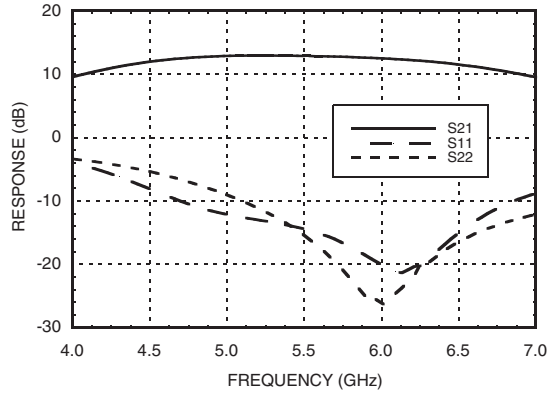


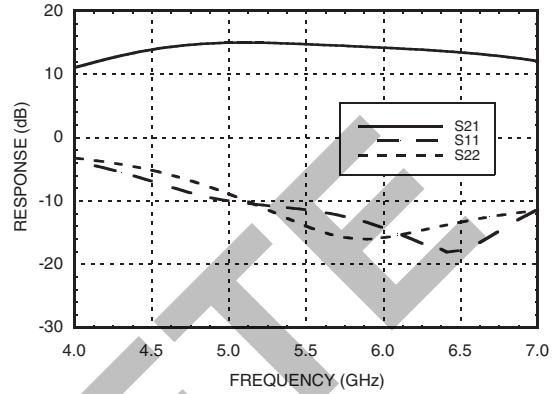
**GaAs PHEMT MMIC LOW NOISE
AMPLIFIER w/ BYPASS MODE, 4.8 - 6.0 GHz**



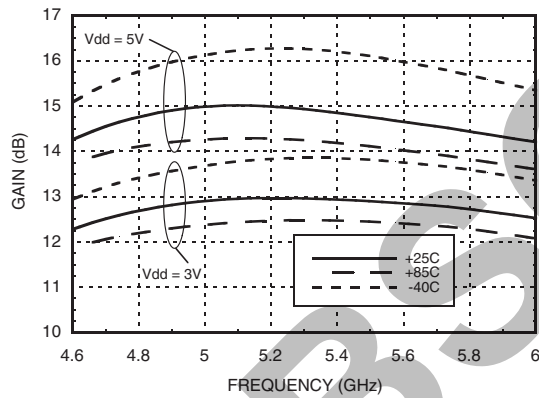
**LNA Broadband Gain
& Return Loss @ Vdd= 3V**



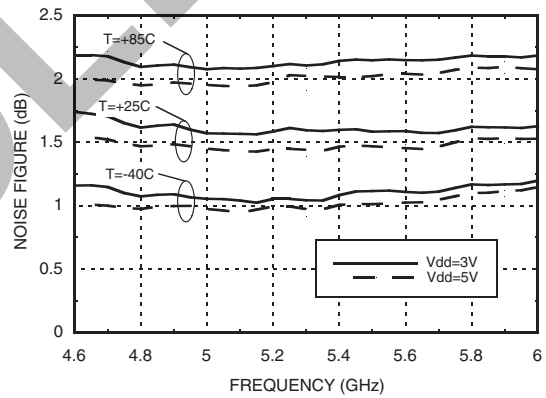
**LNA Broadband Gain
& Return Loss @ Vdd= 5V**



