EMPOWER RF SYSTEMS, INC.

Solid State Broadband High Power Amplifier

1058 - BBM1C3CP8	1 – 100 MHz / 300 Watts

The BBM1C3CP8 (SKU 1058) is suitable for RF & VHF high power 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 AB design
- Instantaneous broadband
- Small and lightweight
- Built-in Protection, Control & Monitoring 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, 50 Ω System

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	1		100	MHz
Output Power CW	P_{SAT}	300			Watt
Output Power @ 1dB Gain Compression	P_{1dB}	200			Watt
Small Signal Gain	G_{SS}	18			dB
Input Power for Rated P_{SAT}	P_{IN}		37	40	dBm
Small Signal Gain Flatness	ΔG		±1.0	±1.5	dB
Input Return Loss	S_{11}			-10	dB
Harmonics @ P_{OUT} = 200W	$2^{ND}/3^{RD}$		-34/-15		dBc
Third Order Intercept Point 2-Tone @ 44dBm/Tone, 100 kHz Spacing	IP3		+58		dBm
Spurious Signals	Spur		-70	-60	dBc
Operating Voltage	V_{DC}	26	28	30	Volt
Current Consumption @ P_{OUT} = 300W	I_{DD}			28	Amp
Current Consumption @ Shutdown	I_{SD}			150	mA

MECHANICAL SPECIFICATIONS

Parameter	Value	Unit
Dimension	8.3 x 6.4 x 1.2	Inch
RF Connectors Input/Output	Type-SMA, Female	
DC Interface Connector	Hybrid, D-Sub 7-Pin, Male (7W2)	
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 Method 514.5/516.5 – Proc I	VI/SH		Airborne		

LIMITS

Input RF drive level without damage	+42 dBm	Max
Load VSWR @ P_{OUT} = 200W	∞ @ all load phase & amplitude for duration of 1 minute 3:1 @ all load phase & amplitude continuous	-
Thermal Overload	85°C shutdown	Max

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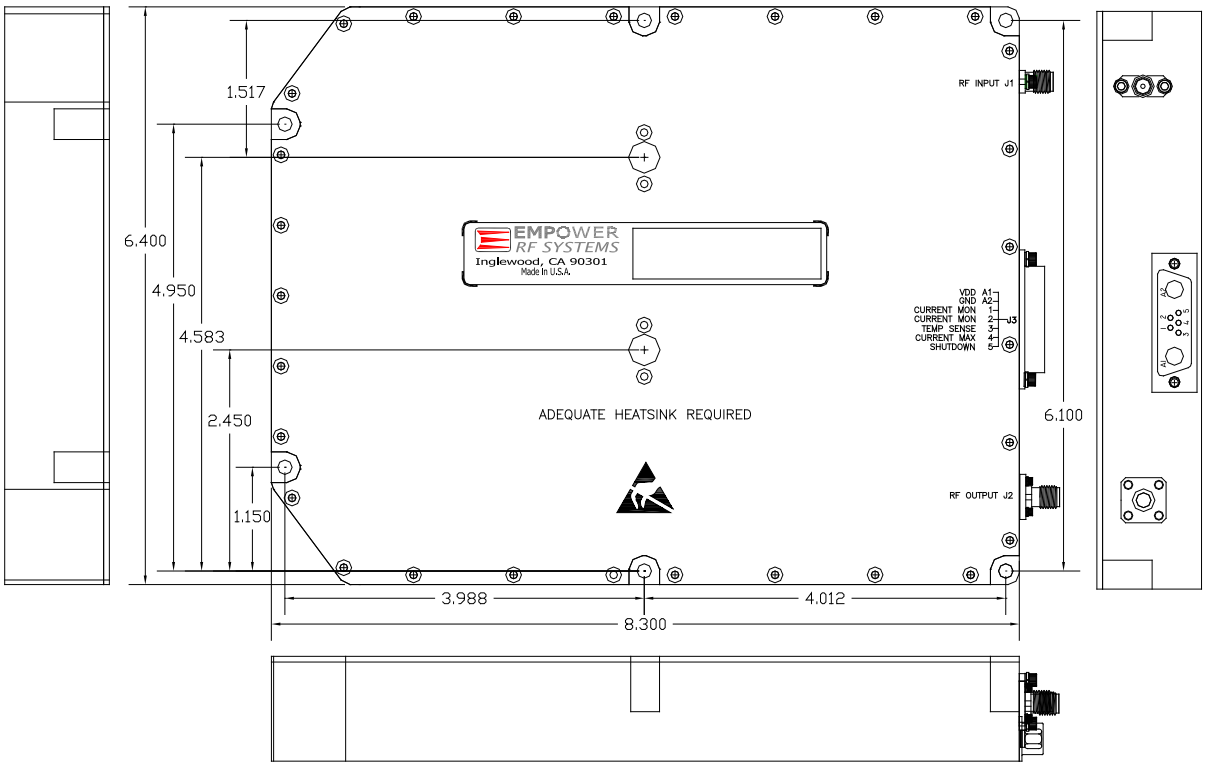
DC INTERFACE CONNECTOR – Hybrid, D-Sub 7-Pin, Male

