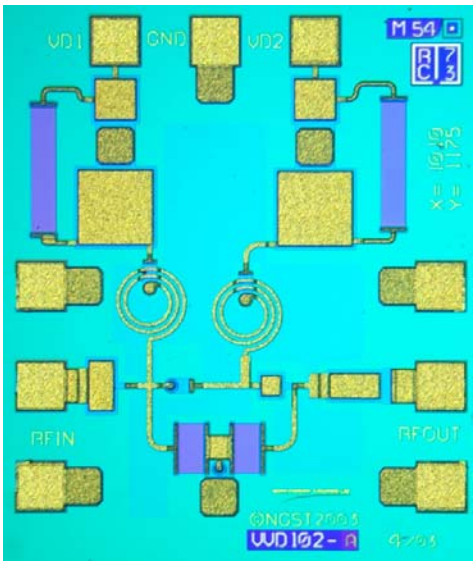
VVD102
17-27 GHz Attenuator

Preliminary Datasheet

Revision: May 2007



X=1010 µm Y=1175 µm

Product Features

- Frequency: 17 to 27 GHz
- Insertion Loss: 2 dB Max
- Dynamic Range: >18 dB
- Voltage Range: +5 to –5V
- Die Size: < 1.2 sq. mm

Applications

- Point-to-Point Digital Radios
- Point-to-Multipoint Digital Radios
- Military Communication Systems

Product Description

The VVD102 is a monolithic PIN Diode broadband voltage variable attenuator. To ensure rugged and reliable operation, PIN Diode devices are fully passivated. Both bond pad and backside metallization are Ti/Au, which is compatible with conventional die attach, thermocompression and thermosonic wire bonding assembly techniques.

Performance Characteristics (Ta = 25°C)

Specification	Min	Typ	Max	Unit
RF Frequency	17		27	GHz
Insertion Loss			2	dB
Dynamic Range		18		dB
Voltage Range	-5		5	V
IM3 @ Pin = 0dBm/tone	30			dBc

Absolute Maximum Ratings (Ta = 25°C)

Parameter	Min	Max	Unit
Vd	-6	6	V
Id		20	mA
Input drive level		TBD	dBm
Assy. Temperature (60 seconds)		300	deg. C

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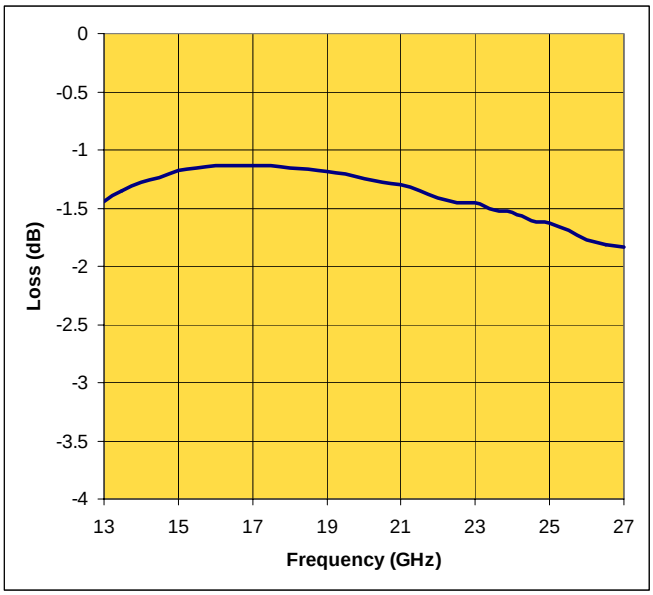
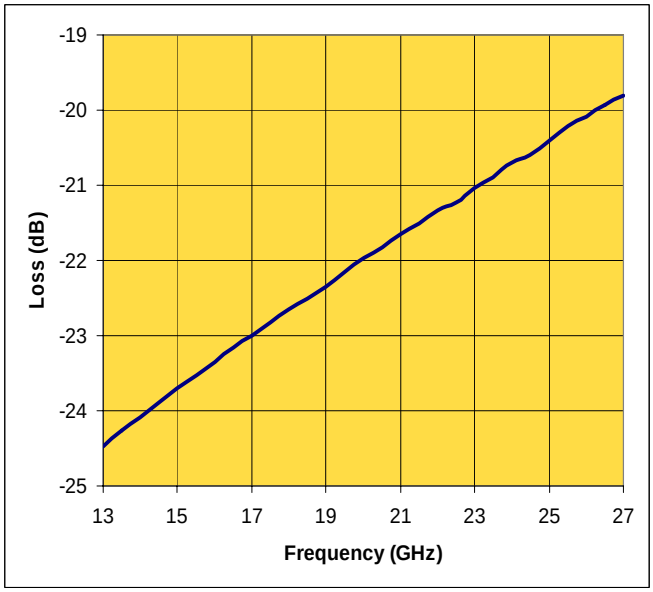
Measured Performance Characteristics (Typical Performance at 25°C)
Pin = -20 dBm