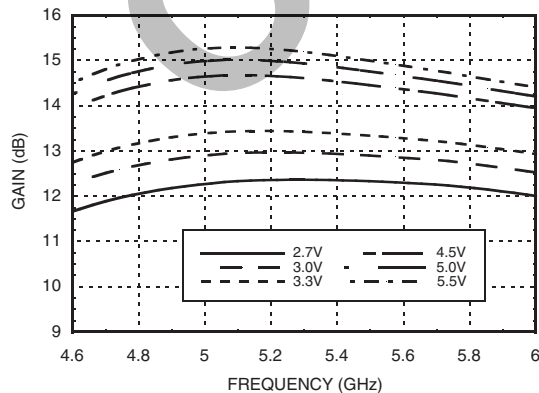
LNA Gain vs. Temperature



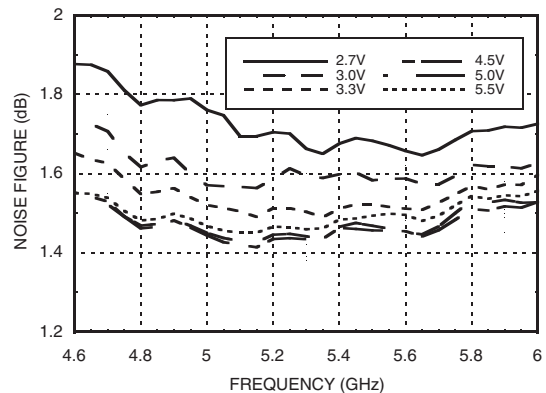
LNA Noise Figure vs. Temperature



LNA Gain vs. Vdd



LNA Noise Figure vs. Vdd



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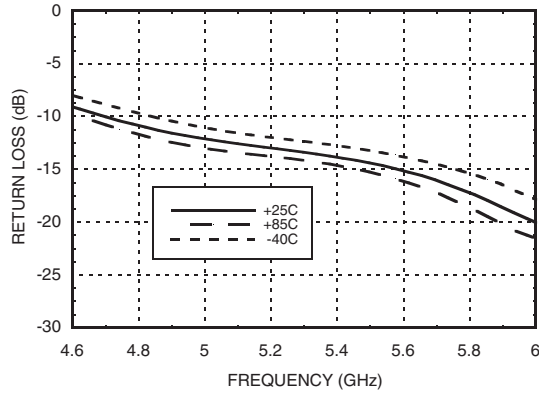
**GaAs PHEMT MMIC LOW NOISE
AMPLIFIER w/ BYPASS MODE, 4.8 - 6.0 GHz**



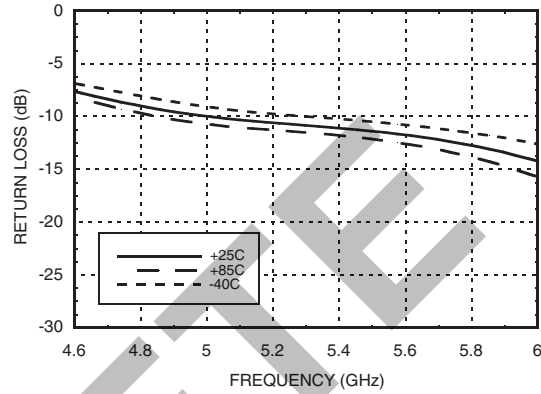
7

AMPLIFIERS - LOW NOISE - SMT

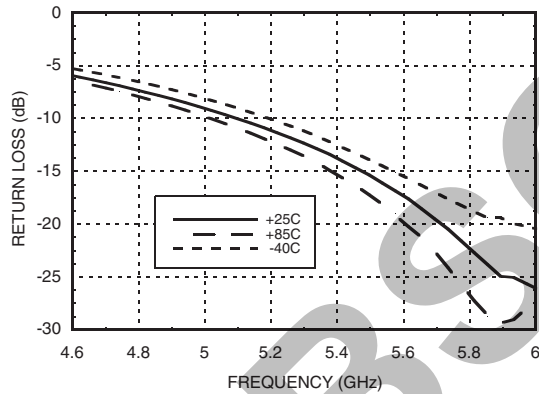
LNA Input Return Loss vs. Temperature @ Vdd= 3V



