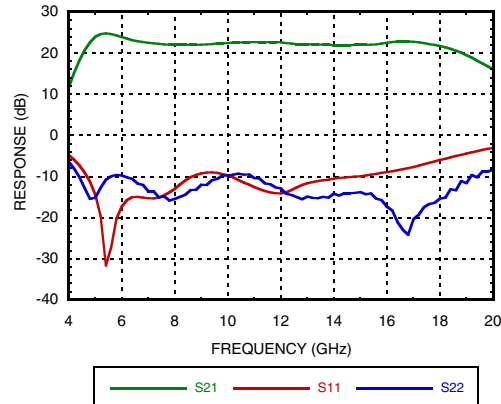
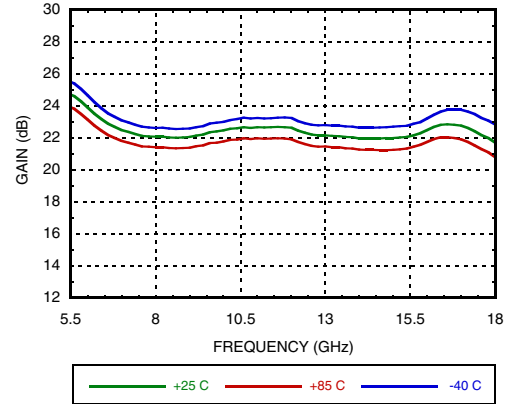
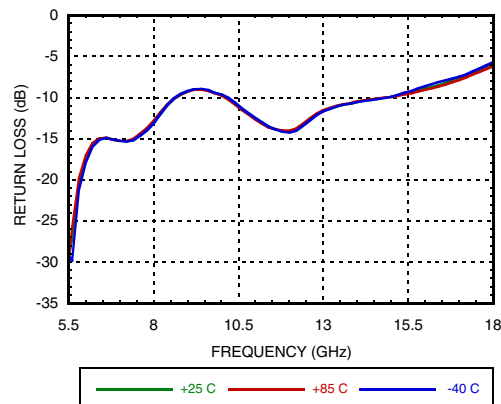
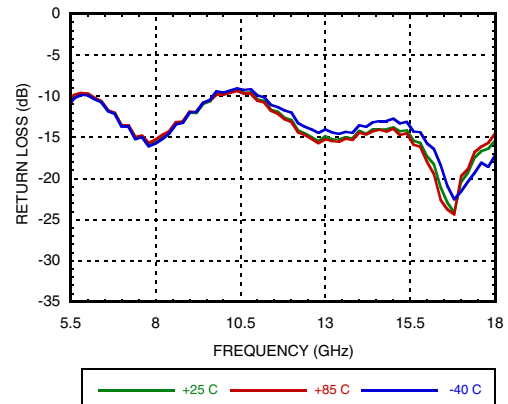
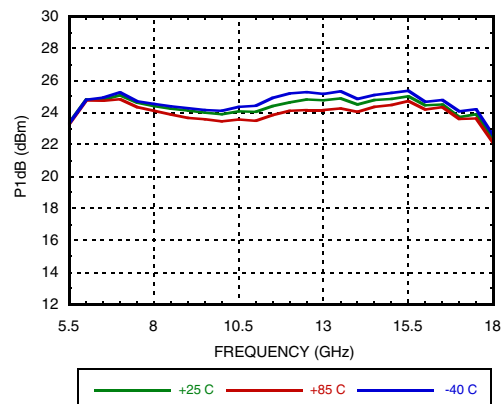
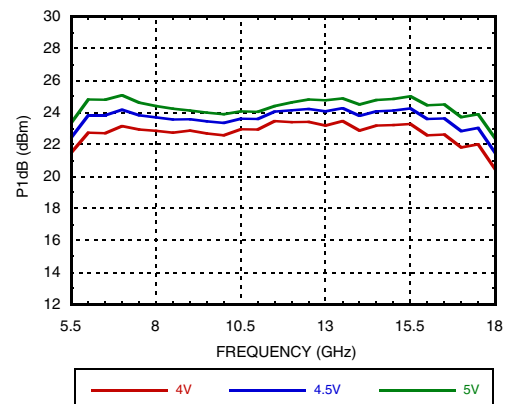
