

CPI Electron Device Business - Microwave Power Module

The PTXM1052 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 PTXM1052 features a broadband (6.0 to 18 GHz) TWT capable of providing 100 W CW across the band. A low-gain TWT is specified together with a low noise solid state preamplifier to provide optimum noise performance.

The MPM can be configured to incorporate a variety of TWT models, allowing the user to specify frequency and peak power parameters.

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) and radars.

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



The PTXM1052 is an ultra-compact modular microwave power module with an integrated “super mini” travelling wave tube (TWT)

FEATURES:

- Frequency: 6.0 - 18.0 GHz
- Duty cycle: 100% max
- Pulsetwidth: 0.1 to $\infty\mu\text{s}$
- Weight: 4.08 lbs (1.85 kgs) max

BENEFITS:

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

APPLICATIONS:

- Radar systems
- Electronic Countermeasure (ECM) systems

RF Characteristics

Typical operating characteristics for the MPM incorporating a 100 W 6.0 to 18 GHz TWT ^{Note 1.}

Frequency range	6.0 to 18.0 GHz
RF output power (saturated)	100 W minimum (+50.0 dBm) (6.0 to 18.0 GHz)
Duty cycle	100% max
Small signal gain	55 dB nom
RF input power (for saturation)	0 ± 1 dBm
Second harmonic at saturation	
-3 dBc max	(from 6.0 GHz)
-4 dBc max	(from 7.0 GHz)
-8 dBc max	(from 8.0 to 18.0 GHz)
Noise power density (Beam On)	-32 dBm/MHz max
Noise power density (Beam Off)	-85 dBm/MHz max -90 dBm/MHz typical
Maximum spurious PM measured in a 100 Hz bandwidth ^{Note 2}	-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	24 dB (typical)
Input VSWR	2.0:1 max
Output VSWR	2.5:1 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)	50 kHz max

Prime Power Requirements

Prime power	270 V DC Per MIL-STD-704E (±10% normal operating range)
Power consumption	480 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

Notes:

- 1 Other characteristics are available to special order
- 2 Lower spurious values are achievable for close to carrier noise using sync or pre-trigger function

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

Mechanical outline	202.5 x 120 x 35 mm excluding fixings and connectors
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Weight	4.08 lbs (1.85 kgs) max
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Orientation	Any
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Finish	Nickel plated
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Markings/Labels	Type number Model number Serial number Connector ident Hazard warning
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Cooling	Conduction via baseplate, +85 °C maximum temperature
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Options (available on request)

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

Environmental

Ambient temperature (operating)	-40 °C to + 85 °C
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Ambient temperature (non-operating)	-54 °C to + 100 °C
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Baseplate temperature (MPM)	85 °C maximum (operating)
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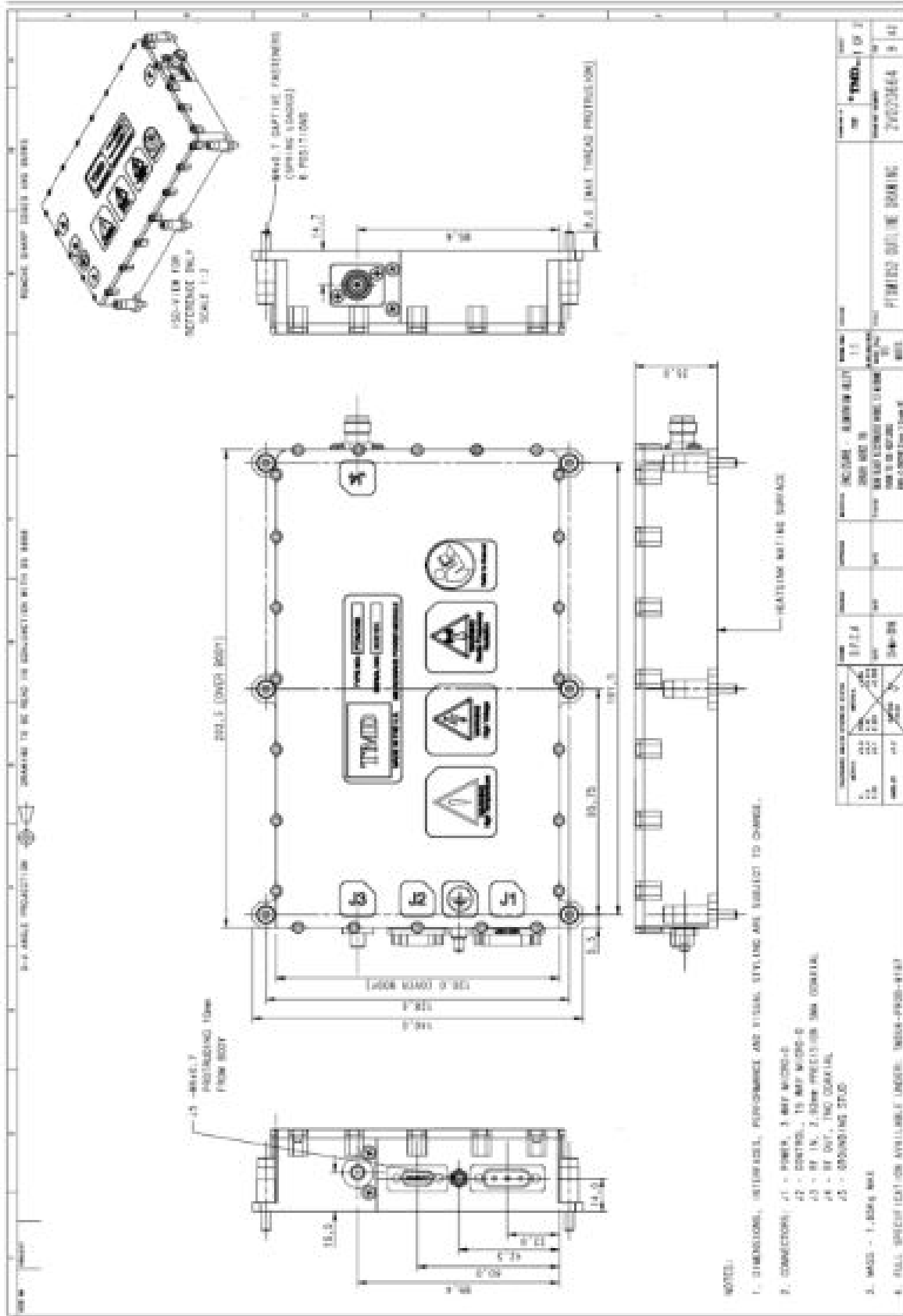
Altitude (operating)	0 - 50,000 ft
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Vibration (operating - 3 axes)	0.2 g ² /Hz 10 to 40 Hz 0.04 g ² /Hz 40 to 2000 Hz
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Shock (3 axes)	40 g, 6 ms half sine
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Humidity (non-condensing)	MIL-STD-810D method 507.2 procedure II
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EMC performance	MIL-STD-461E- requires external EMC filter
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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.