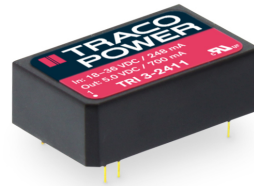


- Reinforced I/O-isolation 7071 VDC rated for 1000 VAC working voltage
- Ultra-high isolation peak voltage 9000 VDC (1s)
- Common Mode Transient Immunity (dv/dt) 15 kV/μs
- Operating temperature range -40 to +90°C
- Low no-load power consumption 96 – 192 mW
- Internal EN 55032 class A filter
- High efficiency up to 87%
- 2:1 input voltage range: 4.5-9, 9-18, 18-36, 36-75 VDC
- Protection against overload, overvoltage and short circuit
- 3-year product warranty



The new TRI 3 is a high isolation, regulated 3.5 Watt DC/DC converter series which comes in a compact DIP-24 package. The core characteristic of the TRI 3 series is a sophisticated reinforced isolation system which is able to withstand high test voltages (9000 VDC for 1s and 7071 VDC for 60s) and working voltages (1000 VACrms). Complementing this isolation characteristic is a high Common Mode Transient Immunity of 15 kV/μs. The new design allows to fully integrate an EN 55032 class A filter and greatly reduces the no-load power consumption. High efficiencies up to 87% allow safe operation from -40°C to +90°C without derating. All models have a wide 2:1 input voltage range and precisely regulated, isolated output voltages. With the latest IT safety certifications (IEC/EN/UL 62368-1) the TRI 3 series is the perfect choice for many demanding applications in the industrial, transportation and instrumentation sectors.

Models

| Order Code | Input Voltage Range | Output 1 | | Output 2 | | Efficiency typ. |
|------------|------------------------------|----------|------------------|----------|------------------|-----------------|
| | | Vnom | I _{max} | Vnom | I _{max} | |
| TRI 3-0511 | 4.5 - 9 VDC (5 VDC nom.) | 5 VDC | 700 mA | | | 82 % |
| TRI 3-0512 | | 12 VDC | 290 mA | | | 83 % |
| TRI 3-0513 | | 15 VDC | 235 mA | | | 84 % |
| TRI 3-0515 | | 24 VDC | 146 mA | | | 83 % |
| TRI 3-0522 | | +12 VDC | 145 mA | -12 VDC | 145 mA | 84 % |
| TRI 3-0523 | | +15 VDC | 115 mA | -15 VDC | 115 mA | 84 % |
| TRI 3-1211 | 9 - 18 VDC (12 VDC nom.) | 5 VDC | 700 mA | | | 82 % |
| TRI 3-1212 | | 12 VDC | 290 mA | | | 86 % |
| TRI 3-1213 | | 15 VDC | 235 mA | | | 87 % |
| TRI 3-1215 | | 24 VDC | 146 mA | | | 86 % |
| TRI 3-1222 | | +12 VDC | 145 mA | -12 VDC | 145 mA | 87 % |
| TRI 3-1223 | | +15 VDC | 115 mA | -15 VDC | 115 mA | 87 % |
| TRI 3-2411 | 18 - 36 VDC (24 VDC nom.) | 5 VDC | 700 mA | | | 82 % |
| TRI 3-2412 | | 12 VDC | 290 mA | | | 85 % |
| TRI 3-2413 | | 15 VDC | 235 mA | | | 87 % |
| TRI 3-2415 | | 24 VDC | 146 mA | | | 86 % |
| TRI 3-2422 | | +12 VDC | 145 mA | -12 VDC | 145 mA | 87 % |
| TRI 3-2423 | | +15 VDC | 115 mA | -15 VDC | 115 mA | 86 % |
| TRI 3-4811 | 36 - 75 VDC (48 VDC nom.) | 5 VDC | 700 mA | | | 82 % |
| TRI 3-4812 | | 12 VDC | 290 mA | | | 85 % |
| TRI 3-4813 | | 15 VDC | 235 mA | | | 85 % |
| TRI 3-4815 | | 24 VDC | 146 mA | | | 83 % |
| TRI 3-4822 | | +12 VDC | 145 mA | -12 VDC | 145 mA | 84 % |
| TRI 3-4823 | | +15 VDC | 115 mA | -15 VDC | 115 mA | 84 % |

