NORTHROP GRUMMAN

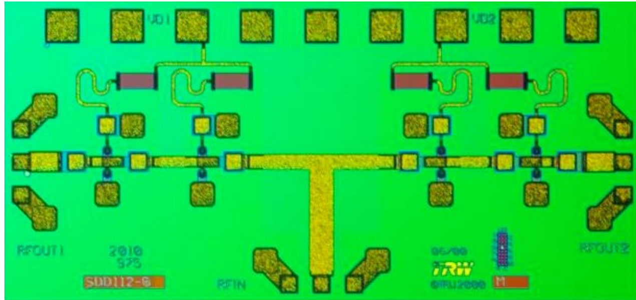
Velocium Products

SDD112

55 – 86 GHz Switch

Preliminary Datasheet

Revision: August 2007



X=2010 μm Y=975 μm

Applications

- ♦ New FCC E-Band Communication Systems
  - Covers both 71-76 GHz and 81-86 GHz Frequency Bands
- ♦ Short-Haul / High Capacity Links
- ♦ Enterprise Wireless LAN
- ♦ Wireless Fiber Replacement
- ♦ Automotive Radar

Product Description

The SDD112 is a monolithic PIN Diode broadband switch. To ensure rugged and reliable operation, PIN Diodes 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.

Product Features

- ♦ Frequency: 55 to 86 GHz
- ♦ Insertion Loss: 3 dB Max
- ♦ Isolation: > 25 dB
- ♦ Voltage Range: +5 to –5V
- ♦ Die Size: < 2.0 sq. mm

Performance Characteristics (Ta = 25°C)

Specification	Min	Typ	Max	Unit
RF Frequency	55		86	GHz
Insertion Loss		2	3	dB
Isolation	25	30		dB
Voltage Range	-5		5	V
"ON" Current @ 5V		22		mA
"OFF" Current @ -5V		-63		nA

Absolute Maximum Ratings (Ta = 25°C)

Parameter	Min	Max	Unit
Voltage Range	-5.5	5.5	V
"ON" Current		30	mA
Input drive level		TBD	dBm
Assy. Temperature (60 seconds)		300	deg. C

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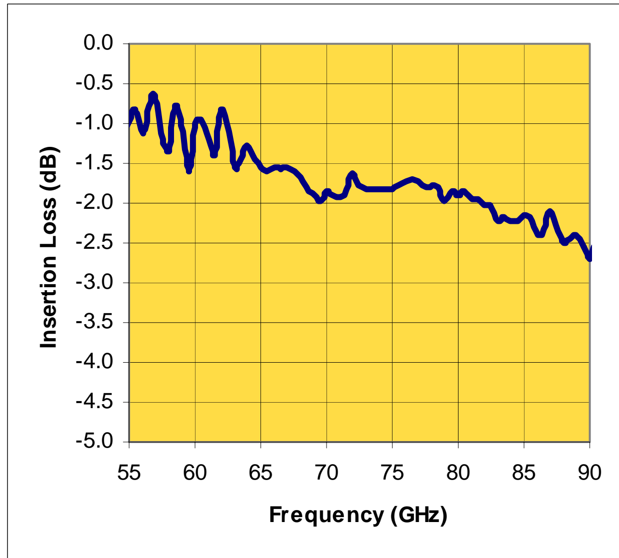
SDD112
55 – 86 GHz Switch

Measured Performance Characteristics (Typical Performance at 25°C)
Test data is taken with probes on RFIN and RFOUT1 with RFOUT2 left open.

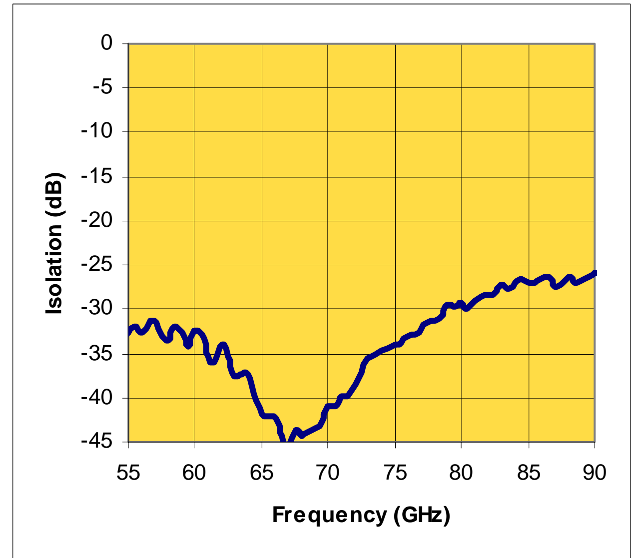
"ON" Insertion Loss Versus Frequency

VD1 = - 5V, VD2 = 5V For RFOUT1 to be on.



