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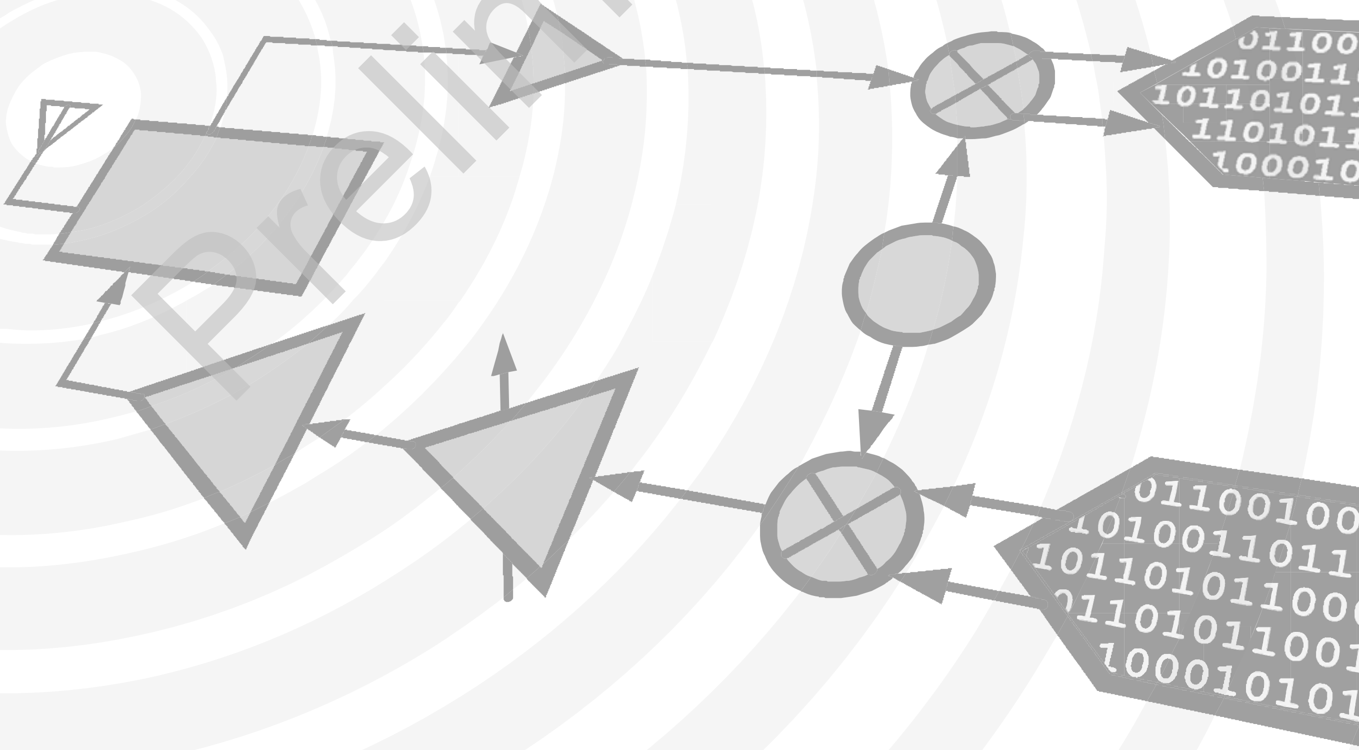

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HMC547ALP3 / 547ALP3E

v00.1115

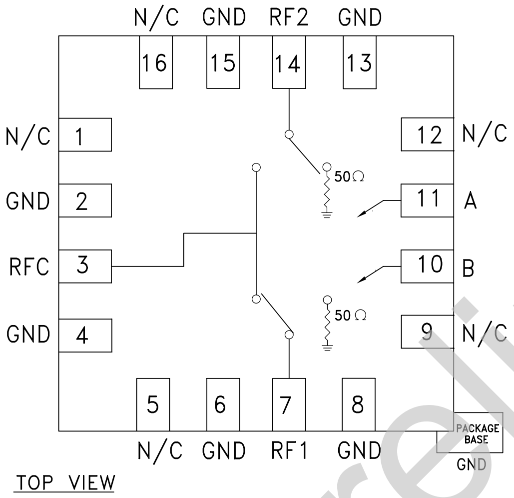
GaAs MMIC SPDT NON-REFLECTIVE SWITCH, DC - 20 GHz

Typical Applications

The HMC547ALP3 & HMC547ALP3E is ideal for:

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

Functional Diagram



Features

High Isolation: >50 dB up to 5 GHz
>45 dB up to 15 GHz

Low Insertion Loss: 1.6 dB @ 10 GHz
2 dB @ 20 GHz

Fast Switching

Non-Reflective Design

QFN SMT Package, 9 mm^2

General Description

The HMC547ALP3 & HMC547ALP3E are general pur-pose broadband high isolation non-reflective GaAs MESFET SPDT switches in low cost leadless QFN surface mount plastic packages. Covering DC to 20 GHz, the switch offers high isolation and low insertion loss. The switch features >50 dB isolation up to 5 GHz and >45 dB isolation up to 15 GHz. The switch operates using complementary negative con-trol voltage logic lines of -5/0V and requires no bias supply. The HMC547ALP3 & HMC547ALP3E are packaged in leadless QFN 3x3 mm surface mount packages.

Electrical Specifications, T_A = +25° C, With 0/-5V Control, 50 Ohm System

Parameter	Frequency	Min.	Typ.	Max.	Units
Insertion Loss	DC - 6.0 GHz DC - 10.0 GHz DC - 15.0 GHz DC - 20.0 GHz		1.5 1.6 1.8 2.0	1.9 2.0 2.2 2.5	dB dB dB dB
Isolation	DC - 6.0 GHz DC - 15.0 GHz DC - 20.0 GHz	45 40 33	50 45 38		dB dB dB
Return Loss "On State"	DC - 20.0 GHz		17		dB
Return Loss RF1, RF2 "Off State"	DC - 6.0 GHz DC - 15.0 GHz DC - 20.0 GHz		25 17 13		dB dB dB
Input Power for 1 dB Compression	0.5 - 20.0 GHz	20	23		dBm
Input Third Order Intercept (Two-Tone Input Power= +7 dBm Each Tone)	0.5 - 10.0 GHz 0.5 - 20.0 GHz		48 45		dBm dBm
Switching Characteristics tRISE, tFALL (10/90% RF) tON, tOFF (50% CTL to 10/90% RF)	DC - 20 GHz		3 6		ns ns

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Absolute Maximum Ratings

RF Input Power (Vctl = -5V)	+30 dBm
Control Voltage Range (A & B)	+0.5V to -7.5 V
Hot Switch Power Level (Vctl = -5V)	+23 dBm
Channel Temperature	150 °C
Continuous Pdiss (T=85°C) (derate 4 mW/°C about 85°C)	0.26 W
Thermal Resistance (Insertion Loss Path)	420 °C/W
Thermal Resistance (Terminated Path)	250 °C/W
Storage Temperature	-65 to +150 °C
Operating Temperature	-40 to +85 °C
ESD Sensitivity (HBM)	Class 1A

Control Voltages

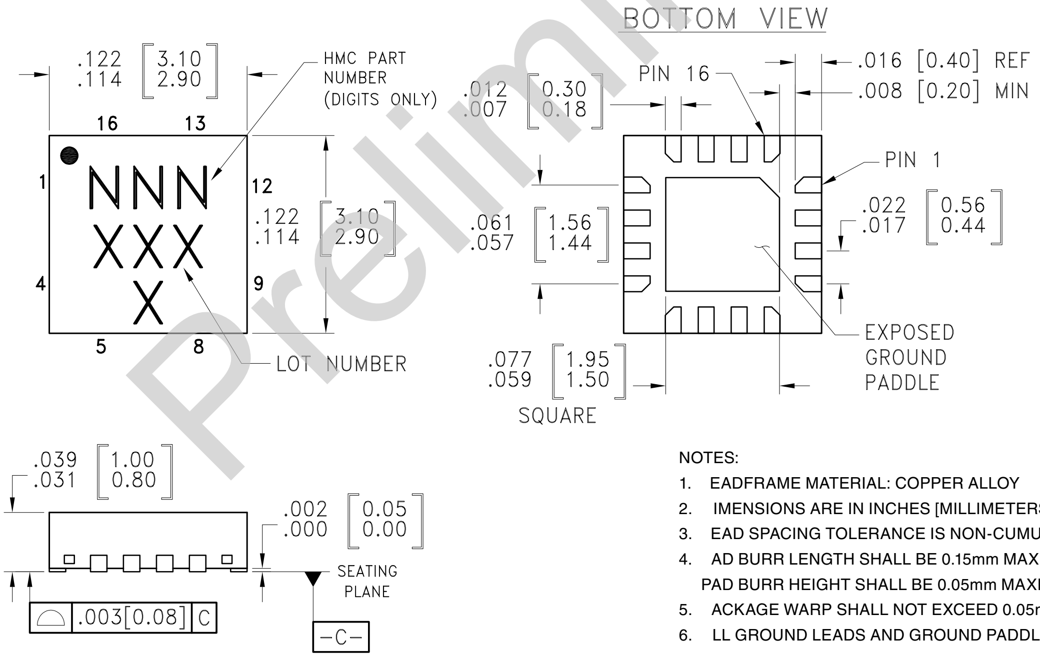
State	Bias Condition
Low	0 to -0.5V @ 10 uA Max.
High	-5V @ 3 uA Typ. to -7V @ 10 uA Typ. (± 0.5 V)

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. EADFRAME MATERIAL: COPPER ALLOY
2. IMENSIONS ARE IN INCHES [MILLIMETERS]
3. EAD SPACING TOLERANCE IS NON-CUMULATIVE
4. AD BURR LENGTH SHALL BE 0.15mm MAXIMUM.
   PAD BURR HEIGHT SHALL BE 0.05mm MAXIMUM.
5. ACKAGE WARP SHALL NOT EXCEED 0.05mm.
6. LL GROUND LEADS AND GROUND PADDLE MUST BE SOLDERED TO PCB RF GROUND.
7. EFER TO HITTITE APPLICATION NOT FOR SUGGESTED LAND PATTERN.