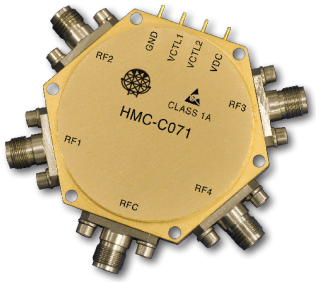
GaAs MMIC SP4T NON-REFLECTIVE SWITCH, DC - 20 GHz

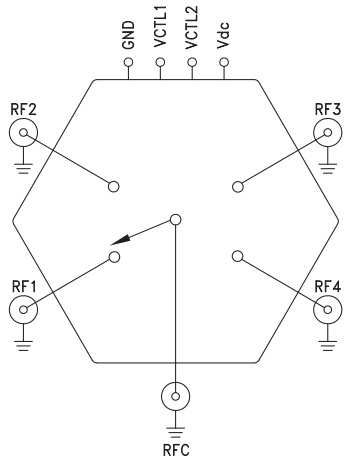


Typical Applications

The HMC-C071 is ideal for:

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

Functional Diagram



Features

High Isolation: >42 dB up to 12 GHz
>32 dB up to 20 GHz

Low Insertion Loss: 2 dB @ 2 GHz
2.8 dB @ 12 GHz

Fast Switching: 17 ns Rise/Fall Times

Non-Reflective Design

Hermetically Sealed Module

Field Replaceable SMA connectors

-55 °C to +85 °C Operating Temperature

General Description

The HMC-C071 is a general purpose broadband high isolation non-reflective GaAs pHEMT SP4T switch housed in a miniature hermetic module with field replaceable SMA connectors. Covering DC to 20 GHz, the switch offers high isolation and low insertion loss. The switch features >42 dB isolation up to 12 GHz and >32 dB isolation up to 20 GHz. The HMC-C071 also provides 2.8 dB insertion loss up to 12 GHz with very fast rise and fall times of 17ns. A CMOS interface allows a single +5V bias voltage at very low DC currents.

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

Parameter		Frequency	Min.	Typ.	Max.	Units
Insertion Loss		DC - 6 GHz DC - 12 GHz DC - 20 GHz		-2.7 -2.8 -3.8	-3.2 -3.8 -5	dB dB dB
Isolation		DC - 6 GHz DC - 12 GHz DC - 20 GHz	44 36 35	48 42 38		dB dB dB
Return Loss	“On State”	DC - 12 GHz DC - 20 GHz		12 10		dB dB
Return Loss RF1, RF2	“Off State”	DC - 12 GHz DC - 20 GHz		15 10		dB dB
Input Power for 1 dB Compression		0.5 - 20 GHz	20.5	24		dBm
Input Third Order Intercept (Two-Tone Input Power= +7 dBm Each Tone)		0.5 - 20 GHz	36.5	40		dBm
Switching Characteristics tRISE, tFALL (10/90% RF) tON, tOFF (50% CTL to 10/90% RF)		DC - 20 GHz		17 130		ns ns

For price, delivery, and to place orders: Analog Devices, Inc., One Technology Way, P.O. Box 9106, Norwood, MA 02062-9106
Phone: 781-329-4700 • Order online at www.analog.com
Application Support: Phone: 1-800-ANALOG-D

