HMC-VVD106

v00.0907

GaAs PIN MMIC VOLTAGE-VARIABLE ATTENUATOR, 36 - 50 GHz

Typical Applications

This HMC-VVD106 is ideal for:

- Short Haul / High Capacity Radios
- Automotive Radar
- Test Equipment
- SATCOM
- Military
- Point-to-Point Radios
- Point to Multi-Point Radios

Features

Low Insertion Loss: 1.5 dB

Wide Dynamic Range: 22 dB

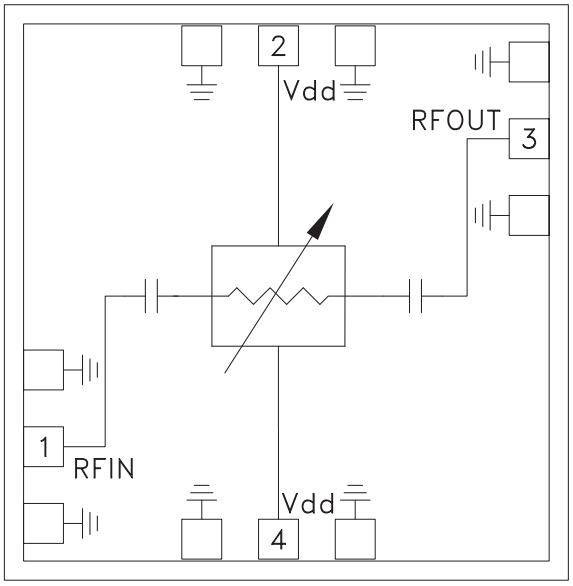
Balanced Topology

High Input IP3: +17 dBm

Single Control Voltage: 0 to +4V

Die Size: 1.47 x 1.5 x 0.1 mm

Functional Diagram



General Description

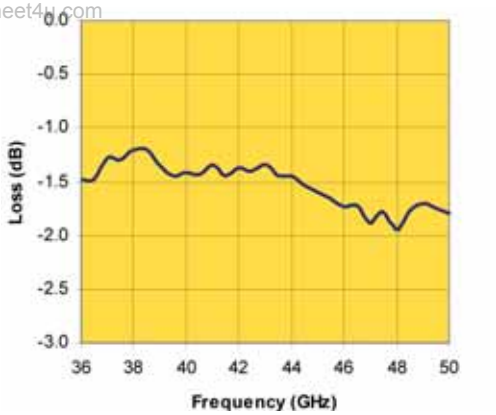
The HMC-VVD106 is a monolithic GaAs PIN diode based Voltage Variable Attenuator (VVA) which exhibits low insertion loss, high IP3, and wide dynamic range. The balanced topology delivers excellent return loss while the single control voltage can be applied to either side of the die. All bond pads and 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 on chip in a 50 Ohm environment and contacted with RF probes.

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

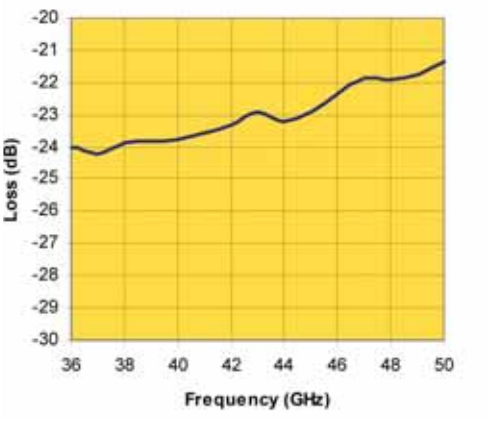
Parameter	Min.	Typ.	Max.	Units
Frequency Range		36 - 50		GHz
Insertion Loss		1.5	2	dB
Attenuation Range		21		dB
Return Loss		15		dB
IM3 @ Pin = 0 dBm / Tone	30			dBc

