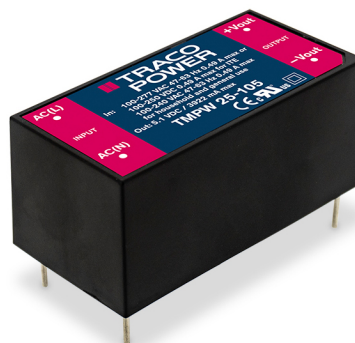


- Compact PCB power module in 2.07" x 1.08" package
- Wide input voltage range 90-305 VAC
- Certified according to EN 60335-1 and IEC/EN/UL 62368-1
- I/O-Isolation 4'000 VAC
- Operating temperature range -40°C to +70°C
- No load input power <0.1W (acc. ErP directive)
- High efficiency up to 88%
- Internal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



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  $\pm 10\%$ ) 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<br>max. | Output Voltage<br>nom. | Output Current<br>max. | Efficiency<br>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 %               |

## Input Specifications

|                        |                                                            |                                                                                                                                                                                                                                                           |
|------------------------|------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Input Voltage          | - AC Range                                                 | Operational Range: <b>90 - 305 VAC</b> (Full Range)<br>Rated Range: <b>100 - 277 VAC</b> (Full Range)                                                                                                                                                     |
|                        | - DC Range                                                 | Operational Range: <b>100 - 430 VDC</b><br>Certified Range: <b>100 - 250 VDC</b><br>Polarity: <b>irrelevant</b><br>(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: <b>47 - 440 Hz</b><br>Certified: <b>50/60 Hz</b>                                                                                                                                                                                       |
| Input Current          | - Full Load & Vin = 230 VAC<br>- Full Load & Vin = 115 VAC | <b>320 mA max.</b><br><b>490 mA max.</b>                                                                                                                                                                                                                  |
| Power Consumption      | - No load & Vin = 230 VAC<br>- No load & Vin = 115 VAC     | <b>100 mW max.</b> (Ready to meet ErP directive)<br><b>100 mW max.</b>                                                                                                                                                                                    |
| Input Inrush Current   | - At 230 VAC<br>- At 115 VAC                               | <b>60 A max.</b><br><b>30 A max.</b>                                                                                                                                                                                                                      |
| Recommended Input Fuse |                                                            | <b>2'500 mA</b> (slow blow)<br>(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)<br>- Load Variation (0 - 100%) | <b>1% max.</b><br><b>3% max.</b> (5.1 Vout models)<br><b>2 % max.</b> (other models)                                                                                                                                                                                                  |
| Ripple and Noise<br>(20 MHz Bandwidth) |                                                                | 5.1 VDC model: <b>120 mVp-p max.</b> (w/ 0.1 $\mu$ F    47 $\mu$ F)<br>12 VDC model: <b>150 mVp-p max.</b> (w/ 0.1 $\mu$ F    47 $\mu$ F)<br>15 VDC model: <b>160 mVp-p max.</b> (w/ 0.1 $\mu$ F    47 $\mu$ F)<br>24 VDC model: <b>240 mVp-p max.</b> (w/ 0.1 $\mu$ F    47 $\mu$ F) |
| Capacitive Load                        |                                                                | 5.1 VDC model: <b>2'000 <math>\mu</math>F max.</b><br>12 VDC model: <b>680 <math>\mu</math>F max.</b><br>15 VDC model: <b>220 <math>\mu</math>F max.</b><br>24 VDC model: <b>220 <math>\mu</math>F max.</b>                                                                           |
| Minimum Load                           |                                                                | <b>Not required</b>                                                                                                                                                                                                                                                                   |
| Temperature Coefficient                |                                                                | <b>±0.05 %/K max.</b>                                                                                                                                                                                                                                                                 |
| Hold-up Time                           | - At 230 VAC                                                   | <b>36 ms min.</b>                                                                                                                                                                                                                                                                     |
| Start-up Time                          | - At 230 VAC<br>- At 115 VAC                                   | <b>130 ms max.</b><br><b>130 ms max.</b>                                                                                                                                                                                                                                              |
| Short Circuit Protection               |                                                                | <b>Continuous, Automatic recovery</b>                                                                                                                                                                                                                                                 |
| Output Current Limitation              |                                                                | <b>140 - 280% of Iout max.</b>                                                                                                                                                                                                                                                        |
| Overvoltage Protection                 |                                                                | <b>105 - 145% of Vout nom.</b><br>(By Zener diode)                                                                                                                                                                                                                                    |
| Transient Response                     | - Response Deviation<br>- Response Time                        | <b>2% typ. / 3% max.</b> (50% to 75% Load Step)<br><b>500 <math>\mu</math>s max.</b> (50% to 75% Load Step)                                                                                                                                                                           |

