



MICROWAVE CORPORATION v00.0313



HMC1084LC4

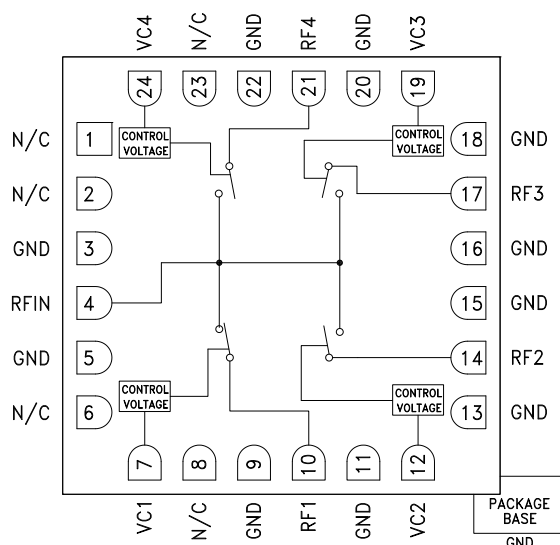
GaAs MMIC SP4T REFLECTIVE SWITCH 23 - 30 GHz

Typical Applications

The HMC1084LC4 is ideal for:

- Telecom Infrastructure
- Microwave Radio & VSAT
- Military & Space Hybrids
- Test Instrumentation
- SATCOM & Sensors

Functional Diagram



Features

Broadband Performance: 23 - 30 GHz

High Isolation: 26 dB

Insertion Loss: 2.8 dB

High Power Handling: >27 dBm

24 Lead 4x4mm SMT Package: 16mm²

General Description

The HMC1084LC4 is a broadband reflective GaAs MESFET SP4T switch in a compact 4x4 mm ceramic package. Covering 23 - 30 GHz, this switch offers high isolation and low insertion loss. The HMC1084LC4 is controlled with 0/-3V logic, exhibits fast switching speed and consumes much less DC current than pin diode based solutions. With its compact form factor, the HMC1084LC4 is ideal for microwave radio as well as SATCOM and sensor applications. The HMC1084LC4 is housed in a leadless 4x4 mm SMT package which is compatible with surface mount manufacturing techniques.

Electrical Specifications, $T_A = +25^\circ\text{C}$, With 0/-3V Control, 50 Ohm System

Parameter		Frequency	Min.	Typ.	Max.	Units
Insertion Loss	(RFC to RF1)	23 - 26 GHz		3.2	3.9	dB
	(RFC to RF2)			3.6	4.3	dB
	(RFC to RF3)			3.6	4.3	dB
	(RFC to RF4)			3.8	4.5	dB
Insertion Loss	(RFC to RF1)	26 - 30 GHz		2.8	3.5	dB
	(RFC to RF2)			2.8	3.5	dB
	(RFC to RF3)			2.8	3.4	dB
	(RFC to RF4)			3.3	4.0	dB
Isolation	(RFC to RF1, RF4)	23 - 30 GHz	21	26		dB
Isolation	(RFC to RF2, RF3)	23 - 30 GHz	21	26		
Return Loss [1]	"On State"	23 - 30 GHz		11		dB
Return Loss [2]	"Off State"	23 - 30 GHz		6		dB
Input Third Order Intercept (Two-Tone Input Power= 10 dBm Each Tone)		23 - 25 GHz		47		dBm
		25 - 30 GHz		43		
Switching Characteristics tRISE, tFALL (10/90% RF)		23 - 30 GHz		15		ns
	tON, tOFF (50% CTL to 10/90% RF)	23 - 30 GHz		53		ns

[1] Return loss with switch path in insertion loss state.

[2] Return loss with switch path in isolation state.

