

CPI Electron Device Business - Microwave Power Module

The PTX8110 is an ultra compact modular microwave power module with an integrated “super mini” traveling wave tube (TWT), a solid state preamplifier and has an optimized high density switch mode power supply.

The MPM features a broadband (6.0 - 18.0 GHz) TWT capable of providing over 200 W. It is factory adjusted to optimize performance with no additional user adjustments, simplifying replacement times in the field.

The MPM includes a high speed focus electrode module to permit operation at high pulse repetition frequencies (PRFs). This makes the MPM ideal for pulsed applications such as Electronic Countermeasure (ECM) systems and radars.

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



The PTX8110 ultra compact modular microwave power module

FEATURES:

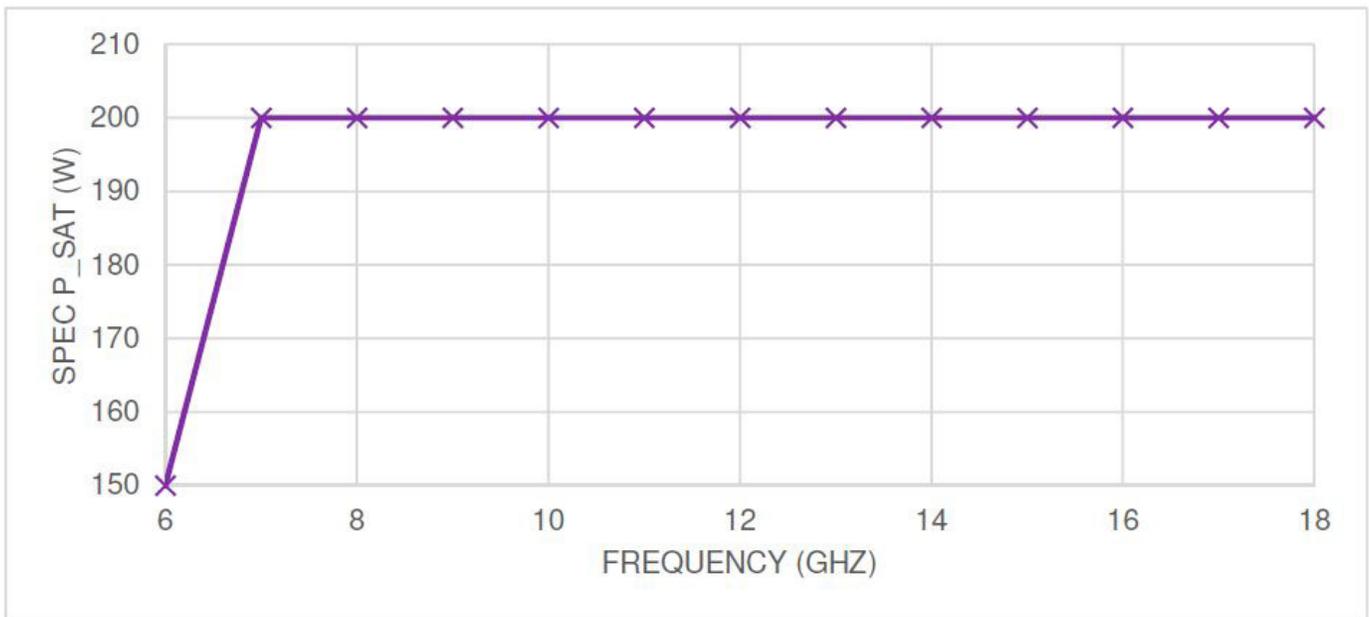
- Frequency: 6.0 - 18.0 GHz
- Output power: 200 W
- Duty cycle: 0 to 100%
- Small single gain: 55 dB nominal
- VSWR: 2.0:1 max

BENEFITS:

- Operate at high altitudes and high humidity
- Excellent thermal management
- Wide temperature range
- High reliability

APPLICATIONS:

- Radar
- Electronic Countermeasure (ECM) systems



RF Characteristics

Frequency range	See graph
RF output power (Saturated)	See graph
Duty cycle	0 to 100 % max
Small signal gain	55 dB nom
RF input power (for saturation)	0 ± 1 dBm
Second harmonic at saturation	5 dBc max (8.0 – 9.0 GHz)
Noise power density (Beam on)	-27 dBm/MHz max
Noise power density (Beam off)	-80 dBm/MHz max
Maximum spurious PM measured in a 100 Hz bandwidth ^{Note 1}	-40 dBc

Phase noise power density	-80 dBc/Hz max at 1 kHz from carrier
	-90 dBc/Hz max at 10 kHz from carrier
	-100 dBc/Hz max at >100 kHz from carrier

Noise figure	32 dB (typical)
Input VSWR	2.0:1 max
Output VSWR	2.0:1 max (No damage)
Pulse width	0.1 to ∞ μ s (CW operation)
Pulse delay (ON command to RF Out)	150 ns max
Pulse repetition frequency (PRF)	20 kHz max

Prime Power Requirements

Prime power	270 V DC Per MIL-STD-704E ($\pm 10\%$ normal operating range)
Power consumption	1200 W maximum

Connectors

Primary power input connector	Glenair: MRM18396
Control and monitoring connector	Glenair: MRM18395
RF input connector	SMA female
RF output connector	TNC female

Control and Monitoring

Control inputs	HV on, TWT beam on
Status outputs	Standby, HV on, Fault

Fault protection

Extensive internal BIT incorporated to monitor most TWT parameters. MPM shuts down under fault conditions. TWT operating parameters can be monitored externally to aid fault location. An over-temperature trip is incorporated.

Fault outputs	Over-temperature Summary fault
TWT monitor outputs	Cathode voltage, Beam current, Helix current
Heater warmup	180 seconds from power on
Automatic restart	Auto-reset after fault is included (3 restarts)

Mechanical

Mechanical outline	330.0 x 200.0 x 55.0mm excluding fixings and connectors
Weight	13.2 lbs (6.0 kgs) max
Orientation	Any
Finish	Nickel plated
Markings/Labels	Type number Model number Serial number Connector indent Hazard warning
Cooling	Conduction via baseplate, +71 °C maximum temperature

Options (available on request)

Alternative prime power 28 V, 115 VAC 3-phase (plug-in or stand-alone converters)

Environmental

Temperature (operating)	-40 °C to + 71 °C
Ambient temperature (Storage)	-54 °C to + 100 °C
Baseplate temperature (MPM)	+71 °C maximum (operating)
Altitude (operating)	0 - 40,000 ft
Vibration (operating - 3 axes)	0.2 g ² /Hz 10 to 40 Hz 0.04 g ² /Hz 40 to 2000 Hz
Shock (3 axes)	40 g, 6 ms half sine

Humidity (condensing)	MIL-STD-810D
	Method 507.2 procedure II

EMC performance	MIL-STD-461E-
	Requires external EMC filter

Notes:

- 1 Lower spurious values are achievable for close to carrier noise using sync or pre-trigger function



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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.