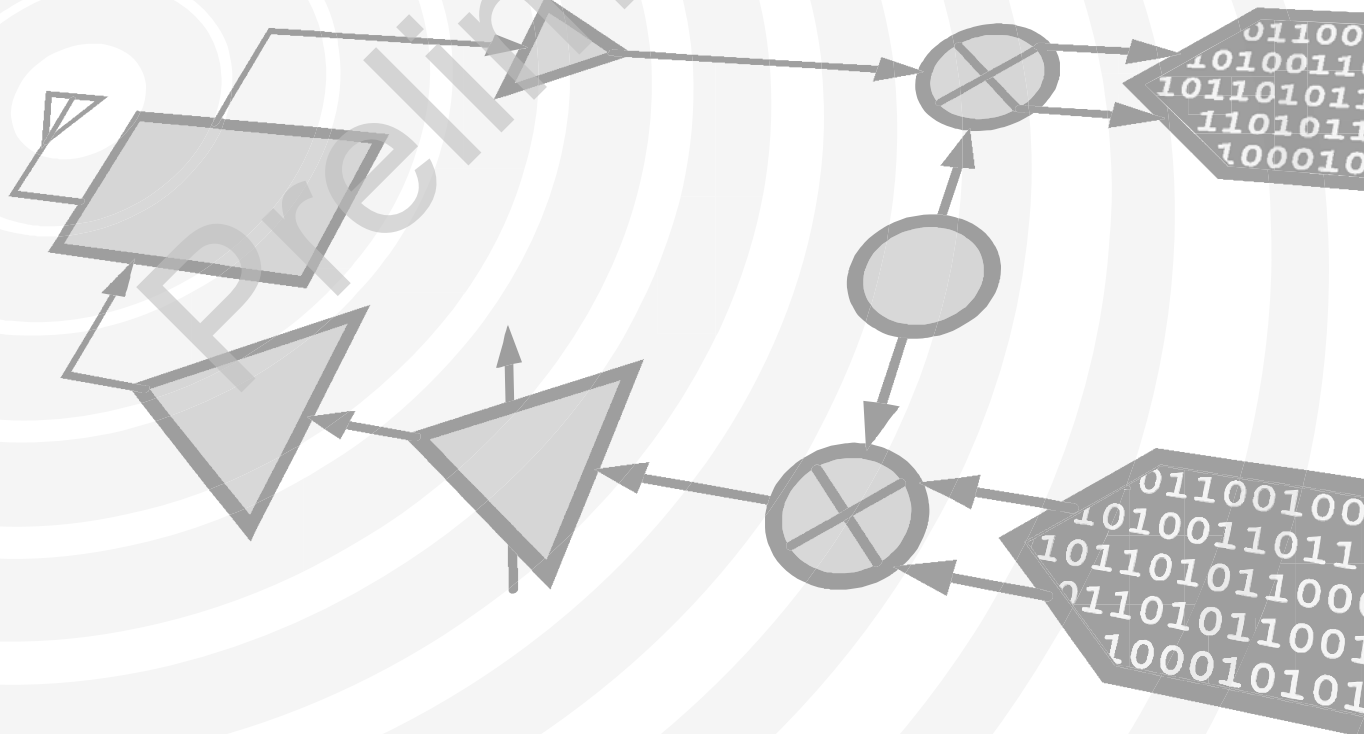


# Analog Devices Welcomes Hittite Microwave Corporation



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Preliminary

## GaAs MMIC VOLTAGE-VARIABLE ATTENUATOR, DC - 14 GHz

### Typical Applications

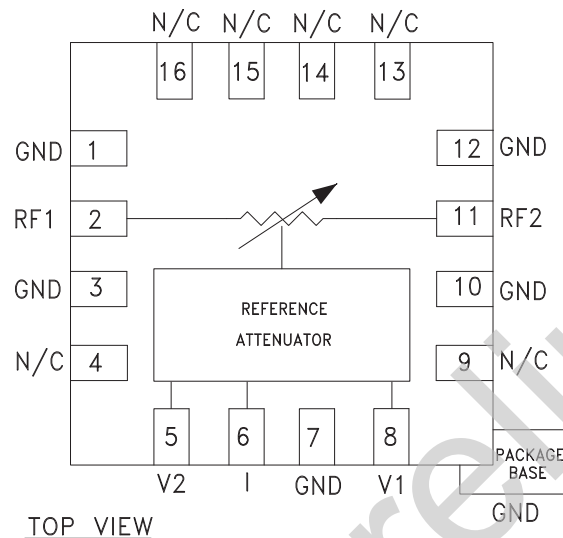
The HMC346ALP3 / HMC346ALP3E is ideal for:

- Basestation Infrastructure
- Fiber Optics & Broadband Telecom
- Microwave Radio & VSAT
- Military Radios, Radar, & ECM
- Test Instrumentation

### Features

- Wide Bandwidth: DC - 14 GHz
- Low Phase Shift vs. Attenuation
- 30 dB Attenuation Range
- Simplified Voltage Control
- 3 x 3 x 1 mm SMT Package

### Functional Diagram



### General Description

The HMC346ALP3 & HMC346ALP3E are absorptive Voltage Variable Attenuators (VVA) in low cost leadless surface mount plastic packages operating from DC - 14 GHz. It features an on-chip reference attenuator for use with an external op-amp to provide simple single voltage attenuation control, 0 to -3V. The device is ideal in designs where an analog DC control signal must control RF signal levels over a 30 dB amplitude range. This VVA is an excellent alternative to the HMC121C8.