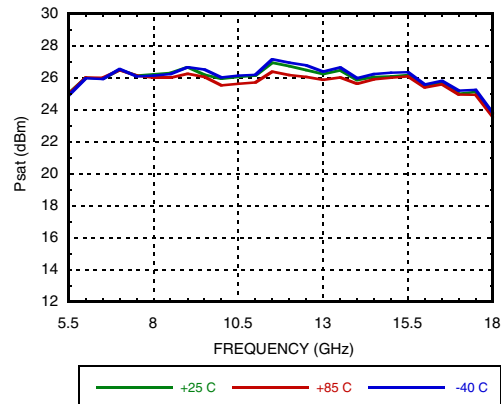
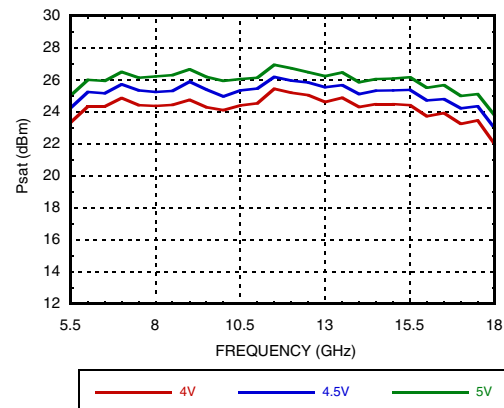
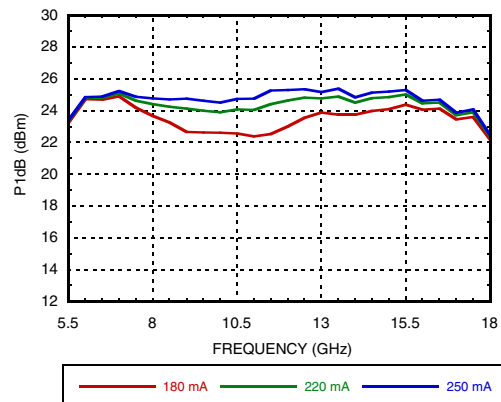
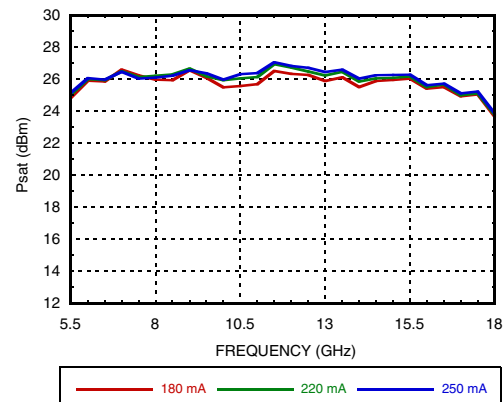
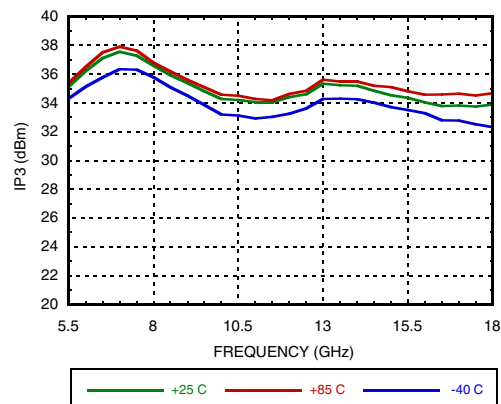
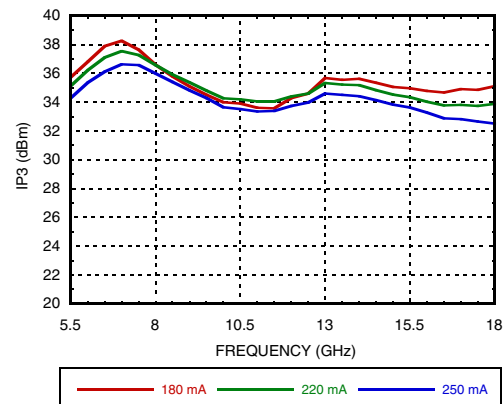


