EMPOWER RF SYSTEMS, INC.

Solid State Broadband High Power Amplifier

2029 - BBS0D3FJN

0.15 – 230 MHz / 75 Watts

The BBS0D3FJN (2029) 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#: 2029DFRAAXLXX

- Solid-state Class AB design
- Instantaneous ultra broadband
- Front panel manual gain adjust or LCD controller
- Suitable for CW, AM, and FM (Consult factory for other modulation types)
- Built-in control, monitoring & protection circuits
- 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	0.15		230	MHz
Power Output CW	P_{SAT}	75	100		Watt
Power Output @ 1dB Gain Compression	P_{1dB}	50			Watt
Power Gain @ 1dB Gain Compression	G_{1dB}	48			dB
Input Power for Rated P_{SAT}	P_{IN}		0	3	dBm
Small Signal Gain Flatness	ΔG_{SS}			±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}= 50W	H		-20		dBc
Third Order Intercept Point 2-Tone @ 37dBm/Tone, 100kHz Spacing	IP3		+55		dBm
Spurious Signals	Spur		-70	-60	dBc
Operating Voltage (1-phase)	V_{AC}	100		240	Volt
Power Consumption @ P_{OUT} = 75W CW	P_D		400	500	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 internal 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	SH / VI		Airborne		-

LIMITS

Input RF drive level without damage	+10 dBm	Max
Load VSWR @ P_{OUT}= 50W	∞ @ 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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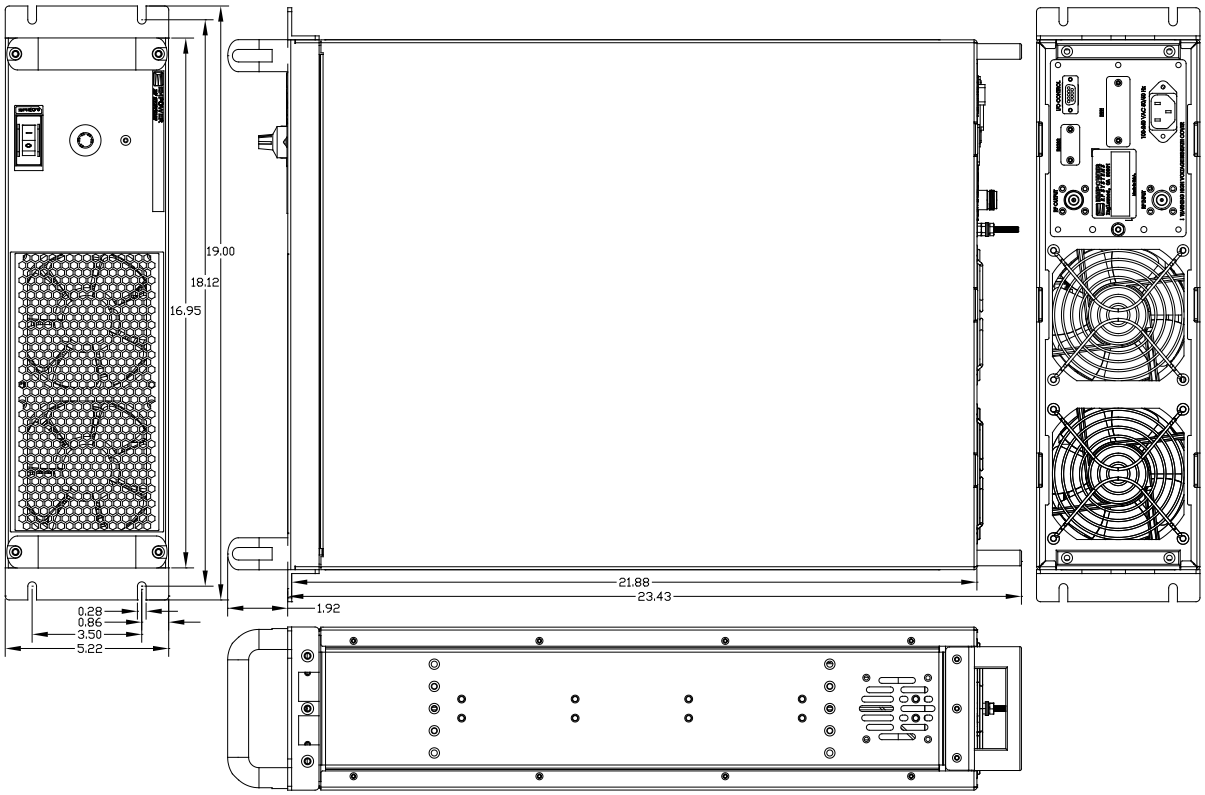
AVAILABLE OPTIONS