Input Specifications

| | | |
|-----------------------|----------------|--|
| Input Current | - at no load | 5 Vin models: 20 mA typ. 12 Vin models: 8 mA typ. 24 Vin models: 6 mA typ. 48 Vin models: 4 mA typ. |
| | - at full load | 5 Vin models: 838 mA typ. 12 Vin models: 339 mA typ. 24 Vin models: 170 mA typ. 48 Vin models: 87 mA typ. |
| Surge Voltage | | 5 Vin models: 15 VDC max. (1 s max.) 12 Vin models: 25 VDC max. (1 s max.) 24 Vin models: 50 VDC max. (1 s max.) 48 Vin models: 100 VDC max. (1 s max.) |
| Under Voltage Lockout | | 5 Vin models: 4 VDC typ. 12 Vin models: 8 VDC typ. 24 Vin models: 16 VDC typ. 48 Vin models: 34 VDC typ. |
| Input Filter | | Internal Pi-Type |

Output Specifications

| | | |
|---------------------------|--|--|
| Voltage Set Accuracy | | ±1% max. |
| Regulation | - Input Variation (Vmin - Vmax) | single output models: 0.5% max. dual output models: 0.5% max. |
| | - Load Variation (0 - 100%) | single output models: 0.5% max. dual output models: 0.5% max. (Output 1) 0.5% max. (Output 2) |
| | - Cross Regulation (symmetrical load) | dual output models: 2% max. |
| | - Cross Regulation (25% / 100% asym. load) | dual output models: 5% max. |
| Ripple and Noise | - 20 MHz Bandwidth | 70 mVp-p max. (with 1 μ F MLCC) |
| Capacitive Load | - single output | 5 Vout models: 750 μF max. 12 Vout models: 130 μF max. 15 Vout models: 100 μF max. 24 Vout models: 39 μF max. |
| | - dual output | 12 / -12 Vout models: 75 / 75 μF max. 15 / -15 Vout models: 56 / 56 μF max. |
| Minimum Load | | Not required |
| Start-up Time | | 30 ms max. |
| Short Circuit Protection | | Continuous, Automatic recovery |
| Output Current Limitation | | 150% typ. of Iout max. |
| Overvoltage Protection | | 125% typ. of Vout nom. |
| Transient Response | - Response Deviation | 5% max. (75% to 100% Load Step) |
| | - Response Time | 300 μs typ. (75% to 100% Load Step) |

Safety Specifications

| | | |
|-----------------------|-----------------------------|--|
| Safety Standards | - IT / Multimedia Equipment | EN 62368-1 IEC 62368-1 UL 62368-1 |
| | - Certification Documents | www.tracopower.com/overview/tri3 |
| Pollution Degree | | PD 2 |
| Over Voltage Category | | OVC II |

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

EMC Specifications

| | | |
|---------------|--|--|
| EMC Emissions | - Conducted Emissions | EN 55032 class A (internal filter) EN 55032 class B (with external filter) FCC Part 15, class A |
| | - Radiated Emissions - External Filter Proposal | EN 55032 class A (with external filter) www.tracopower.com/overview/tri3 |
| EMC Immunity | - Electrostatic Discharge | Air: EN 55024 (IT Equipment) EN 61000-4-2, ± 15 kV, perf. criteria A Contact: EN 61000-4-2, ± 6 kV, perf. criteria A |
| | - RF Electromagnetic Field - EFT (Burst) - Surge - Conducted RF Disturbances - PF Magnetic Field | EN 61000-4-3, 10 V/m, perf. criteria A EN 61000-4-4, ± 2 kV, perf. criteria A EN 61000-4-5, ± 2 kV, perf. criteria A EN 61000-4-6, 10 Vrms, perf. criteria A EN 61000-4-8, 100 A/m, perf. criteria A |

General Specifications

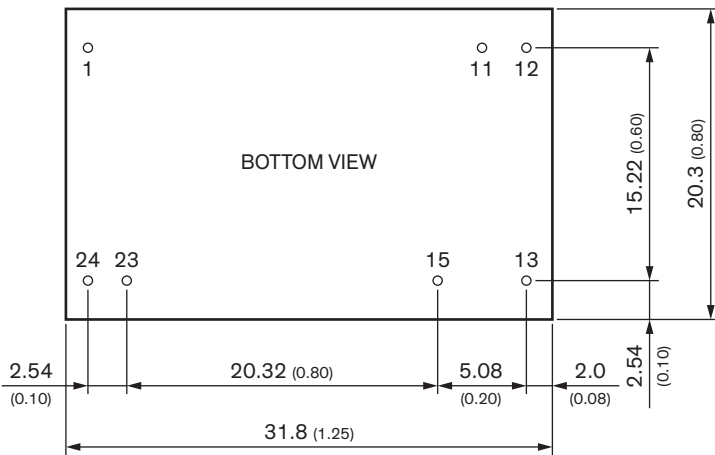
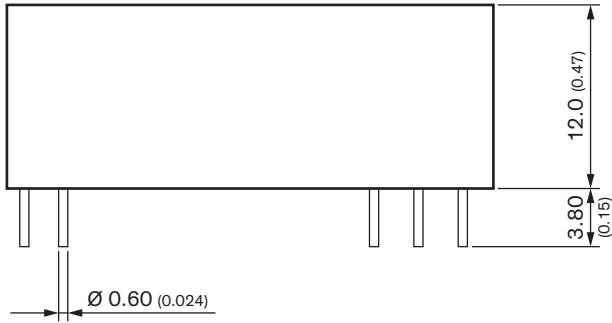
| | | |
|--------------------------------|---------------------------------|--|
| Relative Humidity | | 95% max. (non condensing) |
| Temperature Ranges | - Operating Temperature | -40°C to +96°C |
| | - Case Temperature | +105°C max. |
| | - Storage Temperature | -40°C to +125°C |
| Power Derating | - High Temperature | 8.3 %/K above 90°C |
| Cooling System | | Natural convection (20 LFM) |
| Altitude During Operation | | 5'000 m max. |
| Switching Frequency | | 330 kHz typ. (PWM) |
| Insulation System | | Reinforced Insulation |
| Working Voltage (rated) | | 1'000 VAC |
| Isolation Test Voltage | - Input to Output, 60 s | 7'071 VDC |
| | - Input to Output, 1 s | 9'000 VDC |
| Isolation Resistance | - Input to Output, 500 VDC | 10'000 MOhm min. |
| Isolation Capacitance | - Input to Output, 100 kHz, 1 V | 40 pF max. |
| Common Mode Transient Immunity | | 15 kV/ μ s min. |
| Reliability | - Calculated MTBF | 5'815'000 h (MIL-HDBK-217F, ground benign) |
| Housing Material | | Plastic (UL 94V-0 rated) |
| Pin Material | | Tinned Copper |
| Soldering Profile | | Wave Soldering (1.5mm from casing) |
| | | 260°C / 10 s |
| Connection Type | | THD (Through-Hole Device) |
| Weight | | 15.5 g |
| Environmental Compliance | - Reach | www.tracopower.com/info/reach-declaration.pdf |
| | - RoHS | www.tracopower.com/info/rohs-declaration.pdf |

Supporting Documents

| | |
|--|--|
| Overview Link (for additional Documents) | www.tracopower.com/overview/tri3 |
|--|--|

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

Outline Dimensions



Dimensions in mm (inch)
 Tolerances ± 0.5 (± 0.02)
 Pin $\varnothing 0.5 \pm 0.05$ (0.02 ± 0.002)

| Pinout | | |
|--------|---------------|-------------|
| Pin | Single Output | Dual Output |
| 1 | +Vin (Vcc) | +Vin (Vcc) |
| 11 | No pin | Common |
| 12 | -Vout | No pin |
| 13 | +Vout | -Vout |
| 15 | No pin | +Vout |
| 23 | -Vin (GND) | -Vin (GND) |
| 24 | -Vin (GND) | -Vin (GND) |



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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