

# 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 LDMOS 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 linear design
- Instantaneous ultra broadband
- Small and lightweight
- Built in Control, Monitoring & Protection Circuits
- 50 ohm input/output impedance
- High reliability and ruggedness

## ELECTRICAL SPECIFICATIONS @ +27.5 VDC, +25°C, 50 Ω System

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	20		520	MHz
Power Output CW	P <sub>SAT</sub>	60			Watt
Power Output @ 1 dB Gain Compression Point	P <sub>1dB</sub>	50			Watt
Power Gain @ 1 dB Gain Compression Point	G <sub>1dB</sub>	46			dB
Input Power for Rated Output	P <sub>IN</sub>		0		dBm
Small Signal Gain Flatness	ΔG		±1.0	±1.5	dB
Gain Adjustment Range (VVA: 0 – 5 VDC)	VVA	25			dB
Input Return Loss	S11			-10	dB
Noise Figure @ max Gain	NF			10	dB
Third Order Intercept Point 2 - Tones, Pout = 2 W/Tone, Δ = 100 KHz	IP3		+53		dBm
Harmonics @ 50 W	2 <sup>nd</sup>		-40		dBc
	3 <sup>rd</sup>		-20		
Switching Time (Enable = TTL Low <sup>†</sup> )	T <sub>SW</sub>			1.0	uSec
Operating Voltage	VDC	26	27.5	28	Volt
Optional Operating Voltage (Option DCB)	VDC	24	26	28	Volt
Current Consumption @ 50 W	IDD		8.0	9.0	Amp

## ENVIRONMENTAL CHARACTERISTICS

Parameter	Symbol	Min	Typ	Max	Unit
Operating Case Temperature	T <sub>c</sub>	-40		+85	°C
Storage Temperature	T <sub>stg</sub>	-45		+85	°C
Relative humidity (non-condensing)	RH			95	%
Altitude (MIL-STD-810F Method 500.4)	ALT	10,000			Feet
Shock / Vibration (MIL-STD-810F Method 516.5)	SH / VI		Airborne		

## MECHANICAL SPECIFICATIONS

Parameter	Value	Units
Dimensions	6.4 x 3.4 x 1.1	Inch
Weight	2.0	lb.
RF Connectors In/Out	SMA female	
DC & Control Connector	Dxub, 9-Pin, or Feed-thru	
Cooling	External Heatsink	

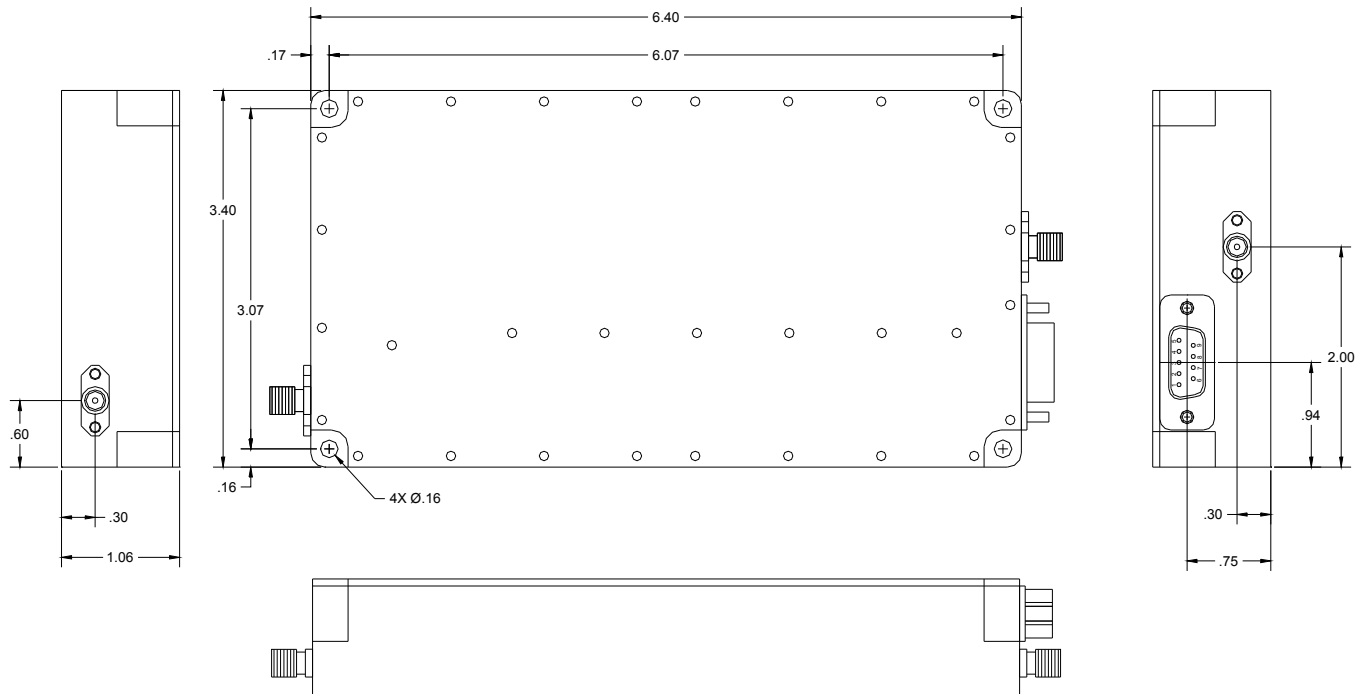
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**PROTECTIONS**

