

Solid State Broadband High Power Amplifier

1109 - BBM2E5KCL
20 – 2500 MHz / 15 Watts

The BBM2E5KCL (SKU 1109) is suitable for ultra broadband high power counter communication and linear applications. This unit combines two separate amplifiers with a diplexer, one for 20-1000 MHz and the second for 500-2500 MHz, utilizing power GaN devices that provide high gain, wide dynamic range, low distortions and excellent linearity. 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 form factor and lightweight
- Built-in control, monitoring & protection circuits
- Suitable for CW, AM and FM (Consult factory for other modulation types)
- 50 ohm input/output impedance
- High reliability and ruggedness

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

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	20		2500	MHz
Output Power CW	P _{SAT}	15			Watt
Output Power @ 1dB Gain Compression	P _{1dB}	6	10		Watt
Power Gain @ 1dB Gain Compression	G _{1dB}	40	44		dB
Input Power for Rated P _{SAT}	P _{IN}		0	3	dBm
Small Signal Gain Flatness	ΔG		±3.0	±4.0	dB
Input Return Loss	S ₁₁			-10	dB
Noise Figure	NF			10	dB
Third Order Intercept Point 2-Tone @ 33dBm/Tone, 100kHz Spacing	IP3		+52		dBm
Harmonics @ P _{OUT} = 6W	H		-20		dBc
Spurious Signals	Spur		-70	-60	dBc
Operating Voltage	V _{DC}	26	28	30	Volt
Current Consumption P _{SAT} = 15 W	I _{DD}			6.5	Amp
Switching Time, 1kHz TTL, P _{IN} = 0 dBm	T _{ON} / T _{OFF}			20	μSec

MECHANICAL SPECIFICATIONS

Parameter	Value	Unit
Dimension	8.5 x 6.75 x 1.25	Inch
Weight	3.0	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 _C	-20		+65	°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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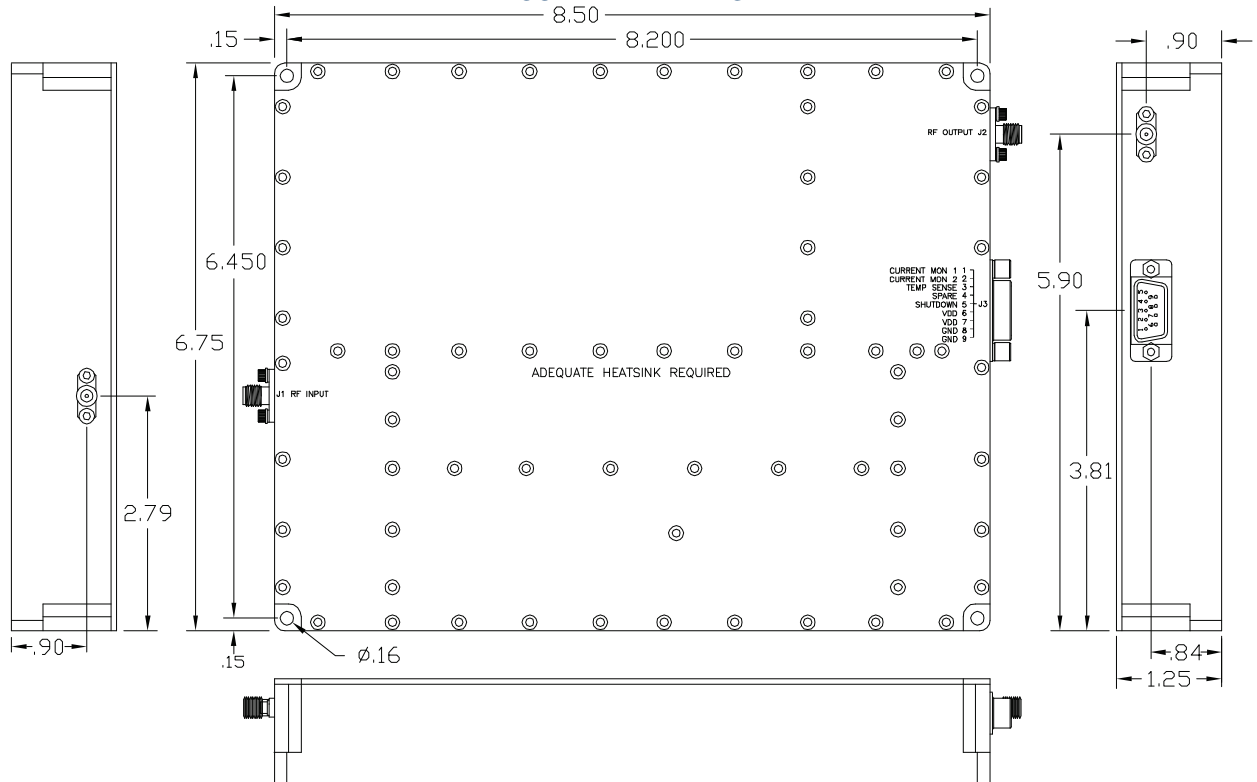
LIMITS

Input RF drive level without damage	+10 dBm	Max
Load VSWR @ P _{OUT} = 15 W	∞:1 @ all load phase & amplitude for duration of 1 minute 3:1 @ all load phase & amplitude continuous	-
Thermal Overload	Graceful degradation	Max

DC INTERFACE CONNECTOR

Pin #	Description	Specification
1	Current Monitor 1	Analog Voltage related I _{DD} @ 100mV/100mA
2	Current Monitor 2	Analog Voltage related 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	+26.0-30.0V _{DC}
8&9	GND	Ground

OUTLINE DRAWING



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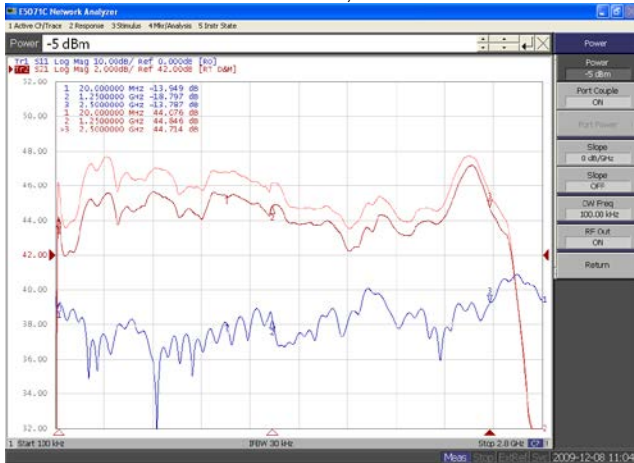
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TYPICAL PERFORMANCE PLOTS

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

Top Curve: Small Signal Gain @ $P_{IN} = -20\text{dBm}$
 Middle Curve: Power Gain @ P_{1dB} , $P_{IN} = -5.0\text{dBm}$
 Reference: 42dB, 2dB/div.
 Bottom Curve: Input Return Loss
 Reference: 0dB, 10dB/div.



Plot 2 – Small Signal Gain and P_{SAT}

Top Curve: Small Signal Gain @ $P_{IN} = -20\text{dBm}$
 Middle Curve: Power Gain @ P_{SAT} , $P_{IN} = 2\text{dBm}$
 Reference: 42dB, 2dB/div.
 Bottom Curve: Input Return Loss
 Reference: 0dB, 10dB/div.