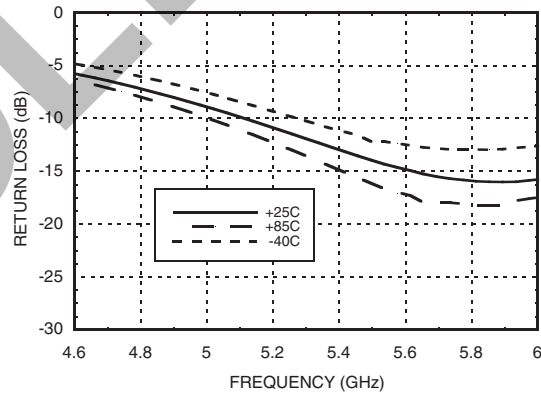
LNA Input Return Loss vs. Temperature @ Vdd= 5V



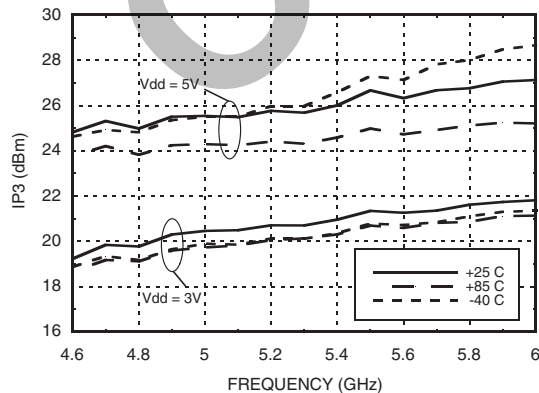
LNA Output Return Loss vs. Temperature @ Vdd= 3V



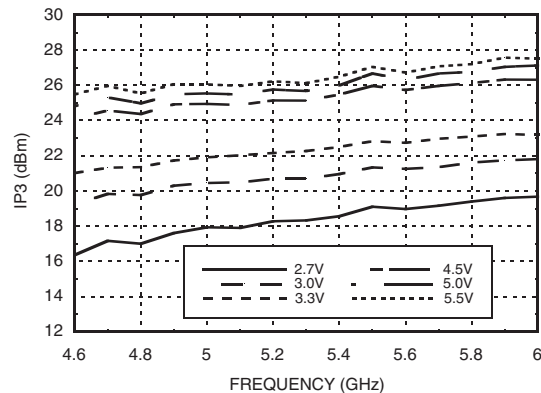
LNA Output Return Loss vs. Temperature @ Vdd= 5V



LNA Output IP3 vs. Temperature



LNA Output IP3 vs. Vdd



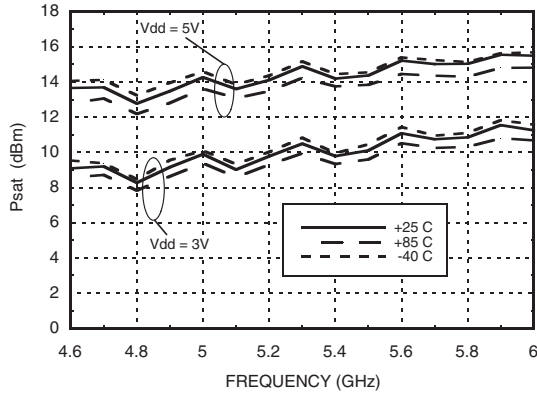
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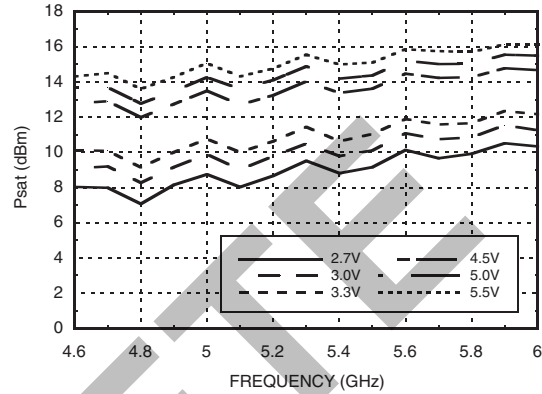
GaAs PHEMT MMIC LOW NOISE AMPLIFIER w/ BYPASS MODE, 4.8 - 6.0 GHz



