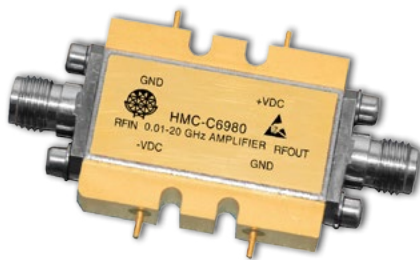


WIDEBAND POWER AMPLIFIER MODULE, 0.01 - 20 GHz

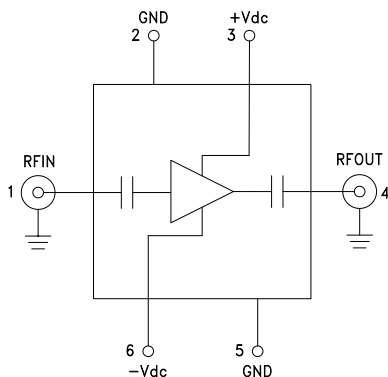


Typical Applications

The HMC6980 Wideband PA is ideal for:

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

Functional Diagram



Features

- Gain: 12 dB
- P1dB Output Power: +28 dBm
- Regulated Supply and Bias Sequencing
- Hermetically Sealed Module
- Field Replaceable SMA connectors
- 55 to +85 °C Operating Temperature

General Description

The HMC6980 is a GaAs MMIC PHEMT Power Amplifier in a miniature, hermetic module with replaceable SMA connectors which operates between 0.01 GHz and 20 GHz. The amplifier provides 12 dB of gain, up to +36 dBm output IP3 and up to +28 dBm of output power at 1 dB gain compression. Gain flatness is excellent from 2 - 18 GHz making the HMC6980 ideal for EW, ECM, Radar, Fiber Optic and test equipment applications. The wideband amplifier I/Os are internally matched to 50 Ohms and are DC blocked. 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, $T_A = +25^\circ\text{C}$, $+V_{dc} = +11\text{V}$, $-V_{dc} = -3\text{V}$ to -12V

| Parameter | Min. | Typ. | Max. | Min. | Typ. | Max. | Min. | Typ. | Max. | Units |
|--|-----------|-----------|------|--------|-----------|------|---------|-----------|------|-------|
| Frequency Range | 0.5 - 6.0 | | | 6 - 12 | | | 12 - 20 | | | GHz |
| Gain | 9 | 12 | | 9 | 11 | | 8 | 11 | | dB |
| Gain Flatness | | ± 0.3 | | | ± 0.3 | | | ± 0.5 | | dB |
| Gain Variation Over Temperature | | 0.02 | | | 0.02 | | | 0.02 | | dB/°C |
| Noise Figure | | 4.5 | | | 3.5 | | | 5.0 | | dB |
| Input Return Loss | | 25 | | | 17 | | | 15 | | dB |
| Output Return Loss | | 20 | | | 17 | | | 12 | | dB |
| Output Power for 1 dB Compression (P1dB) | 25 | 28 | | 24 | 27 | | 20 | 24 | | dBm |
| Saturated Output Power (Psat) | | 29 | | | 27.5 | | | 26 | | dBm |
| Output Third Order Intercept (IP3) | | 36 | | | 34 | | | 29 | | dBm |
| Positive Supply Current (+IDC) | | 345 | | | 345 | | | 345 | | mA |
| Negative Supply Current (-IDC) | | -5 | | | -5 | | | -5 | | mA |

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HMC6980* PRODUCT PAGE QUICK LINKS

Last Content Update: 02/23/2017

COMPARABLE PARTS

View a parametric search of comparable parts.

DOCUMENTATION

Application Notes

- AN-1363: Meeting Biasing Requirements of Externally Biased RF/Microwave Amplifiers with Active Bias Controllers

Data Sheet

- HMC6980 Data Sheet

DESIGN RESOURCES

- HMC6980 Material Declaration
- PCN-PDN Information
- Quality And Reliability
- Symbols and Footprints

DISCUSSIONS

View all HMC6980 EngineerZone Discussions.

SAMPLE AND BUY

Visit the product page to see pricing options.

TECHNICAL SUPPORT

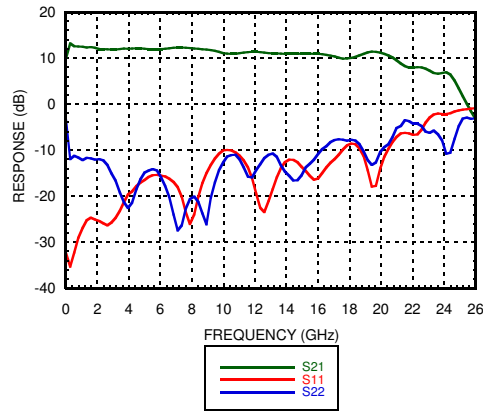
Submit a technical question or find your regional support number.

DOCUMENT FEEDBACK

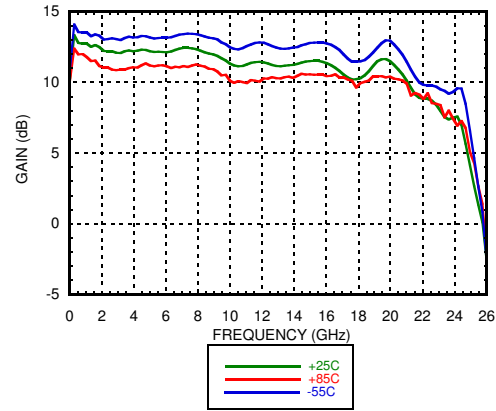
Submit feedback for this data sheet.

