

## Solid State Broadband High Power Amplifier

**2075 - BBS0A3KEL**
**0.01 – 500 MHz / 25 Watts**

The BBS0A3KEL (SKU 2075) is suitable for immunity testing, laboratory, and broadband linear applications. This rack mount amplifier utilizes push-pull MOSFET power devices that provide high gain, wide dynamic range, low distortions and good linearity. Exceptional performance, long term reliability and high efficiency are achieved by employing advanced broadband RF matching networks and combining techniques, built in high quality power supply, EMI/RFI filters, machined housings and all qualified components. Empower RF's ISO9001 Quality Assurance Program assures consistent performance and the highest reliability.



SKU#: 2075CLFAAXXX

- Solid-state class AB linear design
- Instantaneous ultra broadband
- Small form factor and lightweight
- Standard front panel 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, 50 Ω System

Characteristics	Rating	Min	Typ	Max	Units
Frequency Response	BW	0.01		500	MHz
Output Power CW	P <sub>SAT</sub>	25			Watt
Output Power @ 1dB Gain Compression	P <sub>1dB</sub>	15	20		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	3	dBm
Small Signal Gain Flatness	ΔG			±1.5	dB
Gain Adjustment Range	FGA	20	25		dB
Input Return Loss	S <sub>11</sub>			-10	dB
Noise Figure @ maximum gain	NF		7	10	dB
Harmonics @ P <sub>OUT</sub> = 15W	2 <sup>ND</sup> / 3 <sup>RD</sup>		-20		dBc
Third Order Intercept Point 2-Tone @ 33dBm/Tone, 100kHz Spacing	IP3		+54		dBm
Spurious Signals	Spur		-70	-60	dBc
Operating Voltage (1-phase)	V <sub>AC</sub>	100		240	Volt
Power Consumption @ P <sub>OUT</sub> = 25W CW	P <sub>D</sub>		200	220	Watt

### MECHANICAL SPECIFICATIONS

Parameter	Value	Units	Limits
Dimensions W x H x D	19 x 3.5 x 18	Inch	Typ
Weight	27	lb.	Max
RF Connectors Input/Output	Type-N, Female		
Cooling	Built-in internal forced air cooling system		

### ENVIRONMENTAL SPECIFICATIONS (Design to Meet)

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

### LIMITS

Input RF drive level without damage	+10 dBm	Max
Load VSWR @ P <sub>OUT</sub> = 15W	∞ @ 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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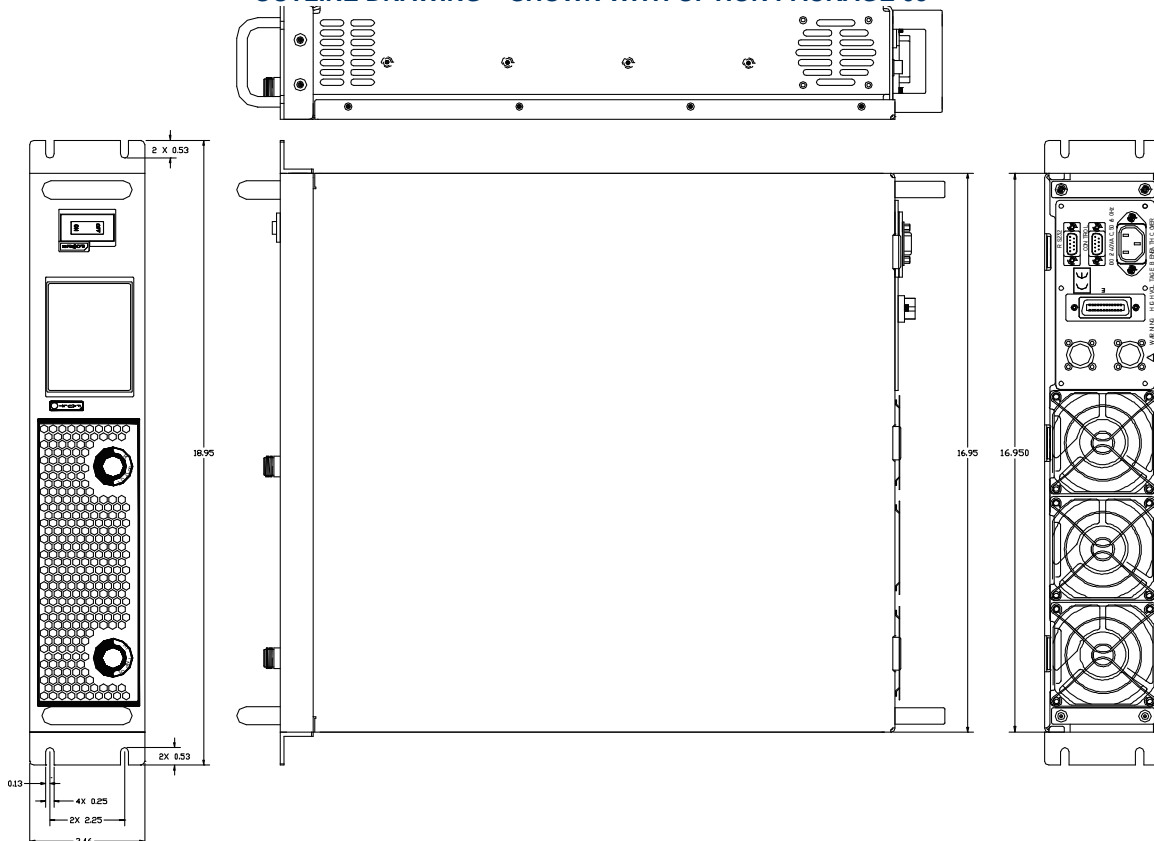
## AVAILABLE OPTIONS

