

Solid State Broadband High Power Amplifier

1109 - BBM2E5KCL
20 – 2500 MHz / 15 Watts

SINGLE OUTPUT CONFIGURATION

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 solid-state 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 linear design
- Instantaneous ultra broadband
- Small form factor and lightweight
- Built-in control, monitoring & protection circuits
- Suitable for CW, AM and FM (for other modulation types, consult factory).
- 50 ohm input/output impedance
- High reliability and ruggedness

ELECTRICAL SPECIFICATIONS @ +28 VDC, 25°C, 50 Ω System

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	20		2500	MHz
Power Output CW	P _{SAT}	15			Watt
Output Power @ 1 dB Gain Compression Point	P _{1dB}	6	10		Watt
Power Gain @ 1 dB Gain Compression Point	G _{1dB}	40			dB
Input Power for rated P _{OUT}	P _{IN}		0		dBm
Small Signal Gain Flatness	ΔG		±3.0	±4.0	dB
Input Return Loss	S ₁₁			-10	dB
Noise Figure @ minimum attenuation	NF			10	dB
Third Order Intercept Point 2-Tones @ 35.8 dBm/Tone, Δ =100KHz	IP3		+52		dBm
Harmonics @ P1 dB Gain Compression Point	H		-20		dBc
Spurious Signals	Spur		-70	-60	dBc
Operating Voltage	V _{DC}	26	28	30	Volt
Supply Current @ 15 W	I _{DD}			6.5	Amp
Switching Time, 1 KHz TTL, P _{IN} = 0 dBm	T _{ON} / T _{OFF}			20	μSec

MECHANICAL SPECIFICATIONS

Parameter	Value	Units	Limits
Dimensions (excluding heatsink)	8.5 x 6.75 x 1.25	Inch	Max
Weight without HS	3.0	lb.	Max
RF Connectors Input/Output	SMA Female		
DC Connectors	Dsub, 9-Pins, Male		
Cooling	External Heatsink		

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ENVIRONMENTAL CHARACTERISTICS (Design to Meet)

Parameter	Symbol	Min	Typ	Max	Unit
Operating Case Temperature	T _c	-20		+65	°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	VI	MIL-STD-810F Method 514.5 Proc I random sinusoidal Category 4 or 9 or 13			
Shock	SH	MIL-STD-810F Method 516.4 Proc I Operational: Acceleration (A) of 20.0 g ±1.5 g with Duration of 11.0 ms ±1.0 ms shock pulse. Non-Operational: Impact shocks of 25 g ±3.0 g with Duration of 11.0 ms ±1.0 ms shock pulse.			

PROTECTIONS

Input Overdrive	+10 dBm	Max
Load VSWR @ P _{OUT} = 25 W	∞:1 @ all load phase & amplitude for duration of 1 minute 3:1 @ all load phase & amplitude continuous	Nom
Thermal Overload	Graceful degradation	Max

