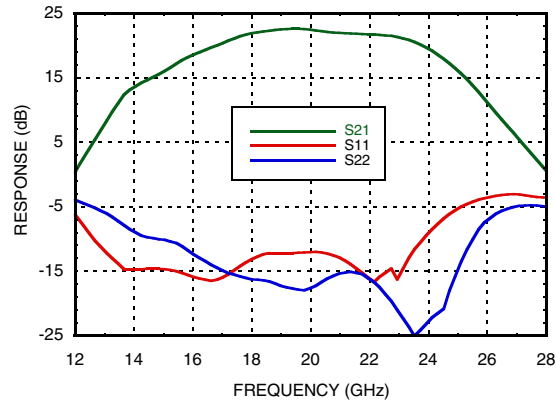
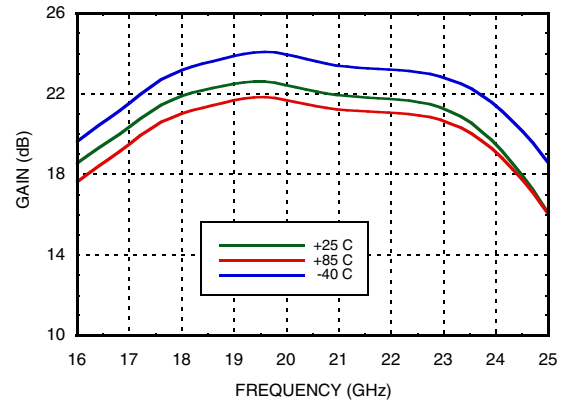


**GaAs PHEMT MEDIUM  
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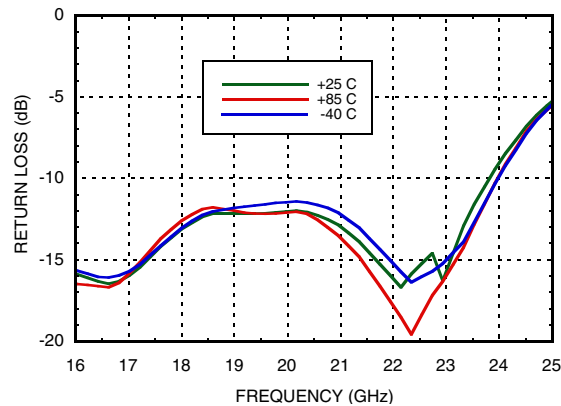
**Broadband Gain & Return Loss**