## Safety Specifications

|           |                             |                                                                                            |
|-----------|-----------------------------|--------------------------------------------------------------------------------------------|
| Standards | - IT / Multimedia Equipment | <b>EN 62368-1</b><br><b>IEC 62368-1</b><br><b>UL 62368-1</b>                               |
|           | - Household                 | <b>EN 60335-1</b><br><b>IEC 60335-1</b>                                                    |
|           | - Power Transformers        | <b>IEC 61558-1</b><br><b>IEC 61558-2-16</b>                                                |
|           | - Certification Documents   | <a href="http://www.tracopower.com/overview/tmpw25">www.tracopower.com/overview/tmpw25</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 | <ul style="list-style-type: none"> <li>- Conducted Emissions</li> <li>- Radiated Emissions</li> <li>- Harmonic Current Emissions</li> <li>- Voltage Fluctuations &amp; Flicker</li> </ul>                                                                    | EN 55032 class B (internal filter)<br>EN 55032 class B (internal filter)<br>EN 61000-3-2, class A<br>EN 61000-3-3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| EMS Immunity  | <ul style="list-style-type: none"> <li>- Electrostatic Discharge</li> <li>- RF Electromagnetic Field</li> <li>- EFT (Burst) / Surge</li> <li>- Conducted RF Disturbances</li> <li>- PF Magnetic Field</li> <li>- Voltage Dips &amp; Interruptions</li> </ul> | EN 55024 (IT Equipment)<br>EN 55035 (Multimedia)<br>Air: EN 61000-4-2, $\pm 8$ kV, perf. criteria A<br>Contact: EN 61000-4-2, $\pm 4$ kV, perf. criteria A<br>EN 61000-4-3, 3 V/m, perf. criteria A<br>EN 61000-4-4, $\pm 1$ kV, perf. criteria A<br>L to L: EN 61000-4-5, $\pm 1$ kV, perf. criteria A<br>EN 61000-4-6, 3 Vrms, perf. criteria A<br>Continuous: EN 61000-4-8, 1 A/m, perf. criteria A<br>230 VAC / 50 Hz: EN 61000-4-11<br>30%, 25 periods, perf. criteria A<br>>95%, 250 periods, perf. criteria B<br>115 VAC / 60 Hz: EN 61000-4-11<br>30%, 25 periods, perf. criteria A<br>>95%, 250 periods, perf. criteria B |

## General Specifications

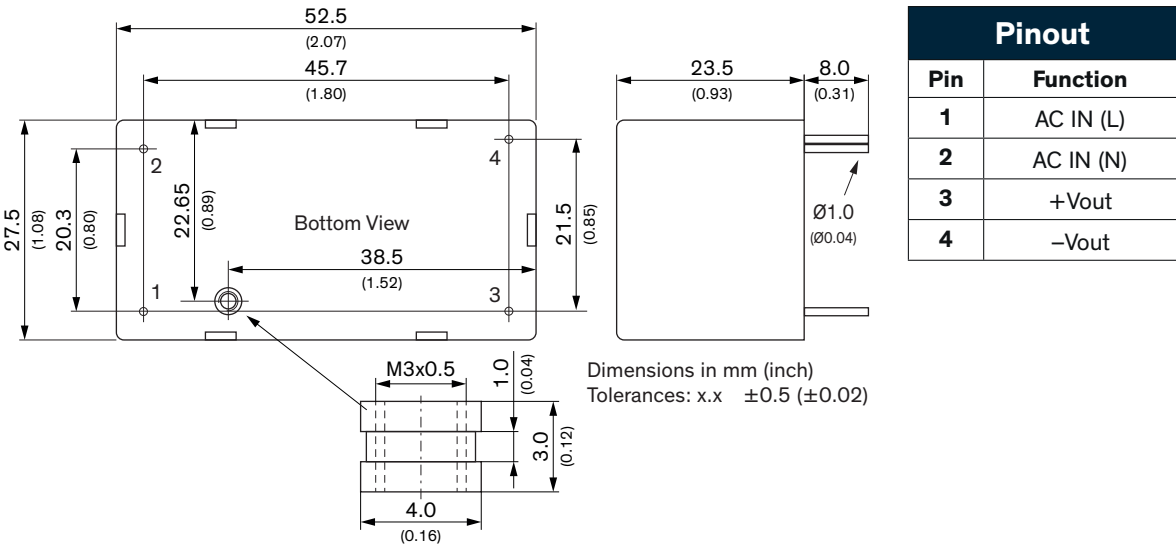
|                           |                                                  |                                                                                                       |
|---------------------------|--------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| Relative Humidity         |                                                  | 95% max. (non condensing)                                                                             |
| Temperature Ranges        | - Operating Temperature<br>- Storage Temperature | -40°C to +70°C<br>-40°C to +85°C                                                                      |
| Power Derating            | - High Temperature<br><br>- Low Input Voltage    | 2.5 %/K above 50°C (High Temperature)<br>2.0 %/K below -30°C (Low Temperature)<br>2 %/V below 100 VAC |
|                           | See application note:                            | <a href="http://www.tracopower.com/overview/tmpw25">www.tracopower.com/overview/tmpw25</a>            |
| Cooling System            |                                                  | Natural convection (20 LFM)                                                                           |
| Altitude During Operation |                                                  | 5'000 m max. (acc. IEC 62368-1)<br>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.                                                                                           |
| Reliability               | - Calculated MTBF                                | 400'000 h (MIL-HDBK-217F, ground benign)                                                              |
| Washing Process           |                                                  | Not allowed                                                                                           |
| Environment               | - Vibration<br><br>- Mechanical Shock            | IEC 60068-2-6<br>2 g, 3 axis, 60 min, 10-500 Hz, 10 min/cycle<br>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<br>270°C / 3 s max.                                                          |

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

|                          |                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Weight                   | 55 g                                                                                                                                                                                                                                                                                                                                                                                               |
| Environmental Compliance | <div>- REACH Declaration<div><a href="http://www.tracopower.com/info/reach-declaration.pdf">www.tracopower.com/info/reach-declaration.pdf</a></div></div> <div>- RoHS Declaration<div><a href="http://www.tracopower.com/info/rohs-declaration.pdf">www.tracopower.com/info/rohs-declaration.pdf</a></div></div> <div>- SCIP Reference Number<div>becfab60-5bd0-47f3-9e83-70d081fbe3f1</div></div> |

|                                                                                                                                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Supporting Documents                                                                                                                                     |
| <div>Overview Link (for additional Documents)<div><a href="http://www.tracopower.com/overview/tmpw25">www.tracopower.com/overview/tmpw25</a></div></div> |

Outline Dimensions



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