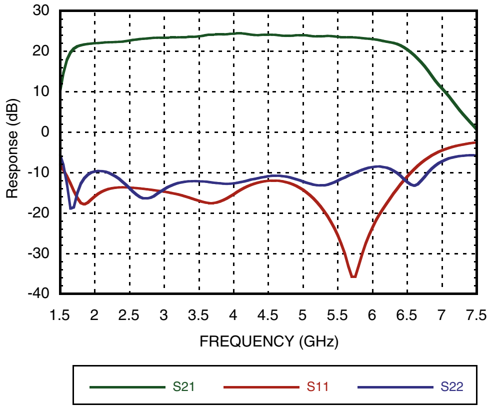
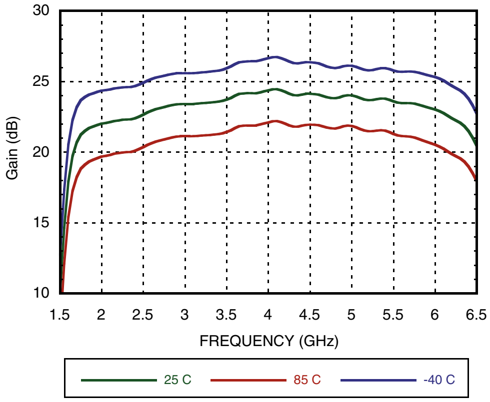
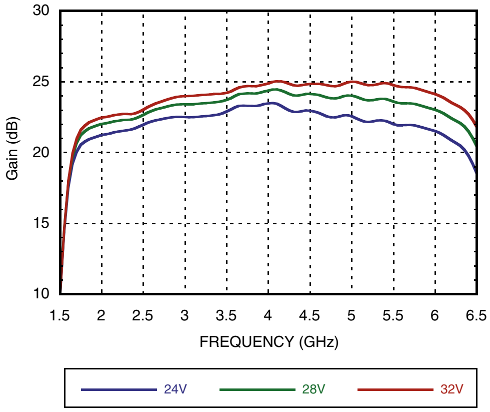
Gain & Return Loss