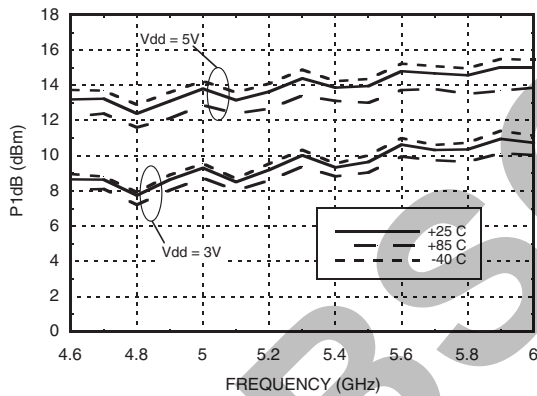
LNA Psat vs. Temperature



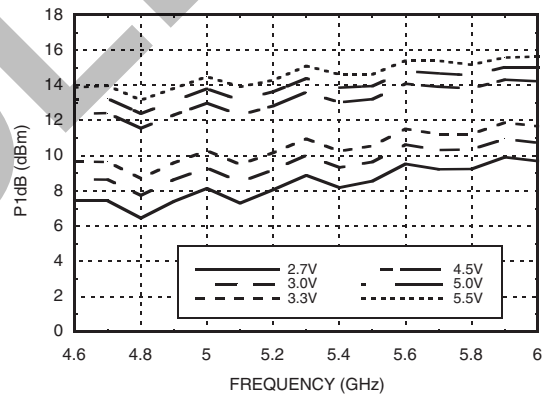
LNA Psat vs. Vdd



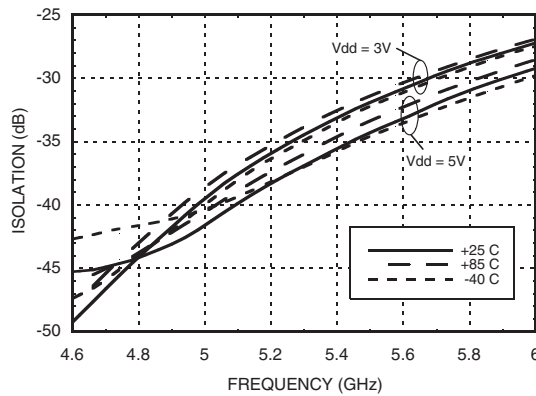
LNA Output P1dB vs. Temperature



LNA Output P1dB vs. Vdd



LNA Reverse Isolation vs. Temperature



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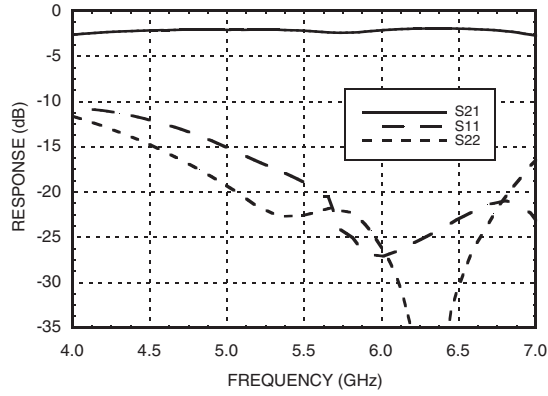


