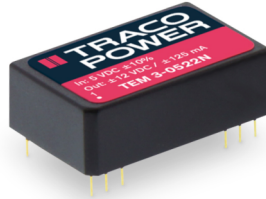


- Cost optimized design in DIP-24 package
- Fully regulated output
- Output ripple & noise 30 mVp-p typ.
- Short circuit protection
- Operating temperature range -40°C to $+75^{\circ}\text{C}$ at full load
- I/O isolation 1'500 VDC
- Input filter meet EN 55022, class A
- No minimum load required
- Industry standard pinout
- 3-year product warranty



UL 62368-1 IEC 62368-1

The TEM 3N series is a range of isolated DC/DC converters in a DIP-24 package. They offer tight output regulation and very low output noise. Operating temperature range is -40°C to $+85^{\circ}\text{C}$. This product series provides a cost effective solution for many industrial or consumer electronics applications.

Models

| Order Code | Input Voltage Range | Output 1 | | Output 2 | | Efficiency typ. |
|-------------|----------------------------------|----------|------------------|----------|------------------|-----------------|
| | | Vnom | I _{max} | Vnom | I _{max} | |
| TEM 3-0511N | 4.5 - 5.5 VDC (5 VDC nom.) | 5 VDC | 600 mA | | | 70 % |
| TEM 3-0512N | | 12 VDC | 250 mA | | | 78 % |
| TEM 3-0513N | | 15 VDC | 200 mA | | | 78 % |
| TEM 3-0522N | | +12 VDC | 125 mA | -12 VDC | 125 mA | 78 % |
| TEM 3-0523N | | +15 VDC | 100 mA | -15 VDC | 100 mA | 78 % |
| TEM 3-1211N | 10.8 - 13.2 VDC (12 VDC nom.) | 5 VDC | 600 mA | | | 74 % |
| TEM 3-1212N | | 12 VDC | 250 mA | | | 80 % |
| TEM 3-1213N | | 15 VDC | 200 mA | | | 80 % |
| TEM 3-1222N | | +12 VDC | 125 mA | -12 VDC | 125 mA | 81 % |
| TEM 3-1223N | | +15 VDC | 100 mA | -15 VDC | 100 mA | 82 % |
| TEM 3-2411N | 21.6 - 26.4 VDC (24 VDC nom.) | 5 VDC | 600 mA | | | 75 % |
| TEM 3-2412N | | 12 VDC | 250 mA | | | 80 % |
| TEM 3-2413N | | 15 VDC | 200 mA | | | 80 % |
| TEM 3-2422N | | +12 VDC | 125 mA | -12 VDC | 125 mA | 81 % |
| TEM 3-2423N | | +15 VDC | 100 mA | -15 VDC | 100 mA | 82 % |

Input Specifications

| | | |
|---------------------------|----------------|--|
| Input Current | - At no load | 5 Vin models: 90 mA typ. 12 Vin models: 45 mA typ. 24 Vin models: 22 mA typ. |
| | - At full load | 5 Vin models: 800 mA typ. 12 Vin models: 320 mA typ. 24 Vin models: 160 mA typ. |
| Surge Voltage | | 5 Vin models: 7.5 VDC max. (1 s max.) 12 Vin models: 15 VDC max. (1 s max.) 24 Vin models: 30 VDC max. (1 s max.) |
| Recommended Input Fuse | | (The need of an external fuse has to be assessed in the final application.) |
| Input Filter | | Internal Pi-Type |
| Short Circuit Input Power | | 2 W max. |

Output Specifications

| | | |
|---------------------------|--------------------------------------|--|
| Voltage Set Accuracy | | ±2% max. |
| Regulation | - Input Variation (Vmin - Vmax) | single output models: 0.5% max. dual output models: 0.5% max. |
| | - Load Variation (10 - 100%) | single output models: 0.5% max. dual output models: 0.5% max. (Output 1) 0.5% max. (Output 2) |
| | - Voltage Balance (symmetrical load) | dual output models: 3% max. |
| | | |
| Ripple and Noise | - 20 MHz Bandwidth | 60 mVp-p max. 30 mVp-p typ. |
| Capacitive Load | - single output | 5 Vout models: 470 µF max. 12 Vout models: 100 µF max. 15 Vout models: 100 µF max. |
| | - dual output | 12 / -12 Vout models: 100 / 100 µF max. 15 / -15 Vout models: 100 / 100 µF max. |
| Minimum Load | | Not required |
| Temperature Coefficient | | ±0.02 %/K max. |
| Short Circuit Protection | | Continuous, Automatic recovery |
| Output Current Limitation | | 120% max. of Iout max. |

Safety Specifications

| | | |
|------------------|-----------------------------|---|
| Standards | - IT / Multimedia Equipment | CSA-C22.2, No. 60950-1 EN 60950-1 EN 62368-1 IEC 60950-1 IEC 62368-1 UL 60950-1 UL 62368-1 |
| | - Certification Documents | www.tracopower.com/overview/tem3n |
| Pollution Degree | | PD 2 |

