

# Solid State Broadband High Power Amplifier

**1164 – BBM3Q6AHM**
**800 – 3000 MHz / 50 Watts**

The BBM3Q6AHM (SKU 1164) is suitable for broadband mobile jamming and band-specific high power applications in the L/S frequency bands. This compact module utilizes high power advanced GaN devices that provide excellent power density, high efficiency, wide dynamic range and low distortion. Exceptional performance, long term reliability and high efficiency are achieved by employing advanced broadband RF matching networks and combining techniques, EMI/RFI filters, machined housings and qualified components.



Empower RF's ISO9001:2015 Quality Assurance Program assures consistent performance and the highest reliability.

- Solid-state Class AB design
- Extremely wide instantaneous bandwidth
- Small form factor and lightweight
- Built-in control, monitoring and protection circuits
- Suitable for CW, AM, and FM (Consult Factory for other modulation types)
- 50 ohm input/output impedance
- Highly rugged and reliable

## ELECTRICAL SPECIFICATIONS @ +28.0V<sub>DC</sub>, 25 °C, 50 Ω System

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	800		3000	MHz
Output Power CW	P <sub>SAT</sub>	50			Watt
Output Power @ 1dB Gain Compression	P <sub>1dB</sub>	20			Watt
Power Gain @ P <sub>1dB</sub>	G <sub>1dB</sub>	46	50	53	dB
Input Power for Rated P <sub>SAT</sub>	P <sub>IN</sub>		0	3	dBm
Small Signal Gain Flatness	ΔG			±2.0	dB
Input Return Loss	S <sub>11</sub>			-10	dB
Noise Figure @ max. gain	NF			10.5	dB
Third Order Intercept Point 2-Tone @ 41dBm/Tone, 1MHz Spacing	IP3	+50			dBm
Harmonics @ P <sub>OUT</sub> = 20W	2 <sup>nd</sup> / 3 <sup>rd</sup>			-17/-20	dBc
Spurious Signals	Spur			-60	dBc
Operating Voltage	V <sub>DC</sub>	27.4	28	28.6	Volt
Current Consumption @ Shutdown	I <sub>SD</sub>		100	350	mA
Current Consumption @ P <sub>OUT</sub> = 50W	I <sub>DD</sub>		5.3	6.3	Amp
Quiescent Current	I <sub>DQ</sub>		2.0	3.0	Amp
Switching Speed (10% to 90%)	T <sub>ON/OFF</sub>		2.0	5.0	μs

## MECHANICAL SPECIFICATIONS

Parameter	Value	Unit
Dimension (L x W x H)	6.4 x 3.4 x 1.0	Inch
Weight	1.2	Pound
RF Connectors Input/Output	Type-SMA, Female	J1
DC Interface Connector	D-Sub 9-Pin, Male	J2
Cooling	External Heatsink (Not Supplied)	-

## ENVIRONMENTAL CHARACTERISTICS (Design to Meet)

Parameter	Symbol	Min	Typ	Max	Unit
Operating Case Temperature	T <sub>C</sub>	-40		+85	°C
Non-operating Temperature	T <sub>STG</sub>	-40		+85	°C
Relative Humidity (non-condensing)	RH			95	%
Altitude (MIL-STD-810F Method 500.4)	ALT			30,000	Feet
Vibration/Shock MIL-STD-810F Method 514.5/516.5 Proc 1	VI/SH		Airborne		

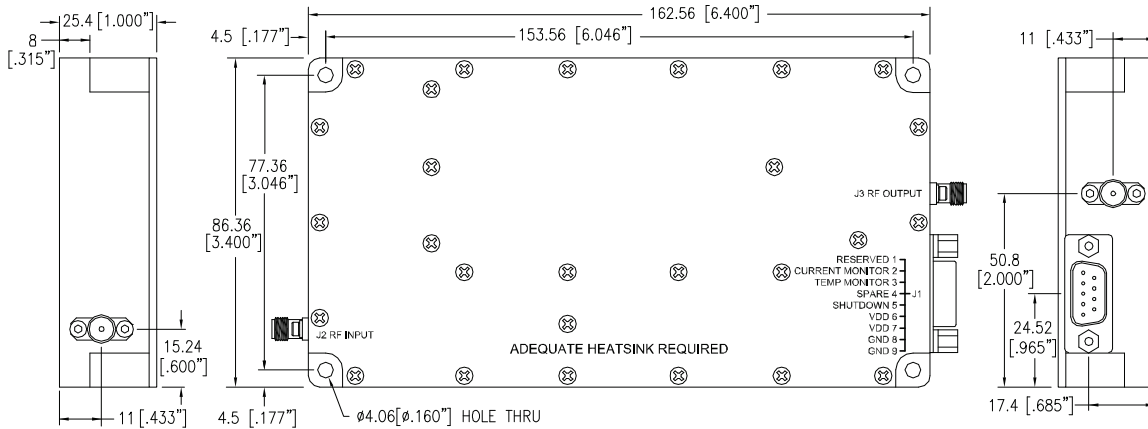
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**LIMITS**

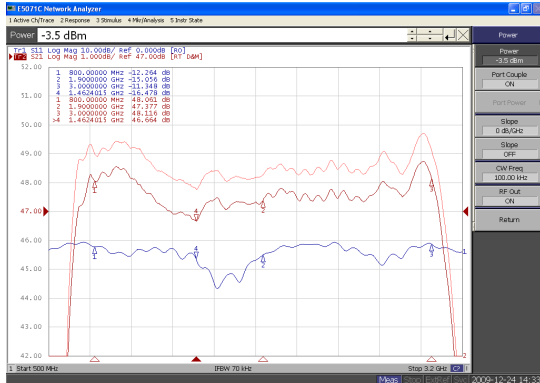
Input RF drive level without damage	+10 dBm	Max
Load VSWR @ P <sub>OUT</sub> = 50W	∞ @ all load phase & amplitude for duration of 1 minute 3:1 @ all load phase & amplitude continuous	-
Thermal Overload	85°C Graceful Degradation	-

**DC INTERFACE CONNECTOR – D-Sub 9-Pin, Male**

Pin #	Description	Specification
1	Reserved	No Connection
2	Current Monitor	Analog voltage relative to I <sub>DD</sub> @ 50mV/100mA
3	Temp Monitor	Analog voltage relative to module temperature @ 10mV/°C
4	Spare	No Connection
5	Shutdown	Amplifier Disable: TTL Logic High (5V) (Internally Pulled-Low)
6&7	VDD	+27.4-28.6V <sub>DC</sub>
8&9	GND	Ground

**OUTLINE DRAWING**

**TYPICAL PERFORMANCE PLOTS**

**Plot 1 – Small Signal Gain and P<sub>1dB</sub>**  
 Top Curve: Small Signal Gain @ P<sub>IN</sub> = -20dBm  
 Middle Curve: Power Gain @ P<sub>1dB</sub>, P<sub>IN</sub> = -3.5dBm  
 Reference: 47dB, 1dB/div.  
 Bottom Curve: Input Return Loss  
 Reference: 0dB, 10dB/div.



**Plot 2 – Small Signal Gain and P<sub>SAT</sub>**  
 Top Curve: Small Signal Gain @ P<sub>IN</sub> = -20dBm  
 Middle Curve: Power Gain @ P<sub>SAT</sub>, P<sub>IN</sub> = +2dBm  
 Reference: 46dB, 1dB/div.  
 Bottom Curve: Input Return Loss  
 Reference: 0dB, 10dB/div.