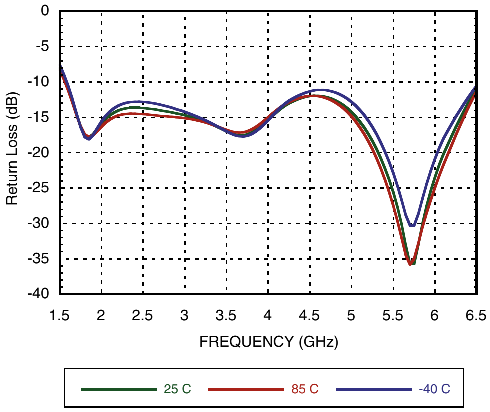
Gain vs. Temperature



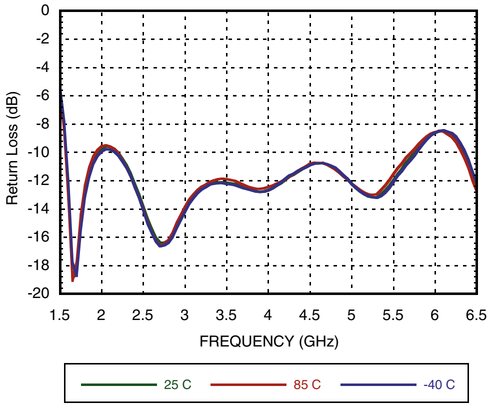
Gain vs. Vdd



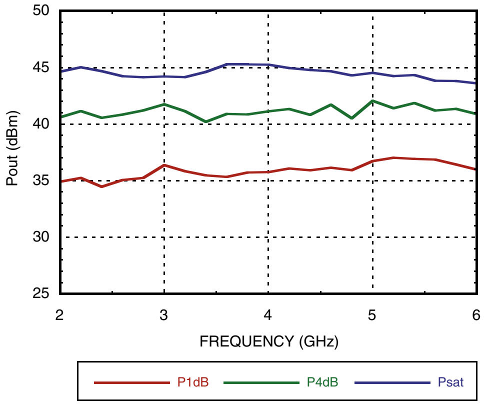
Input Return Loss vs. Temperature



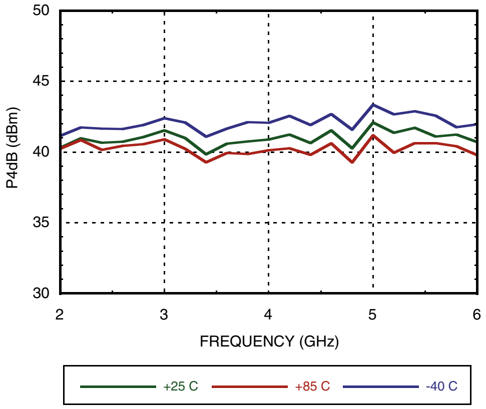
Output Return Loss vs. Temperature



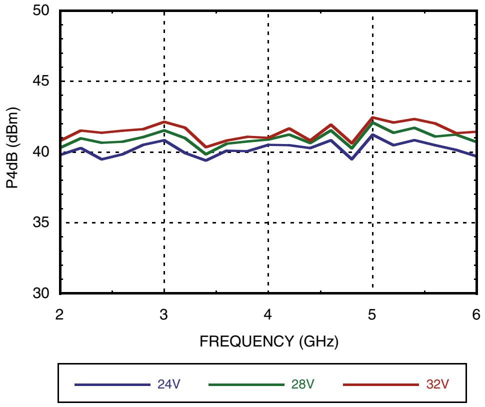
Pout vs. Frequency



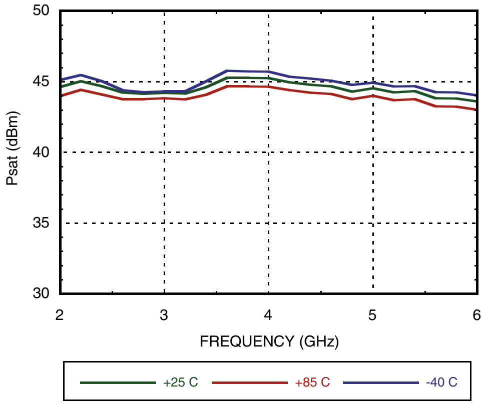
P4dB vs. Temperature



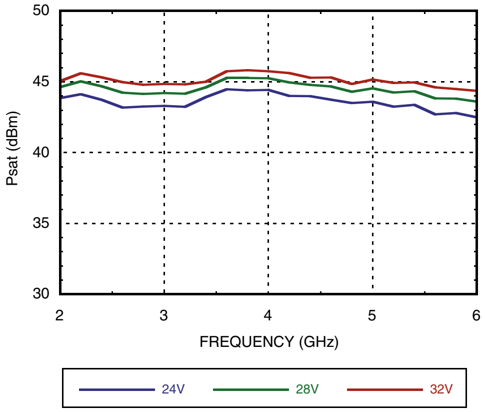
P4dB vs. Supply Voltage



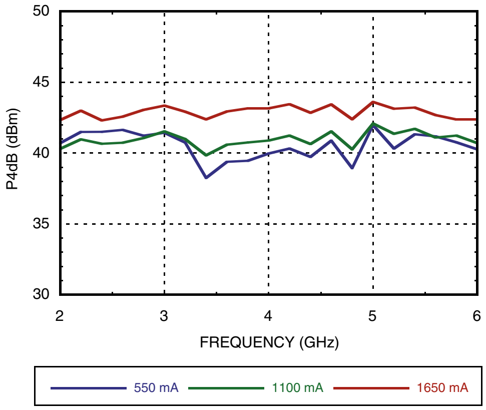
Psat vs. Temperature



