HMC-C076

v00.1109

ULTRA LOW PHASE NOISE AMPLIFIER MODULE, 7 - 11 GHz

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

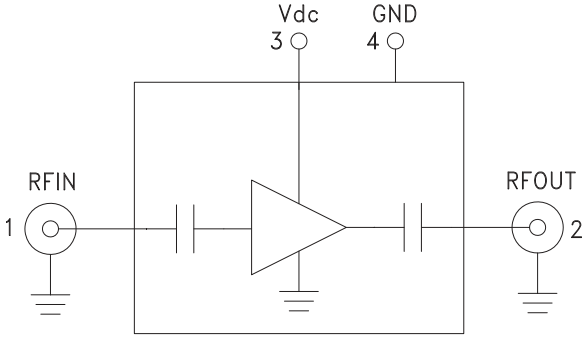
-55 °C to +85 °C Operating Temperature

Typical Applications

The HMC-C076 is ideal for:

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

Functional Diagram



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° C, Vdc = +7V

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

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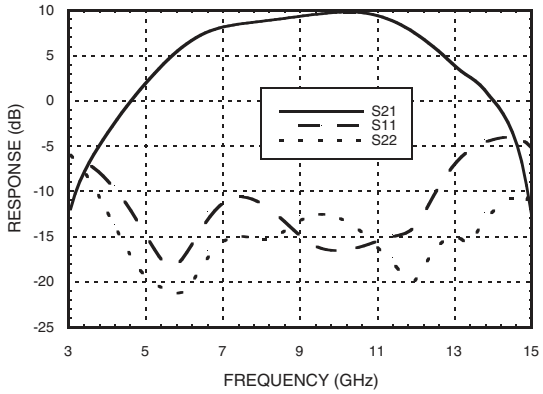
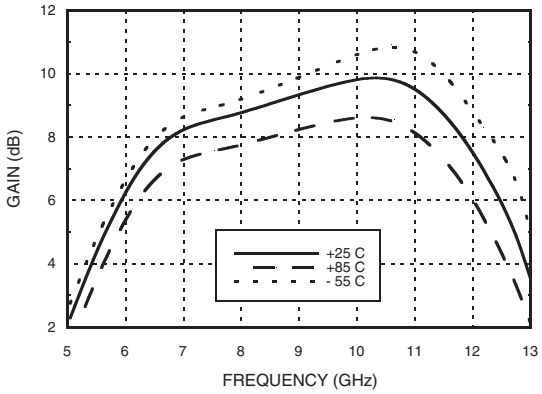
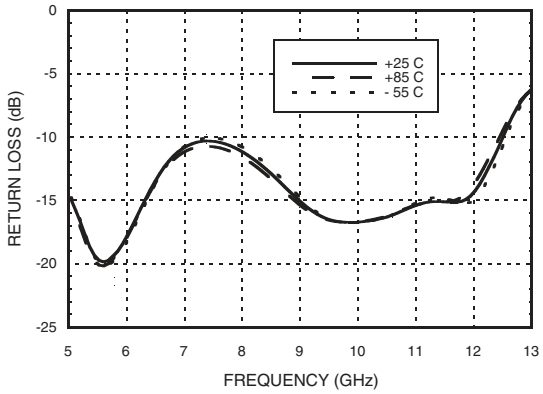
Broadband, Gain & Return Loss



