

## ULTRA LOW PHASE NOISE AMPLIFIER MODULE, 7 - 11 GHz

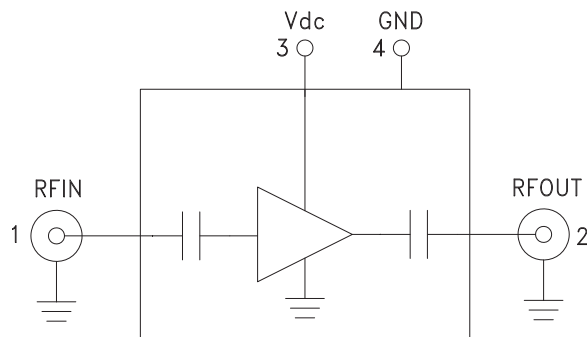


### Typical Applications

The HMC-C076 is ideal for:

- Microwave Radio
- Military & Space
- Test Instrumentation
- VSAT

### Functional Diagram



### Features

- Ultra Low Phase Noise: -170 dBc/Hz @ 1 kHz
- Noise Figure: 6 dB
- Gain: 9 dB
- Psat: +25 dBm
- 50 Ohm Matched Input/Output
- Single Supply Voltage: +7V @ 300mA
- Hermetically Sealed Module
- Field Replaceable SMA Connectors
- 55°C to +85°C Operating Temperature

### General Description

The HMC-C076 is a GaAs HBT Ultra Low Noise Amplifier in a miniature, hermetic module designed to operate between 7 and 11 GHz. This high dynamic range amplifier module provides 9 dB of gain, 6 dB noise figure and up to +25 dBm of output power with a single supply of +7V. The ultra low phase noise contribution of -170 dBc/Hz at 1 kHz offset, enables superior modulation accuracy within transceiver architectures. The wideband distributed amplifier I/O's are internally matched to 50 Ohms and DC blocked for robust performance. The module features removable SMA connectors which can be detached to allow direct connection of the I/O pins to a microstrip or coplanar circuit.

### Electrical Specifications, $T_A = +25^\circ\text{C}$ , $V_{dc} = +7\text{V}$

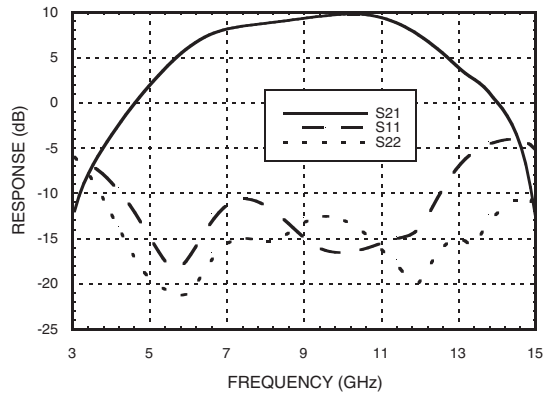
Parameter	Min.	Typ.	Max.	Units
Frequency Range	7 - 11			GHz
Vdc Range	6	7	8	V
Gain	5	9		dB
Gain Variation Over Temperature		0.02		dB/ °C
Noise Figure		6		dB
Input Return Loss		12		dB
Output Return Loss		15		dB
Output Power for 1 dB Compression (P1dB)	20	22		dBm
Saturated Output Power (Psat)		25		dBm
Output Third Order Intercept (IP3)		33		dBm
Phase Noise @ 100 Hz, Psat, 9 GHz		-160		dBc/Hz
Phase Noise @ 1 kHz, Psat, 9 GHz		-170		dBc/Hz
Phase Noise @ 10 kHz, Psat, 9 GHz		-180		dBc/Hz
Supply Current		300	360	mA

For price, delivery, and to place orders, please contact Hittite Microwave Corporation:  
 20 Alpha Road Chelmsford, MA 01824 Phone: 978-250-3343 Fax: 978-250-3373  
 Order Online at [www.hittite.com](http://www.hittite.com)

