

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

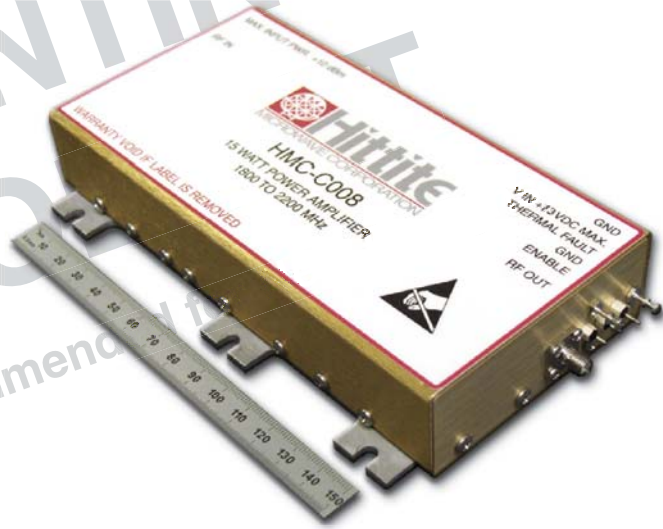
Typical Applications

Test applications for:

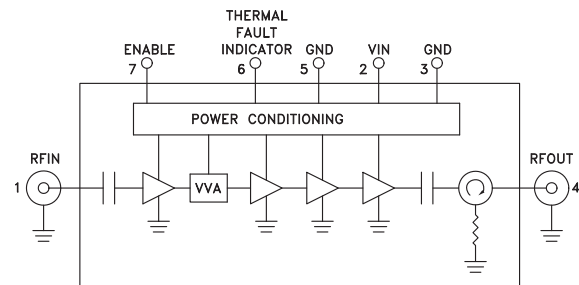
- Cellular/PCS/3G Infrastructure
- Automated Test Equipment (ATE)
- Laboratory Use

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

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

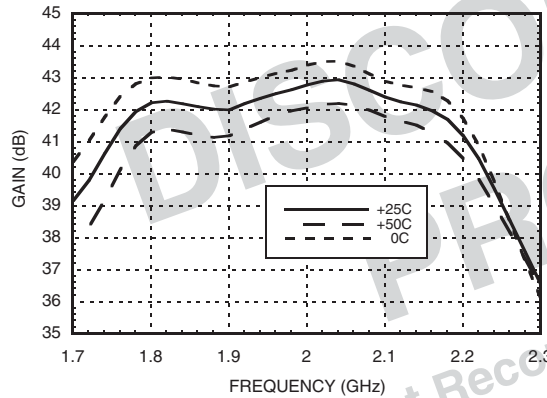
For price, delivery, and to place orders, please contact Hittite Microwave Corporation:
20 Alpha Road Chelmsford, MA 01824 Phone: 978-250-3343 Fax: 978-250-3373
Order Online at www.hittite.com

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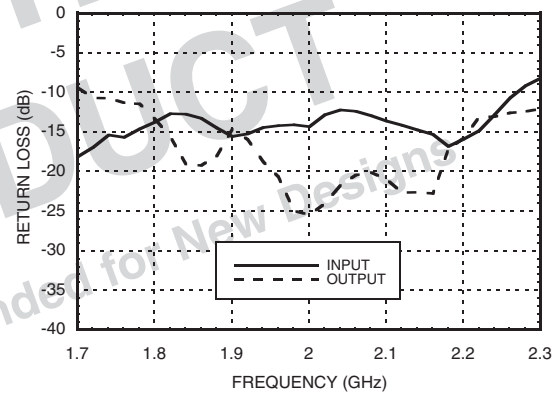
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AMPLIFIERS

