

Solid State Broadband High Power Amplifier

1100 – BBM2E4AJP
20 – 1000 MHz, 80 Watts

The BBM2E4AJP (SKU 1100) is suitable for ultra broadband or band specific high power linear applications. This amplifier utilizes silicon LDMOS power devices that provide high gain, wide dynamic range, low distortion 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
- Extremely wide instantaneous bandwidth
- Compact and lightweight
- Built-in control, monitoring and protection circuits
- Suitable for CW, AM and FM (for other modulation types, consult factory)
- 50 ohm input and output impedance
- Highly rugged and reliable

RoHS Compliant available
 SKU# 1100-0006

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

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	20		1000	MHz
Power Output (CW)	P _{SAT}	80			Watt
Output Power @ 1 dB Gain Compression Point	P _{1dB}	50			Watt
Small Signal Gain	G _{1dB}	49	52	55	dB
Input Power for Rated P _{out}	P _{IN}		0		dBm
Small Signal Gain Flatness	ΔG			±1.5	dB
Gain Adjustment Range	VVA	25	30		dB
Input Return Loss	S ₁₁			-10	dB
Noise Figure @ Max Gain	NF			10	dB
Third Order Intercept Point 2-Tones @ 43 dBm/Tone, Δ = 1MHz	IP3		+53		dBm
Harmonics @ rated P _{1dB}	2 nd / 3 rd		-40 / -20		dBc
Spurious Signals	Spur			-60	dBc
Operating Voltage	VDC	26	28	30	Volt
Supply Current @ 80 Watts RF Output	I _{DD}			9.5	Amp
Quiescent Current	I _{DQ}		6.2	6.5	Amp
Switching Speed (10% to 90%)	T _{SW}		2	5	μs

MECHANICAL SPECIFICATIONS

Parameter	Value	Units	Limits
Dimensions	6.4 x 3.4 x 1.1	Inch	Max
Weight	1.0	lb.	Max
RF Connectors, Input/Output	SMA female		
DC Connectors	Dsub, 9-Pins, Male		
Cooling	External Heatsink		

ENVIRONMENTAL CHARACTERISTICS (Design to Meet)

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

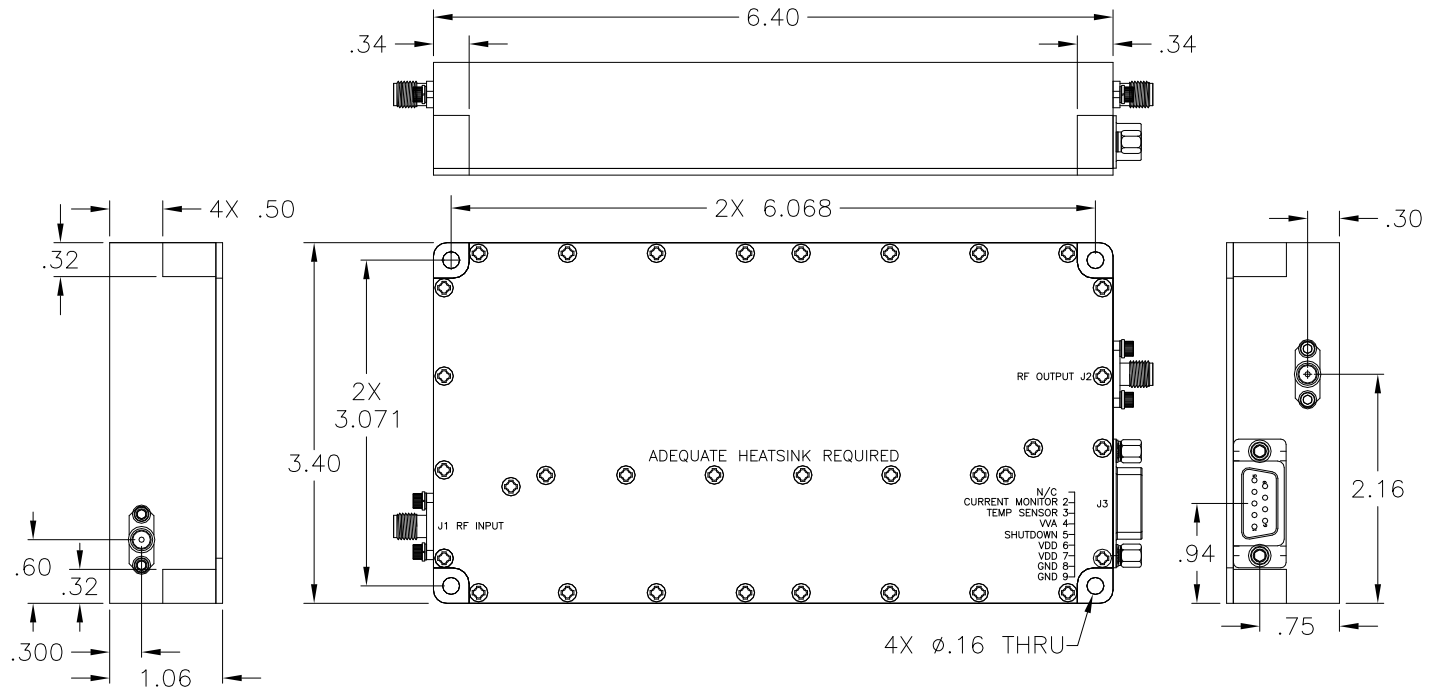
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PROTECTIONS

Input Overdrive	+10 dBm	Max
Load VSWR @ P _{out} = 80 W	∞ @ any angle & amplitude for duration of 1 minute 3:1 @ any angle & amplitude continuous	Nom
Thermal Overload	Graceful degradation	Max

