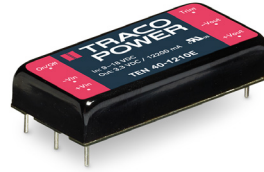


- Developed to maximize quality in a cost efficient design
- Excellent temperature capabilities
- 2" x 1" metal package (6-side shielded)
- Wide 2:1 input voltage range:
9-18, 18-36, 36-75 VDC
- Minimal heat development due to high efficiencies up to 93%
- Operating temperature range -40 to +85°C
- 1600 VDC I/O-isolation
- Remote On/Off and Trim function
- Protection against short circuit, overvoltage and overtemperature
- 3-year product warranty



The TEN 40E is rounding out Traco Power's existing 40 Watt product range. Driven by current market trends this series was developed to maximize quality and cost efficiency in one product. Due to a new design approach the TEN 40E thus offers a cost efficient solution with not only no concession on quality or reliability but even improved specifications compared to its predecessor. It comes in a standard 2" x 1" metal package with a 2:1 input voltage range. High efficiencies of up to 93% allow for an operating temperature range (natural convection) of -40 to +70°C without power derating (model dependent). Certified according to the latest IT standard (IEC/EN/UL 62368-1) and equipped with additional features like remote on/off function and protection against short circuit, overvoltage and over temperature the TEN 40E series is suitable for many industrial applications.

| Models | | | | | | |
|--------------|------------------------------|------------------------------|------------------|-----------|------------------|-----------------|
| Order Code | Input Voltage Range | Output 1 | | Output 2 | | Efficiency typ. |
| | | Vnom | I _{max} | Vnom | I _{max} | |
| TEN 40-1210E | 9 - 18 VDC (12 VDC nom.) | 3.3 VDC | 12'200 mA | | | 89 % |
| TEN 40-1211E | | 5 VDC | 8'000 mA | | | 90 % |
| TEN 40-1212E | | 12 VDC | 3'333 mA | | | 91 % |
| TEN 40-1213E | | 15 VDC | 2'666 mA | | | 91 % |
| TEN 40-1215E | | 24 VDC | 1'666 mA | | | 90 % |
| TEN 40-1222E | | +12 VDC | 1'666 mA | -12 VDC | 1'666 mA | 90 % |
| TEN 40-1223E | | +15 VDC | 1'333 mA | -15 VDC | 1'333 mA | 90 % |
| TEN 40-1225E | | +24 VDC | 833 mA | -24 VDC | 833 mA | 91 % |
| TEN 40-2410E | | 18 - 36 VDC (24 VDC nom.) | 3.3 VDC | 12'200 mA | | |
| TEN 40-2411E | 5 VDC | | 8'000 mA | | | 92 % |
| TEN 40-2412E | 12 VDC | | 3'333 mA | | | 92 % |
| TEN 40-2413E | 15 VDC | | 2'666 mA | | | 93 % |
| TEN 40-2415E | 24 VDC | | 1'666 mA | | | 91 % |
| TEN 40-2422E | +12 VDC | | 1'666 mA | -12 VDC | 1'666 mA | 91 % |
| TEN 40-2423E | +15 VDC | | 1'333 mA | -15 VDC | 1'333 mA | 91 % |
| TEN 40-2425E | +24 VDC | | 833 mA | -24 VDC | 833 mA | 91 % |
| TEN 40-4810E | 36 - 75 VDC (48 VDC nom.) | | 3.3 VDC | 12'200 mA | | |
| TEN 40-4811E | | 5 VDC | 8'000 mA | | | 91 % |
| TEN 40-4812E | | 12 VDC | 3'333 mA | | | 92 % |
| TEN 40-4813E | | 15 VDC | 2'666 mA | | | 92 % |
| TEN 40-4815E | | 24 VDC | 1'666 mA | | | 92 % |
| TEN 40-4822E | | +12 VDC | 1'666 mA | -12 VDC | 1'666 mA | 91 % |
| TEN 40-4823E | | +15 VDC | 1'333 mA | -15 VDC | 1'333 mA | 91 % |
| TEN 40-4825E | | +24 VDC | 833 mA | -24 VDC | 833 mA | 92 % |

