Broadband Microwave Power Module

PTXM9754

CPI Electron Device Business - Microwave Power Module

The PTXM9754 is an ultra compact modular microwave power module (MPM) with an integrated "super mini" traveling wave tube (TWT), a solid state preamplifier and an optimised high density switch mode power supply.

The PTXM9754 features a broad band (6.0 GHz 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) systems and radars.

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 PTXM9754 is an ultra-compact modular microwave power module (MPM) with an integrated "super-mini" travelling wave tube (TWT)

FEATURES:

- Frequency: 6.0 GHz to 18.0 GHz
- Duty cycle: 100% max
- Typical weight: 5.7 lbs (2.6 kgs) max
- RF output power: 100 W min

BENEFITS:

- Compact and lightweight
- High voltage section
- Operate at high altitudes and high humidity

APPLICATIONS:

- Radar
- 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	63 dB nom, 58 dB min, 70 dB max
RF input power (For saturation)	0 ± 1 dBm
Second harmonic at saturation	
-3 dBc max	(from 6.0 GHz)
-6 dBc max	(from 7.5 to 10.0 GHz)
-10 dBc max	(from 10.0 to 18.0 GHz)
Noise power density (Beam On)	-32 dBm/MHz max
Noise power density (Beam Off)	-110 dBm/MHz max
Maximum spurious PM measured in a 100 Hz bandwidth	-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	15 dB (typical)
Input VSWR	2.0:1 max
Output VSWR	2.5:1 max
Load 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)	30 kHz max

Prime Power Requirements

Prime power	28 V DC Per MIL-STD-704E
Power consumption	540 W maximum

Connectors

Primary power input connector	D-sub, male, 15-way
Control and monitoring connector	D-sub, female, 15-way
RF input connector	SMA female
RF output connector	TNC female

Control and Monitoring

Control inputs	HV ON
	RF ON
	BATTLE OVERRIDE
Status outputs	HV OK
	FAULT
	WARMED UP

Notes:
1 Other characteristics are available to special order

Fault protection Internal built-in test incorporated to monitor most TWT parameters and trip at collector over-temperature. MPM shuts down under fault conditions. Helix current can be monitored by the end user to aid TWT troubleshooting.	
TWT monitor outputs	Helix current
Heater warmup	180 seconds from power up
Automatic restart	Auto-reset after fault is included (3 restarts)

Mechanical

Mechanical outline	203.2 x 196.85 x 35.6 mm excluding fixings and connectors
Weight	5.7 lbs (2.6 kgs) max
Orientation	Any
Finish	Nickel plated
Markings/Labels	Type number Model number Serial number Connector ident Hazard warning
Cooling	Conduction, via baseplate; +85 °C maximum collector temperature

Options (available on request)

Alternative prime power: 270V DC, 115V AC 60Hz

Alternative monitor outputs: TWT overtemp, Cathode voltage, standby indicator

Additional control inputs: PSU sync signal

Environmental

Ambient temperature (operating)	-25 °C to + 85 °C
Ambient temperature (Non-operating)	-40 °C to + 100 °C
Baseplate temperature (MPM)	85 °C maximum (operating)
Altitude (operating)	0 - 10,000 ft
Vibration (Operating - 3 axes)	0.04 g^2/Hz 40 to 2000 Hz -6 dB/octave 1000 to 2000 Hz
Shock (3 axes)	20 g, 11 ms half sine
Humidity	90%, non-condensing
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. Specifications may change without notice as a result of additional data or product refinement. Please contact CPI TMD before using this information for system design.

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