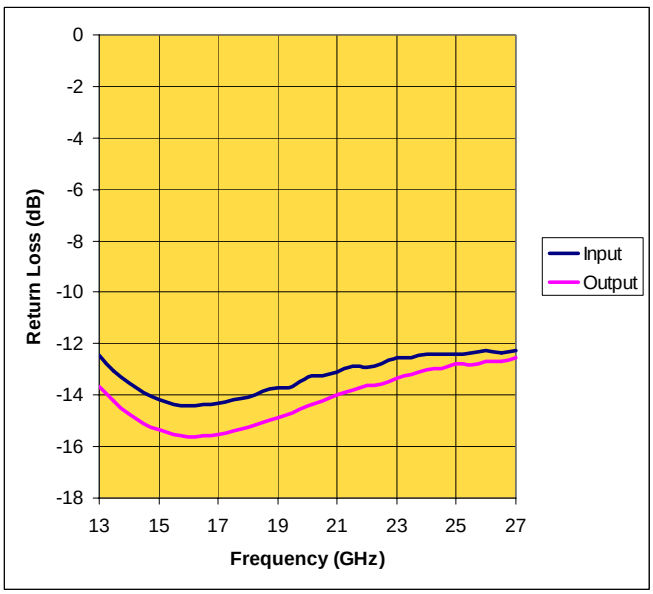
Min. Attenuation Versus Frequency



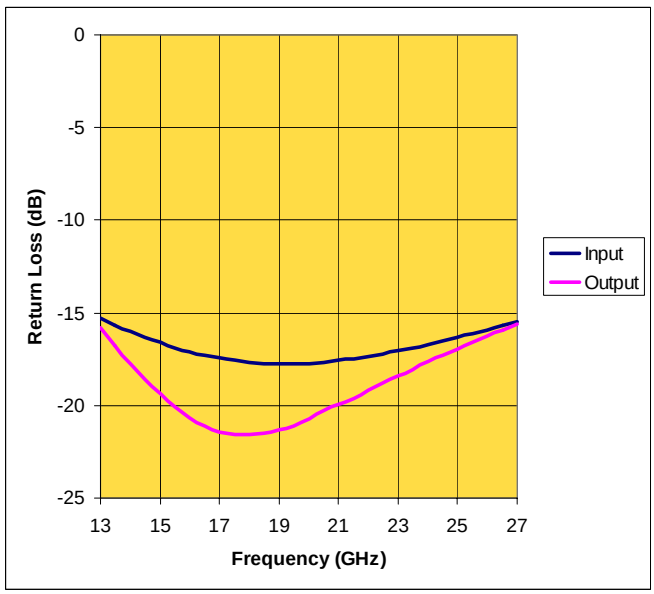
Max. Attenuation Versus Frequency



Return Loss Vs. Frequency @ Min. Atten.



Return Loss Vs. Frequency @ Max. Atten.