EMC Specifications

| | | |
|-----------------|-----------------------|--|
| EMI (Emissions) | - Conducted Emissions | EN 55032 class A (internal filter) FCC 47 Part 15 class A (internal filter) |
|-----------------|-----------------------|--|

General Specifications

| | | |
|-------------------|--|----------------------------------|
| Relative Humidity | | 95% max. (non condensing) |
|-------------------|--|----------------------------------|

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

| | | |
|---------------------------|--|---|
| Temperature Ranges | - Operating Temperature - Case Temperature - Storage Temperature | -40°C to +85°C +95°C max. -50°C to +125°C |
| Power Derating | - High Temperature | 5 %/K above 75°C |
| | See application note: | www.tracopower.com/overview/tem3n |
| Cooling System | | Natural convection (20 LFM) |
| Altitude During Operation | | 6'000 m max. |
| Regulator Topology | | RCC Converter |
| Switching Frequency | | 300 kHz typ. (PFM) |
| Insulation System | | Functional Insulation |
| Isolation Test Voltage | - Input to Output, 60 s - Input to Output, 1 s | 1'500 VDC 1'800 VDC |
| Isolation Resistance | - Input to Output, 500 VDC | 1'000 MΩ min. |
| Isolation Capacitance | - Input to Output, 100 kHz, 1 V | 300 pF typ. |
| Reliability | - Calculated MTBF | 700'000 h (MIL-HDBK-217F, ground benign) |
| Washing Process | | According to Cleaning Guideline www.tracopower.com/info/cleaning.pdf |
| Housing Material | | Non-conductive Plastic (UL 94 V-0 rated) |
| Potting Material | | Epoxy (UL 94 V-0 rated) |
| Pin Material | | Phosphor Bronze (C5191) |
| Pin Foundation Plating | | Nickel (2 - 4 μm) |
| Pin Surface Plating | | Gold (75 - 125 nm), glossy |
| Housing Type | | Plastic Case |
| Mounting Type | | PCB Mount |
| Connection Type | | THD (Through-Hole Device) |
| Footprint Type | | DIP24 |
| Soldering Profile | | Lead-Free Wave Soldering 260°C / 10 s max. |
| Weight | | 12.4 g |
| Environmental Compliance | - REACH Declaration - RoHS Declaration - SCIP Reference Number | www.tracopower.com/info/reach-declaration.pdf REACH SVHC list compliant REACH Annex XVII compliant www.tracopower.com/info/rohs-declaration.pdf Exemptions: 7a (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule).) 20bfc99c-f356-463f-8b8e-bfc6183456c5 |

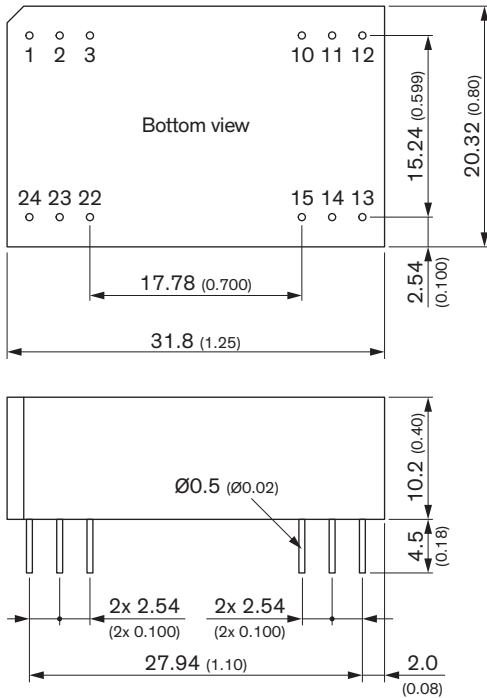
Supporting Documents

Overview Link (for additional Documents)

www.tracopower.com/overview/tem3n

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

Outline Dimensions



Dimensions in mm (inch)
 Tolerances: x.x ±0.5 (x.xx ±0.02)
 x.xx ±0.25 (x.xxx ±0.01)
 Pin tolerance: x.x ±0.05 (x.xx ±0.002)

| Pinout | | |
|--------|------------|------------|
| Pin | Single | Dual |
| 1 | +Vin (Vcc) | +Vin (Vcc) |
| 2 | NC | -Vout |
| 3 | NC | Common |
| 10 | -Vout | Common |
| 11 | +Vout | +Vout |
| 12 | -Vin (GND) | -Vin (GND) |
| 13 | -Vin (GND) | -Vin (GND) |
| 14 | +Vout | +Vout |
| 15 | -Vout | Common |
| 22 | NC | Common |
| 23 | NC | -Vout |
| 24 | +Vin (Vcc) | +Vin (Vcc) |

NC: Not connected