

- ◆ PCB Power module in 1" x 1" package
- ◆ Certified to EN60335-1 for household appliance.
- ◆ No load input power <300 mW to comply with ErP directive
- ◆ Operating temperature range -25°C to +70°C
- ◆ EMI meets EN 55022 class B and EN 55014-1
- ◆ Protection class II prepared
- ◆ 3-year product warranty



The TMPS-05 series comprises ultra compact AC/DC power supply modules in lightweight fully encapsulated plastic casing for PCB mount. Beside the safety approvals for industrial and IT solutions, they are also certified to EN 60335 for household appliance. These 5 Watt modules are the ideal solution for low power or segregated circuits when space is critical or for an efficient powering of a standby mode when compliance to ErP directive is required. A peak current of 130% facilitates the activation of main circuits.

| Models      |                   |                |                |                    |            |
|-------------|-------------------|----------------|----------------|--------------------|------------|
| Order code  | Output power max. | Output Voltage | Output Current |                    | Efficiency |
|             |                   |                | max.           | peak <sup>1)</sup> |            |
| TMPS 05-103 | 5 W               | 3.3 VDC        | 1515 mA        | 1970 mA            | 74 %       |
| TMPS 05-105 |                   | 5.0 VDC        | 1000 mA        | 1300 mA            | 80 %       |
| TMPS 05-109 |                   | 9.0 VDC        | 555 mA         | 721 mA             | 82 %       |
| TMPS 05-112 |                   | 12 VDC         | 416 mA         | 540 mA             | 82 %       |
| TMPS 05-115 |                   | 15 VDC         | 333 mA         | 433 mA             | 83 %       |
| TMPS 05-124 |                   | 24 VDC         | 208 mA         | 270 mA             | 83 %       |
| TMPS 05-148 |                   | 48 VDC         | 104 mA         | 135 mA             | 85 %       |

<sup>1)</sup> < 30 s with maximum duty cycle of 10%, average output power must not exceed 5 W

### Input Specifications

|                                                              |                          |                               |
|--------------------------------------------------------------|--------------------------|-------------------------------|
| Input voltage ranges                                         | – AC input<br>– DC Input | 85 – 264 VAC<br>120 – 370 VDC |
| Input frequency                                              |                          | 47 – 63 Hz                    |
| Input current at full load (115 VAC / 230 VAC nominal input) |                          | 110 mA typ.                   |
| No-Load power consumption                                    |                          | 300 mW max.                   |

### Output Specifications

|                                                                               |                                                                                                                        |                                                                               |
|-------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Voltage set accuracy                                                          |                                                                                                                        | ±2 % max.                                                                     |
| Minimum load                                                                  |                                                                                                                        | no minimum load required                                                      |
| Ripple and noise (20 MHz bandwidth)                                           | 3.3 and 5 VDC models:<br>other models:                                                                                 | 60 mVp-p max.<br>1% mVp-p max. of nominal Vout                                |
| Regulation                                                                    | – Input variation<br>– Load variation                                                                                  | 1 % max.<br>1 % max.                                                          |
| Hold-up time                                                                  |                                                                                                                        | 8 ms typ. (at 115 VAC and full load)<br>40 ms typ. (at 230 VAC and full load) |
| Over voltage protection                                                       |                                                                                                                        | max. 190 % of nominal Vout                                                    |
| Current limitation<br>(operation under over-load conditions may cause damage) |                                                                                                                        | at 150 % typ. (autorecovery)                                                  |
| Short circuit protection                                                      |                                                                                                                        | hiccup, automatic recovery                                                    |
| Max. capacitive load                                                          | 3.3 VDC model:<br>5.0 VDC model:<br>9.0 VDC model:<br>12 VDC model:<br>15 VDC model:<br>24 VDC model:<br>48 VDC model: | 2200 µF<br>1000 µF<br>300 µF<br>160 µF<br>100 µF<br>43 µF<br>10 µF            |

