

## Solid State Broadband High Power Amplifier

**1141 - BBM2E4ALP**
**20 – 1000 MHz / 125 Watts**

The BBM2E4ALP (SKU 1141) is suitable for ultra broadband high power linear applications. This amplifier module utilizes silicon LDMOS power devices that provide high gain, wide dynamic range, low distortion 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 CW, AM, and FM (Consult factory for other modulation types)
- 50 ohm input/output impedance
- High reliability and ruggedness
- Built In protection circuits and control interface

### ELECTRICAL SPECIFICATIONS @ +28V<sub>DC</sub>, 25°C, 50Ω System

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	20		1000	MHz
Output Power CW	P <sub>SAT</sub>	100	125		Watt
Output Power @ 2dB Gain Compression	P <sub>2dB</sub>	100			Watt
Power Gain @ 2dB Gain Compression	G <sub>2dB</sub>	51			dB
Input Power for Rated Output	P <sub>IN</sub>		0		dBm
Small Signal Gain Flatness	ΔG			±1.5	dB
Input Return Loss	S <sub>11</sub>			-10	dB
Noise Figure	NF			10	dB
Third Order Intercept Point 2-Tone @ 37dBm/tone, Δ = 100kHz	IP3		+56		dBm
Harmonics @ Rated P <sub>OUT</sub> = 100W	2 <sup>nd</sup>		-20		dBc
	3 <sup>rd</sup>		-20		
Spurious Signals	Spur		<-70	-60	dBc
Operating Voltage	V <sub>DC</sub>	26	28	30	Volt
Quiescent Current	I <sub>DQ</sub>		4		Amp
Current consumption @ P <sub>OUT</sub> = 100W	I <sub>DD</sub>		13	18	Amp
Switching Time @ 1kHz TTL, P <sub>IN</sub> = 0dBm	T <sub>ON</sub> /T <sub>OFF</sub>			2 / 1	μs

### MECHANICAL SPECIFICATIONS

Parameter	Value	Units	Limits
Dimensions (W x L x H)	6.41 x 6.67 x 1.25	Inch	Max
Weight	4.0	lb.	Max
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 <sub>C</sub>	-40		+85	°C
Storage Temperature	T <sub>STG</sub>	-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		