INTERFACE CONNECTOR - Dsub, 9-Pin

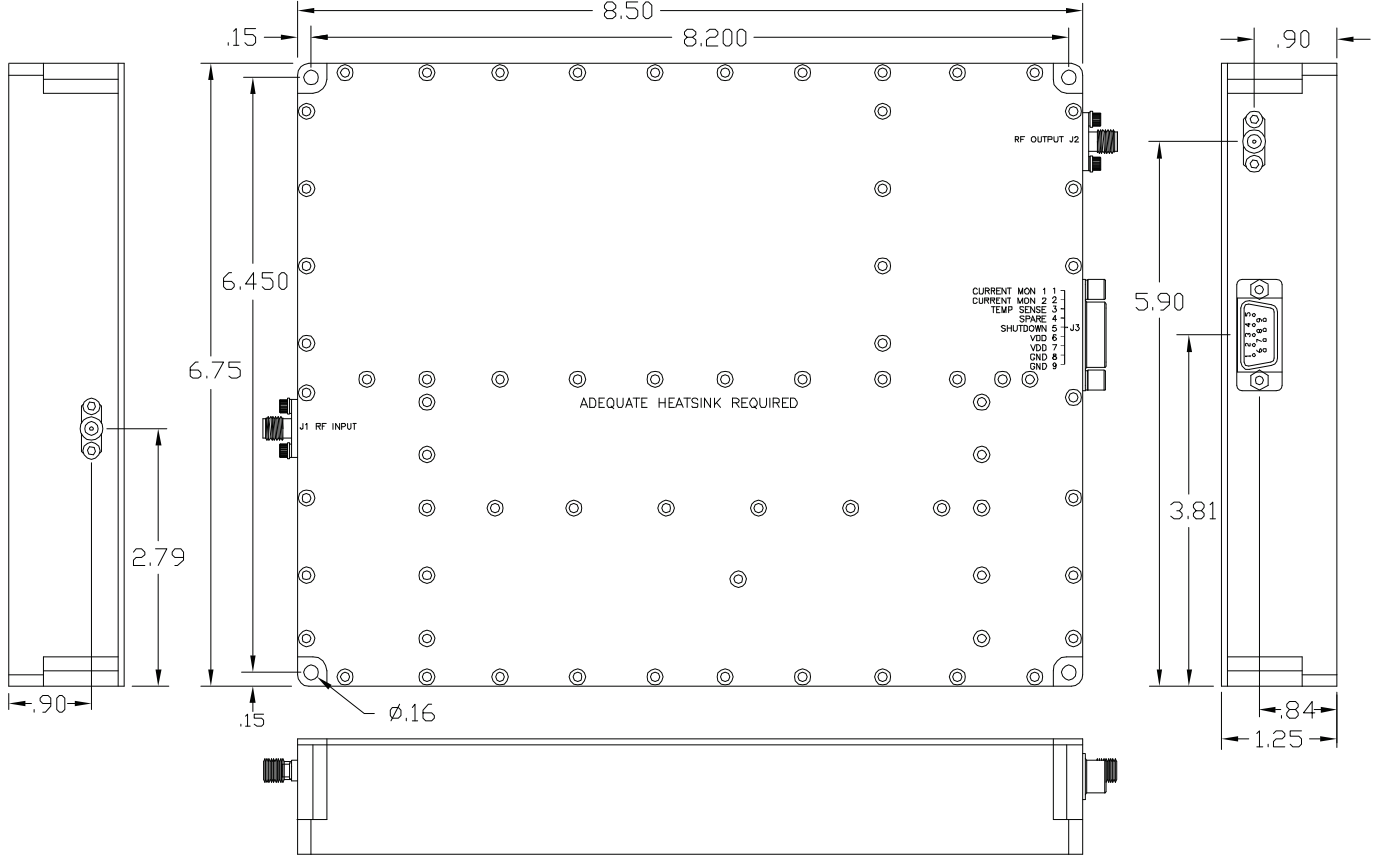
Pin #	Description	Specifications
1	Current Monitor 1	Analog Voltage related I _D @ 100 mv / 100 mA
2	Current Monitor 2	Analog Voltage related I _D @ 100 mv / 100 mA
3	Temperature Monitor	Analog voltage relative to Module's Temperature @ 10 mV/°C
4	N/C	Spare
5	Shutdown	Amplifier Enable: TTL "Low" Amplifier Disable: TTL "High"
6	VDD	+28 V _{DC} ± 2 V
7	VDD	+28 V _{DC} ± 2 V
8	GND	Ground
9	GND	Ground

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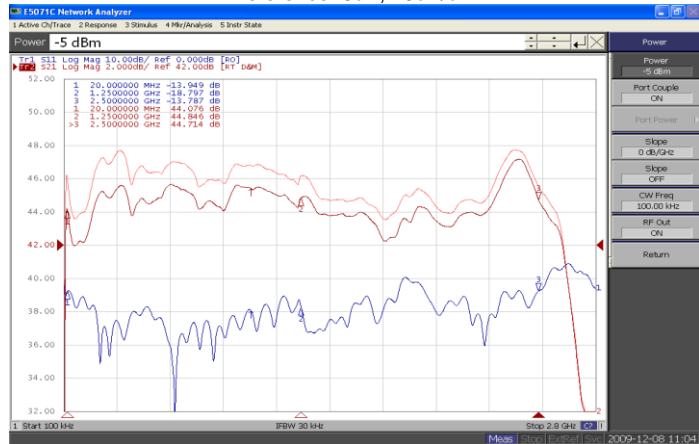
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OUTLINE DRAWING



TYPICAL PERFORMANCE PLOTS

Plot 1 – 3dB BW, Small Signal Gain and P_{1dB}
 Top Curve: Small Signal Gain @ $P_{IN} = -20dBm$
 Middle Curve: Power Gain @ P_{1dB} , $P_{IN} = -5.0dBm$
 Reference: 42dB, 2dB/div.
 Bottom Curve: Input Return Loss
 Reference: 0dB, 10dB/div.



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

