

## Solid State Broadband High Power Amplifier

**1148 – BBM4A6AHM**
**1000 – 3000 MHz, 50 Watts**

The BBM4A6AHM (SKU 1148) is suitable for broadband mobile jamming and band-specific high power applications in the P/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 Quality Assurance Program assures consistent performance and the highest reliability.



- Solid-state Class AB design
- Extremely wide instantaneous bandwidth
- Compact 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 @ +28V<sub>DC</sub>, 25 °C, 50Ω System

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	1000		3000	MHz
Power Output (CW)	P <sub>SAT</sub>	50			Watt
Output Power @ P <sub>1dB</sub> Gain Compression	P <sub>1dB</sub>	20			Watt
Small Signal Gain	G <sub>SS</sub>	47	50	53	dB
Input Power for Rated P <sub>SAT</sub>	P <sub>IN</sub>		0	3	dBm
Small Signal Gain Flatness	ΔG		±1.5	±2.0	dB
Input Return Loss	S <sub>11</sub>			-10	dB
Noise Figure	NF			10	dB
Third Order Intercept Point 2-Tone @ 34dBm/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		-70	-60	dBc
Operating Voltage	V <sub>DC</sub>	26	28	30	Volt
Current Consumption P <sub>OUT</sub> = 50W CW	I <sub>DD</sub>		5.5	7.0	Amp
Quiescent Current	I <sub>DQ</sub>		2.0		Amp
Switching Speed (10% to 90%) @ 1kHz TTL	T <sub>SW</sub>		2.0	5.0	μs

### ENVIRONMENTAL CHARACTERISTICS (Design to Meet)

Parameter	Symbol	Min	Typ	Max	Unit
Operating Case Temperature	T <sub>C</sub>	-20		+85	°C
Non-operating Temperature	T <sub>STG</sub>	-40		+85	°C
Relative Humidity w/o Condensation	RH			95	%
Altitude (MIL-STD-810F Method 500.4)	ALT			30,000	Feet
Vibration / Shock MIL-STD-810F - Method 514.5/516.5 – Proc I	VI / SH		Airborne		-

### LIMITS

Input RF drive level without damage	+15 dBm	Max
Load VSWR @ P <sub>OUT</sub> = 20W	∞:1 @ all load phase & amplitude for duration of 1 minute 3:1 @ all load phase & amplitude continuous	-
Thermal Overload	Graceful Degradation @ 85°C Typical	-

# Solid State Broadband High Power Amplifier

1148 – BBM4A6AHM

1000 – 3000 MHz, 50 Watts

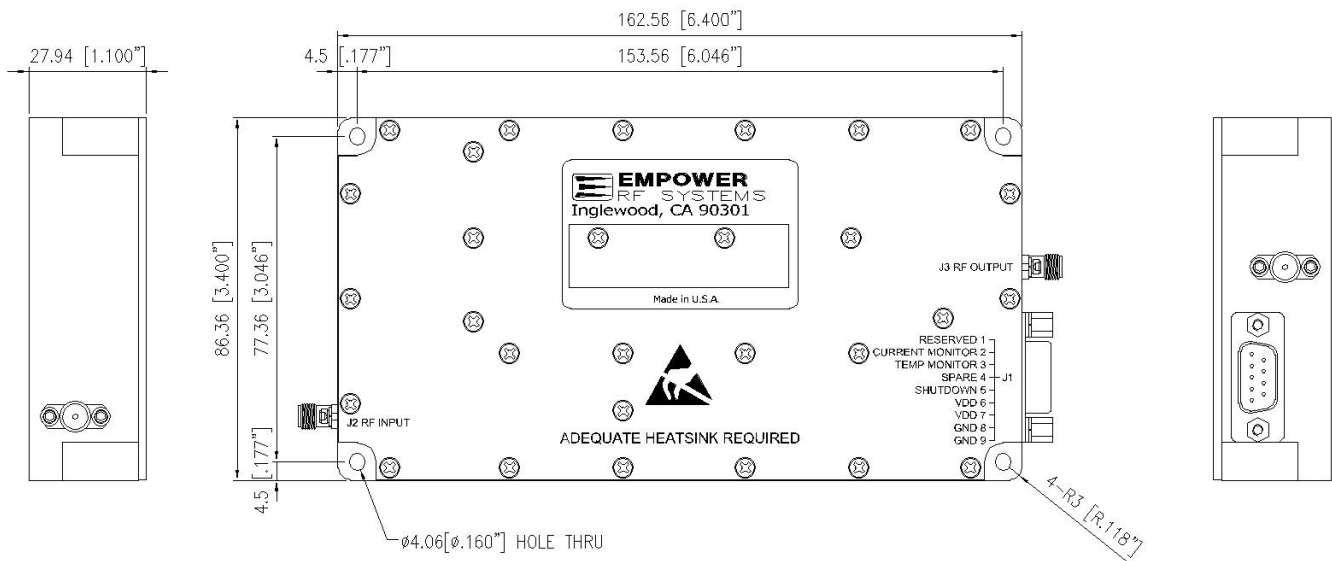
## MECHANICAL SPECIFICATIONS

Parameter	Value	Unit
Dimensions L x W x H	6.4 x 3.4 x 1.1	Inch
Weight	1.5	Pound
RF Connectors Input/Output	Type-SMA, Female Finish: Stainless Steel	-
DC Interface Connector	D-sub 9-pin, Male	-
Cooling	External Heatsink (not supplied)	-

## DC INTERFACE CONNECTOR – D-sub 9-pin, Male

Pin #	Description	Specification
1	Reserved	No Connection
2	Current Consumption Monitor	Analog voltage relative to $I_{DD}$ @ 25mV/100 mA (no load) $I_{DD}$ @ 20mV/100 mA (100k Ohm load)
3	Temperature 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	+26.0-30.0V <sub>DC</sub>
8&9	GND	Ground

## OUTLINE DRAWING



# Solid State Broadband High Power Amplifier

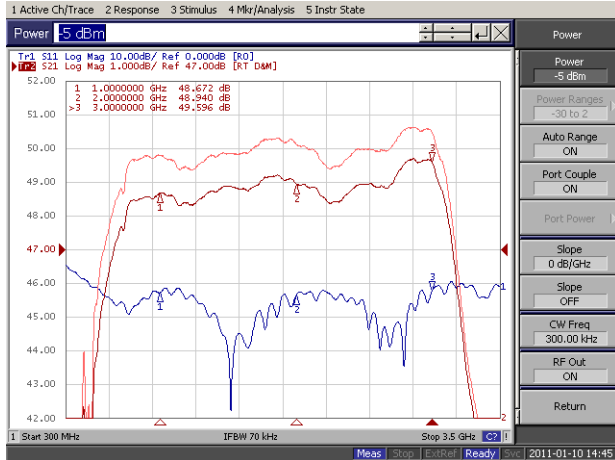
1148 – BBM4A6AHM

1000 – 3000 MHz, 50 Watts

## TYPICAL PERFORMANCE PLOTS

### Plot 1 – Small Signal Gain and $P_{1dB}$

Top Curve: Small Signal Gain @  $P_{IN} = -20dBm$   
 Middle Curve: Power Gain @  $P_{1dB}$ ,  $P_{IN} = -5dBm$   
 Reference: 47dB, 1dB/Div.  
 Bottom Curve: Input Return Loss  
 Reference: 0dB, 10dB/Div.



### Plot 2 – Small Signal Gain and $P_{SAT}$

Top Curve: Small Signal Gain @  $P_{IN} = -20dBm$   
 Middle Curve: Power Gain @  $P_{SAT}$ ,  $P_{IN} = 1dBm$   
 Reference: 47dB, 1dB/Div.  
 Bottom Curve: Input Return Loss  
 Reference: 0dB, 10dB/Div.

