

Features

- ◆ AC/DC power modules for PCB mounting
- ◆ Highest power density
- ◆ Fully encapsulated plastic case
- ◆ Universal input 90–264 VAC, 47–440 Hz
- ◆ High efficiency
- ◆ EMI meets EN 55022, class B and FCC, level B
- ◆ Low ripple and noise
- ◆ Short circuit and overload protection
- ◆ 3-year product warranty



The TMLM Series switching power supplies, offer highest power density in a fully encapsulated module which can be soldered directly on to PCBs. This feature makes these modules an ideal solution for all space critical applications in commercial and industrial electronic equipment. International safety approvals qualify the product for worldwide markets. SMD-technology and high efficiency guarantees a high reliability of these Power Supplies.

Models

| Order Code | Output Power max. | Output 1 | Output 2 | Efficiency |
|------------|-------------------|-------------------|-------------------|------------|
| TMLM 04103 | 4.0 Watt | 3.3 VDC / 1200 mA | | 68 % |
| TMLM 04105 | 4.0 Watt | 5.0 VDC / 800 mA | | 72 % |
| TMLM 04109 | 4.0 Watt | 9.0 VDC / 444 mA | | 75 % |
| TMLM 04112 | 4.0 Watt | 12 VDC / 333 mA | | 76 % |
| TMLM 04115 | 4.0 Watt | 15 VDC / 267 mA | | 76 % |
| TMLM 04124 | 4.0 Watt | 24 VDC / 167 mA | | 77 % |
| TMLM 04253 | 3.5 Watt | +5.0 VDC / 600 mA | +3.3 VDC / 150 mA | 72 % |
| TMLM 04225 | 3.6 Watt | +12 VDC / 250 mA | +5.0 VDC / 120 mA | 75 % |
| TMLM 05103 | 4.1 Watt | 3.3 VDC / 1250 mA | | 68 % |
| TMLM 05105 | 5 Watt | 5.0 VDC / 1000 mA | | 71 % |
| TMLM 05112 | 5 Watt | 12 VDC / 420 mA | | 75 % |
| TMLM 05115 | 5 Watt | 15 VDC / 333 mA | | 75 % |
| TMLM 05124 | 5.5 Watt | 24 VDC / 230 mA | | 77 % |
| TMLM 10103 | 8.2 Watt | 3.3 VDC / 2500 mA | | 74 % |
| TMLM 10105 | 10 Watt | 5.0 VDC / 2000 mA | | 79 % |
| TMLM 10112 | 10 Watt | 12 VDC / 833 mA | | 82 % |
| TMLM 10115 | 10 Watt | 15 VDC / 667 mA | | 78 % |
| TMLM 10124 | 10 Watt | 24 VDC / 417 mA | | 80 % |
| TMLM 20103 | 12 Watt | 3.3 VDC / 3600 mA | | 74 % |
| TMLM 20105 | 18 Watt | 5.0 VDC / 3600 mA | | 78 % |
| TMLM 20112 | 20 Watt | 12 VDC / 1660 mA | | 82 % |
| TMLM 20115 | 20 Watt | 15 VDC / 1330 mA | | 83 % |
| TMLM 20124 | 20 Watt | 24 VDC / 833 mA | | 83 % |

Input Specifications

| | | |
|--|--|---|
| Input voltage | – Nominal – Range – DC range | 100 – 240 VAC 90 – 264 VAC (universal input) 120 – 370 VDC |
| Input frequency | | 47 – 440 Hz |
| Input current at full load (115 VAC / 230 VAC) | TMLM 04 models: TMLM 05 models: TMLM 10 models: TMLM 20 models: | 95 mA / 65 mA typ. 110 mA / 70 mA typ. 220 mA / 150 mA typ. 385 mA / 250 mA typ. |
| Inrush current (<2 ms) (115 VAC / 230 VAC) | TMLM 04 models: TMLM 05 & TMLM 10 models: TMLM 20 models: | 15 A max / 25 A max. 10 A max / 20 A max. 20 A max / 40 A max. |
| External input fuse required (recommended value) | | 1.5 A slow blow type |

