

- Ultra Compact 10 Watt PCB Power module in 1" x 1.5" package
- Certified to IEC/EN 60335-1 and UL 62368-1 for household and industrial appliance
- Reinforced I/O isolation 4000 VAC
- Operating temperature range -25°C to $+70^{\circ}\text{C}$
- Allows 130% peak current up to 30 s
- Ready to meet ErP directive, $< 0.15\text{ W}$ no load power consumption
- EMI meets EN 55032 class B and EN 55014-1
- Protection class II prepared
- 3-year product warranty



The TMPS 10 series comprises ultra compact AC/DC power supply modules in a lightweight fully encapsulated plastic casing for PCB mount. Beside the latest safety approvals for industrial and IT solutions (IEC/EN/UL 62368-1), they are also certified to IEC/EN 60335-1 for household appliance. These 10 Watt modules are the ideal solution for low power or segregated circuits when space is critical or for an efficient powering of a standby mode when compliance to ErP directive is required. A peak current of 130% facilitates the activation of main circuits.

Models

| Order Code | Output Power max. | Output Voltage nom. | Output Current max. | Output Current peak | Efficiency typ. |
|-------------|-------------------|---------------------|---------------------|---------------------|-----------------|
| TMPS 10-103 | 8.6 W | 3.3 VDC | 2'600 mA | 3'380 mA | 77 % |
| TMPS 10-105 | 10 W | 5 VDC | 2'000 mA | 2'600 mA | 80 % |
| TMPS 10-109 | | 9 VDC | 1'100 mA | 1'440 mA | 83 % |
| TMPS 10-112 | | 12 VDC | 830 mA | 1'080 mA | 84 % |
| TMPS 10-115 | | 15 VDC | 660 mA | 860 mA | 84 % |
| TMPS 10-124 | | 24 VDC | 410 mA | 530 mA | 86 % |
| TMPS 10-148 | | 48 VDC | 210 mA | 270 mA | 84 % |

Input Specifications

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|------------------------|---------------------------|--|
| Input Voltage | - AC Range | Operational Range: 85 - 264 VAC (Full Range) Rated Range: 100 - 240 VAC (Full Range) |
| | - DC Range | Operational Range: 120 - 370 VDC (Designed for, no certification) Polarity: irrelevant |
| Input Frequency | | Operational Range: 47 - 440 Hz Certified: 50/60 Hz |
| Power Consumption | - No load & Vin = 230 VAC | 450 mW max. |
| | - No load & Vin = 115 VAC | 150 mW max. |
| Input Inrush Current | - At 230 VAC | 40 A max. |
| | - At 115 VAC | 20 A max. |
| Recommended Input Fuse | | 1'600 mA (slow blow) (The need of an external fuse has to be assessed in the final application.) |

Output Specifications

| | | |
|--|---------------------------------|---|
| Voltage Set Accuracy | | ±2% max. |
| Regulation | - Input Variation (Vmin - Vmax) | 0.5% max. |
| | - Load Variation (0 - 100%) | 1% max. |
| Boost Power | | Output Current peak: See model table Peak power time: 30 s max. Peak power duty cycle: 10% max. Average operation power: 10 W max. |
| Ripple and Noise (20 MHz Bandwidth) | 3.3 VDC model: | 60 mVp-p max. |
| | 5 VDC model: | 60 mVp-p max. |
| | 9 VDC model: | 90 mVp-p max. |
| | 12 VDC model: | 120 mVp-p max. |
| | 15 VDC model: | 150 mVp-p max. |
| | 24 VDC model: | 240 mVp-p max. |
| Capacitive Load | 3.3 VDC model: | 4'400 µF max. |
| | 5 VDC model: | 2'200 µF max. |
| | 9 VDC model: | 680 µF max. |
| | 12 VDC model: | 390 µF max. |
| | 15 VDC model: | 240 µF max. |
| | 24 VDC model: | 100 µF max. |
| 48 VDC model: | 24 µF max. | |
| Minimum Load | | Not required |
| Temperature Coefficient | | ±0.02 %/K max. |
| Hold-up Time | - At 230 VAC | 40 ms min. |
| | - At 115 VAC | 8 ms min. |
| Short Circuit Protection | | Continuous, Automatic recovery |
| Output Current Limitation | | 150% typ. of Iout max. |
| Overvoltage Protection | | 125% typ. of Vout nom. (By Zener diode) |

Safety Specifications

| | | |
|------------------|-----------------------------|--|
| Standards | - IT / Multimedia Equipment | EN 62368-1 IEC 62368-1 UL 62368-1 |
| | - Household | EN 60335-1 IEC 60335-1 |
| | - Certification Documents | www.tracopower.com/overview/tmps10 |
| Protection Class | | Class I & II (Prepared): Reinforced Insulation |

All specifications valid at nominal voltage, resistive full load and +25°C after warm-up time, unless otherwise stated.

| | |
|-----------------------|--------|
| Pollution Degree | PD 2 |
| Over Voltage Category | OVC II |

