EMPOWER RF SYSTEMS, INC.

Solid State Broadband High Power Amplifier

1183 – BBM3O6QJ8 | 700 - 3800MHz / 80Watts

The BBM3O6QJ8 (SKU 1183) is suitable for broadband mobile Jamming and band specific high power applications in the S & C 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

ELECTRICAL SPECIFICATIONS @ +28V_{DC}, 25°C, 50Ω System

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	700		3800	MHz
Power Output CW	P_{SAT}	80	100		Watt
Output Power @ 1dB Gain Compression	P_{1dB}		44		dBm
Small Signal Gain	G_P	18	20		dB
Input Power for Rated P_{1dB}	P_{IN}			36	dBm
Power Gain Flatness	ΔG_P		±1.5	±2.0	dB
Input / Output Return Loss	S_{11}/S_{22}		-10	-8	dB
Third Order Intercept Point 2-Tone @ 36dBm/Tone, 250kHz Spacing	IP3		+54		dBm
Harmonics @ P_{OUT} = 80W	H		-15		dBc
Spurious Signals	Spur		-70	-60	dBc
Operating Voltage	V_{DC}	26	28	30	Volt
Current Consumption @ P_{OUT} = 80W	I_{DD}		10	12	Amp
Quiescent Current	I_{DQ}		2		Amp
Current Consumption @ Shutdown	I_{SD}		100		mA
Switching Time, 1kHz TTL, P_{OUT} = 40W	T_{ON}/T_{OFF}			2.0/5.0	uSec
Module to Module Gain Tracking @ P_{SAT}	ΔGT			±1.0	dB
Module to Module Phase Tracking @ P_{SAT}	ΔPT			±10	Deg

ENVIRONMENTAL CHARACTERISTICS (Design to Meet)

Parameter	Symbol	Min	Typ	Max	Unit
Operating Case Temperature	T_C	-20		+80	°C
Non-operating 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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MECHANICAL SPECIFICATIONS

Parameter	Value	Unit
Dimensions L x W x H	9.5x4.9x1.0	Inch
Weight	2	Pound
RF Connectors Input/Output	Type-SMA, Female	J1 / J2
DC Interface Connector	D-Sub 9-Pin, Male	J3
Cooling	External Heatsink (Not Supplied)	-

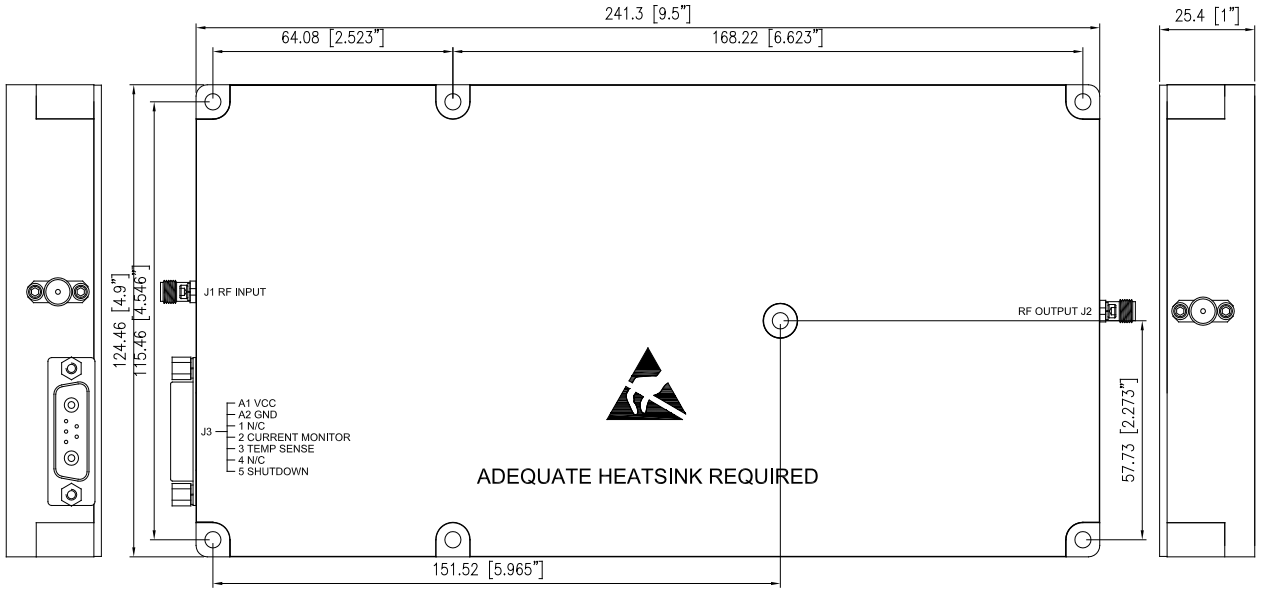
LIMITS

Input RF drive level without damage	+36dBm	Max
Load VSWR @ P_{OUT} = 80W	∞ @ all load phase & amplitude for duration of 1 minute 3:1 @ all load phase & amplitude continuous	-
Thermal Overload	85°C	Min