SKU #	Description	LCD Touchscreen
2075CLFAAAXXXX	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.
2075CFFAAXXXX	FGA (Front Gain Adjust), Front RF connectors, 100-240VAC, 50/60Hz	
2075CFRAAXXXX	FGA (Front Gain Adjust), Rear RF connectors, 100-240VAC, 50/60Hz	
Optional	Rack Slides (Call for price)	

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

Pin #	Description	Specifications	Options	
			FGA	LCD
1	Forward Test Point	Analog Voltage 0-5V <sub>DC</sub> relative to Forward Power Level		√
2	Reverse Test Point	Analog Voltage 0-5V <sub>DC</sub> relative to Reverse Power Level		√
3	5V Test Point	Output +5.0V <sub>DC</sub> ±0.2V	√	√
4	VVA Test Point	VVA Gain Control +5.6V <sub>DC</sub> ±0.2V	√	
5	EXT Shutdown	Amplifier Disable: TTL Logic High (5V) (Internally Pulled-Low)	√	√
6	12V Test Point	Output +12.0V <sub>DC</sub> ± 0.5V	√	√
7	P/S Test Point	Power Supply Output voltage: +26.0-30.0V <sub>DC</sub>	√	√
8&9	GND	Ground	√	√

## OUTLINE DRAWING – SHOWN WITH OPTION PACKAGE 05



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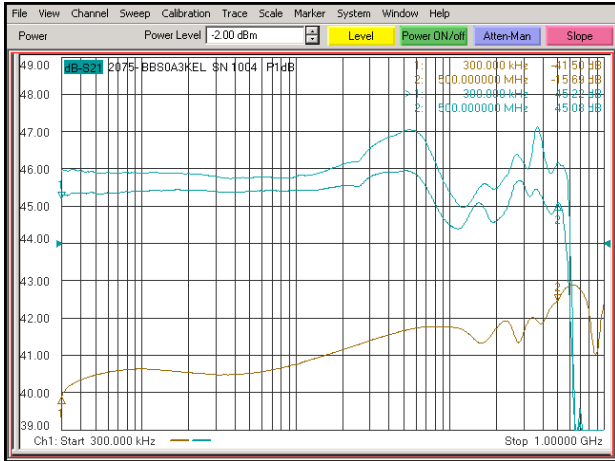
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## TYPICAL PERFORMANCE PLOTS

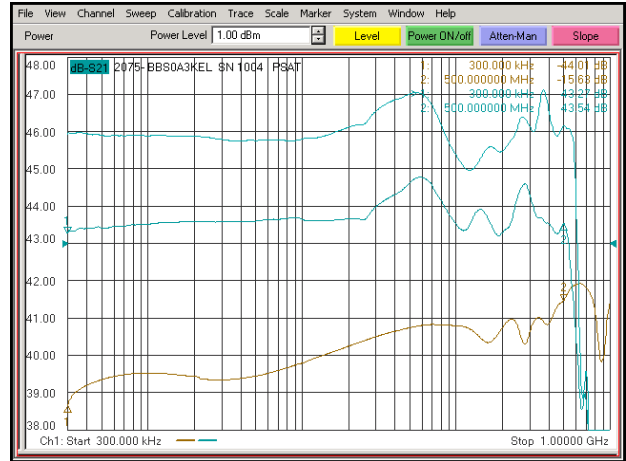
**Plot 1 – Small Signal Gain and  $P_{1dB}$**

Top Curve: Small Signal Gain @  $P_{IN} = -20dBm$   
 Middle Curve: Power Gain @  $P_{1dB}$ ,  $P_{IN} = -2.0dBm$   
 Reference: 44dB, 1dB/div.  
 Bottom Curve: Input Return Loss  
 Reference: 0dB, 10dB/div.



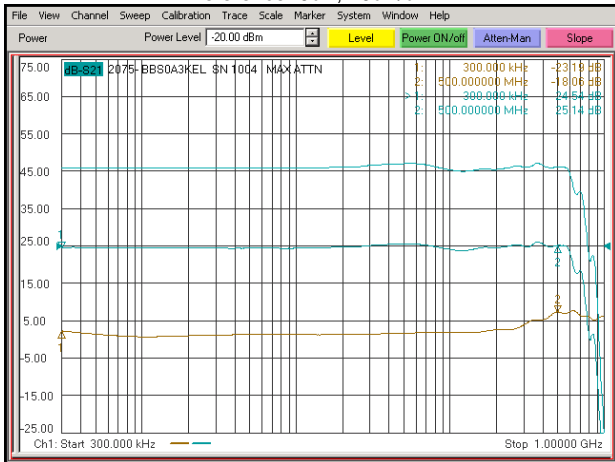
**Plot 2 – Small Signal Gain and  $P_{SAT}$**

Top Curve: Small Signal Gain @  $P_{IN} = -20dBm$   
 Middle Curve: Power Gain @  $P_{SAT}$ ,  $P_{IN} = +1.0dBm$   
 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: 25dB, 10dB/div.  
 Bottom Curve: Input Return Loss @ Minimum Gain  
 Reference: 0dB, 10dB/div.



**Plot 4 – ALC Flatness @ 41dBm & 34dBm**

Top Curve: ALC @ 41dBm,  $P_{IN} = 0dBm$   
 Middle Curve: ALC @ 34dBm,  $P_{IN} = 0dBm$   
 Reference: 34dB, 2dB/div.  
 Bottom Curve: Input return Loss  
 Reference: 0dB, 10dB/div.

