

Solid State Broadband High Power Amplifier

2014 - BBS0D3FKO

0.15 – 230 MHz / 100 Watts

The BBS0D3FKO (2014) is suitable for immunity testing, laboratory, and broadband high power 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#: 2014DFFAAXXX

- Solid-state class AB design
- Instantaneous ultra broadband
- 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 @ 120V_{AC}, 25°C, 50 Ω System

Characteristics	Rating	Min	Typ	Max	Unit
Operating Frequency	BW	0.15		230	MHz
Power Output CW	P _{SAT}	100	125		Watt
Power Output @ 1dB Gain Compression	P _{1dB}	60	80		Watt
Input Power for Rated P _{SAT}	P _{IN}		0	3	dBm
Small Signal Gain, P _{IN} = -20dBm	dB	53			dB
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} = 60W	H		-20		dBc
Third Order Intercept Point 2-Tone @ 37dBm/Tone, 100kHz Spacing	IP3		+58		dBm
Spurious Signals	Spur		-70	-60	dBc
Operating Voltage (1-phase)	V _{AC}	100		240	Volt
Power Consumption @ P _{OUT} = 100W CW	P _D		500	650	Watt

MECHANICAL SPECIFICATIONS

Parameter	Value	Unit
Dimensions W x H x D	19 x 5.25 x 22	Inch
Weight	47	Pound
RF Connectors Input / Output	Type-N, Female	
Cooling	Built-in forced air cooling 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 drive level without damage	+10 dBm	Max
Load VSWR @ P _{OUT} = 60W	∞ @ 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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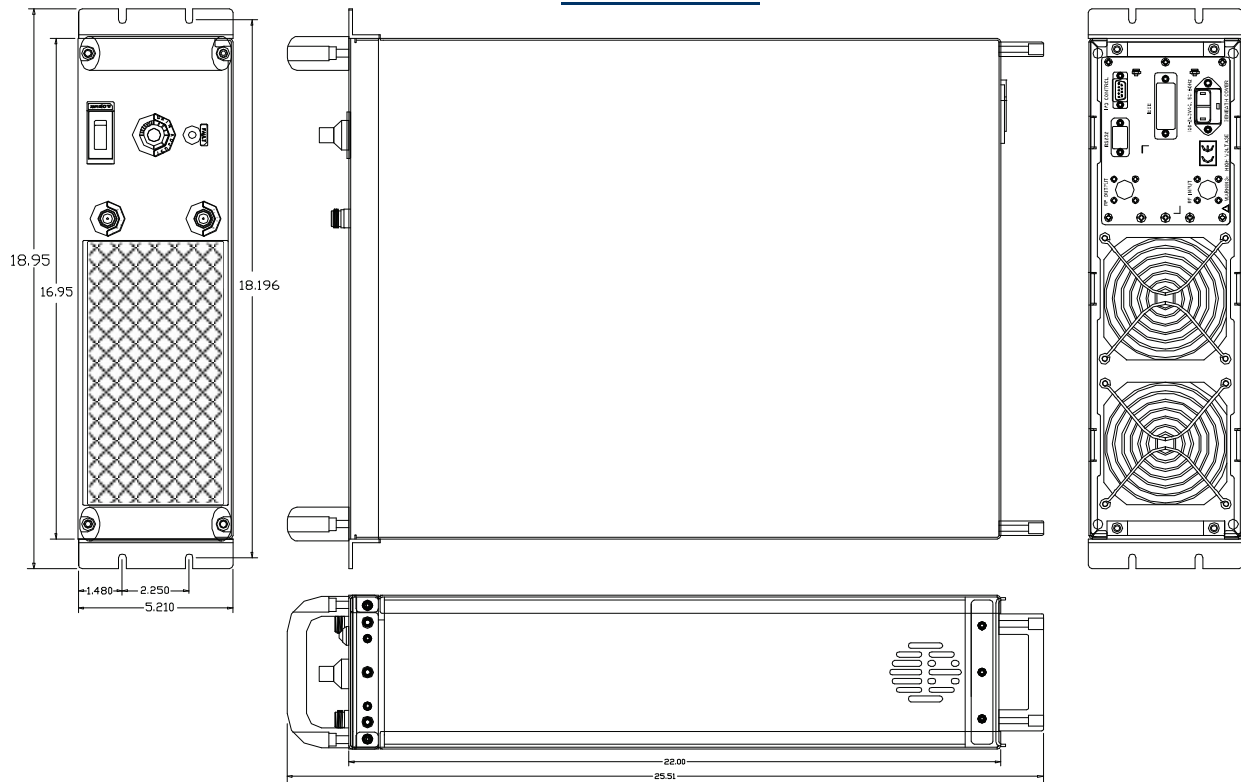
AVAILABLE OPTION

