

## Solid State Broadband High Power Amplifier

**2065 - BBS1C3KFL**
**1 – 500 MHz / 30 Watts**

The BBS1C3KFL (2065) is suitable for ultra broadband high power applications. This amplifier utilizes push-pull MOSFET power devices that provide wide frequency response and dynamic range, high gain, low distortions, and good linearity. Employing advanced broadband RF matching networks and combining techniques, EMI/RFI filters, and all qualified components achieve exceptional performance, and high efficiency. The system includes a universal voltage, single phase, power supply and a built-in forced air-cooling system. Empower RF's ISO9001 Quality Assurance Program assures consistent performance and the highest reliability.



SKU#: 2065AFFAAXXXX

- Solid-state class AB design
- Instantaneous ultra broadband
- Small and lightweight
- Front panel LCD controller or manual gain adjust
- Suitable for CW, AM, FM (Consult factory for other modulation types)
- 50 ohm input/output impedance
- High reliability and ruggedness

### ELECTRICAL SPECIFICATIONS @ 120V<sub>AC</sub>, 25°C, 50Ω System

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	1		500	MHz
Output Power CW	P <sub>SAT</sub>	30	35		Watt
Output Power @ 1dB Gain Compression	P <sub>1dB</sub>	20	25		Watt
Power Gain @ 1dB Gain Compression	G <sub>1dB</sub>	44			dB
Input Power for Rated P <sub>SAT</sub>	P <sub>IN</sub>		0		dBm
Small Signal Gain Flatness, P <sub>IN</sub> = -20dBm	ΔG			±1.5	dB
Gain Adjustment Range	FGA	25			dB
Input Return Loss	S <sub>11</sub>			-10	dB
Noise Figure @ maximum gain	NF		10		dB
Third Order Intercept Point 2-Tone @ 33dB/Tone, 100kHz Spacing	IP3		+52		dBm
Harmonics @ P <sub>OUT</sub> = 20W	2 <sup>ND</sup> / 3 <sup>RD</sup>		-20		dBc
Spurious Signals	Spur		-70	-60	dBc
Operating Voltage (1-phase)	V <sub>AC</sub>	100		240	Volt
Power Consumption @ 30W CW	P <sub>D</sub>			220	Watt

### MECHANICAL SPECIFICATIONS

Parameter	Specification	Unit
Dimensions	8.5 x 3.5 x 16	Inch
Weight	15	Pound
RF Connectors Input/Output	Type-N, Female	
Cooling	Built-in forced air cooling system	

### ENVIRONMENTAL CHARACTERISTICS (Design to Meet)

Parameter	Symbol	Min	Typ	Max	Unit
Operating Ambient Temperature	T <sub>A</sub>	0		+50	°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 I	VI / SH		Airborne		

### LIMITS

Input RF drive level without damage	+10 dBm	Max
Load VSWR @ P <sub>OUT</sub> = 20W	∞ @ 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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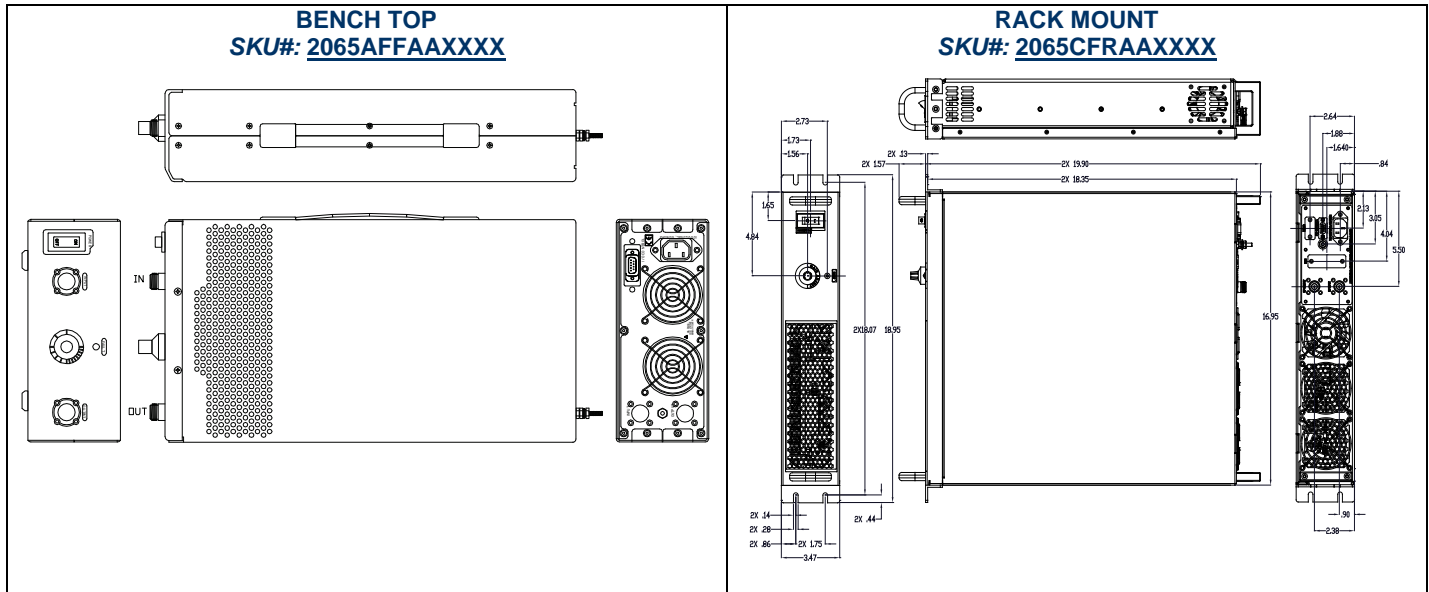
## AVAILABLE OPTIONS