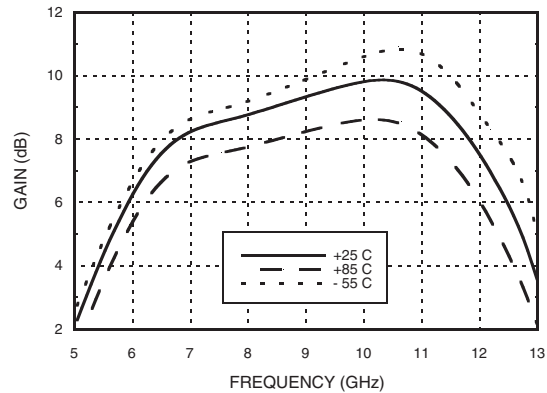


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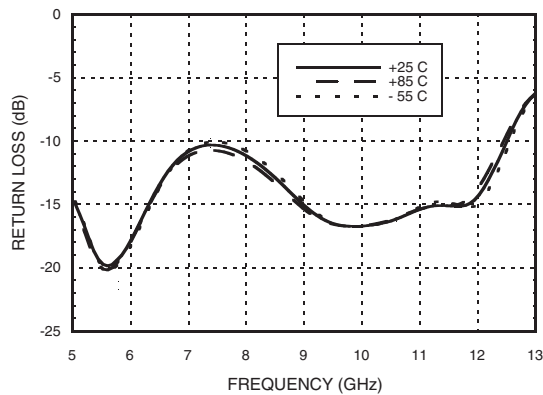
**Broadband, Gain & Return Loss**