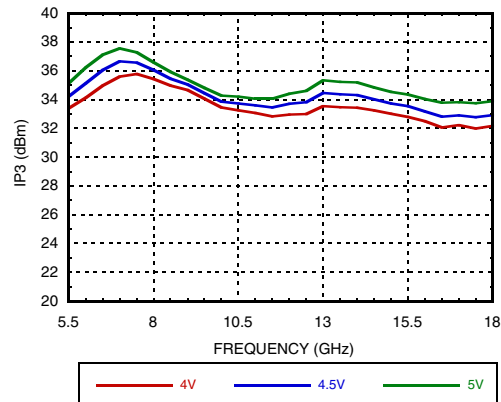
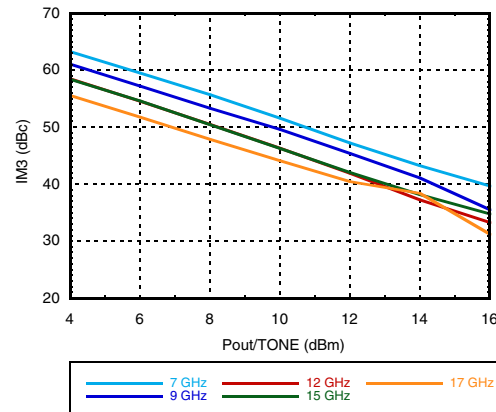
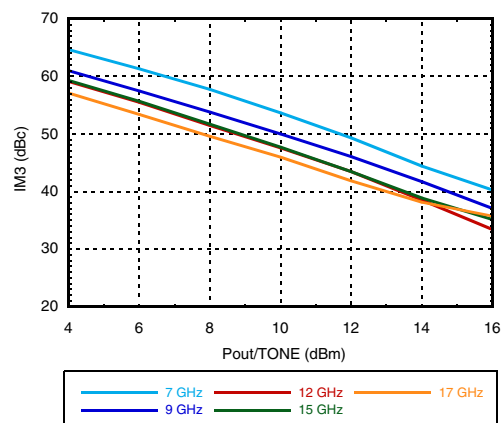
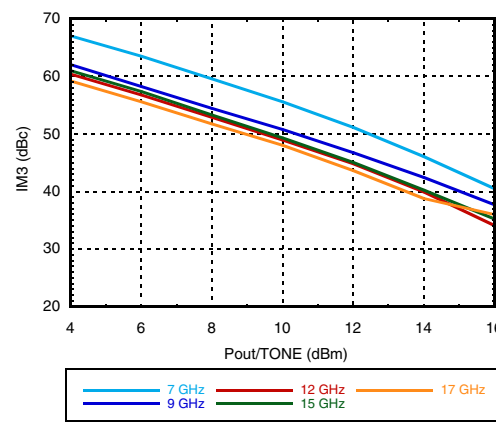
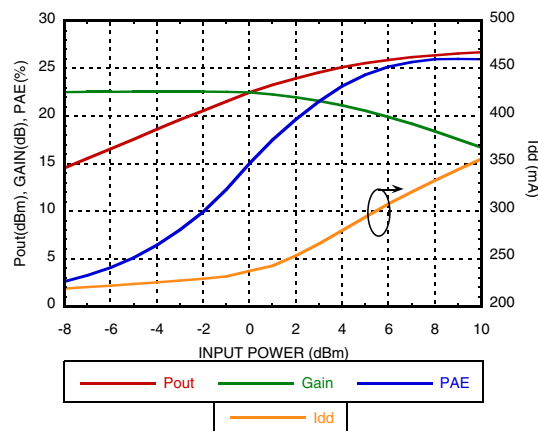
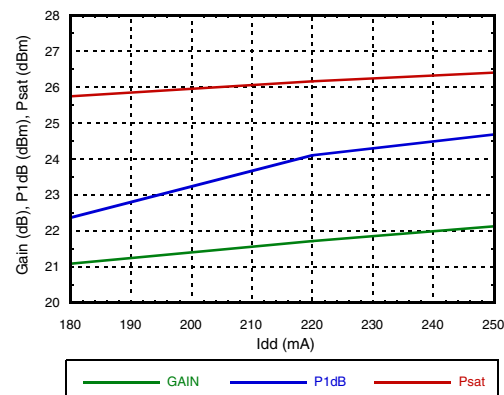
GaAs pHEMT MMIC MEDIUM POWER AMPLIFIER, 5.5 - 18 GHz

