

**15 WATT POWER AMPLIFIER
MODULE, 1.8 - 2.2 GHz**

Features

- P1dB Output Power: 15 Watts from 1.8 to 2.2 GHz
- Gain: 40 dB min
- Noise Figure: 6 dB
- Thermally Compensated and Protected
- Reverse Polarity Protected
- TTL DC Power Enable
- Unconditionally Stable
- Heat Sink/Fan Accessories Available

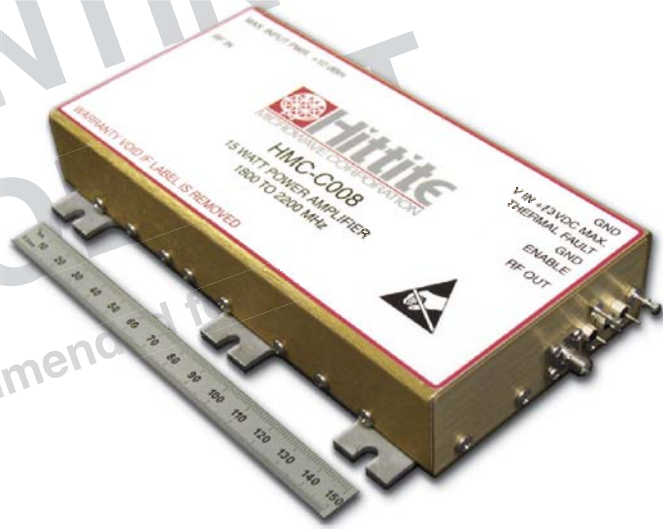
Typical Applications

Test applications for:

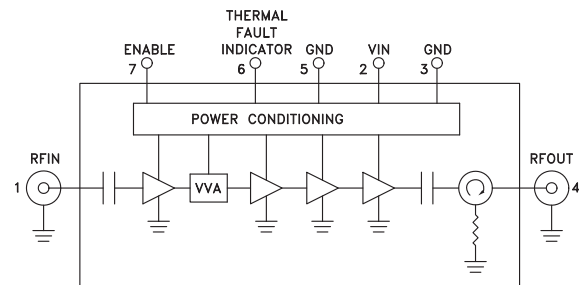
- Cellular/PCS/3G Infrastructure
- Automated Test Equipment (ATE)
- Laboratory Use

General Description

The HMC-C008 is a 15 Watt Power Amplifier Module suitable for Cellular/3G repeaters, laboratory use and ATE applications. The unit includes DC power sequencing, enable and conditioning, as well as an output circulator for load mismatch protection. Thermal protection/fault circuitry automatically turns off DC power at base temperatures exceeding +75 °C and restores power at < +55 °C.



Functional Diagram



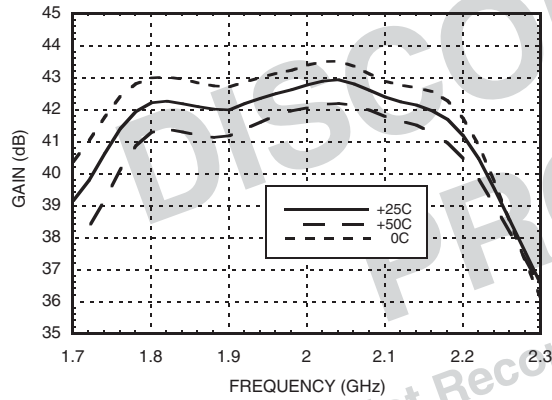
Electrical Specifications, $T_A = +25^\circ C$, $V_{IN} = +12V$

| Parameter | Min. | Typ. | Max. | Units |
|---|-----------|------|------|-------|
| Frequency Range | 1.8 - 2.2 | | | GHz |
| Gain | 40 | 42 | | dB |
| Noise Figure | | 6 | 8 | dB |
| Input Return Loss | | 12 | | dB |
| Output Return Loss | | 12 | | dB |
| Output Power for 1 dB Compression (P1dB) | 15 | | | W |
| Saturated Output Power (Psat) | | 43 | | dBm |
| Output Third Order Intercept (IP3) (Two-tone Input Power = -28 dBm each tone) | | 52 | | dBm |
| Channel Output Power for -50 dBc ACPR (CDMA 2000, 1960 MHz) | | 36 | | dBm |
| Channel Output Power for -50 dBc ACPR (W-CDMA, 2110 MHz) | | 33 | | dBm |
| Second Harmonic at Output P1dB | | -55 | | dBc |
| Third Harmonic at Output P1dB | | -55 | | dBc |
| Spurious at Output P1dB | | -65 | | dBc |
| Supply Current | | 6.5 | 7.0 | A |