Input Overdrive	$P_{OD}$	+10 dBm	Max
Load VSWR	$\Psi$	$\infty$ @ all load phase & amplitude	Nom
Thermal Overload	$T_{OL}$	85°C shutdown	Max

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

Pin #	Description	Specifications
1	N/C	
2	Current Consumption Monitor	Analog voltage relative to $I_D$ @ 50 mV/100 mA
3	Temperature Monitor	Analog voltage relative to Module's Temperature @ 10 mV/°C
4	VVA	Max Gain = 0 VDC Min Gain = 5 VDC
5	Mute (On/Off Switching)	Enable: TTL "Low" or Open Disable: TTL "High"
6	VDD	26 – 28 VDC
7	VDD	26 – 28 VDC
8	GND	Ground
9	GND	Ground

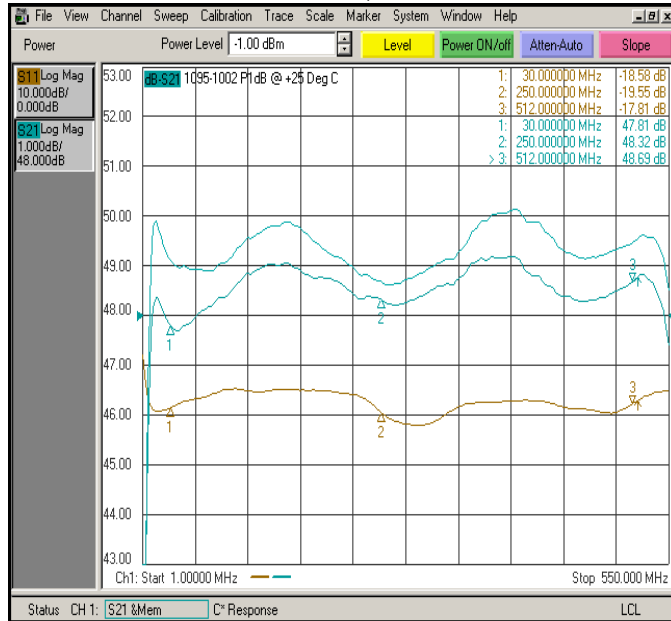
**OUTLINE DRAWING**

**Features:**

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

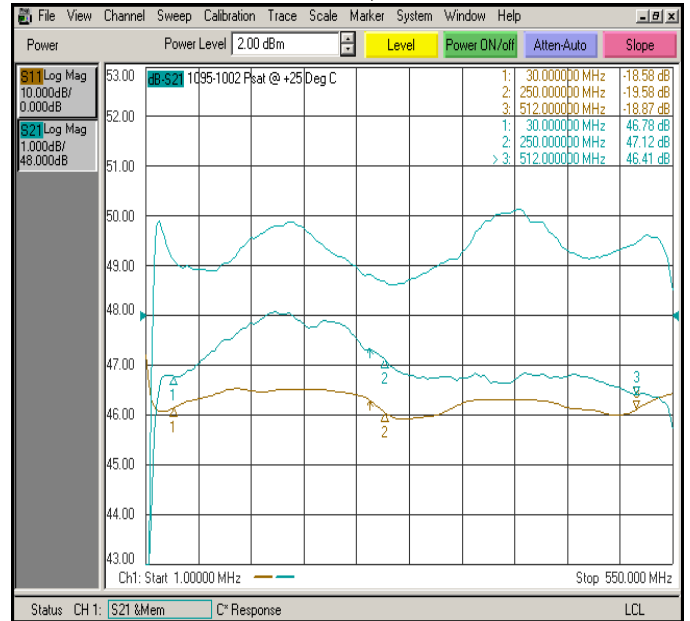
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**TYPICAL PERFORMANCE PLOTS**
**Plot 1**

Top Curve: Small Signal gain @ Pin = -20dBm  
 Middle Curve: Power Gain, Pin = -1.2dBm (**Corrected**)  
 Reference: 48dB, 1dB/Div.  
 Bottom Curve: Input VSWR  
 Reference: 0dB, 10dB/Div.


**Plot 2**

Top Curve: Small Signal gain @ Pin = -20dBm  
 Middle Curve: Output Power @ Pin = 1.8dBm (**Corrected**)  
 Reference: 48dB, 1dB/Div.  
 Bottom Curve: Input VSWR  
 Reference: 0dB, 10dB/Div.


**Plot 3 - VVA Dynamic Range**

Top curve: Max Gain @ VVA = 0V  
 Middle curve: Min Gain @ VVA = 5.0V  
 Pin = -20dBm, Reference: 30dB, 10dB/Div.  
 Bottom Curve: Input VSWR  
 Reference: 0dB, 10dB/Div.