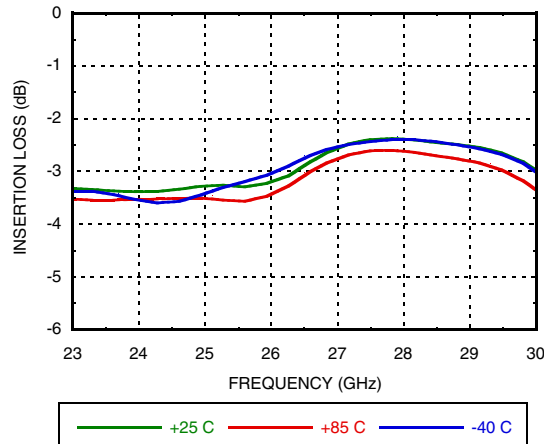
For price, delivery and to place orders: Hittite Microwave Corporation, 2 Elizabeth Drive, Chelmsford, MA 01824

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

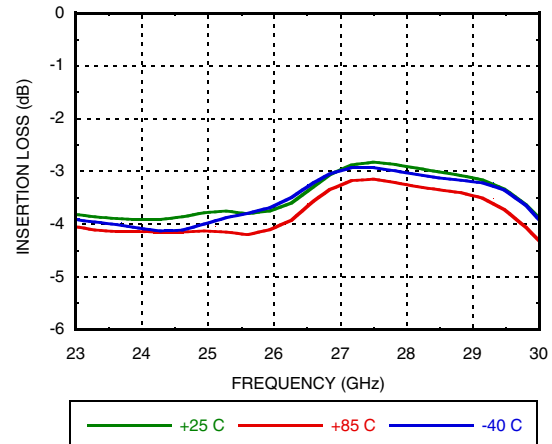
Application Support: Phone: 978-250-3343 or apps@hittite.com

GaAs MMIC SP4T REFLECTIVE SWITCH 23 - 30 GHz

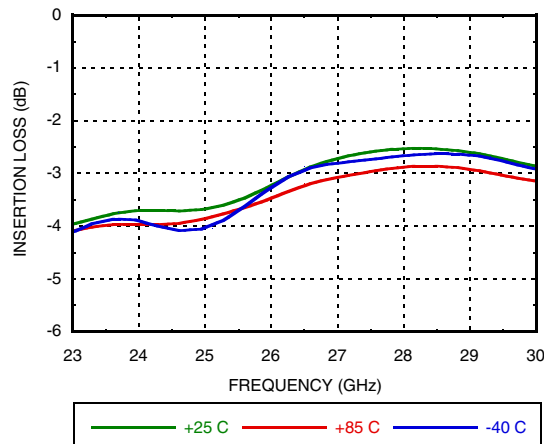
**Insertion Loss RFIN to RF1
vs. Temperature**



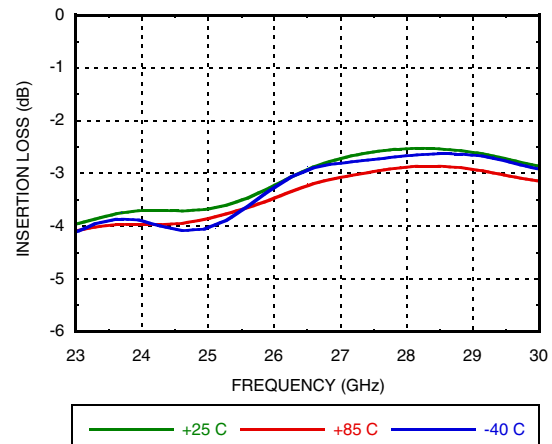
**Insertion Loss RFIN to RF4
vs. Temperature**



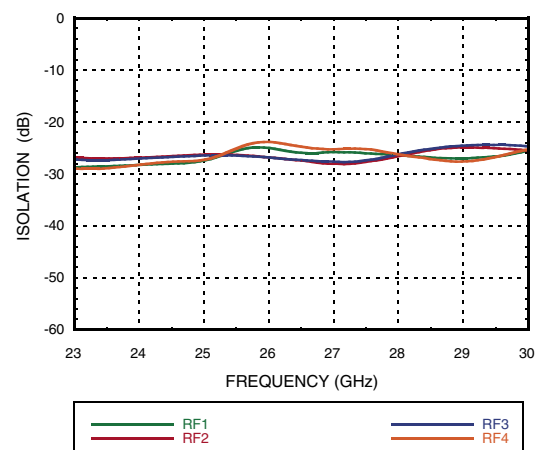
**Insertion Loss RFIN to RF2
vs. Temperature**



