

WIDEBAND DRIVER AMPLIFIER MODULE, 2 - 35 GHz



Features

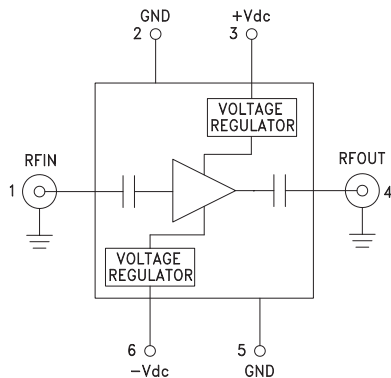
- Gain: 12 dB @ 10 GHz
- P1dB Output Power: +18 dBm @ 10 GHz
- Regulated Supply and Bias Sequencing
- Hermetically Sealed Module
- Field Replaceable 2.92 mm Connectors
- 55 °C to +85 °C Operating Temperature

Typical Applications

The HMC-C038 Wideband Driver is ideal for:

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

Functional Diagram



General Description

The HMC-C038 is a GaAs PHEMT MMIC Distributed Power Amplifier in a miniature, hermetic module with replaceable 2.92mm connectors which operates between 2 and 35 GHz. The amplifier provides 12 dB of gain, +29 dBm output IP3 and up to +18 dBm of output power at 1 dB gain compression. Gain flatness is excellent from 2 - 16 GHz making the HMC-C038 ideal for EW, ECM RADAR 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, $T_A = +25^\circ\text{C}$, $+V_{dc} = +11\text{V to } +16\text{V}$, $-V_{dc} = -4\text{V to } -12\text{V}$

| Parameter | Min. | Typ. | Max. | Min. | Typ. | Max. | Min. | Typ. | Max. | Units |
|--|--------|------|------|---------|------|------|---------|------|------|--------|
| Frequency Range | 2 - 15 | | | 15 - 27 | | | 27 - 35 | | | GHz |
| Gain | 9 | 12 | | 8 | 11 | | 6 | 9 | | dB |
| Gain Flatness | | ±0.5 | | | ±0.4 | | | ±1.5 | | dB |
| Gain Variation Over Temperature | | 0.02 | 0.03 | | 0.02 | 0.03 | | 0.02 | 0.03 | dB/ °C |
| Noise Figure | | 3.0 | | | 4.0 | | | 6.0 | | dB |
| Input Return Loss | | 15 | | | 10 | | | 6 | | dB |
| Output Return Loss | | 15 | | | 13 | | | 13 | | dB |
| Output Power for 1 dB Compression (P1dB) | 15 | 18 | | 13 | 16 | | 10 | 14 | | dBm |
| Saturated Output Power (Psat) | | 20 | | | 18.5 | | | 15.5 | | dBm |
| Output Third Order Intercept (IP3) | | 29 | | | 26 | | | 25 | | dBm |
| Positive Supply Current (+IDC) | | 92 | | | 92 | | | 92 | | mA |
| Negative Supply Current (-IDC) | | 5.3 | | | 5.3 | | | 5.3 | | mA |

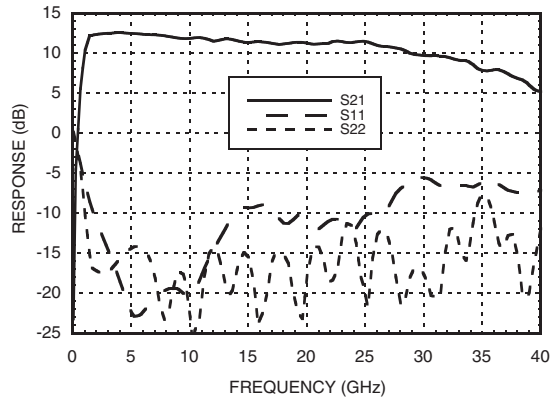
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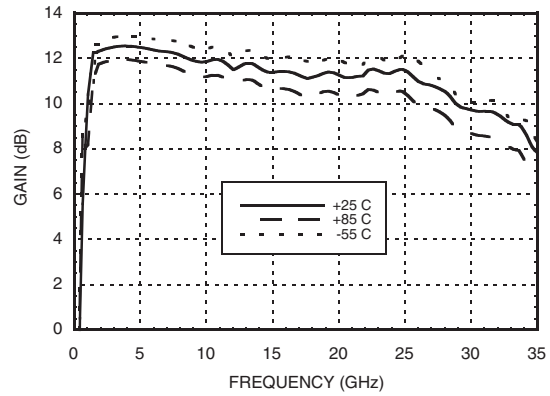


