EMPOWER
RF SYSTEMS, INC.

Solid State Broadband High Power Amplifier

1012 – BBM4A5ACJ

1000 – 2000 MHz / 15 Watts

The BBM4A5ACJ (SKU 1012) is suitable for L-Band broadband linear power applications. This amplifier is utilizing Empower RF advanced GaAsFET technology achieving 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, built in high efficiency sequence regulator, EMI/RFI filters, machined housing, and qualified components. Empower RF's ISO9001 Quality Assurance Program assures consistent performance and the highest reliability.

- Solid-state class A linear design
- Instantaneous ultra broadband
- Small form factor and lightweight
- Suitable for CW, AM, and FM (Consult factory for other modulation types)
- 50 ohm input/output impedance
- High reliability and ruggedness

ELECTRICAL SPECIFICATIONS @ +13V_{DC}, 25°C, 50Ω System

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	1000		2000	MHz
Power Output CW	P_{SAT}	15			Watt
Power Output @ 1dB Gain Compression	P_{1dB}	12			Watt
Power Gain @ 1dB Gain Compression	G_{1dB}	40	42		dB
Input Power for Rated P_{SAT}	P_{IN}		0	3	dBm
Small Signal Gain Flatness, P_{IN} = -20dBm	ΔG			±1.5	dB
Input Return Loss	S_{11}			-10	dB
Noise Figure	NF			10	dB
Third Order Intercept Point 2-Tone @ 33dBm/Tone, 100kHz Spacing	IP3		+51		dBm
Harmonics @ P_{OUT} = 12W	H		-20		dBc
Spurious Signals	Spur		-70	-60	dBc
Operating Voltage	V_{DC}	12	13	15	Volt
Current Consumption @ P_{OUT} = 15W	I_{DD}		5	6	Amp

MECHANICAL SPECIFICATIONS

Parameter	Value	Unit
Dimensions	6.8 x 2.7 x 0.8	Inch
Weight	1.0	Pound
RF Connectors Input/Output	Type-SMA, Female	
DC Interface Connectors	Feed Thru/Terminal Post	
Cooling	External Heatsink (Not Supplied)	

ENVIRONMENTAL CHARACTERISTICS (Design to Meet)

Parameter	Symbol	Min	Typ	Max	Unit
Operating Case Temperature	T_C	0		+50	°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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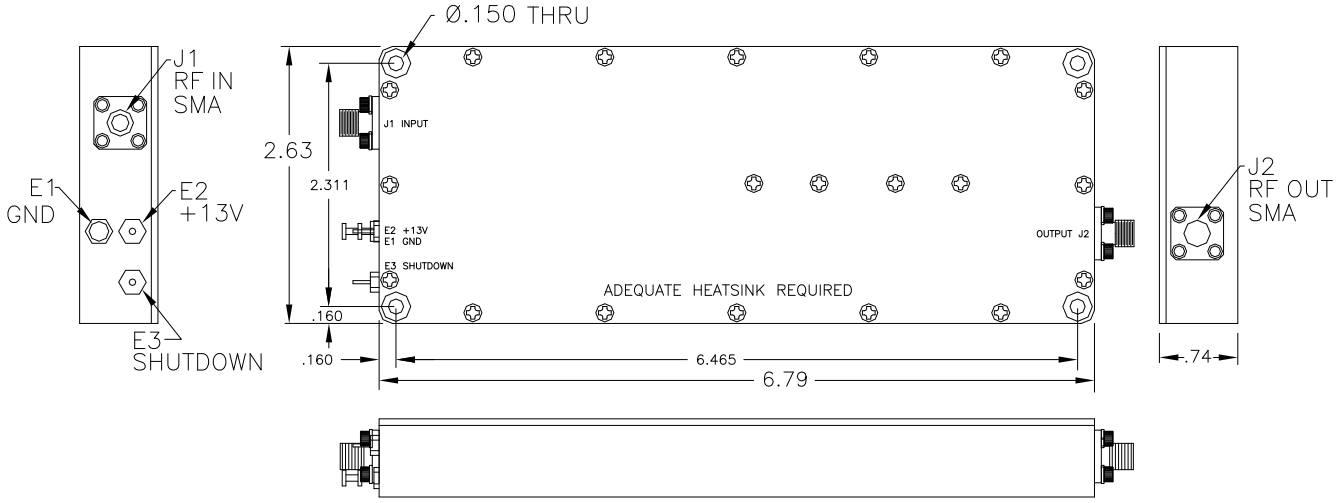
LIMITS

Input RF drive level without damage	+10 dBm	Max
Load VSWR @ P_{OUT} = 12W	∞ @ all load phase & amplitude for duration of 1 minute 3:1 @ all load phase & amplitude continuous	-
Thermal Overload	85°C shutdown	Max

DC INTERFACE CONNECTORS – Feed Thru/Terminal Post

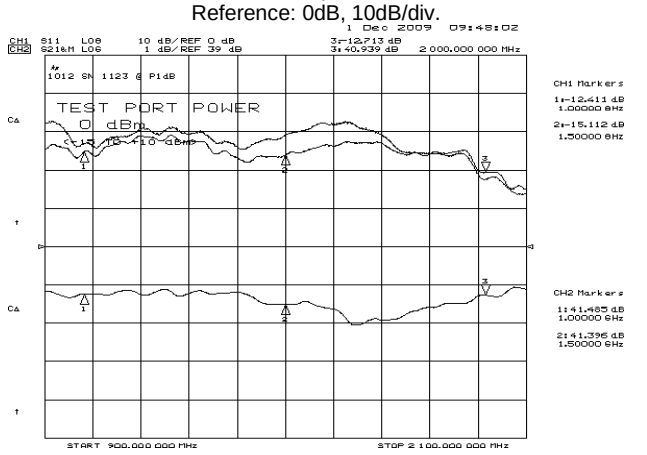
Pin #	Description	Specification
E1	GND	Ground
E2	+VDD	+12.0-15.0V_{DC}
E3	Shutdown	Amplifier Disable: TTL Logic High (5V) (*Internally Pulled-Low*)

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} =0Bm
Reference: 39dB, 1dB/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} = -20dBm
Middle Curve: P_{SAT} @ P_{IN} = 2dBm
Reference: 39dB, 1dB/div.
Bottom Curve: Input Return Loss
Reference: 0dB, 10dB/div.