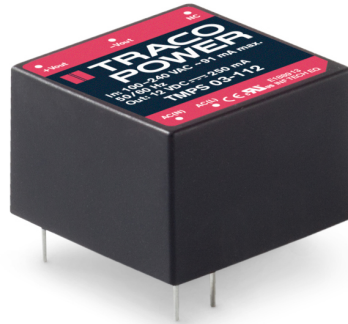




**THE DATASHEET OF  
TMPS 03-109**



- 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>125% typ. of Vout nom.</b>
		<b>190% max. of Vout nom.</b> (By Zener diode)

### 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>UL 60950-1</b>
	- Household	<b>UL 62368-1</b> <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 nominal voltage, 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	EN 61204-3 (Low Voltage Power Supplies)
- 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 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, $\pm 8$ 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
- RF Electromagnetic Field	L to L: EN 61000-4-5, $\pm 1$ kV, perf. criteria A
- EFT (Burst) / Surge	EN 61000-4-6, 10 Vrms, perf. criteria A
- Conducted RF Disturbances	Continuous: EN 61000-4-8, 30 A/m, perf. criteria A
- PF Magnetic Field	230 VAC / 50 Hz: EN 61000-4-11
- Voltage Dips & Interruptions	30%, 25 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: $-25^{\circ}\text{C}$ to $+70^{\circ}\text{C}$ - Approved Ambient Temp.: $+60^{\circ}\text{C}$ max. - Storage Temperature: $-40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$
Power Derating	- High Temperature: 5 %/K above $60^{\circ}\text{C}$ 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 $\mu\text{m}$ )
Pin Surface Plating	Tin (3 - 5 $\mu\text{m}$ ), matte
Housing Type	Plastic Case
Mounting Type	PCB Mount
Connection Type	THD (Through-Hole Device)

All specifications valid at nominal voltage, resistive full load and  $+25^{\circ}\text{C}$  after warm-up time, unless otherwise stated.

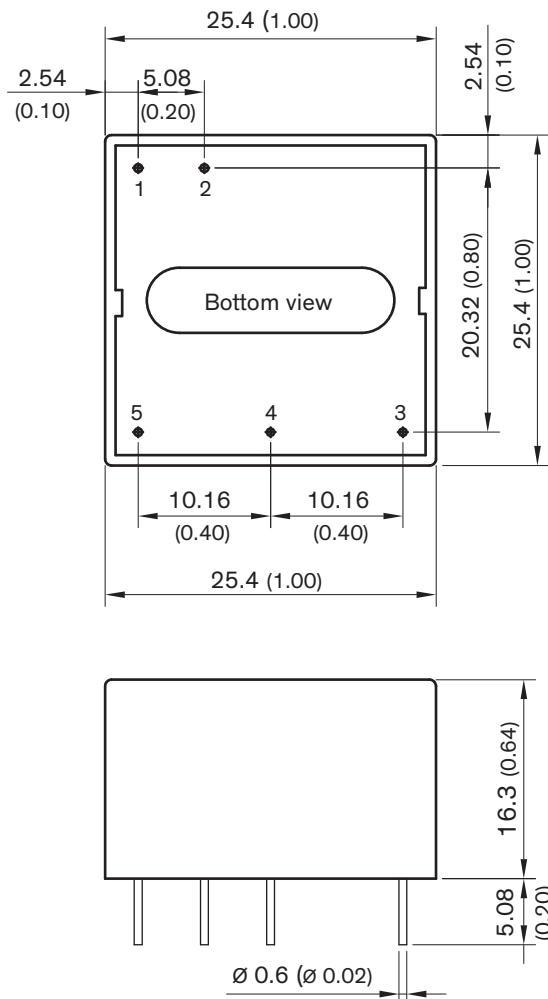
Soldering Profile	Lead-Free Wave Soldering 260°C / 6 s max.
Weight	17.4 g
Environmental Compliance	<a href="http://www.tracopower.com/info/reach-declaration.pdf">www.tracopower.com/info/reach-declaration.pdf</a> REACH SVHC list compliant REACH Annex XVII compliant <a href="http://www.tracopower.com/info/rohs-declaration.pdf">www.tracopower.com/info/rohs-declaration.pdf</a> Exemptions: 7a (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule).) 1f3782d9-743c-4811-920e-082b4bf47f6f
- REACH Declaration	
- RoHS Declaration	
- SCIP Reference Number	

### 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:  $\varnothing 0.6 \pm 0.1$  ( $\pm 0.004$ )

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



## Looking for pricing, stock, or lifecycle information?

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