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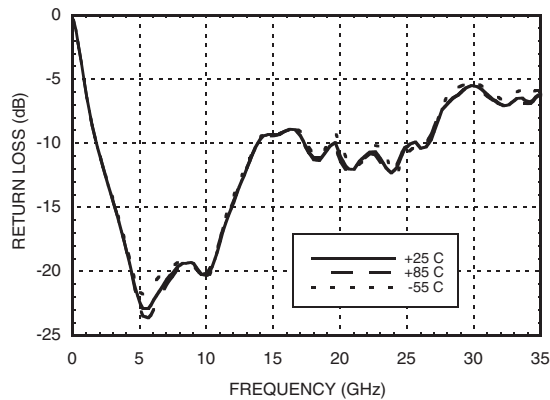
Gain & Return Loss



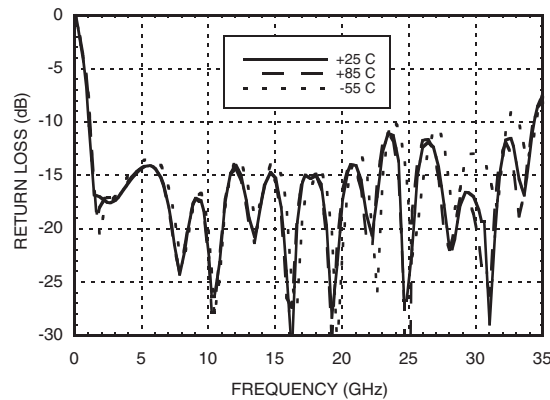
Gain vs. Temperature



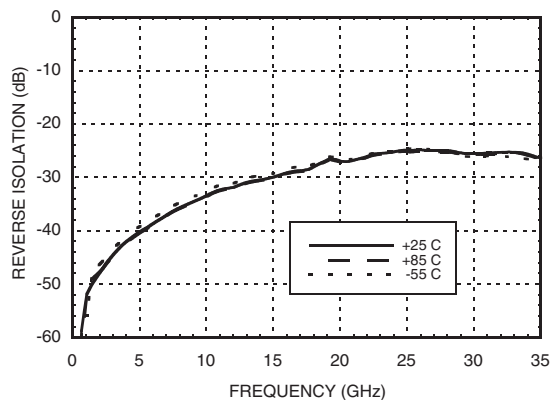
Input Return Loss vs. Temperature



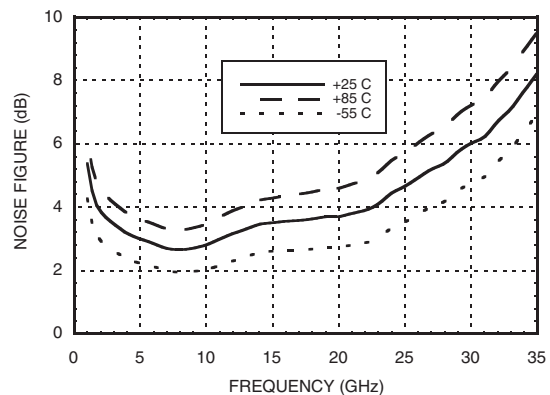
Output Return Loss vs. Temperature



Reverse Isolation vs. Temperature



Noise Figure vs. Temperature



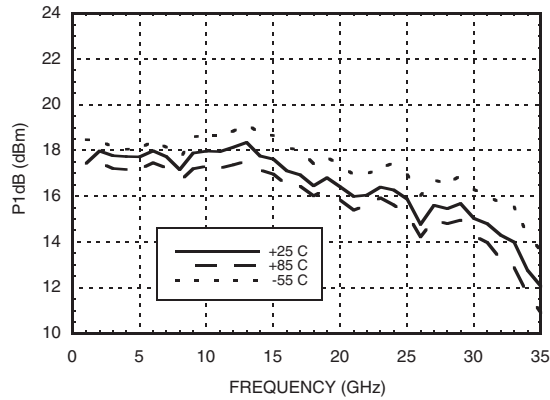
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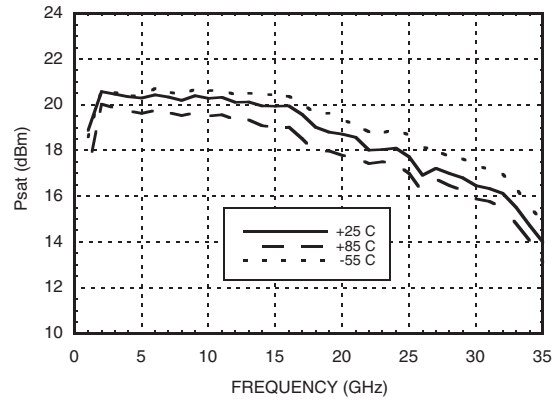


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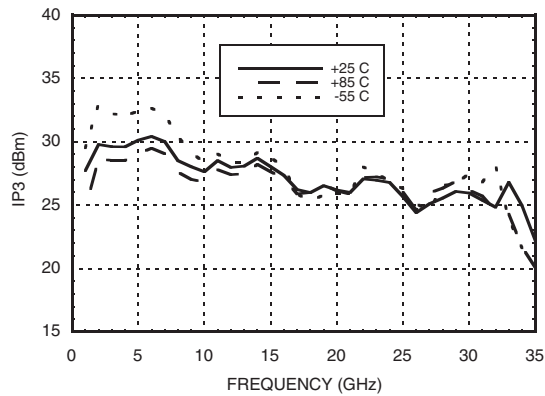
P1dB vs. Temperature



Psat vs. Temperature



Output IP3 vs. Temperature



Absolute Maximum Ratings

| | |
|-------------------------------------|----------------|
| Positive Bias Supply Voltage (+Vdc) | +17V Max |
| Negative Bias Supply (-Vdc) | -16V Min. |
| RF Input Power (RFIN) | +23 dBm |
| Storage Temperature | -65 to +150 °C |
| Operating Temperature | -55 to +85 °C |



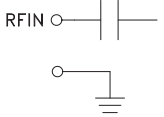

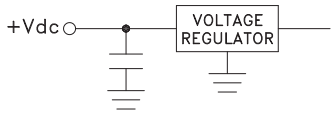
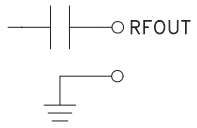
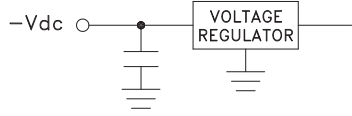
**ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS**

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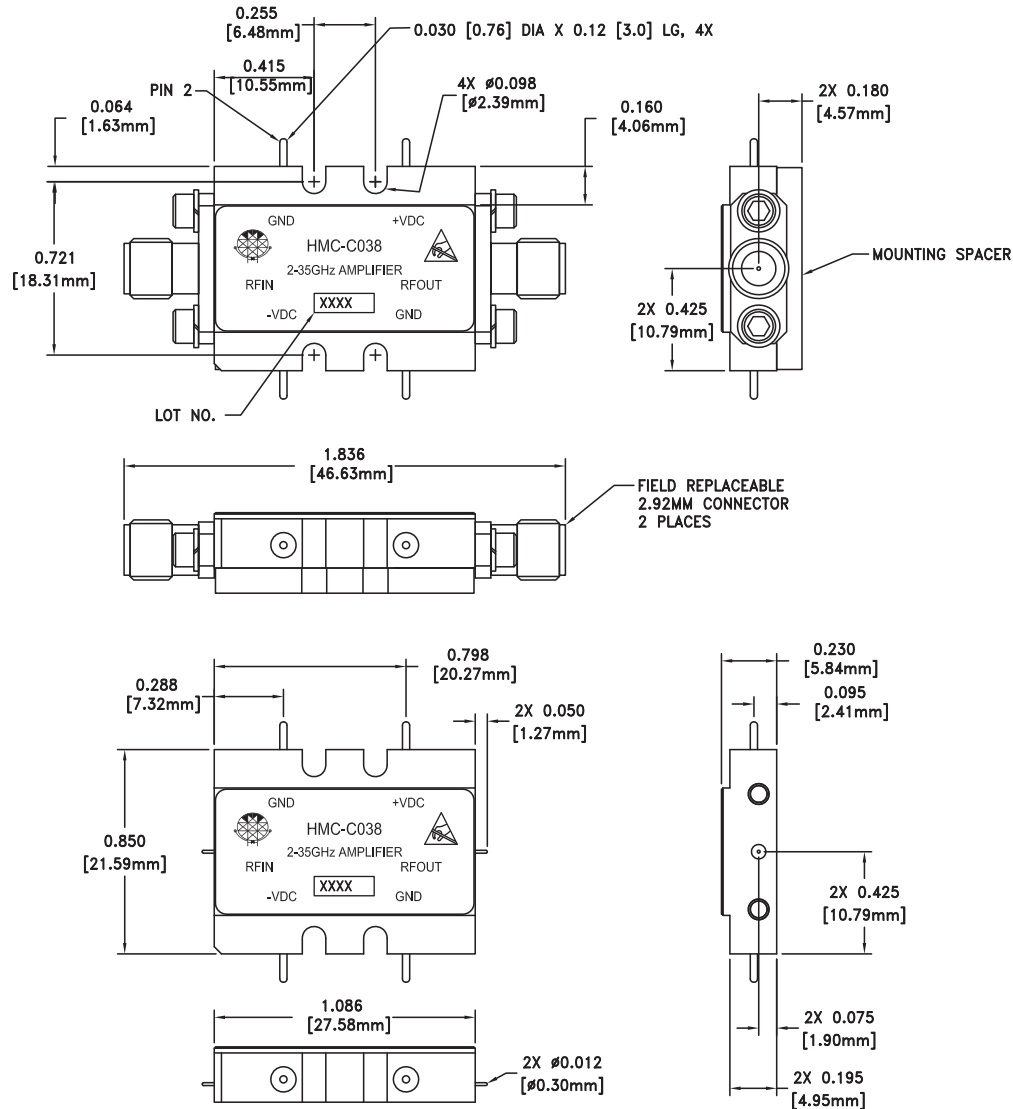
Pin Descriptions

| Pin Number | Function | Description | Interface Schematic |
|------------|----------------------|--|--|
| 1 | RFIN & RF Ground | RF input connector, 2.92 mm 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, 2.92 mm female field replaceable. This pin is AC coupled and matched to 50 Ohms. |  |
| 6 | -Vdc | Negative power supply voltage for the amplifier |  |

**WIDEBAND DRIVER AMPLIFIER
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Outline Drawing



VIEW SHOWN WITH CONNECTORS REMOVED

Package Information

| | |
|-------------------------------|-------------------------|
| Package Type | C-10 |
| Package Weight ^[1] | 18.7 gms ^[2] |
| Spacer Weight | 3.3 gms ^[2] |

[1] Includes the connectors

[2] \pm 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 = \pm 0.02
 - 4.2 .XXX = \pm 0.010
5. FIELD REPLACEABLE 2.92mm CONNECTORS
TENSOLITE 231CCSF OR EQUIVALENT

**WIDEBAND DRIVER AMPLIFIER
MODULE, 2 - 35 GHz****Notes:**