SKU #	Description	LCD Touchscreen
2065CLFAAXXXX	LCD controller, Front RF connectors 100-240VAC, 50/60Hz.	Touchscreen Digital Display, including FWD/REV Power indication (dBm or Watt scale), Gain Adjustment, ALC Fast/Slow, On/Off, Standby mode, Fault indication, Rear panel GPIB/HPIB IEEE-488.2 and Half Duplex RS232. <i>Note: (Output power is lowered by 0.5-0.75dB with this option)</i>
2065CFRAAXXXX	FGA (Front Gain Adjust) Rear RF Connectors, 100-240VAC, 50/60Hz	
Optional	Rack Slides (Call for price)	
2065AFFAAXXXX	Bench top, FGA (Front Gain Adjust) Front RF Connectors, 100-240VAC, 50/60Hz	
2065AFRAAXXXX	Bench top, FGA (Front Gain Adjust) Rear RF Connectors, 100-240VAC, 50/60Hz	

## I/O INTERFACE CONNECTOR – D-sub 9-pin, Female

Pin #	Description	Specification	Option		
			Bench Top	FGA	LCD
1	Forward TP	Analog Voltage 0-5V <sub>DC</sub> relative to Forward Power Level			√
2	Reverse TP	Analog Voltage 0-5V <sub>DC</sub> relative to Reverse Power Level			√
3	5V TP	Test point: 5.0V <sub>DC</sub> ±0.2V	√	√	√
4	VVA TP	Test point: 5.6V <sub>DC</sub> ±0.2V	√	√	
5	EXT Shutdown	Amplifier Disable: TTL Logic High (5V) <i>(Internally Pulled-Low)</i>	√	√	√
6	12V TP	Test point: 12.0V <sub>DC</sub> ±0.5V	√	√	√
7	P/S TP	Test point: 26.0-30.0V <sub>DC</sub>	√	√	√
8&9	GND	Ground	√	√	√

## SYSTEM OUTLINES



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## TYPICAL PERFORMANCE PLOTS

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

Top Curve: Small Signal Gain @  $P_{IN} = -20dBm$   
 Middle Curve: Power Gain @  $P_{1dB}$ ,  $P_{IN} = -1.0dBm$   
 Reference: 45dB, 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 @  $P_{SAT}$ ,  $P_{IN} = 2.0dBm$   
 Reference: 45dB, 1dB/div.  
 Bottom Curve: Input Return Loss  
 Reference: 0dB, 10dB/div.



### Plot 3 – Gain Adjustment Range

Top Curve: Maximum Gain @  $P_{IN} = -20dBm$   
 Bottom Curve: Minimum Gain @  $P_{IN} = -20dBm$   
 Reference: 30 dB, 10dB/div.  
 Middle Curve: Input Return Loss @ Minimum Gain  
 Reference: 0dB, 10dB/div.

