TRACO POWER

AC/DC Power Supply

TMPS 03 Series, 3 Watt

- **PCB Power module in 1" x 1" package**
- **No load input power <150 mW, to comply with ErP directive**
- **Operating temperature range –25°C to +70°C**
- **Certified to IEC/EN 60335-1 for household appliance**
- **EMI meets EN 55032, class B**
- **Protection class II prepared**
- **3-year product warranty**

prepared

Scheme

UL 62368-1 IEC 60335-1
IEC 62368-1

The TMPS-03 series are ultra compact AC/DC power supplies in a fully encapsulated plastic casing for PCB mount. Their safety approvals and extended operating temp. range from –25°C to +70°C qualify them for worldwide markets. They are certified to IEC/EN 60335-1 for household appliance and offer an interesting solution for space critical applications in commercial, and industrial electronic equipment and if compliance to ErP directive is required.

Models

Order Code	Output Power max.	Output Voltage nom.	Output Current max.	Output Current peak	Efficiency typ.
TMPS 03-103	3 W	3.3 VDC	900 mA	1'170 mA	70 %
TMPS 03-105		5 VDC	600 mA	780 mA	72 %
TMPS 03-109		9 VDC	333 mA	430 mA	77 %
TMPS 03-112		12 VDC	250 mA	320 mA	78 %
TMPS 03-115		15 VDC	200 mA	260 mA	78 %
TMPS 03-124		24 VDC	125 mA	160 mA	78 %

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Input Specifications

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 - 63 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		25 A max.
	- At 115 VAC		15 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: 3 W max.
Ripple and Noise (20 MHz Bandwidth)			70 mVp-p max.
Capacitive Load		3.3 VDC model:	1'200 µF max.
		5 VDC model:	820 µF max.
		9 VDC model:	470 µF max.
		12 VDC model:	330 µF max.
		15 VDC model:	270 µF max.
		24 VDC model:	180 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
Output Current Limitation			135% min. of Iout max. 150% typ. of Iout max.
Overvoltage Protection			190% max. of Vout nom. (By Zener diode) 125% typ. of Vout nom. (By Zener diode)

Safety Specifications

Standards	- IT / Multimedia Equipment	CSA-C22.2, No. 60950-1 EN 60950-1 EN 62368-1 IEC 60950-1 IEC 62368-1 UL 60950-1 UL 62368-1
	- Household	EN 60335-1 IEC 60335-1
	- Certification Documents	www.tracopower.com/tmps03-safety-cert/

All specifications valid at 230 VAC, resistive full load and +25°C after warm-up time, unless otherwise stated.

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Protection Class			Class I & II (Prepared): Reinforced Insulation
		See application note:	www.tracopower.com/info/protection-class.pdf
Energy Source	- Output, acc. to 62368-1		ES1
Power Source	- Output, acc. to 62368-1		PS3
Pollution Degree			PD 2
Over Voltage Category			OVC II

EMC Specifications

EMI (Emissions)			EN 61204-3 (Low Voltage Power Supplies)
	- Conducted Emissions		EN 55014-1 (internal filter)
			EN 55032 class A (internal filter)
			EN 55032 class B (internal filter)
			FCC 47 Part 15 class A (internal filter)
			FCC 47 Part 15 class B (internal filter)
	- Radiated Emissions		EN 55014-1 (internal filter)
			EN 55032 class A (internal filter)
			EN 55032 class B (internal filter)
			FCC 47 Part 15 class A (internal filter)
			FCC 47 Part 15 class B (internal filter)
	- Harmonic Current Emissions		EN 61000-3-2
	- Voltage Fluctuations & Flicker		EN 61000-3-3
EMS (Immunity)			EN 61204-3 (Low Voltage Power Supplies)
			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, ±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
			>95%, 0.5 periods, perf. criteria A
			>95%, 250 periods, perf. criteria B
EMC / Environmental	- Certification Documents		www.tracopower.com/tmps03-emc-cert/

