Broadband Solid State Microwave Power Module PTS10147

CPI Electron Device Business - Solid State Power Amplifer

The PTS10147 is a compact, lightweight 2-6 GHz 100W GaN solid state power amplifier that operates in pulsed or continuous wave (CW) mode. It runs off a 28 V supply with a linear gain of 60dB.

This broadband 2-6 GHz, 100 W high-power amplifier (HPA) employs gallium nitride (GaN) high-power transistors in its output and driver stages, resulting in a compact and lightweight product with state-of-the-art power performance and a power-to-volume ratio believed to be among the highest in the microwave industry.

Well-suited to electronic warfare applications, particularly electronic attack (jamming), this SSPA enables defense customers to utilize wideband SSPA technology. Its small size, weight, and power (SWAP) of less than 0.75 kg make it particularly suitable for use in radar or electronis warfare (EW) applications installed in UAVs, drones, or man-portable systems.

To learn more about CPI EDB's MPM capabilities, contact CPI EDB at ElectronDevices@cpi-edb.com or call +44 (0)20 8573 5555

The PTS10147 solid state power amplifer - 2-6 GHz 100 W

FEATURES:

- Frequency: 2.0 - 6.0 GHz
- Output power: 100 W min
- Duty cycle: 0 to 100%
- Saturated power gain: 55 dB nominal
- VSWR: 3:1 max
- Weight: 1.65 lbs (0.75 kgs) nominal

BENEFITS:

- GaN based
- Versatile
- Compact & lightweight

APPLICATIONS:

- Radar
- Electronic Warfare

RF Characteristics

Frequency range	2.0 to 6.0 GHz
RF output power (saturated)	100 W minimum Electrical performance specified at 28 V, 20 °C and into terminating VSWR <1.3:1 unless otherwise stated
Duty cycle	0 to 100%
RF input power	0 dBm typical -5.0 dBm to 0 dBm to achieve compressed Psat
Saturated power gain	55 dB nominal
Linear (small signal) gain	62 dB nominal for <-10 dBm input power
Pulse droop	1 dB maximum, up to 100 µs pulse width
HPA turn-on time (from standby)	150 ns nominal from 50 % TX-GATE signal edge to 50 % RF out rising edge
TX gating pulse width	1.0 µs minimum (shorter time feasible but not specified)
Termination return loss	17.7 dB minimum to achieve specified performance
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
Harmonic / Spurious measurements	Available on request

Prime Power Requirements

Prime power	+28 Vdc
Power supply variation	540 W maximum
Mean DC current	CW 5.0 to 20 a typical efficiency varies with frequency from nominal 60% to 30% (see plot)

Connectors

Power and control input connector	15 Pin D Type
RF input connector	SMA female (optionally SMA-M)
RF output connector	SMA female (optionally SMA-M)

Control Modes

RF_GATE

Pulsed RF On, will amplify any CW or nested RF signal present at RF input when RF_GATE signal is control pulse (TTL or 3.3V LVCMOS)

CW RF On, will continuously amplify any RF signal present at RF input when RF_GATE is high (TTL or 3.3V LVCMOS)

RF-Enable

Enable / disable TTL or 3.3V LVCMOS

Signal high = Enabled

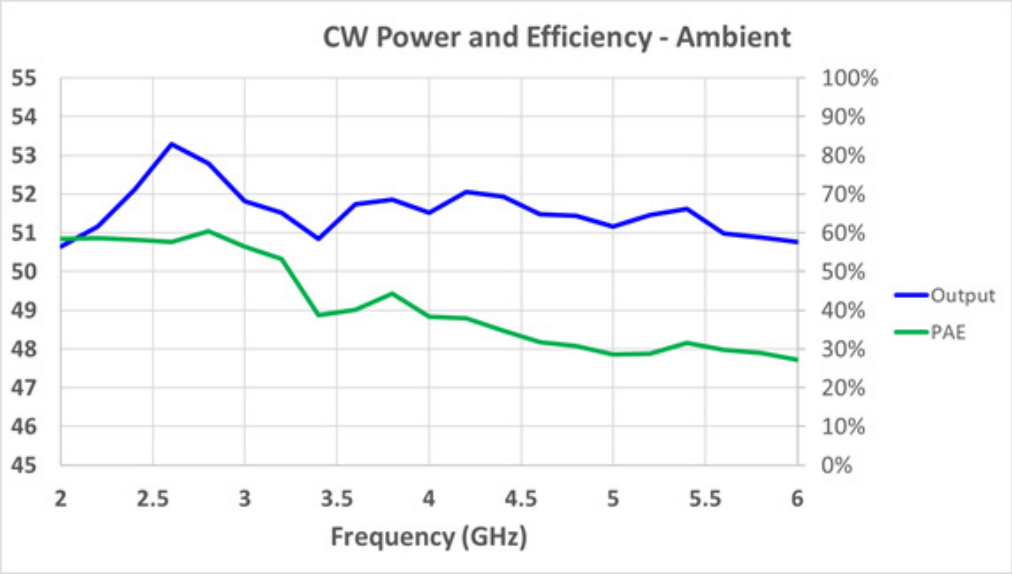
Alarm (output)	
Signal (TTL or 3.3V LVCMOS low) if internal temp exceeds 85°C. Connect to RF_ENABLE to disable the unit	

