

Solid State Broadband High Power Amplifier

1199 – BBM4A6AKQ

1000 – 3000 MHz / 100 Watts

The BBM4A6AKQ (SKU 1199) is a 1000 to 3000 MHz amplifier which is guaranteed to deliver 100W minimum output power and related RF performance under all specified temperature and environmental conditions. Typical power output is 125W and other typical performance parameters are also listed as a guide for consideration, but not guaranteed. This amplifier is suitable for broadband mobile jamming and band specific high power linear applications in the L and S frequency bands. This compact module utilizes the latest high power RF GaN transistors and also features built-in control and monitoring, with protection functions to ensure high availability.



- Solid-state Class AB linear design
- Instantaneous ultra broadband
- Suitable for CW, AM, FM and pulse (Consult factory for other modulation types)
- Small and lightweight
- 50 ohm input/output impedance
- High reliability and ruggedness
- Built-in control, monitoring and protection circuits
- RS485 serial interface for monitoring and control

ELECTRICAL SPECIFICATIONS @ 48.0V_{DC}, Over Temperature and Environmental Conditions, as specified.

Parameter	Symbol	Unit	Test Conditions	Min	Typ	Max
Operating frequency	BW	MHz		1000		3000
Peak output power	P _{SAT}	W	CW input signal	100	125	
Gain, small signal	G _{SS}	dB	Measured with VNA in swept frequency mode at -20dBm CW. Input power calibrated / measured at the amplifier input port. Variable attenuator set to nominal attenuation.	55	58	61
Gain flatness small signal	ΔG _{SS}	dB	Test conditions the same as G _{SS}			±3
Gain adjustment range	G _{ADJ}	dB	Test conditions the same as G _{SS}	15		
Gain adjustment step size	G _{STEP}	dB	Test conditions the same as G _{SS}	0.5		
Maximum input power without damage	P _{IN, Max}	dBm	CW input signal for unlimited duration.			20
Input return loss	IRL	dB	Measured with VNA in swept frequency mode at -20dBm and 0dBm CW. Input power calibrated / measured at the amplifier input port. Variable attenuator set to nominal attenuation.			-10
Noise figure	NF	dB	Variable attenuator set to nominal attenuation.			15
2 ND harmonics	2 ND	dBc	Variable attenuator set to nominal attenuation. CW signal source at an output power of 100W.			-10
3 RD harmonics	3 RD	dBc	Variable attenuator set to nominal attenuation. CW signal source at an output power of 100W.			-20
Spurious	Spur	dBc	Variable attenuator set to nominal attenuation. CW signal source of 0dBm at the input to the amplifier. Input power is calibrated / measured at the amplifier input port. Spurious defined as any non-harmonic amplifier output. Spurious measured in a 1kHz resolution bandwidth, 10kHz video bandwidth. Specifications apply at offsets of greater than or equal to +/-10kHz from the RF carrier. Maximum measurement frequency is 6.5GHz.			-60
Operating voltage	V _{DC}	V	Note: Output power capabilities and gain will vary with voltage.	46	48	50
Current consumption	I _{DC}	A	Variable attenuator set to nominal attenuation. Measurement at an output power of 100W with a CW source.		6.5	9

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PA enable / Disable time	T _{ON/OFF}	uSec	Variable attenuator set to nominal attenuation. Measurement with 0dBm CW signal presented to the input of the amplifier. Rise and fall times of amplifier output envelope recorded. Rise and fall times at 10% / 90% of the output power in linear scale. PA Enable / Disable signal set to 10kHz repetition rate and 50% duty cycle.			1
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PA PROTECTION / RUGGEDNESS

The PA includes protection circuits for:

- Over temperature
- Over voltage
- Reverse polarity
- Over current

In addition to protection circuits, the PA will withstand full reflection at the RF output port at any angle for up to 1 minute at P3dB.

ENVIRONMENTAL SPECIFICATIONS

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			30,000	Feet
Vibration/Shock MIL-STD-810F Method 514.5/516.5 – Proc 1	VI/SH		Airborne		

MECHANICAL SPECIFICATIONS

Parameter	Value	Unit
Dimensions	7.0 x 4.0 x 1.1	Inch
Weight	1.5	Pound
RF Connectors	Input: Type-SMA, Female Output: Type-SMA, Female	
DC Interface Connector	Hybrid – D-sub 17-pin, Male (17W2)	
Cooling	External Heatsink Required (not supplied)	

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DC INTERFACE CONNECTOR

Pin #	Description	Specification
A1	GND	Ground Return
A2	VDD	Supply Voltage: +46.0-50.0V _{DC} , 48.0V _{DC} Nominal
1	RS485 (-)	Serial Communication Bus
2	Temperature Reporting	N/A – (<i>Temperature Monitor Reporting is currently available ONLY from RS485</i>)
3	Address 1	Hardware Address 1
4	Address 3	Hardware Address 3
5	Attenuator Setting	N/A – (<i>Attenuation/Gain control is currently available ONLY from RS485</i>)
6	PA Enable	0/3.3V logic levels: Power Amplifier disable is a TTL Logic Low (0V). (Internally Pulled-High 3.3V) Leave pin open or pulled high to utilize RS-485 interface.
7	Alarm	Amplifier Alarm indicator: Normally TTL Low A logic High indicates a fault condition, 0/3.3V Logic Levels
8	RS485 (+)	Serial Communication Bus
9	Current Reporting	N/A – (<i>Current Monitor Reporting is currently available ONLY from RS485</i>)
10	Address 0	Hardware Address 0 – Least significant bit
11	Address 2	Hardware Address 2
12	Address 4	Hardware Address 4 – Most significant bit
13	Not Used	No Connection
14	Not Used	No Connection
15	Reset	Hardware reset Logic 0 to reset PA and clear latched faults

OUTLINE DRAWING