Broadband Gain & Return Loss

Gain vs. Temperature

Input Return Loss vs. Temperature

Output Return Loss vs. Temperature

P1dB vs. Temperature

P1dB vs. Supply Voltage


**GaAs pHEMT MMIC MEDIUM
POWER AMPLIFIER, 5.5 - 18 GHz**
Psat vs. Temperature

Psat vs. Supply Voltage

P1dB vs. Supply Current

Psat vs. Supply Current

Output IP3 vs. Temperature ^[1]

Output IP3 vs. Supply Current ^[1]


[1] Pout/Tone = +12 dBm

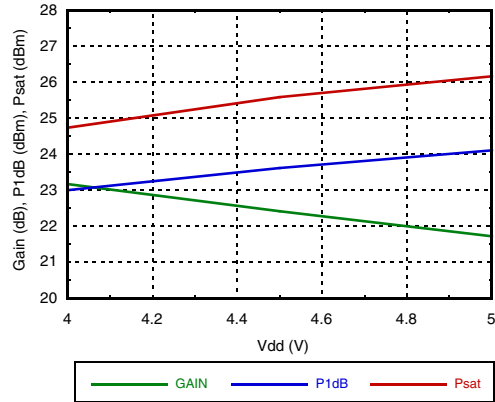
GaAs pHEMT MMIC MEDIUM POWER AMPLIFIER, 5.5 - 18 GHz

Output IP3 vs. Supply Voltage ^[1]