SKU #	Description	
2014DLFAAAXXX	LCD controller, Front RF connectors 100-240VAC, 50/60Hz	Touchscreen Digital Display, including FWD/REV Power indication (dBm/Watt scale), Gain Adjustment, ALC Fast/Slow, On/Off, Standby mode, Fault indication, Rear panel GPIB/HPIB IEEE-488.2 and Half Duplex RS232.
2014DFFAAXXX	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	Specification	Options	
			FGA	LCD
1	Forward Test Point	Analog voltage proportional to forward power level		X
2	Reverse Test Point	Analog voltage proportional to reverse power level		X
3	5V Test Point	Output +5.0V _{DC} ±0.2V	X	X
4	VVA Test Point	Control voltage +5.6V _{DC} ±0.2V	X	
5	EXT Shutdown	Amplifier Disable: TTL Logic High (5V) <i>(Internally Pulled-Low)</i>	X	X
6	12V Test Point	Output +12.0V _{DC} ± 0.5V	X	X
7	P/S Test Point	Power Supply Output voltage: +26.0-30.0V _{DC}	X	X
8&9	GND	Ground	X	X

SYSTEM OUTLINE Shown SKU: 2014DFFAAXXX



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TYPICAL PERFORMANCE PLOTS

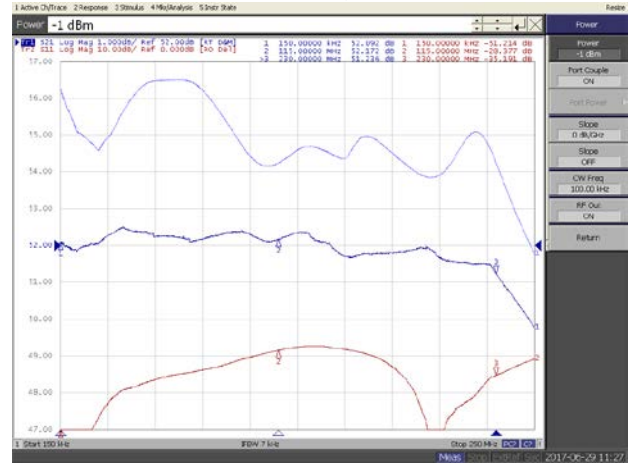
Plot 1 – Small Signal and P_{1dB} Gain

Top Curve: Small Signal Gain @ P_{IN} = -20dBm
 Middle Curve: Power Gain @ P_{1dB}, P_{IN} = -5.0dBm (Note 2)
 Reference: 52dB, 1dB/div.
 Bottom Curve: Input Return Loss
 Reference: 0dB, 10dB/div.



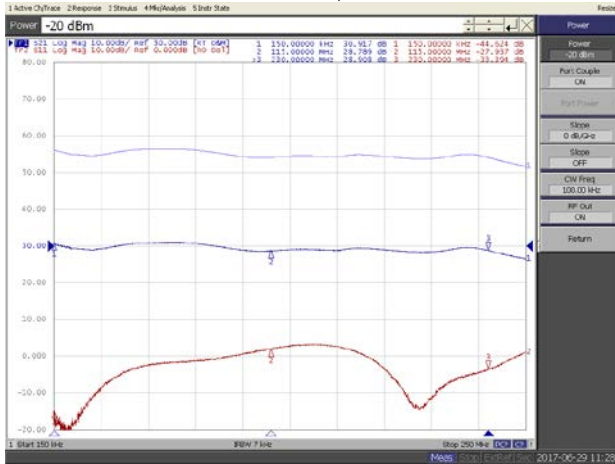
Plot 2 – Small Signal and P_{SAT}

Top Curve: Small Signal Gain @ P_{IN} = -20dBm
 Middle Curve: P_{SAT} @ P_{IN} = -1.0dBm (Note 2)
 Reference: 52dB, 1dB/div.
 Bottom Curve: Input Return Loss
 Reference: 0dB, 10dB/div.



Plot 3 – Gain Adjustment Range @ P_{IN} = -20dBm

Top Curve: VVA @ Maximum Gain
 Middle Curve: VVA @ Minimum Gain
 Reference: 30dB, 10dB/div.
 Bottom Curve: Input Return Loss
 Reference: 0dB, 10dB/div.



Plot 4 – ALC Flatness @ 50W & 20W

Top Curve: ALC @ 50W, P_{IN} = 0dBm
 Middle Curve: ALC @ 20W, P_{IN} = 0dBm
 Reference: 44dB, 1dB/div.
 Bottom Curve: Input Return Loss
 Reference: 0dB, 10dB/div.

