EMPOWER
RF SYSTEMS, INC.

Solid State Broadband High Power Amplifier

1030-BBM3Q7E9I	800 – 4200 MHz / 8 Watts

The BBM3Q7E9I (SKU 1030) is suitable for high power broadband and band specific linear applications. This amplifier is utilizing advanced GaAsFET power devices that provide high gain, wide dynamic range, low distortions and excellent linearity. Exceptional performance, long term reliability, and high efficiency are achieved by employing advanced broadband RF matching networks and combining techniques, built in high efficiency sequence regulator, EMI/RFI filters, machined housing, 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
- Excellent Phase Linearity and Group Delay Characteristics
- Small and lightweight
- Suitable for CW, AM, and FM (Consult factory for other modulation types)
- 50 ohm input/output impedance
- High reliability and ruggedness

ELECTRICAL SPECIFICATIONS @ +13V_{DC}, 25°C, 50Ω System

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	800		4200	MHz
Output Power CW	P_{SAT}	8			Watt
Output Power @ 1dB Gain Compression	P_{1dB}	6			Watt
Power Gain @ P_{1dB}	G_{1dB}	38			dB
Input Power for Rated P_{SAT}	P_{IN}		2	4	dBm
Small Signal Gain Flatness	ΔG			±1.5	dB
Input Return Loss	S_{11}			-10	dB
Noise Figure	NF			10	dB
Third Order Intercept Point 2-Tone @ 30dBm/Tone, 100kHz Spacing	IP3		+48		dBm
Harmonics @ P_{OUT} = 6W	H		-20		dBc
Spurious Signals	Spur		-70	-60	dBc
Operating Voltage	V_{DC}	12	13	15	Volt
Current Consumption @ P_{OUT} = 8W	I_{DD}		4	5	Amp

MECHANICAL SPECIFICATIONS

Parameter	Value	Unit
Dimensions	8.5 x 3.1 x 0.72	Inch
Weight	1.5	Pound
RF Connectors Input/Output	Type-SMA, Female	
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	+10 dBm	Max
Load VSWR @ P_{OUT} = 6W	∞ @ 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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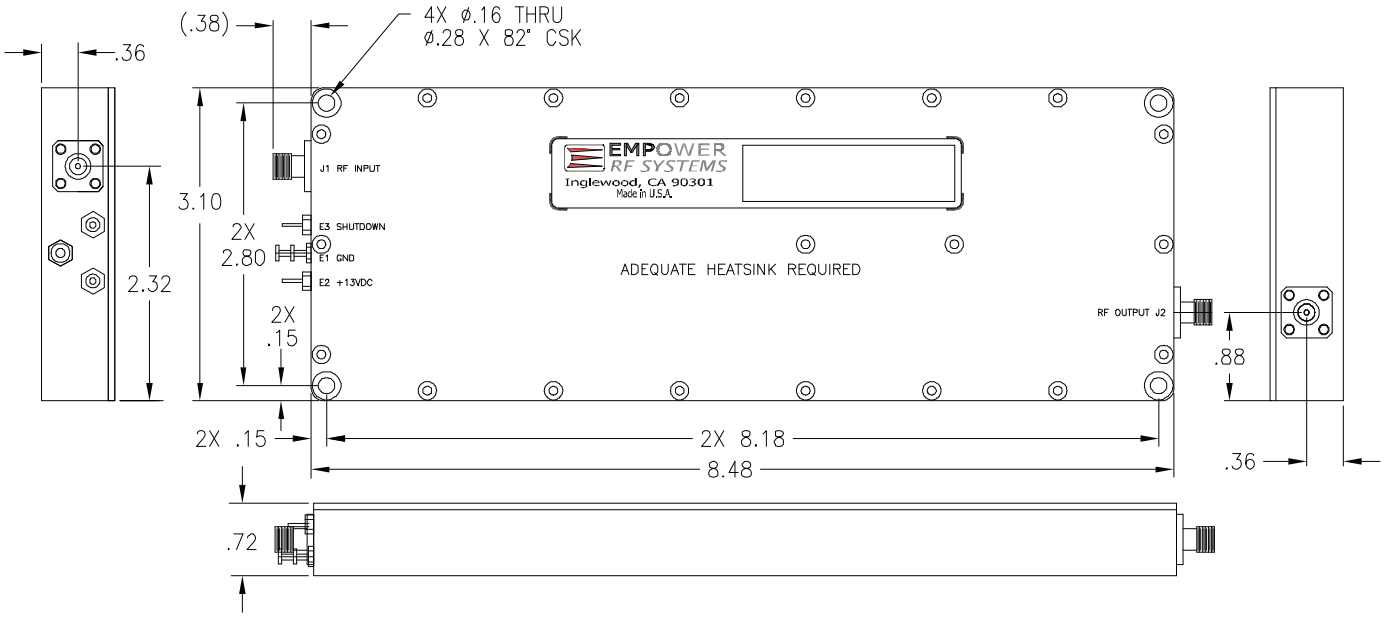
DC INTERFACE CONNECTIONS – Feed Through

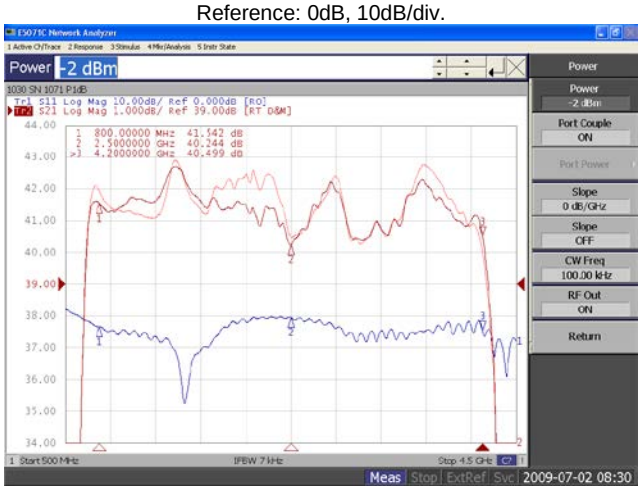
Pin #	Description	Specification
E1	GND	Ground
E2	+13V_{DC}	12.0-15.0V_{DC}
E3	Shutdown	Amplifier Disable: TTL Logic High (5V) (*Internally Pulled-Low*)

OUTLINE DRAWING



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} = -2.0dBm
Reference: 39dB, 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} = 0.9dBm
Reference: 39dB, 1dB/div.
Bottom Curve: Input Return Loss
Reference: 0dB, 10dB/div.