Output IM3 @ Vdd = +4V

Output IM3 @ Vdd = +4.5V

Output IM3 @ Vdd = +5V

Power Compression @ 12 GHz

Gain & Power vs. Supply Current


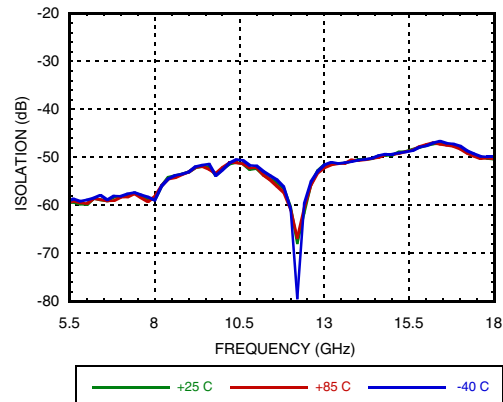
[1] Pout/Tone = +12 dBm

**GaAs pHEMT MMIC MEDIUM
POWER AMPLIFIER, 5.5 - 18 GHz**

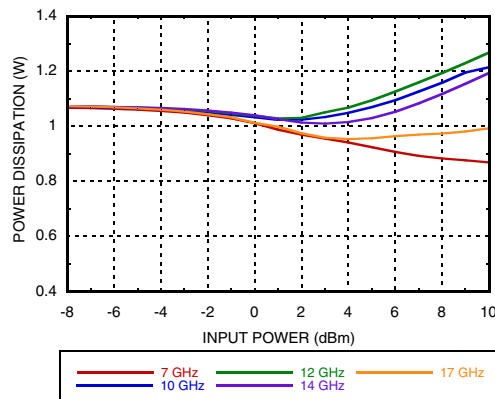
Gain & Power vs. Supply Voltage



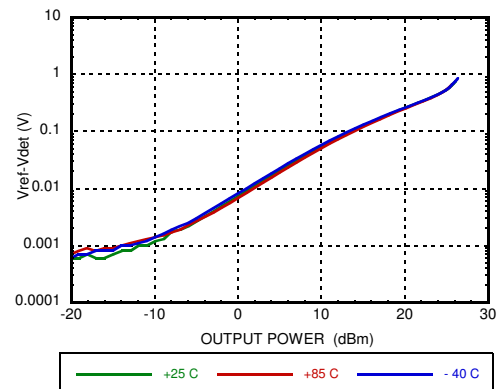
Reverse Isolation vs. Temperature



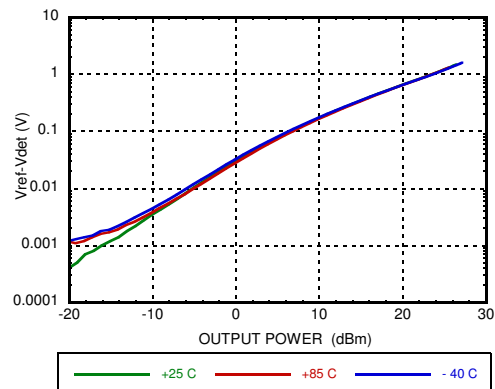
Power Dissipation



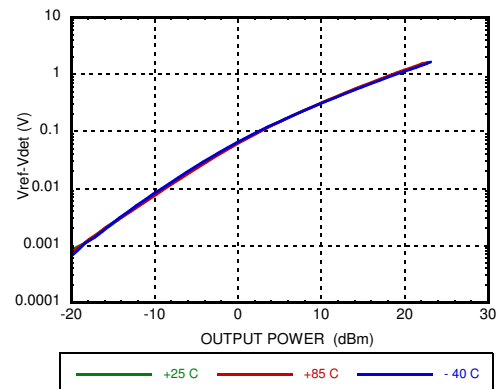
**Detector Voltage vs. Temperature
@ 6 GHz**



**Detector Voltage vs. Temperature
@ 12 GHz**



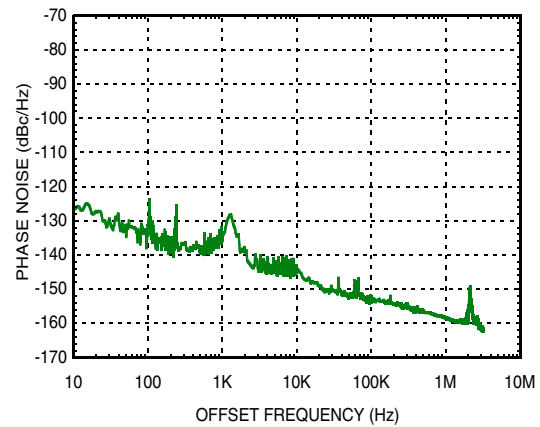
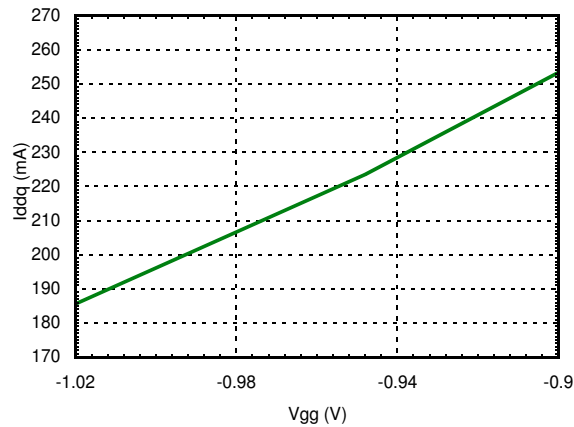
**Detector Voltage vs. Temperature
@ 18 GHz**



**GaAs pHEMT MMIC MEDIUM
POWER AMPLIFIER, 5.5 - 18 GHz**

**Additive Phase Noise Vs Offset Frequency,
RF Frequency = 8 GHz,
RF Input Power = 3 dBm (P1dB)**

I_{ddq} Vs V_{gg}



Notes:

GaAs pHEMT MMIC MEDIUM POWER AMPLIFIER, 5.5 - 18 GHz

Absolute Maximum Ratings

Drain Bias Voltage (Vdd)	5.5V
RF Input Power (RFIN)	20 dBm
Channel Temperature	175 °C
Continuous P _{diss} (T=85 °C) (derate 20mW/°C)	1.81W
Thermal Resistance (R _{TH}) (junction to ground paddle)	49.8 °C/W
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to 150°C
ESD Sensitivity (HBM)	Class 1A, Passed 250V

