

## Solid State Broadband High Power Amplifier

**1117 - BBM3K5KEL**
**500 – 2500 MHz / 25 Watts**

The BBM3K5KEL (SKU 1117) is suitable for broadband mobile Jamming and band specific high power linear 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 distortions. 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
- Instantaneous ultra broadband
- Small and lightweight
- Suitable for CW, AM, and FM (Consult factory for other modulation types)
- 50 ohm input/output impedance
- High reliability and ruggedness
- Built-in control, monitoring and protection circuits



RoHS Compliant available  
 SKU# 1117-0001

### ELECTRICAL SPECIFICATIONS @ +28V<sub>DC</sub>, 25°C, 50Ω System

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	500		2500	MHz
Output Power CW	P <sub>SAT</sub>	25	30		Watt
Output Power @ 1dB Gain Compression	P <sub>1dB</sub>		20		Watt
Small Signal Gain	G <sub>SS</sub>	44	46	52	dB
Input Power for Rated P <sub>SAT</sub>	P <sub>IN</sub>		0		dBm
Gain Flatness @ Rated P <sub>SAT</sub>	ΔG <sub>P</sub>		±1.0	±1.5	dB
Input Return Loss	S <sub>11</sub>			-10	dB
Noise Figure	NF			10	dB
Third Order Intercept Point					
2-Tone @ 30dBm/Tone, 100kHz Spacing	IP3	+45			dBm
Harmonics @ P <sub>OUT</sub> = 20W	H		-25	-15	dBc
Spurious Signals	Spur		-70	-60	dBc
Operating Voltage	V <sub>DC</sub>	26	28	30	Volt
Quiescent Current	I <sub>DQ</sub>		1.5		Amp
Current Consumption @ P <sub>OUT</sub> = 25W	I <sub>DD</sub>			3.3	Amp
Current Consumption @ Shutdown	I <sub>SD</sub>		100		mA
Switching Time @ 1kHz TTL, P <sub>IN</sub> = 0dBm	T <sub>ON</sub> /T <sub>OFF</sub>		2.0	5.0	uSec

### MECHANICAL SPECIFICATIONS

Parameter	Value	Unit
Dimensions	6.0 x 3.0 x 1.0	Inch
Weight	1.0	Pound
RF Connectors Input/Output	Type-SMA, Female	
DC Interface Connector	D-Sub 9-Pin, Male	
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
Storage 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	VI/SH		Airborne		
MIL-STD-810F - Method 514.5/516.5 – Proc I					

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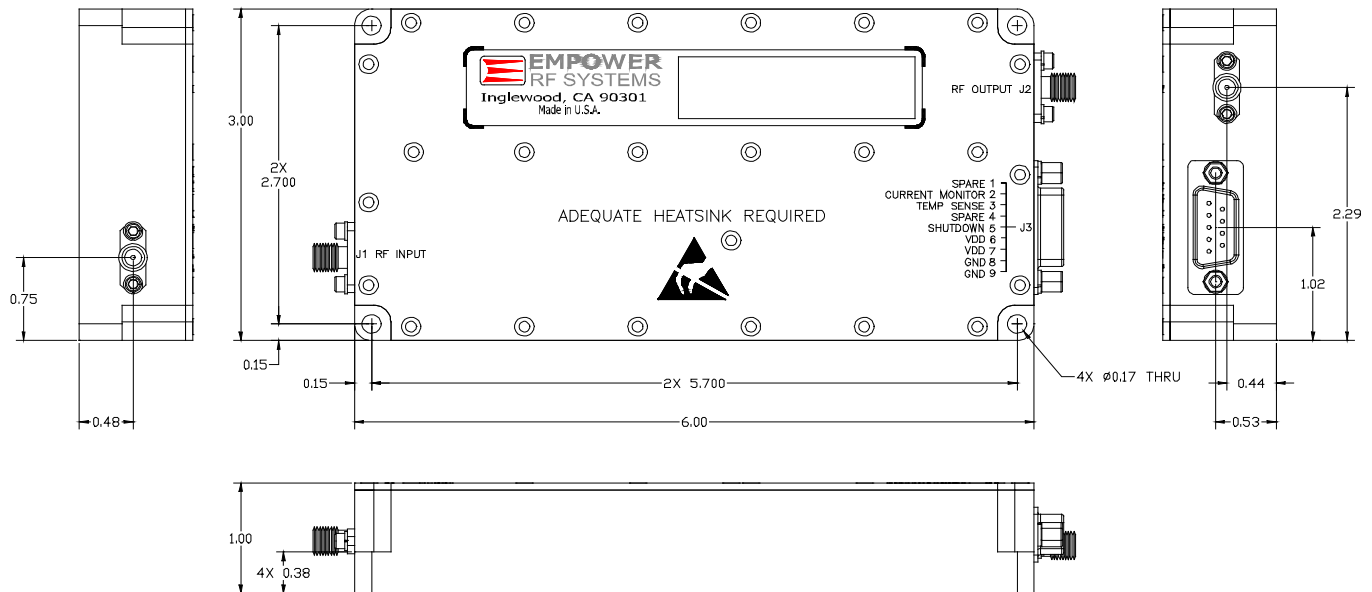
### LIMITS