**GaAs PHEMT MMIC LOW NOISE
AMPLIFIER w/ BYPASS MODE, 4.8 - 6.0 GHz**

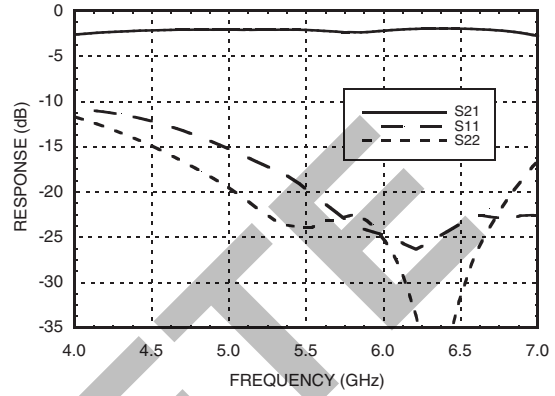
7

AMPLIFIERS - LOW NOISE - SMT

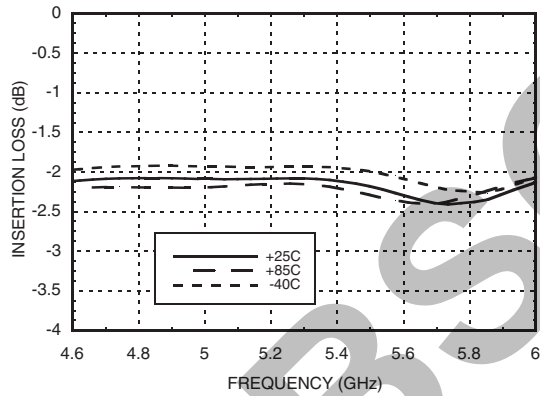
**Bypass Mode
Broadband Gain & Return Loss [1]**



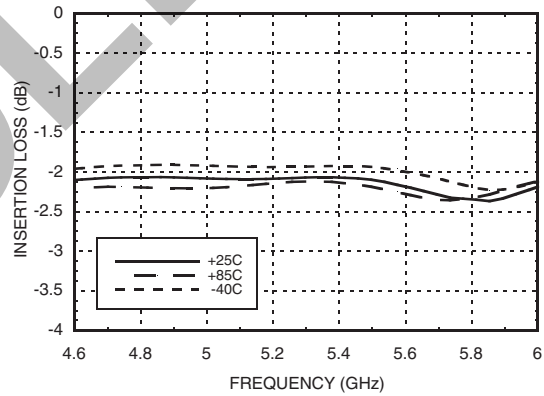
**Bypass Mode
Broadband Gain & Return Loss [2]**



**Bypass Mode
Insertion Loss vs. Temperature [1]**



**Bypass Mode
Insertion Loss vs. Temperature [2]**



[1] Vdd = 3V [2] Vdd = 5V

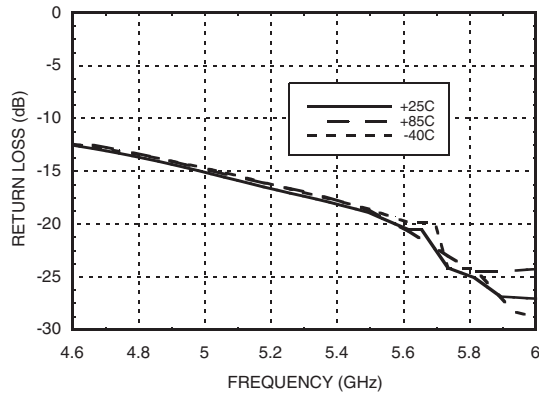
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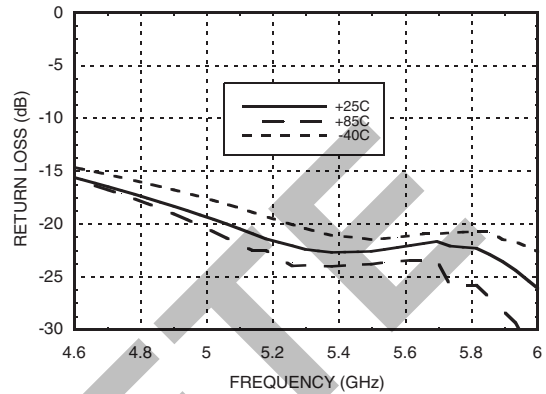