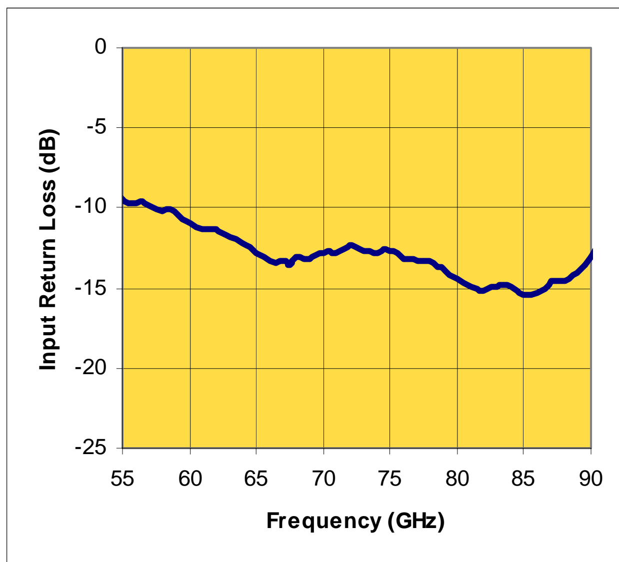
"OFF" Isolation Versus Frequency

VD1 = 5V, VD2 = -5V For RFOUT1 to be off.



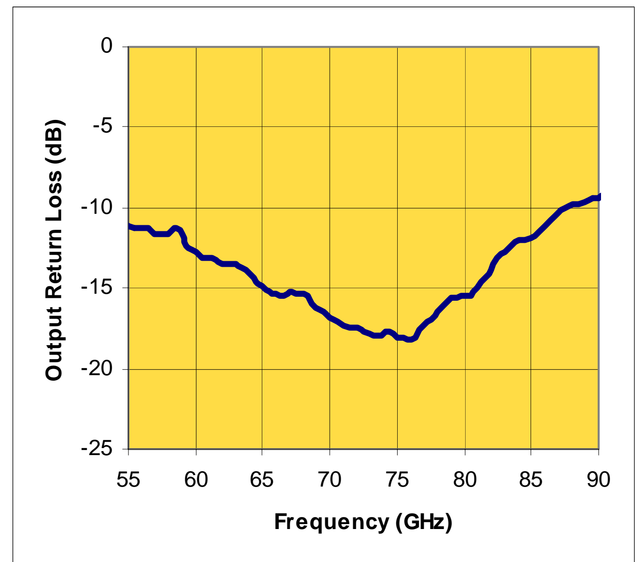
"ON" Input Return Loss Versus Frequency

VD1 = - 5V, VD2 = 5V For RFOUT1 to be on.



"ON" Output Return Loss Versus Frequency

VD1 = - 5V, VD2 = 5V For RFOUT1 to be on.



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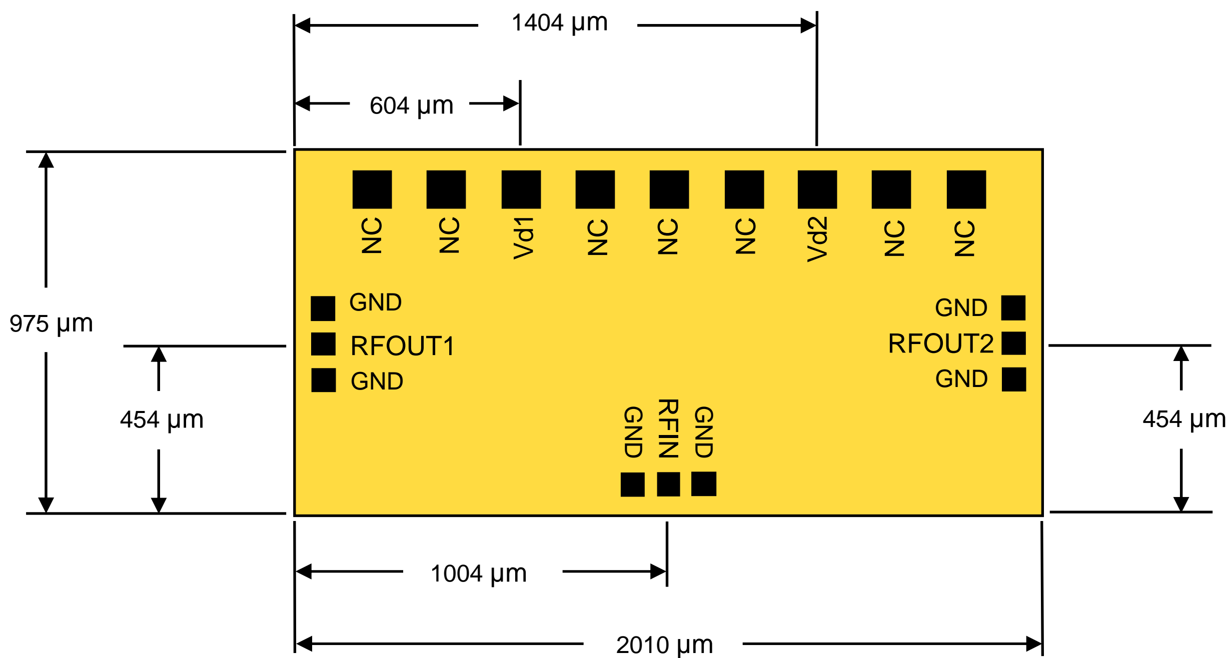
Die Size and Bond Pad Locations

X Dimension: 2010 ± 25 µm
Y Dimension: 975 ± 25 µm
DC Bond Pad Dimension: 101 x 101 µm ± 0.5 µm
RF Bond Pad Dimension: 51 x 51 µm ± 0.5 µm
Chip Thickness = 101 ± 5 µm



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 <6 mil (long) by 1.5 by 0.5 mil ribbons on input and output.

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