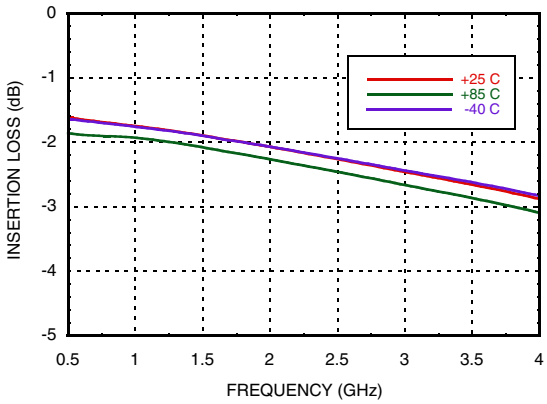
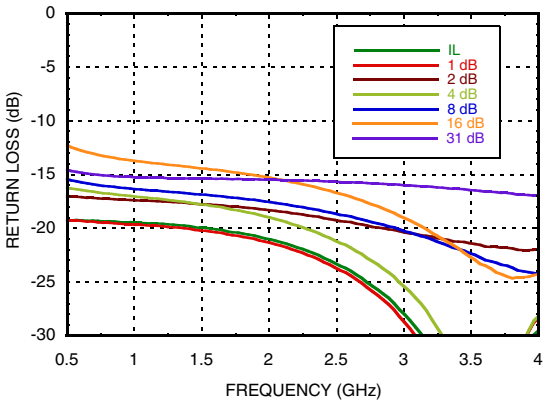
1 dB LSB GaAs MMIC 5-BIT DIGITAL ATTENUATOR, 0.7 - 3.8 GHz

Insertion Loss vs. Temperature



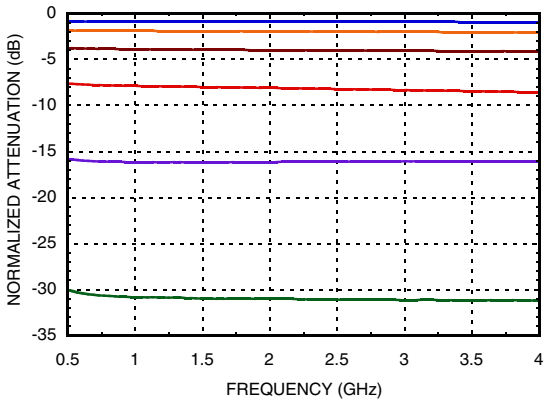
Return Loss RF1, RF2

(Only Major States are Shown)

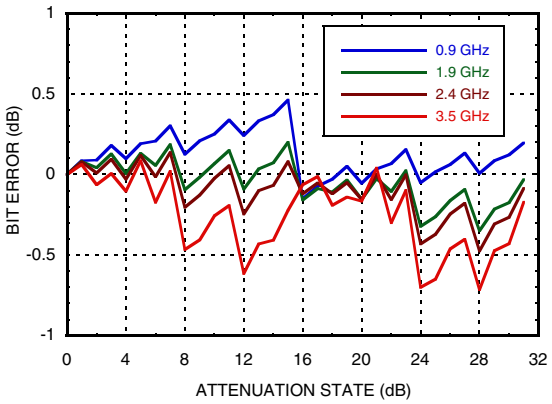


Normalized Attenuation

(Only Major States are Shown)

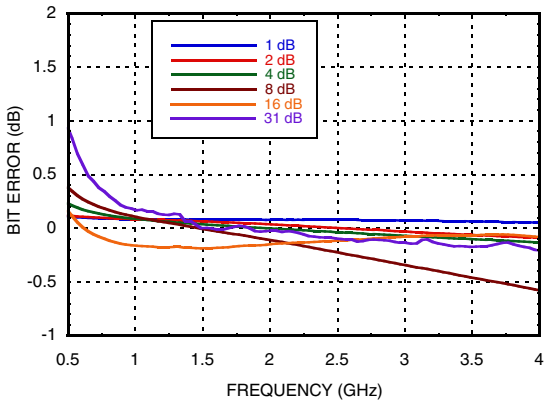


Bit Error vs. Attenuation State



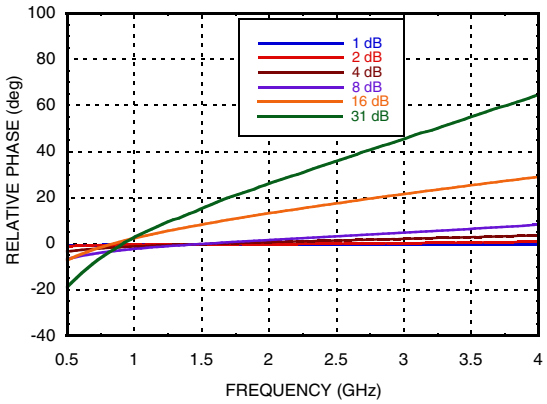
Bit Error vs. Frequency

(Only Major States are Shown)



