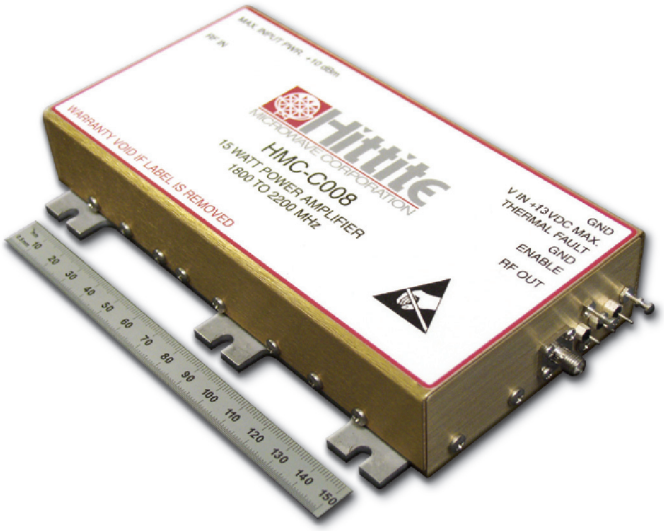
v03.1205

HMC-C008

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

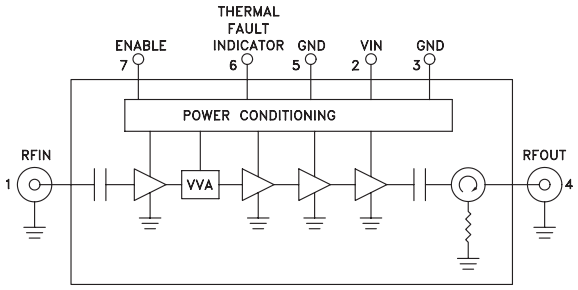
Test applications for:

- 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.

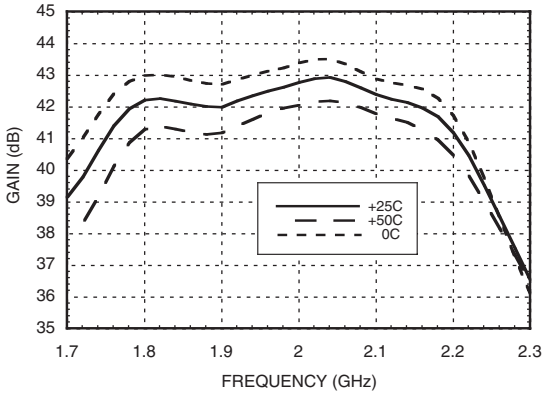
Functional Diagram



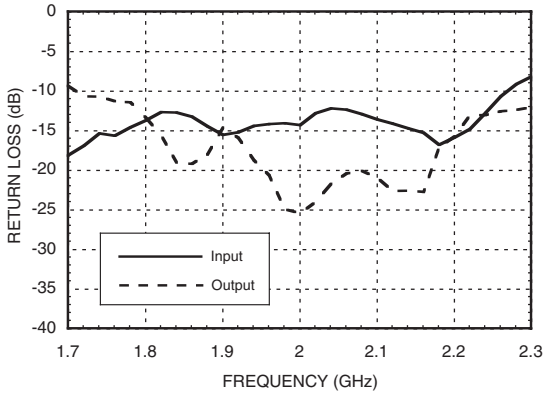
Electrical Specifications, T_A = +25° C, VIN = +12V

