EMPOWER RF SYSTEMS, INC.

Solid State Broadband High Power Amplifier

1096 - BBM2E3LKO

20 – 520 MHz / 100 Watts

The BBM2E3LKO (SKU 1096) is suitable for ultra-broadband or band specific high power RF linear applications in the VHF & UHF frequency bands. This amplifier utilizes push-pull MOSFET and LDMOS power devices that provide high gain, good dynamic range, low distortions, and excellent efficiency. 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
- Built-in Fast Switching & Protection circuits
- High reliability and ruggedness

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

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	20		520	MHz
Output Power CW	P_{SAT}	100	120		Watt
Output Power @ 1dB Gain Compression	P_{1dB}	80	100		Watt
Power Gain @ 1dB Gain Compression	G_{1dB}	50			dB
Input Power for Rated P_{SAT}	P_{IN}		0	3	dBm
Power Gain Flatness	ΔG		±1.0	±1.5	dB
Input Return Loss	S_{11}			-10	dB
Noise Figure @ max. gain	NF			10	dB
Third Order Intercept Point 2-Tone @ 37dBm/Tone, 100kHz Spacing	IP3		+56		dBm
Harmonics @ P_{OUT} = 80W	2^{ND}			-30	dBc
	3^{RD}		-15		
Spurious Signals	Spur		-70	-60	dBc
Operating Voltage	V_{DC}	24	28	30	Volt
Quiescent Current	I_{DQ}		2.0		Amp
Current Consumption @ P_{OUT} = 100W CW	I_{DD}		10	12.5	Amp
Switching Time @ 1kHz TTL, P_{IN} = 0dBm	$T_{ON/OFF}$		5		µSec

MECHANICAL SPECIFICATIONS

Parameter	Value	Unit
Dimensions	6.0 x 2.5 x 1.5	Inch
Weight	1	Pound
RF Connectors Input/Output	Typ-SMA, Female	
DC Interface Connections	Feed Thru	
Cooling	External Heatsink (Not Supplied)	

ENVIRONMENTAL CHARACTERISTICS (Design to Meet)

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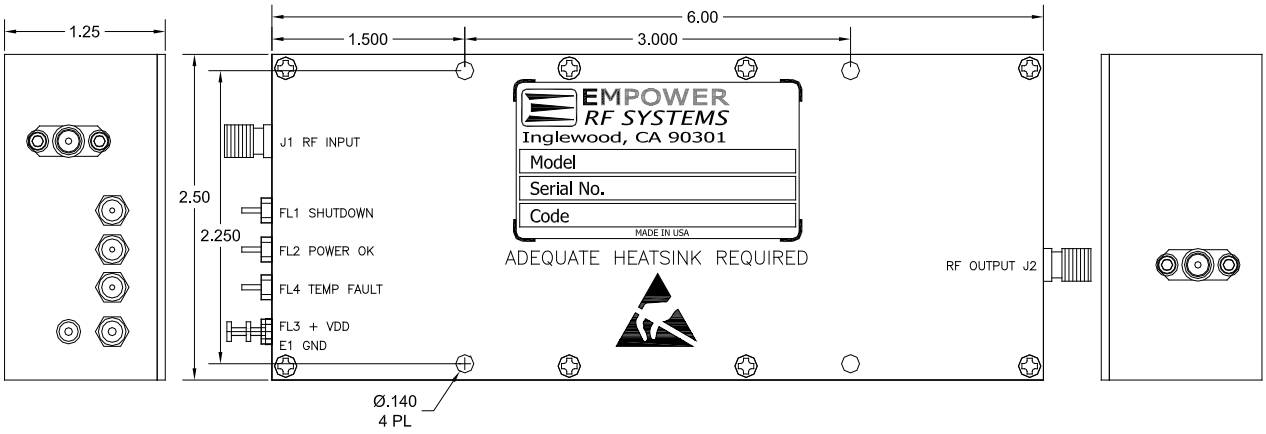
LIMITS

Input RF drive level without damage	+10 dBm	Max
Load VSWR @ P_{OUT} = 80W	∞ @ any angle & amplitude for duration of 5 Seconds 3:1 @ any angle & amplitude continuous	-
Thermal Overload	85°C Shutdown	Max

DC INTERFACE CONNECTIONS – Feed Thru

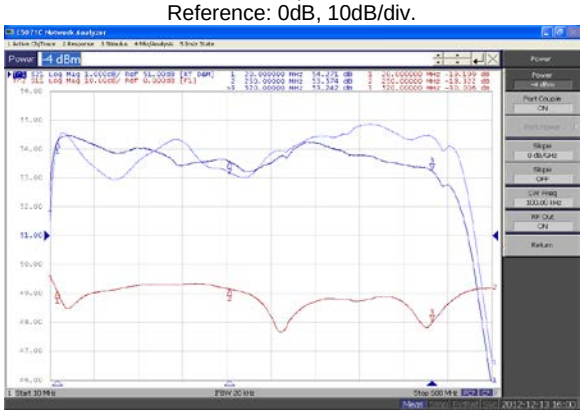
Pin #	Description	Specification
FL1	Shutdown	Amplifier Disable: TTL Logic High (5V) (*Internally Pulled-Low*)
FL2	Power OK	P_{OUT} < 50 Watt TTL Logic Low P_{OUT} > 50 Watt TTL Logic High
FL3	VDD	+28.0V_{DC} nominal (Operational @ 24.0-30.0V_{DC})
FL4	Temp Fault	Temperature Fault = > 85°C TTL Logic High (*Normally TTL Logic Low*)
FL5	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} = -4dBm
Reference: 51dB, 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: Power Gain @ P_{SAT}, P_{IN} = -1dBm
Reference: 51dB, 1dB/div.
Bottom Curve: Input Return Loss
Reference: 0dB, 10dB/div.