

## Solid State Broadband High Power Amplifier

**1105 – BBM3Q5KAM**
**800 – 2500 MHz / 10 Watts**

The BBM3Q5KAM (SKU 1105) is suitable for broadband or band specific high power linear applications in the L/S frequency bands. This compact module utilizes 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, EMI/RFI filters, machined housings and qualified components. Empower RF's ISO9001 Quality Assurance Program assures consistent performance and the highest reliability.



(OPTDCC)

- Solid-state Class A linear design
- Instantaneous ultra broadband
- Small and lightweight
- Suitable for CW, AM, and FM (for other modulation type consult factory)
- 50 ohm input/output impedance
- High reliability and ruggedness
- Built-in control, monitoring and protection circuits

### ELECTRICAL SPECIFICATIONS 14V<sub>DC</sub> or 28V<sub>DC</sub> @ 25°C, 50Ω System

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	800		2500	MHz
Power Output CW	P <sub>SAT</sub>	10	12		Watt
Power Output @ 1dB Gain Compression	P <sub>1dB</sub>	8	10		Watt
Small Signal Gain @ P <sub>IN</sub> = -20dBm	G <sub>SS</sub>	46		52	dB
Input Power for Rated P <sub>SAT</sub>	P <sub>IN</sub>		-4	0	dBm
Gain Flatness	ΔG			±1.5	dB
Input Return Loss	S <sub>11</sub>			-10	dB
Noise Figure	NF			10	dB
Third Order Intercept Point	IP3		+48		dBm
Harmonics @ P <sub>OUT</sub> = 8W	H		-25		dBc
Spurious Signals	Spur		-70	-60	dBc
Operating Voltage	OPTDCA	13	14	15	Volt
	OPTDCC	26	28	30	
Current Consumption @ 10W	OPTDCA			3.2	Amp
	OPTDCC			2.2	
Switching Time @ 1kHz TTL, P <sub>IN</sub> = 0 dBm	T <sub>ON</sub> /T <sub>OFF</sub>		10	20	uSec
Current Consumption @ Shutdown	I <sub>SD</sub>		40	70	mA

### MECHANICAL SPECIFICATIONS

Parameter	Value	Unit
Dimensions	6.0 x 2.2 x 0.9	Inch
Weight	1.0	Pound
RF Connectors Input/Output	Type-SMA, Female	
DC Interface Connector	D-Sub 9-Pin, Male	
Cooling	External Heatsink (not included)	

### ENVIRONMENTAL CHARACTERISTICS (Design to Meet)

Parameter	Symbol	Min	Typ	Max	Unit
Operating Case Temperature	T <sub>C</sub>	-40		+80	°C
Non-operating 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 1	VI/SH		Airborne		

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### LIMITS

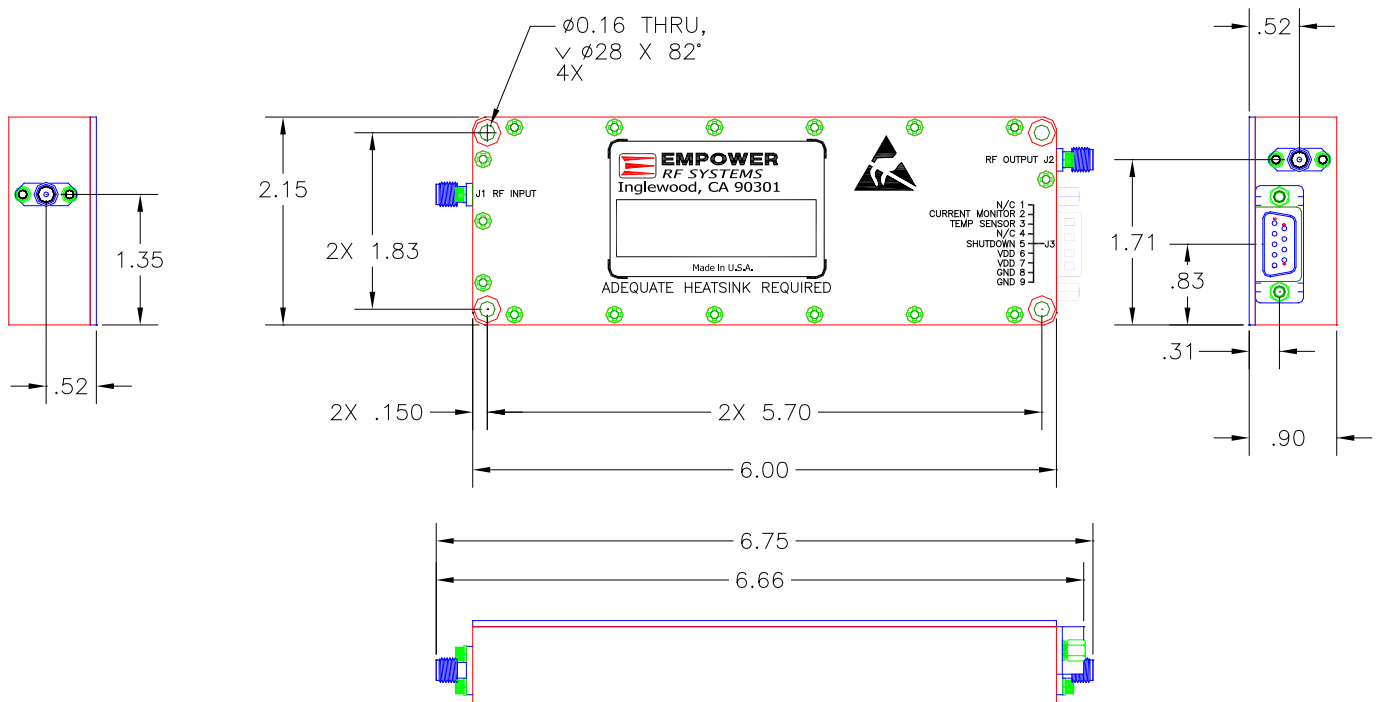
Input RF drive level without damage	+10 dBm	Max
Load VSWR @ 10W	$\infty$ @ all load phase & amplitude for duration of 1 minute 3:1 @ all load phase & amplitude continuous	-

