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HMC347A

v00.1115

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

Functional Diagram



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

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

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Parameter		Frequency	Min.	Тур.	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"	DC - 20.0 GHz	10	13		dB
Return Loss RF1, RF2	"On State"	DC - 20.0 GHz	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) tON, tOFF (50% CTL to 10/90% RF))	DC - 20.0 GHz		3 6		ns ns

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Absolute Maximum Ratings

RF Input Power (VctI = -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		
А	В	RFC to RF1	RFC to RF2	
High	Low	ON	OFF	
Low	High	OFF	ON	



ELECTROSTATIC SENSITIVE DEVICE OBSERVE HANDLING PRECAUTIONS