**GaAs PHEMT MMIC LOW NOISE
AMPLIFIER w/ BYPASS MODE, 4.8 - 6.0 GHz**

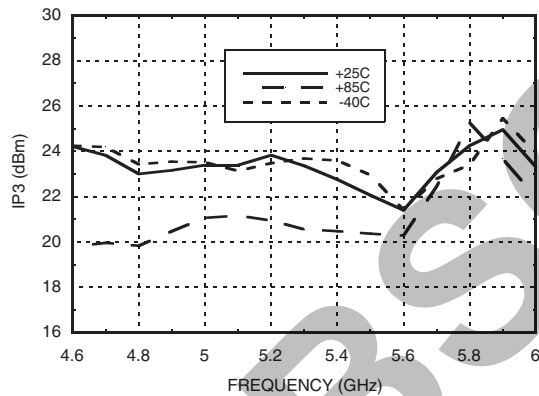
**Bypass Mode
Input Return Loss vs. Temperature [1]**



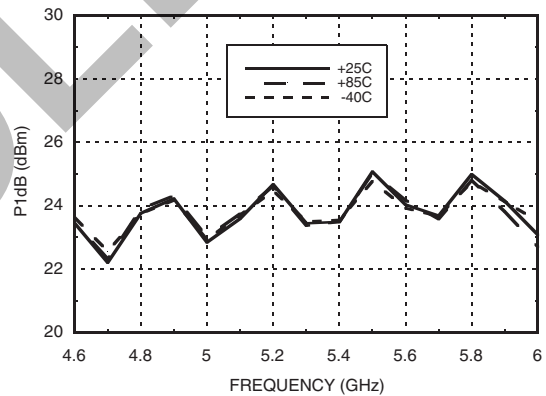
**Bypass Mode
Output Return Loss vs. Temperature [1]**



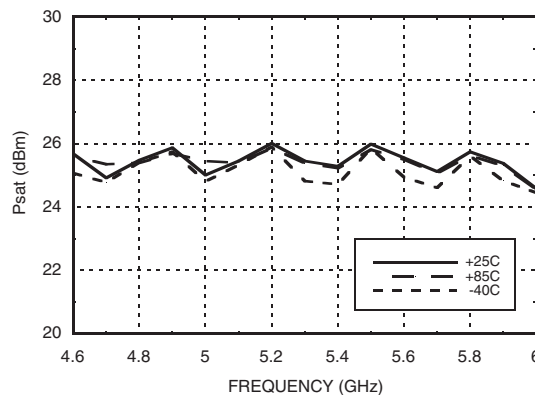
**Bypass Mode
Output IP3 vs. Temperature [1]**



**Bypass Mode
Output P1dB vs. Temperature [1]**



**Bypass Mode
Psat vs. Temperature [1]**



[1] Vdd = 3V or Vdd = 5V

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**GaAs PHEMT MMIC LOW NOISE
AMPLIFIER w/ BYPASS MODE, 4.8 - 6.0 GHz**

Absolute Maximum Ratings

Drain Bias Voltage (Vdd)	+8 Vdc
RF Input Power (RFIN) (Vdd = +5.0 Vdc)	LNA Mode +15 dBm Bypass Mode +30 dBm
Channel Temperature	150 °C
Continuous Pdiss (T = 85 °C) (derate 13 mW/°C above 85 °C)	850 mW
Thermal Resistance (channel to ground paddle)	76.9 °C/W
Storage Temperature	-65 to +150° C
Operating Temperature	-40 to +85° C

