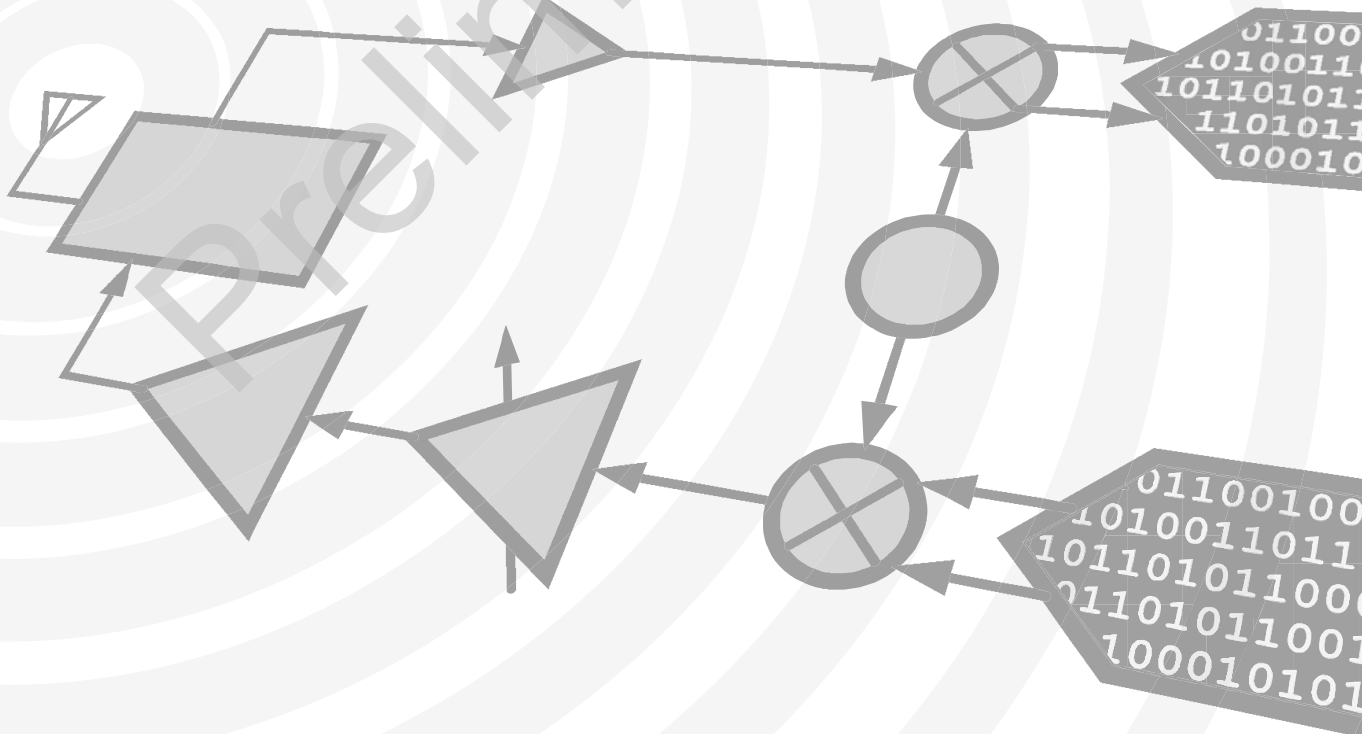


Analog Devices Welcomes Hittite Microwave Corporation



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Preliminary

Typical Applications

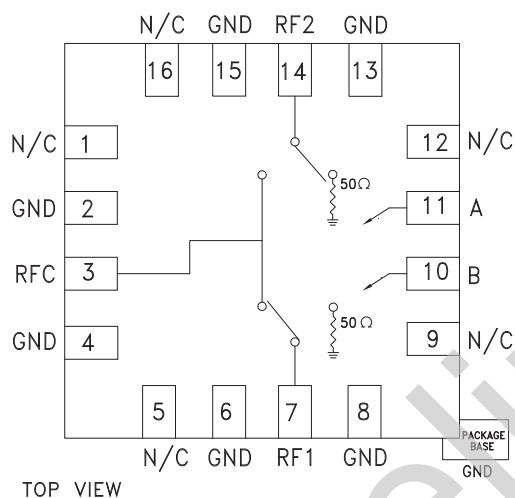
The HMC347ALP3 / HMC347ALP3E is ideal for:

- Basestation Infrastructure
- Fiber Optics & Broadband Telecom
- Microwave Radio & VSAT
- Military Radios, Radar, & ECM
- Test Instrumentation

Features

- High Isolation: >50 dB up to 3 GHz
>45 dB up to 10 GHz
- Low Insertion Loss: 1.6 dB @ 10 GHz
- Non-Reflective Design
- 3x3 mm QFN SMT Package

Functional Diagram



General Description

The HMC347ALP3 & HMC347ALP3E are broad-band high isolation non-refl ective GaAs MESFET SPDT switches in low cost leadless QFN surface mount plastic packages. Covering DC to 14 GHz, the switch offers high isolation and low insertion loss. The switch features >50 dB isolation up to 3 GHz and >40 dB isolation up to 13 GHz. The switch operates using complementary negative control voltage logic lines of -5/0V and requires no bias supply. This SPDT is an excellent alternative to the HMC132C8 SPDT.

