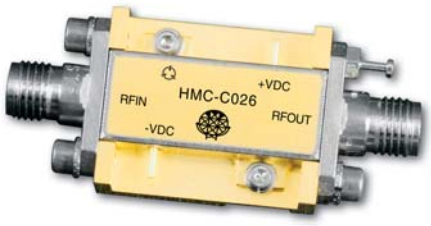
# HMC-C026

v03.1007

## WIDEBAND HIGH GAIN POWER AMPLIFIER MODULE, 2 - 20 GHz

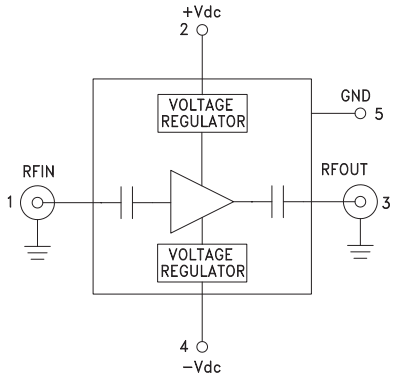



## Typical Applications

The HMC-C026 Wideband PA is ideal for:

- Telecom Infrastructure
- Microwave Radio & VSAT
- Military & Space
- Test Instrumentation
- Fiber Optics

## Functional Diagram




## Features

Gain: 31 dB @ 6 GHz

P1dB Output Power: +26 dBm @ 6 GHz

Noise Figure: 2.5 dB @ 8 GHz

Spurious-Free Operation

Regulated Supply and Bias Sequencing

Hermetically Sealed Module

Field Replaceable SMA connectors

-55 °C to +85 °C Operating Temperature

## General Description

The HMC-C026 is a GaAs MMIC pHEMT Distributed Power Amplifier in a miniature, hermetic module with replaceable SMA connectors which operates between 2 and 20 GHz. The amplifier provides 31 dB of gain, 2.5 dB noise figure, +30 dBm output IP3 and up to +26 dBm of output power at 1 dB gain compression. The wideband amplifier I/Os are internally matched to 50 Ohms and are DC blocked making the HMC-C026 ideal for EW, ECM RADAR and test equipment applications. Integrated voltage regulators allow for flexible biasing of both the negative and positive supply pins, while internal bias sequencing circuitry assures robust operation.

## Electrical Specifications, $T_A$ = +25° C, +Vdc = +11V to +16V, -Vdc = -3V to -12V

| Parameter | Min. | Typ. | Max. | Min. | Typ. | Max. | Min. | Typ. | Max. | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Frequency Range | | 2 - 6 | | | 6 - 12 | | | 12 - 16 | | | 16 - 20 | | GHz |
| Gain | 28 | 31 | | 26 | 29 | | 24 | 27 | | 19 | 22 | | dB |
| Gain Flatness | | ±0.25 | | | ±0.75 | | | ±1.0 | | | ±2.0 | | dB |
| Gain Variation Over Temperature | | 0.03 | 0.04 | | 0.03 | 0.04 | | 0.03 | 0.04 | | 0.03 | 0.04 | dB/ °C |
| Noise Figure | | 3.0 | 5.0 | | 2.5 | 3.5 | | 3.0 | 4.0 | | 3.5 | 5.0 | dB |
| Input Return Loss | | 15 | | | 15 | | | 13 | | | 10 | | dB |
| Output Return Loss | | 15 | | | 15 | | | 10 | | | 8 | | dB |
| Output Power for 1 dB Compression (P1dB) | 23 | 26 | | 22.5 | 25.5 | | 20 | 24 | | 18 | 21 | | dBm |
| Saturated Output Power (Psat) | | 27.5 | | | 27 | | | 25 | | | 23 | | dBm |
| Output Third Order Intercept (IP3) | | 33 | | | 30 | | | 27 | | | 24 | | dBm |
| Positive Supply Current (+IDC) | | 400 | 450 | | 400 | 450 | | 400 | 450 | | 400 | 450 | mA |
| Negative Supply Current (-IDC) | | 3.2 | 5 | | 3.2 | 5 | | 3.2 | 5 | | 3.2 | 5 | mA |

*Information furnished by Analog Devices is believed to be accurate and reliable. However, no responsibility is assumed by Analog Devices for its use, nor for any infringements of patents or other rights of third parties that may result from its use. Specifications subject to change without notice. No license is granted by implication or otherwise under any patent or patent rights of Analog Devices. Trademarks and registered trademarks are the property of their respective owners.*

*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*

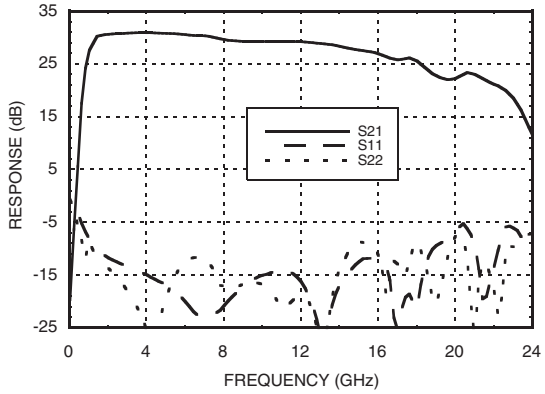


Downloaded from Arrow.com.

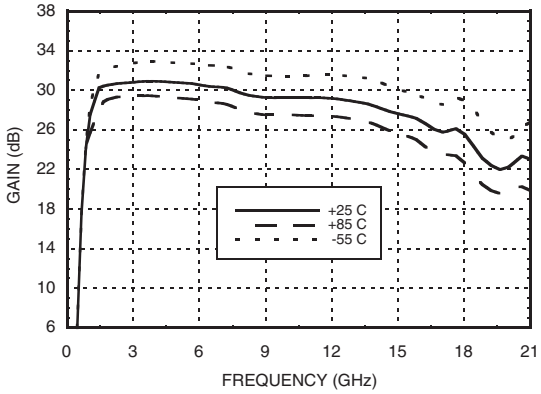
# WIDEBAND HIGH GAIN POWER AMPLIFIER MODULE, 2 - 20 GHz



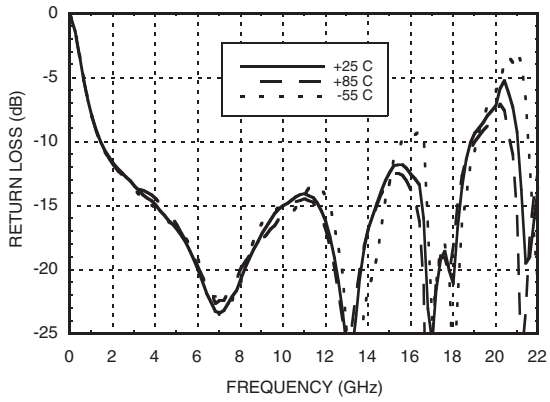
## Gain & Return Loss



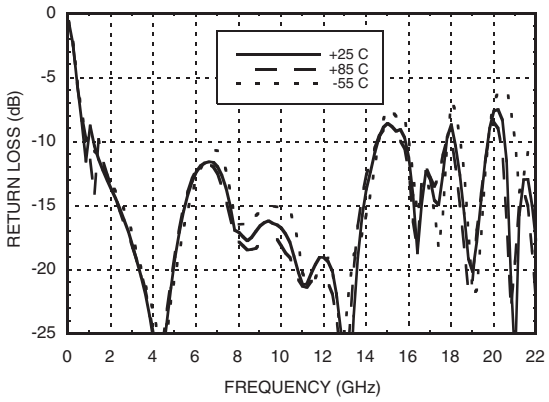

## Gain vs. Temperature



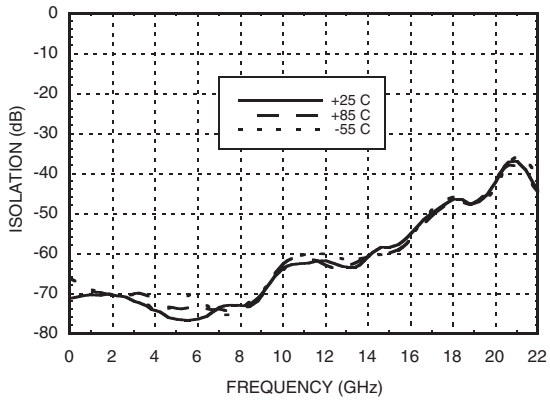

## Input Return Loss vs. Temperature



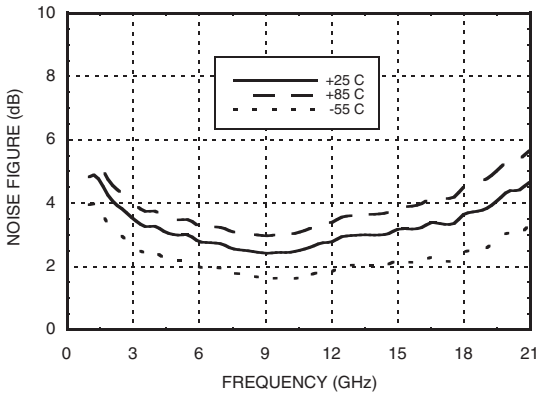

## Output Return Loss vs. Temperature




## Reverse Isolation vs. Temperature




## Noise Figure vs. Temperature




*Information furnished by Analog Devices is believed to be accurate and reliable. However, no responsibility is assumed by Analog Devices for its use, nor for any infringements of patents or other rights of third parties that may result from its use. Specifications subject to change without notice. No license is granted by implication or otherwise under any patent or patent rights of Analog Devices. Trademarks and registered trademarks are the property of their respective owners.*

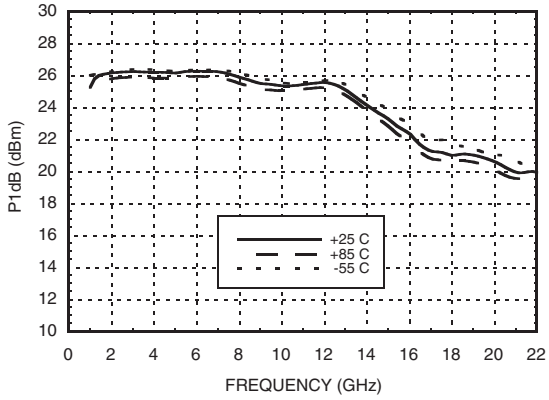
*For price, delivery, and to place orders: Analog Devices, Inc., One Technology Way, P.O. Box 9106, Norwood, MA 02062-9106*
*Phone: 781-329-4700 • Order online at www.analog.com*
*Application Support: Phone: 1-800-ANALOG-D*



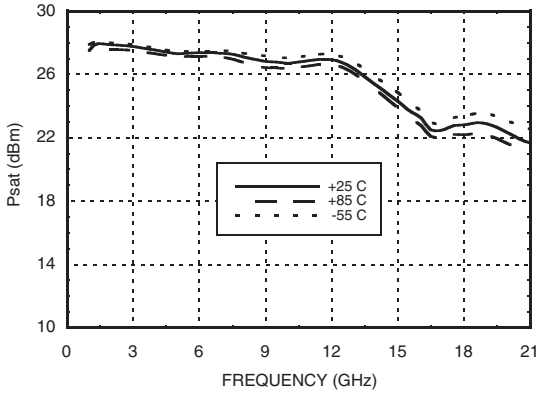
Downloaded from Arrow.com.