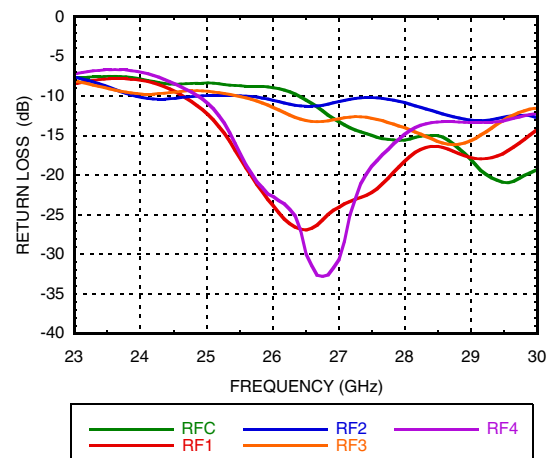
**Insertion Loss RFIN to RF3
vs. Temperature**



Isolation, Worst Case



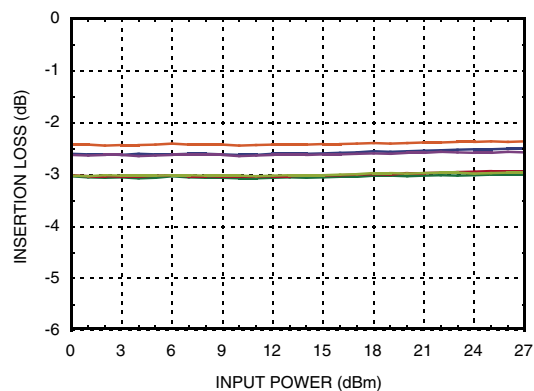
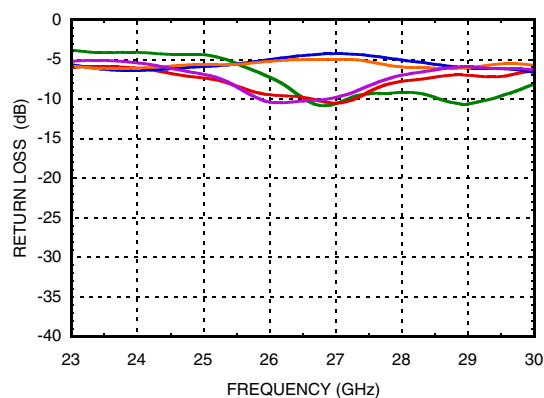
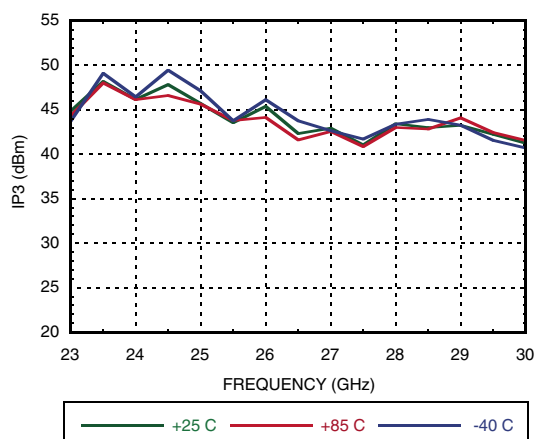
Return Loss On State [1]



[1] Return loss with switch path in insertion loss state.



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**HMC1084LC4****GaAs MMIC SP4T REFLECTIVE
SWITCH 23 - 30 GHz****Insertion Loss vs. Input Power****Return Loss Off State [1]****Input IP3 vs. Temperature @ 10dBm/tone**

[1] Return loss with switch path in isolation state.

