

Solid State Broadband High Power Amplifier

2111 - BBS3O6AHM
700 - 3000MHz / 50Watts

PRELIMINARY INFORMATION

The BBS3O6AHM (SKU # 2111) is suitable for ultra broadband high power linear applications, laboratory, and RFI/EMC susceptibility testing. This amplifier utilizes high power GaAsFET devices that provide wide frequency response and dynamic range, high gain, low distortions, and excellent 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.

- Solid-state Class A linear design
- Instantaneous ultra broadband
- Small and lightweight
- Standard front panel manual gain adjust
- Suitable for CW, AM, and FM (for other modulation type consult factory)
- 50 Ohm Input/Output impedance
- High reliability and ruggedness



Shown with Option Package 10

ELECTRICAL SPECIFICATIONS @ 120VAC, 25°C, 50Ω System

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	800	700-3000	3000	MHz
Output Power CW	P _{SAT}	40	50		Watt
Output Power @ 1dB G.C.P	P _{1dB}	30	40		Watt
Power Gain @ 1dB G.C.P	G _{1dB}	46	48		dB
Input Power for Nominal P _{OUT}	P _{IN}		0		dBm
Small Signal Gain Flatness	ΔG			±2.0	dB
Gain Adjustment Range	FGA	25			dB
Input Return Loss	S ₁₁			-10	dB
Noise Figure @ Maximum Gain	NF		10		dB
Third Order Intercept Point	IP ₃		+56		dBm
Harmonics @ 1dB G.C.P	H		-20		dBc
Spurious Signals	Spur		-70	-60	dBc
Operating Voltage (single phase)	VAC	100		240	Volt
AC Power Consumption	P _D			600	Watt

ENVIRONMENTAL CHARACTERISTICS (Design to Meet)

Parameter	Symbol	Min	Typ	Max	Unit
Operating Temperature	T _c	0		+50	°C
Non-operating Temperature	T _{stg}	-40		+85	°C
Relative humidity w/o condensation	RH	95			%
Altitude	ALT	10,000	30,000		Feet
Shock & Vibration	SH / VI		Airborne		

MECHANICAL SPECIFICATIONS

Parameter	Value	Units	Limits
Dimensions	19 x 5.25 x 22	Inch	Max
Weight	50	lb.	Max
RF Connectors Input/Output	Type-N female		
Cooling	Built in internal forced air cooling system		

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PROTECTIONS

Input Overdrive	+6dBm	Max
Load VSWR @ 50W	∞ @ all load phase & amplitude for duration of 1 minute 3:1 @ all load phase & amplitude continuous	Nom
Thermal Overload	85°C shutdown	Max

SELECTED AVAILABLE OPTIONS (Refer to table for systems options) www.EmpowerRF.com

Option	Number	Description	Price
FGA	061	Front panel 10 turns manual gain adjustment.	Standard
LCD	062	Touchscreen Digital Display, including Fwd/Rev Power indication (dB or Watt scale), Gain Adjustment, ALC Fast/Slow, On/Off, Standby mode, Fault indication, Rear panel HPIB IEEE-488.2 or Full Duplex RS232 remote interface. Note: Output Power is lowered by 0.5 - 0.75dB with this option.	Call
FCN	051	Front Panel Type-N female	N/C
RCN	052	Rear Panel Type-N female	N/C

