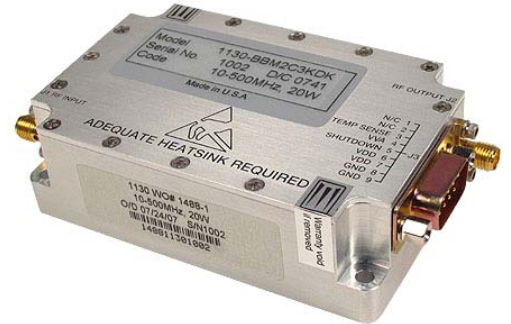


## Solid State Broadband High Power Amplifier

**1130 - BBM2C3KDK**
**10 – 500 MHz / 20 Watts**

The BBM2C3KDK (SKU 1130) is suitable for multi octave broadband high power RF, VHF & UHF linear applications. This compact module utilizes high power advanced GaN devices that provide excellent power density, high efficiency, wide dynamic range and low distortions. 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 (for other modulation types contact factory)
- 50 ohm input/output impedance
- High reliability and ruggedness
- Built-in control, monitoring and protection circuits

### ELECTRICAL SPECIFICATIONS @ +28 VDC, 25°C, 50 Ω System

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	10		500	MHz
Power Output CW	P <sub>SAT</sub>		20		Watt
Power Output @ 1 dB Gain Compression Point	P <sub>1dB</sub>	10			Watt
Power Gain @ 1 dB Gain Compression Point	G <sub>1dB</sub>	42			dB
Input Power for Rated Output	P <sub>IN</sub>		0		dBm
Small Signal Gain Flatness	ΔG		±1.0	±1.5	dB
Gain Adjustment Range	VVA	25	30		dB
Input Return Loss	S <sub>11</sub>			-10	dB
Noise Figure	NF		7	10	dB
Third Order Intercept Point	IP3		+49		dBm
2-Tones @ 30 dBm/Tone, Δ = 100 KHz					
Harmonics @ 1 dB Gain Compression Point	H		-25		dBc
Spurious Signals	Spur		-70	-60	dBc
Operating Voltage	V <sub>DC</sub>	26	28	30	Volt
Supply Current @ nominal P <sub>OUT</sub>	I <sub>DD</sub>			2.2	Amp

### MECHANICAL SPECIFICATIONS

Parameter	Value	Units	Limits
Dimensions	3.5 x 2.3 x 1.1	Inch	Max
Weight	1.0	lb.	Max
RF Connectors In/Out	SMA female		
DC Connectors	Dsub, 9 Pins, Male		
Cooling	External Heatsink		

### ENVIRONMENTAL CHARACTERISTICS (Design to Meet)

Parameter	Symbol	Min	Typ	Max	Unit
Operating Case Temperature	T <sub>c</sub>	-40		+90	°C
Storage Temperature	T <sub>stg</sub>	-54		+125	°C
Relative humidity (non-condensing)	RH			95	%
Altitude (MIL-STD-810F Method 500.4)	ALT		30,000		Feet
Vibration	VI	MIL-STD-810F Method 514.5 Proc I random sinusoidal Category 4 or 9 or 13			
Shock	SH	MIL-STD-810F Method 516.4 Proc I Operational: Acceleration (A) of 20.0 g ±1.5 g with Duration of 11.0 ms ±1.0 ms shock pulse. Non-Operational: Impact shocks of 25 g ±3.0 g with Duration of 11.0 ms ±1.0 ms shock pulse.			

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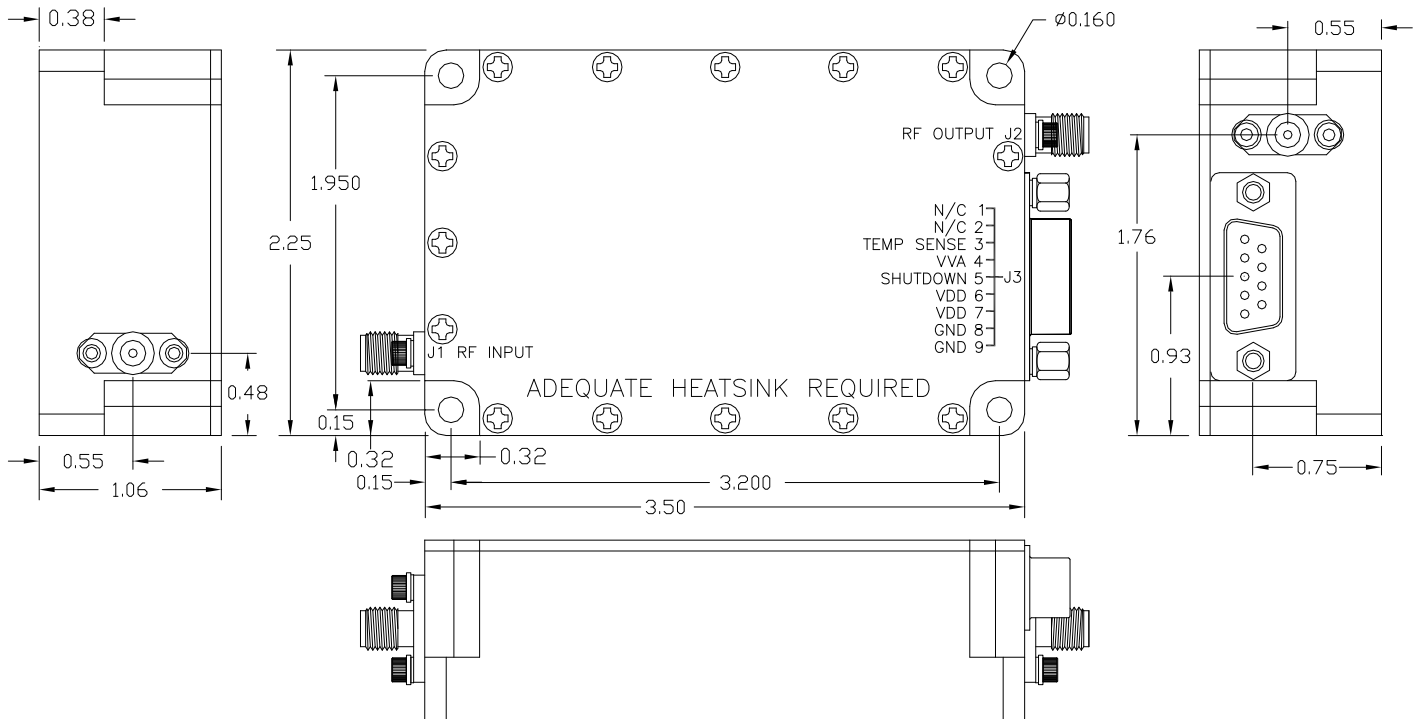
## PROTECTIONS