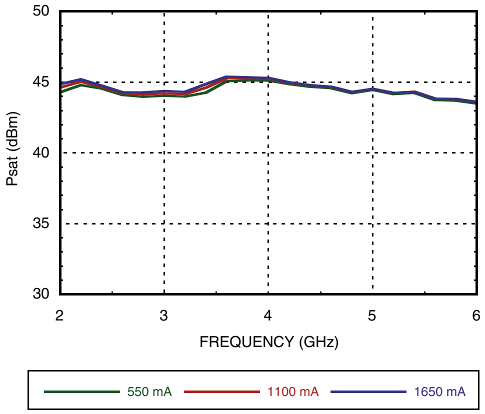
Psat vs. Supply Voltage



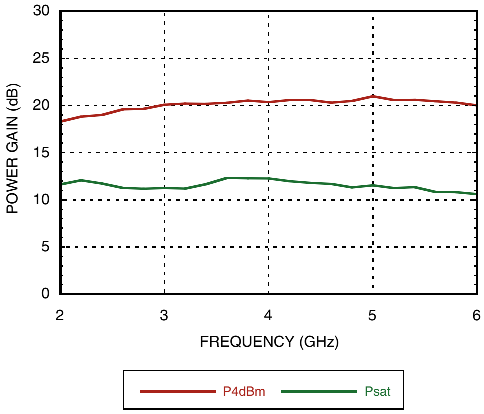
P4dB vs. Supply Current



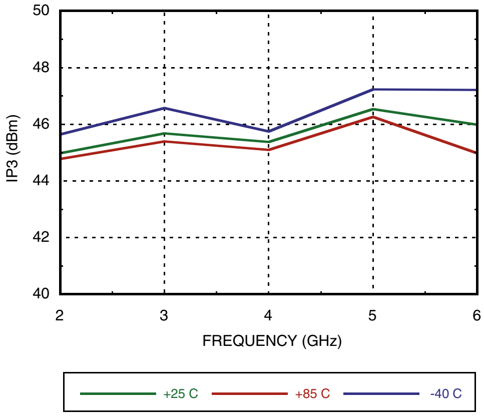
Psat vs. Supply Current



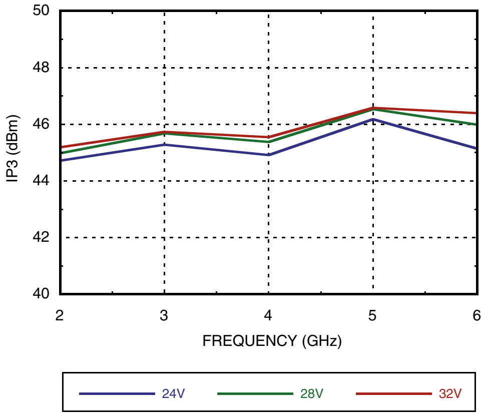
Power Gain vs. Frequency



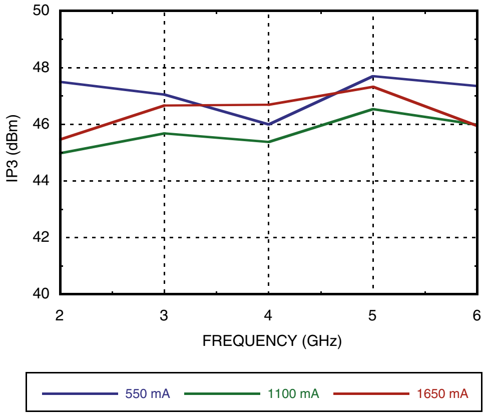
Output IP3 vs. Temperature, Pout/tone = +33 dBm



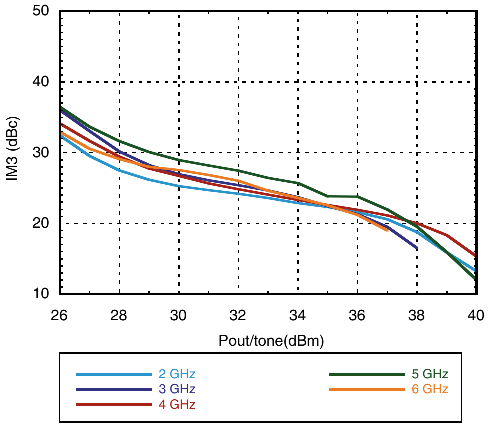
Output IP3 vs. Supply Voltage, Pout/tone = +33 dBm



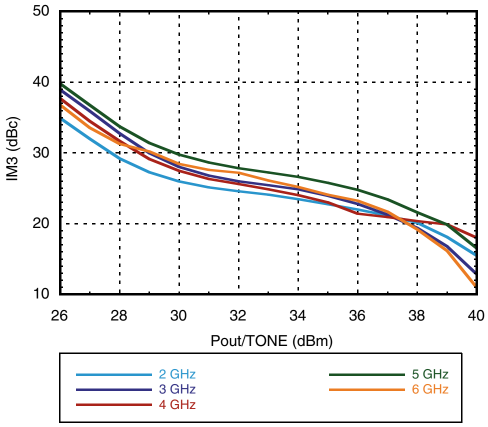
Output IP3 vs. Supply Current, Pout/tone = +33 dBm