Input RF drive level without damage	+10 dBm	Max
Load VSWR @ P <sub>OUT</sub> = 25W	∞ @ all load phase & amplitude for duration of 1 minute 3:1 @ all load phase & amplitude continuous	-
Thermal Overload	85°C	Typ

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

Pin #	Description	Specification
1	Spare	No Connection
2	Current Monitor	Analog voltage relative to I <sub>DD</sub> @ 100mV/100mA
3	Temp Sense	Analog voltage relative to Module's Temperature @ 10mV/°C
4	Spare	No Connection
5	Shutdown	Amplifier Disable: TTL Logic High (5V) <i>(Internally Pulled-Low)</i>
6&7	VDD	+26.30V <sub>DC</sub>
8&9	GND	Ground

### OUTLINE DRAWING



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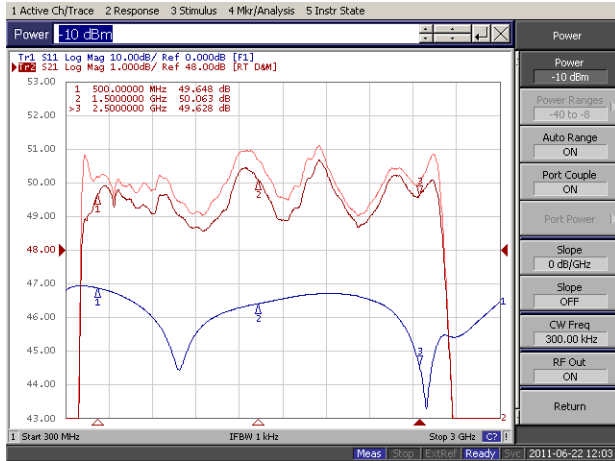
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## TYPICAL PERFORMANCE PLOTS

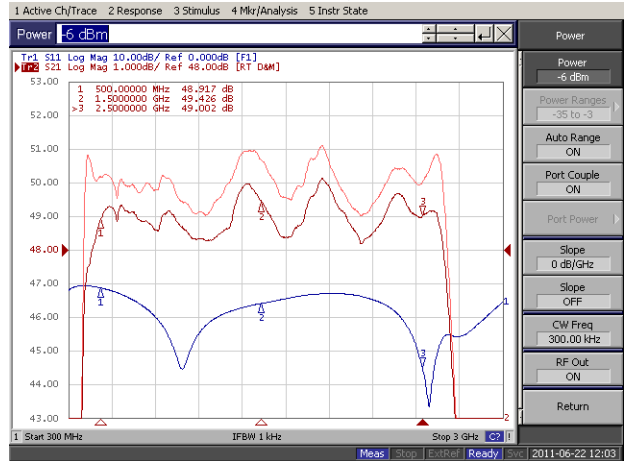
### Plot 1 – Small Signals Gain

Top Curve: Small Signal Gain @  $P_{IN} = -20\text{dBm}$   
 Middle Curve: Small Signal Gain @  $P_{IN} = -10\text{dBm}$   
 Reference: 48dB, 1dB/div.  
 Bottom Curve: Input Return Loss  
 Reference: 10dB, 10dB/div.



### Plot 2 – Small Signal Gain and $P_{1dB}$

Top Curve: Small Signal Gain @  $P_{IN} = -20\text{dBm}$   
 Middle Curve: Power Gain @  $P_{1dB}$ ,  $P_{IN} = -6.0\text{dBm}$   
 Reference: 48dB, 1dB/div.  
 Bottom Curve: Input Return Loss  
 Reference: 10dB, 10dB/div.



### Plot 3 – Small Signal Gain and $P_{SAT}$

Top Curve: Small Signal Gain @  $P_{IN} = -20\text{dBm}$   
 Middle Curve: Power Gain @  $P_{SAT}$ ,  $P_{IN} = -1.0\text{dBm}$   
 Reference: 48dB, 1dB/div.  
 Bottom Curve: Input Return Loss  
 Reference: 10dB, 10dB/div.