### General Specifications

|                                                                       |                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Temperature ranges                                                    | – Operating (20 LFM convection cooling)<br>– Power derating above +50°C<br>– Storage (non operating)                                                                                             | –25°C to +70°C<br>2.5 %/K<br>–40°C to +85°C                                                                                                                                                                                                                                                                                                                             |
| Temperature coefficient                                               |                                                                                                                                                                                                  | 0.05 %/°C                                                                                                                                                                                                                                                                                                                                                               |
| Humidity (non condensing)                                             |                                                                                                                                                                                                  | 95 % rel max.                                                                                                                                                                                                                                                                                                                                                           |
| Switching frequency (pulse width modulation PWM)                      |                                                                                                                                                                                                  | 65 kHz typ.                                                                                                                                                                                                                                                                                                                                                             |
| Isolation voltage (60 sec.) – Input/Output                            |                                                                                                                                                                                                  | 3'000 VAC                                                                                                                                                                                                                                                                                                                                                               |
| Isolation resistance (500 VDC)                                        |                                                                                                                                                                                                  | >100 MOhm                                                                                                                                                                                                                                                                                                                                                               |
| Reliability /calculated MTBF (MIL-HDBK-217F, at +25°C, ground benign) |                                                                                                                                                                                                  | 628'000 h                                                                                                                                                                                                                                                                                                                                                               |
| Electromagnetic compatibility (EMC), emissions                        | – Conducted and radiated input suppression                                                                                                                                                       | EN 55011/22, class B, FCC part 15, level B<br>EN 55014-1,                                                                                                                                                                                                                                                                                                               |
| Electromagnetic compatibility (EMC), immunity                         | – Electrostatic discharge ESD<br>– RF field immunity<br>– Electrical fast transients/burst immunity<br>– Surge<br>– Conducted RF<br>– Magnetic field immunity<br>– Voltage dip and interruptions | EN55014-2; EN55024<br>IEC / EN 61000-4-2, 8 kV / 4kV criteria A<br>IEC / EN 61000-4-3, 10 V/m criteria A<br>IEC / EN 61000-4-4, 2 kV DC criteria A<br>IEC / EN 61000-4-5, 1 kV/0.5kV criteria A<br>IEC / EN 61000-4-6, 10 Vrms criteria A<br>IEC / EN 61000-4-8, 30 A/m criteria A<br>IEC / EN 61000-4-11<br>30%, 10ms perf. criteria A<br>95%, 5000ms perf. criteria B |

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

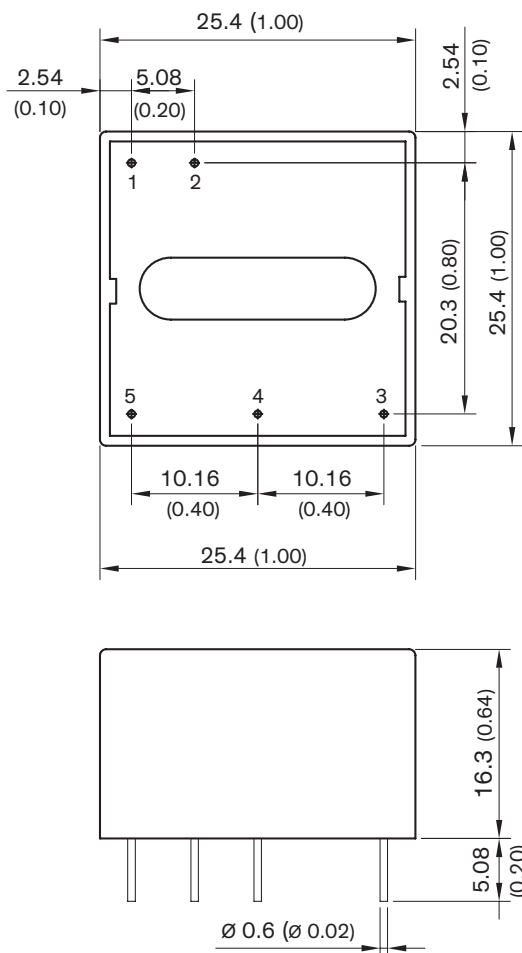
### General Specifications (continued)

|                          |                                     |                                                                                                                                                       |
|--------------------------|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Protection class II      |                                     | according IEC/EN 60536                                                                                                                                |
| Safety standards         |                                     | IEC/EN 60950-1, UL 60950-1<br>EN 60335-1                                                                                                              |
| Safety approvals         | – certification documents (pending) | <a href="http://www.tracopower.com/overview/tmps05">www.tracopower.com/overview/tmps05</a>                                                            |
| Environmental compliance | – Reach (pending)<br>– RoHS         | <a href="http://www.tracopower.com/products/reach-declaration.pdf">www.tracopower.com/products/reach-declaration.pdf</a><br>RoHS directive 2011/65/EU |

### Physical Specifications

|                 |                                             |
|-----------------|---------------------------------------------|
| Casing material | plastic resin + fiberglass (UL 94V-0 rated) |
| Pin             | tinned copper                               |
| Weight          | 19.7 g (0.69 oz)                            |

### Outline Dimensions



| Pin-Out |       |
|---------|-------|
| Pin     |       |
| 1       | AC(N) |
| 2       | AC(L) |
| 3       | NC*   |
| 4       | -Vout |
| 5       | +Vout |

\*internally not connected but keep it isolated from primary circuit

Dimensions in [mm], ( ) = Inches  
Tolerances = 0.5mm (0.01)  
Pin diameter  $\varnothing$  0.6 mm (0.02  $\pm$  0.004)

Specifications can be changed without notice! Make sure you are using the latest documentation, downloadable at [www.tracopower.com](http://www.tracopower.com)

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