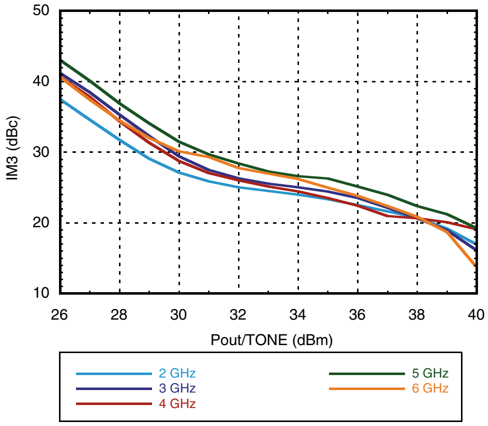
Output IM3 @ Vdd= +24V



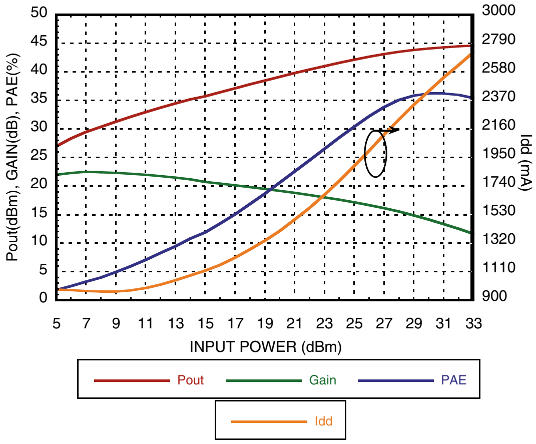
Output IM3 @ Vdd= +28V



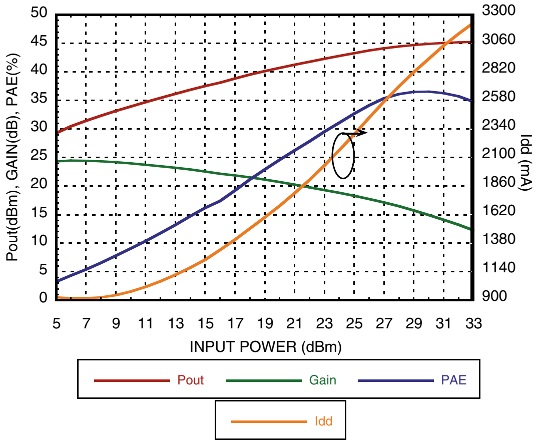
Output IM3 @ Vdd= +32V



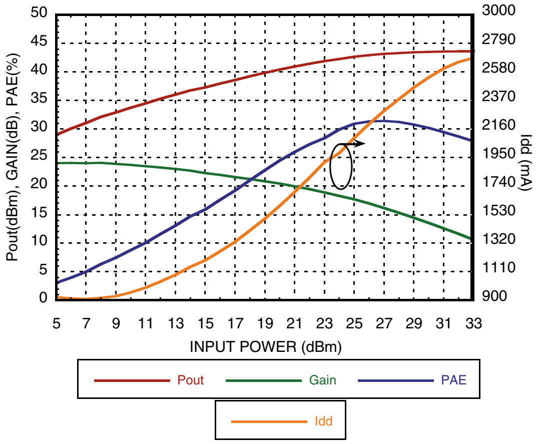
Power Compression @ 2 GHz



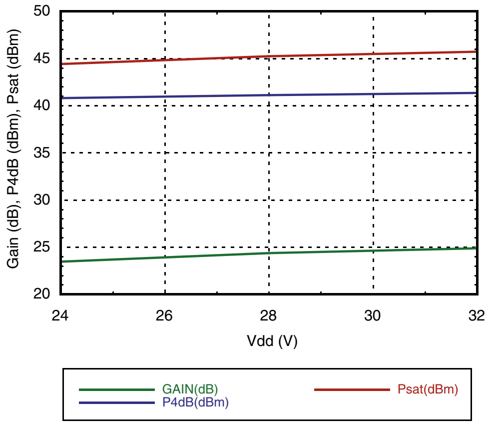
Power Compression @ 4 GHz



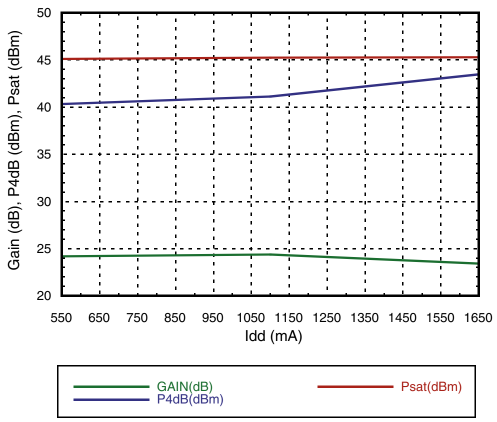
Power Compression @ 6 GHz



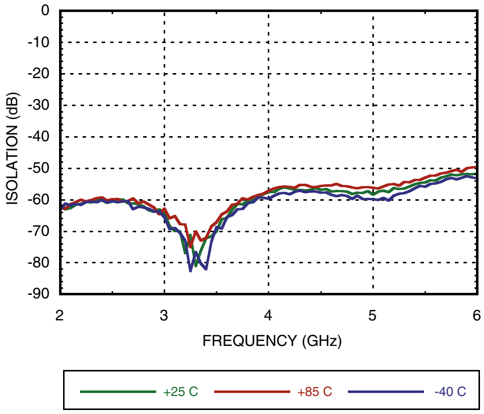
Gain & Power vs.
Supply Voltage @ 4 GHz