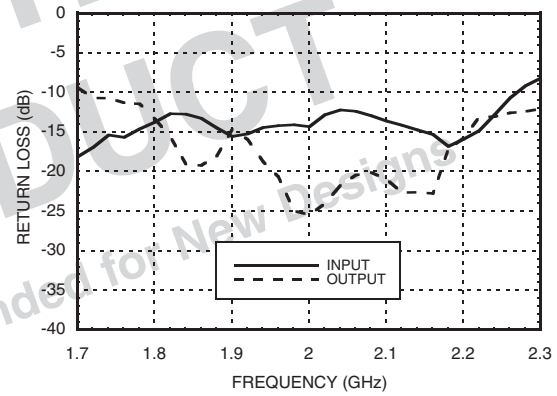
For price, delivery, and to place orders, please contact Hittite Microwave Corporation:
20 Alpha Road Chelmsford, MA 01824 Phone: 978-250-3343 Fax: 978-250-3373
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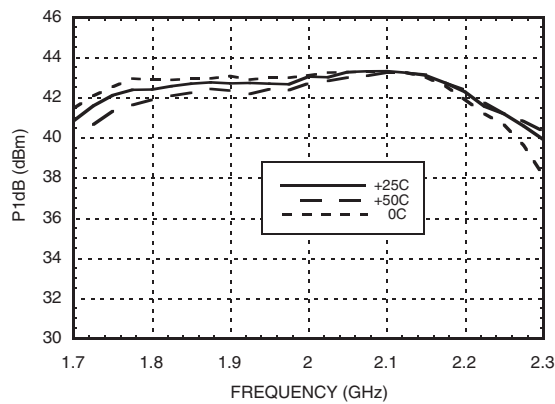
Gain vs. Temperature



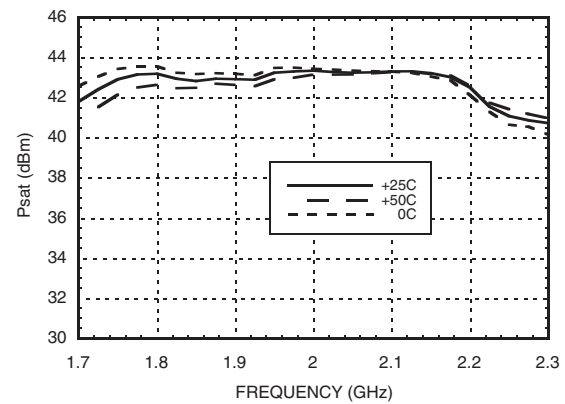
Input & Output Return Loss



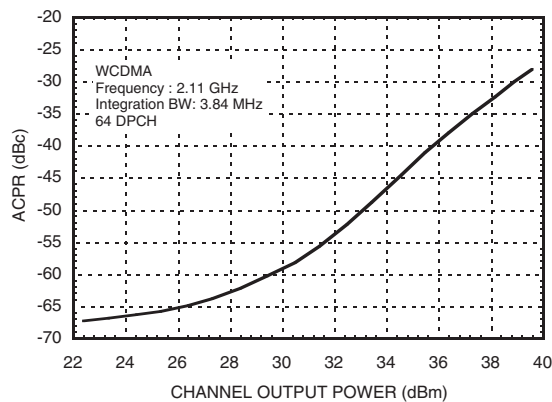
P1dB vs. Temperature



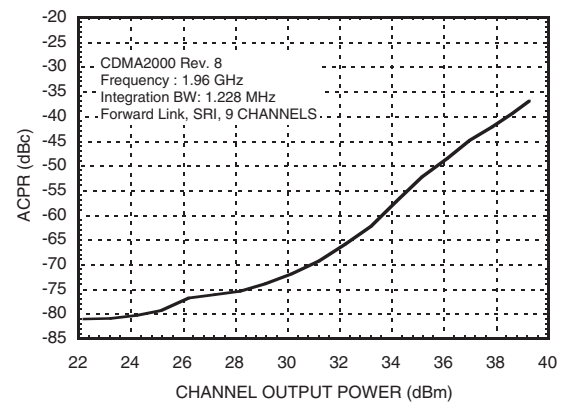
Psat vs. Temperature



ACPR @ 2110 MHz, W-CDMA

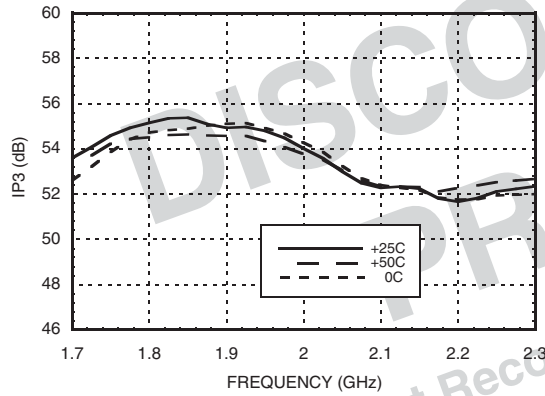


ACPR @ 1960 MHz, CDMA-2000

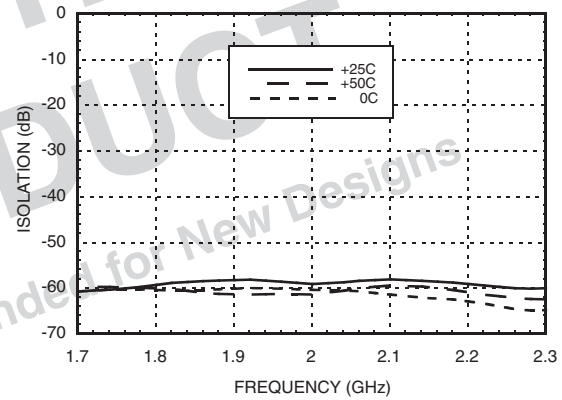


15 WATT POWER AMPLIFIER MODULE, 1.8 - 2.2 GHz

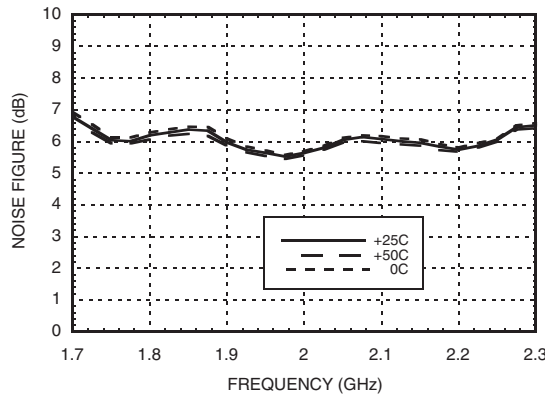
Output IP3 vs. Temperature



Reverse Isolation vs. Temperature



Noise Figure vs. Temperature



Absolute Maximum Ratings

| | |
|--|---------------|
| Supply Voltage (VIN) | +13 Vdc |
| RF Input Power (RFIN) | +10 dBm |
| Storage Temperature | -40 to +70 °C |
| Operating Temperature | 0 to +50 °C |
| RF Output Isolator Max Dissipation | 20 W |
| Thermal Fault Indicator Max Pdiss (derate 1.8 mW/°C above 50 °C) | 180 mW |
| Enable Vmax | 6 V |



**ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS**

**Thermal Fault Indicator
Characteristics**

| Parameter | Min. | Typ. | Max. | Units |
|--|------|------|------|-------|
| I _{OUT} (V _{OUT} > 2V) | | 350 | | mA |
| R _{ON} (I _{OUT} = 50 mA) | | | 7.5 | Ohms |
| R _{OFF} (V _{OUT} = 30 V) | | 1 | | MOhm |

Enable Input Characteristics

| Parameter | Min. | Typ. | Max. | Units |
|----------------------------|------|--------|------|-------|
| V _{IH} | 3.5 | | | V |
| V _{IL} | | | 1.6 | V |
| I _{IL} @ VIN = 0V | | -0.5 | | mA |
| I _{IH} @ 5V | | < ± 50 | | µA |

Recommended Biasing Procedure

TURN-ON

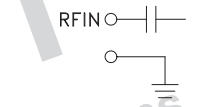
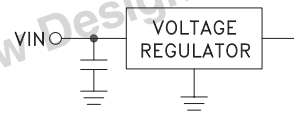

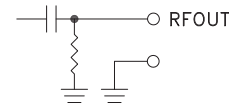

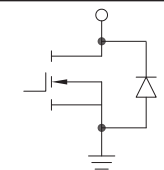
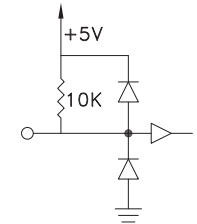
1. Connect RF input and output
2. Apply Supply Voltage VIN (+12 Vdc)
3. Set Enable low
4. Apply RF input signal

TURN-OFF

1. Remove RF input signal
2. Remove Supply Voltage VIN

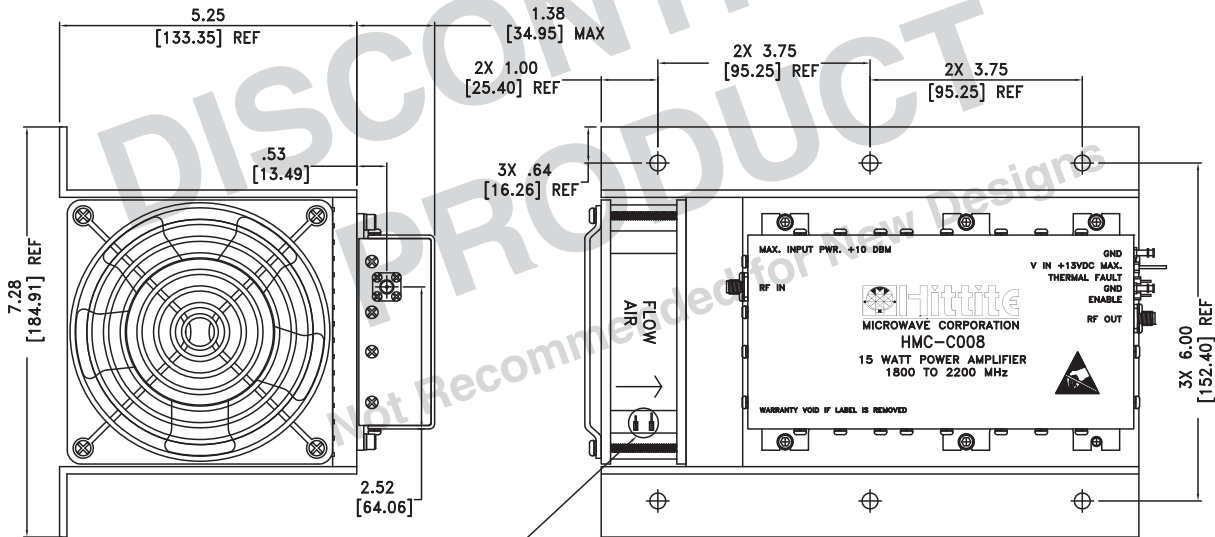
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Pin Descriptions

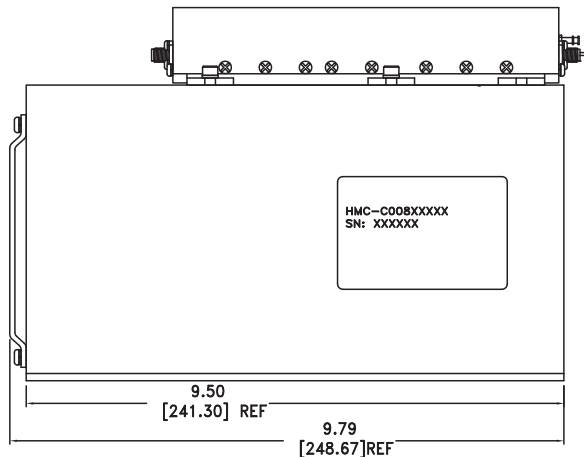
| Pin Number | Function | Description | Interface Schematic |
|------------|-------------------------|---|---|
| 1 | RFIN & RF Ground | RF input connector, SMA female. This pin is AC coupled and matched to 50 Ohms. |  |
| 2 | VIN | Power supply voltage for the amplifier. |  |
| 3 | GND | Power supply ground. |  |
| 4 | RFOUT & RF Ground | RF output connector, SMA female. This pin is isolator protected and matched to 50 Ohms. |  |
| 5 | GND | Ground for thermal fault indicator and enable circuit. |  |
| 6 | Thermal Fault Indicator | Open drain output. High impedance for base plate temperatures less than 55 °C. Low impedance for base plate temperatures exceeding 75 °C. |  |
| 7 | Enable | TTL compatible supply voltage (VIN) shutdown. If enable feature is not required, short this pin to DC ground. TTL "High" Disable TTL "Low" Enable |  |

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HMC-C008 Heatsink/Fan Outline Drawing



AC PLUG IN FOR FAN.



NOTES:

1. MATERIAL: ALUMINUM 6061-T6
2. FINISH: COVER & END PLATES, CHEMICAL FILM PER MIL-C-5541, CLASS 3
3. RF CONNECTORS, SMA STYLE
4. DIMENSIONS ARE INCHES (MM)
5. TOLERANCES .X±.1 (2.54mm)
.XX±.02 (0.50mm)

HMC-C008 Ordering Information

| Part Number | Description |
|---------------|--|
| HMC-C008 | 15 Watt Power Amplifier Module, 1.8 - 2.2 GHz |
| HMC-C008HV115 | 15 Watt Power Amplifier Module with heat sink, 115 Vac fan and power cord. |
| HMC-C008HV230 | 15 Watt Power Amplifier Module with heat sink, 230 Vac fan and power cord. |