# WIDEBAND HIGH GAIN POWER AMPLIFIER MODULE, 2 - 20 GHz

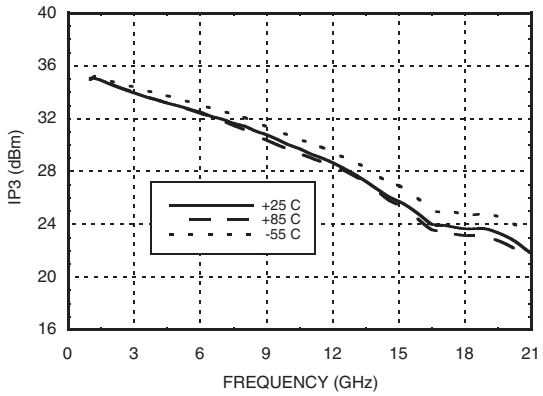
## P1dB vs. Temperature




## Psat vs. Temperature




## Output IP3 vs. Temperature




## Absolute Maximum Ratings

| | |
|---|---|
| RF Input Power (RFIN) | +23 dBm |
| Positive Bias Supply Voltage (+Vdc) | +17V Max |
| Negative Bias Supply (-Vdc) | -16V Min. |
| Thermal Resistance (at +Vdc = 12V, -Vdc = -4V, DC Power = 4.8 Watts) | 15.9 °C/W |
| Storage Temperature | -65 to +150 °C |
| Operating Temperature | -55 to +85 °C |

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

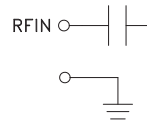
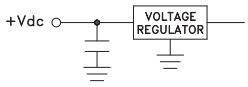
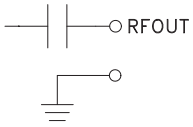
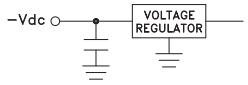
*Information furnished by Analog Devices is believed to be accurate and reliable. However, no responsibility is assumed by Analog Devices for its use, nor for any infringements of patents or other rights of third parties that may result from its use. Specifications subject to change without notice. No license is granted by implication or otherwise under any patent or patent rights of Analog Devices. Trademarks and registered trademarks are the property of their respective owners.*

*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*



Downloaded from Arrow.com.

## Pin Descriptions

| Pin Number | Function | Description | Interface Schematic |
|---|---|---|---|
| 1 | RFIN & RF Ground | RF input connector, SMA female, field replaceable. This pin is AC coupled and matched to 50 Ohms. |   |
| 2 | +Vdc | Positive power supply voltage for the amplifier. |   |
| 3 | RFOUT & RF Ground | RF output connector, SMA female. This pin is AC coupled and matched to 50 Ohms. |   |
| 4 | -Vdc | Negative power supply voltage for the amplifier |   |
| 5 | GND | Power supply ground. |   |

*Information furnished by Analog Devices is believed to be accurate and reliable. However, no responsibility is assumed by Analog Devices for its use, nor for any infringements of patents or other rights of third parties that may result from its use. Specifications subject to change without notice. No license is granted by implication or otherwise under any patent or patent rights of Analog Devices. Trademarks and registered trademarks are the property of their respective owners.*