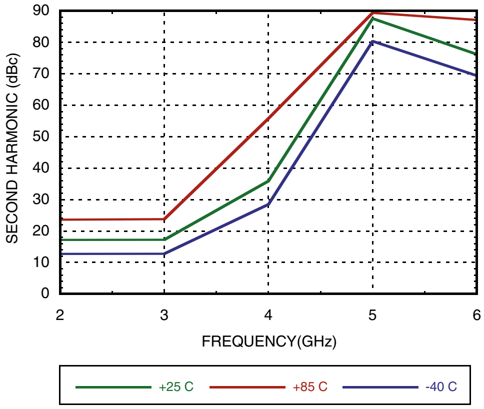
Gain & Power vs.
Supply Current @ 4 GHz



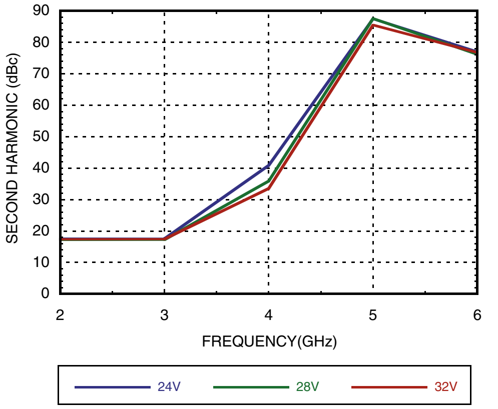
Reverse Isolation vs. Temperature



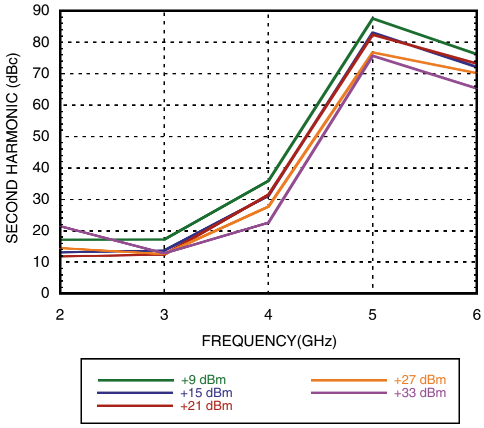
Second Harmonics vs. Temperature



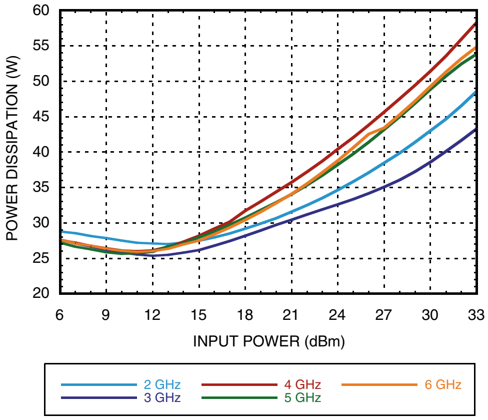
Second Harmonics vs. Supply Voltage



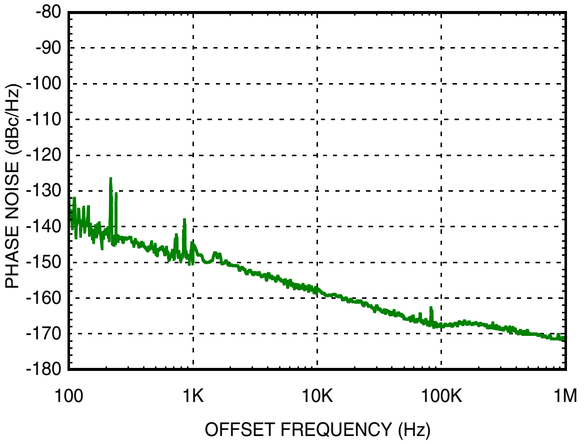
Second Harmonics vs. Pin



Power Dissipation



Additive Phase Noise Vs Offset Frequency, RF Frequency = 4 GHz, RF Input Power = 27 dBm (P1dB)



