EMPOWER RF SYSTEMS, INC.

Solid State Broadband High Power Amplifier

1036 - BBM1C4A6F

1 – 1000 MHz / 4 Watts

The BBM1C4A6F (SKU 1036) 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

1036-SIZ Version

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	P_{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	S11			-10	dB
Noise Figure	NF		7	10	dB
Harmonics @ rated P1 dB Gain Compression Point	H		-25		dBc
Third Order Intercept Point 2-tones, Pout=26 dBm/tone, Δ = 100 KHz	IP3		+46		dBm
Spurious Signals	Spur		-70	-60	dBc
Operating Voltage	VDC	26	28	30	Volt
Quiescent Current	I_{DQ}		1.0		Amp
Current Consumption @ rated Pout	I_{DD}			1.5	Amp

MECHANICAL SPECIFICATIONS

Parameter	Value	Units	Limits
Dimensions (excluding heatsink)	6.0 x 3.0 x 1.0	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	Tc	0		+75	°C
Storage Temperature	Tstg	-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

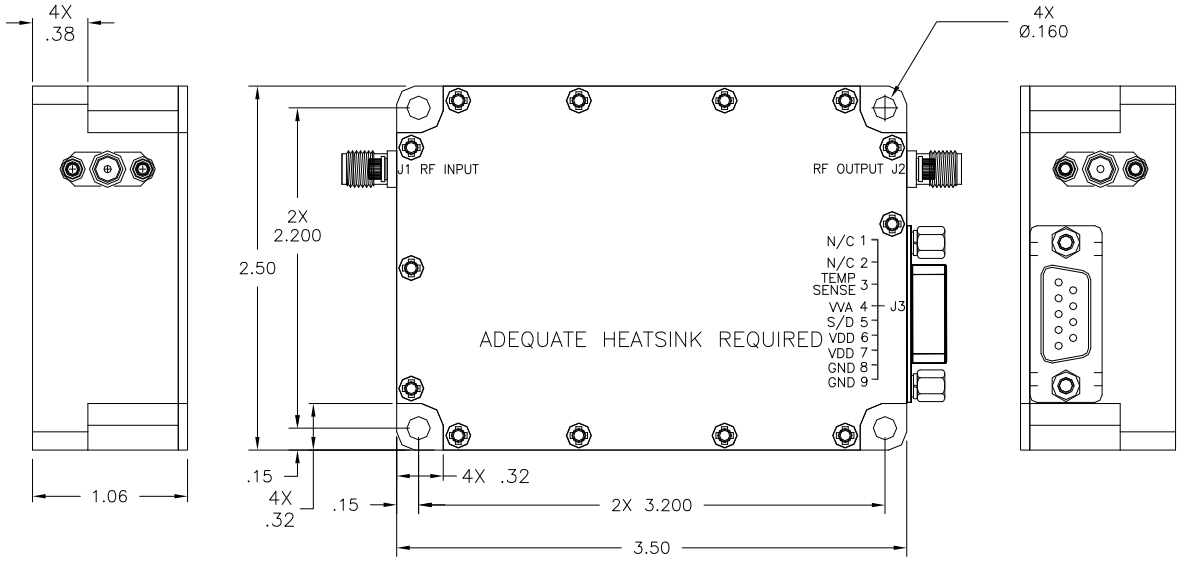
OPTION ENHANCEMENTS TO THE STANDARD PRODUCT

Option	Number	Description
HS0	71	Heatsink
HSF	72	Heatsink with built in fan(s)
VVA	73	Built in Gain Adjustment
SHD	74	Shutdown: F, M, S; TTL Hi = Disable
NTO	75	N-Type Female Output Connector
NIO	76	N-Type Female In/Out Connector
FTB	77	Feed-Thru Bracket
TRA	78	Heatsink Assembly with T/R Switch
RSD	79	Reverse Shutdown Polarity (TTL Hi - Enable)
DOP	80	Dual Output
STO	81	SMA Female Right Angle Output Connector
SIZ	n/a	Size enhancement (3.5 x 2.5 x 1.1)

INTERFACE CONNECTORD, Dsub, 9-Pin (1036-SIZ version)

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 VDC levels Maximum Gain: 5 VDC Minimum Gain: 0 VDC
5	Shutdown	Amplifier Enable: TTL "Low" or Open Amplifier Disable: TTL "High" (Default)
6	VDD	+28 V ±2 VDC
7	VDD	+28 V ±2 VDC
8	GND	Ground
9	GND	Ground