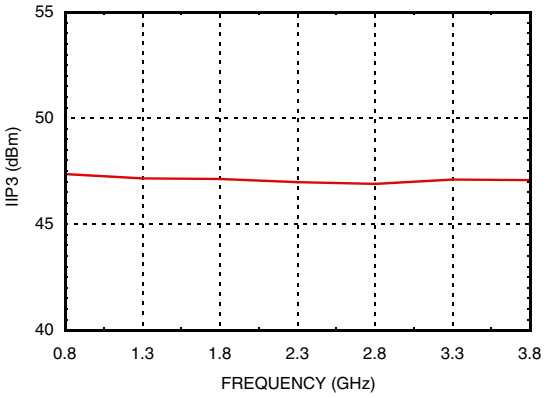
Relative Phase vs. Frequency

(Only Major States are Shown)

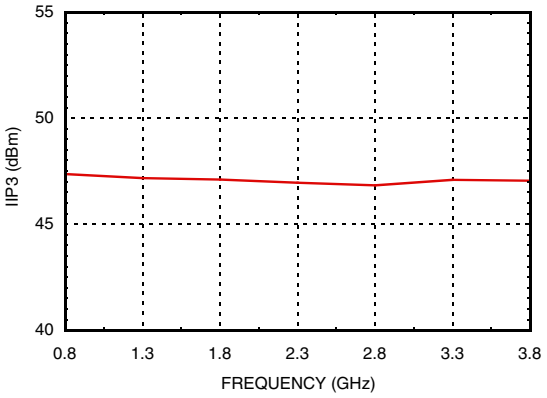


Note: All Data Typical Over Voltage (+3V to +5V)

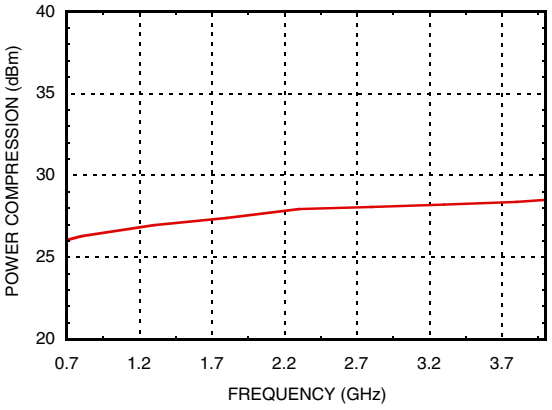
Input IP3 Vs. Frequency @ VDD= 3V, T_A = +25° C



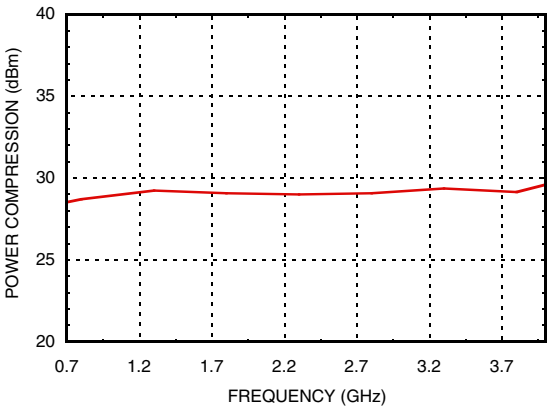
Input IP3 vs. Frequency @ VDD= 5V, T_A = +25° C



