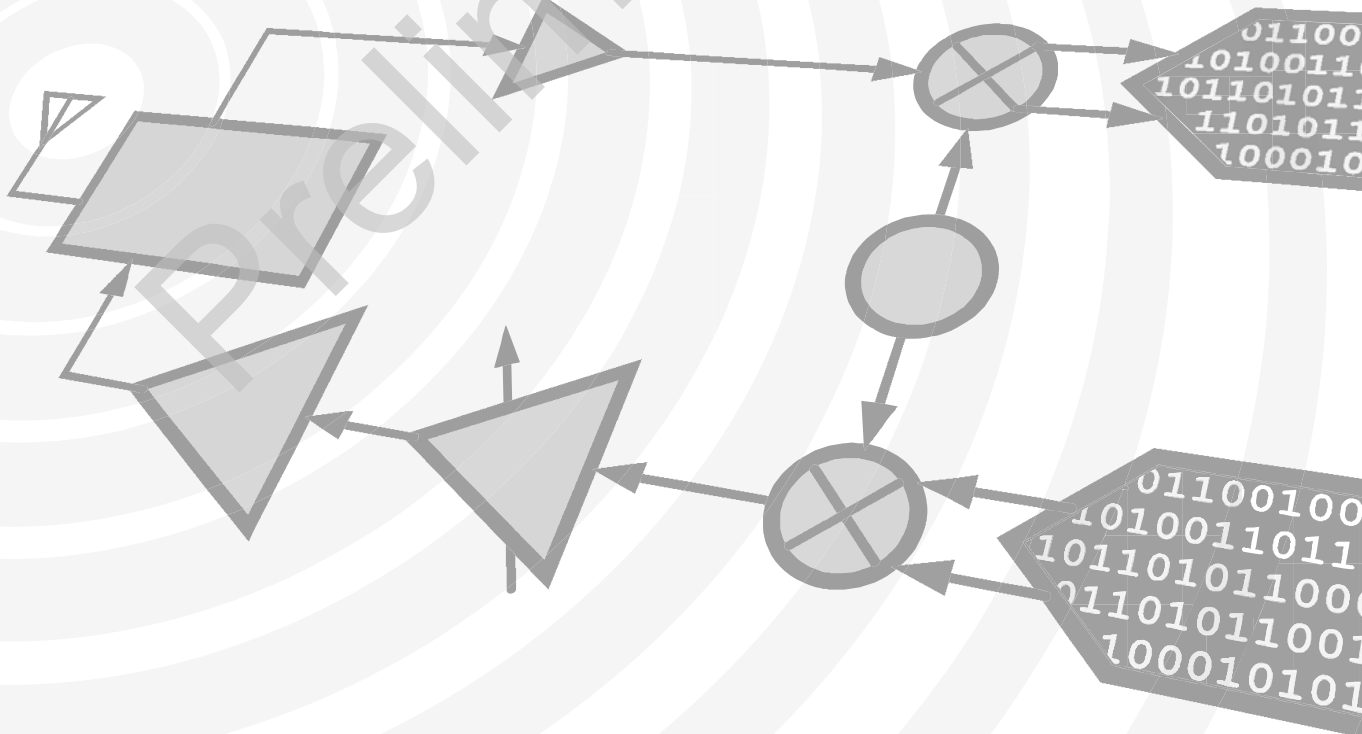


Analog Devices Welcomes Hittite Microwave Corporation



THIS PAGE INTENTIONALLY LEFT BLANK

Preliminary

GaAs MMIC SPDT NON-REFLECTIVE SWITCH, DC - 20 GHz

Typical Applications

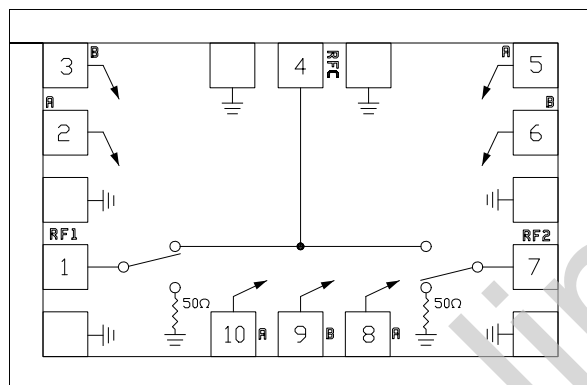
This switch is suitable DC - 20 GHz applications:

- Fiber Optics
- Microwave Radio
- Military
- Space
- VSAT

Features

- High Isolation: >40 dB @ 20 GHz
- Low Insertion Loss: 1.6 dB @ 20 GHz
- Non-Reflective Design
- Small Size: 1.3 x 0.8 x 0.1 mm

Functional Diagram



General Description

The HMC347A is a broadband non-reflective GaAs MESFET SPDT MMIC chip. Covering DC to 20 GHz, the switch offers high isolation and low insertion loss. The switch features over 50 dB isolation at lower frequencies and over 40 dB at higher frequencies due to the implementation of on-chip via hole structures. The switch operates using two negative control voltage logic lines of -5/0V, requires no Vee and has no current consumption. The switch operates down to DC. The chip features coplanar I/Os that allow 100% RF testing prior to delivery to the customer.

Electrical Specifications, $T_A = +25^\circ\text{C}$, With 0/-5V Control, 50 Ohm System

Parameter	Frequency	Min.	Typ.	Max.	Units
Insertion Loss	DC - 20.0 GHz		1.7	2.2	dB
Isolation	DC - 20.0 GHz	40	45		dB
Return Loss	"On State"	10	13		dB
Return Loss RF1, RF2	"On State"	8	10		dB
Input Power for 1 dB Compression	0.5 - 20.0 GHz	19	23		dBm
Input Third Order Intercept	0.5 - 20.0 GHz	38	43		dBm
Switching Characteristics					
tRISE, tFALL (10/90% RF)	DC - 20.0 GHz		3		ns
tON, tOFF (50% CTL to 10/90% RF)			6		ns

**GaAs MMIC SPDT NON-REFLECTIVE
SWITCH, DC - 20 GHz**
Absolute Maximum Ratings

RF Input Power ($V_{ctl} = -5V$)	+27 dBm
Control Voltage Range (A & B)	+0.5V to -7.5 Vdc
Channel Temperature	150 °C
Thermal Resistance (Insertion Loss Path)	440 °C/W
Thermal Resistance (Terminated Path)	540 °C/W
Storage Temperature	-65 to +150 °C
Operating Temperature	-55 to +85 °C
ESD Sensitivity (HBM)	Class 1A

Control Voltages

State	Bias Condition
Low	0 to -0.2V @ 10 uA Max.
High	-5V @ 10 uA Typ. to -7V @ 40 uA Max.

Truth Table

Control Input		Signal Path State	
A	B	RFC to RF1	RFC to RF2
High	Low	ON	OFF
Low	High	OFF	ON



**ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS**

Outline Drawing
