

- 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



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 %

### Input Specifications

Input Voltage	- AC Range	Operational Range: <b>85 - 264 VAC</b> (Full Range) Rated Range: <b>100 - 240 VAC</b> (Full Range)
	- DC Range	Operational Range: <b>120 - 370 VDC</b> (Designed for, no certification) Polarity: <b>irrelevant</b>
Input Frequency		Operational Range: <b>47 - 63 Hz</b> Certified: <b>50/60 Hz</b>
Power Consumption	- No load & Vin = 230 VAC	<b>450 mW max.</b>
	- No load & Vin = 115 VAC	<b>150 mW max.</b>
Input Inrush Current	- At 230 VAC	<b>25 A max.</b>
	- At 115 VAC	<b>15 A max.</b>
Input Protection		<b>T 1.0 A / 250 V</b>
Recommended Input Fuse		(The need of an external fuse has to be assessed in the final application.)

### Output Specifications

Voltage Set Accuracy		<b>±2% max.</b>
Regulation	- Input Variation (Vmin - Vmax)	<b>1% max.</b>
	- Load Variation (0 - 100%)	<b>1% max.</b>
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)		<b>70 mVp-p max.</b>
Capacitive Load	3.3 VDC model:	<b>1'200 µF max.</b>
	5 VDC model:	<b>820 µF max.</b>
	9 VDC model:	<b>470 µF max.</b>
	12 VDC model:	<b>330 µF max.</b>
	15 VDC model:	<b>270 µF max.</b>
	24 VDC model:	<b>180 µF max.</b>
Minimum Load		<b>Not required</b>
Temperature Coefficient		<b>±0.05 %/K max.</b>
Hold-up Time	- At 230 VAC	<b>40 ms min.</b>
	- At 115 VAC	<b>8 ms min.</b>
Start-up Time	- At 230 VAC	<b>200 ms max.</b>
	- At 115 VAC	<b>200 ms max.</b>
Start-up Overshoot Voltage		<b>5% max.</b>
Short Circuit Protection		<b>Continuous, Automatic recovery</b>
Output Current Limitation		<b>135% min. of Iout max.</b>
		<b>150% typ. of Iout max.</b>
Overvoltage Protection		<b>190% max. of Vout nom. (By Zener diode)</b>
		<b>125% typ. of Vout nom. (By Zener diode)</b>

### Safety Specifications

Standards	- IT / Multimedia Equipment	<b>CSA-C22.2, No. 60950-1</b> <b>EN 60950-1</b> <b>EN 62368-1</b> <b>IEC 60950-1</b> <b>IEC 62368-1</b> <b>UL 60950-1</b> <b>UL 62368-1</b>
	- Household	<b>EN 60335-1</b> <b>IEC 60335-1</b>
	- Certification Documents	<a href="http://www.tracopower.com/overview/tmps03">www.tracopower.com/overview/tmps03</a>

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

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 47 Part 15 class B (internal filter)	
	- Radiated Emissions	EN 55014-1 (internal filter) EN 55032 class B (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)	- Electrostatic Discharge	EN 61204-3 (Low Voltage Power Supplies) EN 55024 (IT Equipment) EN 55035 (Multimedia) EN 55014-2 (Household Appliances Tools) Air: EN 61000-4-2, $\pm 8$ kV, perf. criteria A Contact: EN 61000-4-2, $\pm 4$ kV, perf. criteria A EN 61000-4-3, 10 V/m, perf. criteria A EN 61000-4-4, $\pm 2$ kV, perf. criteria A L to L: EN 61000-4-5, $\pm 1$ kV, perf. criteria A EN 61000-4-6, 10 Vrms, perf. criteria A Continuous: EN 61000-4-8, 30 A/m, perf. criteria A 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	
	- RF Electromagnetic Field		
	- EFT (Burst) / Surge		
	- Conducted RF Disturbances		
	- PF Magnetic Field		
	- Voltage Dips & Interruptions		
	EMC / Environmental	- Certification Documents	<a href="http://www.tracopower.com/overview/tmps03">www.tracopower.com/overview/tmps03</a>

### General Specifications

Relative Humidity		95% max. (non condensing)
Temperature Ranges	- Operating Temperature	-25°C to +70°C
	- Approved Ambient Temp.	+60°C max. (for compliance to 62368-1 and 60335-1)
	- Storage Temperature	-40°C to +85°C
Power Derating	- High Temperature	5 %/K above 60°C See application note: <a href="http://www.tracopower.com/overview/tmps03">www.tracopower.com/overview/tmps03</a>
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 M $\Omega$ min.
Reliability	- Calculated MTBF	1'200'000 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 $\mu$ m)
Pin Surface Plating		Tin (3 - 5 $\mu$ m), matte
Housing Type		Plastic Case
Mounting Type		PCB Mount

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

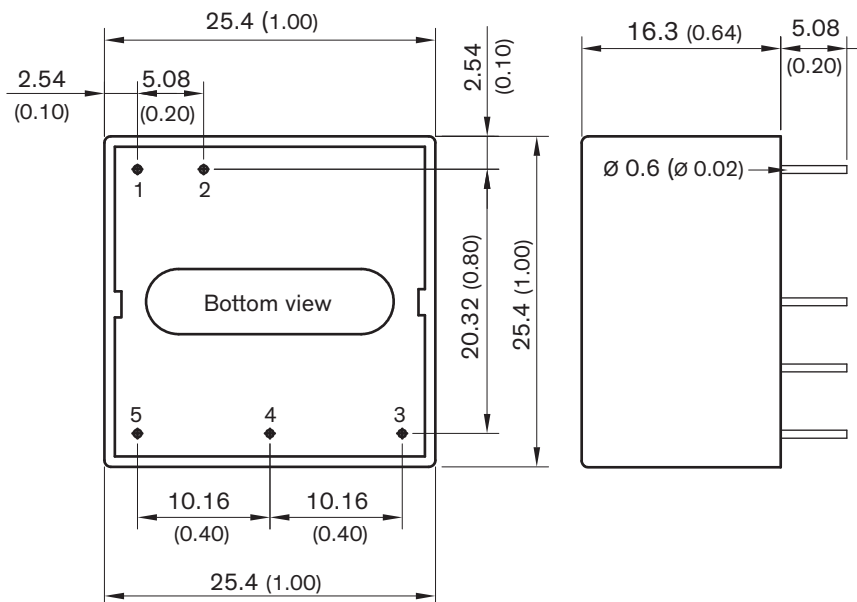
Connection Type	THD (Through-Hole Device)
Soldering Profile	Lead-Free Wave Soldering 260°C / 6 s max.
Weight	17.4 g
Environmental Compliance	- REACH Declaration <a href="http://www.tracopower.com/info/reach-declaration.pdf">www.tracopower.com/info/reach-declaration.pdf</a> REACH SVHC list compliant REACH Annex XVII compliant - RoHS Declaration <a href="http://www.tracopower.com/info/rohs-declaration.pdf">www.tracopower.com/info/rohs-declaration.pdf</a> Exemptions: 7a (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule.)) - SCIP Reference Number
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### Supporting Documents

Overview Link (for additional Documents)

[www.tracopower.com/overview/tmps03](http://www.tracopower.com/overview/tmps03)

### Outline Dimensions



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

NC: Not connected

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

