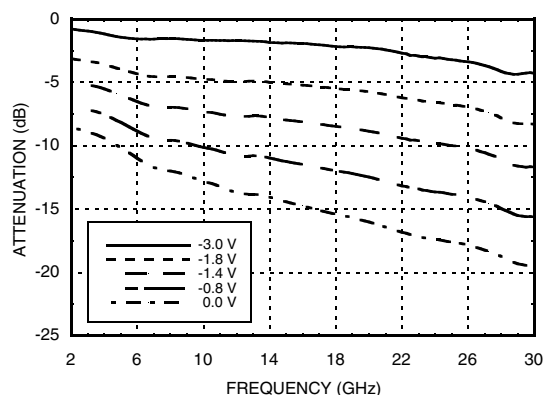
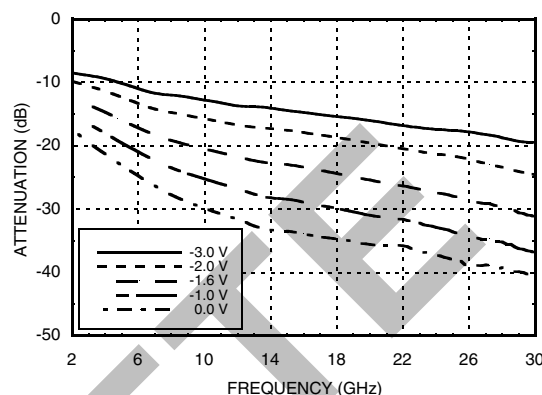
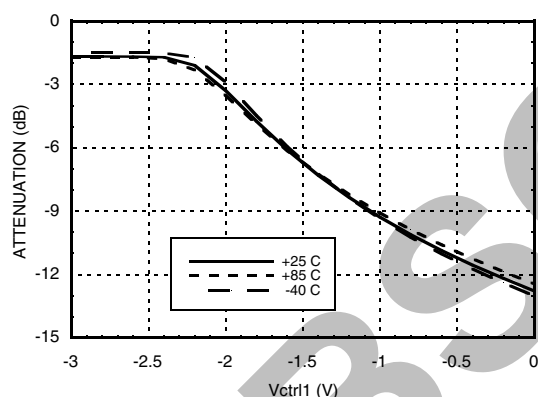
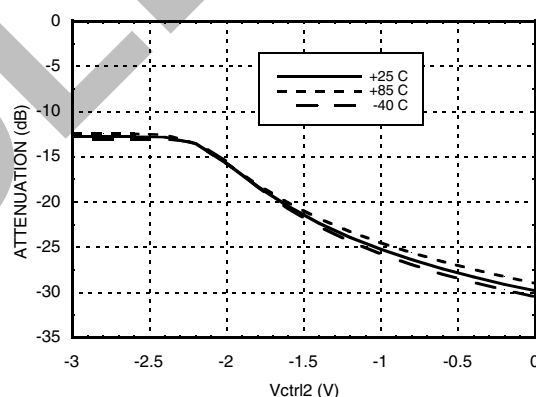
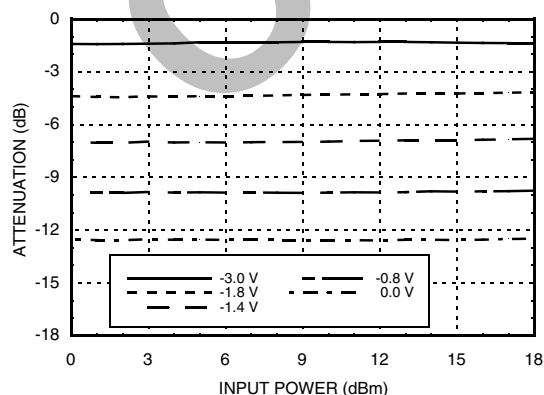
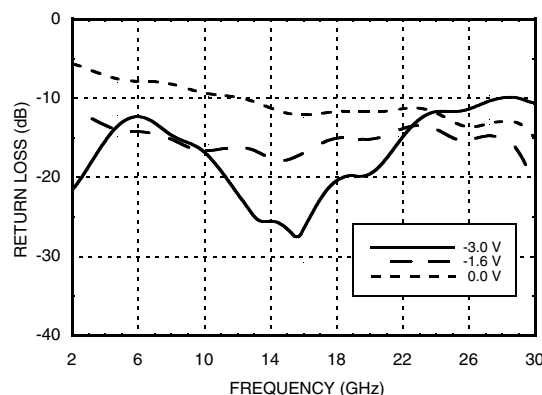
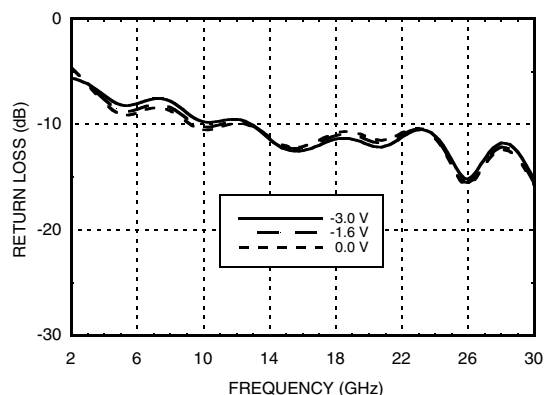
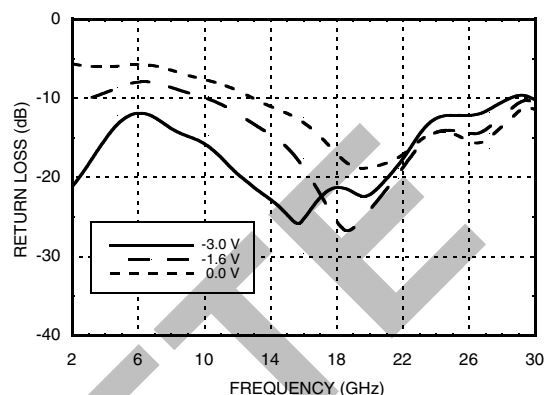
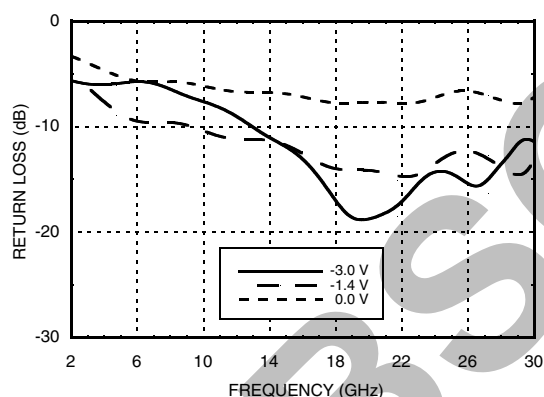
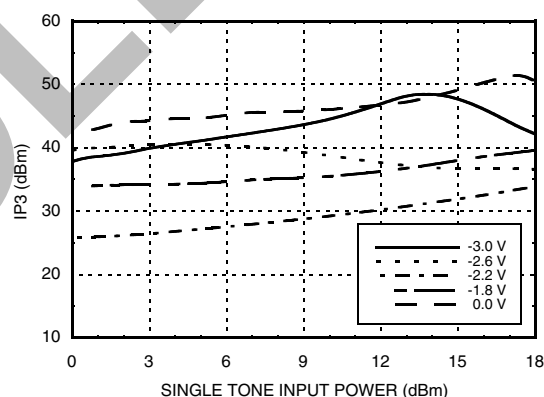
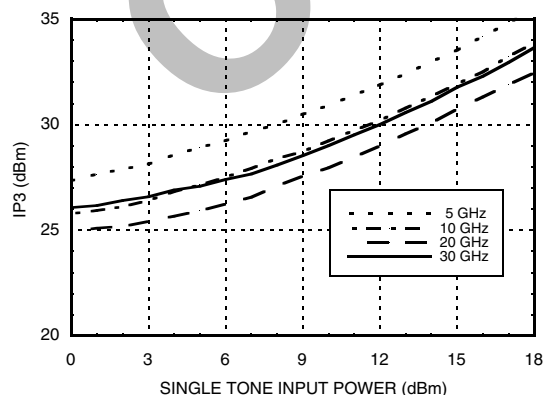
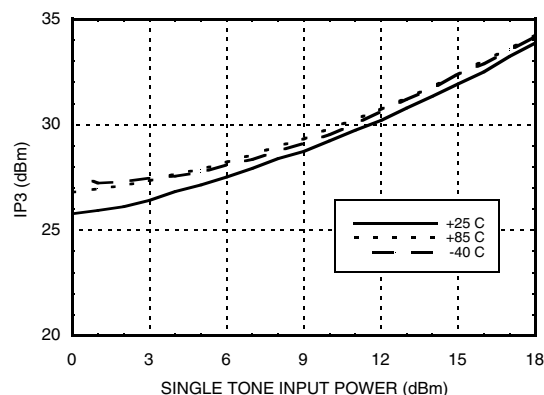
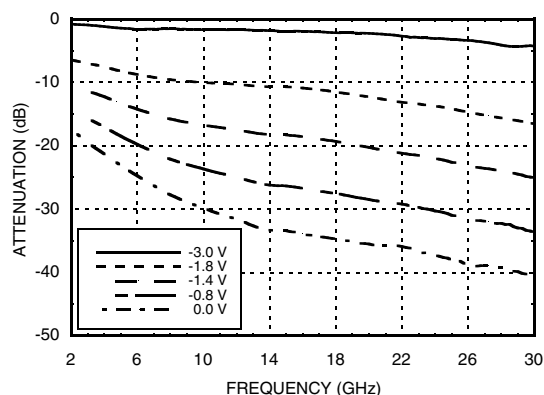
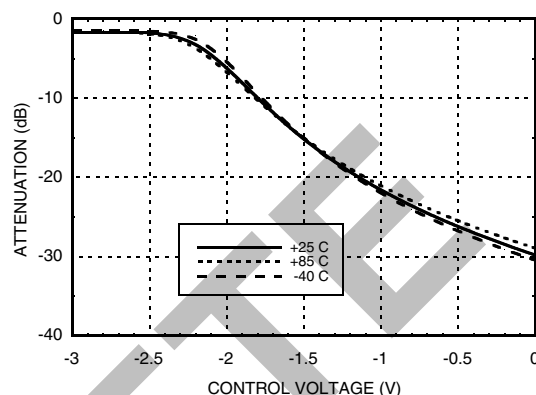
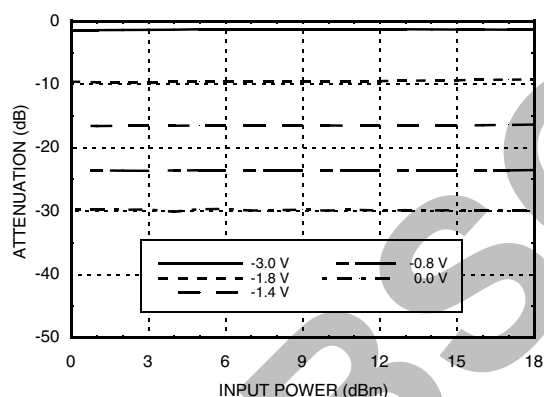
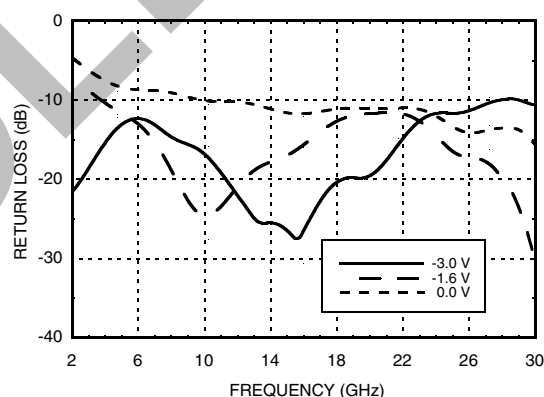
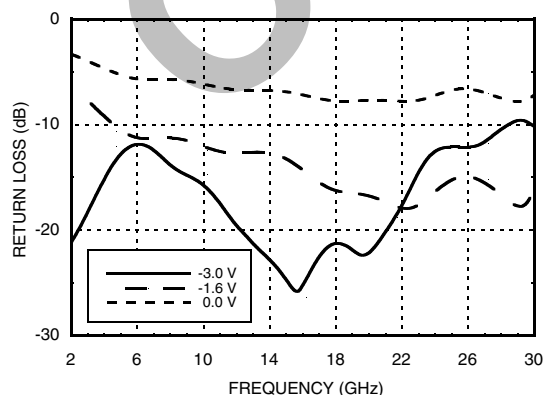
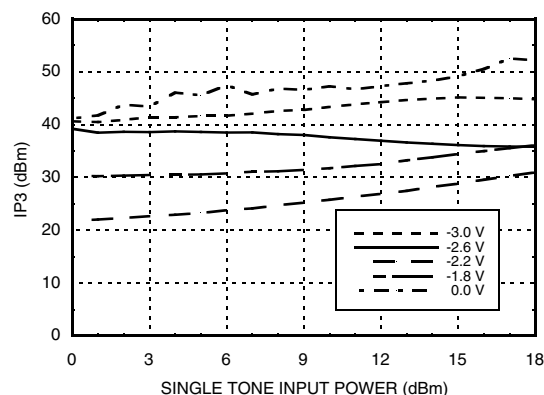


**GaAs MMIC VOLTAGE-VARIABLE
 ATTENUATOR, 5 - 30 GHz**
Attenuation vs. Frequency over Vctrl
Vctrl1 = Variable, Vctrl2 = -3V

Attenuation vs. Frequency over Vctrl
Vctrl1 = 0V, Vctrl2 = Variable

Attenuation vs. Vctrl1
Over Temperature @ 10 GHz, Vctrl2 = -3V

Attenuation vs. Vctrl2
Over Temperature @ 10 GHz, Vctrl1 = 0V

Attenuation vs. Pin @ 10 GHz
Vctrl1 = Variable, Vctrl2 = -3V

Input Return Loss
Vctrl1 = Variable, Vctrl2 = -3V




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**HMC812LC4****GaAs MMIC VOLTAGE-VARIABLE
ATTENUATOR, 5 - 30 GHz****Input Return Loss****Vctrl1 = 0V, Vctrl2 = Variable****Output Return Loss****Vctrl1 = Variable, Vctrl2 = -3V****Output Return Loss****Vctrl1 = 0V, Vctrl2 = Variable****Input IP3 vs Input Power @ 10 GHz****Vctrl1 = Variable, Vctrl2 = -3V****Input IP3 vs. Input Power Over Frequency****Vctrl1 = -2.2V, Vctrl2 = -3V (Worst Case IP3)****Input IP3 vs. Input Power Over Temperature****@ 10 GHz, Vctrl1 = -2.2V, Vctrl2 = -3V**

**GaAs MMIC VOLTAGE-VARIABLE
 ATTENUATOR, 5 - 30 GHz**
**Attenuation vs. Frequency over Vctrl
 Vctrl1 = Vctrl2**

**Attenuation vs. Vctrl over Temperature
 @ 10 GHz, Vctrl1 = Vctrl2**

**Attenuation vs. Input Power over Vctrl
 Vctrl1 = Vctrl2**

Input Return Loss, Vctrl1 = Vctrl2

Output Return Loss, Vctrl1 = Vctrl2

**Input IP3 vs. Input Power Over
 Vctrl @ 10 GHz, Vctrl1 = Vctrl2**




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HMC812LC4

GaAs MMIC VOLTAGE-VARIABLE
ATTENUATOR, 5 - 30 GHz

Absolute Maximum Ratings

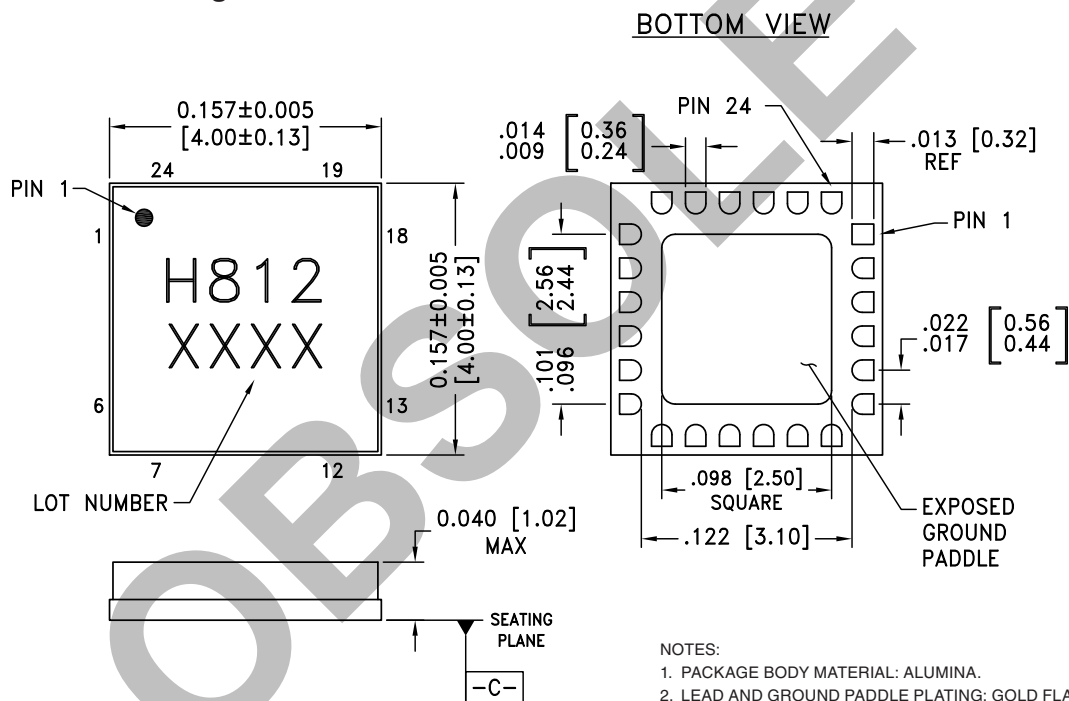
RF Input Power	+30 dBm
Control Voltage Range	+1 to -5V
Channel Temperature	150 °C
Continuous Pdiss (T = 85 °C) (derate 16.4 mW/ °C above 85 °C)	1.07 W
Thermal Resistance (Channel to ground paddle)	61 °C/W
Storage Temperature	-65 to +150 °C
Operating Temperature	-40 to +85 °C

Control Voltages

Vctrl1	-3 to 0V @ 10 µA
Vctrl2	-3 to 0V @ 10 µA

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

Outline Drawing



NOTES:

1. PACKAGE BODY MATERIAL: ALUMINA.
2. LEAD AND GROUND PADDLE PLATING: GOLD FLASH OVER NICKEL.
3. DIMENSIONS ARE IN INCHES (MILLIMETERS).
4. LEAD SPACING TOLERANCE IS NON-CUMULATIVE.
5. PACKAGE WARP SHALL NOT EXCEED 0.05MM DATUM -C-
6. 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]
HMC812LC4	Alumina, White	Gold over Nickel	MSL3 ^[1]	H812 XXXX


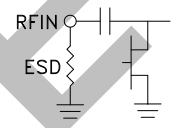
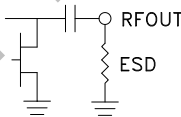
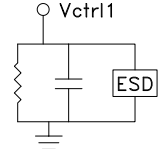
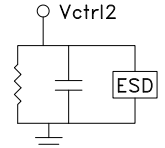
[1] Max peak reflow temperature of 260 °C

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

**GaAs MMIC VOLTAGE-VARIABLE
ATTENUATOR, 5 - 30 GHz**
Pin Descriptions

Pin Number	Function	Description	Interface Schematic
1, 2, 6 - 8, 11 - 13, 17 - 24	N/C	These pins are not connected internally, however these pins must be connected to RF/DC ground externally.	
3, 5, 14, 16	GND	These pins and the exposed ground paddle must be connected to RF/DC ground.	
4	RFIN	This pad is DC coupled and matched to 50 Ohms. A blocking capacitor is required if RF line potential is not equal to 0V.	
15	RFOUT		
9	Vctrl1	Control Voltage 1	
10	Vctrl2	Control Voltage 2	

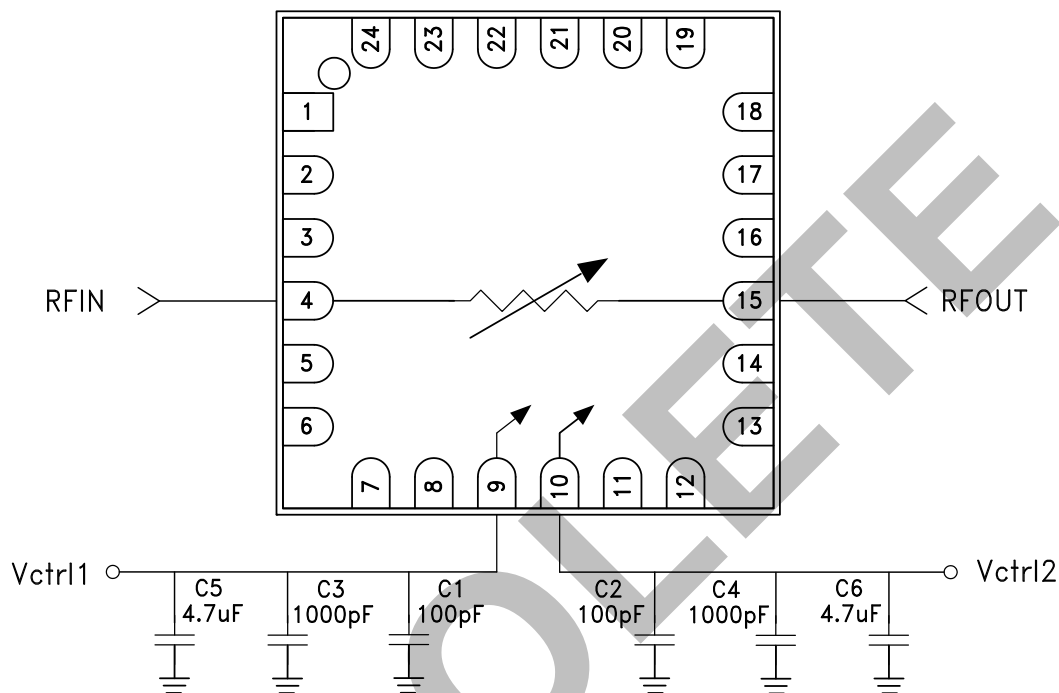


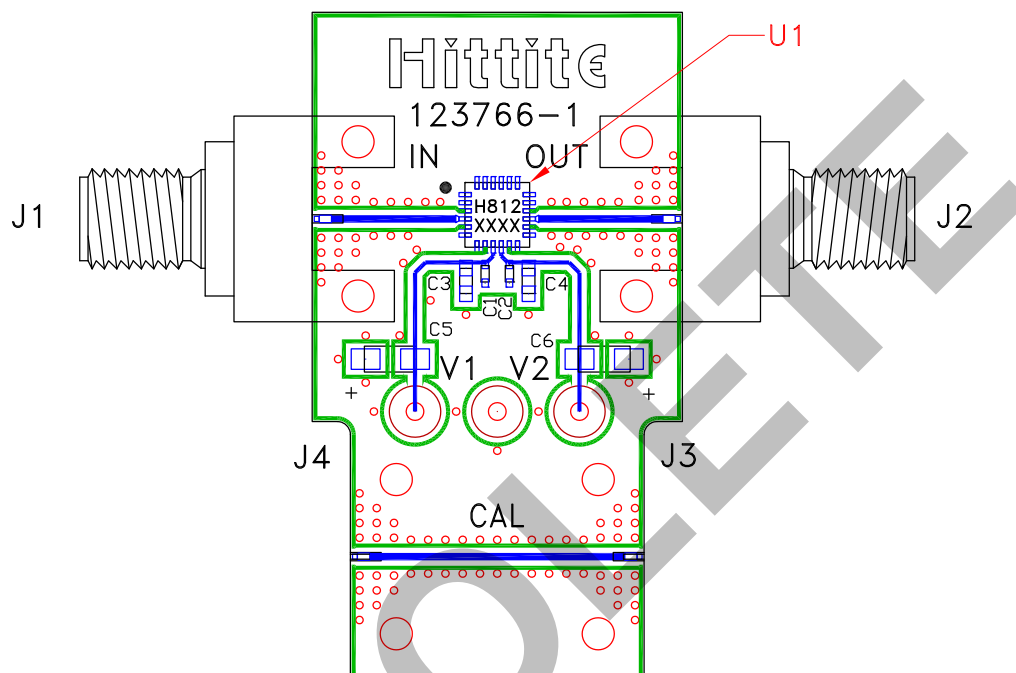
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**HMC812LC4**

**GaAs MMIC VOLTAGE-VARIABLE
ATTENUATOR, 5 - 30 GHz**

Application Circuit



Evaluation PCB

List of Materials for Evaluation PCB 123768 [1]

Item	Description
J1, J2	2.9 mm PC Mount RF Connector
J3, J4	DC Pin
C1, C2	100 pF Capacitor, 0402 Pkg.
C3, C4	1000 pF Capacitor, 0402 Pkg.
C5, C6	4.7 μ F Capacitor, CASE A
U1	HMC812LC4 Analog VVA
PCB [2]	123766 Evaluation PCB

[1] Reference this number when ordering complete evaluation PCB

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

The circuit board used in the final 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.