

Solid State Broadband High Power Amplifier

1154 - BBM1C4A6F
1 – 1000 MHz / 4 Watts

The BBM1C4A6F (SKU 1154) is suitable for ultra broadband and band specific high power linear applications. This amplifier module utilizes MOSFET power devices that provide high gain, wide dynamic range 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 form factor and lightweight
- Suitable for most modulation types (contact factory for details)
- 50 ohm input/output impedance
- High reliability and ruggedness
- Built in control, monitoring and protection circuits



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

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	1		1000	MHz
Power Output CW	P _{SAT}	4	5		Watt
Power Output @ 1 dB Gain Compression Point	P _{1dB}	3			Watt
Gain @ P1 dB Gain Compression Point	G _{1dB}	32			dB
Input Power for Rated Pout	P _{IN}		4		dBm
Small Signal Gain Flatness	ΔG			±1.0	dB
VVA Adjustment Range	VVA		25		dB
Input Return Loss	S ₁₁			-10	dB
Noise Figure	NF		7	10	dB
Harmonics @ rated P1 dB Gain Compression Point	H		-25		dBc
Third Order Intercept Point 2-tones, P _{OUT} =26 dBm/tone, Δ = 100 KHz	IP3		+43		dBm
Spurious Signals	Spur		-70	-60	dBc
Operating Voltage	V _{DC}	26	28	30	Volt
Quiescent Current	I _{DQ}		1.0		Amp
Current Consumption @ rated P _{OUT}	I _{DD}			1.5	Amp

MECHANICAL SPECIFICATIONS

Parameter	Value	Units	Limits
Dimensions (excluding heatsink)	3.5 x 2.5 x 1.1	Inch	Max
Weight without HS / with HS	1.0 / 2.5	lb.	Max
RF Connectors In/Out	SMA female		
DC / Interface Connector	Dsub, 9-Pins, Male		
Cooling	External Heatsink		

ENVIRONMENTAL CHARACTERISTICS

Parameter	Symbol	Min	Typ	Max	Unit
Operating Case Temperature	T _c	0		+75	°C
Storage Temperature	T _{stg}	-40		+85	°C
Relative humidity (non-condensing)	RH			95	%
Altitude (MIL-STD-810F Method 500.4)	ALT	10,000		30,000	Feet
Shock / Vibration (MIL-STD-810F Method 516.5)	SH / VI		Airborne		

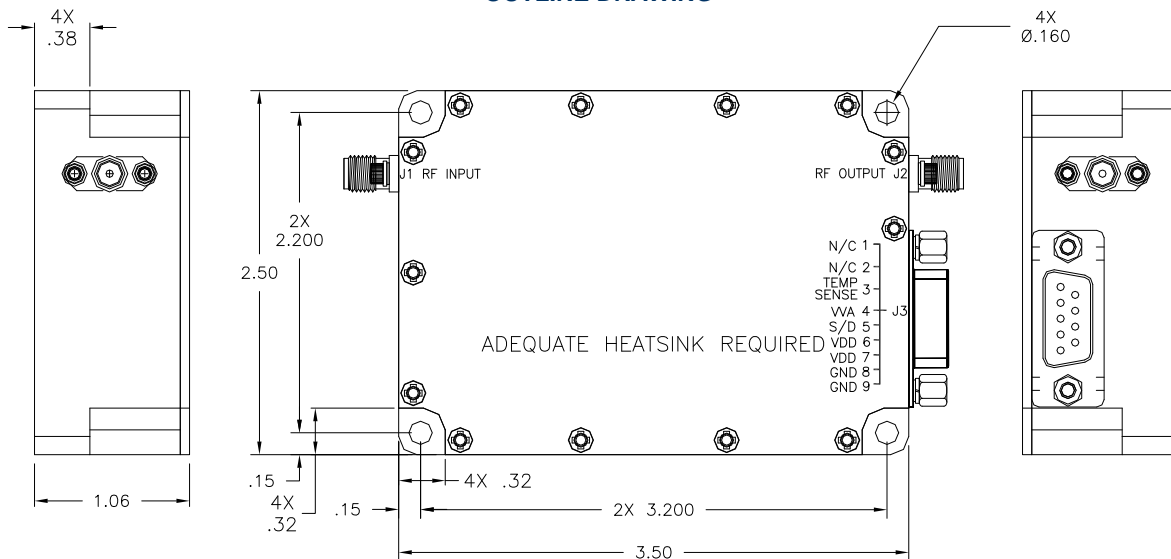
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PROTECTIONS