*Unless otherwise indicated, all measurements are from probed die

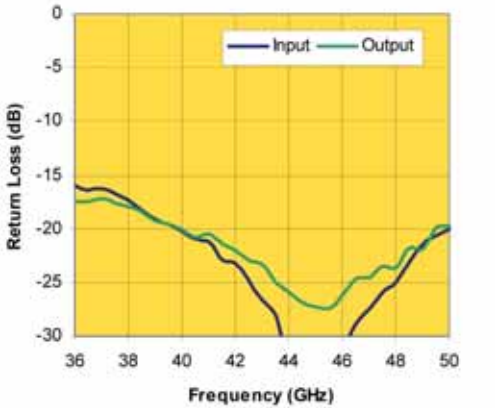
Minimum Attenuation vs. Frequency



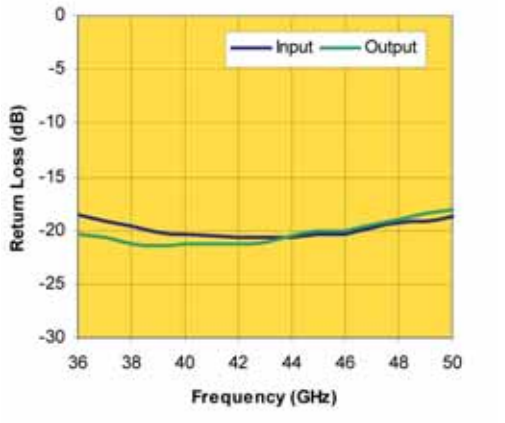
Maximum Attenuation vs. Frequency



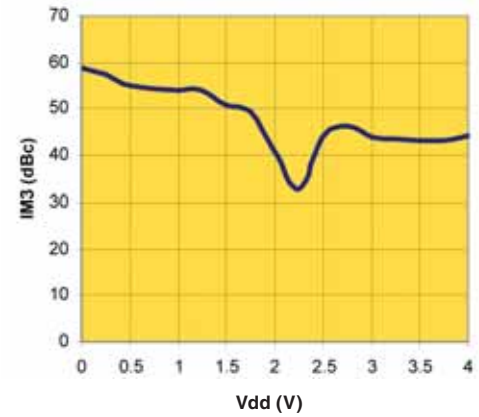
Return Loss vs. Frequency @ Minimum Attenuation



Return Loss vs. Frequency @ Maximum Attenuation



IM3 vs. Vdd @ 38.5 GHz

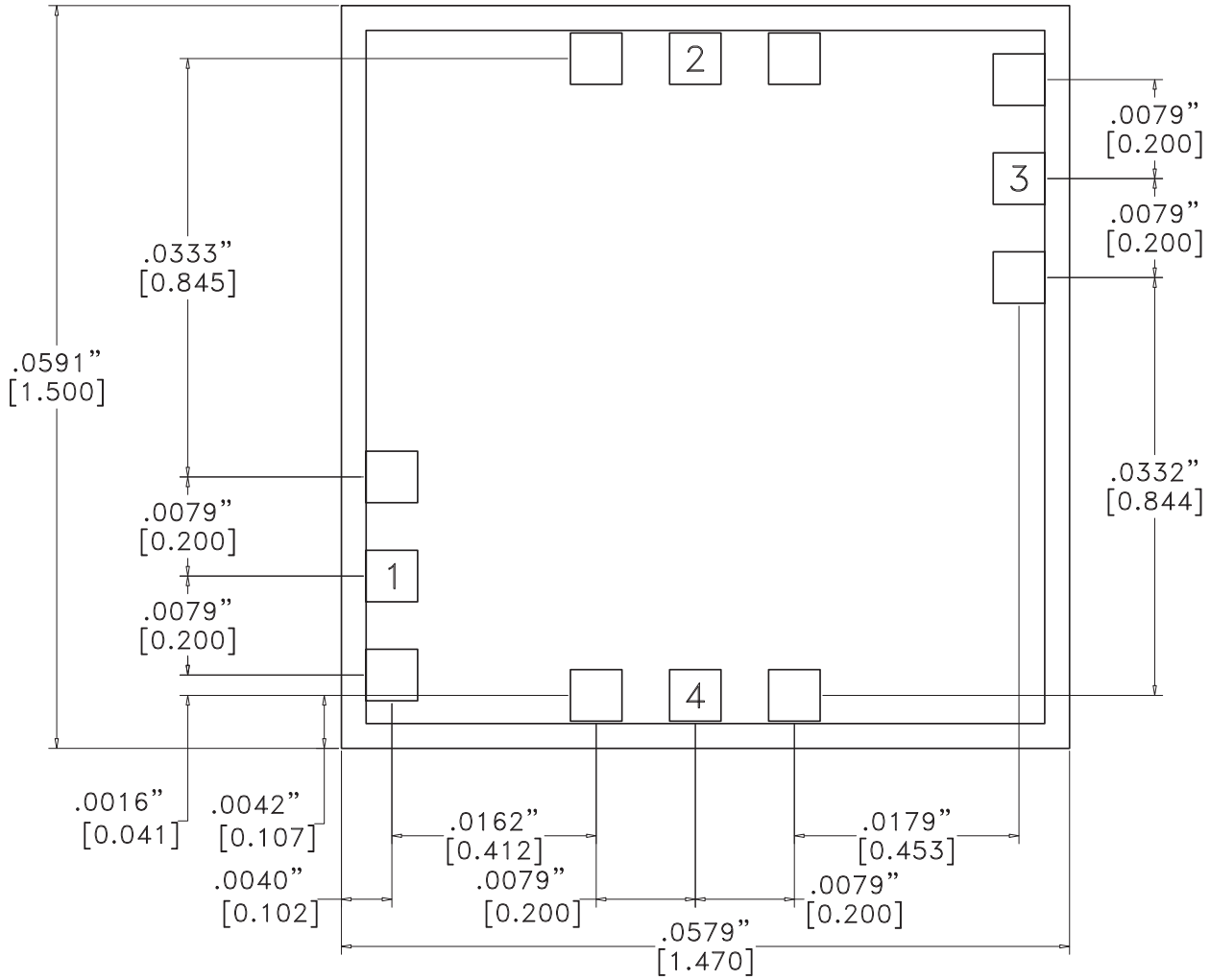


Absolute Maximum Ratings

Control Voltage Range (Vdd)	-6V to +6V Vdc
Storage Temperature	-65 to +150 °C
Operating Temperature	-55 to +85 °C
Bias Current (Idd)	20 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"