EMC Specifications

| | | |
|---------------|----------------------------------|--|
| EMI Emissions | - Conducted Emissions | EN 55014-1 (internal filter) EN 55032 class B (internal filter) FCC Part 15 class B (internal filter) |
| | - Radiated Emissions | EN 55014-1 (internal filter) EN 55032 class B (internal filter) FCC Part 15 class B (internal filter) |
| | - Harmonic Current Emissions | EN 61000-3-2 |
| | - Voltage Fluctuations & Flicker | EN 61000-3-3 |
| EMS Immunity | | EN 55024 (IT Equipment) EN 55035 (Multimedia) EN 55014-2 (Household Appliances Tools) |
| | - Electrostatic Discharge | Air: EN 61000-4-2, ± 8 kV, perf. criteria A Contact: EN 61000-4-2, ± 6 kV, perf. criteria A EN 61000-4-3, 10 V/m, perf. criteria A EN 61000-4-4, ± 2 kV, perf. criteria A |
| | - RF Electromagnetic Field | L to L: EN 61000-4-5, ± 1 kV, perf. criteria A EN 61000-4-6, 10 Vrms, perf. criteria A |
| | - EFT (Burst) / Surge | Continuous: EN 61000-4-8, 30 A/m, perf. criteria A EN 61000-4-11 |
| | - Conducted RF Disturbances | 230 VAC / 50 Hz: 30%, 25 periods, perf. criteria A >95%, 0.5 periods, perf. criteria A >95%, 250 periods, perf. criteria B |
| | - PF Magnetic Field | |
| | - Voltage Dips & Interruptions | |
| | | |
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| | | |

General Specifications

| | | |
|---------------------------|----------------------------|--|
| Relative Humidity | | 95% max. (non condensing) |
| Temperature Ranges | - Operating Temperature | -25°C to +70°C |
| | - Approved Ambient Temp. | +50°C max. |
| | - Case Temperature | +95°C max. |
| | - Storage Temperature | -40°C to +85°C |
| Power Derating | - High Temperature | 2.5 %/K above 50°C |
| | | See application note: www.tracopower.com/overview/tmps10 |
| Cooling System | | Natural convection (20 LFM) |
| Altitude During Operation | | 2'000 m max. |
| Switching Frequency | | 30 - 65 kHz (PWM) |
| | | 45 kHz typ. (PWM) |
| Insulation System | | Reinforced Insulation |
| Working Voltage (rated) | | 244 VAC |
| Isolation Test Voltage | - Input to Output, 60 s | 4'000 VAC |
| Isolation Resistance | - Input to Output, 500 VDC | 1'000 M Ω min. |
| Leakage Current | - Touch Current | 250 μ A max. |
| Reliability | - Calculated MTBF | 453'000 h (MIL-HDBK-217F, ground benign) |
| Washing Process | | Not allowed |
| Housing Material | | Plastic resin (UL 94 V-0 rated) |
| Potting Material | | Silicone (UL 94 V-0 rated) |
| Pin Material | | Copper Alloy (C6801) |
| Pin Foundation Plating | | Nickel (2 - 4 μ m) |
| Pin Surface Plating | | Tin (3 - 5 μ m), matte |
| Housing Type | | Plastic Case |
| Mounting Type | | PCB Mount |
| Connection Type | | THD (Through-Hole Device) |
| Soldering Profile | | Lead-Free Wave Soldering 260°C / 10 s max. |

All specifications valid at nominal voltage, resistive full load and +25°C after warm-up time, unless otherwise stated.

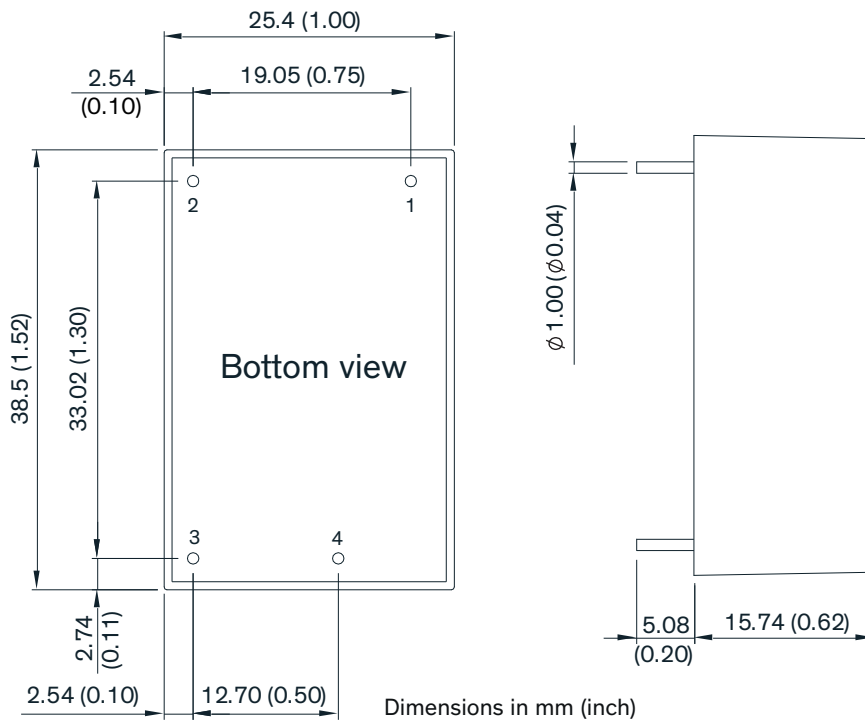
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|--|--|
| Weight | 29 g |
| Environmental Compliance - REACH Declaration | www.tracopower.com/info/reach-declaration.pdf REACH SVHC list compliant REACH Annex XVII compliant |
| - RoHS Declaration | www.tracopower.com/info/rohs-declaration.pdf Exemptions: 7a (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule).) |
| - SCIP Reference Number | ff22f0cd-e618-4e40-a6d5-fcf29f17a993 |

Supporting Documents

Overview Link (for additional Documents)

www.tracopower.com/overview/tmps10

Outline Dimensions



| Pin Connections | |
|-----------------|----------|
| Pin | Function |
| 1 | AC (N) |
| 2 | AC (L) |
| 3 | -Vout |
| 4 | +Vout |

Dimensions in mm (inch)
 Outside dimension tolerance: ± 0.5 (± 0.02)
 Pin pitch tolerance: ± 0.25 (± 0.01)
 Pin diameter \varnothing : 1.0 ± 0.1 (0.04 ± 0.004)