



## Solid-State Pulsed Power Amplifier, 1.2–1.4 GHz, 1200 W

PLB1200-V3

POAM's PLB1200-V3 is a rugged, standalone Pulse 1200 W L-band GaN RF power amplifier designed for radar and field-deployed transmitter applications. Operating from 1200 to 1400 MHz, the PLB1200-V3 delivers up to 54 dB of gain with approximately 50% 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 PLB1200-V3 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 L-Band Pulsed GaN Power Amplifier
- Small Signal Gain 54dB Typical
- Saturation Output Power 1200 W Typical
- Supply Voltage +48VDC
- IP67 Protection
- 50 Ohm Matched Input/Output
- Compact and rugged design 368x190x166 mm (14.5x7.5x6.5 inch)
- low weight 10 kg (22 lbs.)

### Typical Applications

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

### ELECTRICAL SPECIFICATIONS

(TEST CONDITION:  $T_A=+25^{\circ}\text{C}$ , DUTY CYCLE=10%, PULSE= 100US, UNLESS OTHERWISE STATED)

| PARAMETER                             |               | VALUE                          | UNIT                                                                |
|---------------------------------------|---------------|--------------------------------|---------------------------------------------------------------------|
| Operating Frequency                   |               | 1200 to 1400                   | MHz                                                                 |
| Saturation Output Power-Pulsed        |               | 1100 (Minimum), 1200 (Typical) | W                                                                   |
| Input Power (Pulsed)                  |               | 0 (min), +8 (max)              | dBm                                                                 |
| Power Gain                            |               | 54                             | dB                                                                  |
| Gain Flatness                         |               | +/- 1                          | dB                                                                  |
| Duty Cycle                            |               | 10 (Max 20)                    | %                                                                   |
| Pulse Width                           |               | 500 (Max)                      | us                                                                  |
| Spurious                              |               | 60 (min)                       | dBc                                                                 |
| Rise/Fall Time [PW=100 us]            |               | 200/200                        | ns                                                                  |
| Input/Output VSWR                     |               | 1.5:1                          |                                                                     |
| Input Impedance                       |               | 50                             | $\Omega$ (coaxial option)                                           |
| Power Supply<br>(with bulk capacitor) | Voltage       | 48                             | VDC                                                                 |
|                                       | Current (AVG) | 10(Typical)                    | A<br>(for Duty Cycle=20% and PW=200us)                              |
| MTBF                                  |               | 200,000                        | Hours<br>(25°C, Ground fixed, duty cycle 10%;<br>per MIL-HDBK-217F) |



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### MECHANICAL AND ENVIRONMENTAL SPECIFICATION

| PARAMETER                | VALUE                                               | NOTE                                               |
|--------------------------|-----------------------------------------------------|----------------------------------------------------|
| Operational Temperature  | -30°C to +75°C                                      |                                                    |
| Storage Temperature      | -40°C to +85°C                                      |                                                    |
| Dimension                | 368x190x166 mm (14.5x7.5x6.5 inch)                  |                                                    |
| Weight                   | 10 kg (22 lbs.)                                     |                                                    |
| RF Connectors            | N-Type female (Input/Output)                        | Also Available with SMA input and waveguide output |
| DC and M&C Connectors    | Military Round connectors D38999 Series by AMPHENOL | Mating connectors will be provided                 |
| Environmental Protection | IP67                                                |                                                    |
| Cooling method           | Heatsink with fans                                  | fans rated IP67                                    |
| 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<br>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:<br>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<br>-40°C for 16 hours - Storage                                                                                                                                                                                                           | BS EN 60068-2-1: 2007:                       |
|                   | High Temperature Test    | +60°C for 16 hours - Operational<br>+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<br>12-hour dwell +30°C 95%RH<br>3-hour ramp +30°C 95%RH to +20°C 95%RH<br>6-hour dwell +20°C 95%RH<br>24-hour cycle, 14 cycles<br>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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## Technical Data Sheet



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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 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         |      |