Absolute Maximum Ratings

Drain Bias Voltage (Vdd)	+32 Vdc
Gate Bias Voltage (Vgg)	-8 to 0 Vdc
RF Input Power (RFIN)	+33 dBm
Channel Temperature	225 °C
Maximum Pdiss (T = 85 °C) (derate 432 mW/°C above 85 °C)	60.5W
Thermal Resistance (channel to flange bottom)	2.31 °C/W
Maximum Forward Gate Current (mA)	11 mA
Maximum VSWR *[1]*	6:1
Storage Temperature	-65 to 150 °C *[2]*
Operating Temperature	-40 to 85 °C

[1] Restricted by maximum power dissipation.

[2] This device is not surface mountable and is not intended nor suitable to be used in a solder reflow process.
This device must not be exposed to ambient temperatures above +150°C.

Typical Supply Current vs. Vdd

Vdd (V)	Idd (mA)
+24	1100
+28	1100
+32	1100

Adjust Vgg to achieve Idd = 1100 mA

Amplifier Turn-on Procedure:

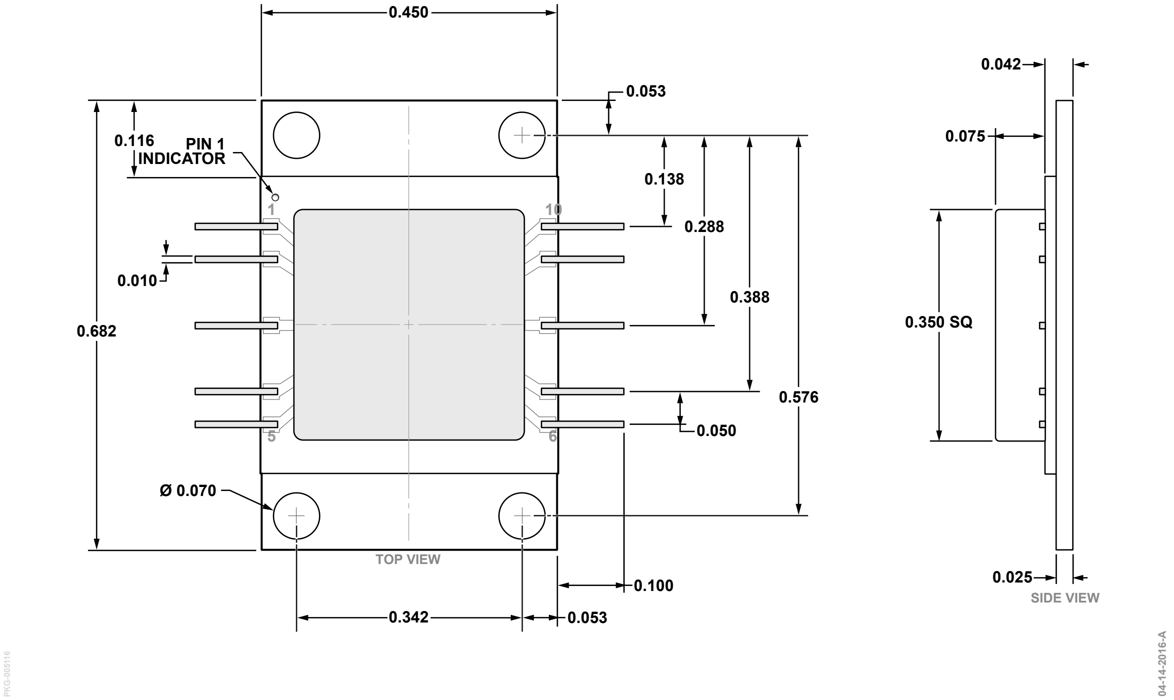
1.) Set Vgg to -5V.
2.) Set Vdd to +28V.
3.) Ramp gate voltage until quiescent drain current = 1100 mA.
4.) Apply RF input power.

