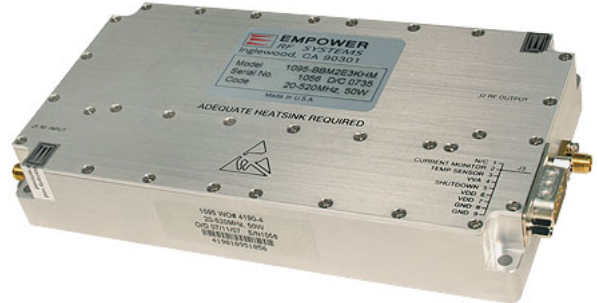


## Solid State Broadband High Power Amplifier

**1095 - BBM2E3KHM**
**20 – 520 MHz / 50 Watts**

The BBM2E3KHM (SKU 1095) is suitable for VHF & UHF broadband and band specific high power linear applications. This amplifier utilizes push-pull LD MOS power devices that provide high gain, wide dynamic range, low distortions, and good 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
- Suitable for CW, AM, and FM (Consult factory for other modulation types)
- Small and lightweight
- Built-in Control, Monitoring & Protection Circuits
- 50 ohm input/output impedance
- High reliability and ruggedness

### ELECTRICAL SPECIFICATIONS @ +27.5 V<sub>DC</sub>, +25°C, 50Ω System

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	20		520	MHz
Output Power CW	P <sub>SAT</sub>	60			Watt
Output Power @ P <sub>1dB</sub> Gain Compression	P <sub>1dB</sub>	50			Watt
Power Gain @ P <sub>1dB</sub> Gain Compression	G <sub>1dB</sub>	46			dB
Input Power for Rated P <sub>SAT</sub>	P <sub>IN</sub>		0	3	dBm
Small Signal Gain Flatness	ΔG		±1.0	±1.5	dB
Gain Adjustment Range	VVA	25			dB
Input Return Loss	S <sub>11</sub>			-10	dB
Noise Figure @ max. gain	NF			10	dB
Third Order Intercept Point	IP3		+49		dBm
2-Tone @ 33dBm/Tone, 100kHz Spacing					
Harmonics @ P <sub>OUT</sub> = 50W	2 <sup>ND</sup> /3 <sup>RD</sup>		-40/-20		dBc
Switching Time @ 1kHz TTL, P <sub>IN</sub> = 0dBm	T <sub>ON</sub> /T <sub>OFF</sub>		2.0	5.0	uSec
Operating Voltage	V <sub>DD</sub>	26	27.5	28	Volt
Optional Operating Voltage (Option DCB)	V <sub>DD</sub>	24	26	28	Volt
Current Consumption @ P <sub>OUT</sub> = 50W	I <sub>DD</sub>		8.0	9.0	Amp

### ENVIRONMENTAL CHARACTERISTICS (Design to Meet)

Parameter	Symbol	Min	Typ	Max	Unit
Operating Case Temperature	T <sub>C</sub>	-40		+85	°C
Non-operating Temperature	T <sub>STG</sub>	-45		+85	°C
Relative Humidity (non-condensing)	RH			95	%
Altitude (MIL-STD-810F Method 500.4)	ALT			30,00	Feet
Vibration/Shock MIL-STD-810F Method 514.5/516.5 Proc 1	SH / VI		Airborne		

### MECHANICAL SPECIFICATIONS

Parameter	Value	Unit
Dimension	6.4 x 3.4 x 1.1	Inch
Weight	2.0	Pound
RF Connectors Input/Output	Type-SMA, Female	
DC Interface Connector	D-Sub 9-Pin, Male	
Cooling	External Heatsink (not supplied)	