Typical Supply Current vs. Vdd

Vdd (Vdc)	Idd (mA)
+2.7	13
+3.0	17
+3.3	21
+4.5	37
+5.0	42
+5.5	46


**ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS**
Truth Table

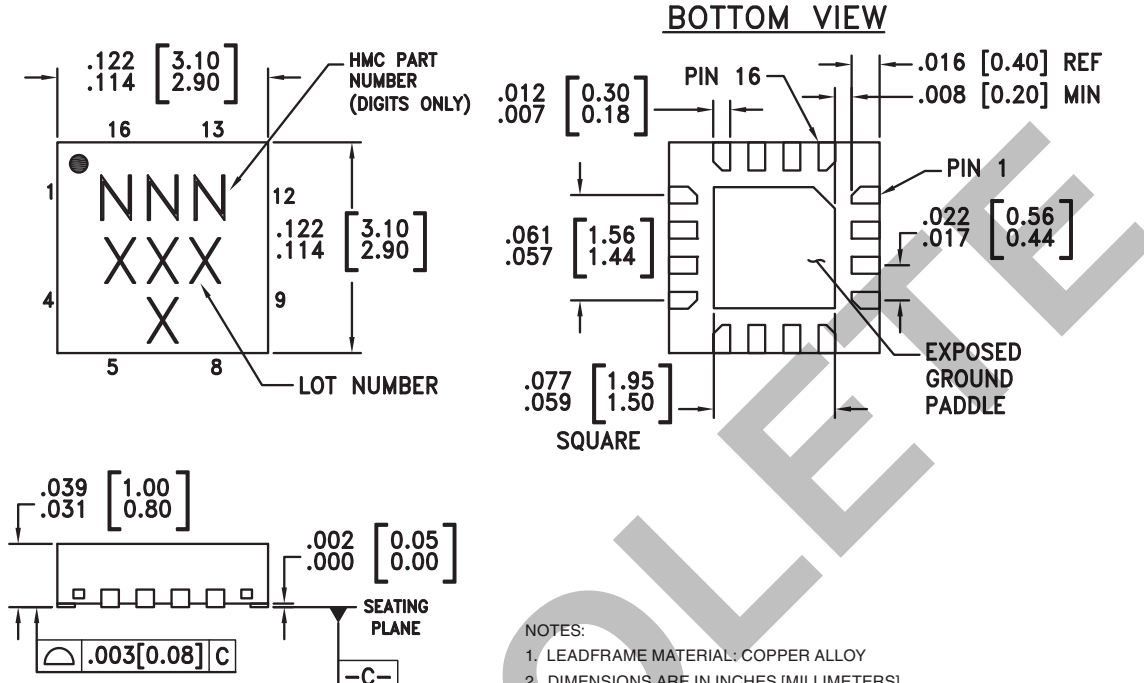
LNA Mode	Vctl= Vdd
Bypass Mode	Vctl= 0V

OBSOLETE

**GaAs PHEMT MMIC LOW NOISE
AMPLIFIER w/ BYPASS MODE, 4.8 - 6.0 GHz**



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.

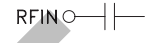


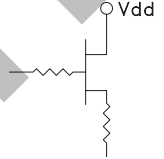
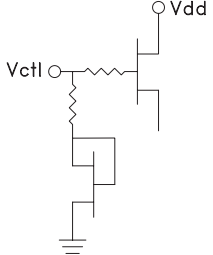
Package Information

Part Number	Package Body Material	Lead Finish	MSL Rating	Package Marking ^[3]
HMC604LP3	Low Stress Injection Molded Plastic	Sn/Pb Solder	MSL1 ^[1]	604 XXXX
HMC604LP3E	RoHS-compliant Low Stress Injection Molded Plastic	100% matte Sn	MSL1 ^[2]	604 XXXX

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

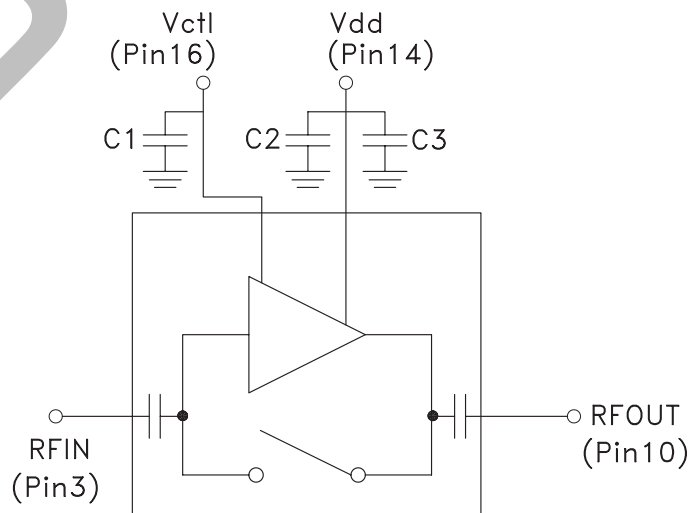
**GaAs PHEMT MMIC LOW NOISE
AMPLIFIER w/ BYPASS MODE, 4.8 - 6.0 GHz**