Amplifier Turn-off Procedure:

1.) Remove RF input power.
2.) Set Vgg to -5V.
3.) Set Vdd to 0V.
4.) Set Vgg to 0V.

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

Outline Drawing



10-Lead Ceramic Leaded Chip Carrier [LDCC]
(EJ-10-1)
Dimensions shown in inches

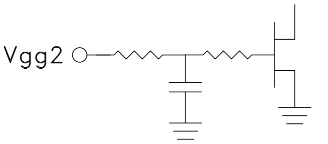
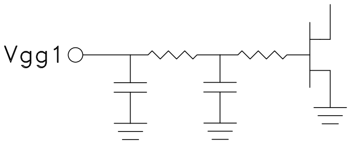
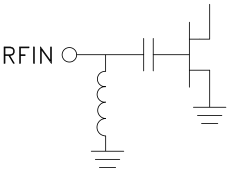
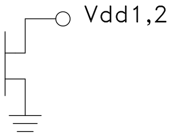
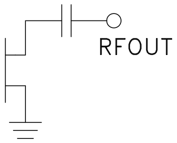
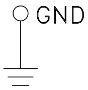
Package Information

Part Number	Package Body Material	Lead Finish	MSL Rating	Package Marking [1]
HMC1086F10	Copper 15 Tungsten 85	NiAu	N/A [2]	H1086 XXXX

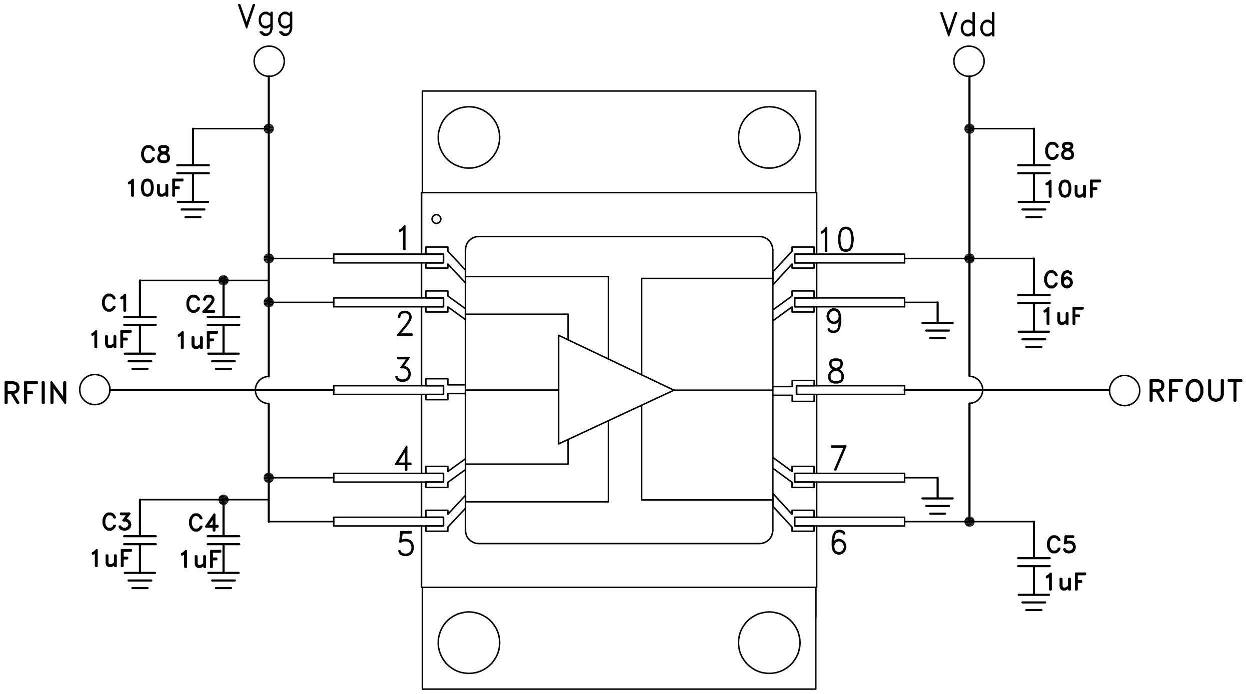
[1] 4-Digit lot number XXXX

[2] This device is not rated for Moisture Sensitivity Level. The HMC1086F10 is a non-hermetic, air cavity device which is not surface mountable and is not intended nor suitable to be used in a solder reflow process.