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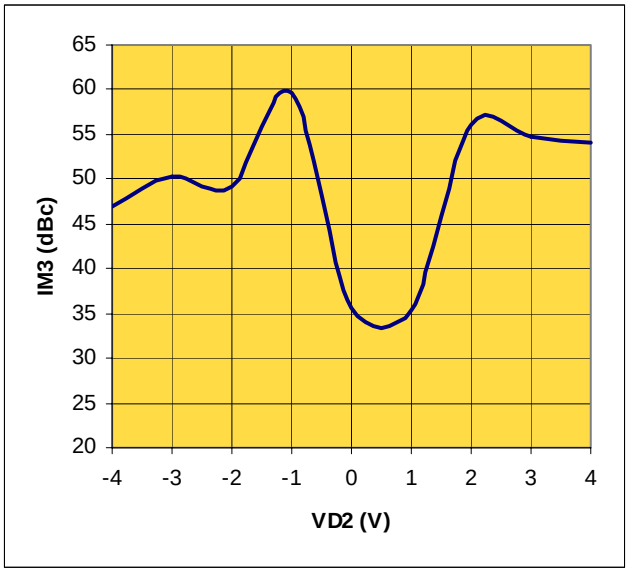
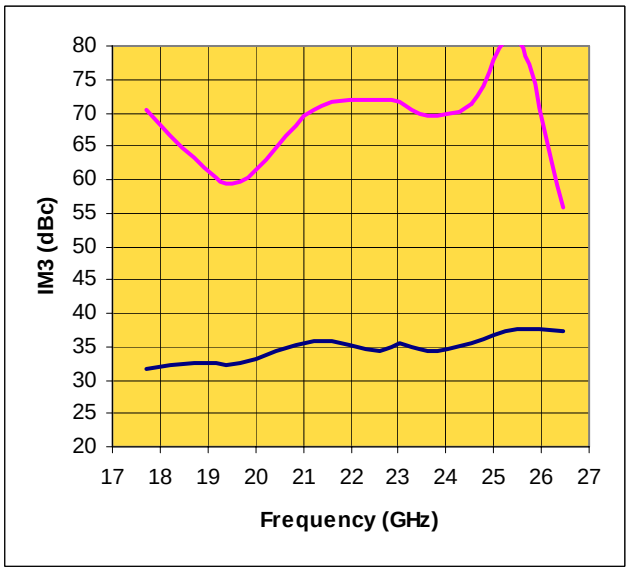
Measured Performance Characteristics (Typical Performance at 25°C)
Two-Tone measurement @ 0 dBm / tone

IM3 Versus VD2 (VD1=4V) at 17.5 GHz



IM3 Versus Frequency



VD1=4V
VD2=0.5V
(Worst Case)

VD1=4V
VD2=2V
(Best Case)

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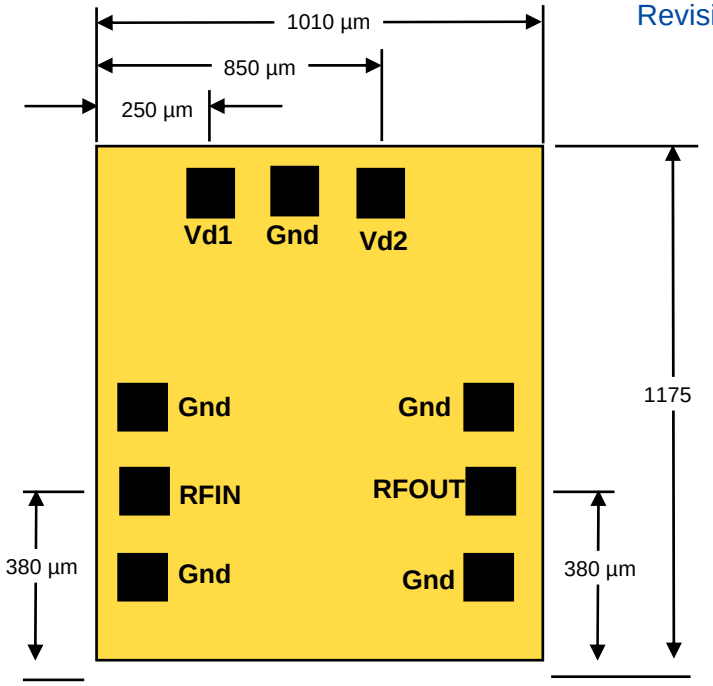
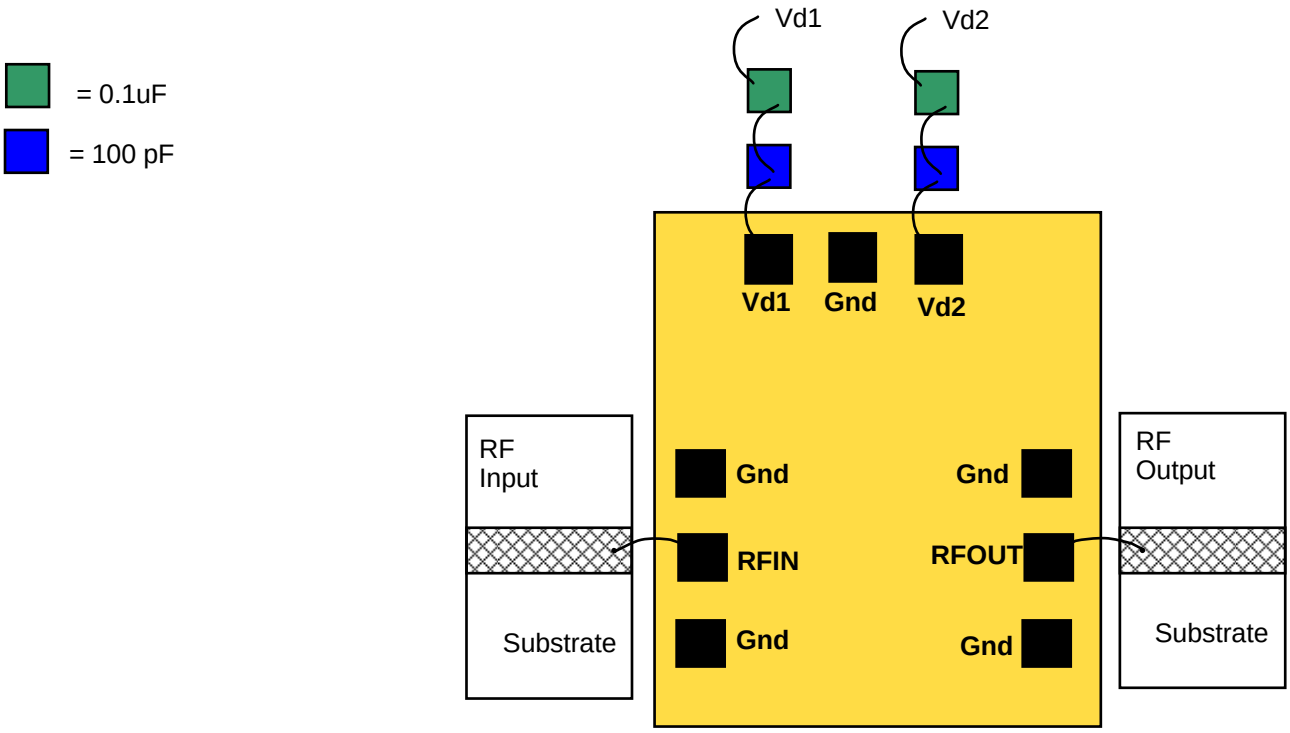
Die Size and Bond Pad Locations

X Dimension: 1010 ± 25 µm
Y Dimension: 1175 ± 25 µm
Bond Pad Dimension: 101 x 101 µm ± 0.5 µm
Chip Thickness: 101 ± 5 µm



Suggested Bonding Arrangement



Recommended Assembly Notes

1. Bypass caps should be 100 pF (approximately) ceramic (single-layer) placed no farther than 30 mils from the amplifier.
2. Best performance obtained from use of <10 mil (long) by 1.5 by 0.5 mil ribbons on input and output.