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

Parameter	Frequency	Min.	Typ.	Max.	Units
Insertion Loss	DC - 3.0 GHz		1.5	1.9	dB
	DC - 6.0 GHz		1.6	2.0	dB
	DC - 12.0 GHz		1.6	2.1	dB
	DC - 14.0 GHz		1.9	2.4	dB
Isolation	DC - 3.0 GHz	49	53		dB
	DC - 6.0 GHz	41	46		dB
	DC - 12.0 GHz	39	44		dB
	DC - 14.0 GHz	33	38		dB
Return Loss	"On State"	DC - 6.0 GHz	10	13	dB
		DC - 14.0 GHz	8	13	dB
Return Loss RF1, RF2	"Off State"	DC - 6.0 GHz	7	10	dB
		DC - 14.0 GHz	6	9	dB
Input Power for 1 dB Compression	0.5 - 14.0 GHz	19	23		dBm
Input Third Order Intercept (Two-Tone Input Power= +7 dBm Each Tone)	0.5 - 14.0 GHz	38	43		dBm
Switching Characteristics	DC - 14 GHz		3		ns
			6		ns

HMC347ALP3 / 347ALP3E

GaAs MMIC SPDT NON-REFLECTIVE SWITCH, DC - 14 GHz

Absolute Maximum Ratings

RF Input Power (Vctl = -5V)	+27 dBm
Control Voltage Range (A & B)	+0.5V to -7.5 Vdc
Hot Switch Power Level (Vctl = -5 V)	+23 dBm
Channel Temperature	150 °C
Continuous Pdiss (T=85 °C) (derate 2mW/ °C above 85 °C)	0.12 W
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 -0.5V @ 10 uA Max.
High	-5V @ 10 uA Typ. to -7V @ 40 uA Typ. (± 0.5 Vdc)

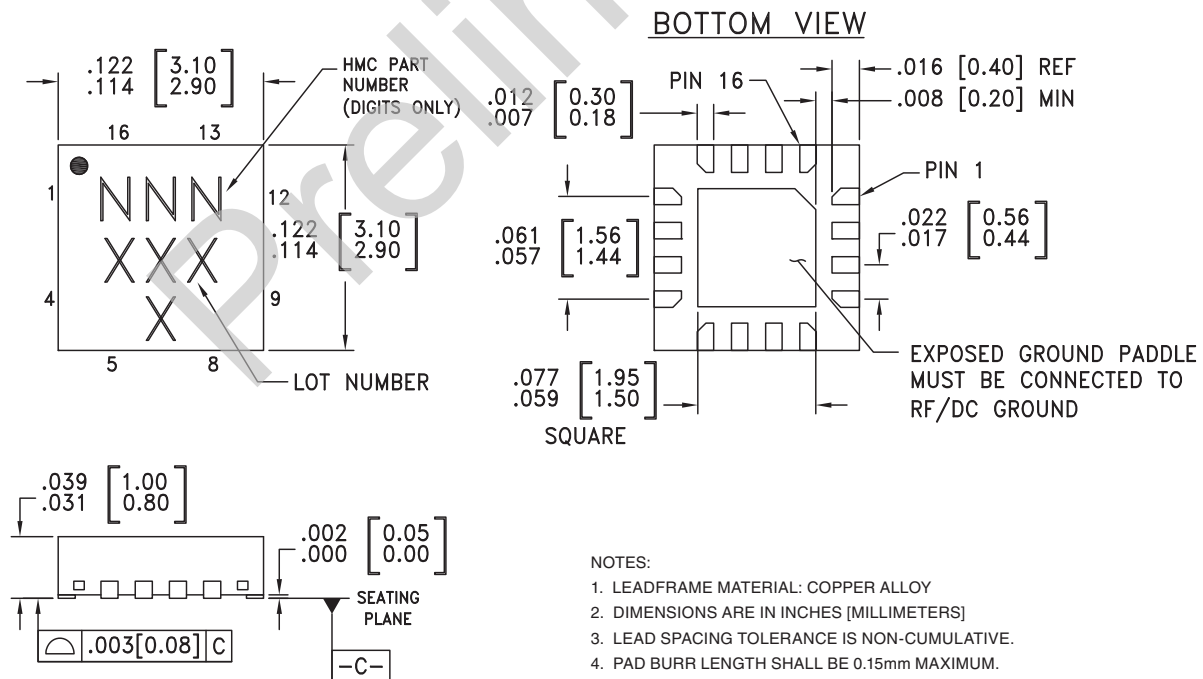
Truth Table

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



NOTES:

1. LEADFRAME MATERIAL: COPPER ALLOY
2. DIMENSIONS ARE IN INCHES [MILLIMETERS]
3. LEAD SPACING TOLERANCE IS NON-CUMULATIVE.
4. PAD BURR LENGTH SHALL BE 0.15mm MAXIMUM.
PAD BURR HEIGHT SHALL BE 0.05mm MAXIMUM.
5. PACKAGE WARP SHALL NOT EXCEED 0.05mm.
6. ALL GROUND LEADS AND GROUND PADDLE MUST BE SOLDERED TO PCB RF GROUND.
7. REFER TO HITTITE APPLICATION NOTE FOR SUGGESTED LAND PATTERN.