Pin Descriptions

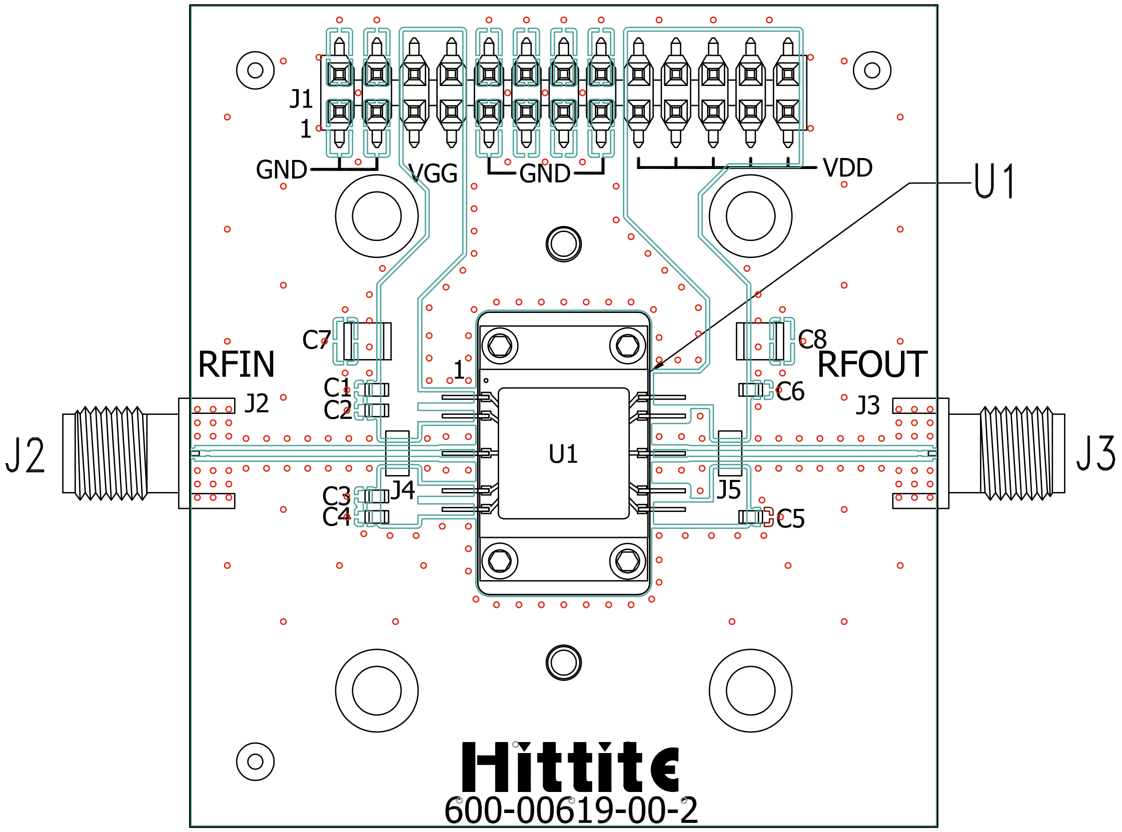
Pin Number	Function	Description	Interface Schematic
1, 5	Vgg2	Gate control voltage for second stage.	
2, 4	Vgg1	Gate control voltage for first stage.	
3	RFIN	This pin is DC coupled and matched to 50 Ohms.	
6, 10	Vdd1,2	Drain bias for first and second stage	
7, 9	NC	These pins are not connected internally.	
8	RFOUT	This pad is RF coupled and matched to 50 Ohms.	
Package Base	GND	The package base must be mounted to a suitable heat sink for RF & DC ground. Recommended mounting screws are #0-80 socket cap screws.	

Application Circuit



25 WATT FLANGE MOUNT GAN MMIC POWER AMPLIFIER, 2 - 6 GHz

Evaluation PCB



Evaluation Order Information

Item	Contents	Part Number
Evaluation PCB	HMC1086F10 Evaluation PCB	EVAL01-HMC1086F10 [1]

[1] Reference this number when ordering Evaluation PCB

List of Materials for Evaluation PCB EVAL01-HMC1086F10

Item	Description
J2, J3	SRI K Connector
J1	DC Connector
J4, J5	Preform jumpers
C1 - C6	1 uF Capacitor, 0602 Pkg.
C7 - C8	10 uF Capacitor, 1210 Pkg.
U1	HMC1086F10
PCB [1]	600-00619-00 Evaluation PCB

[1] 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.

Notes: