MICROWAVE CORPORATION

v00.0907

HMC-VVD104

GaAs PIN MMIC VOLTAGE-VARIABLE ATTENUATOR, 70 - 86 GHz

Typical Applications

This HMC-VVD104 is ideal for:

- E-Band Communication Systems
- Short Haul / High Capacity Radios
- Automotive Radar
- Test Equipment
- SATCOM and Sensors

Features

Low Insertion Loss: 2 dB

Wide Dynamic Range: 14 dB

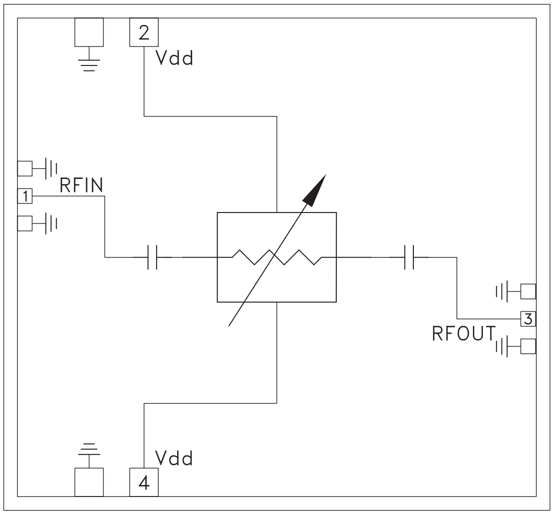
Balanced Topology

Flexible Biasing

Single Control Voltage: -5V to +5V

Die Size: 1.99 x 1.845 x 0.1 mm

Functional Diagram



General Description

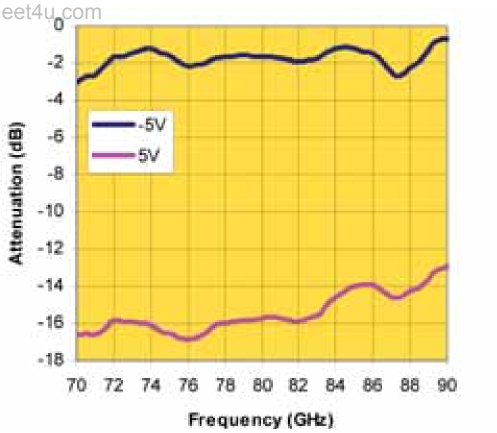
The HMC-VVD104 is a monolithic GaAs PIN diode based Voltage Variable Attenuator (VVA) which exhibits low insertion loss, high IP3, and wide dynamic range. The balanced topology delivers excellent return loss while the single control voltage can be applied to either side of the die. All bond pads and the die backside are Ti/Au metallized, and the PIN diode devices are fully passivated for reliable operation. This wideband VVA MMIC is compatible with conventional die attach methods, as well as thermocompression and thermosonic wirebonding, making it ideal for MCM and hybrid microcircuit applications. All data shown herein is measured with the chip in a 50 Ohm environment and contacted with RF probes.

Electrical Specifications, T_A = +25 °C, 50 Ohm System

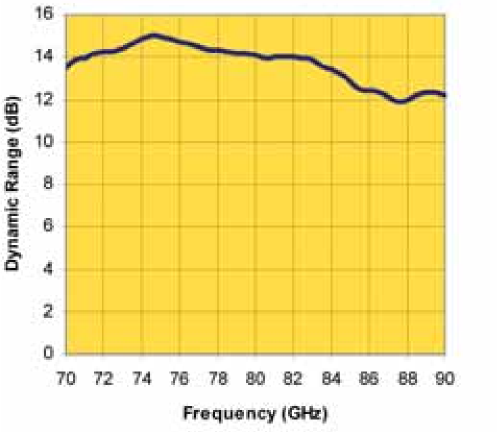
Parameter	Min.	Typ.	Max.	Units
Frequency Range		70 - 86		GHz
Insertion Loss		2	3	dB
Attenuation Range		14		dB
Input Return Loss		14		dB
Output Return Loss		12		dB

*Unless otherwise indicated, all measurements are from probed die

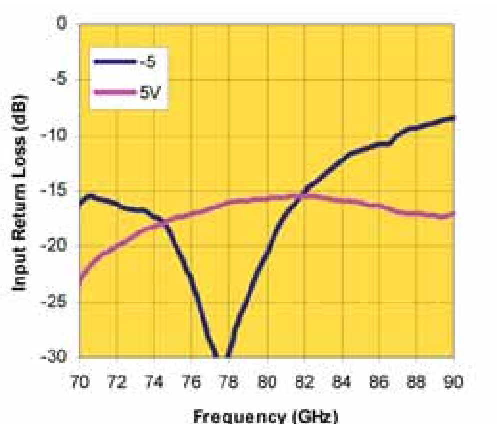
Attenuation vs. Frequency



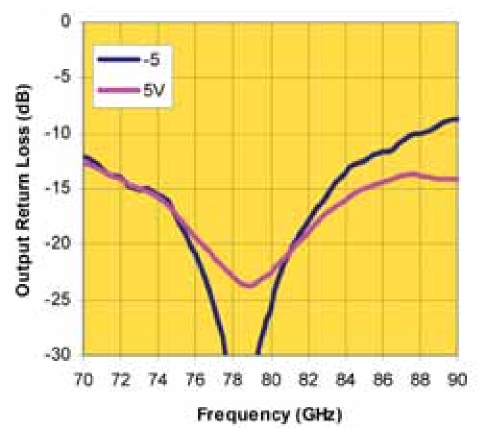
Dynamic Range vs. Frequency



Input Return Loss vs. Frequency



Output Return Loss vs. Frequency



Note: Measured Performance Characteristics (Typical Performance at 25°C) Pin= -20 dBm

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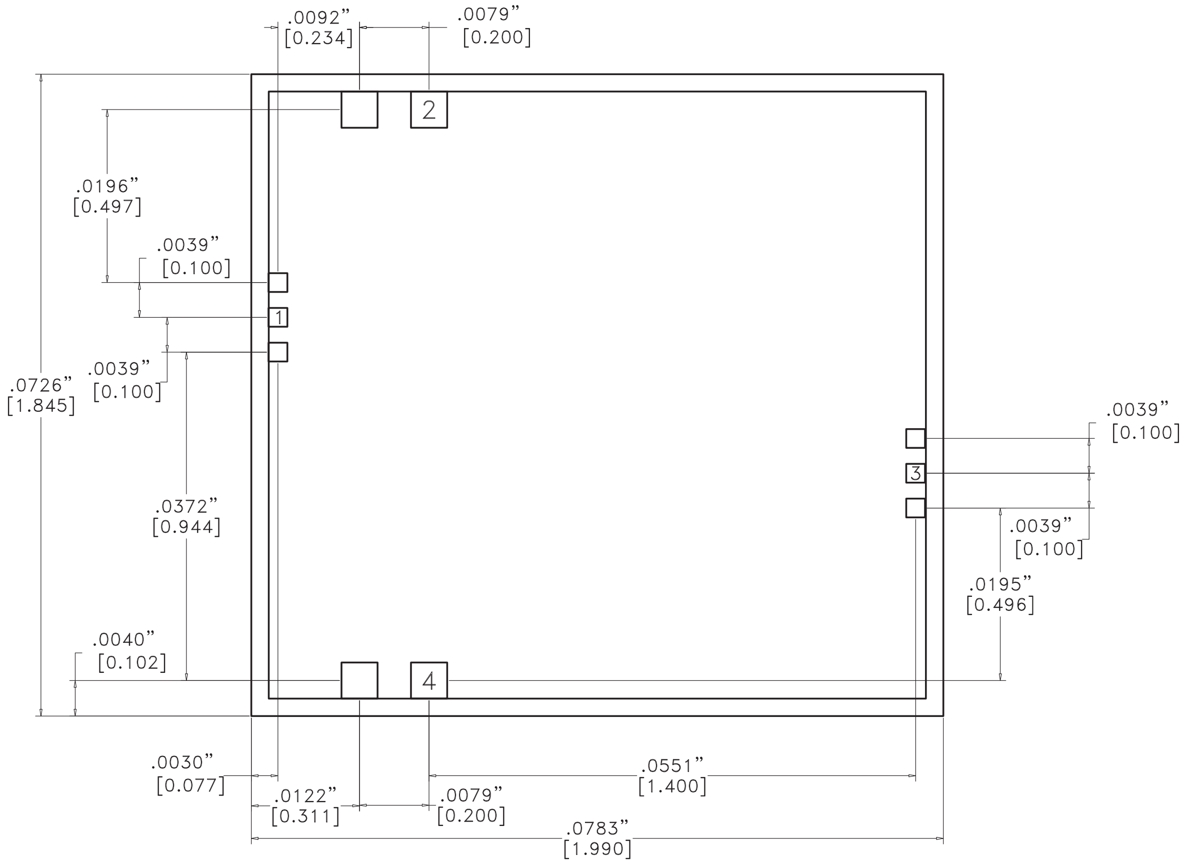
Absolute Maximum Ratings

Control Voltage Range (Vdd)	-6V to +6V Vdc
Storage Temperature	-65 to +150 °C
Operating Temperature	-55 to +85 °C
Bias Current (Idd)	30 mA

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

Outline Drawing



NOTES:
1. ALL DIMENSIONS ARE IN INCHES [MM].
2. TYPICAL BOND PAD IS .004” SQUARE.
3. BACKSIDE METALLIZATION: GOLD.
4. BACKSIDE METAL IS GROUND.
5. BOND PAD METALLIZATION: GOLD.
6. CONNECTION NOT REQUIRED FOR UNLABELED BOND PADS.
7. OVERALL DIE SIZE ±.002”