DC INTERFACE CONNECTOR

Pin #	Description	Specification
A1	VDD	+26.0-30.0V_{DC}
A2	GND	Ground
1	N/C	No Connection
2	Current Monitor	Analog voltage relative to I_{DD} @ 25mV/100mA (4V max)
3	Temp Sense	Analog voltage relative to module temperature @ 10mV/°C (e.g. 0.25V_{DC} = 25°C)
4	N/C	No Connection
5	Shutdown	Amplifier Disable: TTL Logic High (5V) (*Internally Pulled-Low*)

MECHANICAL OUTLINE



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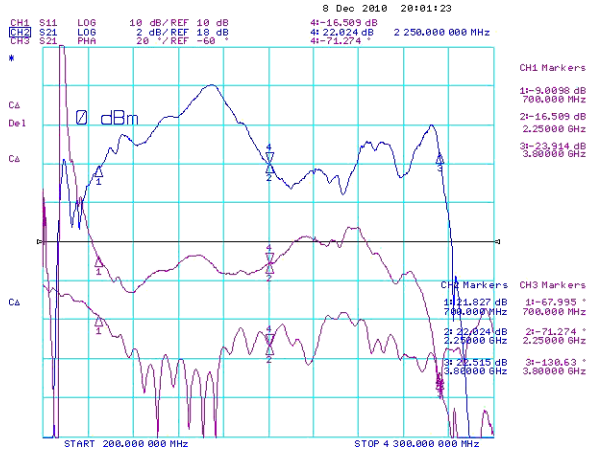
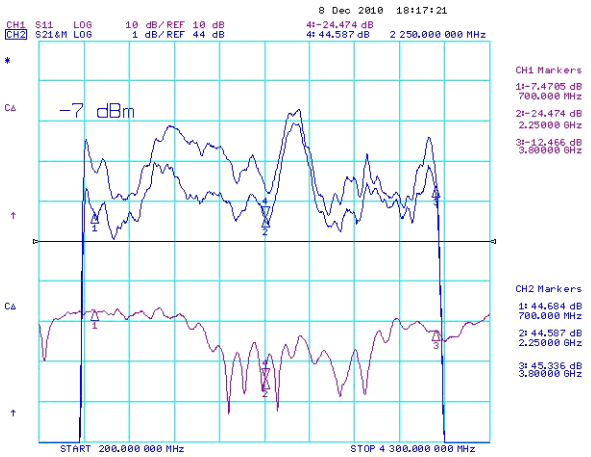
TYPICAL PERFORMANCE PLOTS

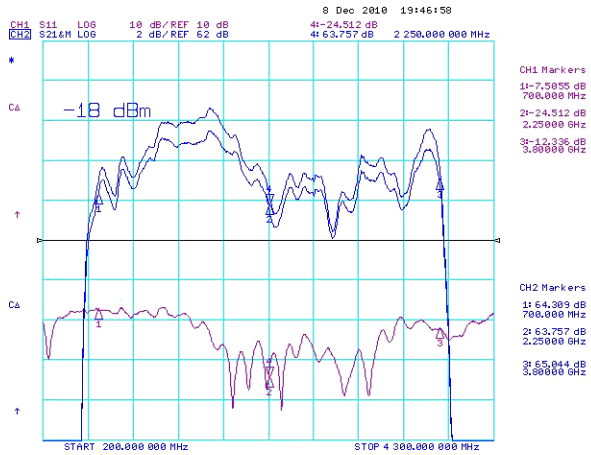
Plot 1 – Small Signal Gain and Phase Response
Top Curve: Small Signal Gain @ P_{IN} = 0dBm
Reference: 18dB, 2dB/div.
Middle Curve: Phase
Reference: -60deg, 20deg/div, Elec. Delay 5.9nsec.
Bottom Curve: Input Return Loss
Reference: 10dB, 10dB/div.



Plot 2 – Driver Small Signal Gain and P_{1dB} (1184)
Top Curve: Small Signal Gain @ P_{IN} = -20dBm
Middle Curve: Power Gain @ P1dB, P_{IN}= -7dBm
Reference: 44dB, 1dB/div.
Bottom Curve: Input Return Loss
Reference: 10dB, 10dB/div.



Plot 3 – Small Signal Gain and P_{1dB} with Driver
Top Curve: Small Signal Gain @ P_{IN} = -20dBm
Middle Curve: Power Gain @ P_{1dB}, P_{IN}= -18dBm
Reference: 62dB, 2dB/div.
Bottom Curve: Input Return Loss of Driver
Reference: 10dB, 10dB/div.



Plot 4 – Small Signal Gain and P_{SAT} with Driver
Top Curve: Small Signal Gain @ P_{IN} = -20dBm
Middle Curve: Power Gain @ P_{SAT}, P_{IN}= -9dBm
Reference: 60dB, 2dB/div.
Bottom Curve: Input Return Loss of Driver
Reference: 10dB, 10dB/div.