

Communications & Power Industries - SSPA

The PTS10224 X-band GaN SSPA delivers greater than 300 W min. at up to 15% duty. The standard output connector is N-type female. Two models are available: one runs off a 40 V supply and the other at 50 V, the latter offering the best overall efficiency and output power typically in excess of 400 W.

CPI's X-band SSPA employs gallium nitride (GaN) power transistors giving state-of-the-art power performance with a power-to-volume ratio.

This high-power amplifier (HPA) is well suited to a range of radar applications, enabling our customers to use compact and reliable SSPA technology instead of the incumbent traveling-wave tube amplifiers (TWTAs).

CPI's high-power microwave amplifiers are continuously being improved, so please contact us for the latest specification as it is subject to change without notice.

Contact us at wecare@cpii-int.com or call us at +44 (0)20 8573 5555



The PTS10224 SSPA - 8.5 to 9.6 GHz

FEATURES:

- Frequency: 8.5 - 9.6 GHz
- Output power: Typically 400 W (300 W min)
- Duty cycle: 15% max
- Saturated power gain: 55 dB nominal
- VSWR: 3:1 max

BENEFITS:

- GaN based
- Versatile
- Compact & reliable

APPLICATIONS:

- Land
- Naval
- Airborne

RF Characteristics

Frequency range	8.5 to 9.6 GHz
RF output power (Saturated)	Typically 400 W (300 W minimum) Electrical performance specified at 40 V, 20 °C and into terminating VSWR <1.3:1 unless otherwise stated
Output power variation (Psat)	± 1 dB deviation from medium power across the band
RF input power	0 dBm ± 1 dBm
Saturated power gain	55 dB nominal
Pulse droop (on 100 µs pulse)	0.8 dB maximum, 0.7 dB typical
Output phase control resolution	5.625 deg nominal Internal 6-bit phase shifter
HPA turn-on time (from standby)	200 ns nominal measured between 10 % and 90 % points
RF gating pulse (min)	0.5 µs minimum (shorter time feasible but not specified)
Pulse rise / Fall time	50 ns nominal
Harmonics	-50 dBc max
Spurious	-55 dBc max
Duty cycle	Maximum 15 % duty. Not to be exceeded with any pulse width, or damage may occur
PRI	13.3 µs at minimum pulse width only. Constrained by duty cycle

Termination return loss	17.7 dB minimum to achieve specified performance.
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Worst case load VSWR	3:1 maximum. Not to be exceeded or damage may occur at high power output. Internal protection against reverse power is not included
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Prime Power Requirements

Prime power	+40 Vdc.
Power supply variation	+0.5 V maximum
Mean DC current	8.0 A maximum At maximum 15 % duty
Power added efficiency @ 15 % duty	20 % typical

Connectors

Primary power input connector	Hybrid, D-sub 17 pin female. NorComp 680M17W2203L401
RF input connector	SMA Female
RF output connector	N Type Female

Operating Modes

STANDBY	HPA enabled/ disabled with "RF_ENABLE" TTL or 3.3V LVCMOS Signal High = Enabled
PULSED	Pulsed RF On, will amplify any CW or nested RF signal present at RF Input when "RF_GATE" signal is applied

I/O Communications

Alarm (output) Alarm signal (3.3 V LVCMOS-Low) for any alarm state. Connect "Alarm" (externally) to "RF_Enable" to auto-disable HPA. Can be hard wired on request

Phase control Control of internal 6-bit phase shifter via I2 C for phase matching

I2 C (at 3.3V) I2 C bus: (SDA/SCL/Gnd) monitoring of drain voltage and GaN drain currents in output stage and internal temperature. Look-up table provides addresses and cal factors

Mechanical

Mechanical outline 197 x 150 x 30 mm excluding connectors and fixings

Weight 1.5 kg nominal

Finish Chemical conversion MIL-DTL-5541F Type II /Surtec 650 or Iridite NCP

Markings/Labels Type number
Model number
Serial number
Connector ident
RF hazard warning
Hot surface warning
Anti-static warning

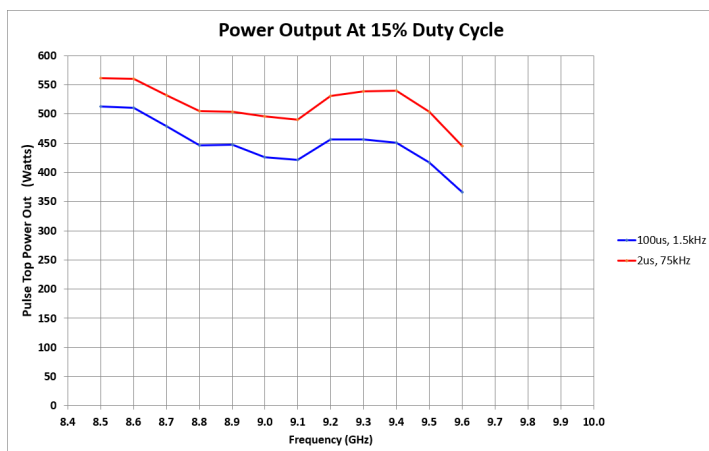
Environmental

Temperature (operating) 0 °C to + 60 °C

Operating humidity level Non-condensing atmosphere.

EMC performance

It is expected that the customer using the SSPA will use an appropriate filtering network placed between this unit's main RF output and the antenna used in their system, to ensure compliance with MIL STD-461F



Typical power performance



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For more detailed information, please refer to the corresponding technical description if one has been published, or contact CPI TMD Technologies. Specifications may change without notice as a result of additional data or product refinement. Please contact CPI TMD Technologies before using this information for system design.