Pin #	Description	Specification
A1	VDD	26.0-30.0V_{DC}
A2	GND	Ground
1	Current Mon 1	Analog voltage relative to I_{DD1} @ 10mV/100mA
2	Current Mon 2	Analog voltage relative to I_{DD2} @ 10mV/100mA
3	Temp Sense	Analog voltage relative to module's Temperature @ 10mV/ºC
4	Current Max	Current Maximum (factory use)
5	Shutdown	Amplifier Disable: TTL Logic High (5V) (*Internally Pulled-Low*)

OUTLINE DRAWING



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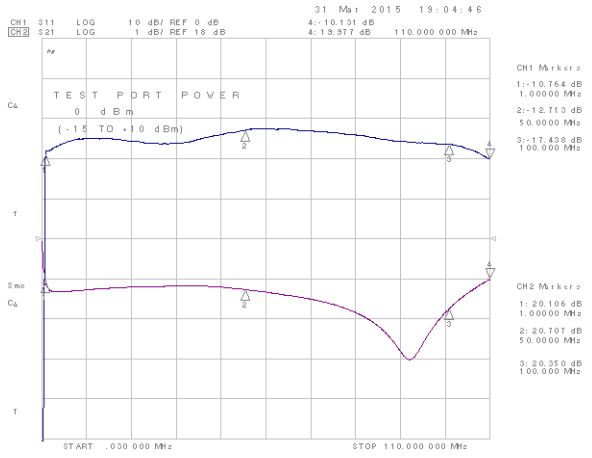
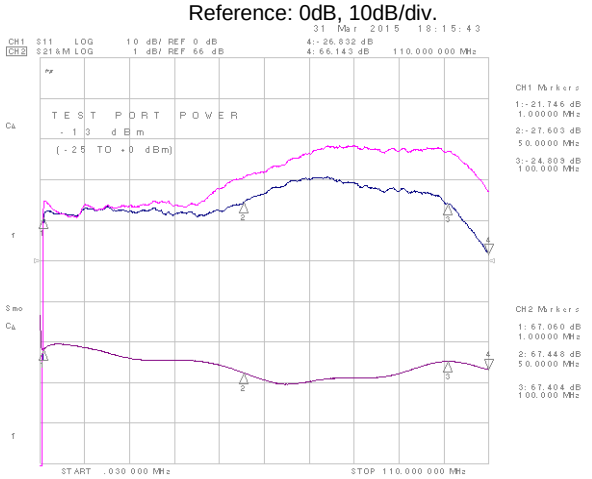
TYPICAL PERFORMANCE PLOTS

Plot 1 – Small Signal Gain
Top Curve: Small Signal Gain @ P_{IN} = 0dBm
Reference: 18dB, 1dB/div.
Bottom Curve: Input Return Loss
Reference: 0dB, 10dB/div.



Plot 2 – Small Signal Gain and P_{1dB} with Driver
Top Curve: Small Signal Gain @ P_{IN} = -20dBm
Middle Curve: Power Gain @ P_{1dB}, P_{IN} = -13dBm
Reference: 66dB, 1dB/div.
Bottom Curve: Input Return Loss of Driver
Reference: 0dB, 10dB/div.



Plot 3 – Small Signal Gain and P_{SAT} with Driver
Top Curve: Small Signal Gain @ P_{IN} = -20dBm
Middle Curve: Power Gain @ P_{SAT}, P_{IN} = -10dBm
Reference: 66dB, 1dB/div.
Bottom Curve: Input Return Loss of Driver
Reference: 0dB, 10dB/div.