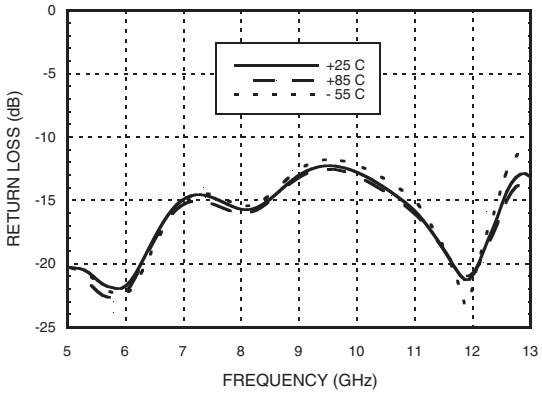
Gain vs. Temperature



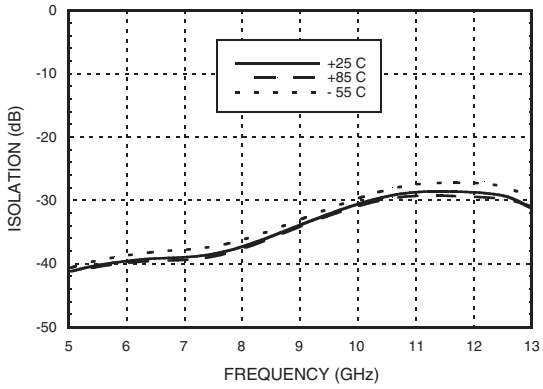
Input Return Loss vs. Temperature



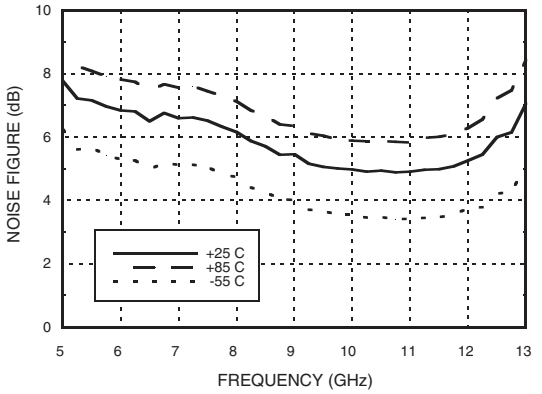
Output Return Loss vs. Temperature



Reverse Isolation vs. Temperature



Noise Figure vs. Temperature



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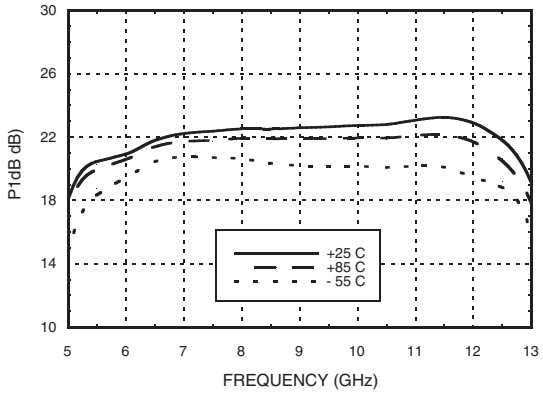
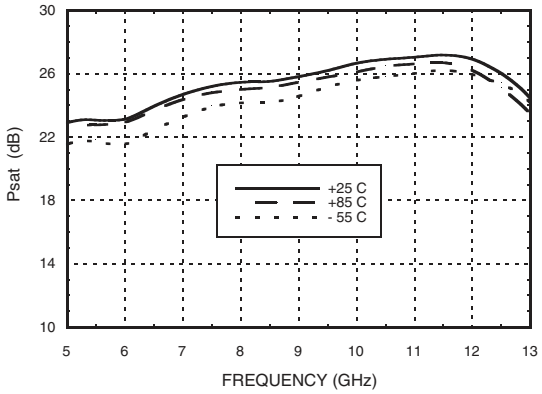
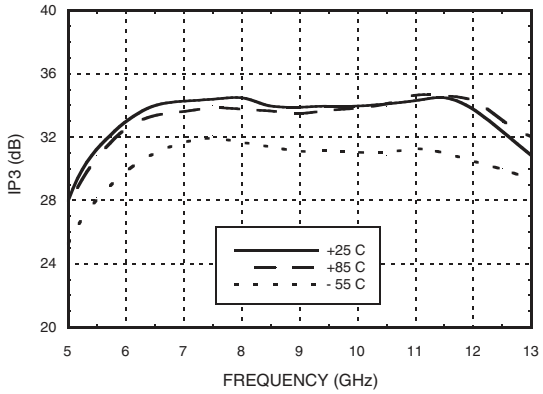
Output P1dB vs. Temperature