SKU #	Description	LCD Touchscreen
2029DLRAAXXXX	LCD controller, Rear 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. ***Note:*** ***(Output power is lowered by 0.5-0.75dB with this option)***
2029DFFAAXXXX	FGA (Front Gain Adjust), Front RF connectors, 100-240VAC, 50/60Hz	
2029DFRAAXLXX	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	Options 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	Output +5.0V_{DC} ±0.2V	√	√
4	VVA Test Point	VVA Gain Control +5.6V_{DC} ±0.2V	√	
5	EXT Shutdown	Amplifier Disable: TTL Logic High (5V) (*Internally Pulled-Low*)	√	√
6	12V Test Point	Output +12.0V_{DC} ± 0.5V	√	√
7	P/S Test Point	Power Supply Output voltage: +26.0-30.0V_{DC}	√	√
8&9	GND	Ground	√	√

SYSTEM OUTLINE Shown
***SKU#:* 2029DFRAAXLXX**



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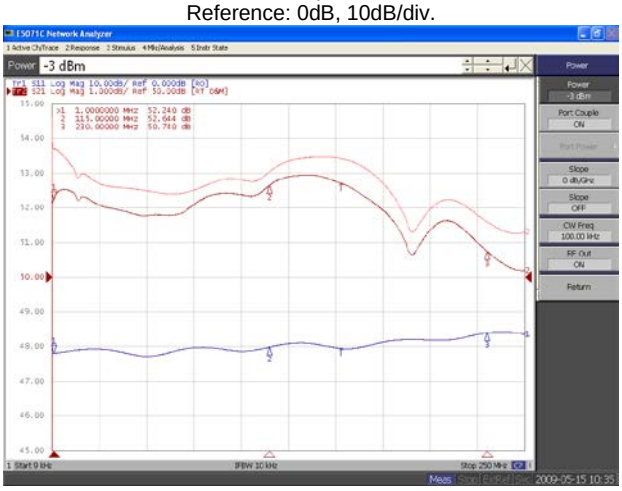
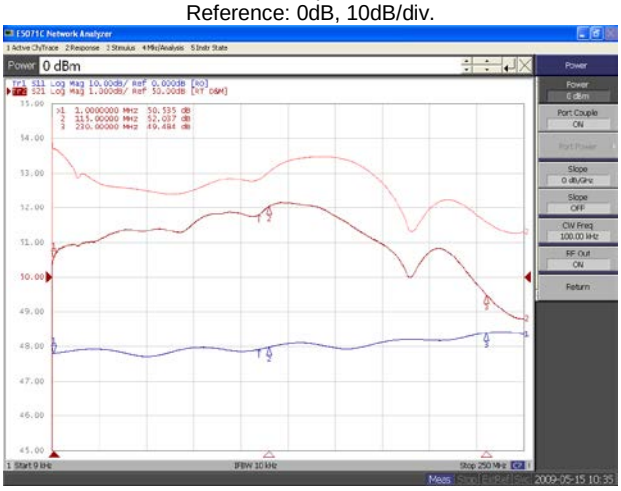
TYPICAL PERFORMANCE PLOTS

Plot 1 – Small Signal Gain and P_{1dB}
Top Curve: Small Signal Gain @ P_{IN}= -20dBm
Middle Curve: Power Gain @ P_{1dB}, P_{IN}= -3dBm
Reference: 50dB, 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}= 0dBm
Reference: 50dB, 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.