### DC INTERFACE CONNECTOR – D-Sub 9-Pin, Male

Pin #	Description	Specification
1	N/C	No Connection
2	Current Monitor	Analog voltage relative to $I_{DD}$ @ 100mV/100mA
3	Temp. Sensor	Analog voltage relative to Module's Temperature @ 10mV/°C
4	N/C	No Connection
5	Shutdown	Amplifier Disable: TTL Logic High (5V) (Internally Pulled-low)
6&7	VDD	+13.0-15.0V <sub>DC</sub> (OPTDCA) +26.0-30.0V <sub>DC</sub> (OPTDCC)
8&9	GND	Ground

### OUTLINE DRAWING 1

#### 13 – 15V<sub>DC</sub> OPTDCA



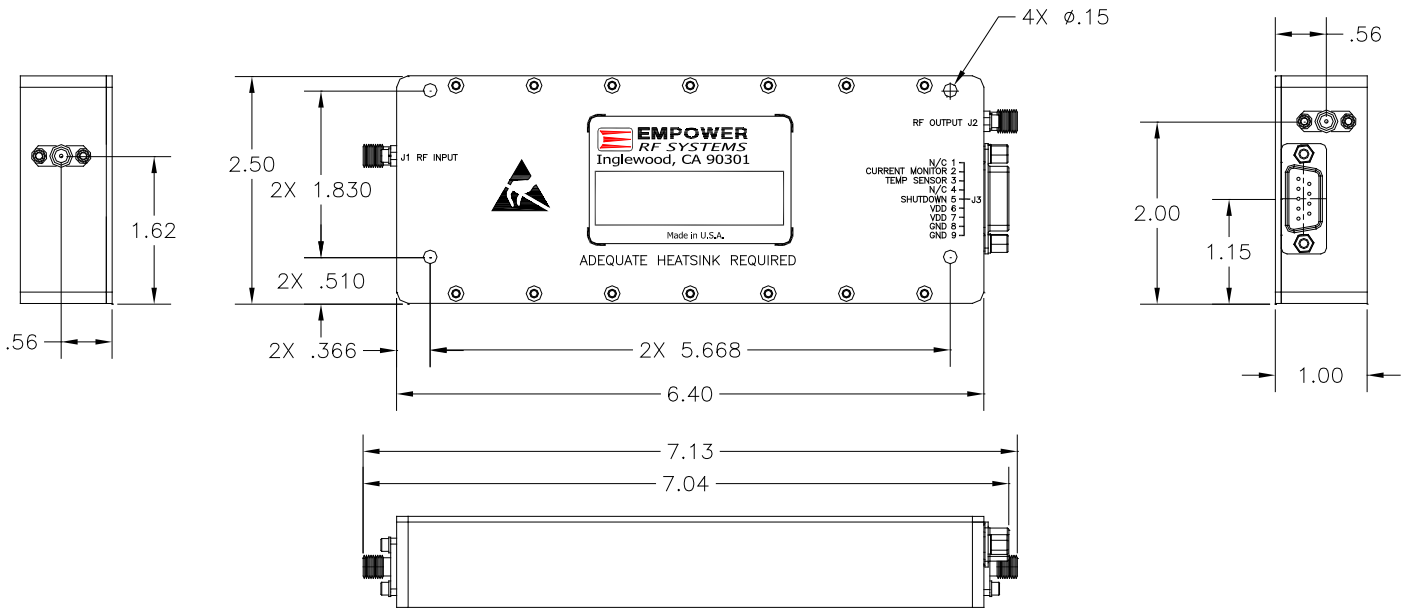
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**OUTLINE DRAWING 2**

**26 – 30V<sub>DC</sub> OPTDCC**



**TYPICAL PERFORMANCE PLOTS**

**Plot 1 – Small Signal Gain and P<sub>1dB</sub>**

Top Curve: Small Signal Gain @ P<sub>IN</sub> = -20dBm  
 Middle Curve: Power Gain @ P<sub>1dB</sub>, P<sub>IN</sub> = -7.0dBm  
 Reference: 44dB, 1dB/div.  
 Bottom Curve: Input Return Loss  
 Reference: 0dB, 10dB/div.



**Plot 2 – Small Signal Gain and P<sub>SAT</sub>**

Top Curve: Small Signal Gain @ P<sub>IN</sub> = -20dBm  
 Middle Curve: Power Gain @ P<sub>SAT</sub>, P<sub>IN</sub> = -4.5dBm  
 Reference: 44dB, 1dB/div.  
 Bottom Curve: Input Return Loss  
 Reference: 0dB, 10dB/div.