Output Specifications

| | | |
|---|---|---|
| Voltage set accuracy | | ±2 % |
| Regulation | – Input variation – Load variation | 0.3 % max. (0.5% max. for TMLM 20 models, 3.0 % max for output 2) TMLM 04; 3.3 VDC models: 1.0 % max. (0–100% load) TMLM 04 other models output 1: 0.5 % max. (0–100% load) TMLM 04 output 2: 5.0 % max. (25–100% load) TMLM 05 & TMLM 10 models: 0.5 % max. (5–100% load) TMLM 20 models: 1.0 % max. (5–100% load) |
| Minimum load | | 0 % (25% for dual output models) operation at 0-load condition will not damage these power supplies, however, they may not meet all listed specifications |
| Ripple and noise (20 MHz bandwidth) | TMLM 04; 3.3 VDC models: TMLM 04; 5.0 VDC models: TMLM 04; other models: TMLM 05 & TMLM 10; 3.3 & 5.0 VDC models: TMLM 05 & TMLM 10; 12 & 15 VDC models: TMLM 05 & TMLM 10; 24 VDC models: TMLM 20; 3.3 & 5.0 VDC models: TMLM 20; 12 VDC model: TMLM 20; 15 VDC model: TMLM 20; 24 VDC model: | <250 mV <200 mV <100 mV <130 mV <210 mV <280 mV <200 mV <240 mV <300 mV <480 mV |
| Current limitation | | 120 – 180 % fold back |
| Short circuit protection | | indefinite (automatic recovery) |
| Overvoltage protection by Zehner diode (main output only) | | 120 % of Vout typ. |

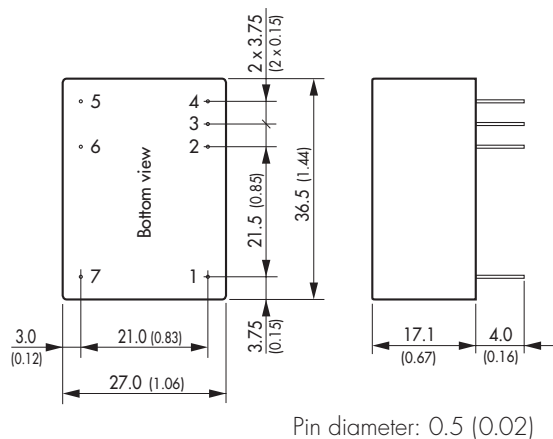
| Max. capacitive load [µF] | | Model series | | | |
|---------------------------|-------------------|---------------|---------|---------|---------|
| | | TMLM 04 | TMLM 05 | TMLM 10 | TMLM 20 |
| Single output models: | Output: 3.3 VDC | 14'000 | 13'800 | 75'000 | 4'500 |
| | 5.0 VDC | 8'000 | 6'000 | 40'000 | 3'500 |
| | 9.0 VDC | 2'400 | - | - | - |
| | 12 VDC | 1'000 | 1'400 | 8'500 | 1'800 |
| | 15 VDC | 700 | 1'000 | 3'500 | 1'500 |
| | 24 VDC | 220 | 170 | 1'200 | 1'200 |
| Dual output models: | 5.0 VDC / 3.3 VDC | 5'600 / 4'700 | - | - | - |
| | 12 VDC / 5.0 VDC | 330 / 4'700 | - | - | - |

General Specifications

| | | |
|---|---|--|
| Temperature ranges | - Operating - Storage (non operating) | -25°C to +60°C -40°C to +85°C |
| Derating | | 3.75 %/K above +50°C TMLM 20 models: 2.5 %/K above +40°C |
| Temperature coefficient | | 0.02 %/K |
| Humidity (non condensing) | | 95 % rel max. |
| Switching frequency | | approx. 100 kHz |
| Hold-up time (115 VAC / 230 VAC) | TMLM 20 models: other models: | 12 ms / 56 ms 15 ms min. |
| Isolation voltage (60 sec.) - Input/ Output | | 3'000 VAC |
| Leakage current | TMLM 04 models: TMLM 05 models: TMLM 10 models: TMLM 20 models: | 0.25 mA max. 0.75 mA max. 0.25 mA max. tba. |
| Reliability /calculated MTBF (MIL-HDBK-217F, at +25°C, ground benign) | | >330'000 h TMLM 20 models: >250'000 h |
| Electromagnetic compatibility (EMC), emissions | | EN 55022, class B, FCC part 15, level B |
| Electromagnetic compatibility (EMC), immunity | | EN 61000-6-2: 2005 |
| Degree of protection | | class II to IEC/EN 60536 |
| Safety standards | | UL 60950-1, IEC/EN 60950-1 |
| Safety approvals | - UL/cUL 60950-1 - CB test certificate IEC 60950-1 for 4W models: - CB test certificate IEC 60950-1 for other models: | www.ul.com -> certifications -> File e188913 www.tracopower.com/products/tmlm04-cb.pdf www.tracopower.com/products/tmlm-cb.pdf |
| Environment | - Vibration acc. IEC 60068-2-6; - Shock acc. IEC 60068-2-27 | 3 axes, sine sweep, 10-55 Hz, 1g, 1oct/min. 20 G (3 directions each 3 times) |
| Environmental compliance | - Reach - RoHS | www.tracopower.com/products/tmlm-reach.pdf RoHS directive 2011/65/EU |
| Casing material | | Plastic resin with fiberglass (UL 94V-0 rated) |