Options

| | |
|---|---|
| TEN-HS1 | - Heat-sink with clamps |
| on demand (backorder with MOQ non stocking item) | - Models with factory assembled heat-sink - Models with inverse remote control |

Input Specifications

| | | |
|------------------------|--------------|--|
| Input Current | - At no load | 12 Vin models: 20 mA typ. 24 Vin models: 15 mA typ. 48 Vin models: 10 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: 7 VDC min. / 8 VDC typ. / 8.8 VDC max. 24 Vin models: 15 VDC min. / 16 VDC typ. / 17.5 VDC max. 48 Vin models: 32 VDC min. / 33 VDC typ. / 35 VDC max. |
| Recommended Input Fuse | | 12 Vin models: 8'000 mA (fast acting) 24 Vin models: 4'000 mA (slow blow) 48 Vin models: 2'000 mA (slow blow) |
| Input Filter | | Internal Pi-Type |

Output Specifications

| | | |
|--|---|--|
| Output Voltage Adjustment | | -10% to +20% (By external trim resistor) (15 & 24 Vout models) ±10% (By external trim resistor) (other models) (Single models only) Output power must not exceed rated power! |
| Voltage Set Accuracy | | ±1% max. |
| Regulation | - Input Variation (Vmin - Vmax) - Load Variation (0 - 100%) - Cross Regulation (25% / 100% asym. load) | single output models: 0.2% max. single output models: 0.3% max. dual output models: 0.5% max. (Output 1) 0.5% max. (Output 2) dual output models: 5% max. |
| Ripple and Noise (20 MHz Bandwidth) | - single output - dual output | 3.3 Vout models: 75 mVp-p typ. 5 Vout models: 75 mVp-p typ. 12 Vout models: 100 mVp-p typ. 15 Vout models: 100 mVp-p typ. 24 Vout models: 150 mVp-p typ. 12 / -12 Vout models: 100 / 100 mVp-p typ. 15 / -15 Vout models: 100 / 100 mVp-p typ. 24 / -24 Vout models: 150 / 150 mVp-p typ. |
| Capacitive Load | - single output - dual output | 3.3 Vout models: 22'000 µF max. 5 Vout models: 12'000 µF max. 12 Vout models: 2'000 µF max. 15 Vout models: 1'300 µF max. 24 Vout models: 490 µF max. 12 / -12 Vout models: 980 / 980 µF max. 15 / -15 Vout models: 630 / 630 µF max. 24 / -24 Vout models: 250 / 250 µF max. |
| Minimum Load | | Not required |
| Temperature Coefficient | | ±0.02 %/K max. |
| Start-up Time | | 30 ms typ. / 60 ms max. |
| Short Circuit Protection | | Continuous, Automatic recovery |
| Output Current Limitation | | 150% typ. of Iout max. |

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

| | | |
|------------------------|-----------------|--|
| Overvoltage Protection | | 125% typ. of Vout nom. (By Zener diode) |
| Transient Response | - Response Time | 250 µs typ. (25% Load Step) |

Safety Specifications

| | | |
|------------------|-----------------------------|---|
| Safety Standards | - IT / Multimedia Equipment | EN 62368-1 IEC 62368-1 UL 62368-1 |
| | - Certification Documents | |

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) |
| EMS Immunity | - Electrostatic Discharge | Air: EN 61000-4-2, ±8 kV, perf. criteria A Contact: EN 61000-4-2, ±6 kV, perf. criteria A |
| | - RF Electromagnetic Field | EN 61000-4-3, 20 V/m, perf. criteria A |
| | - EFT (Burst) / Surge | EN 61000-4-4, ±2 kV, perf. criteria A EN 61000-4-5, ±2 kV, perf. criteria A |
| | - Conducted RF Disturbances | Ext. input component: 2 x KY 220 µF // SMDJ36A (12 Vin models) 2 x KY 220 µF // SMDJ58A (24 Vin models) 2 x KY 220 µF // SMDJ120A (48 Vin models) EN 61000-4-6, 10 Vrms, perf. criteria A |
| | - PF Magnetic Field | Continuous: EN 61000-4-8, 100 A/m, perf. criteria A 1 s: EN 61000-4-8, 1000 A/m, perf. criteria A |

