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Technical Data Sheet

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 IP66 for demanding outdoor and mobile environments. Both RF input and output ports are fully matched to 50 Ω, 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
- IP66 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	Ω (coaxial option)
Power Supply (with bulk capacitor)	Voltage	48	VDC
	Current (AVG)	3(Typical)	A
MTBF		200,000	Hours

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		(25°C, Ground fixed, duty cycle 10%; per MIL-HDBK-217F)

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	IP66	
Cooling method	Finless Heatsink	
Colour	Anodized Olive Green	Other colours also available

Test Standards

	Parameter	Value	Note - Test Standard
Vibration	Random Vibration	5Hz to 8Hz @ 6mm, 8Hz to 500Hz @ 15m/s2, 2 hours in each direction of 3 axes	MIL-STD-202G BS EN 60068-2-6 2008:
	Vibration Shock	Half Sine, 400m/s2, 11ms. 3 shocks in each direction of 3 axes	BS EN 60068-2-27: 2009: Shock
	Bump Test	Half Sine, 250m/s2, 6ms, 4000 bumps in each direction of 3 axes	BS EN 60068-2-27: 2009:
Thermal	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:
Drop	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:

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Protection	Ingress Protection, IP6X	Dust tight (with internal pressure reduction)	BS EN 60529:1992+A2:2013
	Driving Rain	200 l/m2/h for 1 hour	DEF STAN 00-035, PART 3, ISSUE 4, TEST CL 27
	Environmental Protection		MIL-STD-108E
Altitude	Altitude	30,000 ft, 30 kPa, 16 hours	MIL-STD-810 method 500
Safety	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 Ω	Please advise if SMA coaxial interface is required
J2 - RF output	N-Type Female – 50 Ω	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	Disable/ Enable Amplifier (on/off)	
4		
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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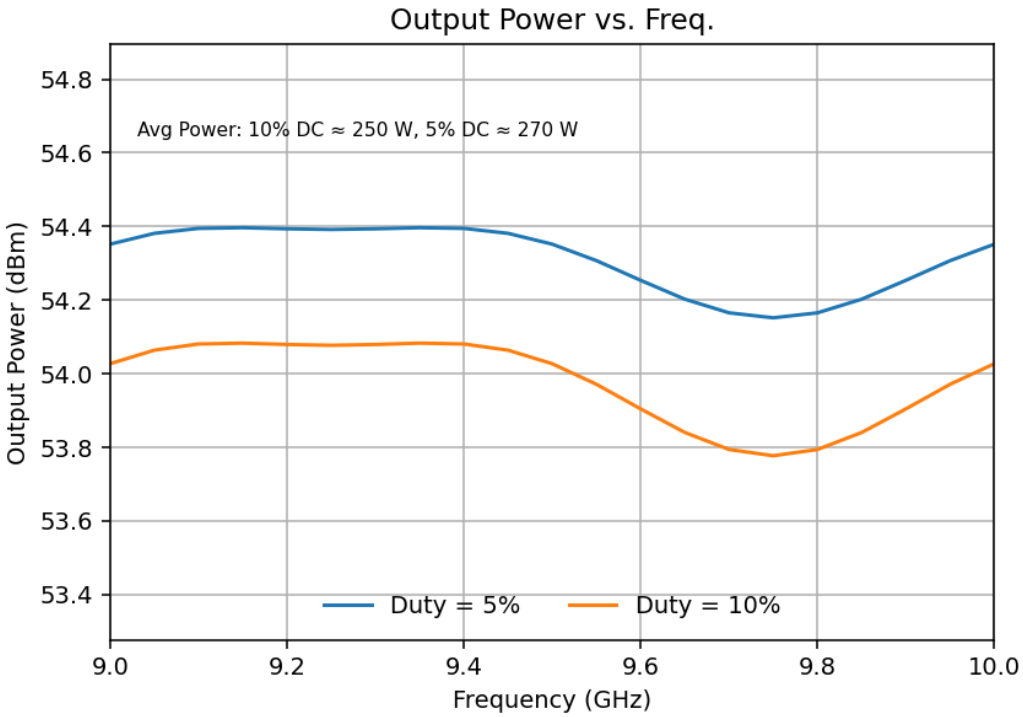
TYPICAL OUTPUT POWER GRAPH:

(Conditions unless otherwise specified: VD = +48 V, IDQ = 3 A, PIN= 0 dBm, Pulse Width = 100 us, Duty Cycle = 10%)



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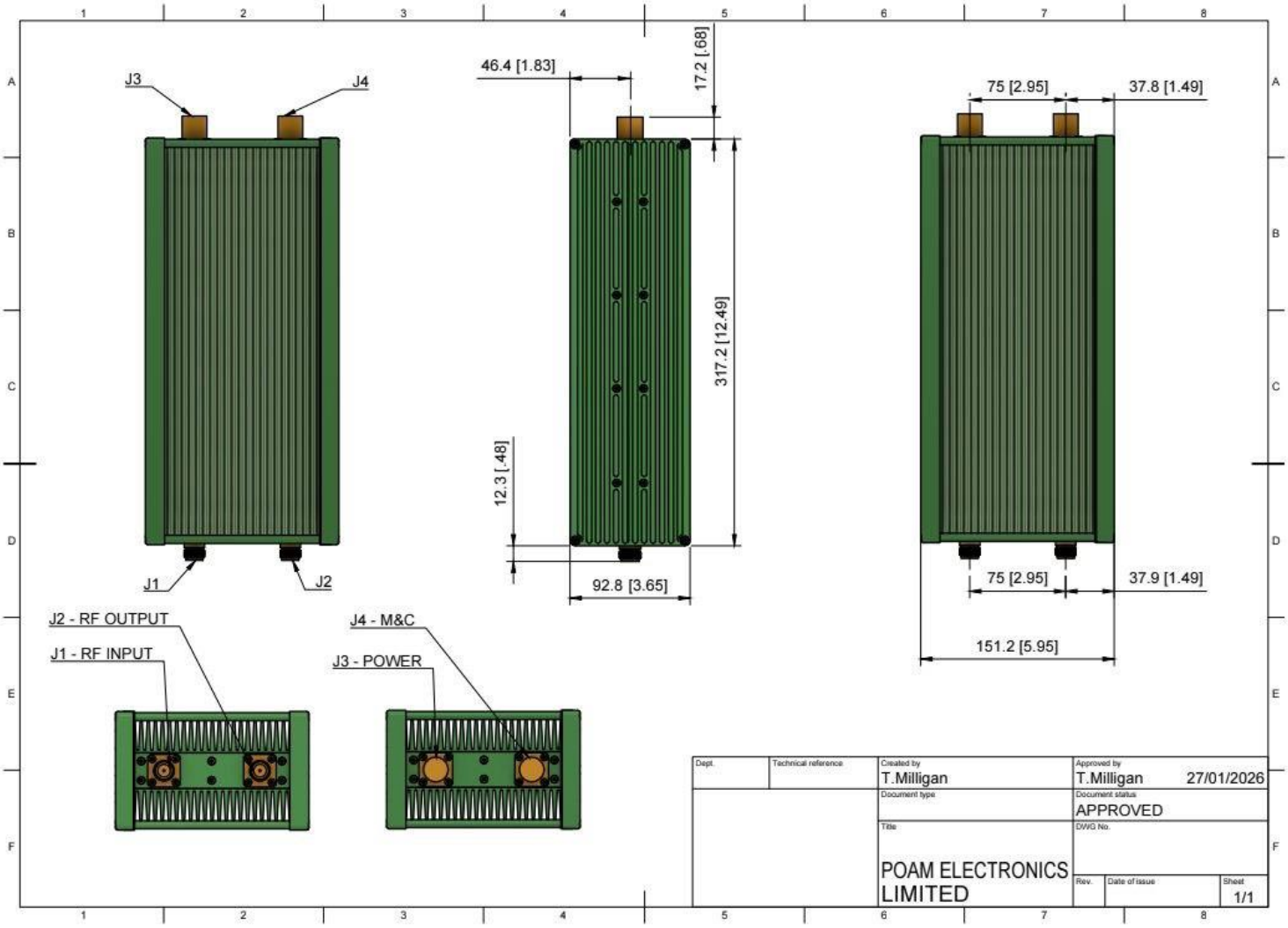
OUTLINE DRAWING:

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.

Important Notice

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