Outline Dimensions

TMLM 04 Models:



| Pin-Out | | |
|---------|--------|--------|
| Pin | Single | Dual |
| 1 | ntc | ntc |
| 2 | +Vout | Vout 1 |
| 3 | -Vout | Common |
| 4 | ntc | Vout 2 |
| 5 | AC (L) | AC (L) |
| 6 | AC (N) | AC (N) |
| 7 | ntc | ntc |

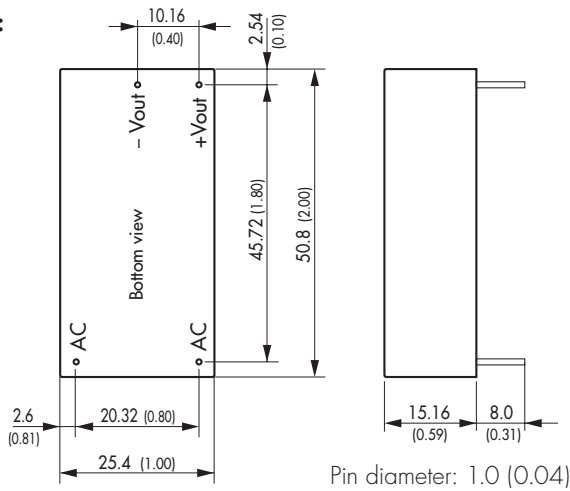
(ntc = not to connect)

Weight: 26 g (0.92 oz)

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

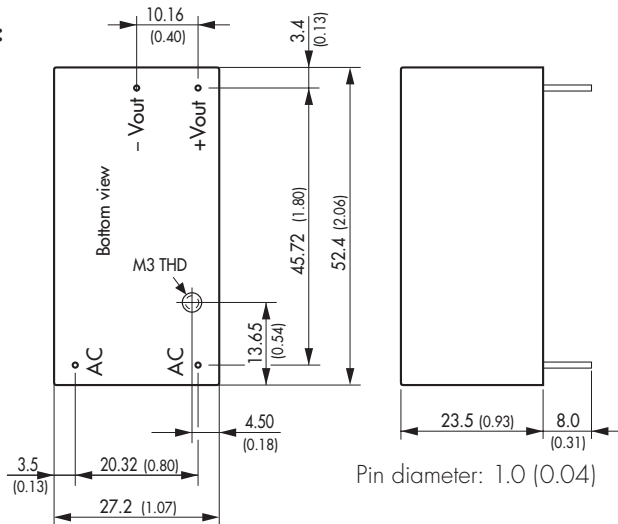
Outline Dimensions

TMLM 05 Models:



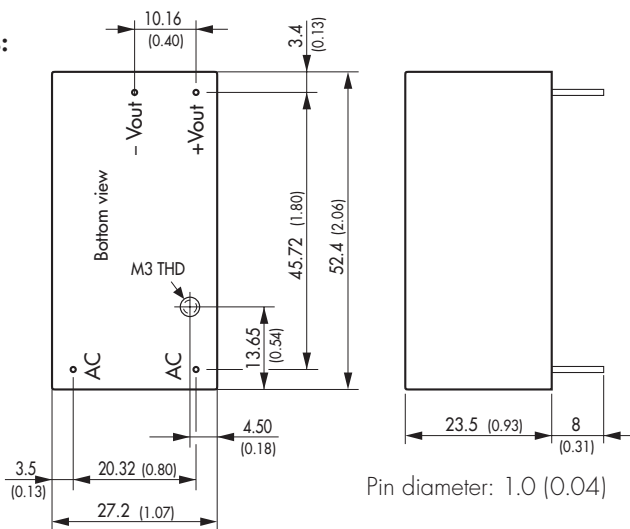
Weight: 30 g (1.06 oz)

TMLM 10 Models:



Weight: 54 g (1.91 oz)

TMLM 20 Models:



Weight: 59 g (2.08 oz)

Dimensions in [mm], () = Inch
Tolerances: ± 0.5 (± 0.02)
Pin pitch tolerance: ± 0.3 (± 0.012)
Max mounting screw penetration: 3.0 mm (0.12)

Данный компонент на территории Российской Федерации

Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

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