WIDEBAND POWER AMPLIFIER MODULE, 0.01 - 20 GHz

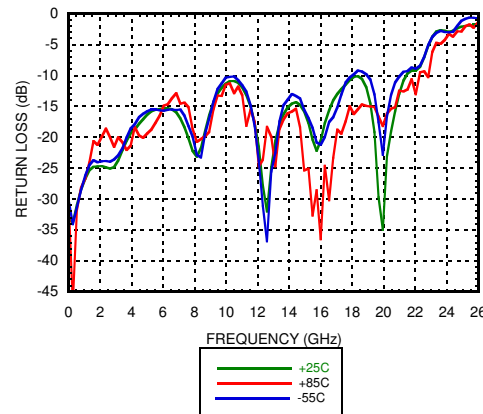
Gain & Return Loss



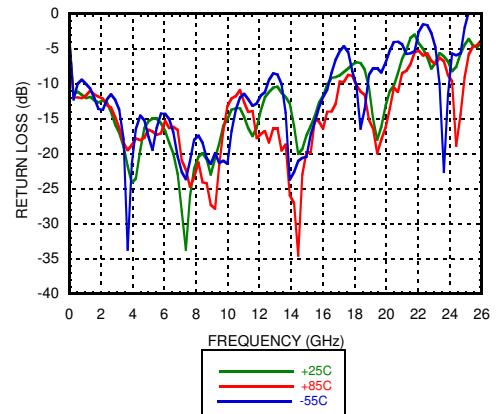
Gain vs. Temperature



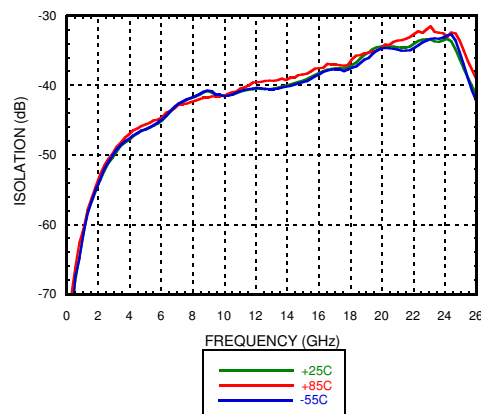
Input Return Loss vs. Temperature



Output Return Loss vs. Temperature

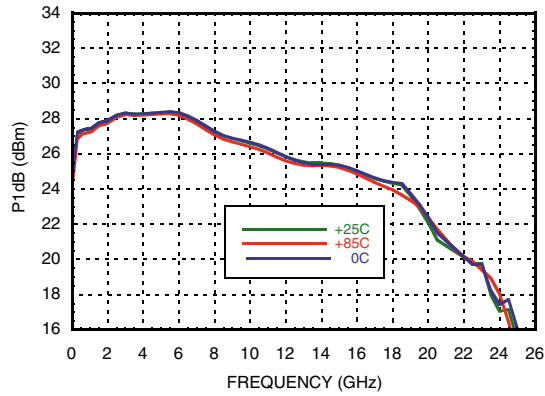


Reverse Isolation vs. Temperature

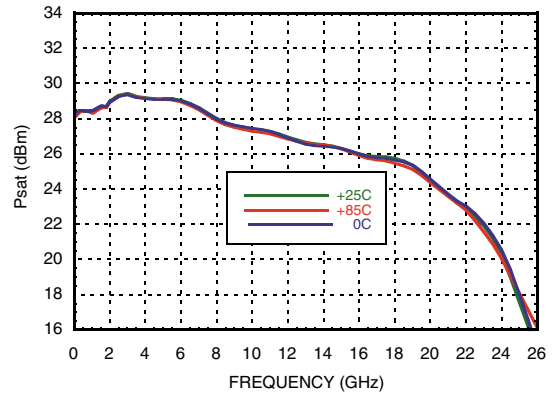


**WIDEBAND POWER AMPLIFIER
MODULE, 0.01 - 20 GHz**

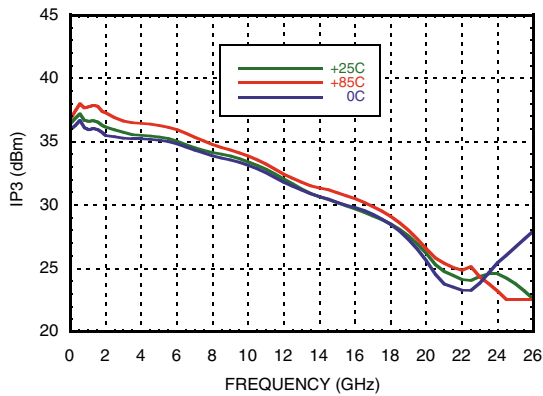
P1dB vs. Temperature



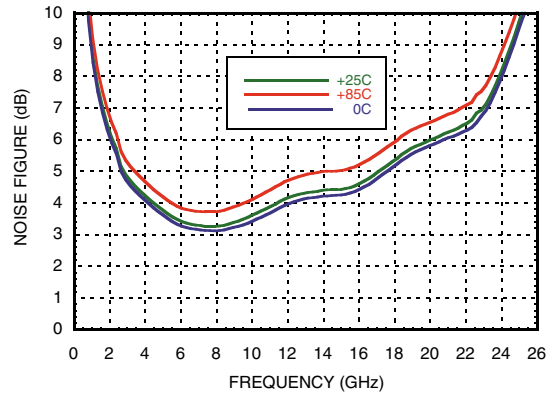
Psat vs. Temperature



Output IP3 vs. Temperature



Noise Figure vs. Temperature



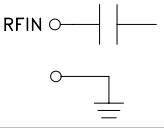

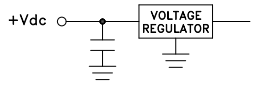
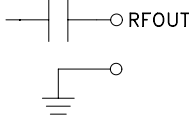
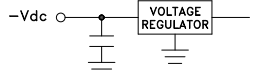
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**WIDEBAND POWER AMPLIFIER
MODULE, 0.01 - 20 GHz**
Absolute Maximum Ratings

