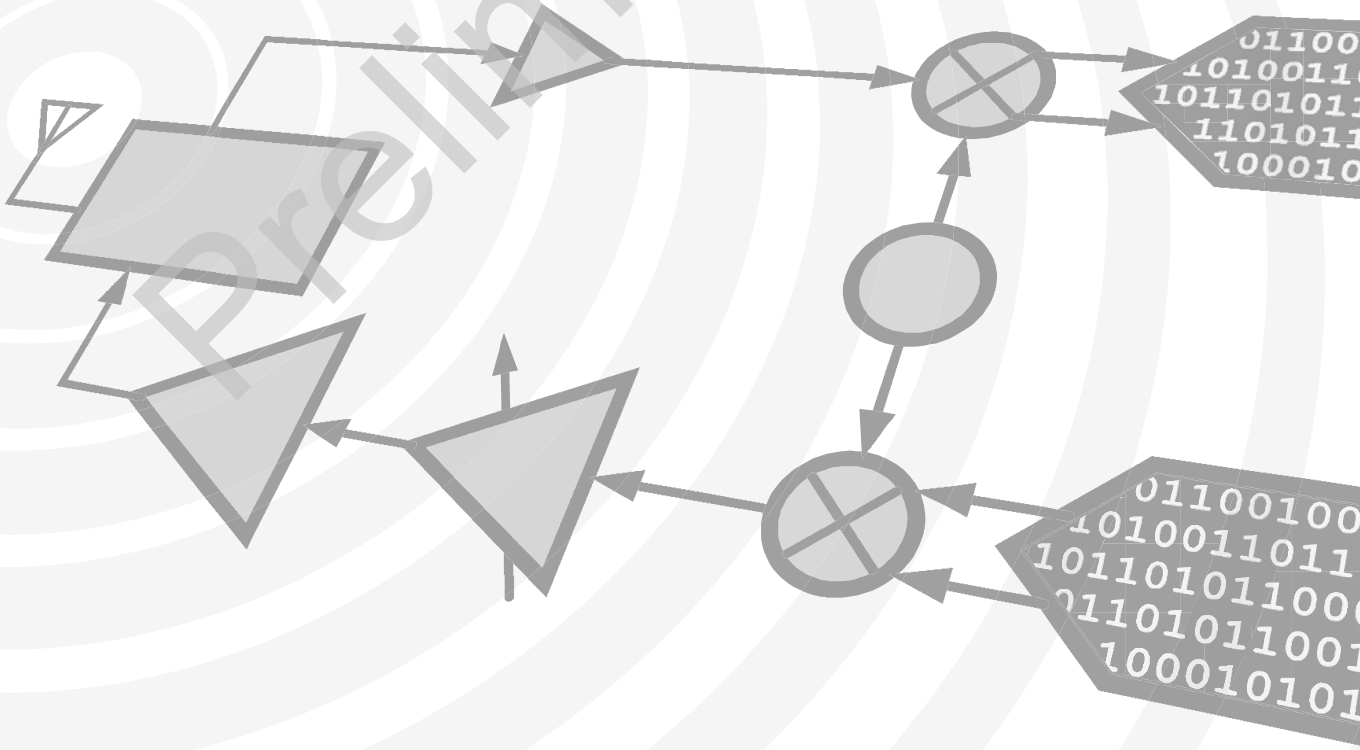
ANALOG DEVICES

Hittite MICROWAVE PRODUCTS FROM ANALOG DEVICES

Analog Devices Welcomes Hittite Microwave Corporation



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HMC985ALP4KE

v00.1115

GaAs MMIC VOLTAGE - VARIABLE ATTENUATOR, 10 - 40 GHz

Typical Applications

The HMC985ALP4KE is ideal for:

- Point-to-Point Radio
- VSAT Radio
- Test Instrumentation
- Microwave Sensors
- Military, ECM & Radar

Features

Wide Bandwidth: 10 - 40 GHz

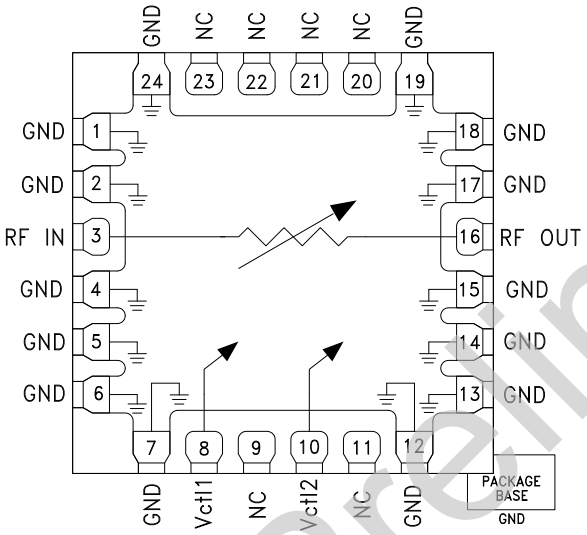
Excellent Linearity: +32 dB Input IP3

Wide Attenuation Range: 35 dB

No External Matching

24 Lead 4x4 mm SMT Package: 16 mm²

Functional Diagram



General Description

The HMC985ALP4KE is an absorptive Voltage Variable Attenuator (VVA) which operates from 10 - 40 GHz and is ideal in designs where an analog DC control signal must be used to control RF signal levels over a 35 dB dynamic range. It features two shunt-type attenuators which are controlled by two analog voltages, Vctl1 and Vctl2. Optimum linearity performance of the attenuator is achieved by first varying Vctl1 of the first attenuation stage from -3V to 0V with Vctl2 fixed at -3V. The control voltage of the second attenuation stage, Vctl2, should then be varied from -3V to 0V with Vctl1 fixed at 0V.