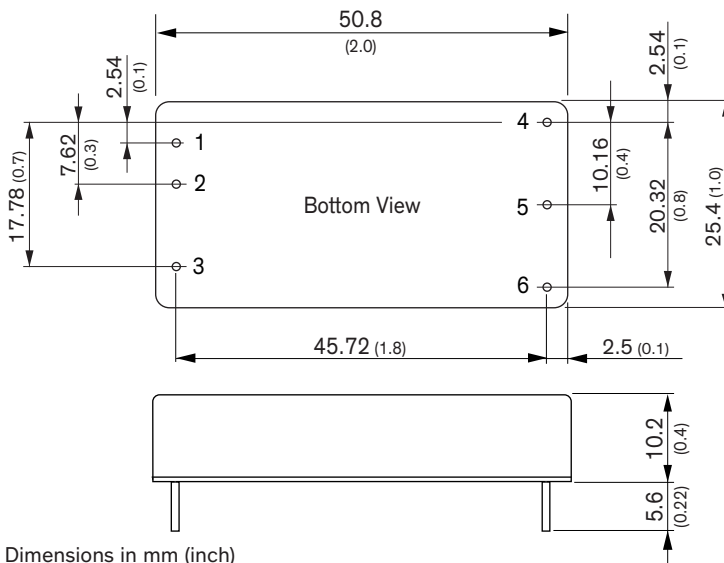
General Specifications

| | | |
|--|---------------------------------|--|
| Relative Humidity | | 95% max. (non condensing) |
| Temperature Ranges | - Operating Temperature | -40°C to +85°C |
| | - Case Temperature | +105°C max. |
| | - Storage Temperature | -55°C to +125°C |
| Power Derating | - High Temperature | |
| Over Temperature Protection Switch Off | - Protection Mode | 115°C typ. (Automatic recovery) |
| Cooling System | | Natural convection (20 LFM) |
| Remote Control | - Voltage Controlled Remote | On: 3.0 to 12 VDC or open circuit Off: 0 to 1.2 VDC or short circuit Refers to 'Remote' and '-Vin' Pin 3 mA typ. -0.5 to 1.0 mA (Inverse Remote On/Off logic on demand) |
| | - Off Idle Input Current | |
| | - Remote Pin Input Current | |
| Switching Frequency | | 225 - 275 kHz (PWM) 250 kHz typ. (PWM) |
| Insulation System | | Functional Insulation |
| Isolation Test Voltage | - Input to Output, 60 s | 1'131 VAC |
| | - Input to Case, 60 s | 1'131 VAC |
| | - Output to Case, 60 s | 1'131 VAC |
| Isolation Resistance | - Input to Output, 500 VDC | 1'000 MOhm min. |
| Isolation Capacitance | - Input to Output, 100 kHz, 1 V | 1'500 pF max. |
| Reliability | - Calculated MTBF | 1'245'000 h (MIL-HDBK-217F, ground benign) |
| Environment | - Vibration | MIL-STD-810F |
| | - Mechanical Shock | MIL-STD-810F |
| | - Thermal Shock | MIL-STD-810F |
| Housing Material | | Copper |

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

| | |
|--------------------------|-------------------------------------|
| Base Material | Non-conductive FR4 (UL94 V-0 rated) |
| Potting Material | Silicone (UL 94 V-0 rated) |
| Connection Type | THD (Through-Hole Device) |
| Weight | 34 g |
| Thermal Impedance | 10.8 K/W |
| | - with Heat Sink |
| | 10.3 K/W |
| Environmental Compliance | - Reach |
| | - RoHS |

Outline Dimensions



Dimensions in mm (inch)
Tolerances: x.x ±0.5 (±0.02)
 x.xx ±0.25 (±0.01)
Pin dimension tolerance ±0.1 (±0.004)

| Pinout | | |
|--------|---------------|---------------|
| Pin | Single | Dual |
| 1 | +Vin (Vcc) | +Vin (Vcc) |
| 2 | -Vin (GND) | -Vin (GND) |
| 3 | Remote On/Off | Remote On/Off |
| 4 | +Vout | +Vout |
| 5 | -Vout | Common |
| 6 | Trim | -Vout |

Specifications can be changed without notice.

Rev. October 16, 2019

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