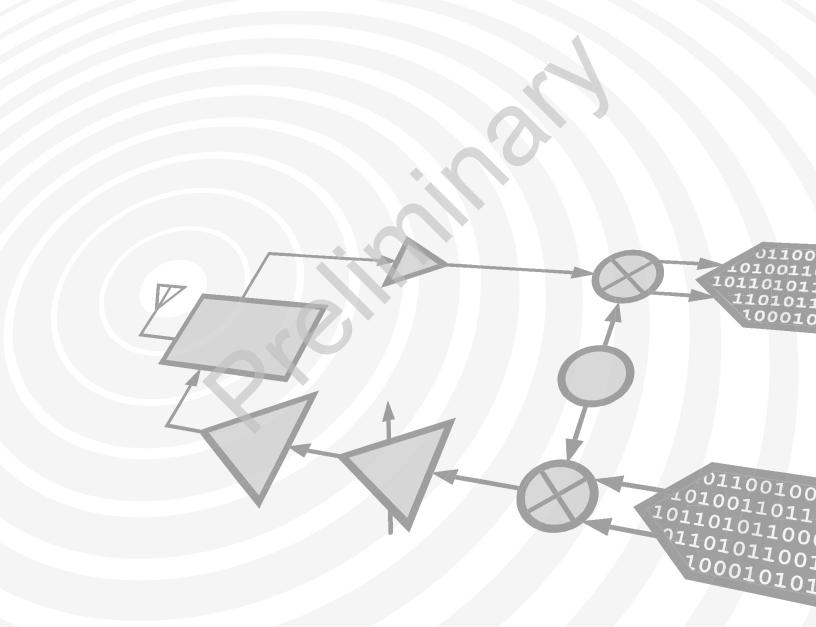




Analog Devices Welcomes Hittite Microwave Corporation



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HMC985ALP4KE

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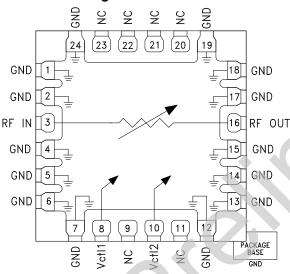
GaAs MMIC VOLTAGE - VARIABLE ATTENUATOR, 10 - 40 GHz

Typical Applications

The HMC985ALP4KE is ideal for:

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

Functional Diagram



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

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.	Тур.	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



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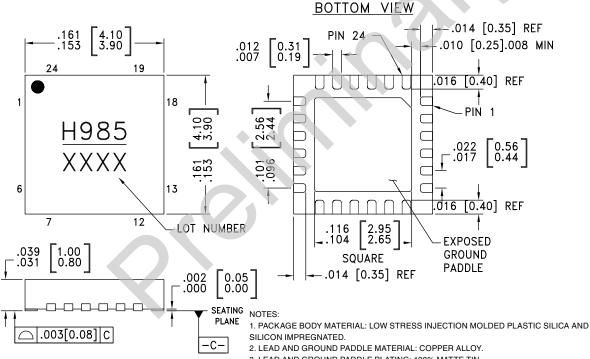
GaAs MMIC VOLTAGE - VARIABLE ATTENUATOR, 10 - 40 GHz

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		



Outline Drawing



- 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.