EMPOWER RF SYSTEMS, INC.

Solid State Broadband High Power Amplifier

1035 - BBM1C4A3E

1 – 1000 MHz / 2 Watts

The BBM1C4A3E (SKU 1035) is suitable for ultra broadband and band specific high power linear applications. This amplifier 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 A linear design
- Instantaneous ultra broadband
- Small and lightweight
- Built in functions and protection circuits
- Suitable for CW, AM, and FM (Consult factory for other modulation types)
- 50 ohm input/output impedance
- High reliability and ruggedness

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

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	1		1000	MHz
Power Output CW	P_{SAT}	2	3		Watt
Power Output @ 1dB Gain Compression	P_{1dB}	1.5			Watt
Power Gain @ 1dB Gain Compression	P_{1dB}	30			dB
Input Power for Rated P_{SAT}	P_{IN}		0	3	dBm
Small Signal Gain Flatness	ΔG		±1.0	±1.5	dB
Input Return Loss	S_{11}			-10	dB
Noise Figure	NF		7	10	dB
Harmonics @ P_{OUT} = 2W	H		-25		dBc
Third Order Intercept Point 2-Tone @ 27dBm/Tone, 100kHz Spacing	IP3		+44		dBm
Spurious Signals	Spur		-70	-60	dBc
Operating Voltage	V_{DC}	26	28	30	Volt
Current Consumption @ P_{OUT} = 2W	I_{DD}		1.0	2.0	Amp

MECHANICAL SPECIFICATIONS

Parameter	Value	Unit
Dimensions	6.0 x 3.0 x 1.0	Inch
Weight	1.0	Pound
RF Connectors Input/Output	Type-SMA, Female	
DC Interface Connections	Feed-Thru	
Cooling	External Heatsink (Not Supplied)	

ENVIRONMENTAL CHARACTERISTICS (Design to Meet)

Parameter	Symbol	Min	Typ	Max	Unit
Operating Case Temperature	T_C	0		+50	°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 – Method514.5/514.5 – Proc I	VI/SH	Airborne			

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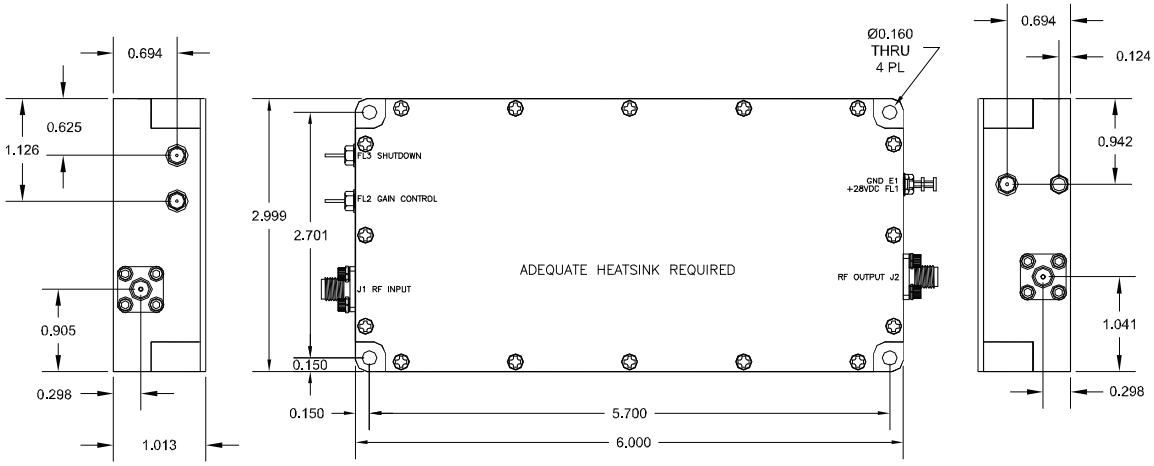
LIMITS

Input RF drive level without damage	+10 dBm	Max
Load VSWR @ P_{OUT} = 1.5W	∞ @ all load phase & amplitude for duration of 1 minute 3:1 @ all load phase & amplitude continuous	-
Thermal Overload	85°C shutdown	Max

DC INTERFACE CONNECTIONS

Pin #	Description	Specification
E1	GND	Ground
FL1	+28VDC	+26.0-30.0V_{DC}
FL2	Gain Control	Gain Control Voltage Continuous: Minimum Gain: 0V_{DC}, Maximum Gain: 5.0V_{DC}
FL3	Shutdown	Amplifier Disable: TTL Logic High (5V) (*Internally Pulled-Low*)

OUTLINE DRAWING



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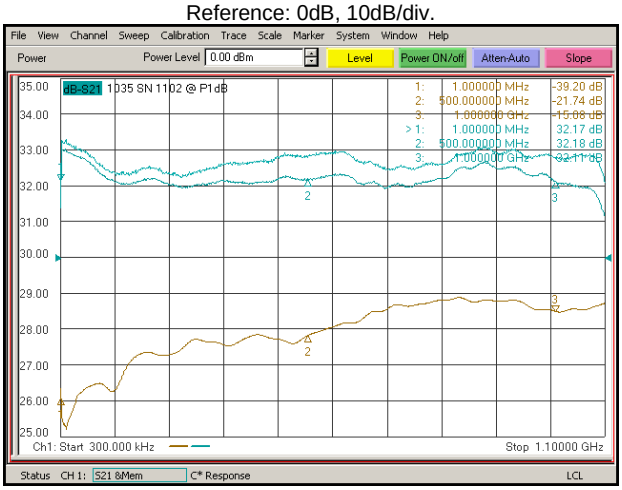
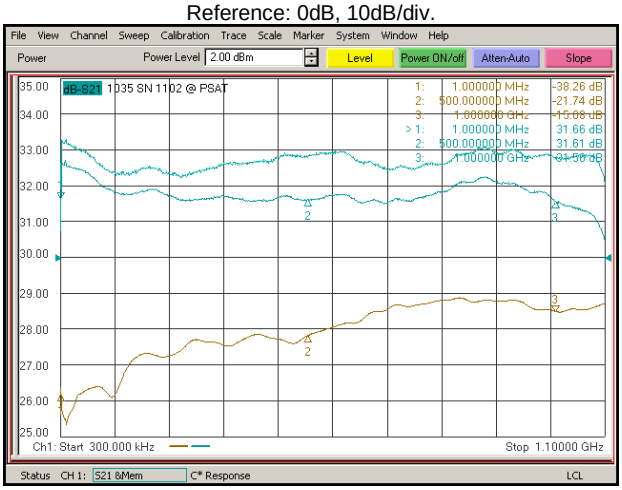
TYPICAL PERFORMANCE PLOTS

Plot 1 – Small Signal Gain and P_{1dB}
Top Curve: Small Signal Gain @ P_{IN} = -20dBm
Middle Curve: Power Gain @ P_{1dB}, P_{IN} = 0dBm
Reference: 30dB, 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} = 2dBm
Reference: 30dB, 1dB/div.
Bottom Curve: Input Return Loss
Reference: 0dB, 10dB/div.



Plot 3 – Gain Adjustment Range
Top Curve: Max. Gain @ VVA_{CTRL} = 5.0V, P_{IN} = -20dBm
Bottom Curve: Min. Gain @ VVA_{CTRL} = 1.0V, P_{IN} = -20dBm
Reference: 20dB, 10dB/div.
Middle Curve: Input Return Loss @ Minimum Gain
Reference: 0dB, 10dB/div.