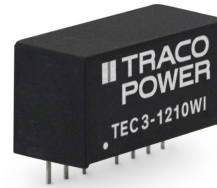


- Compact SIP-8 package
- I/O-isolation voltage 1'600 VDC
- Ultra-wide 4:1 input voltage range
- Fully regulated outputs
- Operating temperature range -40°C to $+90^{\circ}\text{C}$
- Continuous short circuit protection
- Remote On/Off
- 3-year product warranty
- Designed to meet UL 62368-1



TEC 3WI is a new series with the design purpose to improve the prevalent 3 Watt SIP-8 DC/DC converters in terms of cost, efficiency and performance. The latest technology and components effectuate a high efficiency for a low thermal loss. This enables an operating temperature range from -40°C up to $+90^{\circ}\text{C}$. The converters are fully regulated over 0 - 100% load (no minimum load is required). The models are available with ultra-wide input ranges of 4.5-18, 9-36 and 18-75 VDC. The functional I/O-isolation system is designed to meet IEC/EN 62368-1 with a test voltage (60 s) of 1600 VDC.

Models

| Order Code | Input Voltage Range | Output 1 | | Output 2 | | Efficiency typ. |
|--------------|-------------------------------|----------|------------------|----------|------------------|-----------------|
| | | Vnom | I _{max} | Vnom | I _{max} | |
| TEC 3-1210WI | 4.5 - 18 VDC (12 VDC nom.) | 3.3 VDC | 700 mA | | | 75 % |
| TEC 3-1211WI | | 5 VDC | 600 mA | | | 79 % |
| TEC 3-1219WI | | 9 VDC | 333 mA | | | 81 % |
| TEC 3-1212WI | | 12 VDC | 250 mA | | | 82 % |
| TEC 3-1213WI | | 15 VDC | 200 mA | | | 83 % |
| TEC 3-1215WI | | 24 VDC | 125 mA | | | 82 % |
| TEC 3-1221WI | | +5 VDC | 300 mA | -5 VDC | 300 mA | 80 % |
| TEC 3-1222WI | | +12 VDC | 125 mA | -12 VDC | 125 mA | 82 % |
| TEC 3-1223WI | | +15 VDC | 100 mA | -15 VDC | 100 mA | 81 % |
| TEC 3-2410WI | 9 - 36 VDC (24 VDC nom.) | 3.3 VDC | 700 mA | | | 76 % |
| TEC 3-2411WI | | 5 VDC | 600 mA | | | 80 % |
| TEC 3-2419WI | | 9 VDC | 333 mA | | | 81 % |
| TEC 3-2412WI | | 12 VDC | 250 mA | | | 83 % |
| TEC 3-2413WI | | 15 VDC | 200 mA | | | 83 % |
| TEC 3-2415WI | | 24 VDC | 125 mA | | | 81 % |
| TEC 3-2421WI | | +5 VDC | 300 mA | -5 VDC | 300 mA | 79 % |
| TEC 3-2422WI | | +12 VDC | 125 mA | -12 VDC | 125 mA | 81 % |
| TEC 3-2423WI | | +15 VDC | 100 mA | -15 VDC | 100 mA | 81 % |
| TEC 3-4810WI | 18 - 75 VDC (48 VDC nom.) | 3.3 VDC | 700 mA | | | 74 % |
| TEC 3-4811WI | | 5 VDC | 600 mA | | | 80 % |
| TEC 3-4819WI | | 9 VDC | 333 mA | | | 81 % |
| TEC 3-4812WI | | 12 VDC | 250 mA | | | 82 % |
| TEC 3-4813WI | | 15 VDC | 200 mA | | | 83 % |
| TEC 3-4815WI | | 24 VDC | 125 mA | | | 82 % |
| TEC 3-4821WI | | +5 VDC | 300 mA | -5 VDC | 300 mA | 80 % |
| TEC 3-4822WI | | +12 VDC | 125 mA | -12 VDC | 125 mA | 82 % |
| TEC 3-4823WI | | +15 VDC | 100 mA | -15 VDC | 100 mA | 82 % |

Input Specifications

| | | |
|------------------------|--------------|---|
| Input Current | - At no load | 12 Vin models: 35 mA typ. 24 Vin models: 20 mA typ. 48 Vin models: 13 mA typ. |
| Surge Voltage | | 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 | | 12 Vin models: 2 VDC min. / 3 VDC typ. / 4 VDC max. 24 Vin models: 6 VDC min. / 7 VDC typ. / 8 VDC max. 48 Vin models: 13 VDC min. / 15 VDC typ. / 17 VDC max. |
| Recommended Input Fuse | | 12 Vin models: 1'600 mA (slow blow) 24 Vin models: 800 mA (slow blow) 48 Vin models: 500 mA (slow blow) (The need of an external fuse has to be assessed in the final application.) |
| Input Filter | | Internal Capacitor |