OUTLINE DRAWING - 1036-SIZ Version Shown



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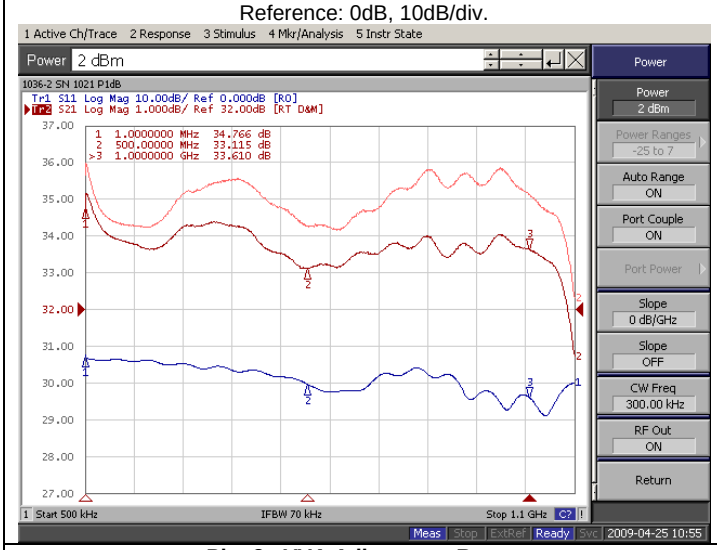
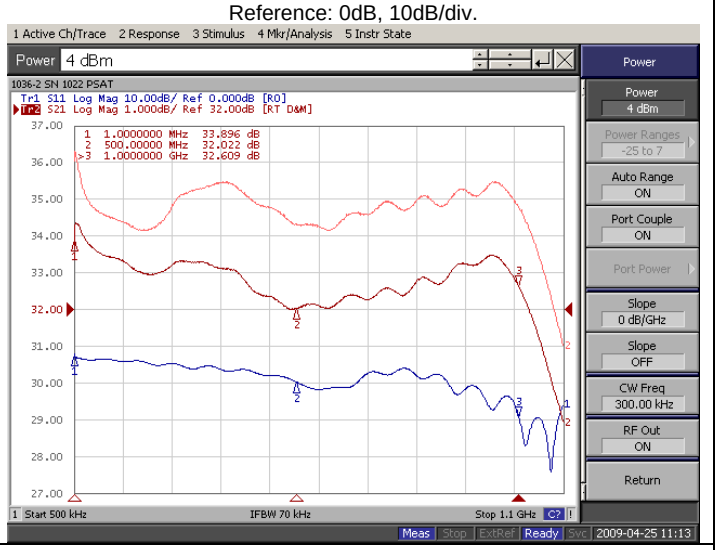
TYPICAL PERFORMANCE PLOTS (1036-SIZ version)

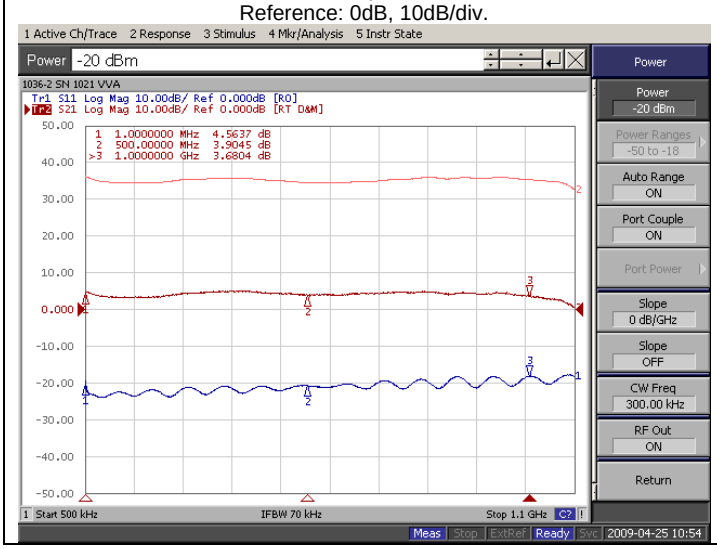
Plots 1 - Small Signal and P_{1dB} Gain
Top Curve: Small Signal Gain @ P_{IN} = -20dBm
Middle Curve: Power Gain @ P_{1dB}, P_{IN} = 2.0dBm
Reference: 32dB, 1dB/div.
Bottom Curve: Input Return Loss
Reference: 0dB, 10dB/div.



Plot 2 - Small Signal and P_{SAT}
Top Curve: Small Signal Gain @ P_{IN} = -20dBm
Middle Curve: P_{SAT} @ P_{IN} = +4.0dBm
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} = -20dBm
Middle Curve: Max. Gain @ VVA = 5.0V
Reference: 0.0dB, 10dB/div.
Bottom Curve: Input Return Loss
Reference: 0dB, 10dB/div.



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