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

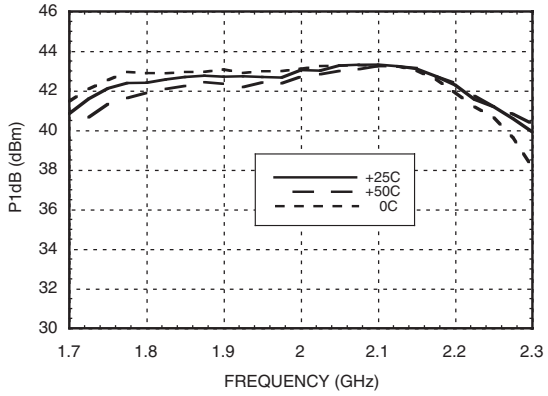
Gain vs. Temperature



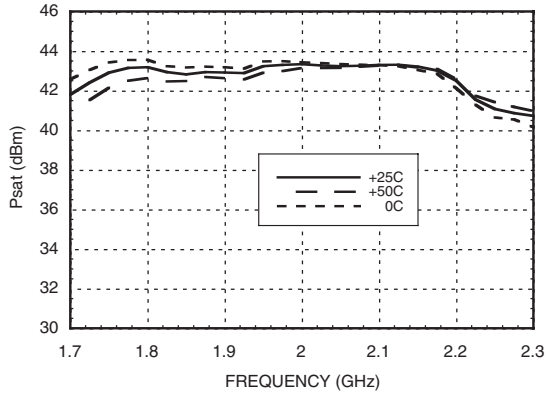
Input & Output Return Loss



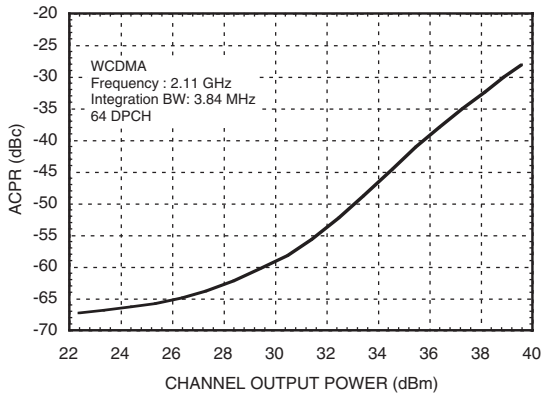
P1dB vs. Temperature



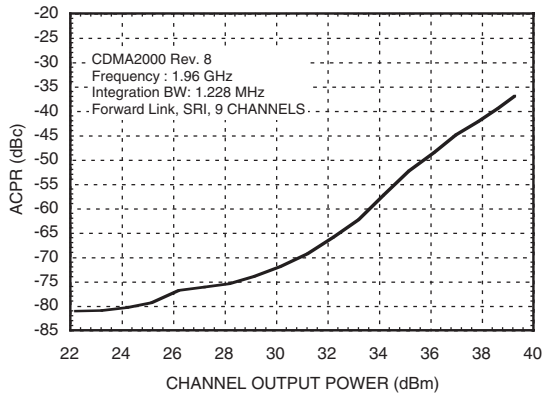
Psat vs. Temperature



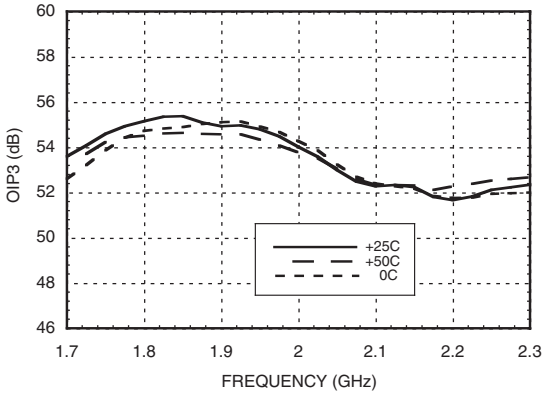
ACPR @ 2110 MHz, W-CDMA



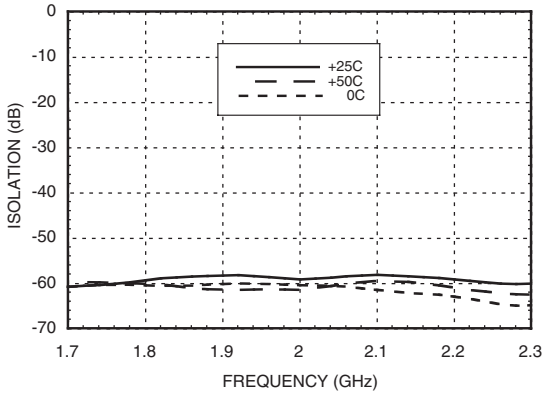
ACPR @ 1960 MHz, CDMA-2000



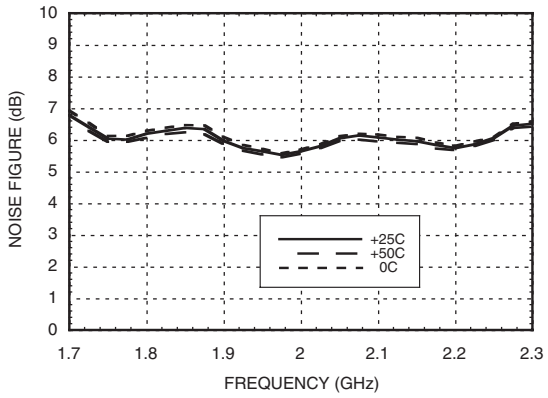
Output IP3 vs. Temperature



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

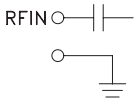
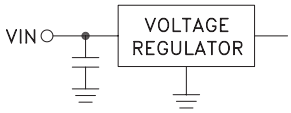
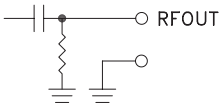
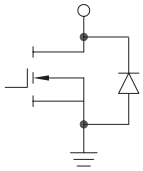
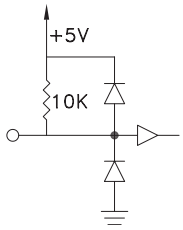
TURN-ON

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

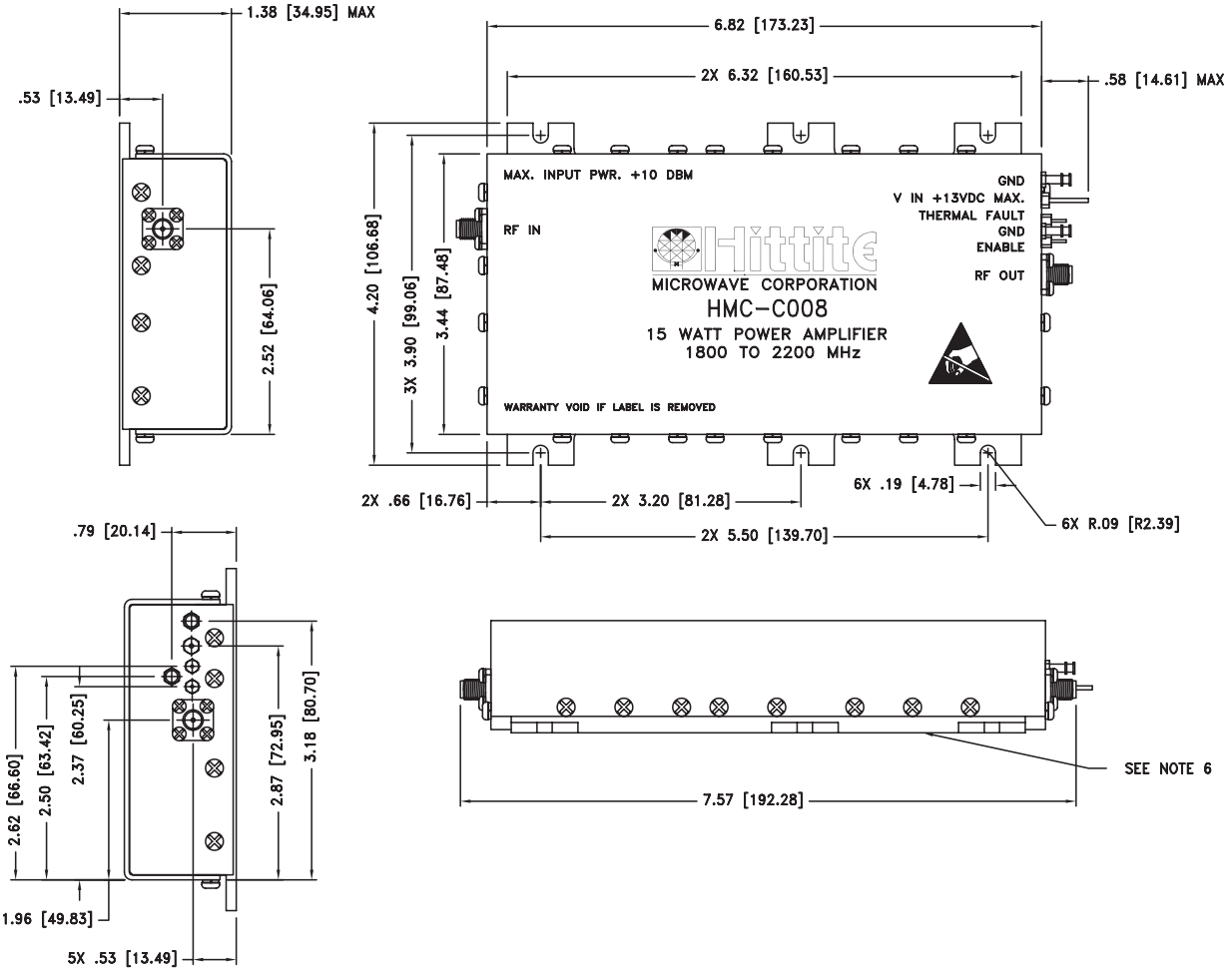
TURN-OFF

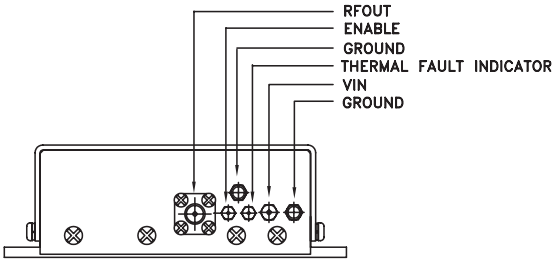
1. Remove RF input signal
2. Remove Supply Voltage VIN

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 from 1.8 - 2.2 GHz.	
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 from 1.8 - 2.2 GHz.	
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	

Outline Drawing





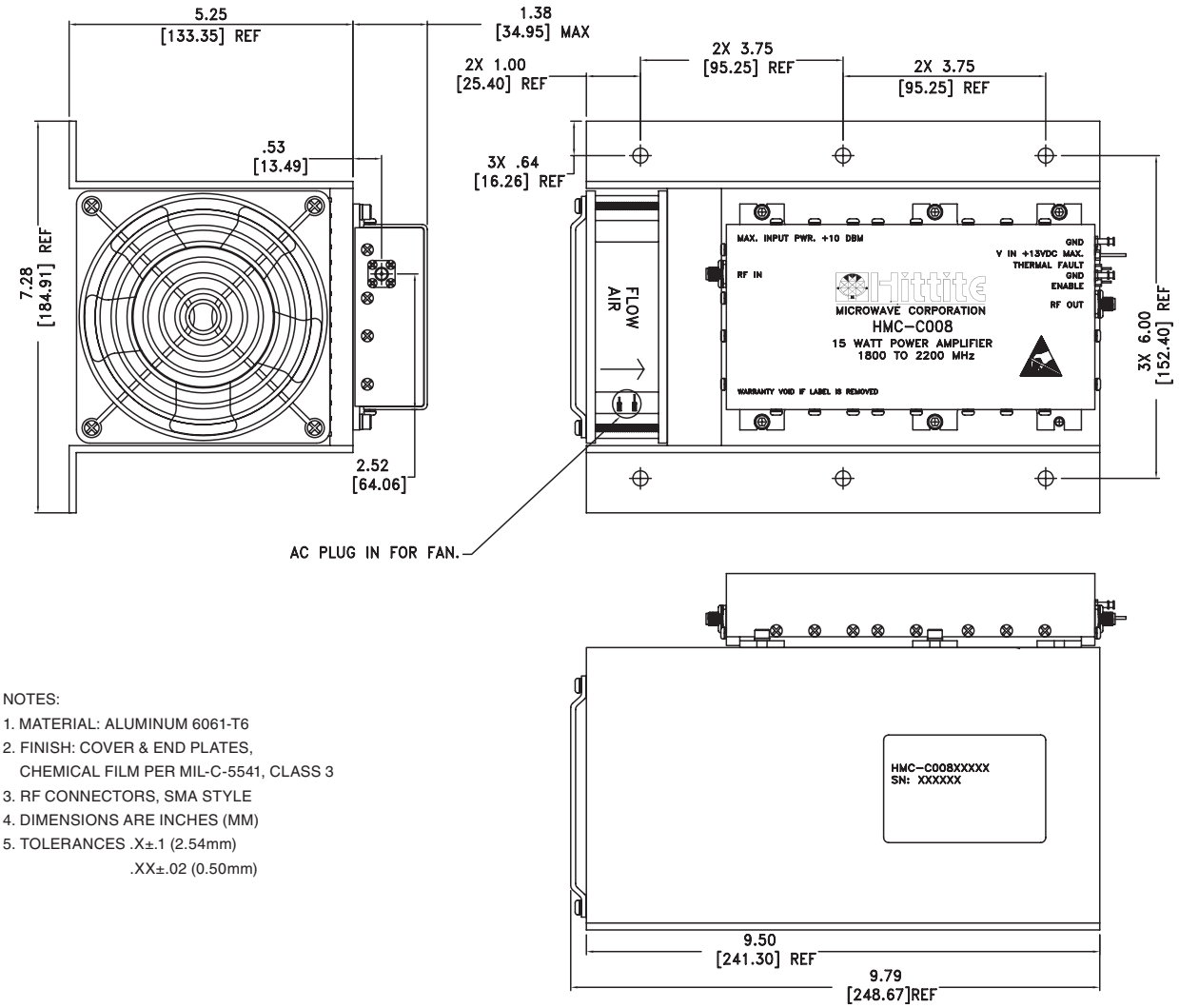
NOTES:

1. MATERIAL: ALUMINUM 6061-T6
2. FINISH
   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±.1 (2.54mm)
   .XX±.02 (0.50mm)
6. BASE MUST BE GROUNDED AND MOUNTED TO HEAT SINK CAPABLE OF DISSIPATING 100W (50 °C)

HMC-C008

15 WATT POWER AMPLIFIER MODULE, 1.8 - 2.2 GHz

HMC-C008 Heatsink/Fan Outline Drawing



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.