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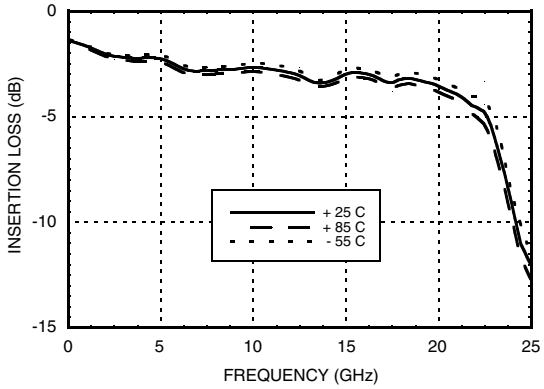
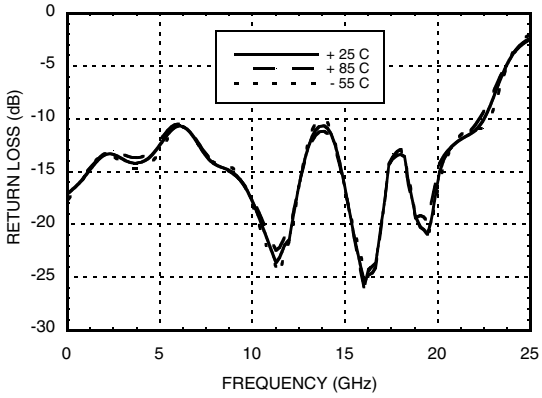
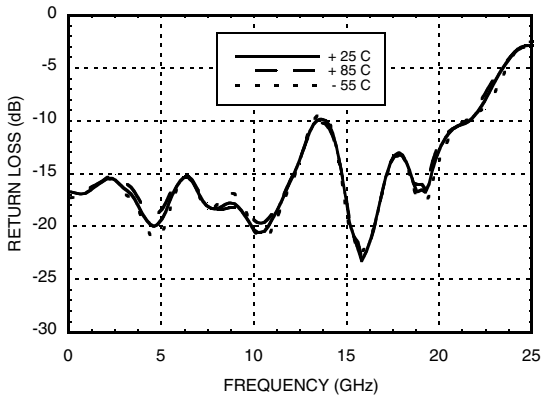
Insertion Loss