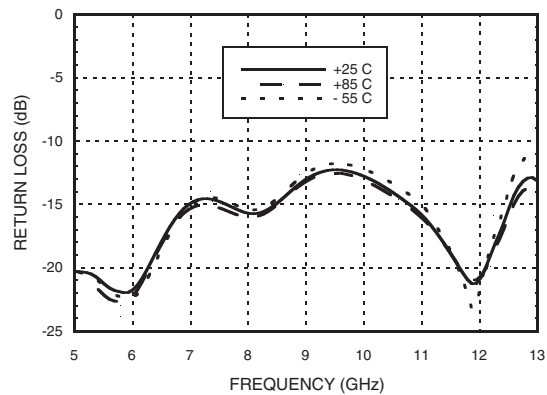
**Gain vs. Temperature**



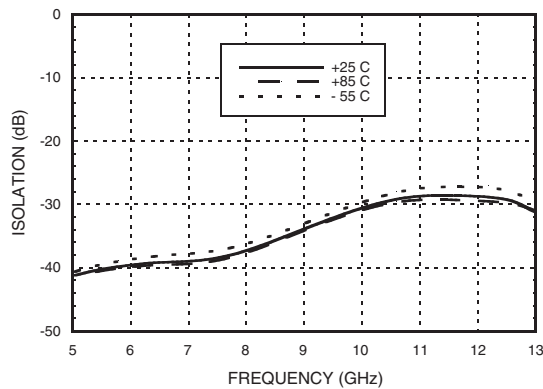
**Input Return Loss vs. Temperature**



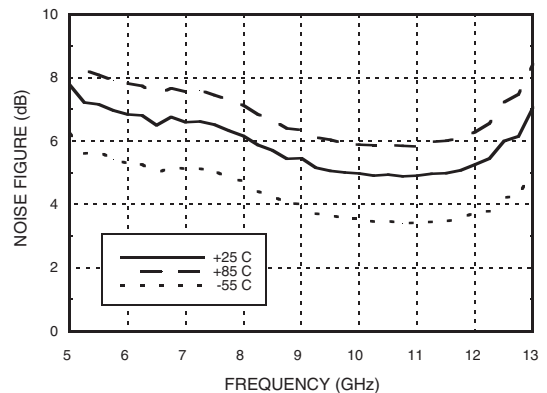
**Output Return Loss vs. Temperature**



**Reverse Isolation vs. Temperature**

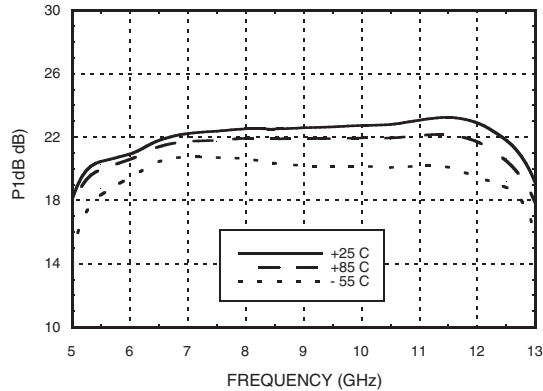


**Noise Figure vs. Temperature**

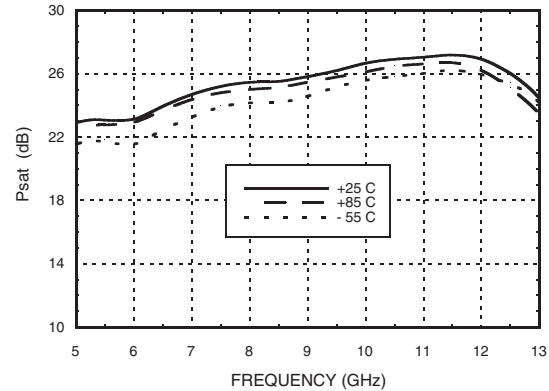


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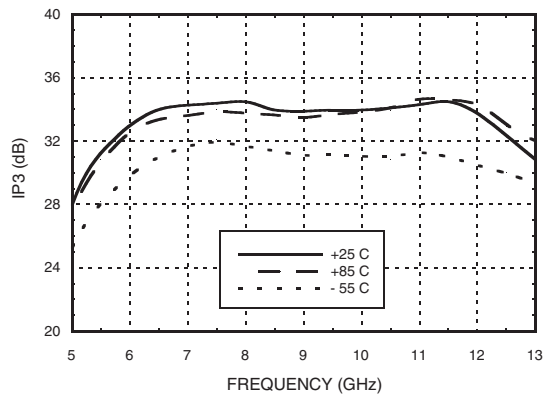
**Output P1dB vs. Temperature**



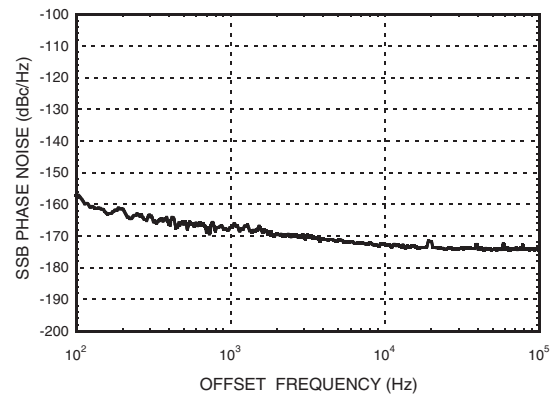
**Output Psat vs. Temperature**



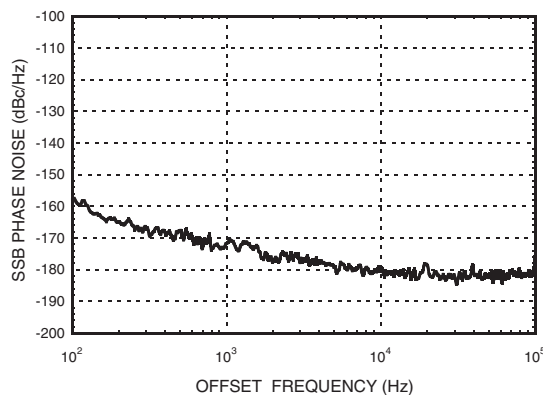
**Output IP3 vs. Temperature**



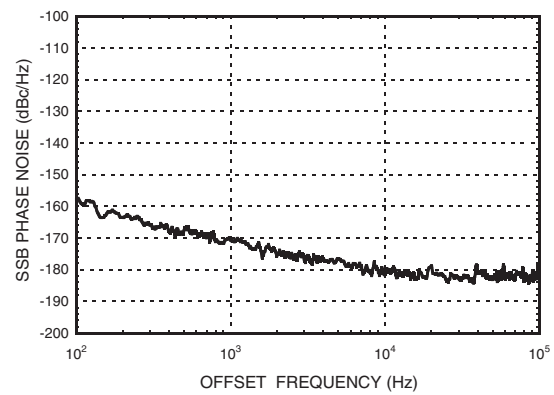
**Phase Noise at Pout = 10 dBm @ 9 GHz**



**Phase Noise at Pout = P1dB @ 9 GHz**



**Phase Noise at Pout = Psat @ 9 GHz**





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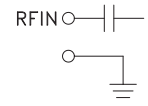
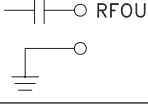
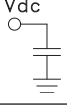

### Absolute Maximum Ratings

Bias Supply Voltage (V)	+8V
RF Input Power (RFIN)	+20 dBm
Continuous P <sub>diss</sub> (T = 85 °C)	2.88W
Storage Temperature	-65 to +150 °C
Operating Temperature	-55 to +85 °C
ESD Sensitivity (HBM)	Class 1A