Typical Supply Current vs. Vdd

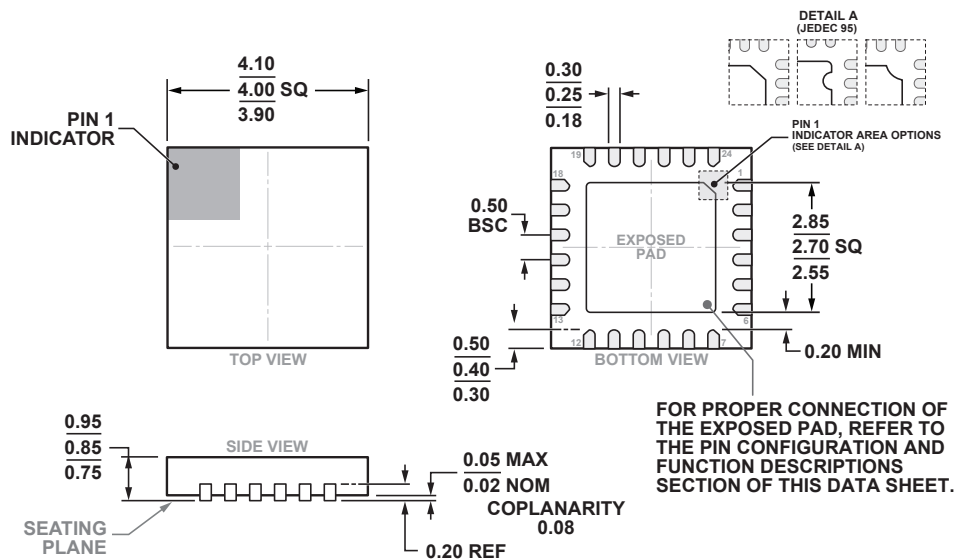
Vdd (V)	Idd (mA)
+4	220
+4.5	220
+5	220

Adjust V_{gg1} to achieve Idd = 220mA



ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

Outline Drawing



24-Lead Lead Frame Chip Scale Package [LFCSP]
4 mm x 4 mm Body and 0.85 mm Package Height
(HCP-24-3)
Dimensions shown in millimeters

Package Information

Part Number	Package Body Material	Lead Finish	MSL Rating ^[2]	Package Marking ^[1]
HMC1082LP4E	RoHS-compliant Low Stress Injection Molded Plastic	100% matte Sn	MSL1	H1082 XXXX

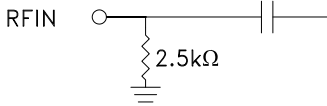
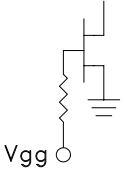
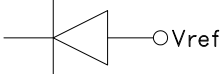
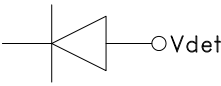
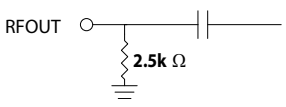
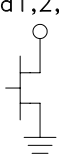
[1] 4-Digit lot number XXXX

[2] Max peak reflow temperature of 260 °C

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
Application Support: Phone: 1-800-ANALOG-D