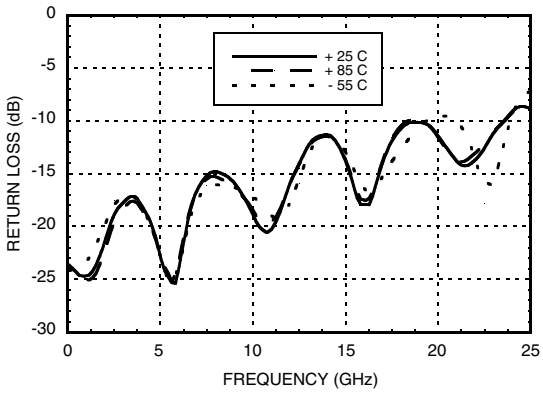
Return Loss RFC



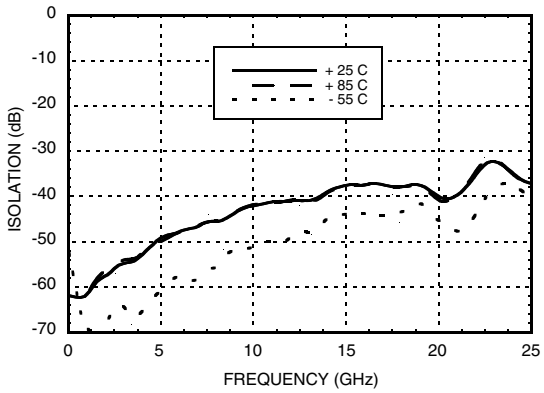
Return Loss RF1, RF2, RF3, RF4 On



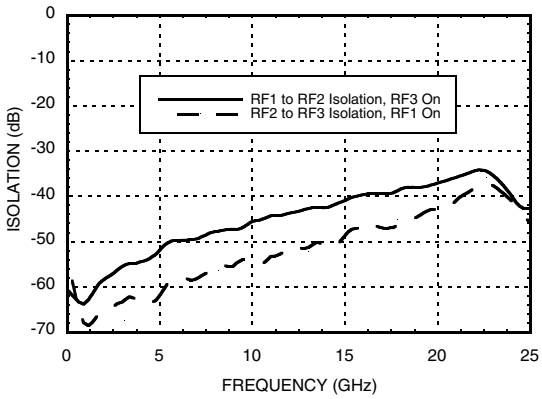
Return Loss RF1, RF2, RF3, RF4 Off



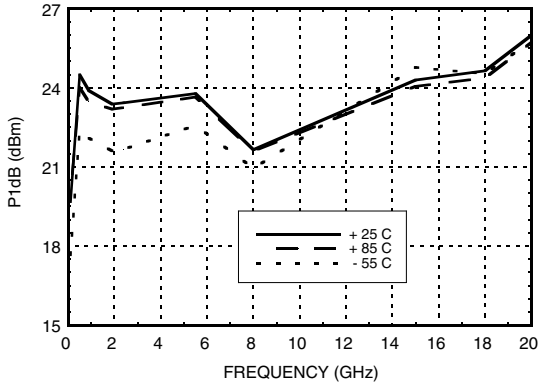
Isolations



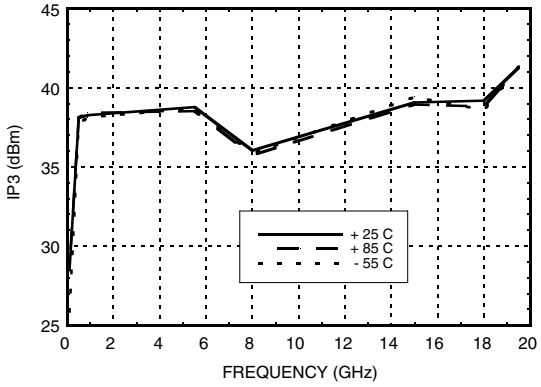
Isolation Between Ports RF1 and RF2



Input P1dB Compression Point



Input Third Order Intercept Point



Absolute Maximum Ratings

RF Input Power	+24 dBm
Supply Voltage (Vdc)	+7V
Control Voltage Range (Vctl)	-0.5V to Vdc +1V
Storage Temperature	-65 to +150 °C
Operating Temperature	-55 to +85 °C

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

Control Voltages

State	Bias Condition
High	+3.0 to Vdc @ 1 mA Typ.
Low	0 to +1.5V @ 20 µA Typ.

Truth Table

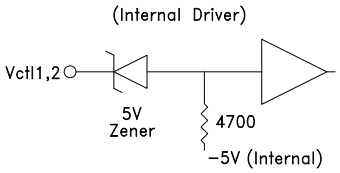
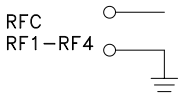
Control Input	Signal Path State	
VCTL1	VCTL2	RFC to:
LOW	LOW	RF1
LOW	HIGH	RF2
HIGH	LOW	RF3
HIGH	HIGH	RF4