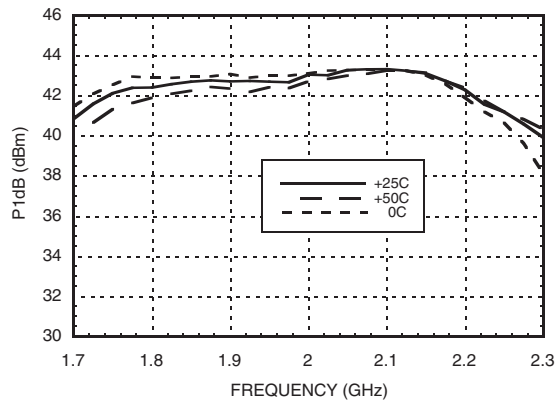
Gain vs. Temperature



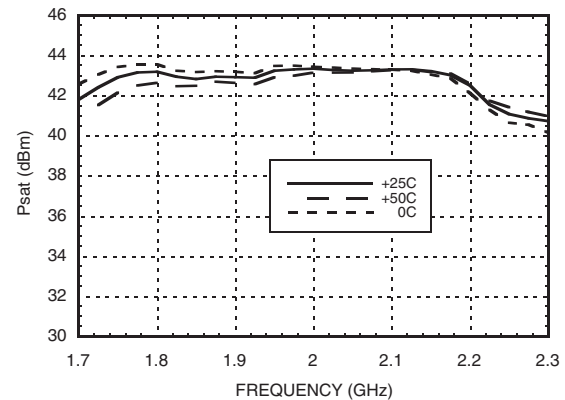
Input & Output Return Loss



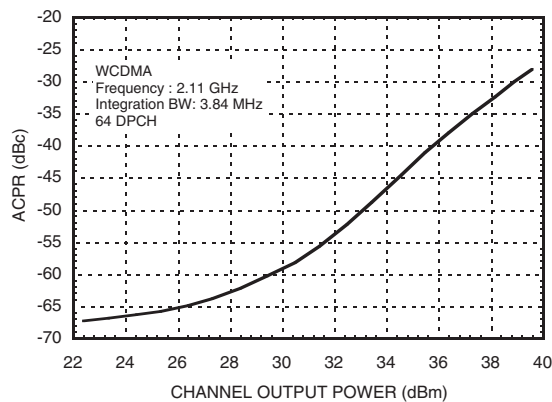
P1dB vs. Temperature



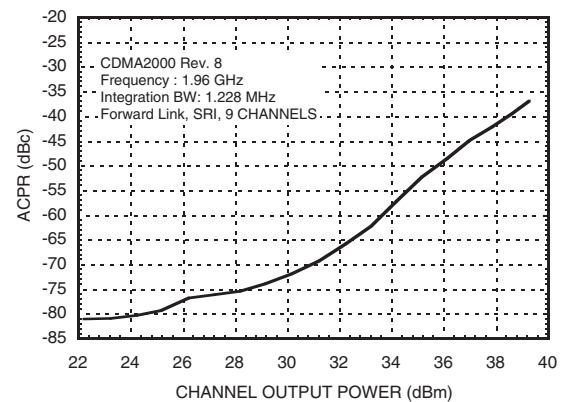
Psat vs. Temperature



ACPR @ 2110 MHz, W-CDMA

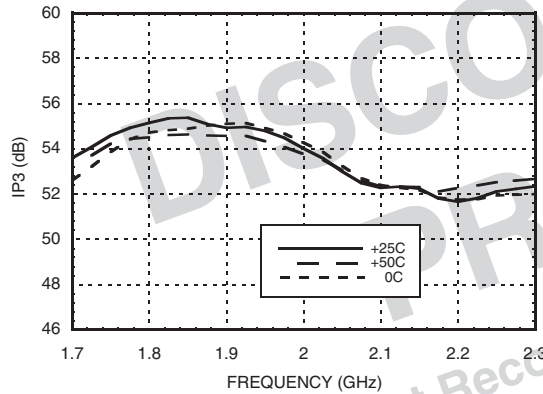


ACPR @ 1960 MHz, CDMA-2000

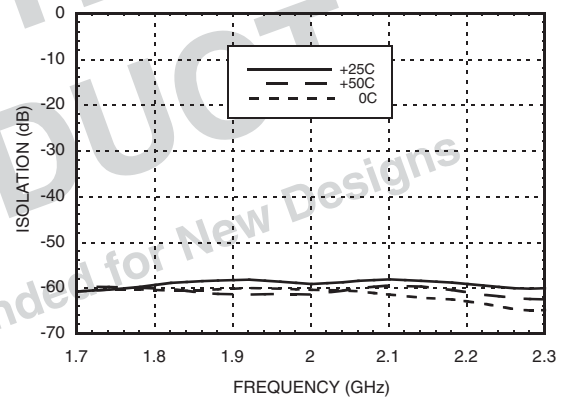


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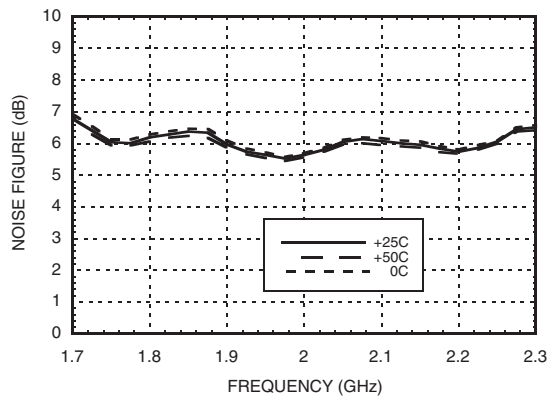
Output IP3 vs. Temperature



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 Pdis (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

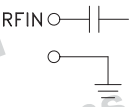
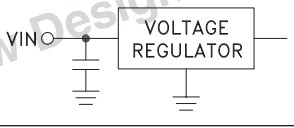
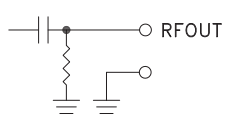
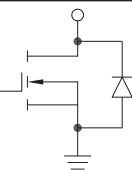
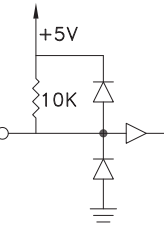
1. Connect RF input and output
2. Apply Supply Voltage VIN (+12 Vdc)
3. Set Enable low
4. Apply RF input signal

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	

Top View Dimensions:

- Overall Width: 6.82 [173.23]
- Internal Spacing: 2X 6.32 [160.53]
- Overall Height: 4.20 [106.68]
- Internal Height: 2.52 [64.06]
