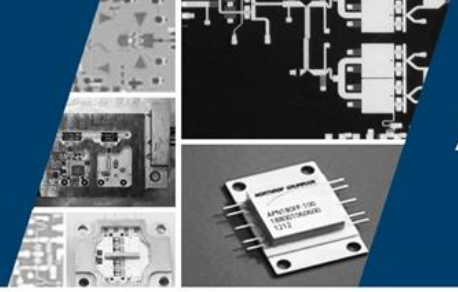
SDH148
80 – 100 GHz Switch



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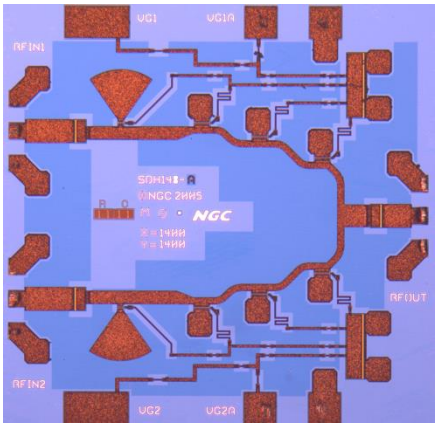
Product Datasheet

Revision: April 2015



X=1400 µm Y=1400 µm

Features

- Frequency Band: 80-100 GHz
- SPDT Switch
- Insertion Loss (Average 80-100 GHz) :
  - 2.2 dB, typical
- Isolation:
  - 35 dB, typical OFF state
  - 35 dB, typical RFIN1 - RFIN2
- Die Size: < 2.0 sq. mm

Performance Characteristics (T_{OP}= 25ºC)

Specification	Min	Typ	Max	Unit
Frequency	80		100	GHz
Insertion Loss (Ave.)		2.2	3	dB
Isolation				
Input - Output	28	35		dB
Input Return Loss				
'ON'		14		dB
'OFF'		22		dB
Output Return Loss		13		dB
RFIN1 - ON				
Vg1		0.3		V
Vg2		-3.3		V
RFIN2 - ON				
Vg1		-3.3		V
Vg2		0.3		V

Applications

- Wide Bandwidth Millimeter-wave Imaging RX Chains
- Sensors
- Radar

Product Description

The SDH148 monolithic HEMT MMIC, a broadband, SPDT switch, is designed for use in Wide Bandwidth Millimeter-wave Imaging RX Chains and sensors. To ensure rugged and reliable operation, HEMT 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.

Absolute Maximum Ratings (T_{OP} = 25°C)

Parameter	Min	Max	Unit
Vg1		0.5	V
Vg2		0.5	V
RF Input Power		TBD	dBm
Assembly Temperature		300	°C

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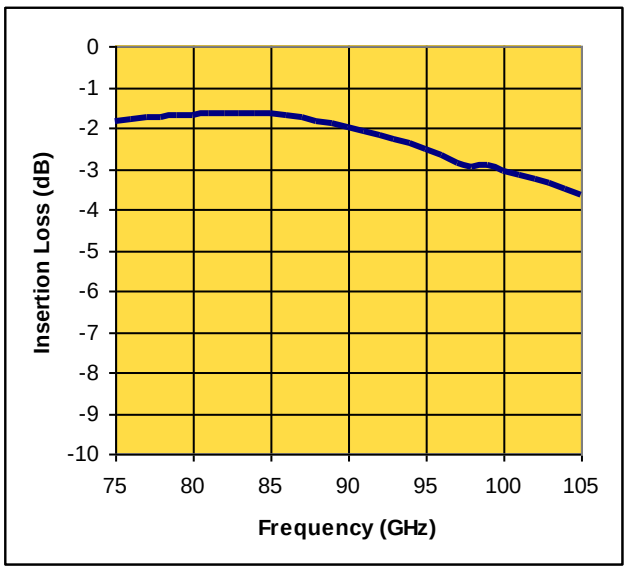
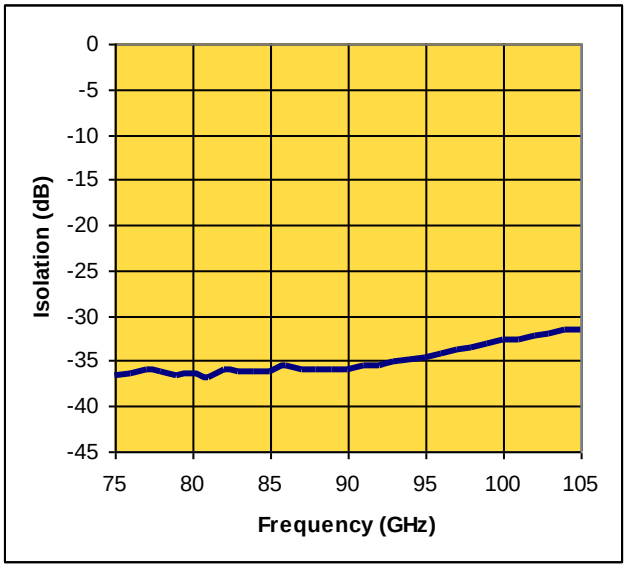
On-Wafer Measured Performance Characteristics (T_{OP} = 25°C)