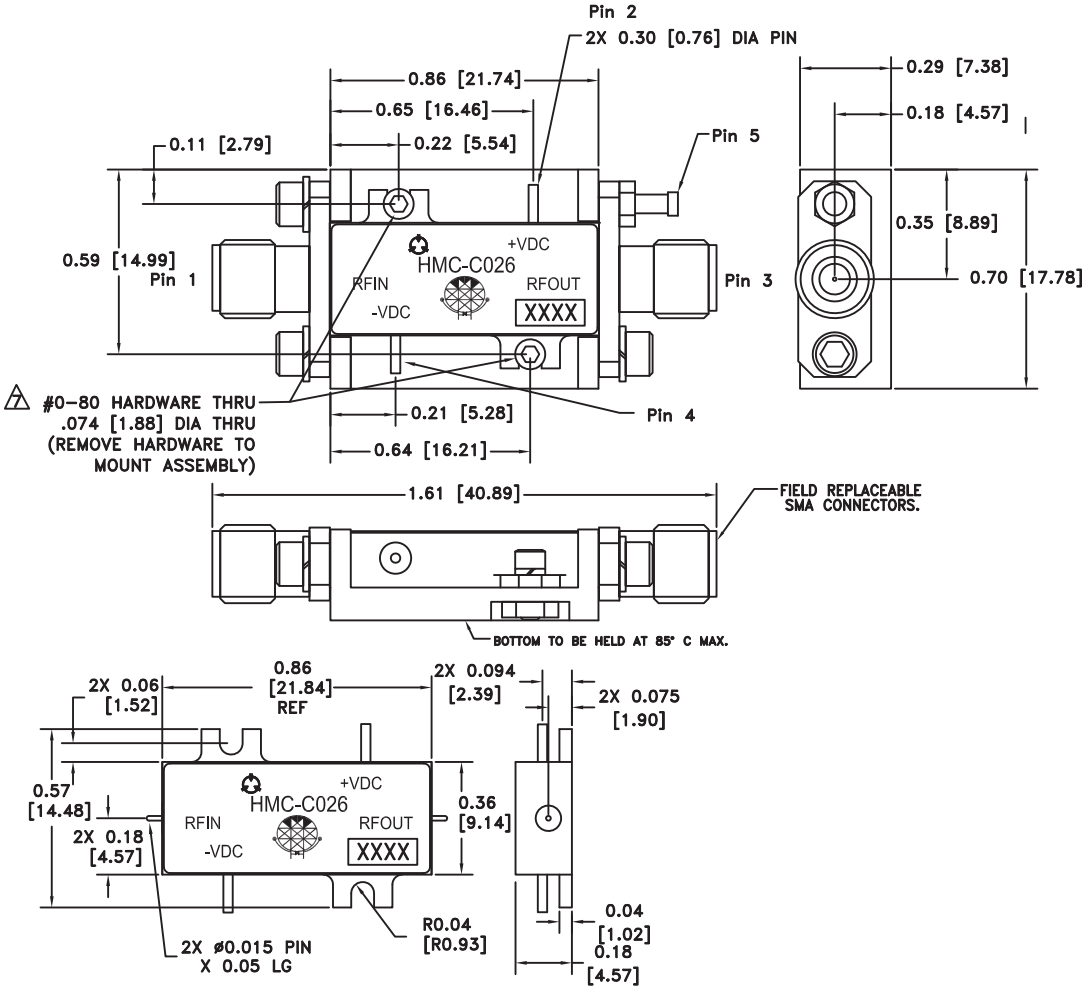
*For price, delivery, and to place orders: Analog Devices, Inc., One Technology Way, P.O. Box 9106, Norwood, MA 02062-9106*
*Phone: 781-329-4700 • Order online at www.analog.com*
*Application Support: Phone: 1-800-ANALOG-D*



Downloaded from Arrow.com.

# WIDEBAND HIGH GAIN POWER AMPLIFIER MODULE, 2 - 20 GHz

## Outline Drawing




## Package Information

| | |
|---|---|
| Package Type | C-3B |
| Package Weight [1] | 12 gms [2] |
| Spacer Weight | N/A |

[1] Includes the connectors

[2] ±1 gms Tolerance

NOTES:

1. PACKAGE, LEADS, COVER MATERIAL: KOVAR™
2. SPACER MATERIAL: ALUMINUM
3. PLATING: ELECTROLYTIC GOLD 50 MICROINCHES MIN., OVER ELECTROLYTIC NICKEL 75 MICROINCHES MIN.
4. ALL DIMENSIONS ARE IN INCHES [MILLIMETERS].
5. TOLERANCES ±.005 [0.13] UNLESS OTHERWISE SPECIFIED.
6. FIELD REPLACEABLE SMA CONNECTORS. TENSOLITE 5602 - 5CCSF OR EQUIVALENT.

⚠7 TO MOUNT MODULE TO SYSTEM PLATFORM REPLACE 0 -80 HARDWARE WITH DESIRED MOUNTING SCREWS.

*Information furnished by Analog Devices is believed to be accurate and reliable. However, no responsibility is assumed by Analog Devices for its use, nor for any infringements of patents or other rights of third parties that may result from its use. Specifications subject to change without notice. No license is granted by implication or otherwise under any patent or patent rights of Analog Devices. Trademarks and registered trademarks are the property of their respective owners.*

*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*



Downloaded from Arrow.com.

***Notes:***

*Information furnished by Analog Devices is believed to be accurate and reliable. However, no responsibility is assumed by Analog Devices for its use, nor for any infringements of patents or other rights of third parties that may result from its use. Specifications subject to change without notice. No license is granted by implication or otherwise under any patent or patent rights of Analog Devices. Trademarks and registered trademarks are the property of their respective owners.*

*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*



Downloaded from Arrow.com.