



GaAs MMIC SPDT NON-REFLECTIVE SWITCH, DC - 18 GHz

Features

High Isolation: >65 dB up to 6 GHz
>50 dB up to 18 GHz

Low Insertion Loss: 2 dB @ 8 GHz
2.8 dB @ 12 GHz

Fast Switching: 3 ns Rise/Fall Times

Non-Reflective Design

Hermetically Sealed Module

Field Replaceable SMA connectors

-55 to +85 °C Operating Temperature

General Description

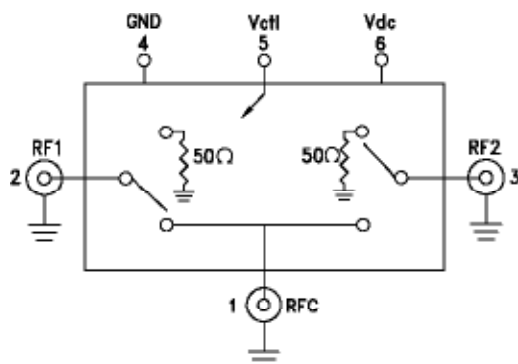
The HMC-C058 is a general purpose broadband high isolation non-reflective GaAs MESFET SPDT switch housed in a miniature hermetic module with field replaceable SMA connectors. Covering DC to 18 GHz, the switch offers high isolation and low insertion loss. The switch features >65 dB isolation up to 6 GHz and >50 dB isolation up to 18 GHz. A CMOS interface allows a single +5V bias voltage at very low DC currents.

Typical Applications

The HMC-C058 is ideal for:

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

Functional Diagram



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

Parameter	Frequency	Min.	Typ.	Max.	Units
Insertion Loss	DC - 6 GHz		1.6	2.4	dB
	DC - 10 GHz		2.0	2.8	dB
	DC - 18 GHz		3.0	5.5	dB
Isolation	DC - 6 GHz	55	65		dB
	DC - 10 GHz	50	60		dB
	DC - 18 GHz	42	55		dB
Return Loss "On State"	DC - 6 GHz		17		dB
	DC - 18 GHz		12		dB
Return Loss RF1, RF2 "Off State"	DC - 6 GHz		14		dB
	DC - 18 GHz		17		dB
Input Power for 1 dB Compression	0.5 - 18 GHz	24	27		dBm
Input Third Order Intercept (Two-Tone Input Power= +7 dBm Each Tone)	0.5 - 18 GHz		46		dBm
Switching Characteristics tRISE, tFALL (10/90% RF) tON, tOFF (50% CTL to 10/90% RF)	DC - 18 GHz		3		ns
			12		ns
Switching Transients	DC - 18 GHz		12		mVpp

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HMC-C058* PRODUCT PAGE QUICK LINKS

Last Content Update: 02/23/2017

COMPARABLE PARTS

View a parametric search of comparable parts.

DOCUMENTATION

Data Sheet

- HMC-C058 Data Sheet

DESIGN RESOURCES

- HMC-C058 Material Declaration
- PCN-PDN Information
- Quality And Reliability
- Symbols and Footprints

DISCUSSIONS

View all HMC-C058 EngineerZone Discussions.

SAMPLE AND BUY

Visit the product page to see pricing options.

TECHNICAL SUPPORT

Submit a technical question or find your regional support number.

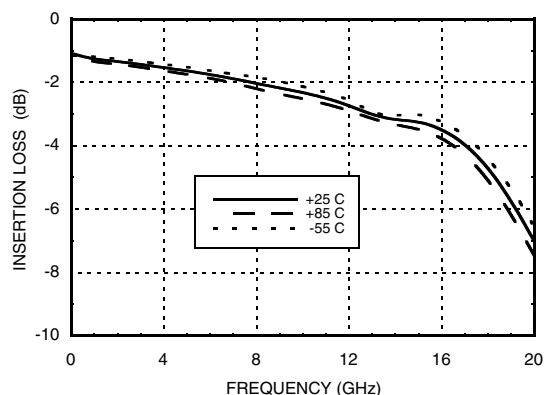
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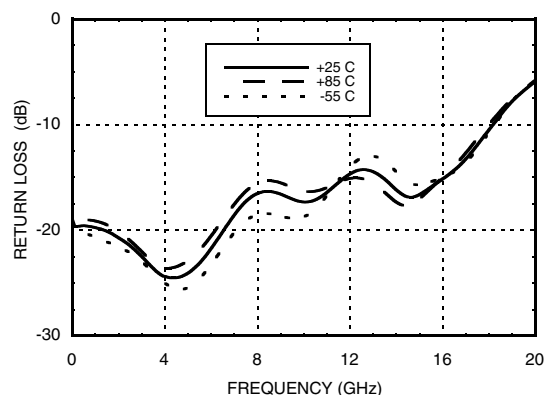


