



## Solid-State Pulsed Power Amplifier, 9.0–10.0 GHz, 250 W

## PXB250-V1

POAM's PXB250-V1 is a rugged, standalone Pulse 250 W X-band GaN RF power amplifier designed for radar and field-deployed transmitter applications. Operating from 9000 to 10000 MHz, the PXB250-V1 delivers up to 54 dB of gain with approximately 25% efficiency under rated operating conditions. The amplifier is powered from a single 48 VDC supply and is based on gallium-nitride-on-silicon-carbide (GaN-on-SiC) technology to support wide instantaneous bandwidth, and high-power density.

The PXB250-V1 is engineered as a compact, lightweight unit with an integrated thermal management structure to support reliable high-power operation. It is built to military-grade standards and housed in a weatherproof enclosure rated to IP67 for demanding outdoor and mobile environments. Both RF input and output ports are fully matched to 50  $\Omega$ , enabling straightforward system integration.



### Features

- High Power X-Band Pulsed GaN Power Amplifier
- Small Signal Gain 54dB Typical
- Saturation Output Power 250 W Typical
- Supply Voltage +48VDC
- IP67 Protection
- 50 Ohm Matched Input/Output
- Compact and rugged design 317x151x93 mm (12.5x6x3.6 inch)
- low weight 4kg (9 lbs.)

### Typical Applications

- Radar
- Wireless Infrastructure
- Military and Aerospace
- Test Instrumentation
- TR Modules
- TWTA Replacement

### ELECTRICAL SPECIFICATIONS

(TEST CONDITION: TA=+25°C, DUTY CYCLE=10%, PULSE= 100US, UNLESS OTHERWISE STATED)

PARAMETER		VALUE	UNIT
Operating Frequency		9000 to 10000	MHz
Saturation Output Power-Pulsed		230 (Minimum), 250 (Typical)	W
Input Power (Pulsed)		-2 (min), +8 (max)	dBm
Power Gain		54	dB
Gain Flatness		+/- 1	dB
Duty Cycle		10 (Max 10)	%
Pulse Width		100 (Max)	us
Spurious		60 (min)	dBc
Rise/Fall Time [PW=100 us]		50/50	ns
Input/Output VSWR		2:1	
Input Impedance		50	$\Omega$ (coaxial option)
Power Supply (with bulk capacitor)	Voltage	48	VDC
	Current (AVG)	3(Typical)	A
MTBF		200,000	Hours (25°C, Ground fixed, duty cycle 10%; per MIL-HDBK-217F)



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### MECHANICAL AND ENVIRONMENTAL SPECIFICATION

PARAMETER	VALUE	NOTE
Operational Temperature	-30°C to +75°C	
Storage Temperature	-50°C to +85°C	
Dimension	317x151x93 mm (12.5x6x3.6 inch)	
Weight	4 kg (9 lbs.)	
RF Connectors	N-Type female (Input/Output)	Also Available with SMA input/output
DC and M&C Connectors	Military Round connectors D38999 Series by AMPHENOL	Mating connectors will be provided
Environmental Protection	IP67	
Cooling method	Finless Heatsink	
Colour	Anodized Olive Green	Other colours also available

### TEST STANDARDS

	PARAMETER	VALUE	NOTE - TEST STANDARD
<b>Vibration</b>	Random Vibration	5Hz to 8Hz @ 6mm, 8Hz to 500Hz @ 15m/s <sup>2</sup> , 2 hours in each direction of 3 axes	MIL-STD-202G BS EN 60068-2-6 2008:
	Vibration Shock	Half Sine, 400m/s <sup>2</sup> , 11ms. 3 shocks in each direction of 3 axes	BS EN 60068-2-27: 2009: SHOCK
	Bump Test	Half Sine, 250m/s <sup>2</sup> , 6ms, 4000 bumps in each direction of 3 axes	BS EN 60068-2-27: 2009:
<b>Thermal</b>	Ambient Temperature Test	14 days	BS EN 60068
	Damp Heat Test	+40°C 93%RH, 16-hour dwell.	BS EN 60068-2-78:
	Temperature Shock	+55°C to -30°C, 3-hour dwells, 10 second transfer, 2 cycles.	BS EN 60068-2-14: 2023:
	Low Temperature Test	-30°C for 16 hours - Operational -40°C for 16 hours - Storage	BS EN 60068-2-1: 2007:
	High Temperature Test	+60°C for 16 hours - Operational +80°C for 16 hours - Storage	BS EN 60068-2-2: 2007:
	Humidity Cycling Test	3-hour ramp +20°C 95%RH to +30°C 95%RH 12-hour dwell +30°C 95%RH 3-hour ramp +30°C 95%RH to +20°C 95%RH 6-hour dwell +20°C 95%RH 24-hour cycle, 14 cycles Functional test performed during the first 2 hours of the +35°C dwell on the 7th and 14th cycles.	BS EN 60068-2-30: 2005:
<b>Drop</b>	Drop Test	Drop height 250mm onto 6 faces. Steel plate backed with concrete	BS EN 60068-2-31: 2008:
	Topple Test	Drop onto wood, 1 drop from each bottom edge, opposite edge lifted to either 45° or 100mm, then allowed to drop back onto bottom face	BS EN 60068-2-31: 2008:
<b>Protection</b>	Ingress Protection, IP6X	Dust tight (with internal pressure reduction)	BS EN 60529:1992+A2:2013
	Driving Rain	200 l/m <sup>2</sup> /h for 1 hour	DEF STAN 00-035, PART 3, ISSUE 4, TEST CL 27
	Environmental Protection		MIL-STD-108E



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<b>Altitude</b>	Altitude	30,000 ft, 30 kPa, 16 hours	MIL-STD-810 method 500
<b>Safety</b>	EMC/EMI	CE102, CS101, CS114, CS115, CS116, CS118, RE102, RS103	MIL-STD-461G

### RF CONNECTOR (J1 & J2)

PIN	DESCRIPTION	NOTE
J1 - RF Input	N-Type Female – 50 $\Omega$	Please advise if SMA coaxial interface is required
J2 - RF output	N-Type Female – 50 $\Omega$	Please advise if SMA or waveguide interface is required


### M&C CONNECTOR PIN DESCRIPTION (J4-M&C)

[D38999/20WB35SN AMPHENOL CIRCULAR MIL SPEC CONNECTOR]

PIN	DESCRIPTION	NOTE
1	Health and Temperature monitoring	
2		
3		
4	Disable/ Enable Amplifier (on/off)	
5	Ground	
6	Ground	
7 to 13	NC	

### DC CONNECTORS PIN DESCRIPTION (J3-POWER)

[D38999/20WB98PN AMPHENOL CIRCULAR MIL SPEC CONNECTOR]

PIN	DESCRIPTION	NOTE
A	+ 48 VDC	
B	+ 48 VDC	
C	+ 48 VDC	
D	GND	
E	GND	
F	GND	

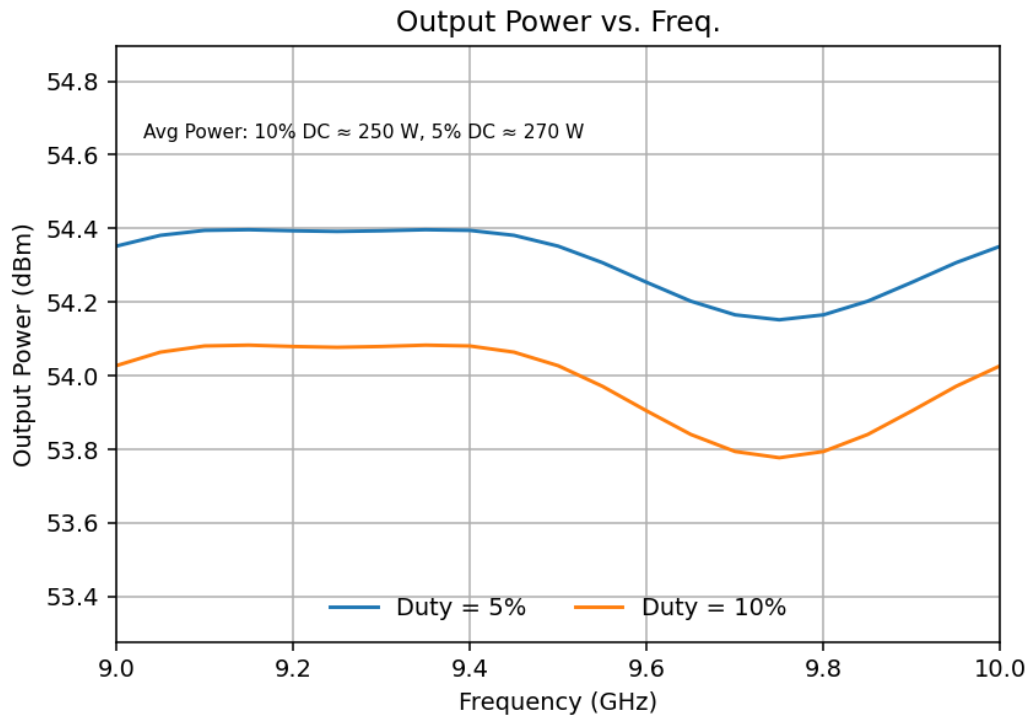


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### TYPICAL OUTPUT POWER GRAPH:

(Conditions unless otherwise specified:  $V_D = +48\text{ V}$ ,  $I_{DQ} = 3\text{ A}$ ,  $P_{IN} = 0\text{ dBm}$ , Pulse Width = 100  $\mu\text{s}$ , Duty Cycle = 10%)



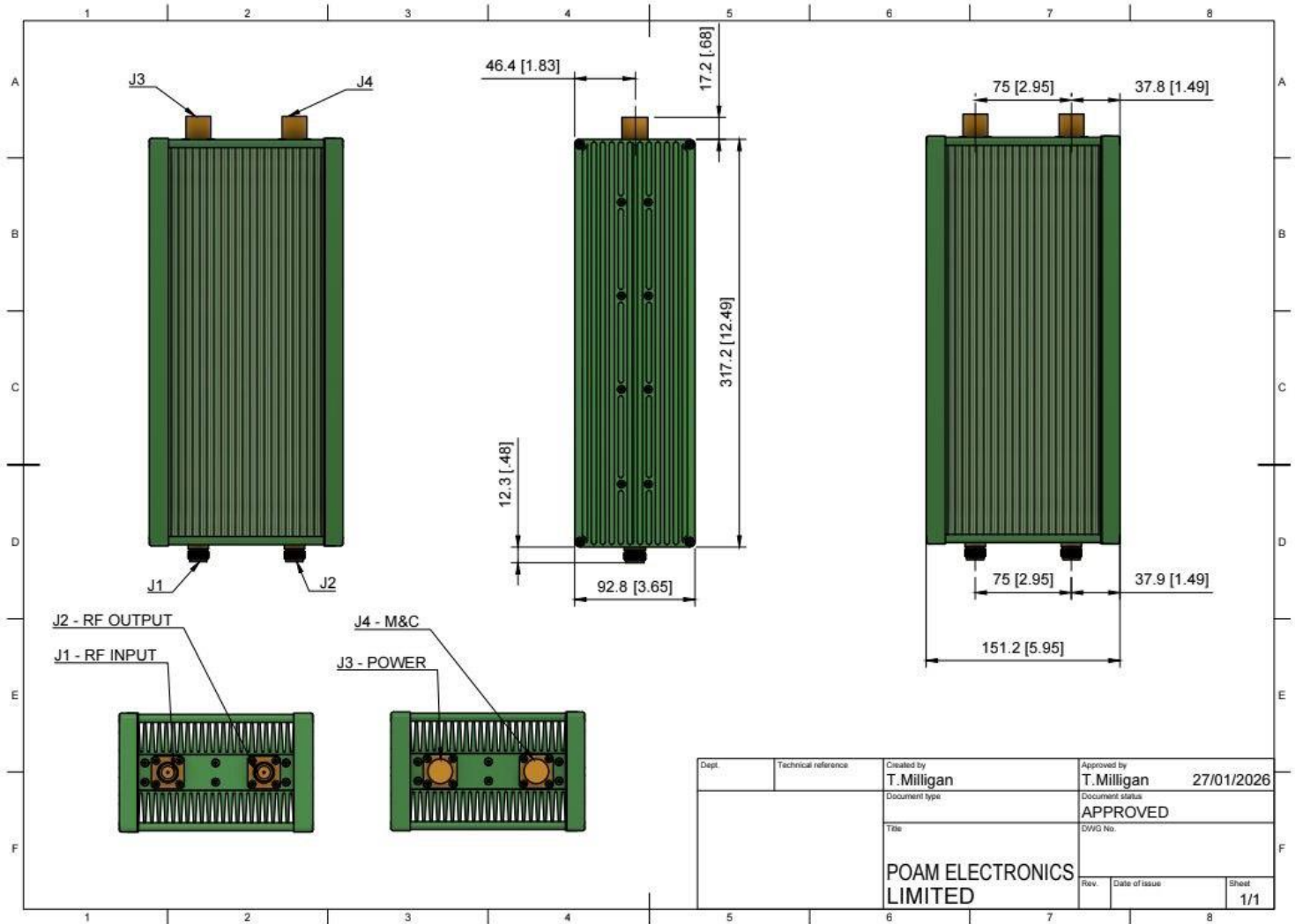


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**OUTLINE DRAWING:**

Note: Unit mm [Inches]



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### Handling Precautions



**Caution! ESD-Sensitive Device**

**RF VOLTAGE HAZARD:** Contact with RF fields at the output connector can cause burns or electric shock. High levels of RF/Microwave energy may be present when the unit is operating.

**HIGH DC CURRENT HAZARD:** High levels of DC current are present when the unit is operating.

**Each amplifier is shipped in a rigid protective carrying case designed to prevent mechanical damage during handling and transport.**



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