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**20 – 520 MHz / 50 Watts**

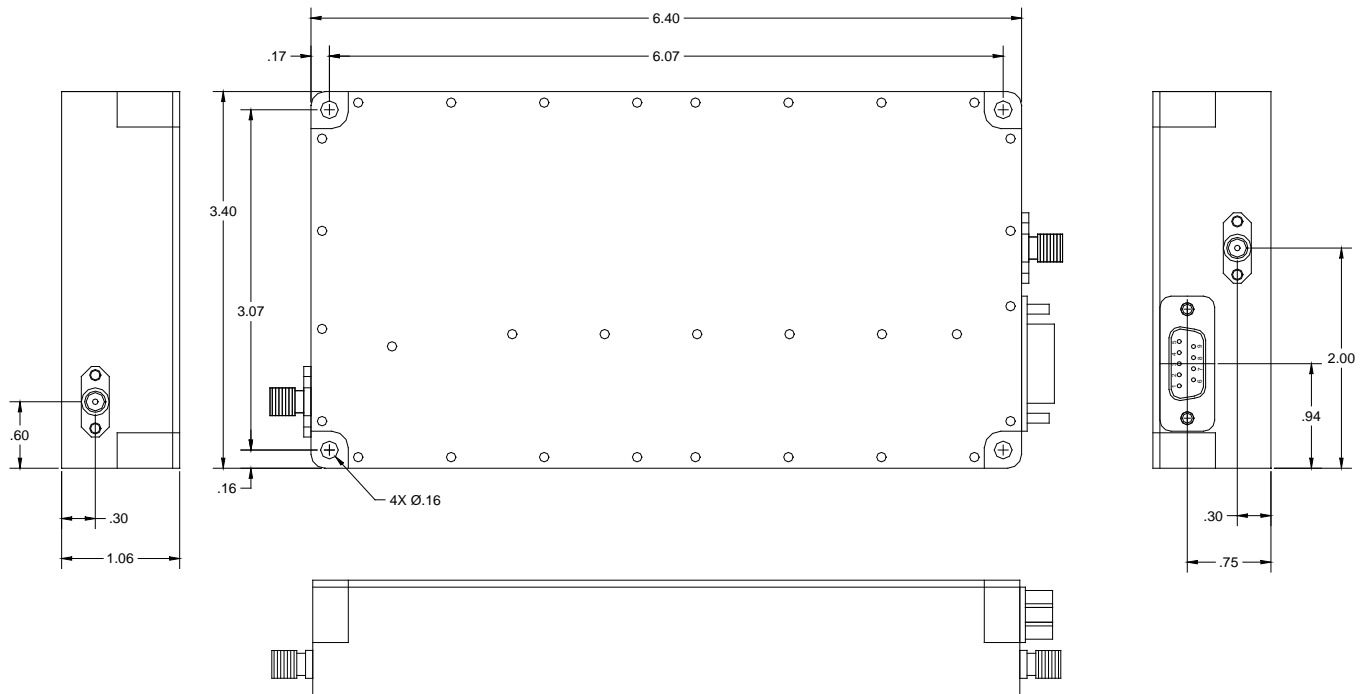
### LIMITS

Input RF drive level without damage	$P_{OD}$	+10 dBm	Max
Load VSWR @ $P_{OUT} = 50W$	$\Psi$	$\infty$ @ all load phase & amplitude for a duration of 1 minute	-
Load VSWR @ $P_{OUT} = 50W$	$\Psi$	3:1 @ all load phase & amplitude continuous	-
Thermal Overload	$T_{OL}$	85°C shutdown	Max

### INTERFACE CONNECTOR - D-Sub, 9-Pin

Pin #	Description	Specification
1	N/C	No Connection
2	Current Monitor	Analog voltage relative to $I_{DD}$ @ 50mV/100mA
3	Temp Sensor	Analog voltage relative to Module's Temperature @ 10mV/°C
4	VVA	Control Voltage Range: 0-5V <sub>DC</sub> Maximum Gain – 0V <sub>DC</sub> Minimum Gain – 5V <sub>DC</sub>
5	Shutdown	Amplifier Disable: TTL Logic High (5V) (Internally Pulled-down)
6&7	VDD	+26.0-28.0V <sub>DC</sub>
8&9	GND	Ground

### OUTLINE DRAWING



### Features:

- Built-in gain adjust VVA
- Fast switching - Mute function
- Reverse polarity protection
- Temperature protection
- Temperature indication
- Current limit protection
- Current consumption indicator

# Solid State Broadband High Power Amplifier

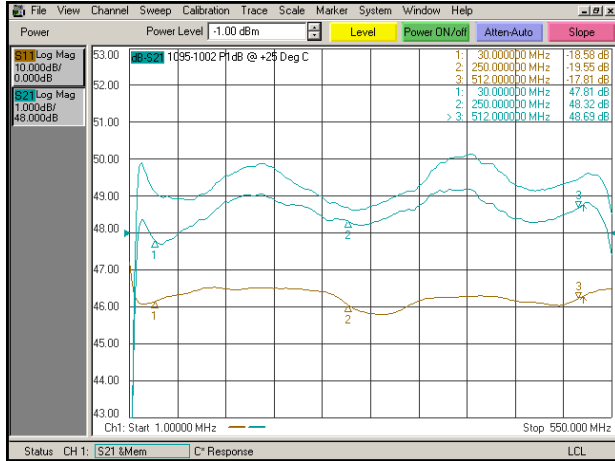
1095 - BBM2E3KHM

20 – 520 MHz / 50 Watts

## TYPICAL PERFORMANCE PLOTS

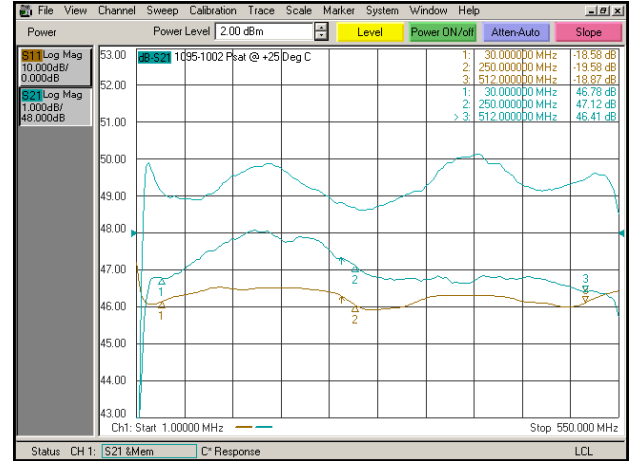
**Plot 1 – Small Signal Gain and  $P_{1dB}$**

Top Curve: Small Signal Gain @  $P_{IN} = -20dBm$   
 Middle Curve: Power Gain @  $P_{1dB}$ ,  $P_{IN} = -1.2dBm$   
 Reference: 48dB, 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 @  $P_{SAT}$ ,  $P_{IN} = 1.8dBm$   
 Reference: 48dB, 1dB/Div.  
 Bottom Curve: Input Return Loss  
 Reference: 0dB, 10dB/Div.



**Plot 3 – Gain Adjustment Range,  $P_{IN} = -20dBm$**

Top Curve: Max Gain @  $V_{VACTRL} = 0V$   
 Middle Curve: Min Gain @  $V_{VACTRL} = 5V$   
 Reference: 30dB, 10dB/Div.  
 Bottom Curve: Input Return Loss @ Minimum Gain  
 Reference: 0dB, 10dB/Div.