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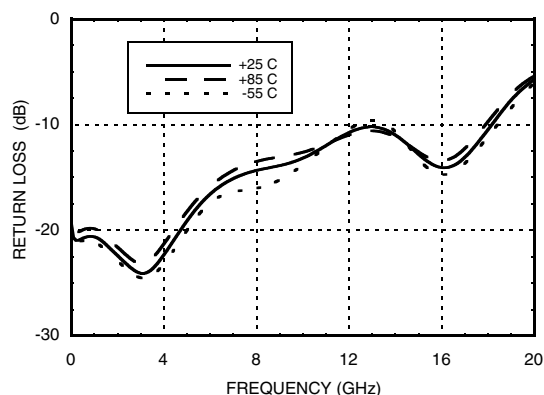
Insertion Loss



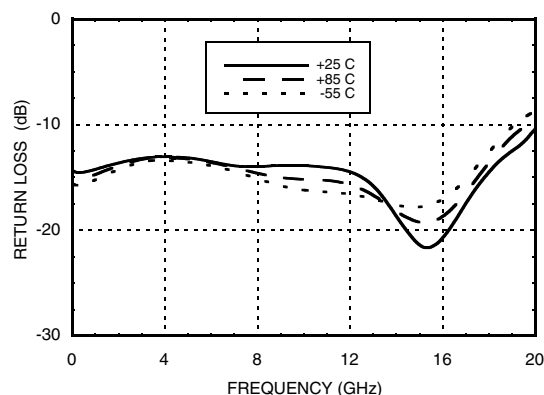
Return Loss RFC



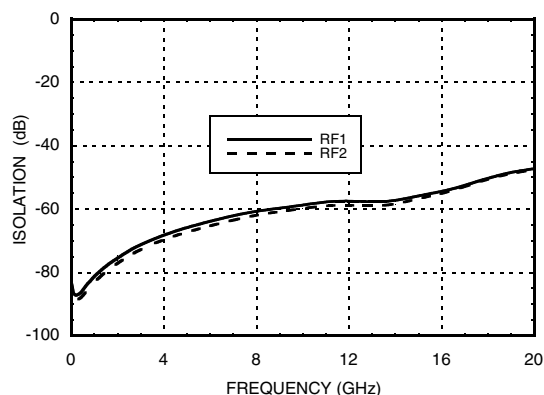
Return Loss RF1, RF2 On



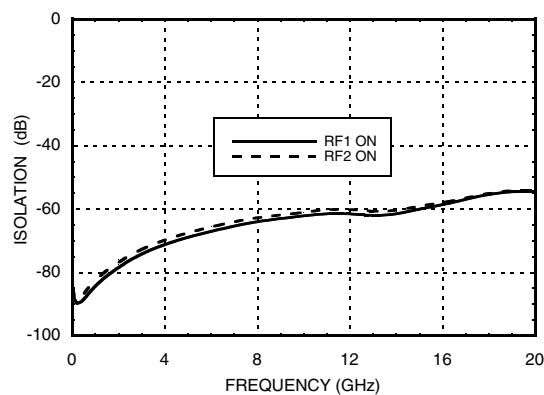
Return Loss RF1, RF2 Off



Isolations



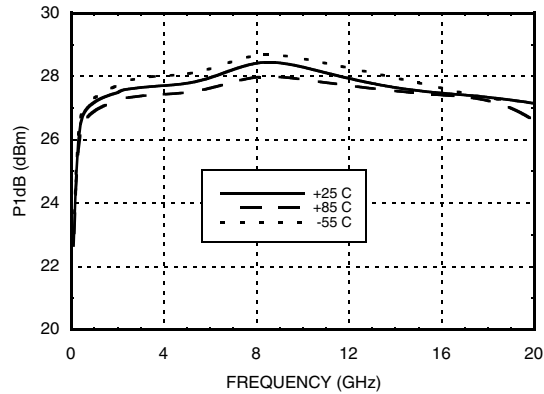
Isolation Between Ports RF1 and RF2



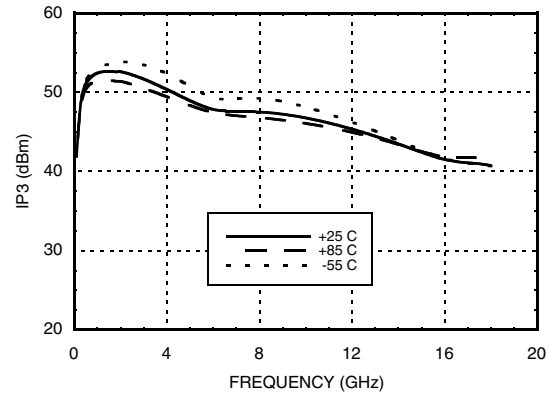


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Input P1dB Compression Point



Input Third Order Intercept Point



Absolute Maximum Ratings

RF Input Power	+30 dBm
Supply Voltage (Vdc)	+7 V
Control Voltage Range (Vctl)	-0.5V to Vdc +0.5V
Hot Switch Power Level	+27 dBm
Storage Temperature	-65 to +150 °C
Operating Temperature	-55 to +85 °C



**ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS**

Control Voltages

State	Bias Condition
High	+3.5 to Vdc @ 1 mA Typ.
Low	0 to +1.5V @ 20 μ A Typ.