Bias Voltage & Current

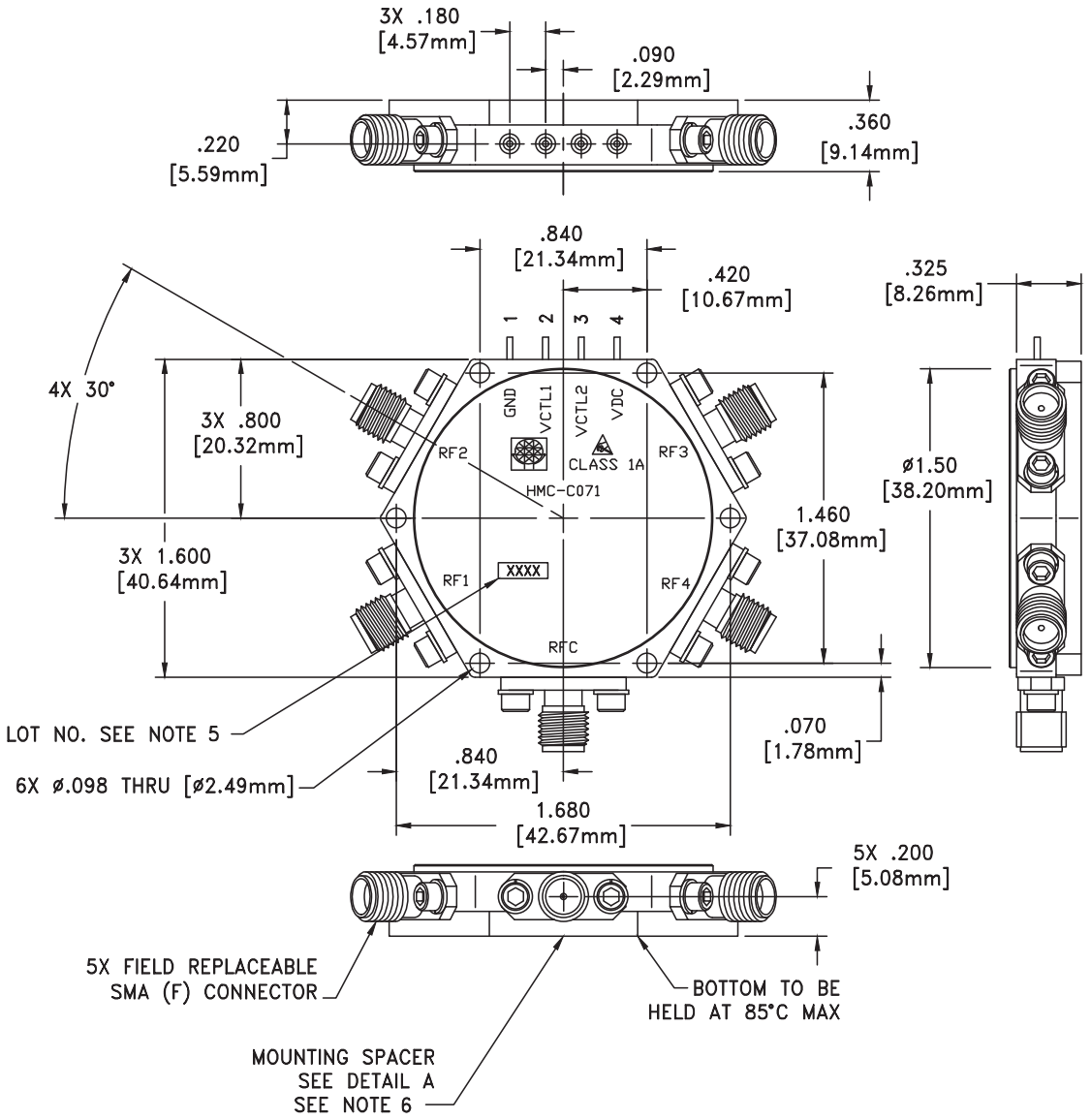
Vdc Range = +5 Vdc ± 10%	
Vdc (V)	Idc (Typ.) (mA)
+5.0	1.4

(Bias current increases with switching rate to 15 - 20 mA.)

Pin Descriptions

Pin Number	Function	Description	Interface Schematic
1	GND	Power supply ground.	
2, 3	Vctl1, 2	CMOS interface, control voltages per table. Requires active pull up to +5V (V_{dc}).	
4	Vdc	Supply voltage	
5 - 9	RFC, RF1, RF2, RF3, RF4	RF connector, SMA female, field replaceable. These pins are DC coupled and matched to 50 Ohms. DC blocking capacitors are required if external RF line potential is not equal to 0V.	

Outline Drawing



Package Information

Package Type	C-15

NOTES:

1. PACKAGE, LEADS, COVER MATERIAL: KOVAR™
2. FINISH: GOLD PLATE OVER NICKEL PLATE
3. ALL DIMENSIONS ARE IN INCHES [MILLIMETERS].
4. TOLERANCES:
   - 4.1 .XX = ±.02 [.51]
   - 4.2 .XXX = ±.010 [.25]
5. MARK LOT NUMBER ON .080 X .250 LABEL WHERE SHOWN, WITH .030 MIN TEXT HEIGHT.
6. MOUNTING SPACER PART NUMBER: 123811.

Notes: