

# Solid State Broadband High Power Amplifier

**2233**
**500 - 2500 MHz / 500 Watts**

The 2233 is suitable for multi-octave bandwidth high power CW, modulated, and pulse applications. This amplifier utilizes high power GaN on SiC devices that provide wide frequency response, high gain, high peak power capability, and low distortions. Exceptional performance, long-term reliability and high efficiency are achieved by employing advanced broadband RF matching networks and combining techniques, EMI/RFI filters, and all qualified components. The amplifier is constructed in 8RU multi-drawer including the forced air-cooling.

The amplifier includes a built-in control and monitoring system, with protection functions which preserve high availability. Remote management and diagnostics are via an embedded web server allowing network managed site status and control simply by connecting the unit's Ethernet port to a LAN. Using a web browser and the unit's IP address (IPv4) allows ease of access with the benefit of multi-level security. The control system core runs an embedded OS (Linux), has a built-in non-volatile memory for event recording and factory setup recovery features. The extended memory option allows storage of control parameters and event logs.



Empower RF's ISO9001:2015 Quality Assurance Program assures consistent performance and the highest reliability.

- Solid-state class AB design
- Suitable for CW, AM, FM, Pulse and some linear applications (Consult factory for other modulation types)
- Compact Modular design
- 50 ohm input/output impedance
- Built-in Control, Monitoring and Protection functions
- High reliability and ruggedness

## ELECTRICAL SPECIFICATIONS over temperature conditions (-10 to +40°C)

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	500		2500	MHz
Power Output CW <sup>(Note 1)</sup>	P <sub>SAT</sub>	500			Watt
Power Gain @ 1dB Gain Compression	G <sub>1dB</sub>	60			dB
Input Power for Rated P <sub>SAT</sub>	P <sub>IN</sub>		-1.0		dBm
Input Power Range	P <sub>IN</sub>	-5.0		+3.0	dBm
Gain Flatness / Leveled ALC	ΔG			±3.5 / ±1.0	dB
Gain Adjustment Range	VVA	20			dB
Input Return Loss	S <sub>11</sub>			-10	dB
Noise Figure @ maximum gain	NF		20	25	dB
Third Order Intermodulation 2-Tone @ 51dBm/Tone, 1MHz Spacing	IM3	-20			dBc
Harmonics @ P <sub>OUT</sub> = 500W	2 <sup>ND</sup>		-15	-12	dBc
	3 <sup>RD</sup>		-20	-15	
Spurious Signals	Spur			-60	dBc
Operating Voltage	V <sub>AC</sub>	180		260	Volt
	V <sub>DC</sub>	24	28	32	
Power Consumption @ 500W CW	P <sub>D</sub>			3750	VA

Note: 1. CW measurement performed in MGC Mode (Manual Gain Control)

## MECHANICAL SPECIFICATIONS

Parameter	Value	Unit
Dimensions W x H x D (excludes connectors, handles and brackets)	17 x 8.75 x 22	Inch
Weight	~150	Pound
RF Connectors Input/Output	Input: Type-N, Female Output: Type-N, Female	RF IN RF OUT
RF Sample Connectors	Type-SMA, Female, Forward and Reverse	Forward / Reverse
Blanking/Gating Connector	Type-BNC, Female	Blanking
Cooling	Built-in forced air cooling system – front to rear	Airflow Direction

# Solid State Broadband High Power Amplifier

**2233**

500 - 2500 MHz / 500 Watts

## ENVIRONMENTAL CHARACTERISTICS

Parameter	Symbol	Min	Typ	Max	Unit
Operating Ambient Temperature	T <sub>A</sub>	-10		+40	°C
Non-operating Temperature	T <sub>STG</sub>	-40		+85	°C
Relative Humidity (non-condensing)	RH			95	%
Shock / Vibration - MIL-STD-810F Shock Method 516.5, Vibration Method 514.5	SH / VI				-

## PROTECTIONS

Parameter	Specification	Unit
Input Overdrive	+10 dBm	Max
VSWR Protection	At 3:1 – PA backs-off output power to a safe operating level – no system shutdown, "On Air" time is maximized	-
Thermal – Graceful Degradation	Ambient +40°C	Min
Default Data Recovery	Factory Default Calibration Recovery	-

## COMMUNICATION INTERFACES:

Function	Utility	Connector
Ethernet	Network management of device / web interface	RJ45
USB	Mass storage / Expansion Bus	USB 1.x/2.0 compatible
RS-232 Standard (RS-422 factory configurable)	Serial management of device / local operator access	D-Sub 9-position Male

## AVAILABLE OPTIONS

### 2233-xxx

**-001** 28VDC, MIL-STD Circular Connector, w/ optional HRF, Rear RF Connectors,

**-002** 28VDC, MIL-STD Circular Connector, Rear RF Connectors

**-003** TBD

Call factory for other available option.

### Standard Features:

- LCD Control, Ethernet & Serial Comm
- Rear SMA Sample Ports, Forward & Reverse
- BNC Female Blanking/Gating Port
- Rack Slides, Handles and Rack mount Brackets

## Notional Block Diagram