Mechanical

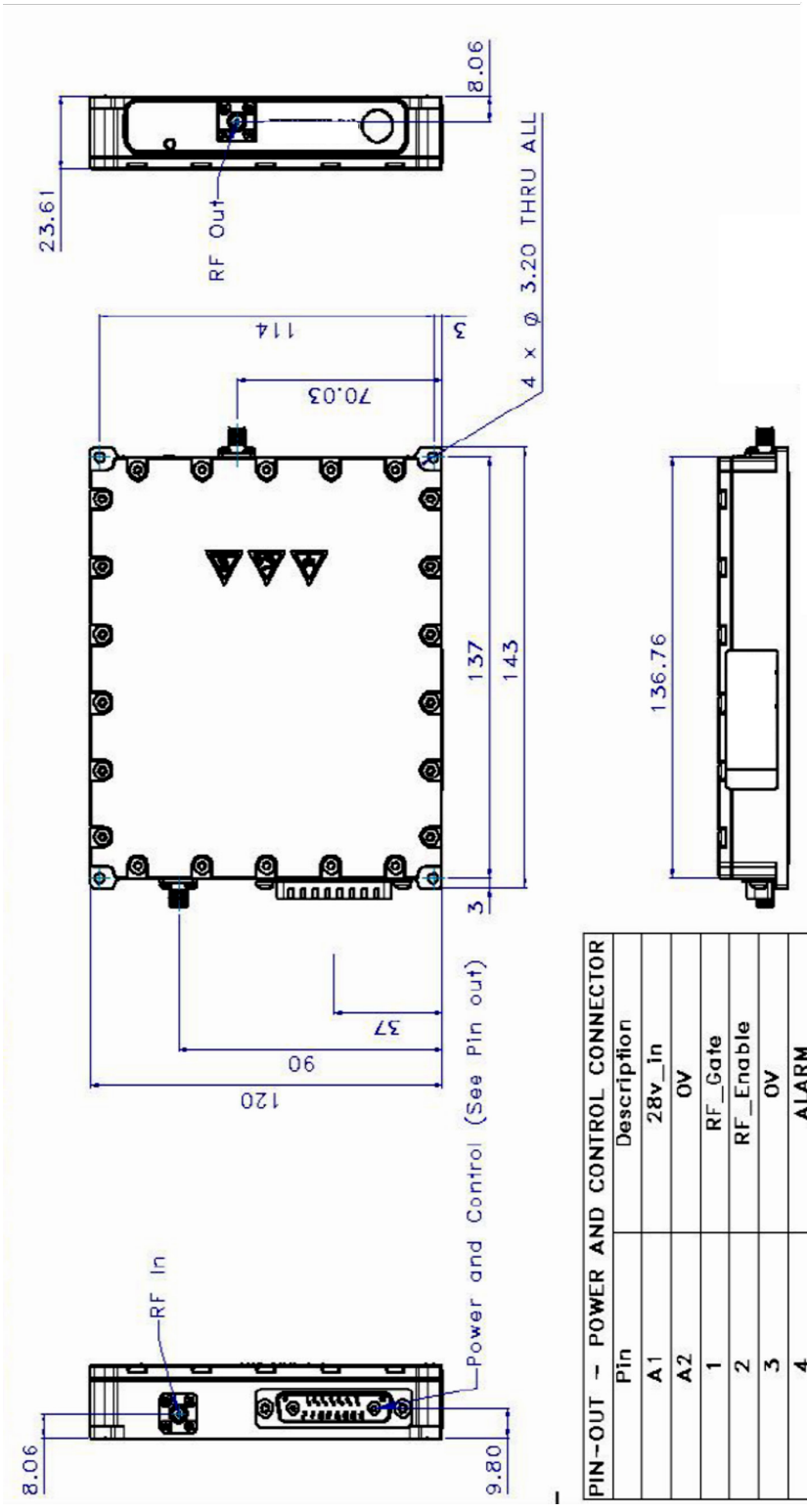
Mechanical outline	137 x 120 x 24 mm excluding connectors
Weight	1.65 lbs (0.75 kgs) nominal
Finish	Chemical conversion
	MIL-DTL-5541F
	Surtec 650 or Iridite NCP
Markings/Labels	Type number
	Model number
	Serial number
	Connector ident
	RF hazard warning

Environmental

Temperature (operating)	-40 °C to + 60 °C
High temperature cut out	Internal over temperature cut out 85 °C
Operating humidity level	Non-condensing atmosphere
EMC performance	
It is expected that the customer using the 2 to 6 GHz 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	



Electrical performance specified at 28 V, 20 °C and into terminating VSWR <1.3:1 unless otherwise stated



PIN-OUT – POWER AND CONTROL CONNECTOR

Pin	Description
A1	28v_in
A2	0V
1	RF_Gate
2	RF_Enable
3	0V
4	ALARM
5	TMD USE ONLY
6	TMD USE ONLY
7	0V
8	0V
9	NC
10	NC
11	NC
12	NC
13	NC
14	NC
15	NC

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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.

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