Available Option Packages: 07, 08, 09, 10

I/O CONNECTOR – Dsub, 9 Pin

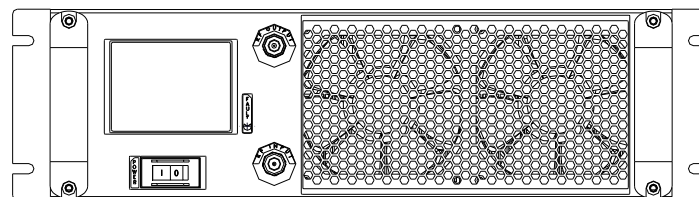
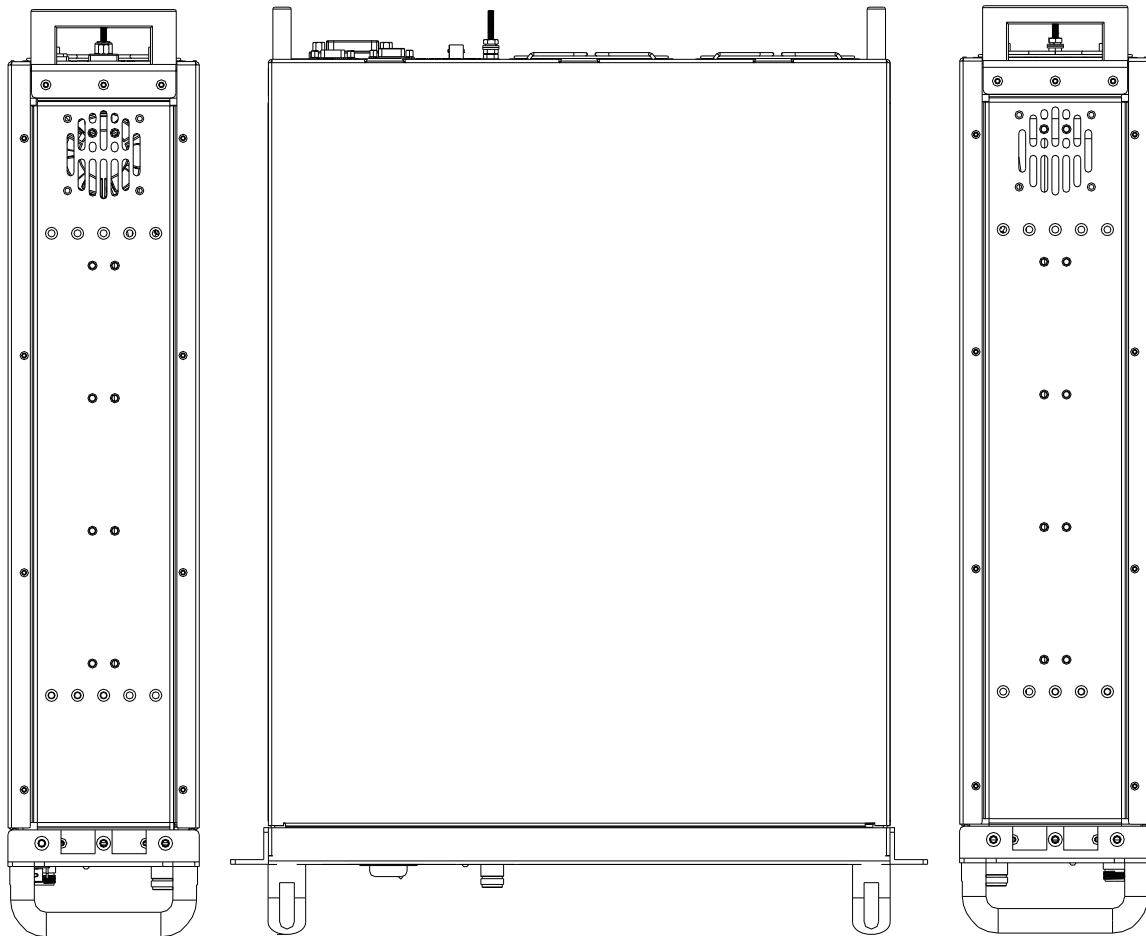
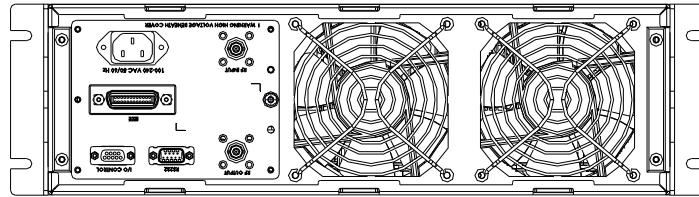
Pin #	Description	Specifications	Options	
			FGA	LCD
1	Forward Test Point	Analog Voltage 0-5V Relative to Forward Power Level		√
2	Reverse Test Point	Analog Voltage 0-5V Relative to Reverse Power Level		√
3	+5 V Test Point	+5.0V _{DC} ±0.2	√	√
4	VVA Test Point	+5.6 V _{DC} ±0.2, VVA Gain Control Voltage	√	
5	External Shutdown	Amplifier Enable: TTL Low (0 V) or Open Amplifier Disable: TTL High (5 V)	√	√
6	+12 V (Test Point)	+12.0V _{DC} ±0.5	√	√
7	PS+ (Test Point)	+13.0V _{DC} ±1.0 Internal Power Supply Output Voltage	√	√
8	GND	Ground	√	√
9	GND	Ground	√	√

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SYSTEM OUTLINE SHOWN WITH OPTION PACKAGE 09



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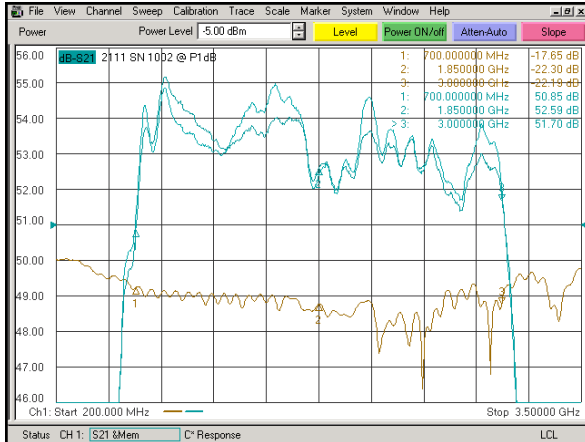
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Typical Performance Plots

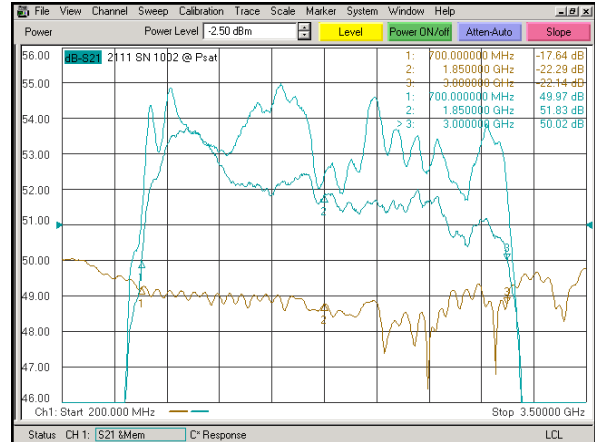
Plot 1 - Small signal & P1dB Gain Plots

Top Curve: Small Signal gain @ Pin = -20dBm
 Middle Curve: Power Gain @ P1dB, Pin = -5.0dBm
 Reference: 51dB, 1dB/div
 Bottom Curve: Input Return Loss
 Reference: 0dB, 10dB/div



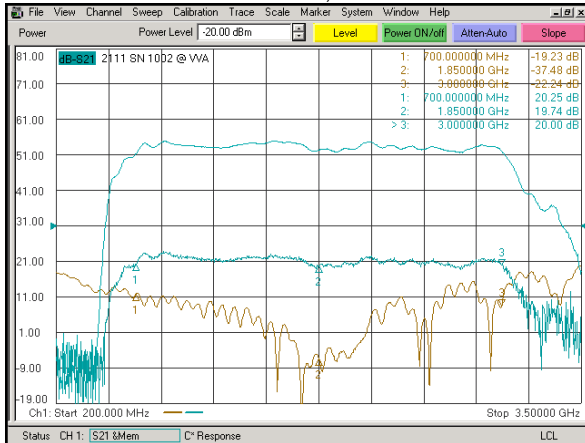
Plot 2 - Psat Gain Plots

Top Curve: Small Signal gain @ Pin = -20dBm
 Middle Curve: Power Gain @ P3dB, Pin = -2.50dBm
 Reference: 51dB, 1dB/div
 Bottom Curve: Input Return Loss
 Reference: 0dB, 10dB/div



Plot 3 - Gain Adjust Dynamic Range @ Pin = -20dBm

Top curve: Maximum Gain
 Middle Curve: Minimum gain
 Reference: 31dB, 10dB/div.
 Bottom curve: Input Return Loss
 Reference: 0dB, 10dB/div



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