EMPOWER RF SYSTEMS, INC.

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 ISO9001:2015 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_{DC}, 25°C, 50Ω System

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	500		2500	MHz
Output Power CW	P_{SAT}	25	30		Watt
Output Power @ 1dB Gain Compression	P_{1dB}		20		Watt
Small Signal Gain	G_{SS}	44	46	52	dB
Input Power for Rated P_{SAT}	P_{IN}		0		dBm
Small Signal Gain Flatness	ΔG		±1.0	±1.5	dB
Input Return Loss	S_{11}			-10	dB
Noise Figure	NF			10	dB
Third Order Intercept Point 2-Tone @ 30dBm/Tone, 100kHz Spacing	IP3	+45			dBm
Harmonics @ P_{OUT} = 20W	H		-25	-15	dBc
Spurious Signals	Spur		-70	-60	dBc
Operating Voltage	V_{DC}	26	28	30	Volt
Quiescent Current	I_{DQ}		1.5		Amp
Current Consumption @ P_{OUT} = 25W	I_{DD}			3.0	Amp
Current Consumption @ Shutdown	I_{SD}		100		mA
Switching Time @ 1kHz TTL, P_{IN} = 0dBm	T_{ON}/T_{OFF}		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	J1 / J2
DC Interface Connector	D-Sub 9-Pin, Male	J3
Cooling	External Heatsink (Not Supplied)	-

ENVIRONMENTAL CHARACTERISTICS (Design to Meet)

Parameter	Symbol	Min	Typ	Max	Unit
Operating Case Temperature	T_C	-40		+85	°C
Storage Temperature	T_{STG}	-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 I	VI/SH		Airborne		

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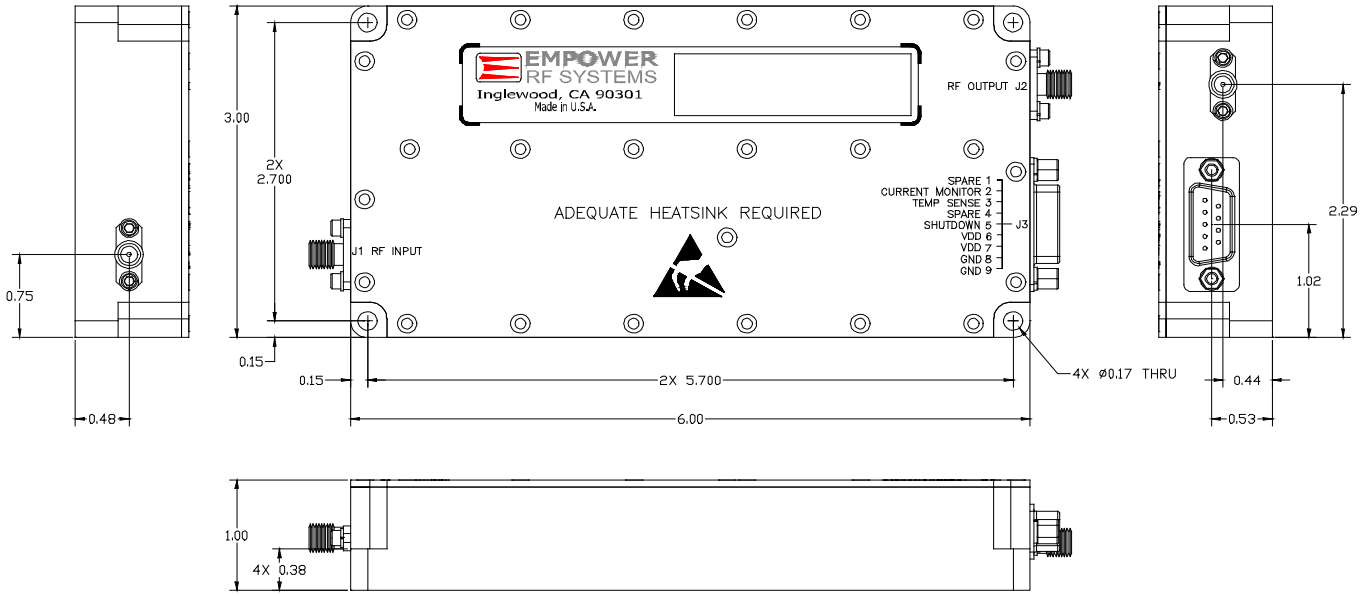
LIMITS

Input RF drive level without damage	+10 dBm	Max
Load VSWR @ P_{OUT} = 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_{DD} @ 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) (*Internally Pulled-Low*)
6&7	VDD	+26.30.0V_{DC}
8&9	GND	Ground

OUTLINE DRAWING



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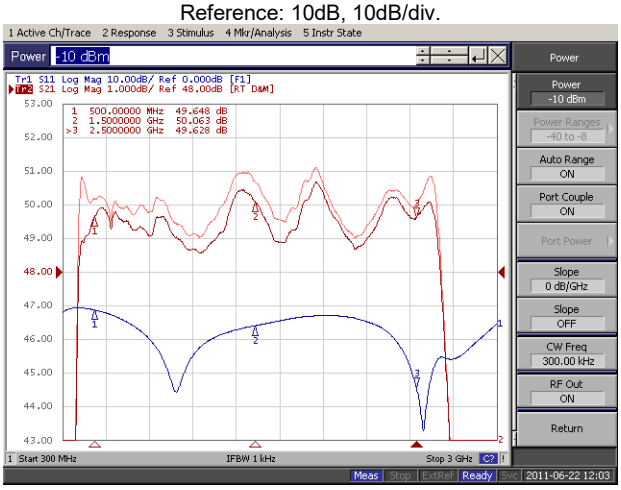
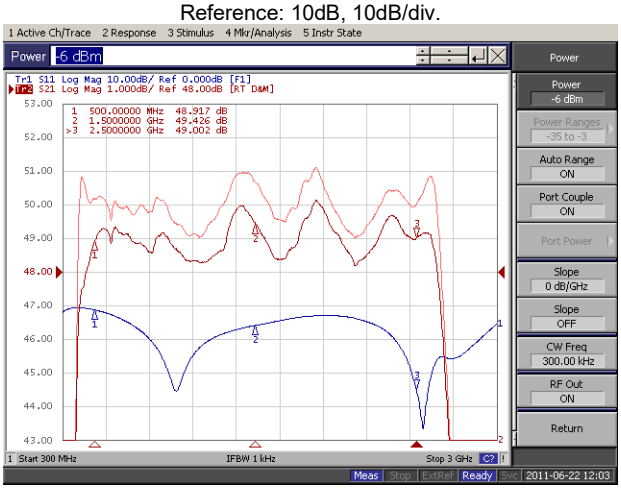
TYPICAL PERFORMANCE PLOTS

Plot 1 – Small Signals Gain
Top Curve: Small Signal Gain @ P_{IN} = -20dBm
Middle Curve: Small Signal Gain @ P_{IN} = -10dBm
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} = -20dBm
Middle Curve: Power Gain @ P_{1dB}, P_{IN} = -6.0dBm
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} = -20dBm
Middle Curve: Power Gain @ P_{SAT}, P_{IN} = -1.0dBm
Reference: 48dB, 1dB/div.
Bottom Curve: Input Return Loss
Reference: 10dB, 10dB/div.