

Solid State Broadband High Power RF Amplifier

2047 - BBS4A5ABJ

1000 – 2000 MHz / 12 Watts

The BBS4A5ABJ (2047) is suitable for broadband or band specific L-Band high power linear applications. These amplifiers use linear GaAsFET power devices that provide high gain, wide dynamic range, low distortions, and excellent linearity. Exceptional performance and long term reliability 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.



SKU#: 2047CLFAAXXX

- Solid-state Class A linear design
- Instantaneous broadband
- Small form factor and lightweight
- Suitable for CW, AM and FM (Consult factory for other radiation types)
- 50 ohm input/output impedance
- Built-in Control, Monitoring
- High reliability and ruggedness

ELECTRICAL SPECIFICATIONS @ 120V_{AC}, 25°C, 50 Ω System

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	1000		2000	MHz
Power Output CW	P _{SAT}	12	15		Watt
Power Output @ 1dB Gain Compression	P _{1dB}	10			Watt
Power Gain @ 1dB Gain Compression	G _{1dB}	40			dB
Input Power for Rated P _{SAT}	P _{IN}		0	5	dBm
Small Signal Gain Flatness	ΔG		±1.0	±1.5	dB
Gain Adjustment Range	FGA	20	25		dB
Input Return Loss	S ₁₁			10	dB
Noise Figure	NF			10	dB
Harmonics @ P _{OUT} = 10W	H		-20		dBc
Third Order Intercept Point 2-Tone @ 36dBm/Tone, 100kHz Spacing	IP3	+50			dBm
Spurious Signals	Spur		-70	-60	dBc
Operating Voltage	V _{AC}	100		240	Volt
Power consumption @ P _{OUT} = 12W CW	P _D			100	Watt

Parameter	Value	Unit
Dimensions	19 x 3.5 x 18.5 8.5 x 3.5 x 15.6 (Bench Top)	Inch
Weight	15	Pound
RF Connectors Input / Output	Type-N, Female	
Cooling	Built-in internal forced air cooling system	

ENVIRONMENTAL CHARACTERISTICS (designed to meet)

Parameter	Symbol	Min	Typ	Max	Unit
Operating Ambient Temperature	T _A	0		+50	°C
Storage Temperature	T _{STG}	-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	+10dBm	Max
Load VSWR @ P _{OUT} = 10W	∞ @ 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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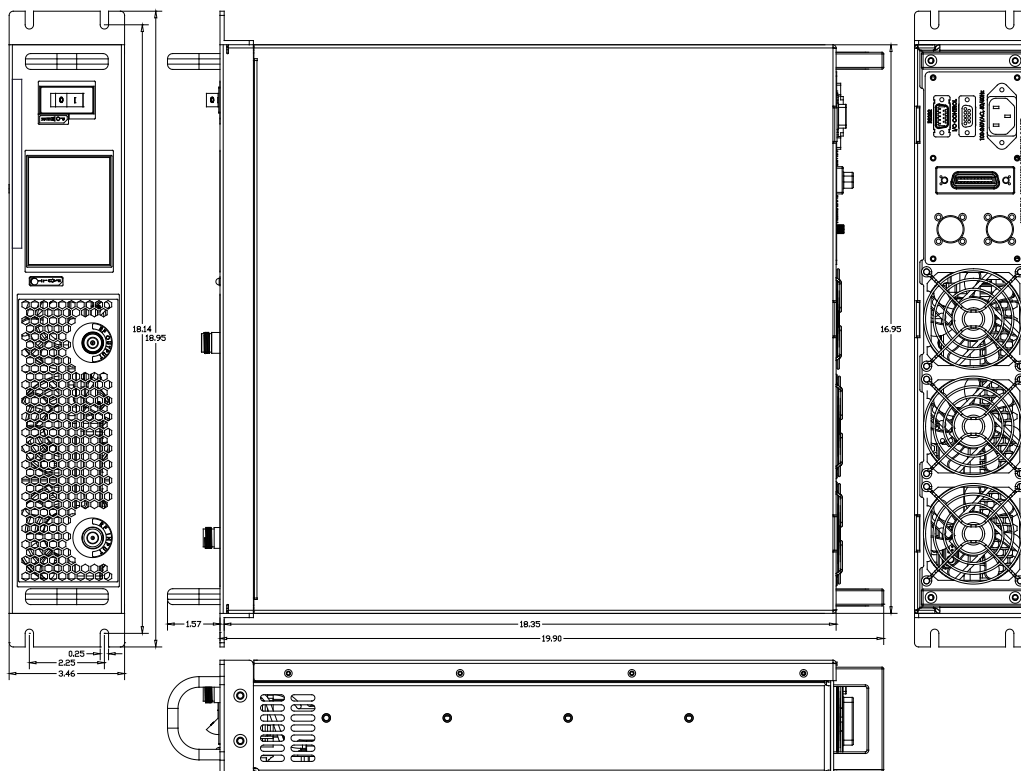
AVAILABLE OPTIONS

SKU Number	Description	LCD Touchscreen
2047CLFAAXXXX	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>
2047CFRAAXLXX	FGA (Front Gain Adjust) Rear RF Connectors, 100-240VAC, 50/60Hz	
Optional	Rack Slides (Call for price)	
2047AFFAAXXXX	Bench Top, FGA (Front Gain Adjust) Front RF Connectors, 100-240VAC, 50/60Hz	

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

Pin #	Description	Specifications	Option	
			Bench Top/FGA	LCD
1	Forward Test Point	Analog Voltage 0-5V _{DC} relative to Forward Power Level		√
2	Reverse Test Point	Analog Voltage 0-5V _{DC} relative to Reverse Power Level		√
3	5V Test Point	Test point: 5.0V _{DC} ±0.2V	√	√
4	VVA Test Point	Test point: 5.6V _{DC} ±0.2V	√	
5	EXT Shutdown	Amplifier Disable: TTL Logic High (5V) (Internally Pulled-Low)	√	√
6	12V Test Point	Test point: 12.0V _{DC} ±0.5V	√	√
7	P/S Test Point	Test point: 12.0-15.0V _{DC}	√	√
8&9	GND	Ground	√	√

OUTLINE DRAWING SHOWN SKU#: 2047CLFAAXXXX



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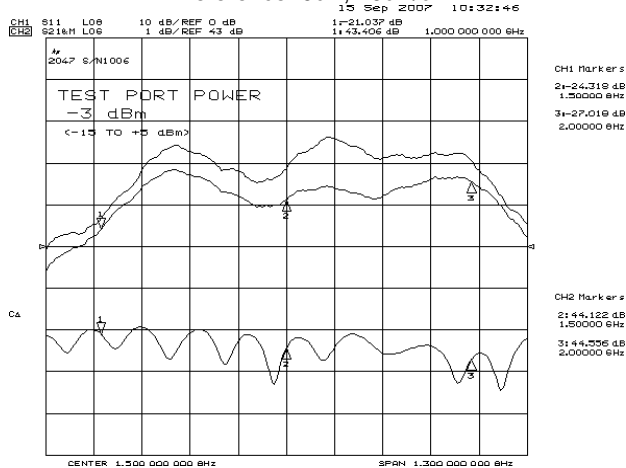
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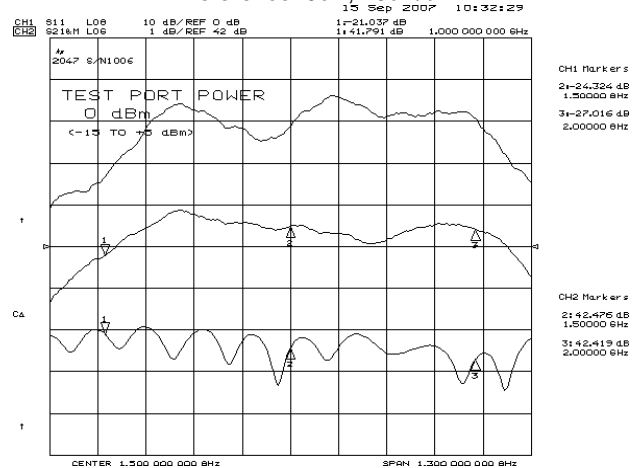
TYPICAL PERFORMANCE PLOTS

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

Top Curve: Small Signal Gain @ $P_{IN} = -15dBm$
 Middle Curve: Power Gain @ P_{1dB} , $P_{IN} = -3.0dBm$
 Reference: 43dB, 1dB/div.
 Bottom Curve: Input Return Loss
 Reference: 0dB, 10dB/div.


Plot 2 – Small Signal Gain and P_{SAT}

Top Curve: Small Signal Gain @ $P_{IN} = -15dBm$
 Middle Curve: Power Gain @ P_{SAT} , $P_{IN} = 0.0dBm$
 Reference: 42dB, 1dB/div.
 Bottom Curve: Input Return Loss
 Reference: 0dB, 10dB/div.


Plot 3 – Gain Adjustment Range

Top Curve: Maximum Gain @ $P_{IN} = -15dBm$
 Middle Curve: Minimum Gain @ $P_{IN} = -15dBm$
 Reference: 20dB, 10dB/div.
 Bottom Curve: Input Return Loss @ Minimum Gain
 Reference: 0dB, 10dB/div.