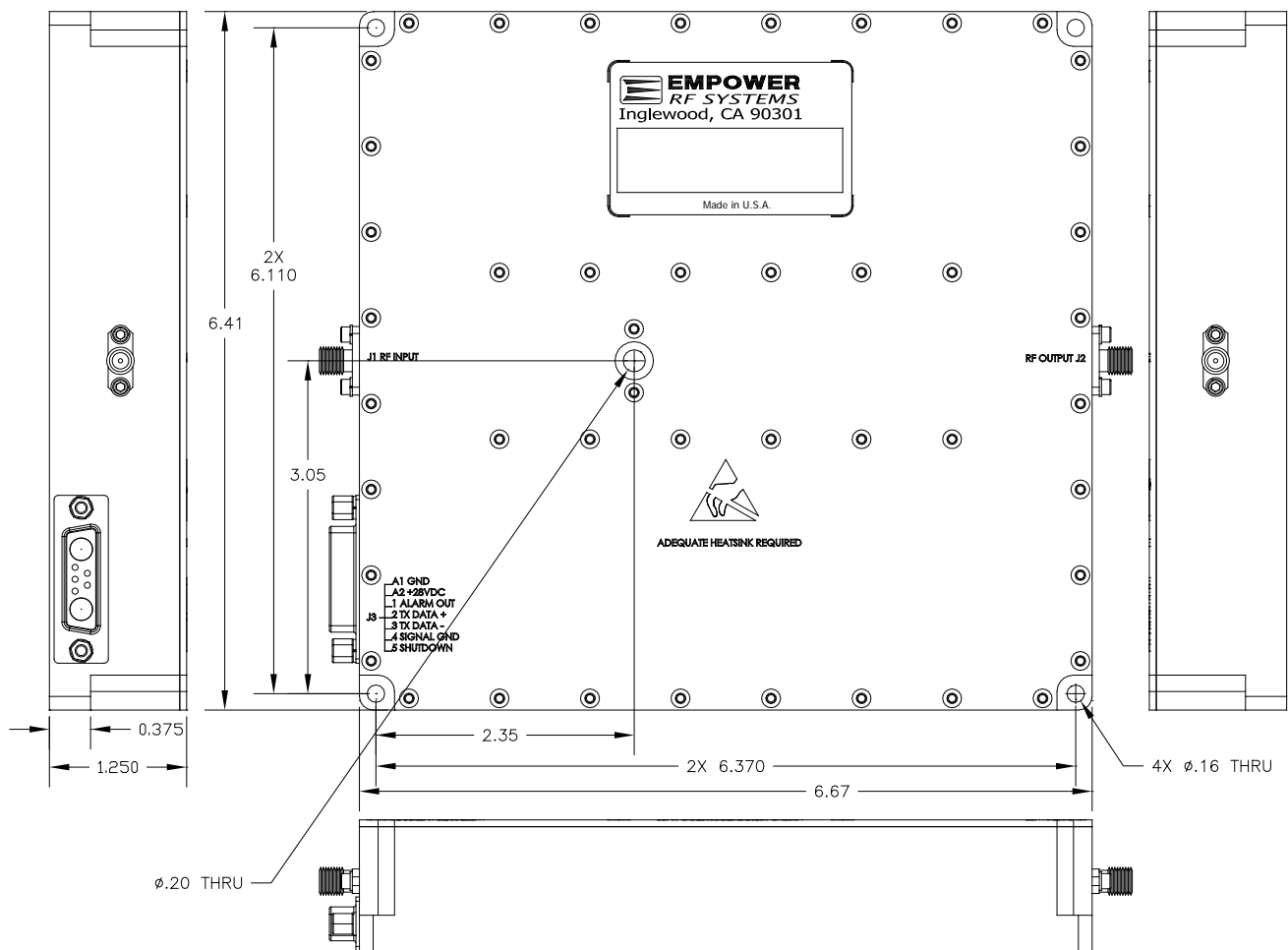
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**PROTECTIONS**

Input Power Overdrive	$P_{od}$	+10dBm	Max
Load VSWR @ Rated $P_{2dB} = 100W$	$\Psi$	$\infty$ @ all load phase & amplitude for duration of 1 minute 3:1 @ all load phase & amplitude continuous	-
Thermal Overload	$T_{OD}$	Graceful Degradation (@95°C Temp Alarm is ON)	-

**DC INTERFACE CONNECTOR – Hybrid D-Sub 7-Pin, Male (7W2)**

Pin #	Description	Specifications
1	Alarm Out	Summary Alarm, TTL Logic Low = Fault
2	TX_DATA (+)	Differential RS-422 Transmit (+)
3	TX_DATA (-)	Differential RS-422 Transmit (-)
4	Signal Gnd	Ground
5	Shutdown	Amplifier Disable: TTL Logic High (5V) (Internally Pulled-Low)
A1	GND	Ground
A2	VDD	+28.0V <sub>DC</sub> ±2V

**OUTLINE DRAWING**


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## TYPICAL PERFORMANCE PLOTS

**Plot 1 – Small Signal Gain and  $P_{2dB}$**

Top Curve: Small Signal Gain @  $P_{IN} = -20\text{dBm}$   
 Middle Curve: Power Gain @  $P_{2dB}$ ,  $P_{IN} = -1.0\text{dBm}$  (**Note 2**)  
 Reference: 52dB, 1dB/div.  
 Bottom Curve: Input Return Loss  
 Reference: 0dB, 10dB/div.



**Plot 2 – Small Signal Gain and  $P_{SAT}$**

Top Curve: Small Signal Gain @  $P_{IN} = -20\text{dBm}$   
 Middle Curve: Power Gain @  $P_{SAT}$ ,  $P_{IN} = 1\text{dBm}$  (**Note 2**)  
 Reference: 52dB, 1dB/div.  
 Bottom Curve: Input Return Loss  
 Reference: 0dB, 10dB/div.