Truth Table

Control Input	Signal Path State	
	RFC to RF1	RFC to RF2
High	On	Off
Low	Off	On

Bias Voltage & Current

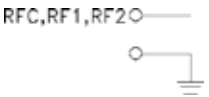

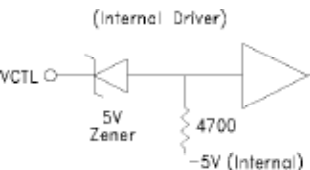
Vdc Range = +5 Vdc \pm 10%	
Vdc (V)	Idc (Typ.) (mA)
+5.0	1.4

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

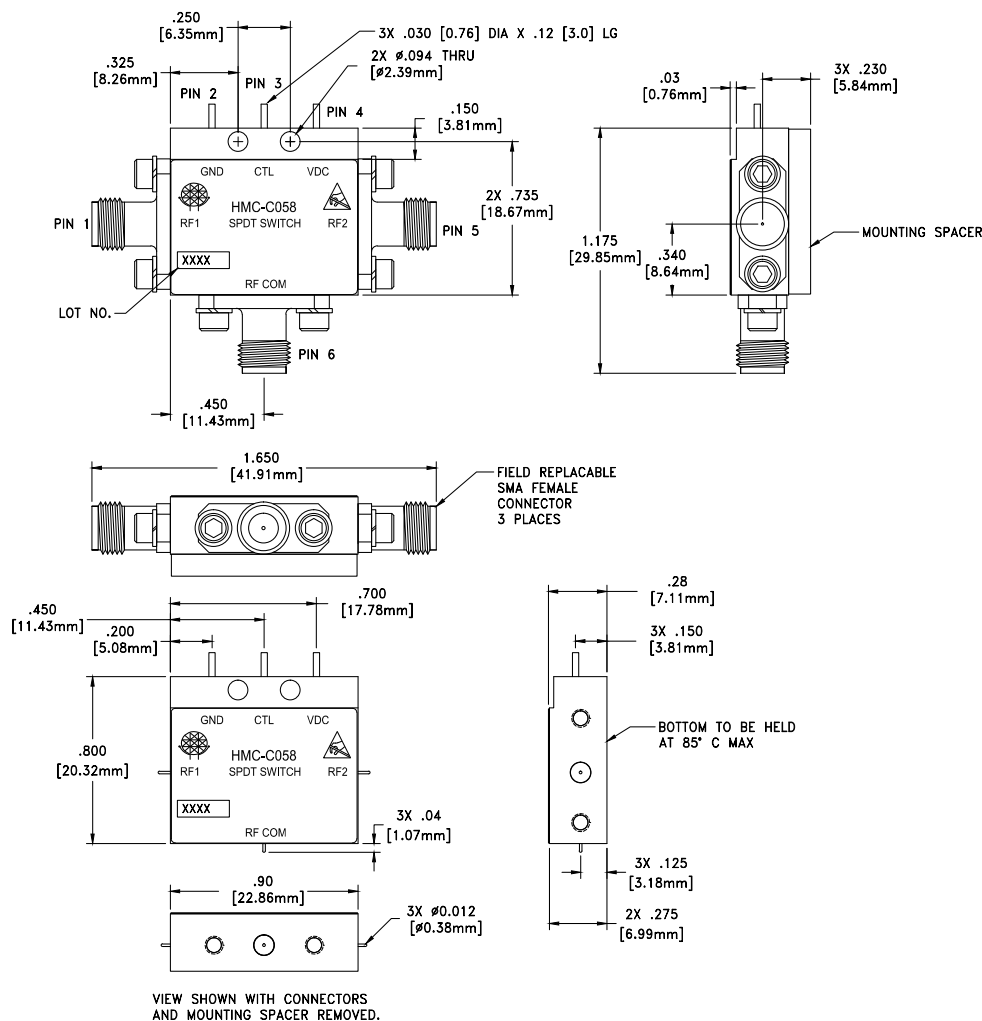


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Pin Descriptions

Pin Number	Function	Description	Interface Schematic
1, 2, 3	RFC, RF1, RF2	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.	
4	GND	Power supply ground.	
5	Vctl	CMOS interface, control voltages per table. Requires active pullup to +5V (V_{dc}).	
6	Vdc	Supply voltage	

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Outline Drawing

Package Information

Package Type	C-14
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NOTES:

1. PACKAGE, LEADS, COVER MATERIAL: KOVAR™
2. PLATING: ELECTROLYTIC GOLD 50 MICROINCHES MIN., OVER ELECTROLYTIC NICKEL 75 MICROINCHES MIN.
3. SPACER MATERIAL: NICKEL PLATED ALUMINUM
4. DIMENSIONS ARE IN INCHES [MILLIMETERS].
5. TOLERANCES ±0.010 [0.25] UNLESS OTHERWISE SPECIFIED
6. FIELD REPLACEABLE SMA CONNECTORS. TENSOLITE 5602-5CCSF OR EQUIVALENT.



HMC-C058

v01.0711

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