

Solid State Broadband High Power Amplifier

1122 – BBM3Q5KHM
800 – 2500 MHz, 50 Watts

The BBM3Q5KHM (SKU 1122) 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 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 linear design, 50 ohm input/output impedance
- Extremely wide instantaneous bandwidth
- Compact, lightweight, rugged and reliable
- Built-in control, monitoring and protection circuits
- Suitable for CW, AM, and FM (Consult factory for other modulation types)

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

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	800		2500	MHz
Power Output CW	P _{SAT}	50			Watt
Output Power @ 1dB Gain Compression	P _{1dB}	20			Watt
Small Signal Gain	G _{1dB}	46	48		dB
Input Power for Rated P _{SAT}	P _{IN}		0		dBm
Small Signal Gain Flatness	ΔG			±2.0	dB
Input Return Loss	S ₁₁			-10	dB
Noise Figure @ Max Gain	NF			10	dB
Third Order Intercept Point 2-Tone @ 34dBm/Tone, 1.0MHz Spacing	IP3	+50			dBm
Harmonics @ P _{OUT} = 20W	2 ND / 3 RD			-17/20	dBc
Spurious Signals	Spur			60	dBc
Operating Voltage	V _{DC}	26	28	30	Volt
Current Consumption @ P _{OUT} = 50W	I _{DD}			6.3	Amp
Quiescent Current	I _{DQ}		2.0		Amp
Switching Speed (10% to 90%)	T _{ON/OFF}		2.0		μs

MECHANICAL SPECIFICATIONS

Parameter	Value	Units	Limits
Dimension	6.4 x 3.4 x 1.1	Inch	Max
Weight	1.0	lb.	Max
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 _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		

LIMITS

Input RF drive level without damage	+15 dBm	Max
Load VSWR @ P _{OUT} = 50W	∞ @ all load phase & amplitude for duration of 1 minute 3:1 @ all load phase & amplitude continuous	-
Thermal Overload	Thermal Degradation @ 85°C	Typ.

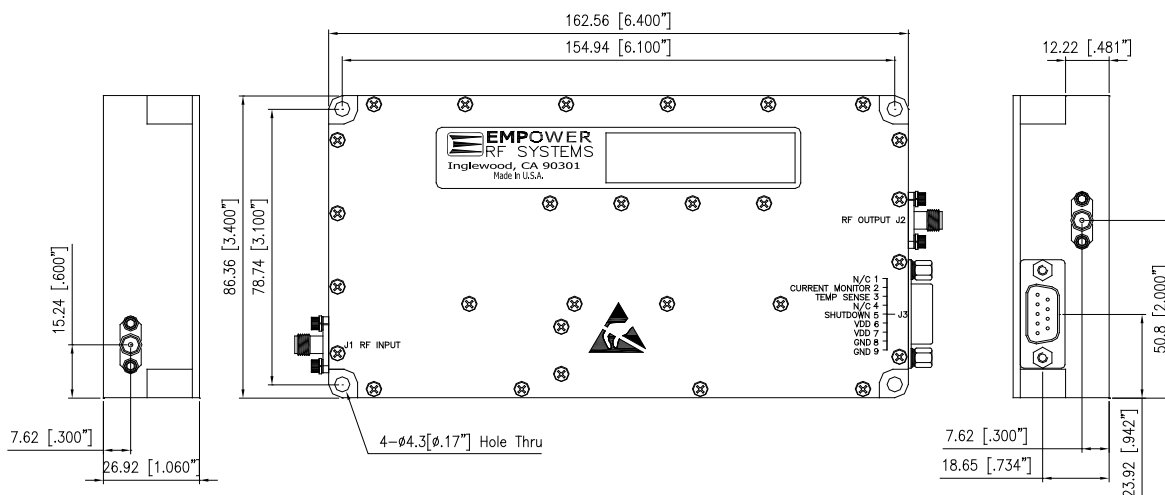
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DC INTERFACE CONNECTOR – D-Sub 9-Pin, Male

Pin #	Description	Specifications
1	N/C	No Connection
2	Current Monitor	Analog voltage relative to module's current @ 50mV/100mA
3	Temp Sense	Analog voltage relative to module's temperature @ 10mV/°C
4	N/C	No Connection
5	Shutdown	Amplifier Disable: TTL Logic High (5V) (Internally Pulled-low)
6&7	VDD	+26.0-30.0V _{DC}
8&9	GND	Ground

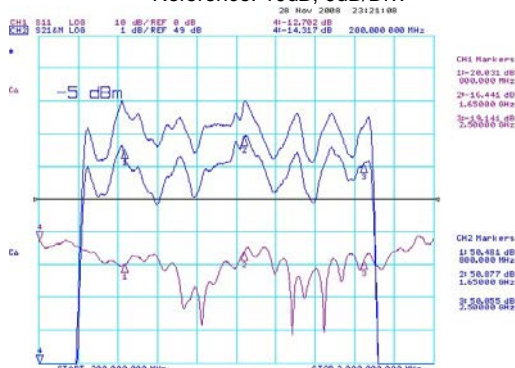
OUTLINE DRAWING



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: 49dB, 1dB/Div.
 Bottom Curve: Input Return Loss
 Reference: 10dB, 0dB/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} = 1.0dBm
 Reference: 48dB, 1dB/Div.
 Bottom Curve: Input Return Loss
 Reference: 10dB, 0dB/Div.

