

Solid State Broadband High Power Amplifier

1023-BBM0K4AAJ
0.5 – 1000 MHz / 10 Watts

The BBM0K4AAJ (SKU 1023) is suitable for ultra broadband and band specific high power linear applications. This amplifier utilizes push-pull MOSFET 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 A linear design
- Instantaneous ultra broadband
- Small and lightweight
- Suitable for CW, AM, and FM (Consult factory for other modulation type)
- 50 ohm input/output impedance
- Built-in Voltage Variable Attenuator
- High reliability and ruggedness

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

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	0.5		1000	MHz
Output Power CW	P _{SAT}	10	15		Watt
Output Power @ P _{1dB} Gain Compression	P _{1dB}	5	8		Watt
Power Gain @ P _{1dB}	G _{1dB}	40			dB
Input Power for Rated P _{SAT}	P _{IN}		0	3	dBm
Small Signal Gain Flatness	ΔG		±1.0	±1.5	dB
Gain Adjustment Range	VVA	25	30		dB
Input Return Loss	S ₁₁			-10	dB
Noise Figure @ Maximum Gain	NF		7	10	dB
Third Order Intercept Point 2-Tone @ 27dBm/Tone, 100kHz Spacing	IP3		+49		dBm
Harmonics @ P _{OUT} = 5W	H		-25		dBc
Spurious Signals	Spur		-70	-60	dBc
Operating Voltage	V _{DC}	26	28	30	Volt
Current Consumption @ P _{OUT} = 10W CW	I _{DD}		2.0	3.0	Amp

MECHANICAL SPECIFICATIONS

Parameter	Value	Unit
Dimensions (L x W x H)	6.0 x 3.0 x 1.1	Inch
Weight	1.0	Pound
RF Connectors Input / Output	Type-SMA, Female	
DC Interface Connector	D-Sub 9-Pin, Male	
Cooling	External Heatsink (not supplied)	

ENVIRONMENTAL CHARACTERISTICS (Design to Meet)

Parameter	Symbol	Min	Typ	Max	Unit
Operating Case Temperature	T _C	0		+75	°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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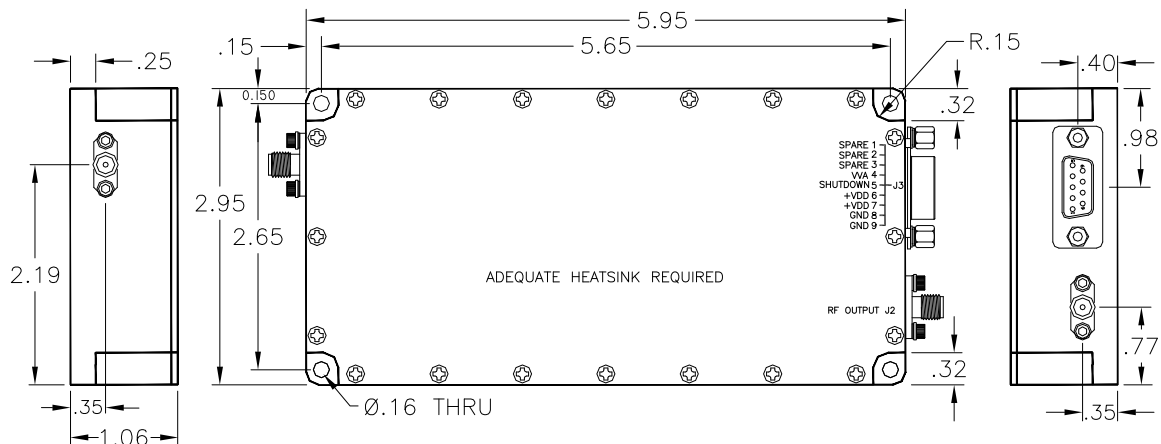
LIMITS

Input RF drive level without damage	+10 dBm	Max
Load VSWR @ P _{OUT} = 5W	∞ @ all load phase & amplitude for duration of 1 minute 3:1 @ all load phase & amplitude continuous	-
Thermal Overload	85°C shutdown	Max

DC INTERFACE CONNECTOR – D-Sub 9-Pin, Male

Pin #	Description	Specification
1-3	N/C	No Connection
4	VVA	Control voltage range; 0-5V _{DC} Maximum Gain = 5V _{DC} , Minimum Gain = 0V _{DC}
5	Shutdown	Amplifier Disable: TTL Logic High (5V) (Internally Pulled-low)
6&7	VDD	26.0-30.0V _{DC}
8&9	GND	Ground

OUTLINE DRAWING



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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} = -2.0dBm
 Reference: 38dB, 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} = 2.0dBm
 Reference: 38dB, 1dB/div.
 Bottom Curve: Input Return Loss
 Reference: 0dB, 10dB/div.



Plot 3 – Gain Adjustment Range

Top Curve: Maximum Gain @ V_{VACTRL} = 5V_{DC}, P_{IN} = -20dBm
 Bottom Curve: Minimum Gain @ V_{VACTRL} = 0V_{DC}, P_{IN} = -20dBm
 Reference: 20dB, 10dB/Div.
 Middle Curve: Input Return Loss @ Minimum Gain
 Reference: 0dB, 10dB/Div.

