

Solid State Broadband High Power Amplifier

2083 - BBS2C4AAJ
10 – 1000 MHz / 10 Watts

The BBS2C4AAJ (2083) is suitable for ultra broadband high power applications. This amplifier utilizes high power push-pull MOSFET 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#: 2083AFFAAXXX

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

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

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	10		1000	MHz
Output Power CW	P _{SAT}	10	15		Watt
Output Power @ 1dB Gain Compression	P _{1dB}	5	10		Watt
Power Gain @ 1dB Gain Compression	G _{1dB}	40			dB
Input Power for Rated P _{SAT}	P _{IN}		0		dBm
Small Signal Gain Flatness, P _{IN} = -20dBm	ΔG		±1.0	±1.5	dB
Gain Adjustment Range	VVA	25			dB
Input Return Loss	S ₁₁			-10	dB
Noise Figure @ maximum gain	NF		10		dB
Third Order Intercept Point 2-Tone @ 27dBm/Tone, 100kHz Spacing	IP3		+49		dBm
Harmonics @ P _{OUT} = 5W	H		-25		dBc
Spurious Signals	Spur		-70	-60	dBc
Operating Voltage (1-phase)	V _{AC}	100		240	Volt
Power Consumption @ P _{OUT} = 10W	P _D			120	Watt

MECHANICAL SPECIFICATIONS

Parameter	Value	Unit
Dimensions – Bench Top / Rack Mount	8.5 x 3.5 x 16 / 19 x 3.5 x 18	Inch
Weight – Bench Top / Rack Mount	20 / 30	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 _A	0		+50	°C
Non-operating 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		

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LIMITS

Input RF drive level without damage	+10dBm	Max
Load VSWR @ P _{OUT} = 5W	∞ @ all load phase & amplitude for duration of 1 minute 3:1 @ all load phase & amplitude continuous	-
Thermal Overload	85°C shutdown	Max

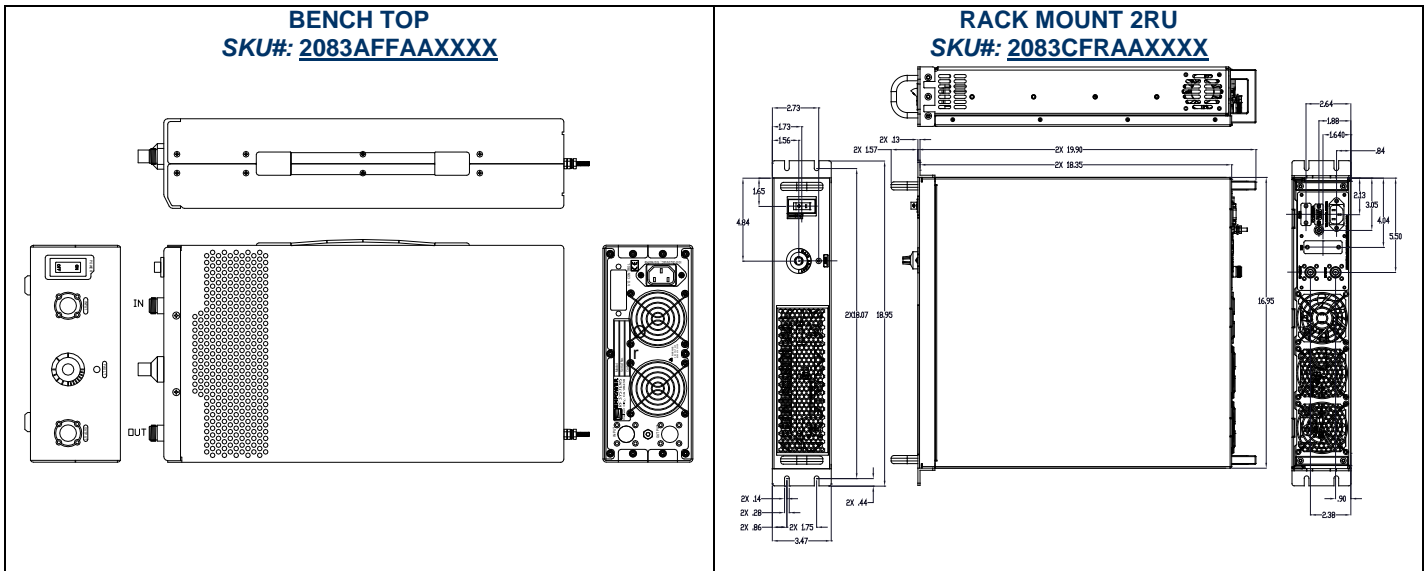
AVAILABLE OPTIONS

SKU #	Description
2083CFRAAXXX	FGA (Front Gain Adjust) Rear RF Connectors, 100-240VAC, 50/60Hz
Optional	Rack Slides (Call for price)
2083AFFAAXXX	Bench Top, FGA (Front Gain Adjust) Front RF Connectors, 100-240VAC, 50/60Hz
2083AFRAAXXX	Bench Top, FGA (Front Gain Adjust) Rear RF Connectors, 100-240VAC, 50/60Hz

I/O CONNECTOR – D-Sub 9-Pin, Female

Pin #	Description	Specification	Option	
			Bench Top	FGA
1	N/C	No Connection		
2	N/C	No Connection		
3	5V TP	Test point: 5.0V _{DC} ±0.2V	√	√
4	VVA TP	Test Point: 5.6V _{DC} ±0.2V	√	√
5	EXT Shutdown	Amplifier Disable: TTL Logic High (5V) (Internally Pulled-Low)	√	√
6	12V TP	Test point: 12.0V _{DC} ±0.5V	√	√
7	P/S TP	Test point: 26.0-30.0V _{DC}	√	√
8&9	GND	Ground	√	√

SYSTEM OUTLINES



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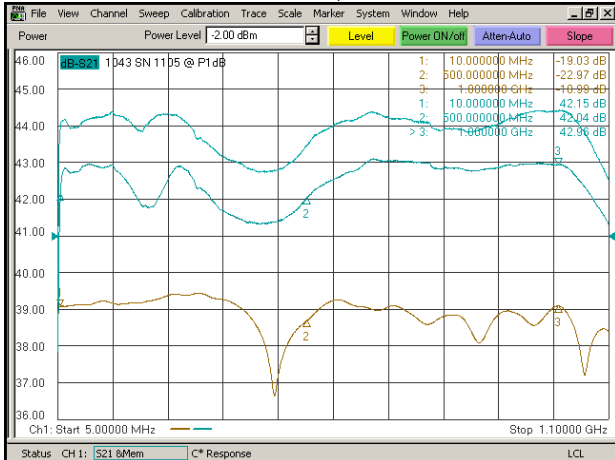
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TYPICAL PERFORMANCE PLOTS

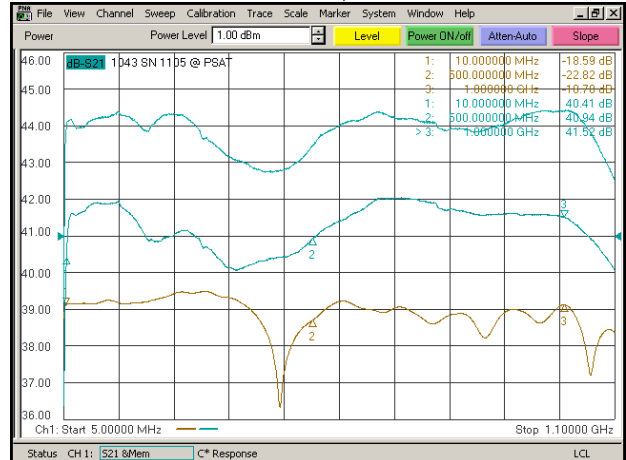
Plot 1 – Small Signal Gain and P_{1dB}

Top Curve: Small Signal Gain @ $P_{IN} = -20dBm$
 Middle Curve: Power Gain @ P_{1dB} , $P_{IN} = -2.0dBm$
 Reference: 41dB, 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: 41dB, 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: 5dB, 10dB/div.
 Bottom Curve: Input Return Loss
 Reference: 0dB, 10dB/div.