P0.1dB Vs. Frequency @ VDD= 3V, T_A = +25° C

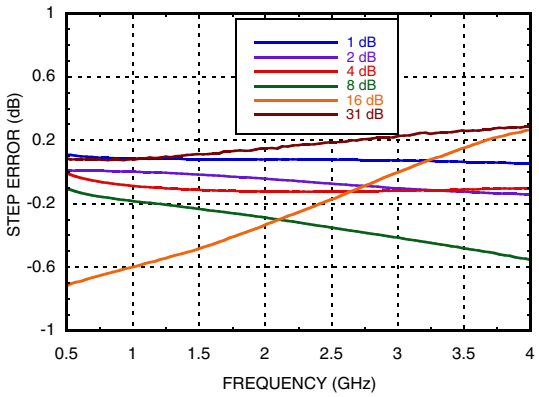


P0.1dB Vs. Frequency @ VDD= 5V T_A = +25° C



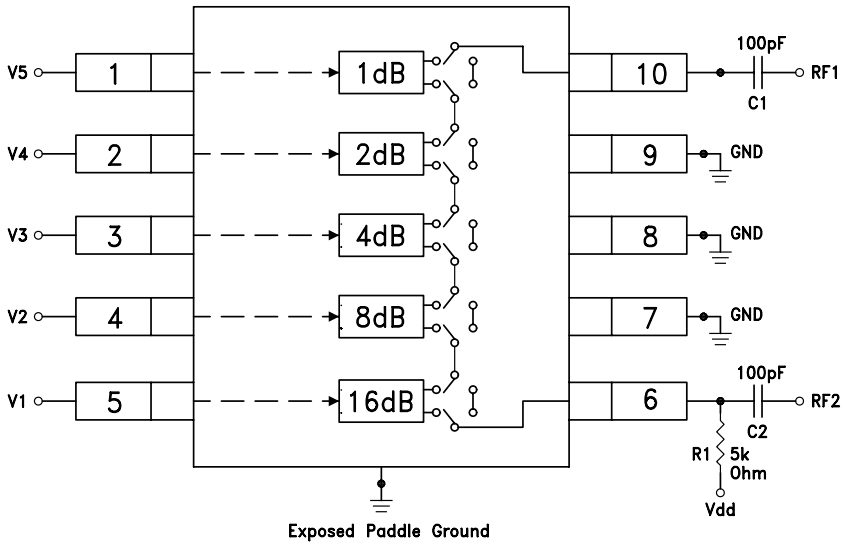
Step Error Vs. Frequency

(Only Major States are Shown)



1 dB LSB GaAs MMIC 5-BIT DIGITAL ATTENUATOR, 0.7 - 3.8 GHz

Application Circuit



DC blocking capacitors C1 & C2 are required on RF1 & RF2. Choose C1 = C2 = 100 ~ 300 pF to allow lowest customer specific frequency to pass with minimal loss. R1 = 5K Ohm is required to supply voltage to the circuit through either PIN 6 or PIN 10.

Truth Table

Control Voltage Input					Attenuation Setting RF1 - RF2
V1 16 dB	V2 8 dB	V3 4 dB	V4 2 dB	V5 1 dB	
High	High	High	High	High	Reference I.L.
High	High	High	High	Low	1 dB
High	High	High	Low	High	2 dB
High	High	Low	High	High	4 dB
High	Low	High	High	High	8 dB
Low	High	High	High	High	16 dB
Low	Low	Low	Low	Low	31 dB Max. Atten.
Any combination of the above states will provide an attenuation approximately equal to the sum of the bits selected.					

Control Voltages

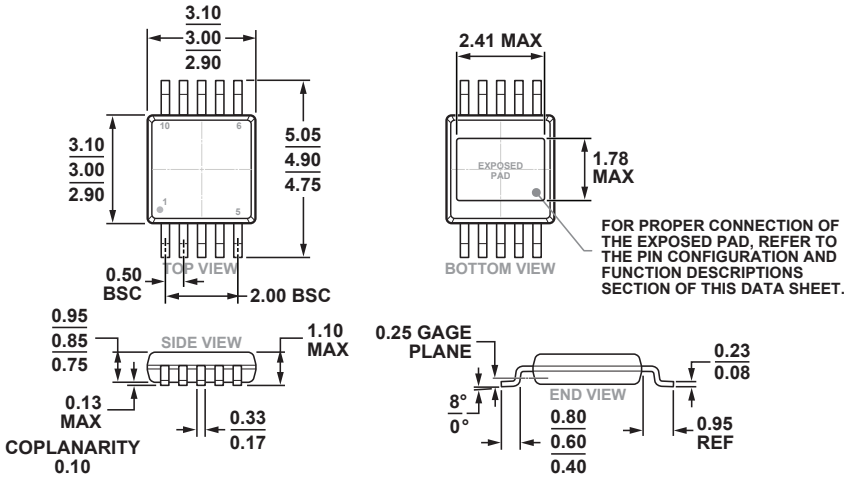
State	Bias Condition
Low	0 to +0.2 V @ < 1uA Max
High	Vdd ± 0.2V @ 1uA Max
Note: Vdd = +3V to 5V ± 0.2V	

Absolute Maximum Ratings

Control Voltage (V1 - V5)	Vdd + 0.5 V
Bias Voltage (Vdd)	+8.0 Vdc
Channel Temperature	150 °C
Continuous Pdiss	0.68 W
Thermal Resistance	95°C/W
Storage Temperature	-65 to +150 °C
Operating Temperature	-40 to +85 °C
RF Input Power	+26 dBm
ESD Sensitivity (HBM)	Class 1A