- Pin Spacing: 2X 6.32 [160.53]
- Pin Spacing: 2X 3.20 [81.28]
- Pin Spacing: 2X 5.50 [139.70]
- Pin Spacing: 6X .19 [4.78]
- Pin Spacing: 6X R.09 [R2.39]

Side View Dimensions:

- Overall Height: 4.20 [106.68]
- Internal Height: 2.52 [64.06]

Bottom View Dimensions:

- Overall Width: 7.57 [192.28]
- Pin Spacing: 2.62 [66.60]
- Pin Spacing: 2.50 [63.42]
- Pin Spacing: 2.37 [60.25]
- Pin Spacing: 2.87 [72.95]
- Pin Spacing: 3.18 [80.70]
- Pin Spacing: 5X .53 [13.49]

Pinout:

- RFOUT
- ENABLE
- GROUND
- THERMAL FAULT INDICATOR
- VIN
- GROUND

Label Text:

MAX. INPUT PWR. +10 DBM

RF IN

MICROWAVE CORPORATION

HMC-C08

15 WATT POWER AMPLIFIER

1800 TO 2200 MHz

WARRANTY VOID IF LABEL IS REMOVED

GND

V IN +13VDC MAX.

THERMAL FAULT

ENABLE

GND

RF OUT

SEE NOTE 1

Package Information

Package Type	C-7
Package Weight ^[1]	740 gms ^[2]
Spacer Weight	N/A

[1] Includes the connectors

[2] ±10% Tolerance

NOTES:

- MATERIAL: ALUMINUM 6061-T6
- FINISH
 - COVER & END PLATES, CHEMICAL FILM PER MIL-C-5541, CLASS 3
 - BASE, TIN
- RF CONNECTORS, SMA STYLE
- DIMENSIONS ARE INCHES (MM)

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NOTES:

