



NO CONTENT ON THE ATTACHED DOCUMENT HAS CHANGED



THIS PAGE INTENTIONALLY LEFT BLANK



MICROWAVE CORPORATION v03.0514



HMC344LC3

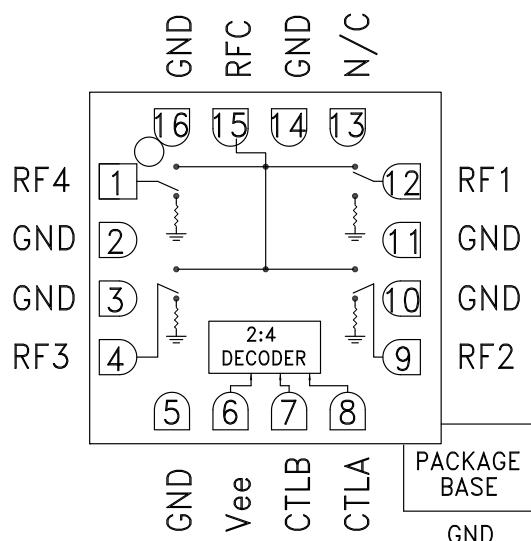
GaAs MMIC SP4T NON-REFLECTIVE SWITCH, DC - 8 GHz

Typical Applications

The HMC344LC3 is ideal for:

- Broadband, Military, Radar & ECM
- Fiber Optics
- Switched Filter Banks
- Wireless below 8 GHz
- Test Instrumentation

Functional Diagram



Features

Broadband Performance: DC - 8 GHz

Integrated 2:4 TTL Decoder

High Isolation: 40 dB@ 6 GHz

Low Insertion Loss: 2 dB@ 6 GHz

Non-Reflective Topology

General Description

The HMC344LC3 is a broadband non-reflective GaAs MESFET SP4T switch in a ceramic 3x3 mm leadless surface mount package. Covering DC to 8 GHz, this switch offers high isolation and low insertion loss. The HMC344LC3 includes an integrated binary decoder circuit which reduces the required logic control lines to two. The switch operates using a negative control voltage of 0/-5V, and requires a fixed bias of -5V. Simple external level shifting circuitry allows this switch to be controlled with most TTL/CMOS positive logic families.

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

Parameter	Frequency	Min.	Typ.	Max.	Units
Insertion Loss	DC - 2.0 GHz		1.6	2.0	dB
	DC - 6.0 GHz		2.0	2.8	dB
	DC - 8.0 GHz		2.5	3.0	dB
Isolation	DC - 2.0 GHz	43	50		dB
	DC - 4.0 GHz	35	45		dB
	DC - 6.0 GHz	32	45		dB
	DC - 8.0 GHz	30	40		dB
Return Loss	DC - 2.0 GHz	15	17		dB
	DC - 4.0 GHz	12	16		dB
	DC - 6.0 GHz	12	16		dB
	DC - 8.0 GHz	12	17		dB
Return Loss	"Off State"	DC - 8.0 GHz	12	15	dB
Input Power for 0.1 dB Compression	0.5 - 8.0 GHz	22	26		dBm
Input Third Order Intercept (Two-Tone Input Power = +7 dBm Each Tone)	0.5 - 8.0 GHz		43		dBm
Switching Characteristics	DC - 8.0 GHz		20		ns
			70		ns

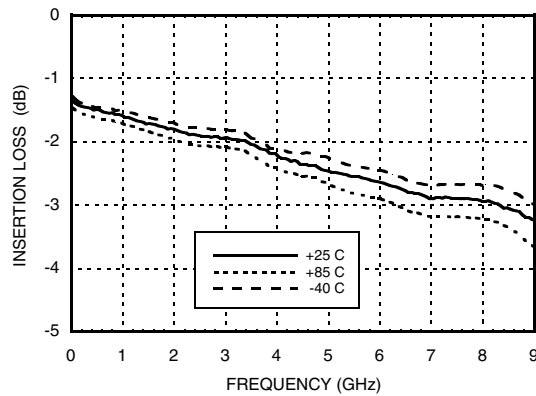
For price, delivery and to place orders: Hittite Microwave Corporation, 2 Elizabeth Drive, Chelmsford, MA 01824

Phone: 978-250-3343 Fax: 978-250-3373 Order On-line at www.hittite.com

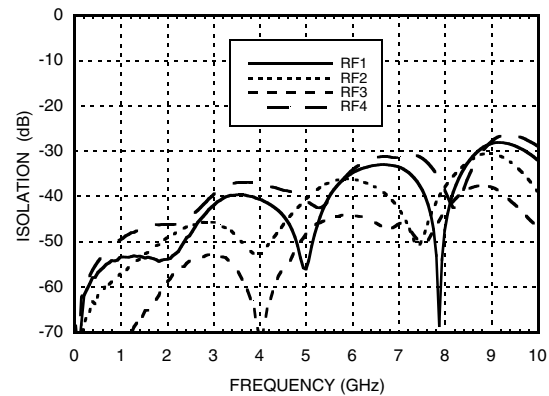
Application Support: Phone: 978-250-3343 or apps@hittite.com

GaAs MMIC SP4T NON-REFLECTIVE SWITCH, DC - 8 GHz

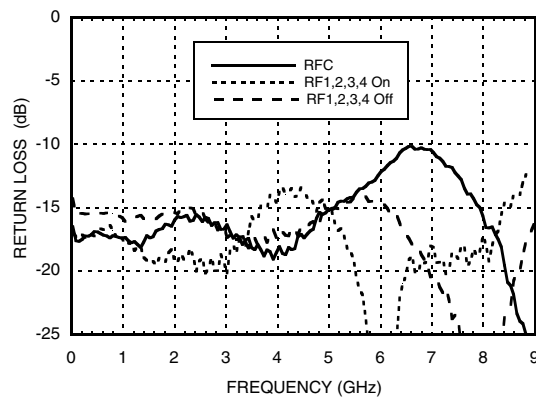
Insertion Loss vs. Temperature



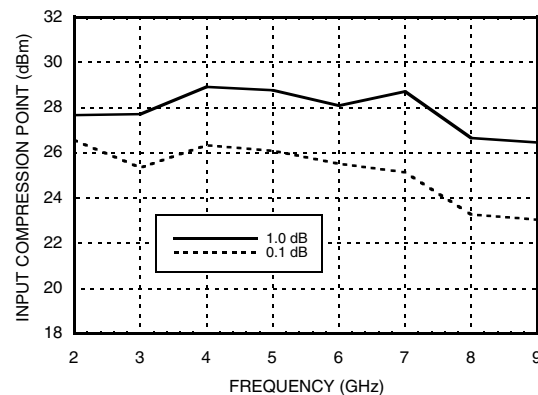
Isolation



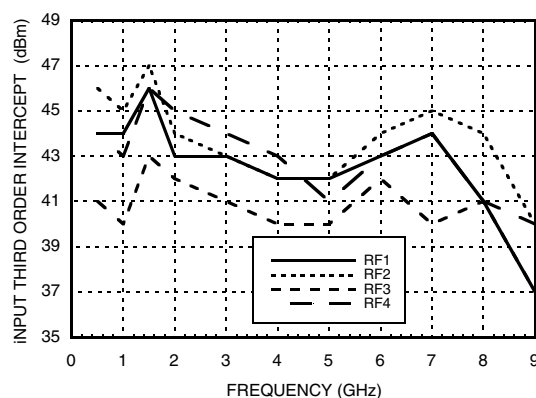
Return Loss



0.1 and 1 dB Input Compression Point



Input Third Order Intercept Point



Bias Voltage & Current


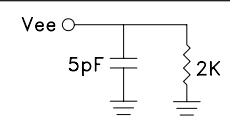
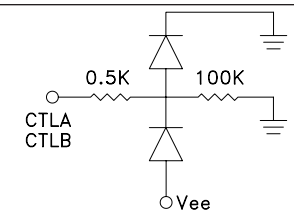
Vee Range = -5.0 Vdc \pm 10%		
Vee (Vdc)	Iee (Typ.) (mA)	Iee (Max.) (mA)
-5.0	3.0	6.0

Control Voltages

State	Bias Condition
Low	-3V to 0 Vdc @ 60 μ A Typical
High	-5 to -4.2 Vdc @ 5 μ A Typical

* Isolation is recorded above insertion loss & measured at output of switch.

Pin Descriptions

Pin Number	Function	Description	Interface Schematic
1, 4, 9, 12, 15	RF4, RF3, RF2, RF1, RFC	This pin is DC coupled and matched to 50 Ohm. Blocking capacitors are required if RF line potential is not equal to 0V.	
2, 3, 5, 10, 11, 14, 16	GND	Package bottom has exposed metal paddle that must also be connected to PCB RF ground.	
6	Vee	Supply Voltage -5V \pm 10%	
7	CTLB	See truth table and control voltage table.	
8	CTLA	See truth table and control voltage table.	
13	N/C	This pin should be connected to PCB RF ground to maximize isolation.	