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

Outline Drawing



COMPLIANT TO JEDEC STANDARDS MO-187-BA-T

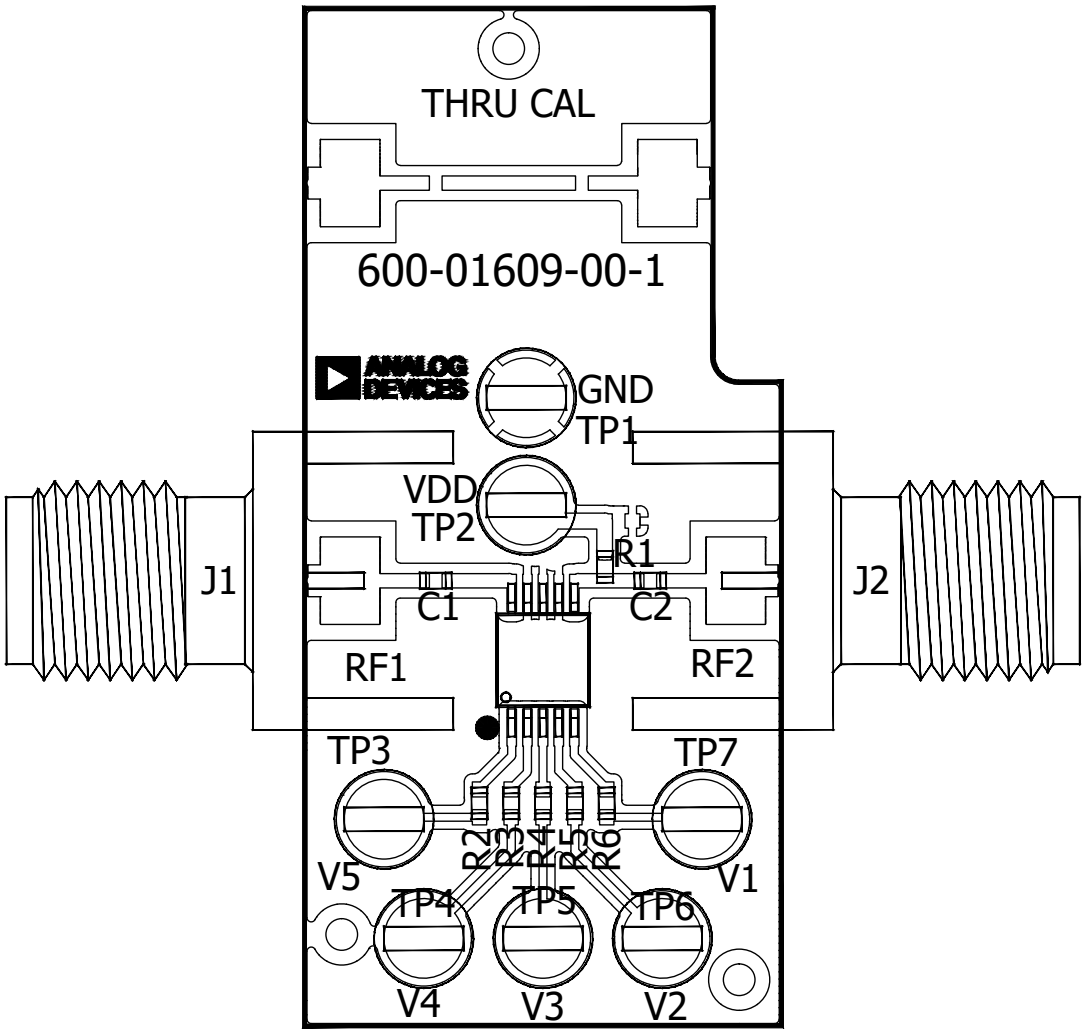
10-Lead Mini Small Outline Package with Exposed Pad [MINI_SO_EP]
(RH-10-3)
Dimensions shown in millimeters

Package Information

Part Number	Package Body Material	Lead Finish	MSL Rating	Package Marking [2]
HMC273AMS10GE	RoHS-compliant Low Stress Injection Molded Plastic	100% matte Sn	MSL3 [1]	273A XXXX

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

Evaluation Circuit Board



List of Materials for Evaluation PCB EV1HMC273AMS10G[1]

Item	Description
J1 - J2	PCB Mount SMA Connector
J3 - J6	DC Pin
R1	5 kOhm Resistor, 0402 Chip
R2, R3, R4	100 Ohm Resistor, 0402 Chip
C1, C2	0402 Chip Capacitor, Select for Lowest Frequency of Operation
U1	HMC273AMS10GE Digital Attenuator
PCB [2]	EV1HMC273AMS10G Evaluation PCB 1.5" x 1.5"

[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 ground paddle should be connected directly to the ground plane similar to that shown below. A sufficient number of via holes should be used to connect the top and bottom ground planes. The evaluation circuit board as shown is available from Analog Devices, upon request.