

Solid State Broadband High Power Amplifier

2015 – BBS0D3FOQ

0.15 – 230 MHz / 250 Watts

The BBS0D3FOQ (2015) is suitable for immunity testing, laboratory, and ultra broadband high power 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#: 2015DLRAAXXX

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

ELECTRICAL SPECIFICATIONS @ 220V_{AC}, 25°C, 50 Ω System

Characteristics	Rating	Min	Typ	Max	Units
Frequency Response	BW	0.15		230	MHz
Power Output CW	P _{SAT}	250	300		Watt
Output Power @ 1dB Gain Compression	P _{1dB}	150			Watt
Power Gain @ 1dB Gain Compression	G _{1dB}	54			dB
Input Power for Rated P _{SAT}	P _{IN}		0	3	dBm
Small Signal Gain Flatness	ΔG			±1.5	dB
Gain Adjustment Range	FGA	25	30		dB
Input Return Loss	S ₁₁			-10	dB
Noise Figure @ maximum gain	NF		7	10	dB
Harmonics @ P _{OUT} = 150W	H		-20		dBc
Third Order Intercept Point 2-Tone @ 44dBm/Tone, 100kHz Spacing	IP3		+61		dBm
Spurious Signals	Spur		-70	-60	dBc
Operating Voltage (1-phase)	V _{AC}	100		240	Volt
Power Consumption @ P _{OUT} = 250W CW	P _D			1300	Watt

MECHANICAL SPECIFICATIONS

Parameter	Value	Units
Dimensions W x H x D	19 x 5.25 x 22	Inch
Weight	50	lb.
RF Connectors Input/Output	Type-N, Female	
Cooling	Built in forced-air system	

ENVIRONMENTAL SPECIFICATIONS (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		-

LIMITS

Input RF level drive without damage	+10 dBm	Max
Load VSWR @ P _{OUT} = 150W	∞ @ all load phase & amplitude for duration of 1 minute 3:1 @ all load phase & amplitude continuous	-
Thermal Overload	85°C shutdown	Max

Solid State Broadband High Power Amplifier

2015 – BBS0D3FOQ

0.15 – 230 MHz / 250 Watts

AVAILABLE OPTIONS

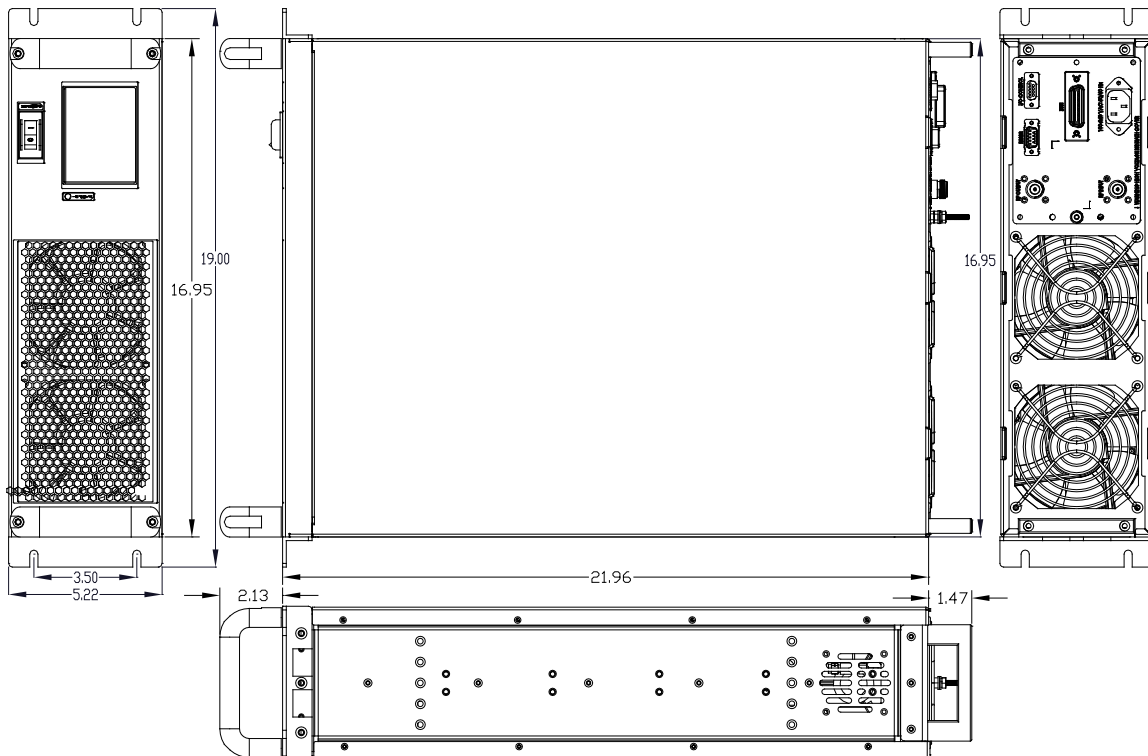
SKU #	Description	LCD Touchscreen
2015DLFAAXXXX	LCD controller, Front RF connectors 100-240VAC, 50/60Hz.	Touchscreen Digital Display, including FWD/REV Power indication (dBm or Watt scale), Gain Adjustment, ALC Fast/Slow, On/Off, Standby mode, Fault indication, Rear panel GPIB/HPIB IEEE-488.2 and Half Duplex RS232.
2015DLRAAXXXX	LCD controller, Rear RF connectors 100-240VAC, 50/60Hz.	
2015DFFAAXXXX	FGA (Front Gain Adjust) Front RF Connectors, 100-240VAC, 50/60Hz	
2015DFRAAXXXX	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 _{DC} relative to Forward Power Level		√
2	Reverse Test Point	Analog Voltage 0-5V _{DC} relative to Reverse Power Level		√
3	5V Test Point	+5.0V _{DC} ±0.2V	√	√
4	VVA Test Point	+5.6V _{DC} ±0.2V	√	
5	EXT Shutdown	Amplifier Disable: TTL Logic High (5V) (Internally Pulled-Low)	√	√
6	12V Test Point	+12.0V _{DC} ± 0.5V	√	√
7	P/S Test Point	+26.0-30V _{DC}	√	√
8&9	GND	Ground	√	√

SYSTEM OUTLINE SHOWN

SKU#: 2015DLRAAXXXX



Solid State Broadband High Power Amplifier

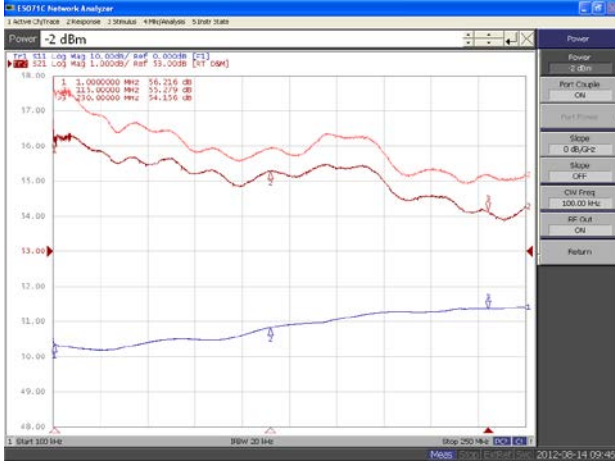
2015 – BBS0D3FOQ

0.15 – 230 MHz / 250 Watts

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: 53dB, 1dB/div.
 Bottom Curve: Input Return Loss
 Reference: 0dB, 10dB/div.



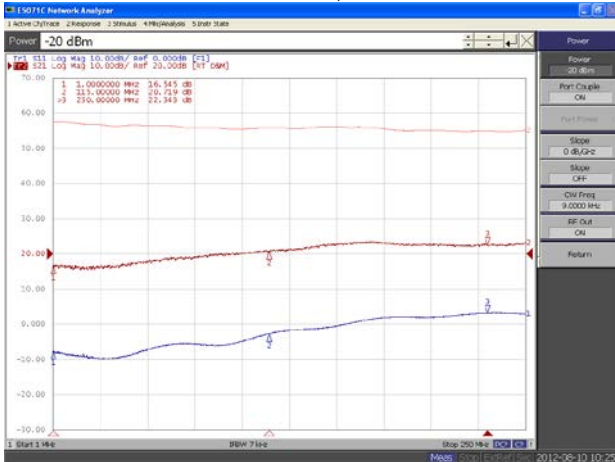
Plot 2 – Small Signal Gain and P_{SAT}

Top Curve: Small Signal Gain @ $P_{IN} = -20dBm$
 Middle Curve: Power Gain @ P_{SAT} , $P_{IN} = 0.0dBm$
 Reference: 53dB, 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: 20dB, 10dB/div.
 Middle Curve: Input Return Loss @ Minimum Gain
 Reference: 0dB, 10dB/div.



Plot 4 – ALC Flatness @ 50dBm & 42dBm

Top Curve: ALC @ 50dBm, $P_{IN} = 0dBm$
 Middle Curve: ALC @ 42dBm, $P_{IN} = 0dBm$
 Reference: 44dB, 2dB/div.
 Bottom Curve: Input Return Loss
 Reference: 0dB, 10dB/div.