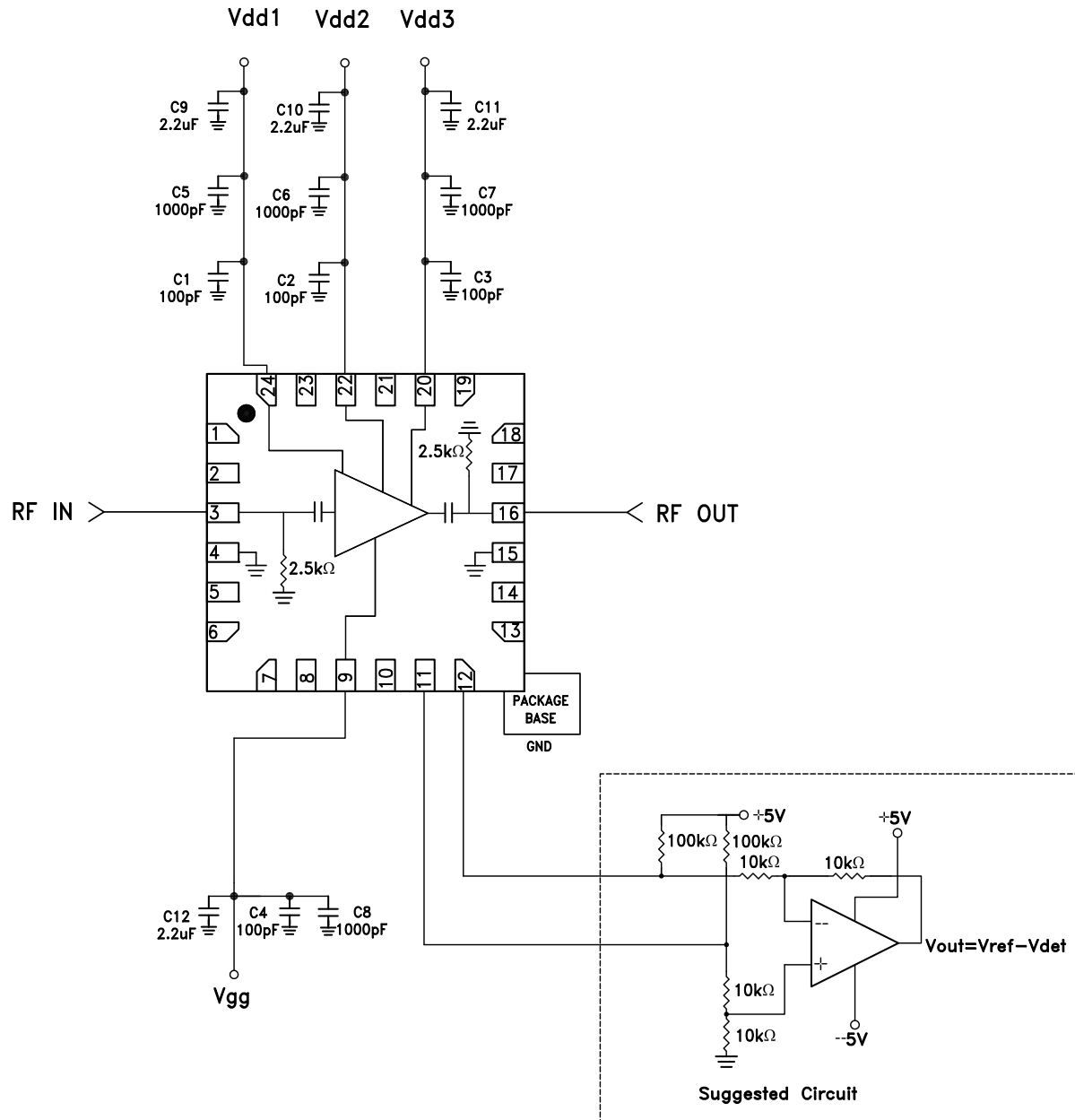
**GaAs pHEMT MMIC MEDIUM
POWER AMPLIFIER, 5.5 - 18 GHz**

