

Features

- ◆ Highest power density in SIP package
- ◆ Wide 2:1 input voltage range
- ◆ Ultra-compact SIP-8 package
- ◆ Smallest footprint 6W converter
- ◆ Full SMD design
- ◆ Temperature range -40° to $+65^{\circ}\text{C}$
- ◆ High efficiency up to 86%
- ◆ Indefinite short-circuit protection
- ◆ I/O isolation 1500 VDC
- ◆ Remote On/Off control
- ◆ Fully RoHS compliant
- ◆ 3-year product warranty



The TMR-6 series is a new family of isolated 6W dc-dc converter modules with regulated output, featuring wide 2:1 input voltage ranges. The product comes in an ultra-compact SIP-8 plastic package with a small footprint occupying only 2.0 cm² (0.3 square in.) of board space.

An excellent efficiency allows -40° to $+65^{\circ}\text{C}$ operation temperatures. Further features include remote On/Off control and continuous short circuit protection. The very compact dimensions of these converters make them an ideal solution for many space critical applications in communication equipment, instrumentation and industrial electronics.

Models

| Order code | Input voltage range | Output voltage | Output current max. | Efficiency typ. |
|------------|----------------------------------|----------------|---------------------|-----------------|
| TMR 6-0510 | 4.5 – 9.0 VDC (5 VDC nominal) | 3.3 VDC | 1300 mA | 77 % |
| TMR 6-0511 | | 5 VDC | 1200 mA | 81 % |
| TMR 6-0519 | | 9 VDC | 666 mA | 83 % |
| TMR 6-0512 | | 12 VDC | 500 mA | 84 % |
| TMR 6-0513 | | 15 VDC | 400 mA | 84 % |
| TMR 6-0515 | | 24 VDC | 250 mA | 84 % |
| TMR 6-0521 | | ± 5 VDC | ± 600 mA | 81 % |
| TMR 6-0522 | | ± 12 VDC | ± 250 mA | 84 % |
| TMR 6-0523 | | ± 15 VDC | ± 200 mA | 84 % |
| TMR 6-1210 | 9 – 18 VDC (12 VDC nominal) | 3.3 VDC | 1300 mA | 78 % |
| TMR 6-1211 | | 5 VDC | 1200 mA | 83 % |
| TMR 6-1219 | | 9 VDC | 666 mA | 84 % |
| TMR 6-1212 | | 12 VDC | 500 mA | 85 % |
| TMR 6-1213 | | 15 VDC | 400 mA | 85 % |
| TMR 6-1215 | | 24 VDC | 250 mA | 84 % |
| TMR 6-1221 | | ± 5 VDC | ± 600 mA | 82 % |
| TMR 6-1222 | | ± 12 VDC | ± 250 mA | 83 % |
| TMR 6-1223 | | ± 15 VDC | ± 200 mA | 84 % |
| TMR 6-2410 | 18 – 36 VDC (24 VDC nominal) | 3.3 VDC | 1300 mA | 78 % |
| TMR 6-2411 | | 5 VDC | 1200 mA | 83 % |
| TMR 6-2419 | | 9 VDC | 666 mA | 84 % |
| TMR 6-2412 | | 12 VDC | 500 mA | 85 % |
| TMR 6-2413 | | 15 VDC | 400 mA | 86 % |
| TMR 6-2415 | | 24 VDC | 250 mA | 85 % |
| TMR 6-2421 | | ± 5 VDC | ± 600 mA | 82 % |
| TMR 6-2422 | | ± 12 VDC | ± 250 mA | 84 % |
| TMR 6-2423 | | ± 15 VDC | ± 200 mA | 84 % |
| TMR 6-4810 | 36 – 75 VDC (48 VDC nominal) | 3.3 VDC | 1300 mA | 78 % |
| TMR 6-4811 | | 5 VDC | 1200 mA | 82 % |
| TMR 6-4819 | | 9 VDC | 666 mA | 84 % |
| TMR 6-4812 | | 12 VDC | 500 mA | 85 % |
| TMR 6-4813 | | 15 VDC | 400 mA | 86 % |
| TMR 6-4815 | | 24 VDC | 250 mA | 84 % |
| TMR 6-4821 | | ± 5 VDC | ± 600 mA | 82 % |
| TMR 6-4822 | | ± 12 VDC | ± 250 mA | 84 % |
| TMR 6-4823 | | ± 15 VDC | ± 200 mA | 85 % |

Input Specifications

| | |
|--|---|
| Input current at no load (nominal input voltage) | 5 V models: 105 mA typ. 12 V models: 55 mA typ. 24 V models: 30 mA typ. 48 V models: 15 mA typ. |
| Surge voltage (100 msec. max.) | 5 V models: 15 V max. 12 V models: 36 V max. 24 V models: 50 V max. 48 V models: 100 V max. |
| Input filter | capacitor type (application note for compliance to EN 55022 class A/B pending) |
| Recommended input fuse (normal blow, max. rating) | 5 V models: 3.15 A 12 V models: 1.4 A 24 V models: 700 mA 48 V models: 315 mA |
| ESD (electrostatic discharge) | EN 61000-4-2, air ± 8 kV, contact ± 6 kV, perf. criteria A |
| Radiated immunity | EN 61000-4-3, 10 V/m, perf. criteria A |
| Fast transient / surge (with external input capacitor) | EN 61000-4-4, ± 2 kV, perf. criteria A EN 61000-4-5, ± 2 kV perf. criteria A |
| – external input capacitor | 5 V _{in} models: Nippon chemi-con KY 330 μ F, 50 V, ESR 55 mOhm other models: Nippon chemi-con KY 220 μ F, 100 V, ESR 48 mOhm |
| Conducted immunity | EN 61000-4-6, 10 V _{rms} , perf. criteria A |

Output Specifications

| | |
|--|--|
| Voltage set accuracy | ± 1 % max |
| Regulation | – Input variation Vin min. to Vin max. 0.2 % max. – Load variation 0 – 100% single output models: 1.0 % max. dual output models: 1.0 % max. balanced load – Load cross regulation 25/100% 5.0 % max. (dual output models) |
| Minimum load | 0 % of rated max. load |
| Ripple and noise (20 MHz Bandwidth) | 50 mVpk-pk max. |
| Transient response setting time (25% load step change) | 500 μ s typ. |
| Short circuit protection | indefinite, automatic recovery |
| Start up time | – Power On 30 ms typ. – Remote On 30 ms typ. |
| Capacitive load | 3.3 VDC / 5 VDC output models: 6600 μ F max. / 3300 μ F max. 9 VDC output models: 2000 μ F max. 12 VDC / 15 VDC output models: 1600 μ F max. / 1400 μ F max. 24 VDC output models: 680 μ F max. ± 5 VDC / ± 12 VDC output models: ± 2000 μ F max. / ± 900 μ F max. ± 15 VDC output models: ± 660 μ F max. |

General Specifications

| | |
|---|--|
| Temperature ranges | – Operating –40°C to +65°C (without derating) – Case temperature +90°C max. – Storage –55°C to +125°C |
| Load derating | 5 %/K above 65°C |
| Thermal shock, mechanical shock & vibration | EN 61373, MIL-STD-810F www.tracopower.com/products/mil810.pdf |
| – Test conditions | |
| Humidity (non condensing) | 95 % rel. H max. |
| Temperature coefficient | ± 0.02 %/K |

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

General Specifications

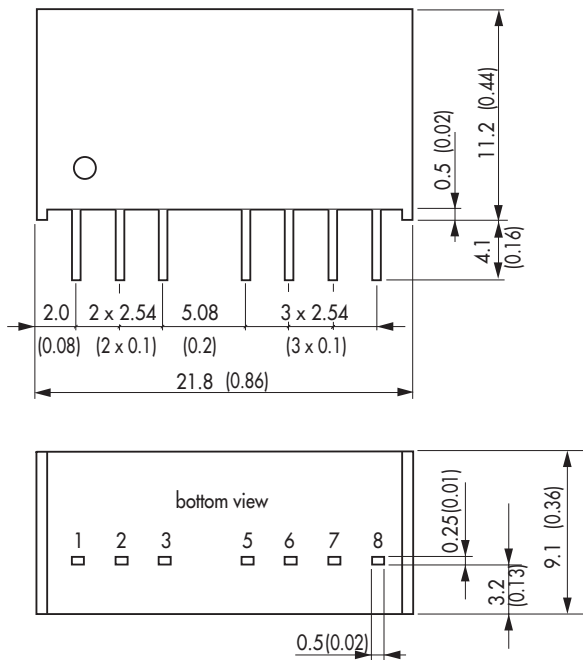
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|---|--|
| Reliability, calculated MTBF (MIL-HDBK-217F, at +25°C, ground benign) | >2.4 Mio h |
| Isolation voltage (60sec.) – Input/Output | 1500 VDC |
| Isolation capacitance – Input/Output | 50 pF max. |
| Isolation resistance – Input/Output (500 VDC) | >10 GOhm |
| Switching frequency | 100 kHz min. (PFM) |
| Remote On/Off | – On: open or high impedance – Off: 2...4 mA current applied via 1KOhm resistor – Off stand by input current 2.5 mA max. |
| Safety standards | IEC/EN 60950-1, UL 60950-1 |
| Altitude during operation | 4'000 m max. (13'120 ft) approved |
| Environmental compliance | – Reach www.tracopower.com/products/tmr6-reach.pdf – RoHS RoHS directive 2011/65/EU |

Physical Specifications

| | |
|------------------|---------------------------|
| Casing material | non-conductive plastic |
| Potting material | silicon, (UL 94V-0 rated) |
| Weight | 4.8 g (0.17oz) |

Application note: www.tracopower.com/products/tmr6-application.pdf

Outline Dimensions



| Pin-Out | | |
|---------|---------------|---------------|
| Pin | Single | Dual |
| 1 | -Vin (GND) | -Vin (GND) |
| 2 | +Vin (Vcc) | +Vin (Vcc) |
| 3 | Remote On/Off | Remote On/Off |
| 5 | No function | No function |
| 6 | +Vout | +Vout |
| 7 | -Vout | Common |
| 8 | No function | -Vout |

Dimensions in [mm], () = Inch
Tolerances: ±0.5 (±0.02)
Pin pitch tolerances: ±0.25 (±0.01)

Specifications can be changed any time without notice.



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- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)

Факс: 8 (812) 320-02-42

Электронная почта: org@eplast1.ru

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.