INTERFACE CONNECTOR – Dsub, 9-Pin

Pin #	Description	Specifications
1	Reserved	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	Continuous Analog 0-5 VDC levels Minimum Gain: 5 VDC Maximum Gain: 0 VDC
5	Shutdown	Amplifier Enable: TTL "Low" (Logic 0) or Open Amplifier Disable: TTL "High" (Logic 1)
6, 7	VDD	+28 VDC ± 2 VDC
8, 9	GND	Ground

OUTLINE DRAWING

Features:

- Fast-switching Shutdown function
- Reverse polarity protection
- Over-temperature protection
- Temperature indication
- High-temp graceful degradation
- Current limit protection
- Current consumption indication

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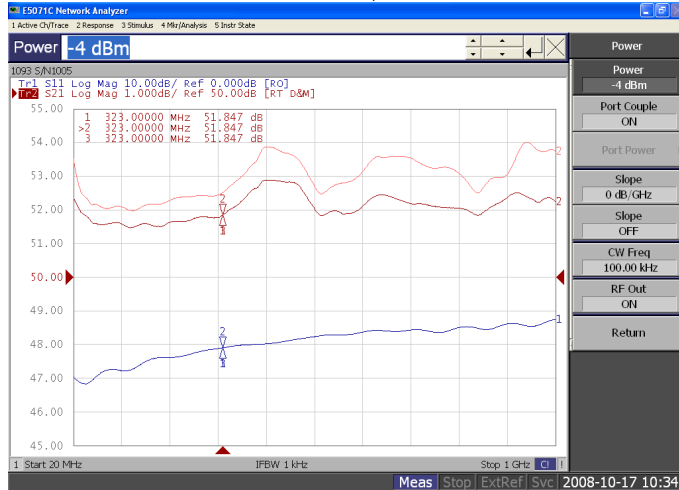
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TYPICAL PERFORMANCE PLOTS

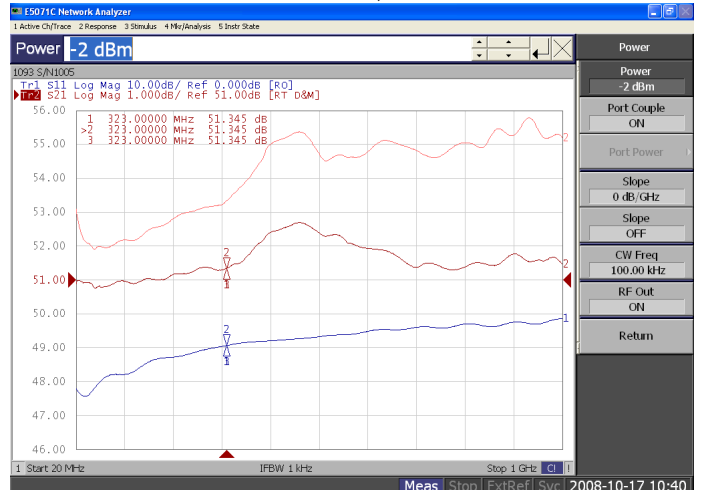
Plots 1 - Small Signal and P_{1dB} Gain

Top Curve: Small Signal Gain @ $P_{IN} = -20dBm$
 Middle Curve: Power Gain @ P_{1dB} , $P_{IN} = -4.0dBm$
 Reference: 50dB, 1dB/div.
 Bottom Curve: Input Return Loss
 Reference: 0dB, 10dB/div.



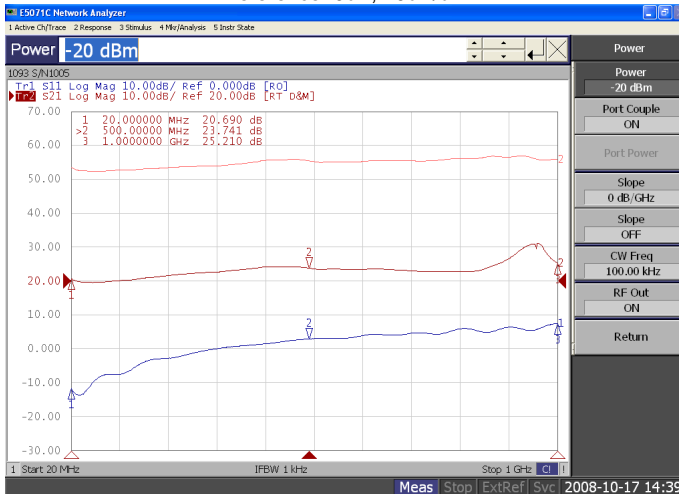
Plot 2 - Small Signal and P_{SAT}

Top Curve: Small Signal Gain @ $P_{IN} = -20dBm$
 Bottom Curve: P_{SAT} @ $P_{IN} = -2.0dBm$
 Reference: 51dB, 1dB/div.
 Middle Curve: Input Return Loss
 Reference: 0dB, 10dB/div.



Plots 3 – Gain Adjustment Range

Top Curve: Max Gain @ $P_{IN} = -20dBm$
 Middle Curve: Min Gain @ $P_{IN} = -20.0dBm$
 Reference: 20dB, 10dB/div.
 Bottom Curve: Input Return Loss
 Reference: 0dB, 10dB/div.



Plots 4 - Gain/Phase Delta, $P_{IN} = 0dBm$ (Ref in memory)

Top Curves: Power Gain vs. Ref. Unit
 Reference: 47dB, 1dB/div.
 Bottom Curve: Phase vs. Ref. Unit
 Reference: -110deg, 10deg/div.