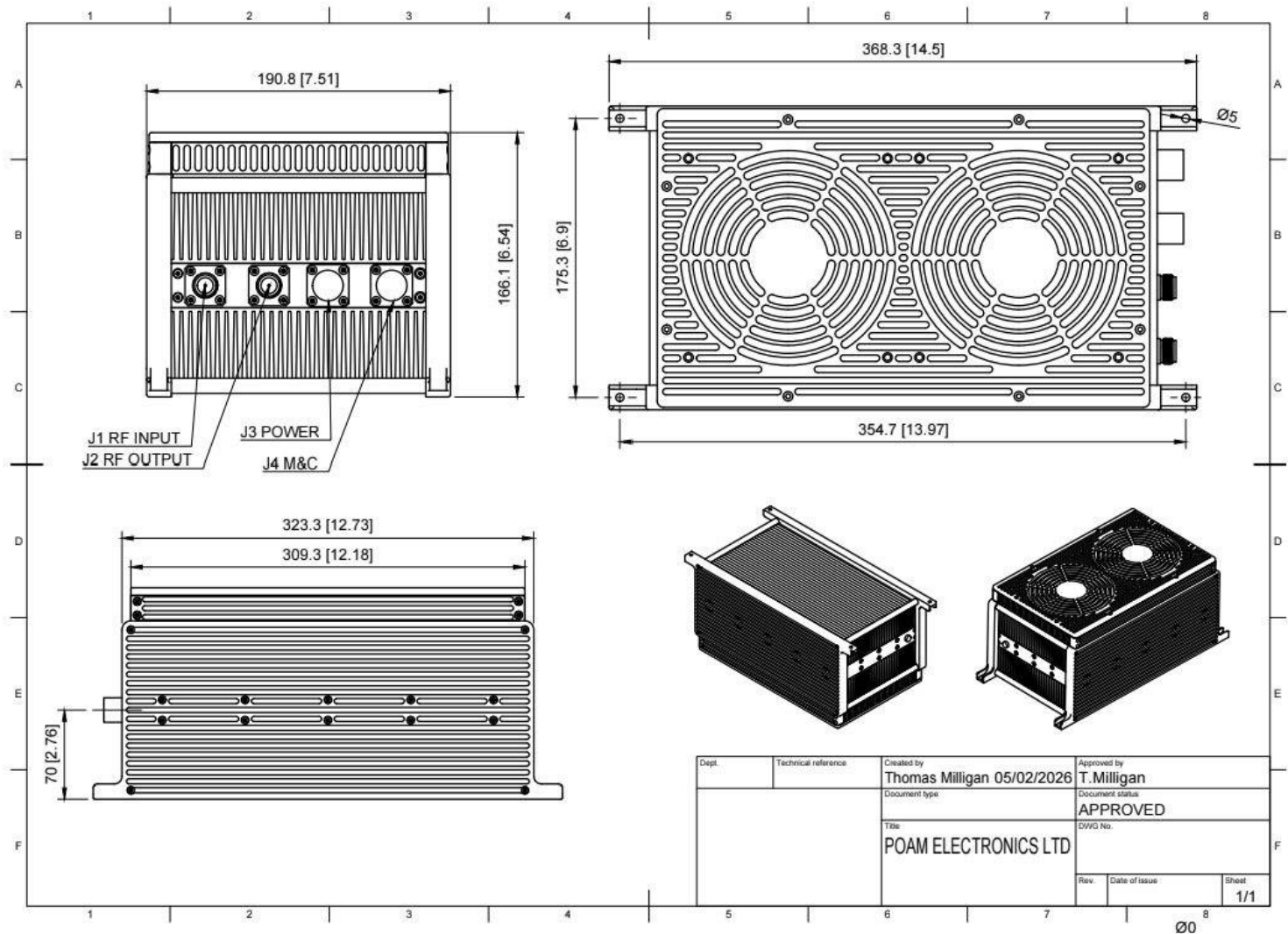


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### OUTLINE DRAWING:

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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