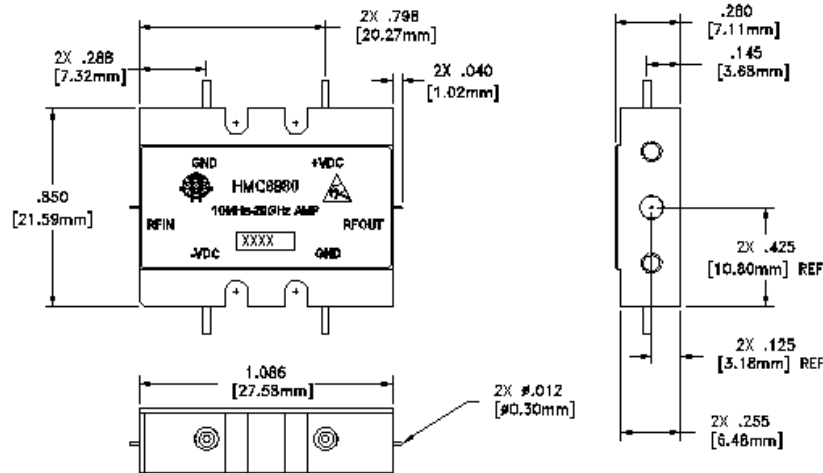
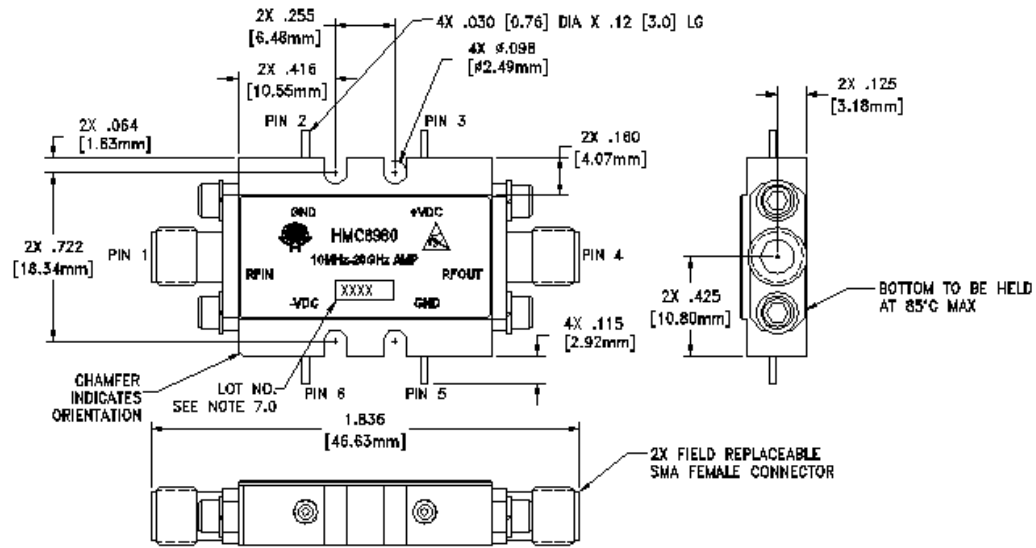
| | |
|-------------------------------------|----------------|
| Positive Bias Supply Voltage (+Vdc) | +12V Max |
| Negative Bias Supply (-Vdc) | -16V Min. |
| Maximum RF Input Power (CW) | +27 dBm |
| Storage Temperature | -65 to +150 °C |
| Operating Temperature | -55 to +85 °C |
| ESD Sensitivity (HBM) | Class 1A |


**ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS**
Pin Descriptions

| Pin Number | Function | Description | Interface Schematic |
|------------|----------------------|--|---|
| 1 | RFIN & RF Ground | RF input connector, SMA female, field replaceable. This pin is AC coupled and matched to 50 Ohms. |  |
| 2, 5 | GND | Power supply ground. |  |
| 3 | +Vdc | Positive power supply voltage for the amplifier. |  |
| 4 | RFOUT & RF Ground | RF output connector, SMA female. This pin is AC coupled and matched to 50 Ohms. |  |
| 6 | -Vdc | Negative power supply voltage for the amplifier |  |

**WIDEBAND POWER AMPLIFIER
MODULE, 0.01 - 20 GHz**

Outline Drawing



VIEW SHOWN WITH CONNECTORS REMOVED

Package Information

| | |
|-------------------------------|-------------------------|
| Package Type | C-10B |
| Package Weight ^[1] | 23.1 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 ±0.010 [0.25] UNLESS OTHERWISE SPECIFIED.
6. FIELD REPLACEABLE SMA CONNECTORS. TENSOLITE 5602 - 5CCSF OR EQUIVALENT.

**WIDEBAND POWER AMPLIFIER
MODULE, 0.01 - 20 GHz**

Notes: