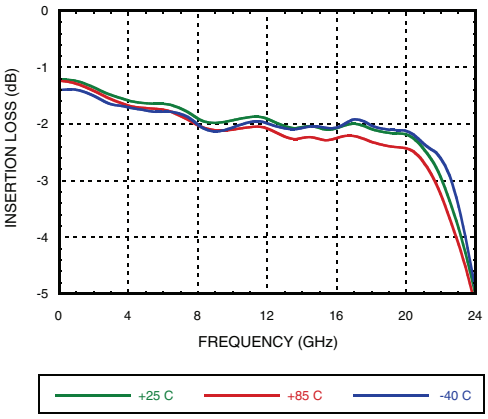
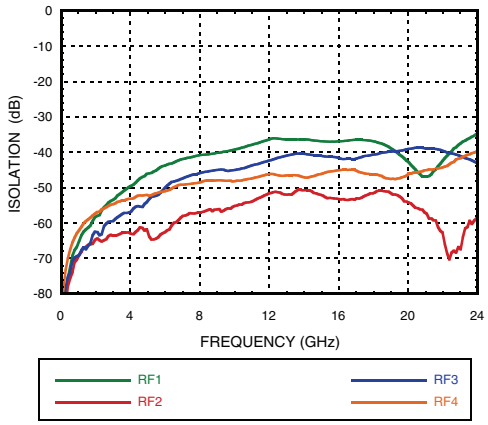
RoHS✓ EARTH FRIENDLY

GaAs MMIC SP4T NON-REFLECTIVE SWITCH, DC - 20 GHz

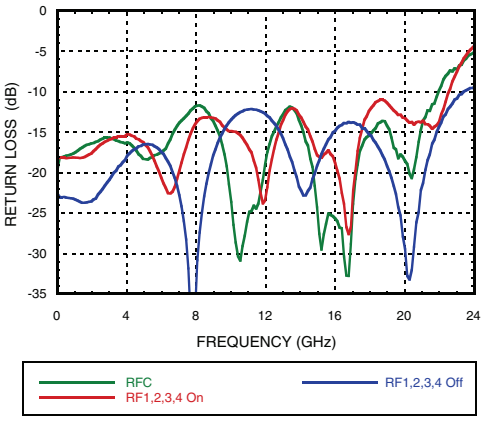
Insertion Loss vs. Temperature



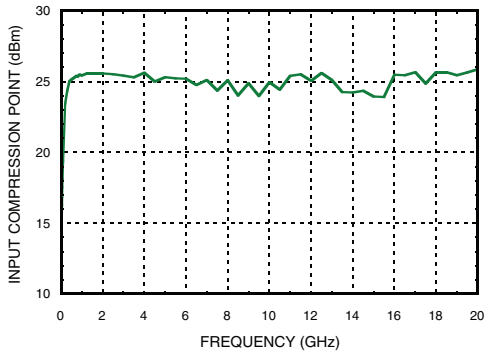
Isolation



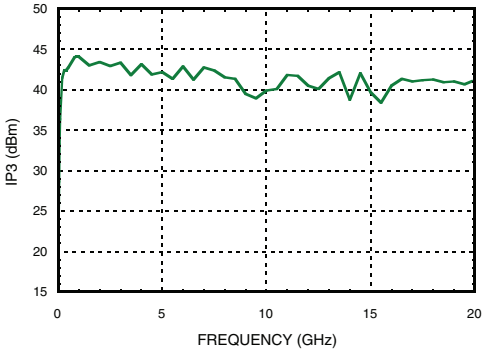
Return Loss



1 dB Input Compression Point



Input Third Order Intercept Point @ 10 dBm Tone Power



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Absolute Maximum Ratings

Bias Voltage (Vss)	-7V
Control Voltage Range (A & B)	Vss -0.5V to +1V
Maximum Input Power Insertion Loss Path Terminated Path	 +26.5 dBm +23 dBm
Channel Temperature	150 °C
Thermal Resistance Channel to die bottom Insertion Loss Path Terminated Path	 201 °C/W 321 °C/W
Storage Temperature	-65 to +150 °C
Operating Temperature	-40 to +85 °C

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

Truth Table

Control Input		Signal Path State
A	B	RFC to:
High	High	RF1
Low	High	RF2
High	Low	RF3
Low	Low	RF4

Bias Voltage & Current

Vss Range= -5.0 Vdc ±10%		
Vss (Vdc)	Iss (Typ) (mA)	Iss (Max) (mA)
-5	1.8	5.0

TTL/CMOS Control Voltages

State	Bias Condition
Low	-2.5V to 0V @ 30 µA Typ.
High	-5V to -3.8V @ 0.5 µA Typ.

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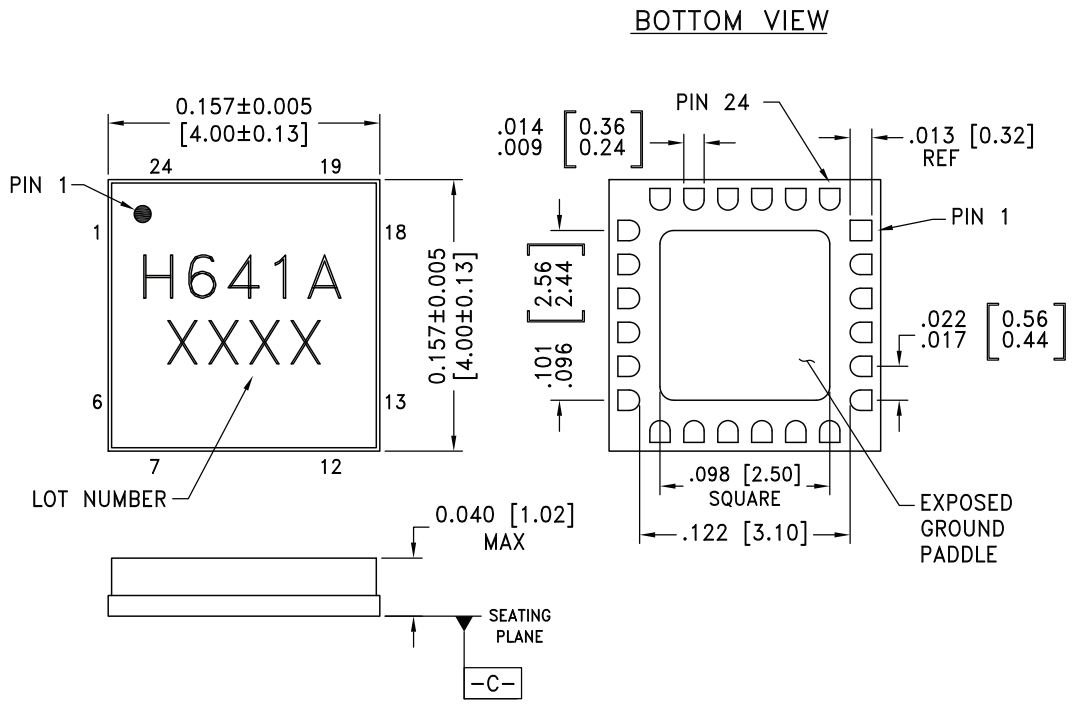
Outline Drawing



NOTES:

1. PACKAGE BODY MATERIAL: ALUMINA
2. LEAD AND GROUND PADDLE PLATING: 30-80 MICROINCHES GOLD OVER 50 MICROINCHES MINIMUM NICKEL.
3. DIMENSIONS ARE IN INCHES [MILLIMETERS].
4. LEAD SPACING TOLERANCE IS NON-CUMULATIVE
5. PACKAGE WARP SHALL NOT EXCEED 0.05mm DATUM -C-
6. ALL GROUND LEADS AND GROUND PADDLE MUST BE SOLDERED TO PCB RF GROUND.