Output Specifications

| | | |
|---------------------------|--|---|
| Voltage Set Accuracy | | ±1% max. |
| Regulation | - Input Variation (Vmin - Vmax) | single output models: 0.2% max. dual output models: 0.2% max. |
| | - Load Variation (0 - 100%) | single output models: 1% max. dual output models: 1% max. (Output 1) 1% max. (Output 2) |
| | - Cross Regulation (25% / 100% asym. load) | dual output models: 5% max. |
| Ripple and Noise | - 20 MHz Bandwidth | 75 mVp-p typ. |
| Capacitive Load | - single output | 3.3 Vout models: 4'400 µF max. 5 Vout models: 2'200 µF max. 9 Vout models: 1'300 µF max. 12 Vout models: 1'000 µF max. 15 Vout models: 820 µF max. 24 Vout models: 470 µF max. |
| | - dual output | 5 / -5 Vout models: 1'200 / 1'200 µF max. 12 / -12 Vout models: 520 / 520 µF max. 15 / -15 Vout models: 440 / 440 µF max. |
| Minimum Load | | Not required |
| Temperature Coefficient | | ±0.02 %/K max. |
| Start-up Time | | 10 ms typ. / 20 ms max. |
| Short Circuit Protection | | Continuous, Automatic recovery |
| Output Current Limitation | | 130 - 230% of Iout max. 170% typ. of Iout max. |
| Transient Response | - Response Time | 500 µs typ. (25% Load Step) |

Safety Specifications

| | | |
|------------------|-----------------------------|---|
| Safety Standards | - IT / Multimedia Equipment | Designed for EN 62368-1 (no certification) |
|------------------|-----------------------------|---|

EMC Specifications

| | | |
|---------------|-----------------------|--|
| EMI Emissions | - Conducted Emissions | EN 55032 class A (with external filter) EN 55032 class B (with external filter) |
| | - Radiated Emissions | EN 55032 class A (with external filter) EN 55032 class B (with external filter) |
| | | External filter proposal: www.tracopower.com/overview/tec3wi |

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

| | | |
|--------------|-----------------------------|---|
| EMS Immunity | - Electrostatic Discharge | Air: EN 61000-4-2, ± 8 kV, perf. criteria A |
| | - RF Electromagnetic Field | Contact: EN 61000-4-2, ± 6 kV, perf. criteria A |
| | - EFT (Burst) / Surge | EN 61000-4-3, 10 V/m, perf. criteria A |
| | | EN 61000-4-4, ± 2 kV, perf. criteria A |
| | | EN 61000-4-5, ± 1 kV, perf. criteria A |
| | - Conducted RF Disturbances | Ext. input component: KY 220 μ F / 100 V |
| | - PF Magnetic Field | EN 61000-4-6, 10 Vrms, perf. criteria A |
| | | Continuous: EN 61000-4-8, 100 A/m, perf. criteria A |
| | | 1 s: EN 61000-4-8, 1000 A/m, perf. criteria A |

General Specifications

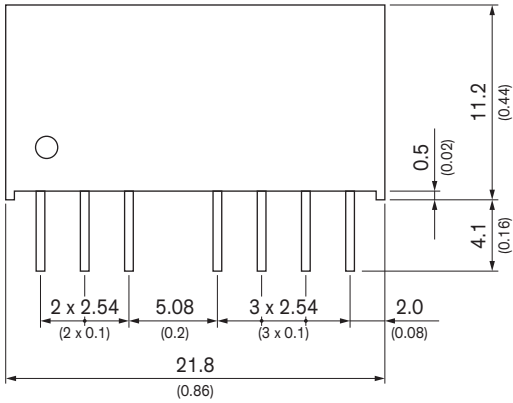
| | | |
|--------------------------|---------------------------------|---|
| Relative Humidity | | 95% max. (non condensing) |
| Temperature Ranges | - Operating Temperature | -40°C to +90°C |
| | - Case Temperature | +105°C max. |
| | - Storage Temperature | -55°C to +125°C |
| Power Derating | - High Temperature | 3.4 %/K above 75°C |
| Cooling System | | Natural convection (20 LFM) |
| Remote Control | - Current Controlled Remote | On: open circuit |
| | | Off: 2 to 4 mA current (internal 1 k Ω resistor) |
| | | External circuit proposal: www.tracopower.com/info/current-remote.pdf |
| | - Off Idle Input Current | 2.5 mA typ. |
| Switching Frequency | | 100 kHz min. (PFM) |
| Insulation System | | Functional Insulation |
| Isolation Test Voltage | - Input to Output, 60 s | 1'600 VDC |
| Isolation Resistance | - Input to Output, 500 VDC | 1'000 M Ω min. |
| Isolation Capacitance | - Input to Output, 100 kHz, 1 V | 50 pF max. |
| Reliability | - Calculated MTBF | 5'124'000 h (MIL-HDBK-217F, ground benign) |
| Environment | - Vibration | MIL-STD-810F |
| | - Mechanical Shock | MIL-STD-810F |
| | - Thermal Shock | MIL-STD-810F |
| Housing Material | | Non-conductive Plastic (UL94 V-0 rated) |
| Potting Material | | Silicone (UL 94 V-0 rated) |
| Pin Material | | Copper |
| Pin Foundation Plating | | Nickel (1 - 2 μ m) |
| Pin Surface Plating | | Tin (3 - 5 μ m), matte |
| Soldering Profile | | Wave Soldering |
| | | 260°C / 10 s max. |
| Connection Type | | THD (Through-Hole Device) |
| Weight | | 4.5 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/tec3wi |
|--|--|

All specifications valid at nominal 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 pitch tolerances ± 0.25 (± 0.01)
 Pin dimension tolerance ± 0.1 (0.004)

| Pinout | | |
|--------|---------------|---------------|
| Pin | Single | Dual |
| 1 | -Vin (GND) | -Vin (GND) |
| 2 | +Vin (Vcc) | +Vin (Vcc) |
| 3 | Remote On/Off | Remote On/Off |
| 5 | NC | NC |
| 6 | +Vout | +Vout |
| 7 | -Vout | Common |
| 8 | NC | -Vout |

NC: Not connected