If the Vctl1 and Vctl2 pins are connected together it is possible to achieve the full analog attenuation range with only a small degradation in input IP3 performance. Applications include AGC circuits and temperature compensation of multiple gain stages in microwave point-to-point and VSAT radios.

Electrical Specifications, T_A = +25 °C, Test Condition Vctl1 = Vctl2

Parameter	Frequency	Min.	Typ.	Max.	Units
Insertion Loss [1]	10 - 20 GHz		3	3.5	dB
	20 - 30 GHz		3	4	dB
	30 -40 GHz		3.5	4.5	dB
Attenuation Range	10 - 20 GHz	25	30		dB
	20 - 30 GHz	30	35		dB
	30 - 40 GHz	35	40		dB
Input Return Loss	10 - 40 GHz		13		dB
Output Return Loss	10 - 40 GHz		13		dB
Input Third Order Intercept (two-tone input Power = 10 dBm Each Tone) [2]			33		dBm

[1] Vcntl1 = Vcntl2 =-2.4V
[2] Vcntl1 = Vcntl2 =-2.0V worst case

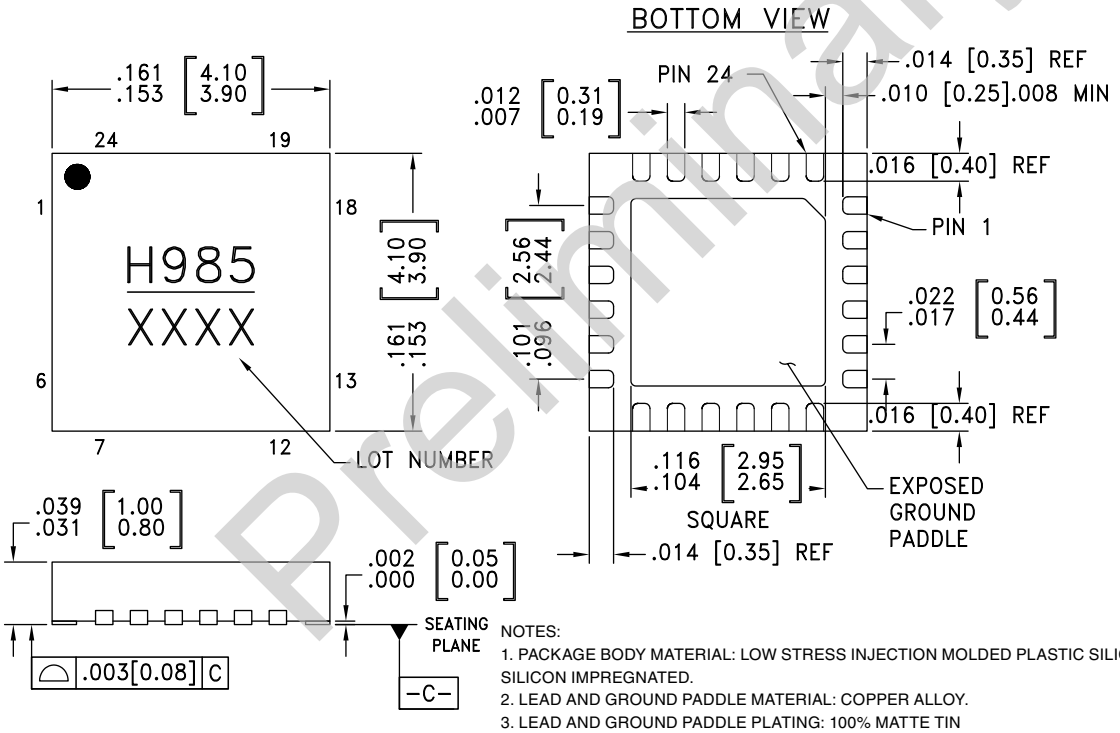
For price, delivery, and to place orders: Analog Devices, Inc., One Technology Way, P.O. Box 9106, Norwood, MA 02062-9106
Phone: 781-329-4700 • Order online at www.analog.com
Application Support: Phone: 1-800-ANALOG-D

Absolute Maximum Ratings

Control Voltage	+1 to -5V
Input RF Power	30 dBm
Maximum Junction Temperature	165 °C
Thermal Resistance (R_{TH}) (junction to ground paddle)	62 °C/W
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to 125°C
ESD Sensitivity (HBM)	Class1A, passed 250V

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

Outline Drawing



NOTES:
1. PACKAGE BODY MATERIAL: LOW STRESS INJECTION MOLDED PLASTIC SILICA AND SILICON IMPREGNATED.
2. LEAD AND GROUND PADDLE MATERIAL: COPPER ALLOY.
3. LEAD AND GROUND PADDLE PLATING: 100% MATTE TIN
4. DIMENSIONS ARE IN INCHES [MILLIMETERS].
5. LEAD SPACING TOLERANCE IS NON-CUMULATIVE.
6. CHARACTERS TO BE HELVETICA MEDIUM, .025 HIGH, WHITE INK, OR LASER MARK LOCATED APPROX. AS SHOWN.
7. PAD BURR LENGTH SHALL BE 0.15mm MAX. PAD BURR HEIGHT SHALL BE 0.05mm MAX.
8. PACKAGE WARP SHALL NOT EXCEED 0.05mm
9. ALL GROUND LEADS AND GROUND PADDLE MUST BE SOLDERED TO PCB RF GROUND.
10. REFER TO HITTITE APPLICATION NOTE FOR SUGGESTED PCB LAND PATTERN.