Pin Descriptions

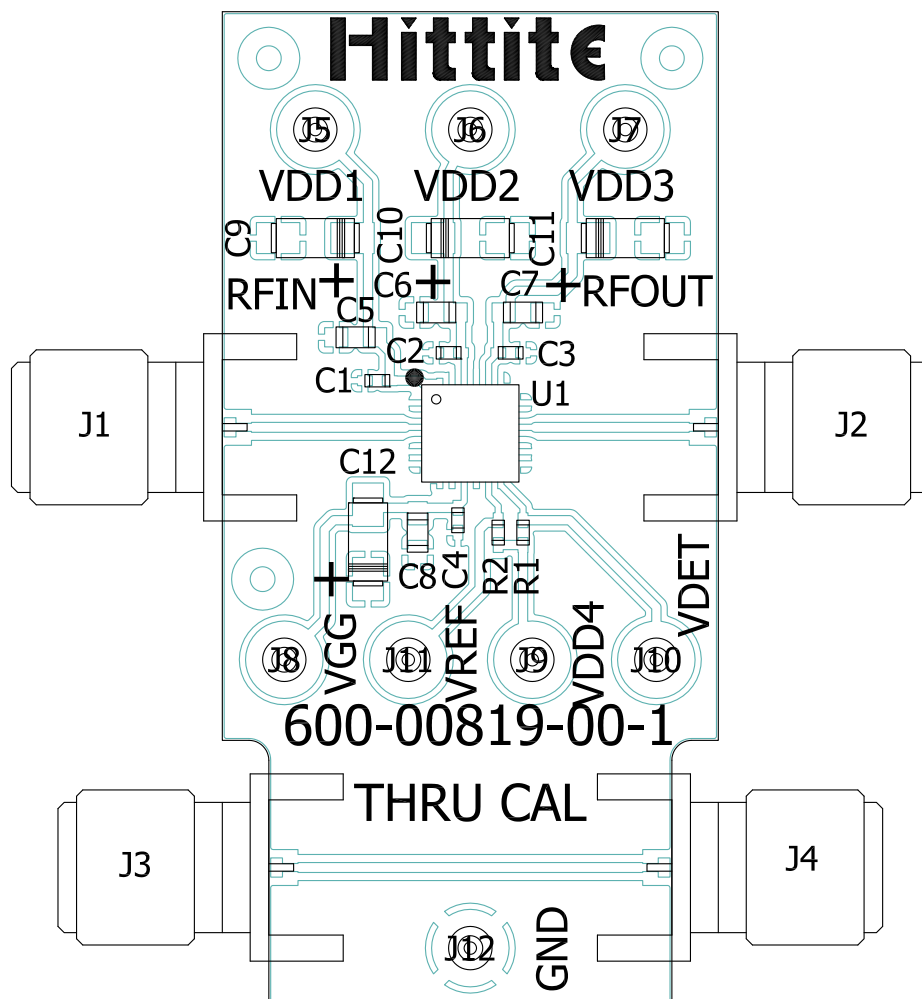
Pin Number	Function	Description	Pin Schematic
1, 2, 5, 6, 7, 8, 10, 13, 14, 17, 18, 19, 21, 23	N/C	These pins are not connected internally, however all data shown herein was measured with these pins connected to RF/DC ground externally.	
3	RF IN	This pin is DC coupled and matched to 50 Ohms.	
4, 15	GND	These pins and package bottom must be connected to RF/DC ground.	
9	Vgg	Gate control for amplifier. External bypass capacitors of 1000pF, 100pF and 2.2uF are required.	
11	Vref	DC bias of diode biased through external resistor used for temperature compensation of Vdet. See application circuit.	
12	Vdet	DC voltage representing RF output power rectified by diode which is biased through an external resistor. See application circuit.	
16	RF OUT	This pin is DC coupled and matched to 50 Ohms.	
24, 22, 20	Vdd1, Vdd2, Vdd3	Drain bias voltage for amplifier. External bypass capacitors of 1000pF, 100pF and 2.2uF are required.	

**GaAs pHEMT MMIC MEDIUM
POWER AMPLIFIER, 5.5 - 18 GHz**

Application Circuit



**GaAs pHEMT MMIC MEDIUM
POWER AMPLIFIER, 5.5 - 18 GHz**

Evaluation PCB

List of Materials for Evaluation PCB EV1HMC1082LP4 [1]

Item	Description
J1, J2	PCB Mount SMA RF Connector
J5 - J12	DC Pin
J9	VDD4 on Evaluation Board is +5V
C1 - C4	100pF Capacitor, 0402 Pkg.
C5 - C8	1000pF Capacitor, 0402 Pkg
C9 - C12	2.2uF Capacitor, 0402 Pkg.
R1, R2	40.2k Ohm Resistor, 0402 Pkg.
U1	HMC1082LP4E
PCB [2]	600-00819-00 Evaluation Board

[1] Reference this number when ordering Complete Evaluation PCB

[2] Circuit Board Material: Rogers 4350 or Arlon 25FR

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 Analog Devices upon request.