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TRACO POWER

AC/DC Power Supply

TMPW 25 Series, 25 Watt

- **Compact PCB power module in 2.07" x 1.08" package**
- **Wide input voltage range 90-305 VAC**
- **Certified according to EN 60335-1 and IEC/EN/UL 62368-1**
- **I/O-Isolation 4'000 VAC**
- **Operating temperature range –40°C to +70°C**
- **No load input power <0.1W (acc. ErP directive)**
- **High efficiency up to 88%**
- **Internal EN 55032 class B filter**
- **Protection class II prepared**
- **3-year product warranty**



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

The TMPW 25 is a 25 Watt AC/DC series with an extended input range of 90-305 VAC and is suitable for industrial and household/building technology applications and comes in a compact encapsulated plastic case. The 305 VAC (277 VAC ±10%) threshold is derived from a 480 VAC three-phase supply voltage often used in heavy industrial applications. Through the increased voltage level, the drawn current from the load is effectively reduced, which allows for an overall more compact and lightweight design approach. They offer an I/O-isolation voltage of 4000 VAC, a high temperature range of -40 to +70°C and are prepared for protection class II applications. Additionally, an internal EN 55032 class B filter saves valuable board space for an otherwise often mandatory external filter setup. An energy efficient design (<0.1 Watt standby power consumption) and safety approvals according to IEC/EN/UL 62368-1 and EN 60335-1 make this series suitable for a wide range of industrial and household/building technology applications.

Models

Order Code	Output Power max.	Output Voltage nom.	Output Current max.	Efficiency typ.
TMPW 25-105	20 W	5.1 VDC	3'922 mA	84 %
TMPW 25-112	25 W	12 VDC	2'083 mA	88 %
TMPW 25-115		15 VDC	1'666 mA	88 %
TMPW 25-124		24 VDC	1'042 mA	87 %

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Input Specifications

Input Voltage	- AC Range	Operational Range:	90 - 305 VAC (Full Range)
		Rated Range:	100 - 277 VAC (Full Range)
	- DC Range	Operational Range:	100 - 430 VDC
		Certified Range:	100 - 250 VDC
		Polarity:	irrelevant
			(The rated range refers to 62368-1. For 60335-1 certification the rated input voltage is 100 - 240 VAC and DC input is not permitted.)
Input Frequency		Operational Range:	47 - 440 Hz
		Certified:	50/60 Hz
Power Consumption	- No load & Vin = 230 VAC		100 mW max. (Ready to meet ErP directive)
	- No load & Vin = 115 VAC		100 mW max.
Input Current	- Full load & Vin = 230 VAC		320 mA max.
	- Full load & Vin = 115 VAC		490 mA max.
Input Inrush Current	- At 230 VAC		60 A max.
	- At 115 VAC		30 A max.
Recommended Input Fuse			2'500 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)		1% max.
		dual output models:	1% max.
	- Load Variation (5 - 100%)		3% max. (5.1 Vout models)
			2 % max. (other models)
		dual output models:	2% max. (Output 1)
			2% max. (Output 2)
	- Voltage Balance (symmetrical load)	dual output models:	2% max.
	- Cross Regulation (25% / 100% asym. load)	dual output models:	5% max.
Ripple and Noise (20 MHz Bandwidth)		5.1 VDC model:	120 mVp-p max. (w/ 0.1 µF || 47 µF)
		12 VDC model:	150 mVp-p max. (w/ 0.1 µF || 47 µF)
		15 VDC model:	160 mVp-p max. (w/ 0.1 µF || 47 µF)
		24 VDC model:	240 mVp-p max. (w/ 0.1 µF || 47 µF)
Capacitive Load		5.1 VDC model:	2'000 µF max.
		12 VDC model:	680 µF max.
		15 VDC model:	220 µF max.
		24 VDC model:	220 µF max.
Minimum Load			Not required
			(Operation at lower load will not damage the converter, but it may not meet all specifications)
Temperature Coefficient			±0.05 %/K max.
Hold-up Time	- At 230 VAC		36 ms min.
Start-up Time	- At 230 VAC		130 ms max.
	- At 115 VAC		130 ms max.
Short Circuit Protection			Continuous, Automatic recovery
Output Current Limitation			140 - 280% of Iout max.
Overvoltage Protection			105 - 145% of Vout nom. (By Zener diode)
Transient Response	- Response Deviation		2% typ. / 3% max. (50% to 75% Load Step)
	- Response Time		500 µs max. (50% to 75% Load Step)

