

- PCB Power module in 1" x 1" package
- Certified to IEC/EN 60335-1 for household appliance
- No load input power <300 mW to comply with ErP directive
- Operating temperature range -25°C to +70°C
- EMI meets EN 55022 class B and EN 55014-1
- Protection class II prepared
- 3-year product warranty



The TMPS-05 series comprises ultra compact AC/DC power supply modules in lightweight fully encapsulated plastic casing for PCB mount. Beside the safety approvals for industrial and IT solutions, they are also certified to IEC/EN 60335-1 for household appliance. These 5 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 05-103	5 W	3.3 VDC	1'515 mA	1'970 mA	74 %
TMPS 05-105		5 VDC	1'000 mA	1'300 mA	80 %
TMPS 05-109		9 VDC	555 mA	721 mA	82 %
TMPS 05-112		12 VDC	416 mA	540 mA	82 %
TMPS 05-115		15 VDC	333 mA	433 mA	83 %
TMPS 05-124		24 VDC	208 mA	270 mA	83 %
TMPS 05-148		48 VDC	104 mA	135 mA	85 %

Input Specifications

Input Voltage	- AC Range	Operational Range: 85 - 264 VAC (Full Range)
	- DC Range	Rated Range: 100 - 240 VAC (Full Range) Operational Range: 120 - 370 VDC (Designed for, no certification) Polarity: irrelevant
Input Frequency		47 - 63 Hz
Power Consumption	- At no load	300 mW max. (Ready to meet ErP directive)
Input Inrush Current	- At 230 VAC	40 A max.
	- At 115 VAC	20 A max.
Input Protection		T 1.0 A / 250 V
Recommended Input Fuse		(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)	1% 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: 5 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.
	48 VDC model:	480 mVp-p max.
Capacitive Load	3.3 VDC model:	2'200 µF max.
	5 VDC model:	1'000 µF max.
	9 VDC model:	300 µF max.
	12 VDC model:	160 µF max.
	15 VDC model:	100 µF max.
	24 VDC model:	43 µF max.
	48 VDC model:	10 µF max.
Minimum Load		Not required
Temperature Coefficient		±0.05 %/K max.
Hold-up Time	- At 230 VAC	40 ms min.
	- At 115 VAC	8 ms min.
Start-up Time	- At 230 VAC	200 ms max.
	- At 115 VAC	200 ms max.
Start-up Overshoot Voltage		5% max.
Short Circuit Protection		Continuous, Automatic recovery
Overload Protection		Foldback Mode
Output Current Limitation		135% min. of Iout max.
		150% typ. of Iout max.
Overvoltage Protection		125% typ. of Vout nom.
		190% max. of Vout nom. (By Zener diode)

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

Safety Specifications

Safety Standards	- IT / Multimedia Equipment	CSA-C22.2, No. 60950-1 EN 60950-1 EN 62368-1 IEC 60950-1 UL 60950-1 UL 62368-1
	- Household	EN 60335-1 IEC 60335-1
	- Certification Documents	www.tracopower.com/overview/tmps05
Protection Class		Class I & II (Prepared): Reinforced Insulation
Pollution Degree		PD 2
Over Voltage Category		OVC II

EMC Specifications

EMI Emissions	- Conducted Emissions	EN 61204-3 (Low Voltage Power Supplies) 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)
	- Electrostatic Discharge	EN 55014-2 (Household Appliances Tools) Air: EN 61000-4-2, ± 8 kV, perf. criteria A Contact: EN 61000-4-2, ± 4 kV, perf. criteria A
	- RF Electromagnetic Field	EN 61000-4-3, 10 V/m, perf. criteria A
	- EFT (Burst) / Surge	EN 61000-4-4, ± 2 kV, perf. criteria A
		L to L: EN 61000-4-5, ± 1 kV, perf. criteria A
	- Conducted RF Disturbances	EN 61000-4-6, 10 Vrms, perf. criteria A
	- PF Magnetic Field	Continuous: EN 61000-4-8, 30 A/m, perf. criteria A
	- Voltage Dips & Interruptions	230 VAC / 50 Hz: EN 61000-4-11 30%, 25 periods, perf. criteria A 60%, 5 periods, perf. criteria A >95%, 0.5 periods, perf. criteria A >95%, 250 periods, perf. criteria B

General Specifications

Relative Humidity		95% max. (non condensing)
Temperature Ranges	- Operating Temperature	-25°C to +70°C
	- Storage Temperature	-40°C to +85°C
Power Derating	- High Temperature	2.5 %/K above 50°C
Cooling System		Natural convection (20 LFM)
Altitude During Operation		4'000 m max.
Switching Frequency		49 - 81 kHz (PWM)
		65 kHz typ. (PWM)
Insulation System		Reinforced Insulation
Working Voltage (rated)		250 VAC
Isolation Test Voltage	- Input to Output, 60 s	3'000 VAC
Isolation Resistance	- Input to Output, 500 VDC	100 M Ω min.
Reliability	- Calculated MTBF	520'000 h (MIL-HDBK-217F, ground benign)
Housing Material		Plastic resin (UL 94 V-0 rated)
Potting Material		Silicone (UL 94 V-0 rated)
Pin Material		Copper Alloy (C6801)

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Pin Foundation Plating	Nickel (2 - 4 µm)
Pin Surface Plating	Tin (3 - 5 µm), matte
Housing Type	Plastic Case
Mounting Type	PCB Mount
Connection Type	THD (Through-Hole Device)
Soldering Profile	Wave Soldering 260°C / 10 s
Weight	19.7 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, 7c-I (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule). The SCIP number is provided on request.)

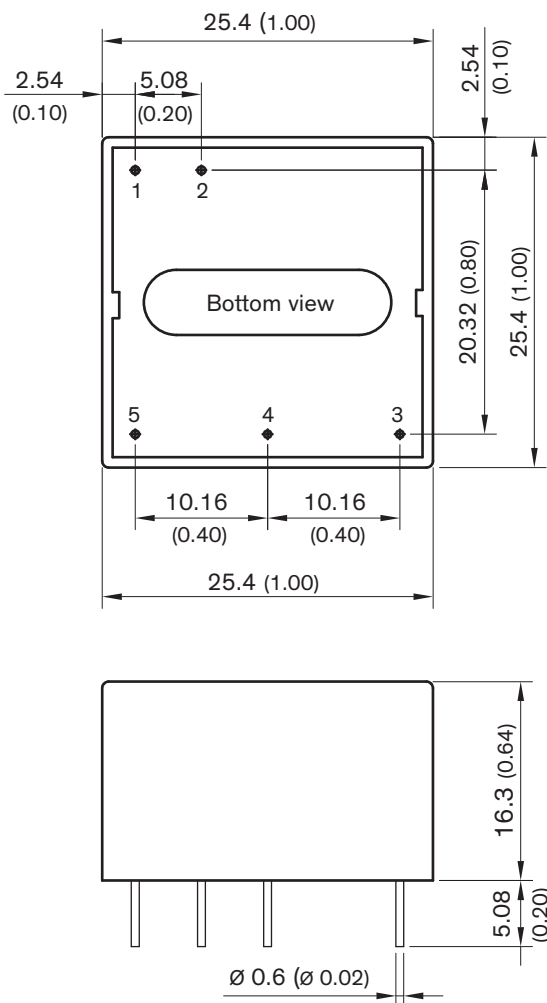
Supporting Documents

Overview Link (for additional Documents)

www.tracopower.com/overview/tmps05

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Outline Dimensions



Dimensions in mm (inch)
 Outside dimension tolerance: ± 0.5 (± 0.02)
 Pin pitch tolerance: ± 0.25 (± 0.01)
 Pin diameter: $\varnothing 0.6 \pm 0.1$ (± 0.004)

Pin Connections

Pin	Function
1	AC (N)
2	AC (L)
3	NC*
4	-Vout
5	+Vout

*Internally not connected
 but keep it isolated from
 primary circuit

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