Input Overdrive	P <sub>OD</sub>	+10 dBm	Max
Load VSWR	Ψ	∞ @ all load phase & amplitude for duration of 1 minute 3:1 @ all load phase & amplitude continuous	Nom
Thermal Overload	T <sub>OD</sub>	95°C shutdown	Max

## INTERFACE CONNECTOR, Dsub, 9-Pin

Pin #	Description	Specifications
1	N/C	Reserved
2	N/C	Reserved
3	Temperature Sense	Analog voltage relative to Module's Temperature @ 10 mV/°C
4	VVA	Continuous Analog 0 – 5 V <sub>DC</sub> levels Maximum Gain: 0 V <sub>DC</sub> Minimum Gain: 5 V <sub>DC</sub>
5	Shutdown	Amplifier Enable: TTL "Low" or Open Amplifier Disable: TTL "High"
6	VDD	+28 V <sub>DC</sub> ± 2 V
7	VDD	+28 V <sub>DC</sub> ± 2 V
8	GND	Ground
9	GND	Ground

## OUTLINE DRAWING



# Solid State Broadband High Power Amplifier

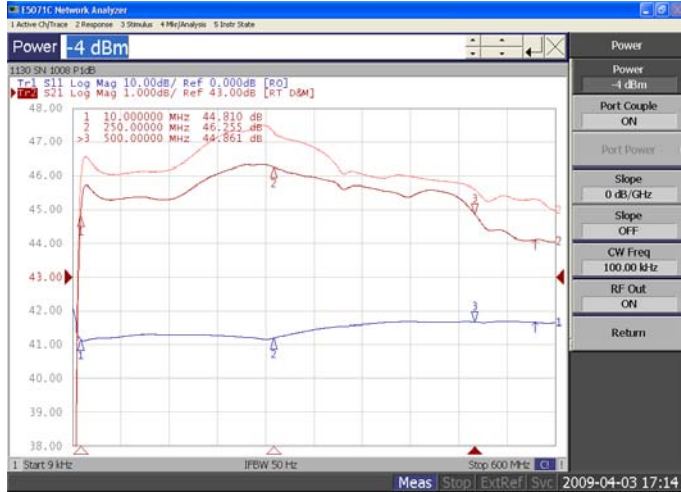
1130 - BBM2C3KDK

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## TYPICAL PERFORMANCE PLOTS

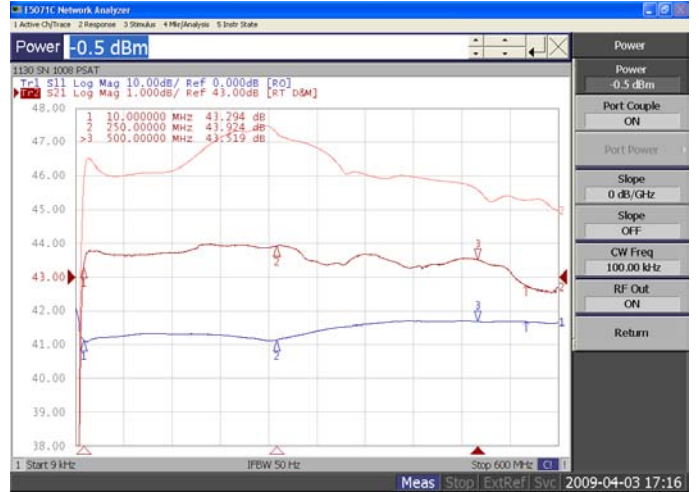
### Plots 1 - Small Signal and $P_{1dB}$ Gain

Top Curve: Small Signal Gain @  $P_{IN} = -20dBm$   
 Middle Curve: Power Gain @  $P_{1dB}$ ,  $P_{IN} = -4.0dBm$   
 Reference: 43dB, 1dB/div.  
 Bottom Curve: Input Return Loss  
 Reference: 0dB, 10dB/div.



### Plot 2 - Small Signal and $P_{SAT}$

Top Curve: Small Signal Gain @  $P_{IN} = -20dBm$   
 Middle Curve:  $P_{SAT}$  @  $P_{IN} = -0.5dBm$   
 Reference: 43dB, 1dB/div.  
 Bottom Curve: Input Return Loss  
 Reference: 0dB, 10dB/div.



### Plot 3 - Gain Adjustment Range

Top Curve: Maximum Gain @  $P_{IN} = -20dBm$   
 Middle Curve: Minimum Gain @  $P_{IN} = -20dBm$   
 Reference: 20dB, 10dB/div.  
 Bottom Curve: Input Return Loss  
 Reference: 0dB, 10dB/div.

