitors of 100 pF, 1000 pF and 2.2 μ F are required.	
2, 3, 7 - 12, 16 - 18, 22, 24	N/C	No connection required. These pins may be connected to RF/DC ground without affecting performance.	
4, 6, 13, 15	GND	Package bottom has an exposed metal paddle that must also be connected to RF/DC ground.	
5	RFIN	This pin is AC coupled and matched to 50 Ohms.	
14	RFOUT	This pin is AC coupled and matched to 50 Ohms.	
21, 20, 19	V _{dd1} , V _{dd2} , V _{dd3}	Power Supply Voltage for the amplifier. External bypass capacitors of 100 pF, 1000pF, and 2.2 μ F are required.	
23	V _{pd}	High gain (connect to ground) / low gain mode pin control (open circuit). External bypass capacitors of 100 pF, 1000 pF and 2.2 μ F are required.	

Evaluation PCB



List of Materials for Evaluation PCB 112763 [1]

Item	Description
J1, J2	PC mount SMA connector
J3 - J8	DC Pin
C1 - C6	100 pF capacitor, 0402 pkg.
C6 - C10	1,000 pF Capacitor, 0603 pkg.
C11 - C15	2.2μF Capacitor, Tantalum
U1	HMC608LC4 Amplifier
PCB [2]	112761 Evaluation PCB

[1] Reference this number when ordering complete evaluation PCB

[2] Circuit Board Material: Rogers 4350.

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 board should be mounted to an appropriate heat sink. The evaluation circuit board shown is available from Hittite upon request.



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HMC608LC4

**GaAs pHEMT MEDIUM
POWER AMPLIFIER, 9.5 - 11.5 GHz**