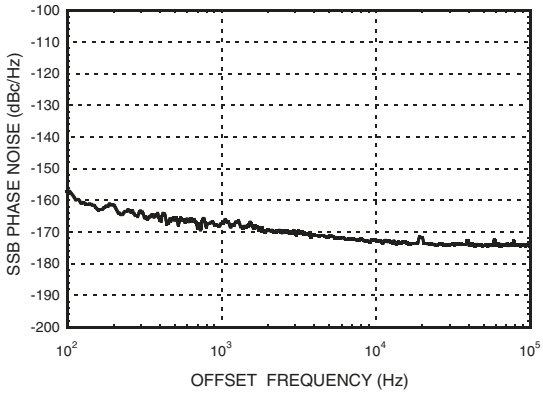
Output Psat vs. Temperature



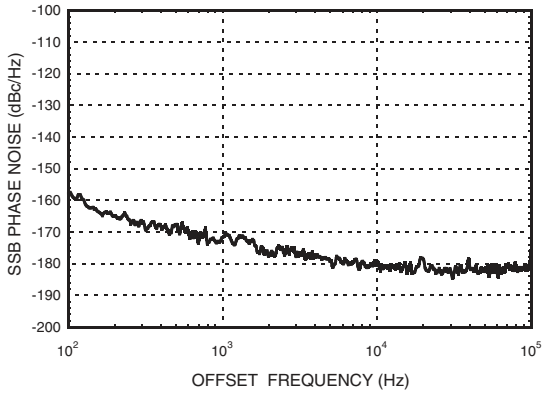
Output IP3 vs. Temperature



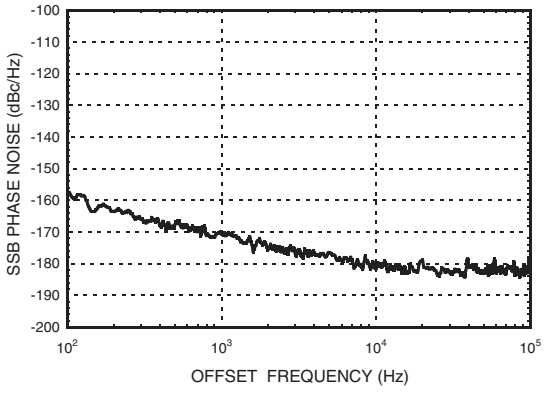
Phase Noise at Pout = 10 dBm @ 9 GHz



Phase Noise at Pout = P1dB @ 9 GHz



Phase Noise at Pout = Psat @ 9 GHz



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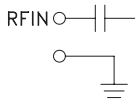
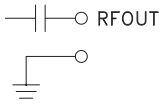
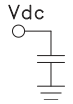
Absolute Maximum Ratings

Bias Supply Voltage (V)	+8V
RF Input Power (RFIN)	+20 dBm
Continuous Pdiss (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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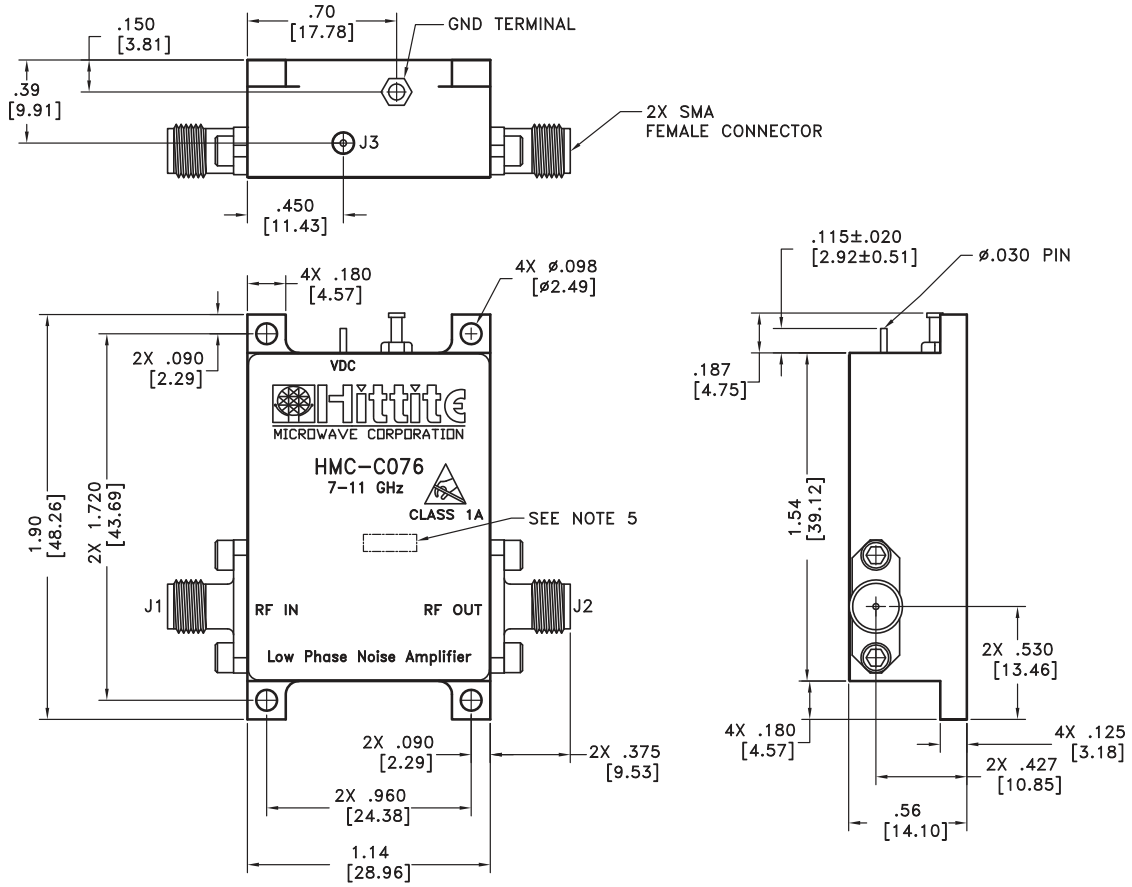
Outline Drawing



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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