General Specifications

Relative Humidity			95% max. (non condensing)
Temperature Ranges	- Operating Temperature		−25°C to +70°C
	- Approved Ambient Temp.	62368-1:	+60°C max.
		60335-1:	+60°C max.
	- Storage Temperature		−40°C to +85°C
Power Derating	- High Temperature		5.0 %/K above 60°C
		See application note:	www.tracopower.com/tmps03-cc/
Cooling System			Natural convection (20 LFM)
Altitude During Operation			5'000 m max.
Switching Frequency			49 - 81 kHz (PWM)
			65 kHz typ. (PWM)
Insulation System			Reinforced Insulation
Working Voltage (rated)			245 VAC
Isolation Test Voltage	- Input to Output, 60 s		3'000 VAC
Isolation Resistance	- Input to Output, 500 VDC		100 MΩ min.
Reliability	- Calculated MTBF		1'200'000 h (MIL-HDBK-217F, ground benign)
Washing Process			Not allowed

All specifications valid at 230 VAC, resistive full load and +25°C after warm-up time, unless otherwise stated.

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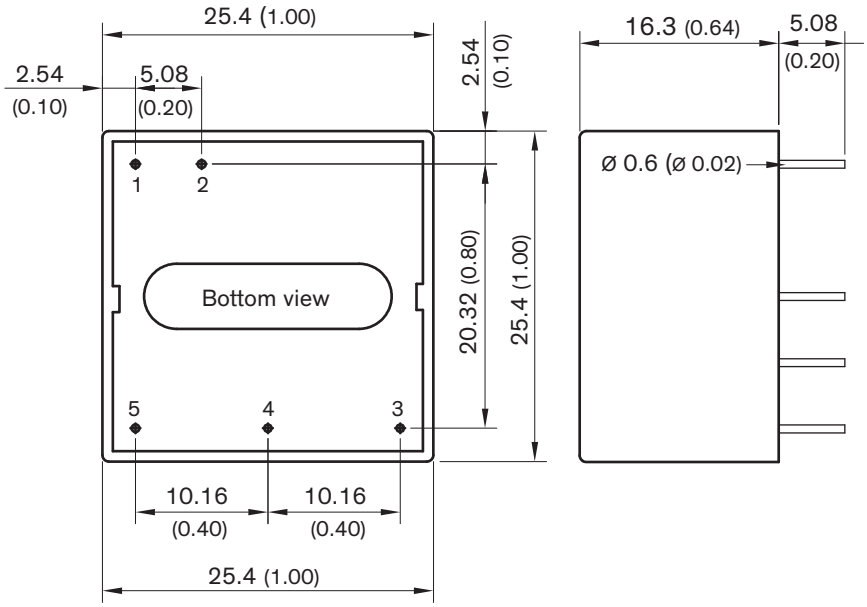
Housing Material	Plastic resin (UL 94 V-0 rated)
Potting Material	Silicone (UL 94 V-0 rated)
Pin Material	Copper Alloy (C6801)
Pin Foundation Plating	Nickel (2 - 4 µm)
Pin Surface Plating	Tin (3 - 5 µm), matte
Housing Type	Plastic Case
Mounting Type	PCB Mount
Connection Type	THD (Through-Hole Device)
Soldering Profile	Lead-Free Wave Soldering 260°C / 6 s max.
Weight	17.4 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: 7(a) (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule).)
- SCIP Reference Number	1f3782d9-743c-4811-920e-082b4bf47f6f

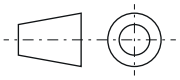
Additional Information

Supporting Documents	www.tracopower.com/overview/tmps03
Frequently Asked Questions	www.tracopower.com/glossary-faq
Glossary	www.tracopower.com/info/glossary.pdf
Service Portal	www.tracoserviceportal.com

Outline Dimensions



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



Pin Connections

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

NC: Not connected

Avoid routing PCB traces under the converter.

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