Input Overdrive	+10 dBm	Max
Load VSWR	∞ @ all load phase & amplitude	Nom
Thermal Overload	85°C shutdown	Max

INTERFACE CONNECTOR, Dsub, 9-Pin

Pin #	Description	Specifications
1	N/C	Reserved
2	N/C	Reserved
3	Temperature Sense	Analog voltage relative to Module's Temperature @ 10 mV/°C
4	VVA	Continuous Analog 0 – 5 V _{DC} levels Maximum Gain: 0 V _{DC} Minimum Gain: 5 V _{DC}
5	Shutdown	Amplifier Enable: TTL "Low" or Open Amplifier Disable: TTL "High" (Default)
6	VDD	+28 V \pm 2 V _{DC}
7	VDD	+28 V \pm 2 V _{DC}
8	GND	Ground
9	GND	Ground

OUTLINE DRAWING


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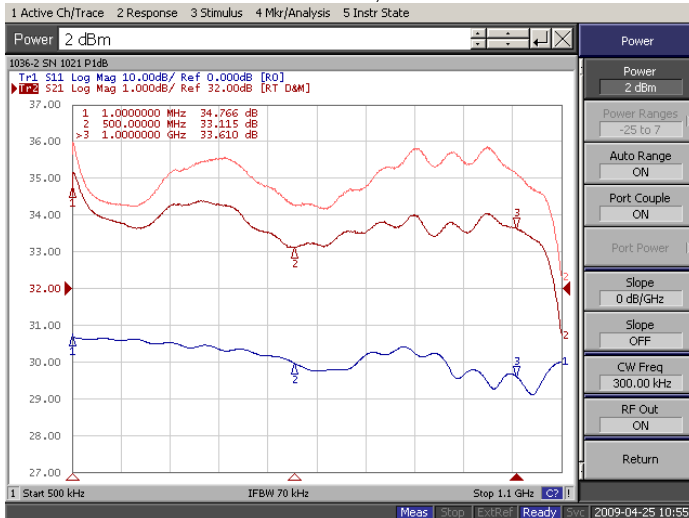
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TYPICAL PERFORMANCE PLOTS

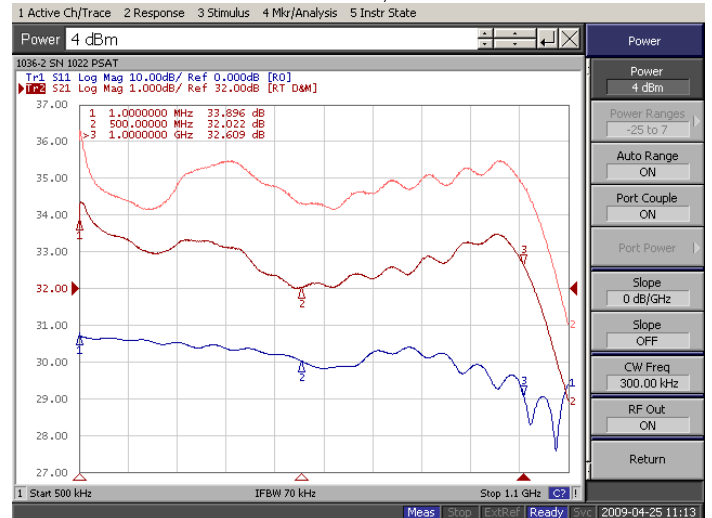
Plots 1 - Small Signal and P_{1dB} Gain

Top Curve: Small Signal Gain @ $P_{IN} = -20\text{dBm}$
 Middle Curve: Power Gain @ P_{1dB} , $P_{IN} = 2.0\text{dBm}$
 Reference: 32dB, 1dB/div.
 Bottom Curve: Input Return Loss
 Reference: 0dB, 10dB/div.



Plot 2 - Small Signal and P_{SAT}

Top Curve: Small Signal Gain @ $P_{IN} = -20\text{dBm}$
 Middle Curve: P_{SAT} @ $P_{IN} = +4.0\text{dBm}$
 Reference: 32dB, 1dB/div.
 Bottom Curve: Input Return Loss
 Reference: 0dB, 10dB/div.



Plot 3 - VVA Adjustment Range

Top Curve: Max. Gain @ VVA = 0.0V, $P_{IN} = -20\text{dBm}$
 Middle Curve: Max. Gain @ VVA = 5.0V
 Reference: 0.0dB, 10dB/div.
 Bottom Curve: Input Return Loss
 Reference: 0dB, 10dB/div.