Package Information

Part Number	Package Body Material	Lead Finish	MSL Rating	Package Marking [2]
HMC641ALC4	Alumina, White	Gold over Nickel	MSL3 [1]	H641A XXXX

[1] Max peak reflow temperature of 260 °C
[2] 4-Digit lot number XXXX

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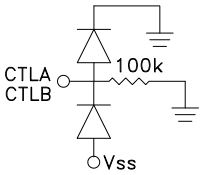
Pin Descriptions

Pin Number	Function	Description	Interface Schematic
1, 5, 6, 13, 18	N/C	These pins are not connected internally; however, all data shown herein was measured with these pins connected to RF/DC ground externally.	
2, 4, 7, 9, 10, 12, 17, 19, 21, 22, 24 Ground Paddle	GND	These pins and the exposed ground paddle must be connected to RF/DC ground.	
3, 8, 11, 20, 23	RFC, RF1, RF2, RF3, RF4	These pads are DC coupled and matched to 50 Ohms. Blocking capacitors are required if RF line potential is not equal to 0V.	
14	Vss	Supply Voltage -5 Vdc ± 10%.	
15	CTLB	See Truth Table and Control Voltage Table.	
16	CTLA	See Truth Table and Control Voltage Table.	

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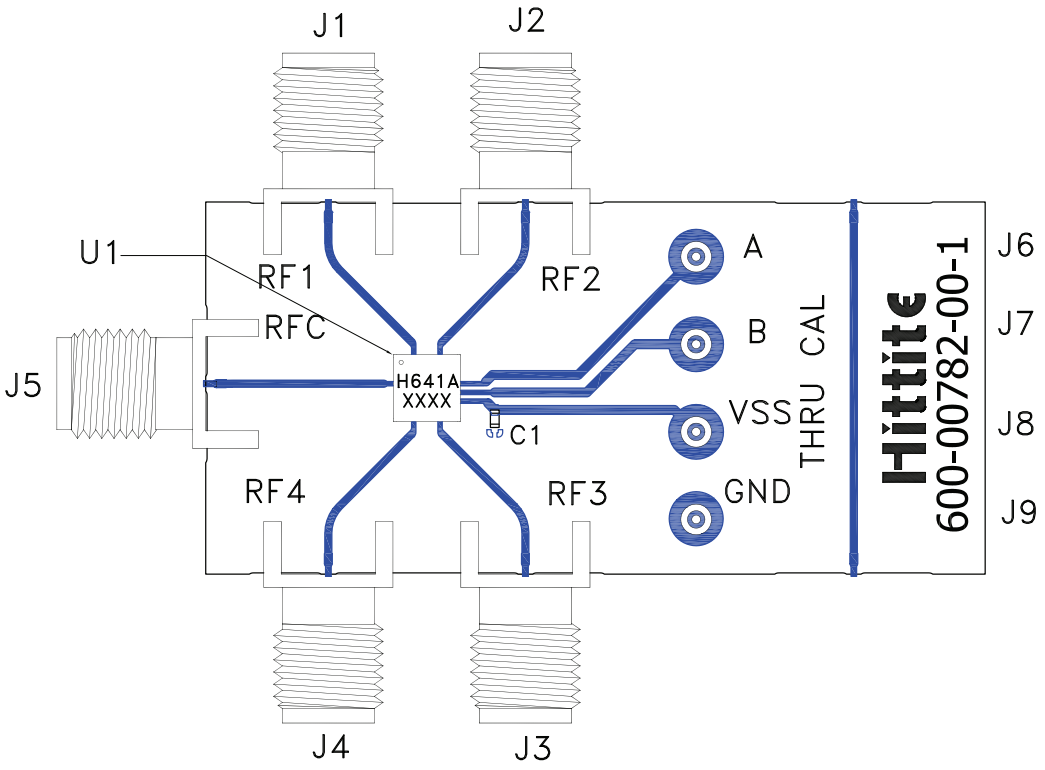
Evaluation PCB



List of Materials for Evaluation PCB EVAL01 - HMC641ALC4 [1]

Item	Description
J1 - J5	PCB Mount SMA Connector
J6 - J9	DC Pin
C1	1000 pF Capacitor, 0402 Pkg.
U1	HMC641ALC4 Switch
PCB [2]	600-00782-00-1 Evaluation PCB

[1] Reference this number when ordering complete evaluation PCB

[2] Circuit Board Material: Rogers 4350 or Arlon FR4

The circuit board used in the application should use RF circuit design techniques. Signal lines should have 50 Ohm impedance while the package ground leads and exposed paddle should be connected directly to the ground plane similar to that shown. A sufficient number of via holes should be used to connect the top and bottom ground planes. The evaluation board should be mounted to an appropriate heat sink. The evaluation circuit board shown is available from Hittite upon request.

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