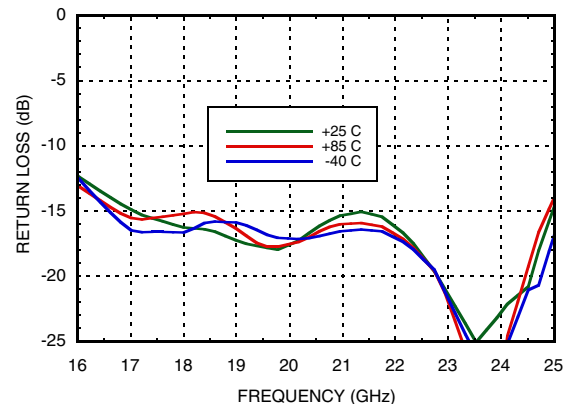
**Gain vs. Temperature**



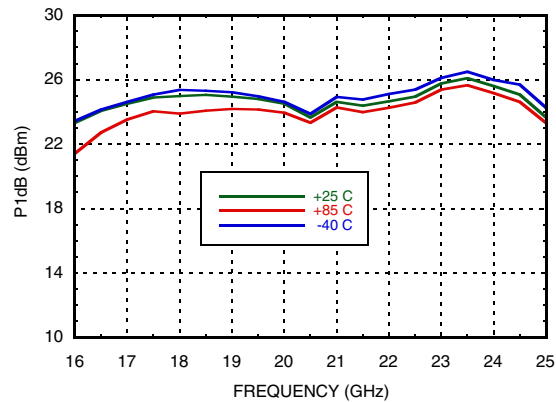
**Input Return Loss vs. Temperature**



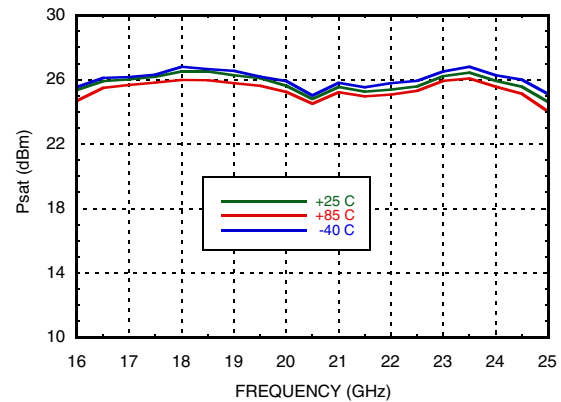
**Output Return Loss vs. Temperature**

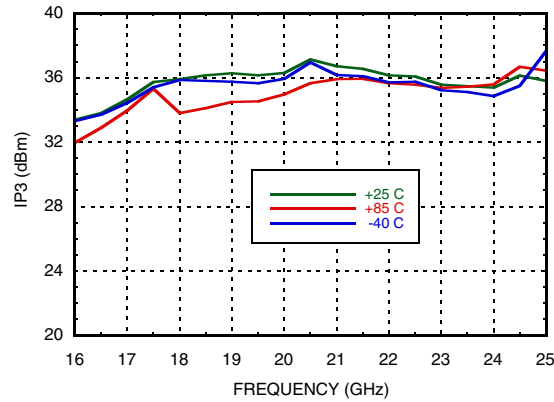
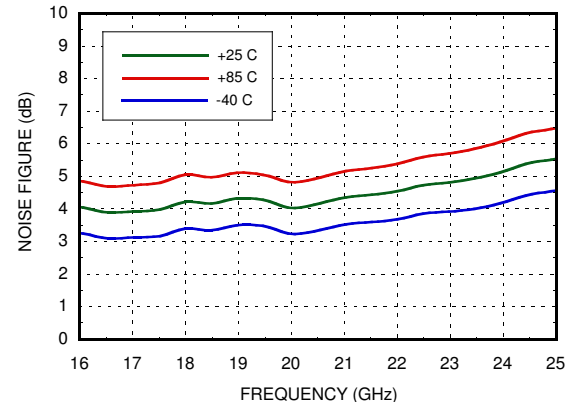
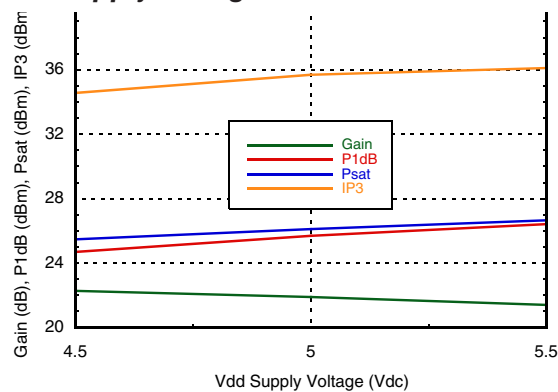
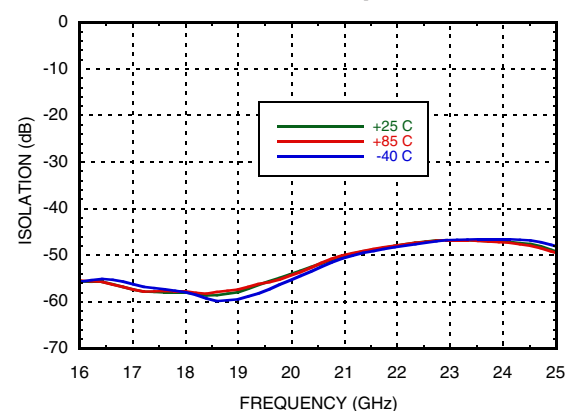
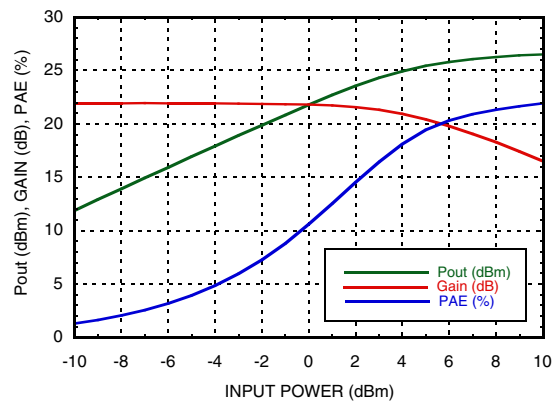
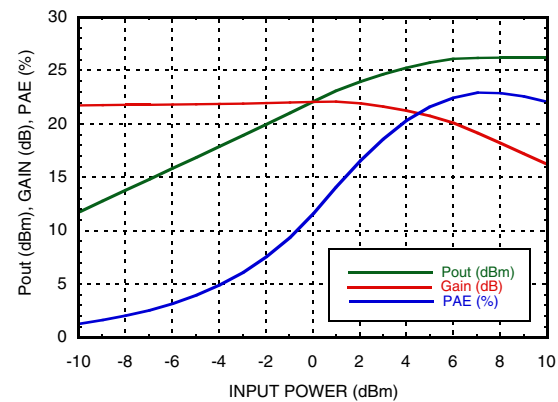


**P1dB vs. Temperature**



**Psat vs. Temperature**



**GaAs PHEMT MEDIUM  
POWER AMPLIFIER, 17 - 24 GHz**
**Output IP3 vs. Temperature**

**Noise Figure vs. Temperature**

**Gain, Power & OIP3  
vs. Supply Voltage @ 23 GHz**

**Reverse Isolation vs. Temperature**

**Power Compression @ 18 GHz**

**Power Compression @ 23 GHz**


## GaAs PHEMT MEDIUM POWER AMPLIFIER, 17 - 24 GHz

### Absolute Maximum Ratings

Drain Bias Voltage (Vdd1, Vdd2, Vdd3)	+5.5 Vdc
Gate Bias Voltage (Vgg)	-4.0 to 0 Vdc
RF Input Power (RFIN)(Vdd = +5Vdc)	+10 dBm
Channel Temperature	175 °C
Continuous P <sub>diss</sub> (T= 85 °C) (derate 18 mW/°C above 85 °C)	1.62 W
Thermal Resistance (channel to ground paddle)	55.6 °C/W
Storage Temperature	-65 to +150 °C
Operating Temperature	-40 to +85 °C
ESD Sensitivity (HBM)	Class 1A

### Typical Supply Current vs. Vdd

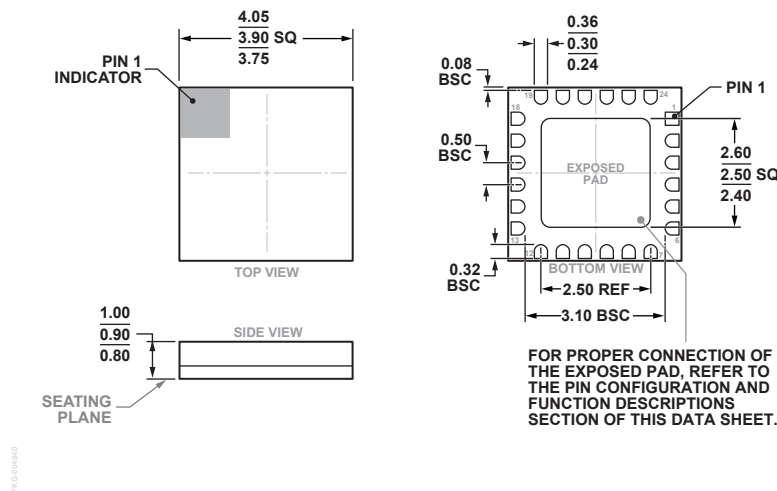
Vdd (Vdc)	Idd (mA)
+4.5	239
+5.0	250
+5.5	262

Note: Amplifier will operate over full voltage ranges shown above. Vgg adjusted to achieve Idd= 250 mA at +5V.



ELECTROSTATIC SENSITIVE DEVICE  
OBSERVE HANDLING PRECAUTIONS

### Outline Drawing



24-Terminal Ceramic Leadless Chip Carrier [LCC]  
(E-24-1)  
Dimensions shown in millimeters.

### Package Information

Part Number	Package Body Material	Lead Finish	MSL Rating	Package Marking [2]
HMC498LC4	Alumina, White	Gold over Nickel	MSL3 [1]	H498 XXXX


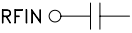
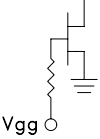
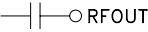
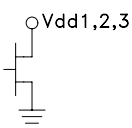
[1] Max peak reflow temperature of 260 °C

[2] 4-Digit lot number XXXX

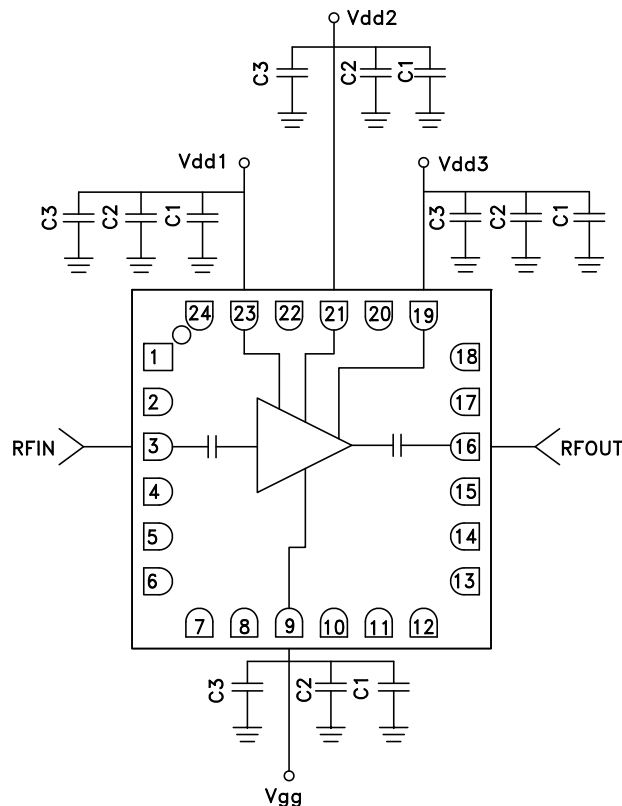
For price, delivery, and to place orders: Analog Devices, Inc., One Technology Way, P.O. Box 9106, Norwood, MA 02062-9106  
Phone: 781-329-4700 • Order online at [www.analog.com](http://www.analog.com)  
Application Support: Phone: 1-800-ANALOG-D

# GaAs PHEMT MEDIUM POWER AMPLIFIER, 17 - 24 GHz

## Pin Descriptions

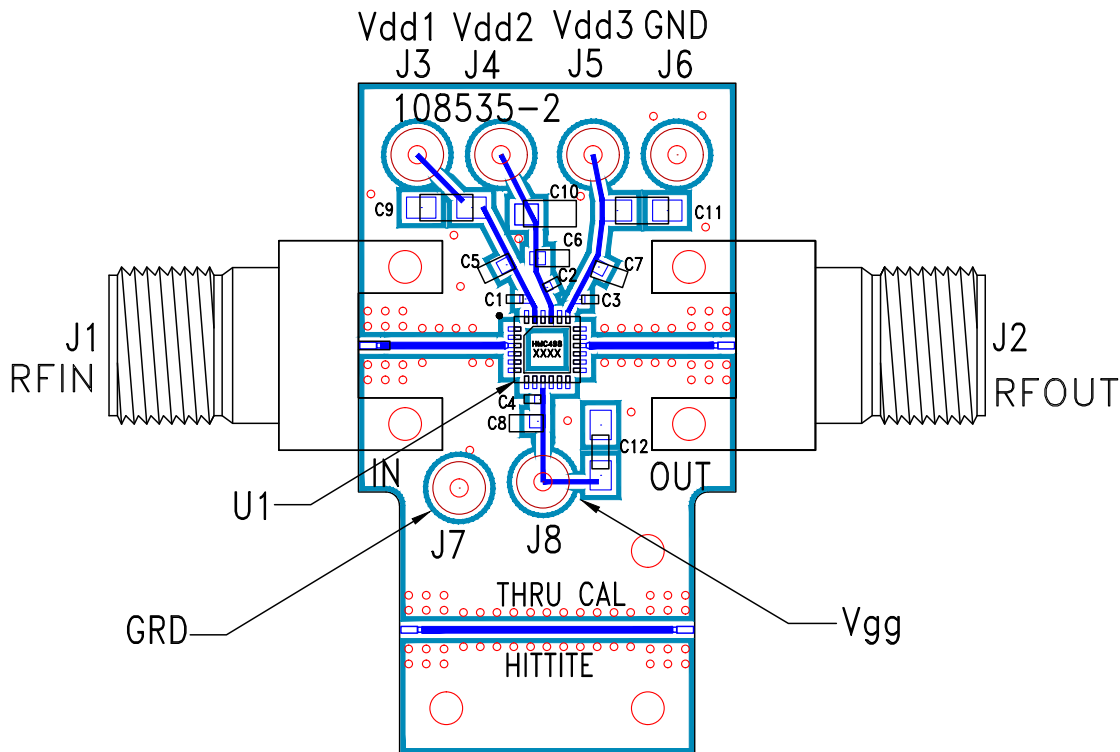
Pin Number	Function	Description	Interface Schematic
1, 5 - 8, 10 - 14, 18, 20, 22, 24	N/C	These pins are not connected internally; however, all data shown herein was measured with these pins connected to RF/DC ground externally.	
2, 4, 15, 17	GND	Package bottom has an exposed metal paddle that must also be connected to RF/DC ground.	
3	RFIN	This pin is AC coupled and matched to 50 Ohms.	
9	Vgg	Gate control for amplifier. Adjust to achieve Id of 250 mA. Please follow "MMIC Amplifier Biasing Procedure" Application Note. External bypass capacitors of 100 pF, 1000 pF and 2.2 μF are required.	
16	RFOUT	This pin is AC coupled and matched to 50 Ohms.	
23, 21, 19	Vdd1, Vdd2, Vdd3	Power Supply Voltage for the amplifier. External bypass capacitors of 100 pF, 1000pF, and 2.2 μF are required.	

## Application Circuit



**GaAs PHEMT MEDIUM  
POWER AMPLIFIER, 17 - 24 GHz**

**Evaluation PCB**



**List of Materials for Evaluation PCB 108537 <sup>[1]</sup>**

Item	Description
J1, J2	2.92 mm PC mount K-connector
J3 - J8	DC Pin
C1 - C4	100 pF capacitor, 0402 pkg.
C5 - C8	1,000 pF Capacitor, 0603 pkg.
C9 - C12	2.2μF Capacitor, Tantalum
U1	HMC498LC4 Amplifier
PCB [2]	108535 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 Analog Devices, upon request.