

## CPI Electron Device Business - Microwave Power Module

The PTXM1057/PTXM1059 is an ultra compact modular microwave power module with an integrated “super mini” traveling wave tube (TWT), a solid state preamplifier, and an optimized high density switch-mode power supply.

The PTXM1057 features a broadband (7.5 to 18 GHz) TWT capable of providing over 140 W, while the PTXM1059 provides over 110 W from 6.0 to 18.0 GHz.

A low-gain TWT is specified together with a low-noise solid state preamplifier to provide optimum noise performance.

The MPM includes a high speed focus electrode modulator to permit operation at high 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@cpi-edb.com](mailto:ElectronDevices@cpi-edb.com) or call us at +44 (0)20 8573 5555**



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### FEATURES:

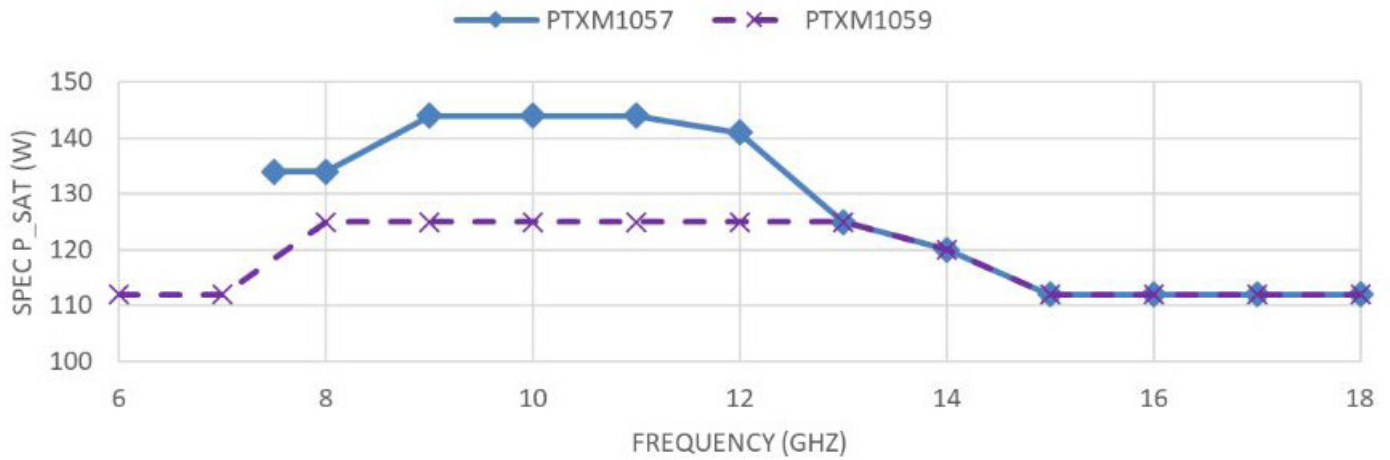
- PTXM1057 frequency: 7.5 - 18.0 GHz
- PTXM1059 frequency: 6.0 - 18.0 GHz
- Duty cycle: 100% max
- Weight: 5.3 lbs (2.4 kgs) max
- Pulsewidth: 0.1 to  $\infty\mu\text{s}$

### BENEFITS:

- Compact size
- Lightweight
- High electrical efficiency
- High-voltage capability
- Suitable for high-altitude operations
- Resilient in high-humidity environments

### APPLICATIONS:

- Radar systems
- Electronic Countermeasure (ECM) systems



## RF Characteristics

Frequency range	See graph
RF output power (saturated)	See graph
Duty cycle	100% max
Small signal gain	55 dB nom
RF input power (for saturation)	0 ± 1 dBm
Second harmonic at saturation	
PTXM1057:	
7.5 – 9.0 GHz:	-6 dBc
>9 GHz:	-8 dBc
PTXM1059:	
6.0 – 7.0 GHz:	-3 dBc
8.0- 9.0 GHz:	-6 dBc
>9 GHz:	-8 dBc
Noise power density (Beam On)	-24 dBm/MHz max
Noise power density (Beam Off)	-75 dBm/MHz max
Maximum spurious PM measured in a 100 Hz bandwidth <sup>Note 1</sup>	-38 dBc - -45 dBc

## Phase noise power density

-100 dBc/Hz max at 1 kHz from carrier	
-110 dBc/Hz max at 10 kHz from carrier	
-120 dBc/Hz max at >100 kHz from carrier	
Noise figure	27 dB (typical)
Input VSWR	2.0:1 max
Output VSWR	2.0:1 max (no damage)
Pulse width	0.1 to ∞ μs (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 (±10% normal operating range)
Power consumption	620 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	Over-temperature Summary fault
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	254.0 x 135.0 x 45.5 mm excluding fixings and connectors 254.0 x 155.0 x 45.5 mm including fixings
Mechanical outline drawing	1V020806
Weight	5.3 lbs (2.4 kgs) max
Orientation	Any
Finish	Nickel plated
Markings/Labels	Type number Model number Serial number Connector ident 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 <sup>2</sup> /Hz 10 to 40 Hz 0.04 g <sup>2</sup> /Hz 40 to 2000 Hz

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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

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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.