ELECTROSTATIC SENSITIVE DEVICE  
OBSERVE HANDLING PRECAUTIONS

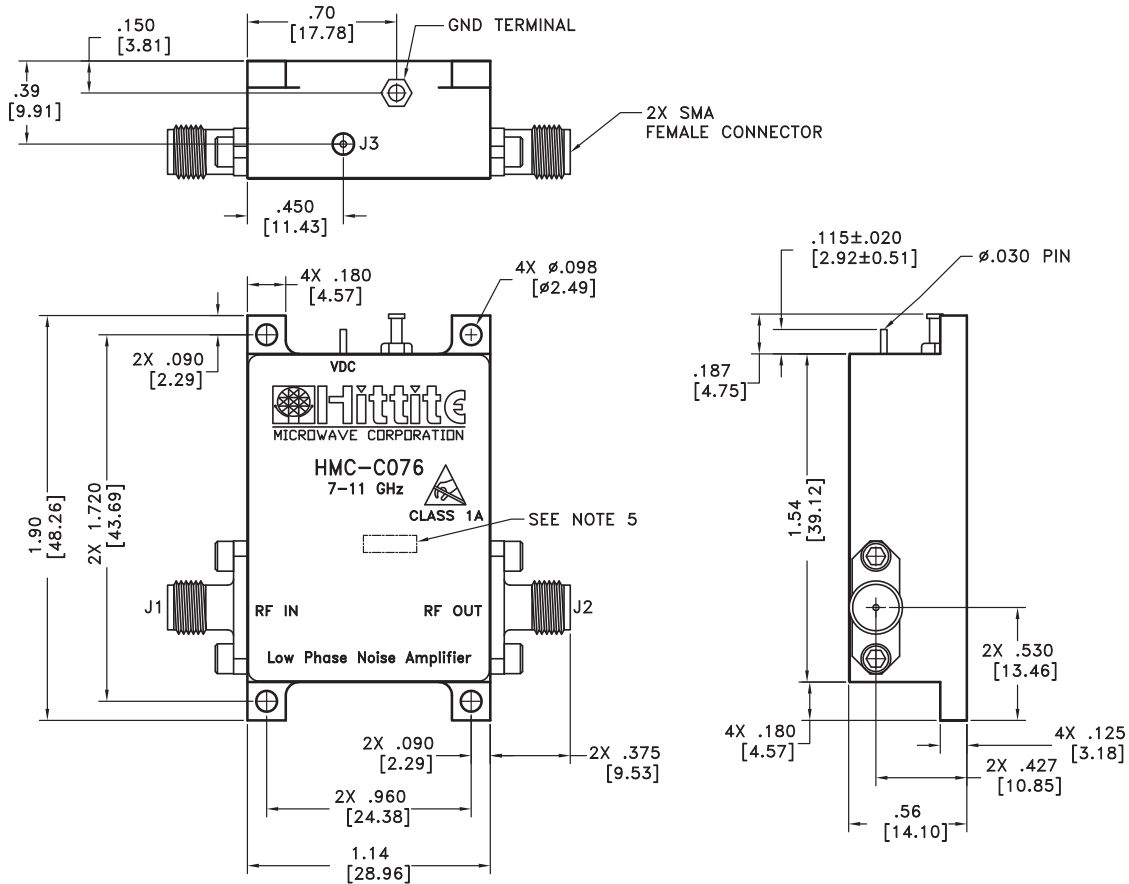
### Pin Descriptions

Pin Number	Function	Description	Interface Schematic
1	RFIN & RF Ground	RF input connector, coaxial female, field replaceable. This pin is AC coupled and matched to 50 Ohms.	
2	RFOUT & RF Ground	RF output connector, coaxial female, field replaceable. This pin is AC coupled and matched to 50 Ohms.	
3	Vdc	Power supply voltage for the amplifier.	
4	GND	Power supply ground.	

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### Outline Drawing



### Package Information

Package Type	C-16
Package Weight	107 gms [1]

[1] ±1 gms Tolerance

#### 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
  - 4.2 .XXX = ±.010
5. MARK LOT NUMBER ON 0.080 X 0.250 LABEL WHERE SHOWN, WITH 0.030" MIN TEXT HEIGHT.

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**Notes:**