'ON' Insertion Loss vs. Frequency



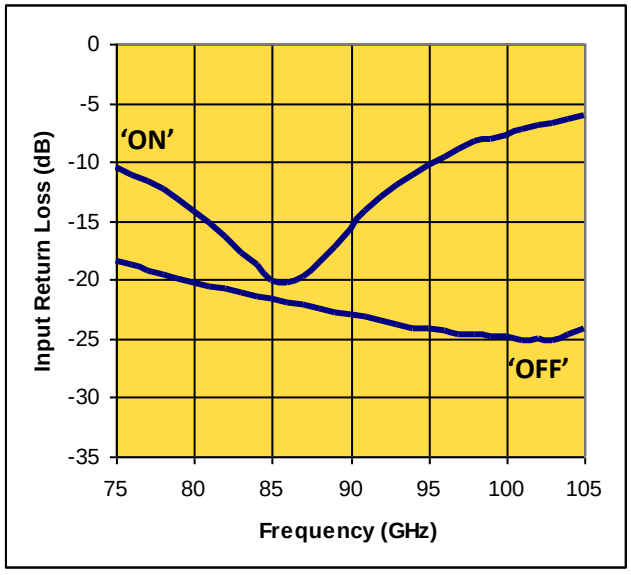
Vg1 = 0.3V, Vg2 = -3.3V

'OFF' Insertion Loss vs. Frequency

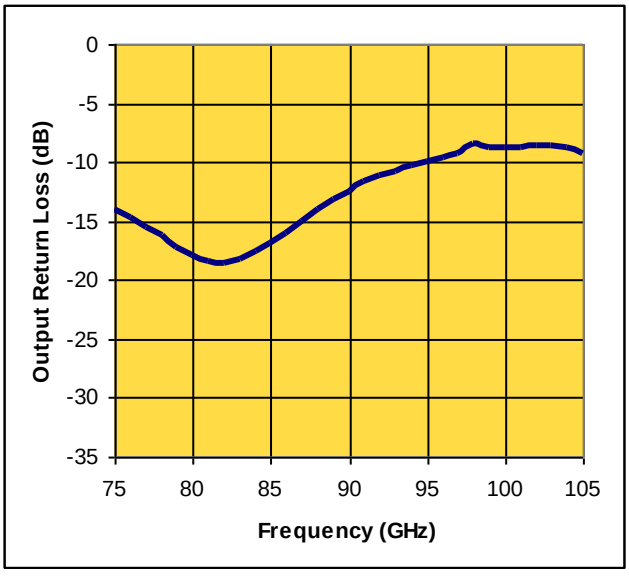


Vg1 = -3.3V, Vg2 = -0.3V

Input Return Loss vs. Frequency

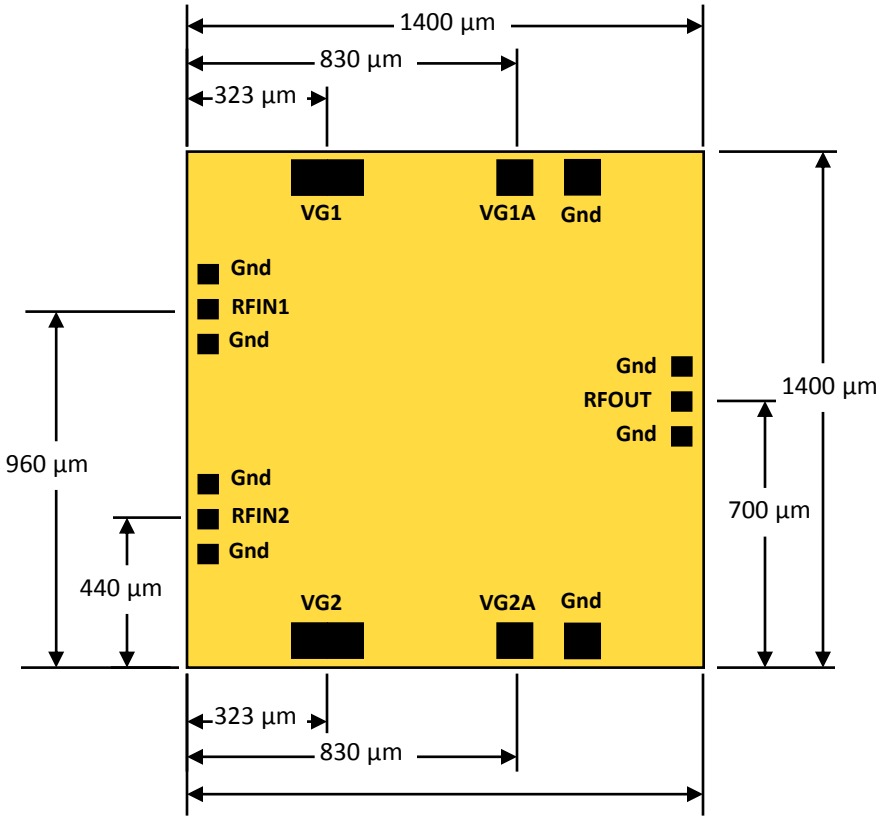


'ON' Output Return Loss vs. Frequency



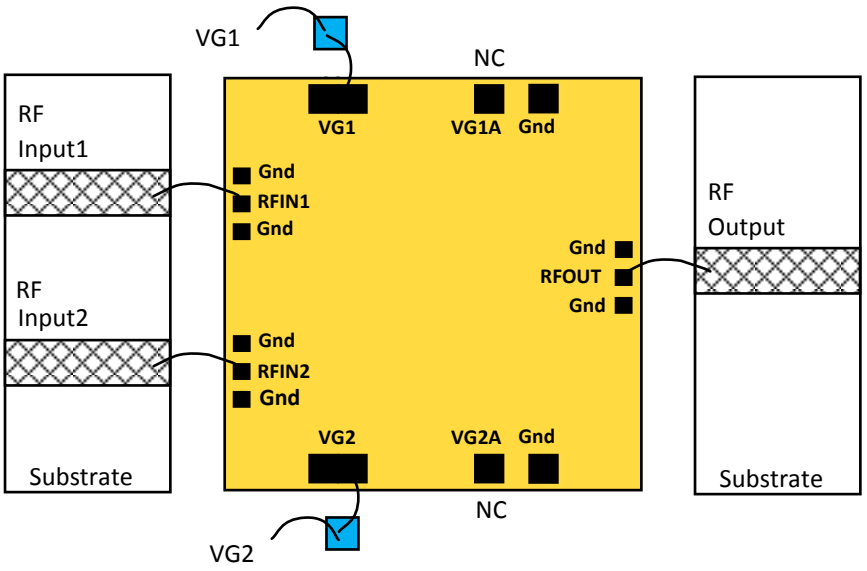
Die Size and Bond Pad Locations (Not to Scale)

X Dimension: 1400 ± 25 µm
Y Dimension: 1400 ± 25 µm
Bond Pad Dimensions:
RF: 50 x 50 µm ± 0.5 µm
* DC: 101 x 101 µm ± 0.5 µm
* VG1 & VG2: 201 x 101 µm ± 0.5 µm
Chip Thickness = 101 ± 5 µm



Suggested Bonding Arrangement

= 100 pF, 15V (Shunt)



Recommended Assembly Notes

1. Bypass caps should be 100 pF ceramic (single-layer) placed no further than 30 mils from the device.
2. Best performance obtained from use of <6 mil (long) by 1.5 by 0.5 mil ribbons on inputs and output.
3. VG1A and VG2A are optional gate bias /control pads and can be used in place of VG1 and/or VG2. Typical use would be NC.

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