Pin Descriptions

Pin Number	Function	Description	Interface Schematic
1, 2, 5, 6, 8, 12	N/C	No connection necessary. These pins may be connected to RF/DC ground.	
3	RFIN	This pin is AC coupled and matched to 50 Ohms.	
4, 7, 9, 11, 15	GND	These pins must be connected to RF/DC ground.	
10	RFOUT	This pin is AC coupled and matched to 50 Ohms.	
14	Vdd	Power supply voltage. Bypass capacitors are required. See application circuit.	
16	Vctl	LNA/Bypass Mode Control Voltage. See truth table.	

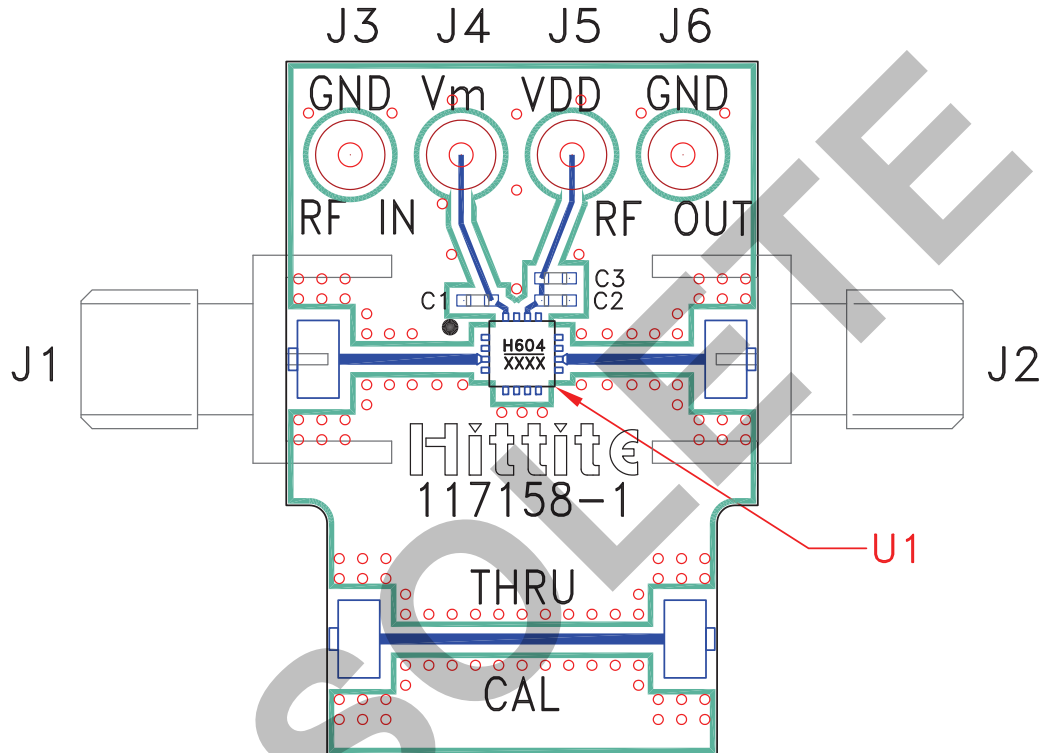
Application Circuit

Components	Value
C1, C2	100pF
C3	10KpF





Evaluation PCB



List of Materials for Evaluation PCB 117160 [1]

Item	Description
J1 - J2	PCB Mount SMA RF Connector
J3 - J6	DC Pin
C1, C2	100 pF Capacitor, 0402 Pkg.
C3	10 KpF Capacitor, 0402 Pkg.
U1	HMC604LP3 / HMC604LP3E Amplifier
PCB [2]	117158 Evaluation Board

[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.