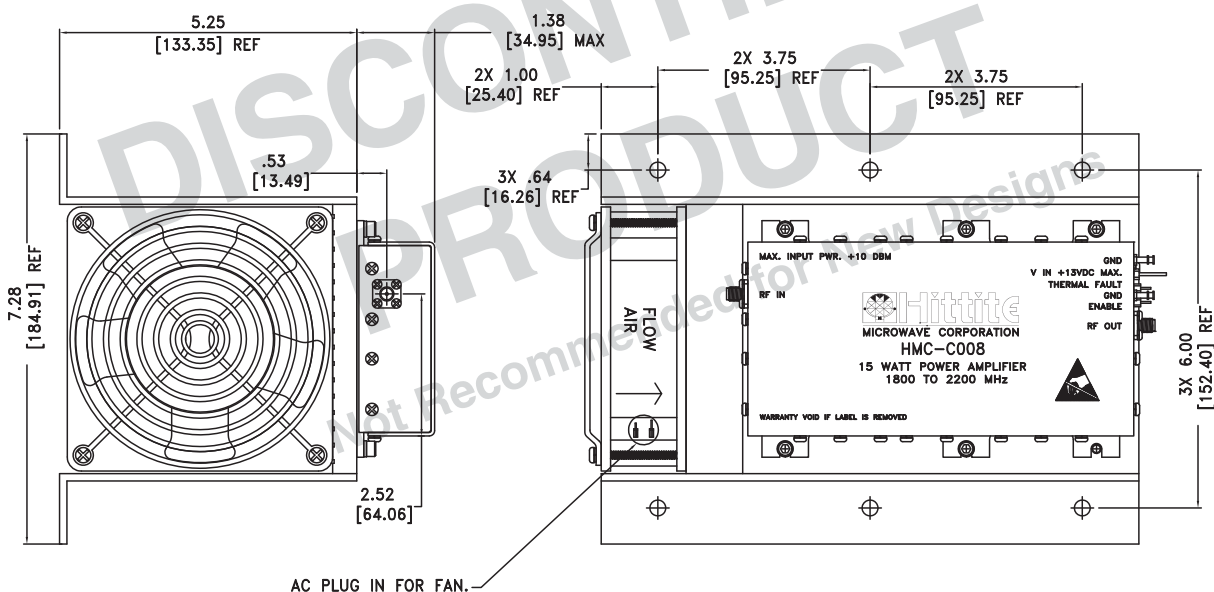
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 - a. COVER & END PLATES, CHEMICAL FILM PER MIL-C-5541, CLASS 3
 - b. BASE, TIN
3. RF CONNECTORS, SMA STYLE
4. DIMENSIONS ARE INCHES (MM)
5. TOLERANCES .X $\pm$.1 (2.54mm)
.XX $\pm$.02 (0.50mm)
6. BASE MUST BE GROUNDED AND MOUNTED TO HEAT SINK
CAPABLE OF DISSIPATING 100W (50 °C)

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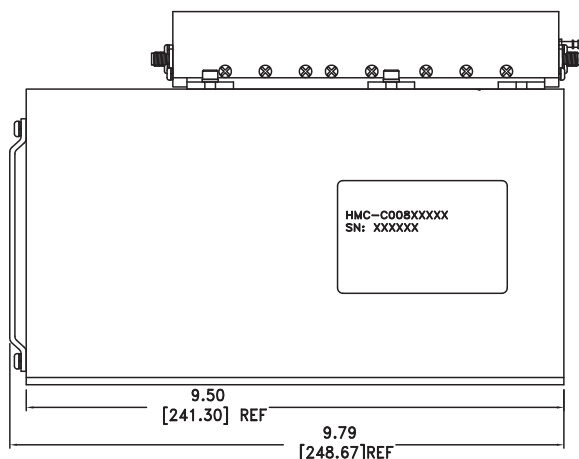
AMPLIFIERS

HMC-C008 Heatsink/Fan Outline Drawing



NOTES:

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3. RF CONNECTORS, SMA STYLE
4. DIMENSIONS ARE INCHES (MM)
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.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.

