



Solid-State Pulsed Power Amplifier, 16–17 GHz, 100 W

PKUB100-V1

POAM's PKU100-V1 is a rugged, standalone Pulse 100 W Ku-band GaN RF power amplifier designed for radar and field-deployed transmitter applications. Operating from 16 to 17 GHz, the PKUB100-V1 delivers up to 40 dB of gain with approximately 20% 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 PKUB100-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 Ω , enabling straightforward system integration.



Features

- High Power Ku-Band Pulsed GaN Power Amplifier
- Small Signal Gain 40dB Typical
- Saturation Output Power 100W 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
- Military and Aerospace
- Test Instrumentation
- TR Modules
- TWTA Replacement

ELECTRICAL SPECIFICATIONS

(TEST CONDITION: $T_A=+25^{\circ}\text{C}$, DUTY CYCLE=7%, PULSE= 8 μs , UNLESS OTHERWISE STATED)

PARAMETER		VALUE	UNIT
Operating Frequency		16 to 17	GHz
Saturation Output Power-Pulsed		90 (Minimum), 100 (Typical)	W
Input Power (Pulsed)		-2 (min), +6 (max)	dBm
Power Gain		40	dB
Gain Flatness		+/- 1	dB
Duty Cycle		7 (Max 10)	%
Pulse Width		8	μs
Spurious		60 (min)	dBc
Rise/Fall Time [PW=100 μs]		50/50	ns
Input/Output VSWR		2:1	
Input Impedance		50	Ω (coaxial option)
Power Supply	Voltage	48	VDC
	Current	2(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	SMA-Type female (Input/Output)	Also Available with N-Type 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
Vibration	Random Vibration	5Hz to 8Hz @ 6mm, 8Hz to 500Hz @ 15m/s ² , 2 hours in each direction of 3 axes	MIL-STD-202G BS EN 60068-2-6 2008:
	Vibration Shock	Half Sine, 400m/s ² , 11ms. 3 shocks in each direction of 3 axes	BS EN 60068-2-27: 2009: SHOCK
	Bump Test	Half Sine, 250m/s ² , 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:
Protection	Ingress Protection, IP6X	Dust tight (with internal pressure reduction)	BS EN 60529:1992+A2:2013
	Driving Rain	200 l/m ² /h for 1 hour	DEF STAN 00-035, PART 3, ISSUE 4, TEST CL 27
	Environmental Protection		MIL-STD-108E



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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	SMA-Type Female – 50 Ω	Please advise if N-Type coaxial interface is required
J2 - RF output	SMA-Type Female – 50 Ω	Please advise if N-Type 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		
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	

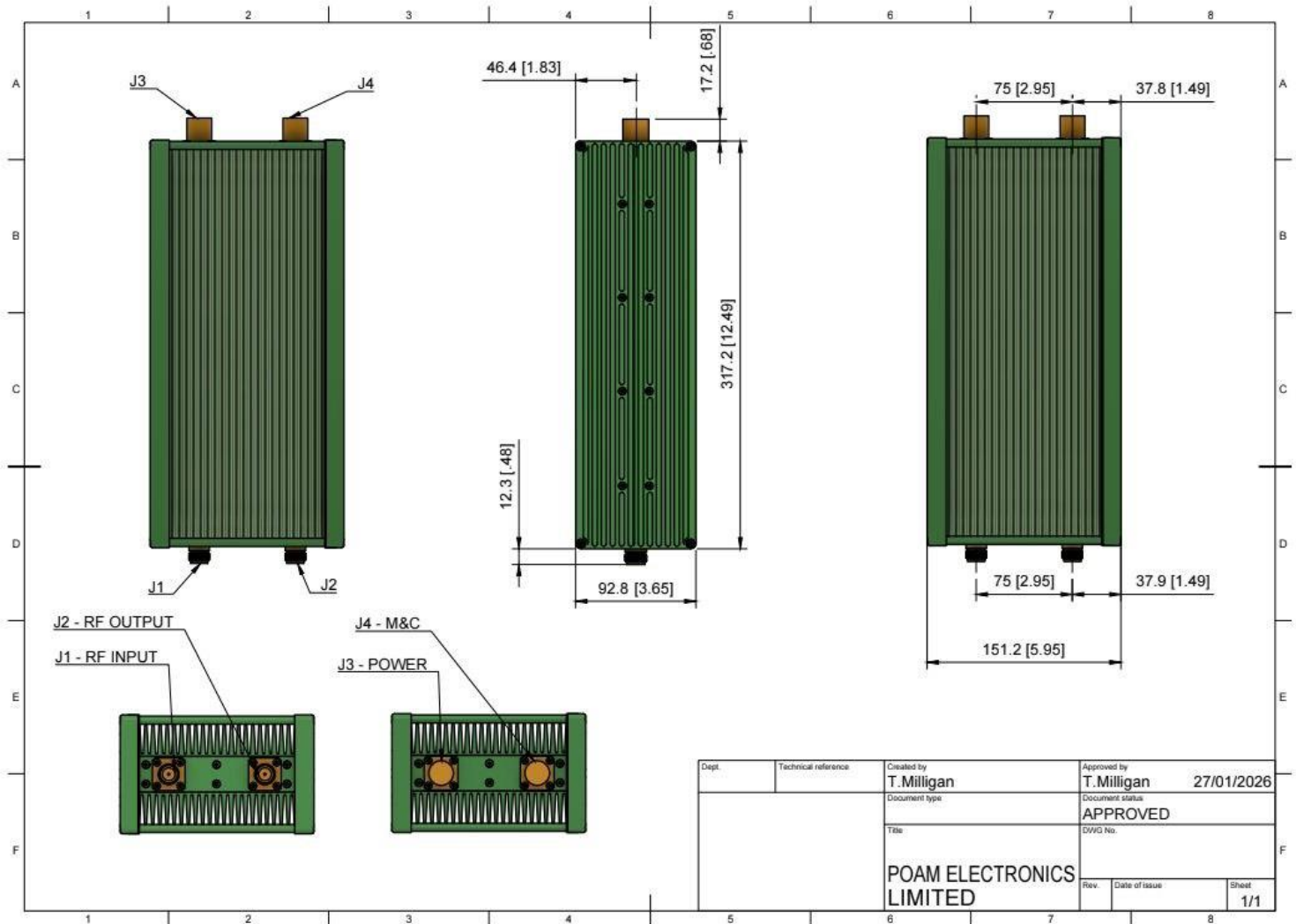


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OUTLINE DRAWING:

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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Data Sheet Rev. B, Jan. 2026 Subject to change without notice.



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