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

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Safety Specifications

Standards	- IT / Multimedia Equipment		EN 62368-1 IEC 62368-1 UL 62368-1
	- Household		EN 60335-1 IEC 60335-1
	- Power Transformers		IEC 61558-1 IEC 61558-2-16
	- Certification Documents		www.tracopower.com/tmpw25-safety-cert/
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)	- Conducted Emissions		EN 55032 class A (internal filter) EN 55032 class B (internal filter)
	- Radiated Emissions		EN 55032 class A (internal filter) EN 55032 class B (internal filter)
	- Harmonic Current Emissions		EN 61000-3-2, class A
	- Voltage Fluctuations & Flicker		EN 61000-3-3
EMS (Immunity)			EN 55024 (IT Equipment) EN 55035 (Multimedia)
	- 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, 3 V/m, perf. criteria A
	- EFT (Burst) / Surge		EN 61000-4-4, ±1 kV, perf. criteria A
		L to L:	EN 61000-4-5, ±1 kV, perf. criteria A
	- Conducted RF Disturbances		EN 61000-4-6, 3 Vrms, perf. criteria A
	- PF Magnetic Field	Continuous:	EN 61000-4-8, 1 A/m, perf. criteria A
	- Voltage Dips & Interruptions	230 VAC / 50 Hz:	EN 61000-4-11 30%, 25 periods, perf. criteria A >95%, 250 periods, perf. criteria B
		115 VAC / 60 Hz:	EN 61000-4-11 30%, 25 periods, perf. criteria A >95%, 250 periods, perf. criteria B
EMC / Environmental	- Certification Documents		www.tracopower.com/tmpw25-emc-cert/

General Specifications

Relative Humidity			95% max. (non condensing)
Temperature Ranges	- Operating Temperature		–40°C to +70°C
	- Storage Temperature		–40°C to +85°C
Power Derating	- High Temperature		2.5 %/K above 50°C 2.0 %/K below –30°C
	- Low Input Voltage		2.0 %/V below 100 VAC
		See application note:	www.tracopower.com/tmpw25-cc/
Cooling System			Natural convection (20 LFM)
Altitude During Operation			5'000 m max. (acc. IEC 62368-1) 2'000 m max. (acc. IEC 60335-1)
Switching Frequency			50 - 68 kHz (PWM, PFM)
Insulation System			Reinforced Insulation
Working Voltage (rated)			311 VAC
Isolation Test Voltage	- Input to Output, 60 s		4'000 VAC
Leakage Current	- Touch Current		250 µA max.

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

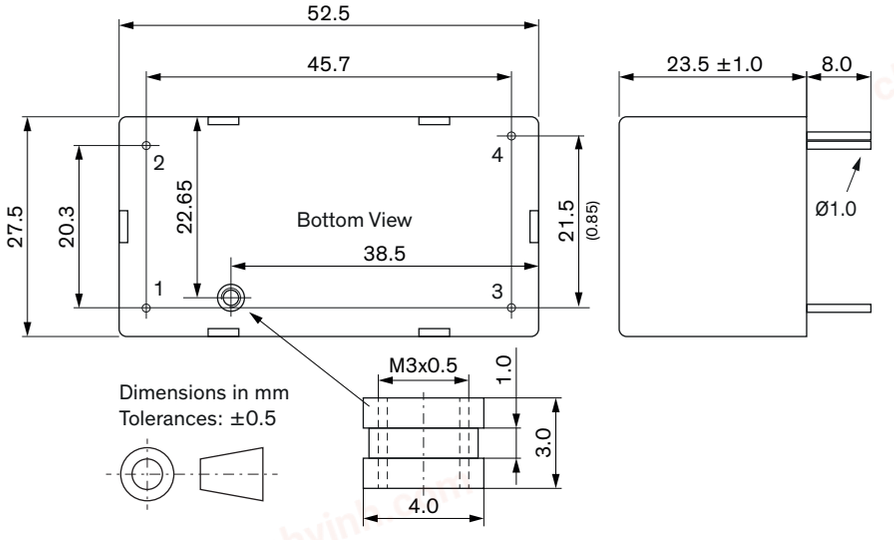
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Reliability	- Calculated MTBF	400'000 h (MIL-HDBK-217F, ground benign)
Washing Process		Not allowed
Environment	- Vibration	IEC 60068-2-6 2 g, 3 axis, 60 min, 10-500 Hz, 10 min/cycle
	- Mechanical Shock	IEC 60068-2-27
Housing Material		Plastic resin (UL 94 V-0 rated)
Potting Material		Silicone (UL 94 V-0 rated) (Hermetical sealed structure, dust-proof only non water-proof)
Pin Material		Brass
Pin Surface Plating		Tin (120 µm min.), matte
Housing Type		Plastic Case
Mounting Type		PCB Mount
Connection Type		THD (Through-Hole Device)
Soldering Profile		Lead-Free Wave Soldering 270°C / 3 s max.
Weight		55 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(c)-I (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule).)
	- SCIP Reference Number	becfab60-5bd0-47f3-9e83-70d081fbe3f1

Additional Information

Supporting Documents	www.tracopower.com/overview/tmpw25
Frequently Asked Questions	www.tracopower.com/glossary-faq
Glossary	www.tracopower.com/info/glossary.pdf
Service Portal	www.tracoserviceportal.com

Outline Dimensions



Pinout	
Pin	**Single**
1	AC IN (L)
2	AC IN (N)
3	+Vout
4	–Vout

Avoid routing PCB traces under the converter.

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