### Electrical Specifications, $T_A = +25^\circ\text{C}$ , 50 ohm system

Parameter	Min	Typical	Max	Units
Insertion Loss	DC - 10 GHz	1.7	2.2	dB
	DC - 14 GHz	2.8	3.3	dB
Attenuation Range	DC - 10 GHz	27	30	dB
	DC - 14 GHz	22	27	dB
Return Loss	DC - 14 GHz	5	10	dB
Switching Characteristics	tRISE, tFALL (10/90% RF):	2		ns
	tON, tOFF (50% CTL to 10/90% RF):	8		ns
Input Power for 0.25 dB Compression (0.5 - 8 GHz)	Min. Atten:	+8		dBm
	Atten. >2 dB:	-4		dBm
Input Third Order Intercept (0.5 - 8 GHz) (Two-tone Input Power = -8 dBm Each Tone)	Min. Atten:	+25		dBm
	Atten. >2 dB:	+10		dBm

## GaAs MMIC VOLTAGE-VARIABLE ATTENUATOR, DC - 14 GHz

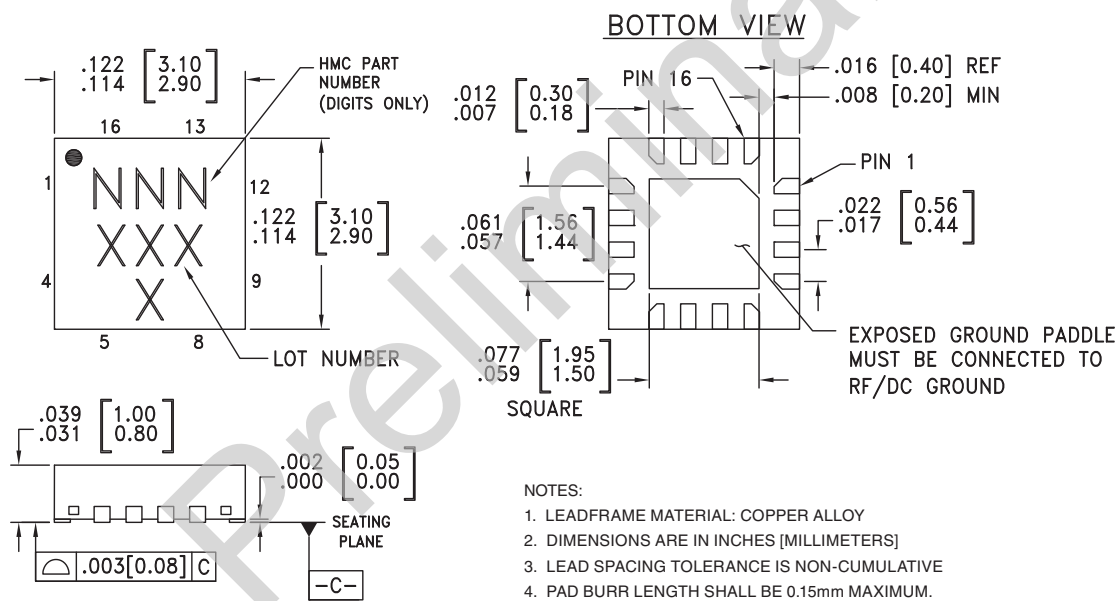
### Absolute Maximum Ratings

RF Input Power	+18 dBm
Control Voltage Range	+1 to -5V
Storage Temperature	-65 to +150 °C
Operating Temperature	-40 to +85 °C
ESD Sensitivity (HBM)	Class 1A



ELECTROSTATIC SENSITIVE DEVICE  
OBSERVE HANDLING PRECAUTIONS

### Outline Drawing



NOTES:

1. LEADFRAME MATERIAL: COPPER ALLOY
2. DIMENSIONS ARE IN INCHES [MILLIMETERS]
3. LEAD SPACING TOLERANCE IS NON-CUMULATIVE
4. PAD BURR LENGTH SHALL BE 0.15mm MAXIMUM.  
PAD BURR HEIGHT SHALL BE 0.05mm MAXIMUM.
5. PACKAGE WARP SHALL NOT EXCEED 0.05mm.
6. ALL GROUND LEADS AND GROUND PADDLE MUST BE SOLDERED TO PCB RF GROUND.
7. REFER TO HITTITE APPLICATION NOTE FOR SUGGESTED LAND PATTERN.