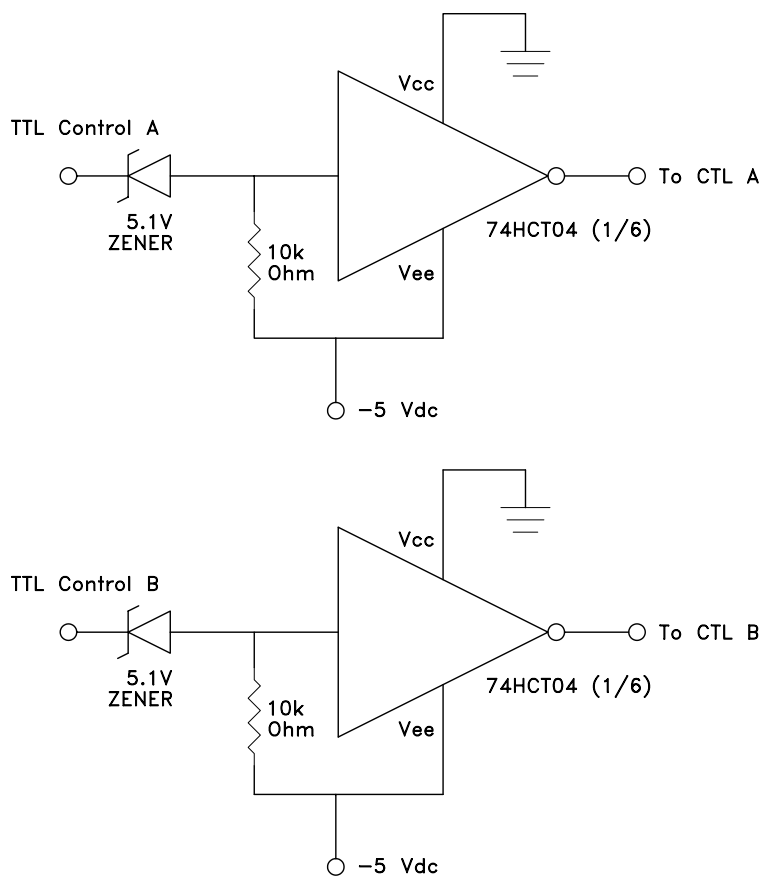
MICROWAVE CORPORATION v03.0514



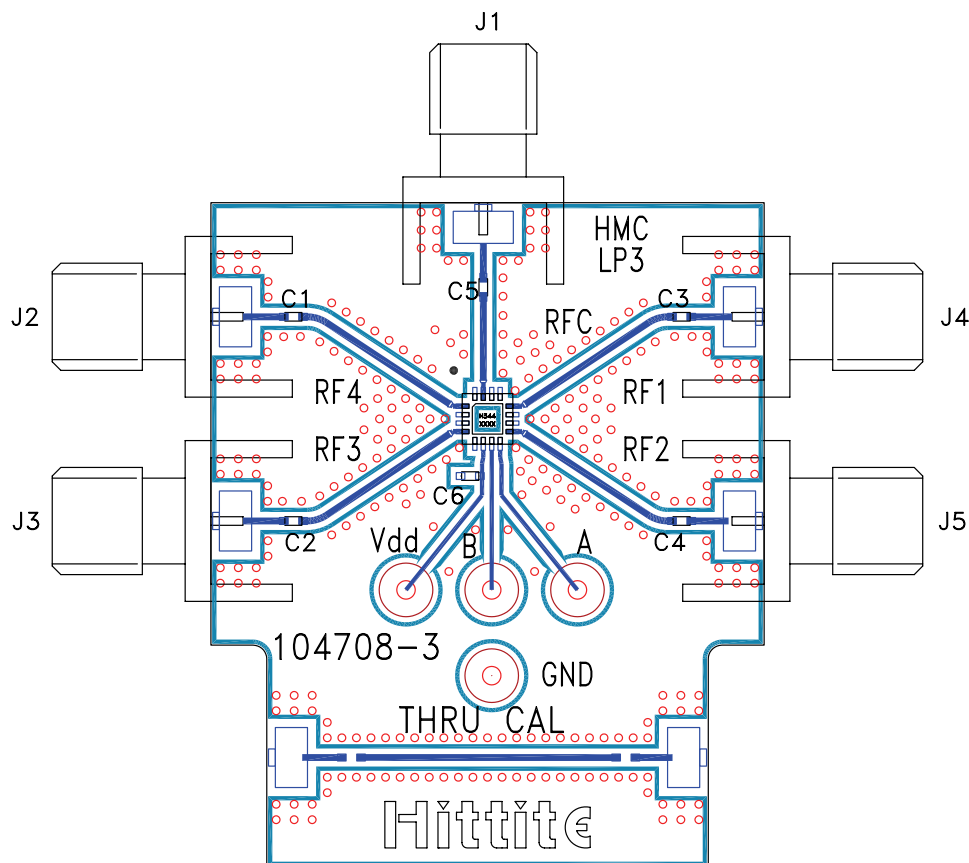
HMC344LC3

GaAs MMIC SP4T NON-REFLECTIVE SWITCH, DC - 8 GHz

TTL Interface Circuit



Evaluation PCB



List of Materials for Evaluation PCB 105311 ^[1]

Item	Description
J1 - J7	PCB Mount SMA RF Connector
J8 - J11	DC Pin
C1 - C5	0Ω Resistor, 0402 Pkg. ^[3]
C6	1000 pF Capacitor, 0402 Pkg.
U1	HMC344LC3
PCB ^[2]	104708 Evaluation PCB 1.29"x1.55"

[1] Reference this number when ordering complete evaluation PCB

[2] Circuit Board Material: Rogers 4350

[3] Select and replace with a suitable capacitor value for applicable operating frequency range.

The circuit board used in the application should be generated with proper RF circuit design techniques. Signal lines at the RF port should have 50 ohm impedance and the package ground leads and backside ground slug should be connected directly to the ground plane similar to that shown above. The evaluation circuit board shown above is available from Hittite Microwave Corporation upon request.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Analog Devices Inc.:](#)

[HMC344LC3](#)