GaAs MMIC SP4T REFLECTIVE SWITCH 23 - 30 GHz

Absolute Maximum Ratings

Control Voltage Range (VC1, VC2, VC3, VC4)	+5V
Maximum Input Power	30 dBm
Channel Temperature	175 °C
Thermal Resistance Channel to die bottom (Insertion Loss Path)	24 °C/W
Storage Temperature	-65 to +150 °C
Operating Temperature	-55 to +85 °C
ESD Sensitivity (HBM)	Class1A

Bias Voltage & Current

VC (V)	IC (μA)
VC1 = -3V	IC1 < 10 μA
VC2 = -3V	IC2 < 10 μA
VC3 = -3V	IC3 < 10 μA
VC4 = -3V	IC4 < 10 μA

Truth Table

VC1	VC2	VC3	VC4	RFIN to:
-3V	0V	0V	0V	RF1
0V	-3V	0V	0V	RF2
0V	0V	-3V	0V	RF3
0V	0V	0V	-3V	RF4

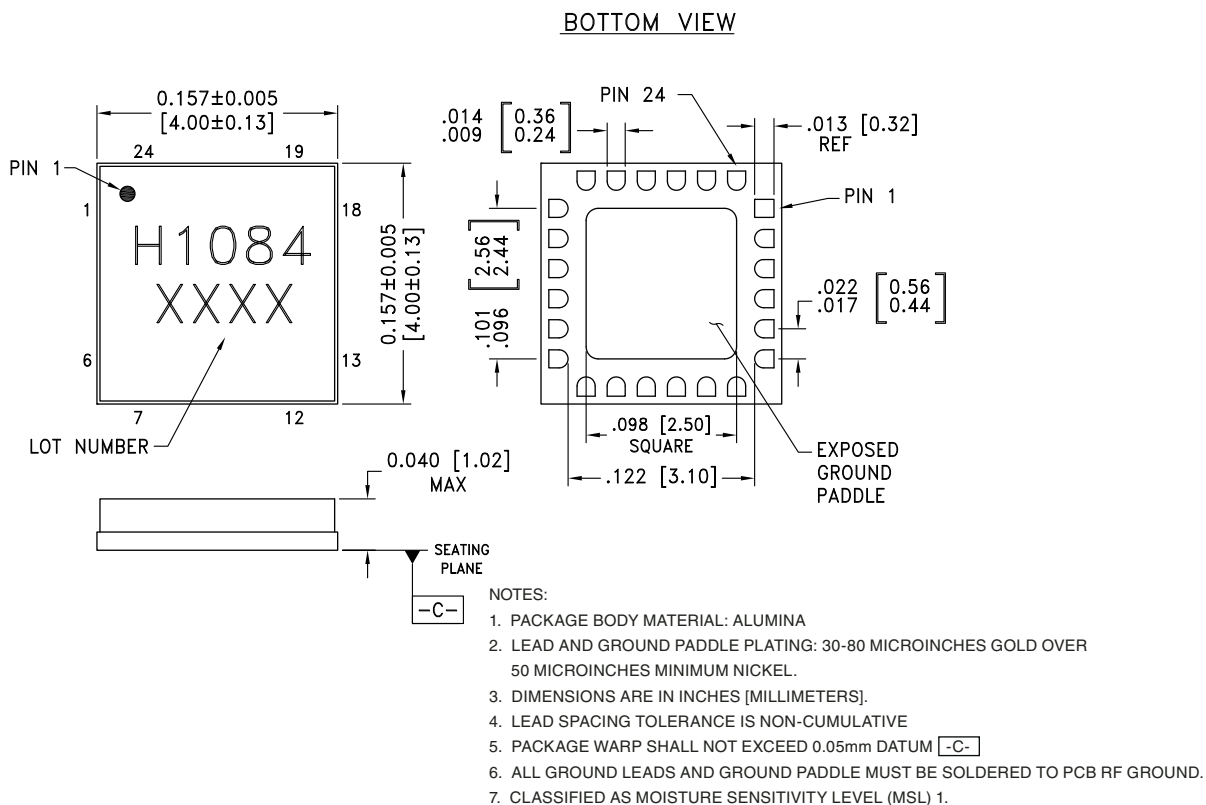


ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

Control Voltages

State	Bias Condition
Low	+1V to -0.25V
High	-2.75V to -5V, < 10 μA

Outline Drawing





GaAs MMIC SP4T REFLECTIVE SWITCH 23 - 30 GHz

Notes: