Features

◆ Highest power density in DIP 24 package
◆ Shielded metal case with isolated baseplate
◆ Very high efficiency up to 90%
◆ Ultra wide 4:1 input ranges
◆ No minimum load required
◆ Input filter meets EN 55022 class A without external components
◆ I/O isolation voltage 1500 VDC
◆ Operating temp. range: –40°C to +85°C
◆ Remote On/Off control
◆ Industry standard pinout
◆ 3-year product warranty

The THD-15WIN series models provide 15 Watt output power out of a very compact shielded metal case that occupies only 1 inch² of board space. The converters work with a high efficiency over the full load range and draw a very low input current at no load conditions. All models have a wide 4:1 input voltage range and a precisely regulated output voltage. Typical applications for these converters are mobile equipment, instrumentation, distributed power architectures in communication and industrial electronics and everywhere where space on PCB is critical.

Models

<table>
<thead>
<tr>
<th>Order code</th>
<th>Input voltage range</th>
<th>Output voltage</th>
<th>Output current max.</th>
<th>Efficiency typ.</th>
</tr>
</thead>
<tbody>
<tr>
<td>THD 15-2410WIN</td>
<td>9 – 36 VDC</td>
<td>3.3 VDC</td>
<td>4'000 mA</td>
<td>88 %</td>
</tr>
<tr>
<td>THD 15-2411WIN</td>
<td></td>
<td>5.1 VDC</td>
<td>3'000 mA</td>
<td>90 %</td>
</tr>
<tr>
<td>THD 15-2412WIN</td>
<td></td>
<td>12 VDC</td>
<td>1'250 mA</td>
<td>90 %</td>
</tr>
<tr>
<td>THD 15-2413WIN</td>
<td></td>
<td>15 VDC</td>
<td>1'000 mA</td>
<td>90 %</td>
</tr>
<tr>
<td>THD 15-2421WIN</td>
<td>±5 VDC</td>
<td>±1'500 mA</td>
<td>±625 mA</td>
<td>86 %</td>
</tr>
<tr>
<td>THD 15-2422WIN</td>
<td>±12 VDC</td>
<td>±625 mA</td>
<td>±500 mA</td>
<td>89 %</td>
</tr>
<tr>
<td>THD 15-2423WIN</td>
<td>±15 VDC</td>
<td>±500 mA</td>
<td></td>
<td>90 %</td>
</tr>
<tr>
<td>THD 15-4810WIN</td>
<td>18 – 75 VDC</td>
<td>3.3 VDC</td>
<td>4'000 mA</td>
<td>89 %</td>
</tr>
<tr>
<td>THD 15-4811WIN</td>
<td></td>
<td>5.1 VDC</td>
<td>3'000 mA</td>
<td>89 %</td>
</tr>
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<td>±15 VDC</td>
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<td></td>
<td>90 %</td>
</tr>
</tbody>
</table>
### Input Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>24 Vin models</th>
<th>48 Vin models</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input current at no load (nominal input voltage)</td>
<td>6 mA typ.</td>
<td>4 mA typ.</td>
</tr>
<tr>
<td>Input current at full load (nominal input voltage)</td>
<td>740 mA typ.</td>
<td>370 mA typ.</td>
</tr>
<tr>
<td>Start-up voltage / under voltage shut down</td>
<td>9 VDC / 8 VDC</td>
<td>18 VDC / 16 VDC</td>
</tr>
<tr>
<td>Surge voltage (1 sec. max.)</td>
<td>50 V max.</td>
<td>100 V max.</td>
</tr>
</tbody>
</table>

**Conducted noise (input)**

- EN 55022 class A, FCC part 15, level A (without external components)
- EN 55022 class B, with external filter see Application note

**ESD (electrostatic discharge)**

- EN 61000-4-2, air ±8 kV, contact ±6 kV, perf. criteria A
- EN 61000-4-3 10 V/m, perf. criteria A

**Radiated immunity**

- EN 61000-4-4, ±2 kV, perf. criteria A
- EN 61000-4-5, ±2 kV perf. criteria A

**Fast transient / Surge**

- EN 61000-4-2, ±8 kV, perf. criteria A
- EN 61000-4-3 10 V/m, perf. criteria A
- EN 61000-4-4, ±2 kV, perf. criteria A

**Conducted immunity**

- EN 61000-4-6, 10 Vrms, perf. criteria A

**Reflected ripple current**

- 20 mAp-p typ.

### Output Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Single output models</th>
<th>Dual output models</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage set accuracy</td>
<td>±1 % max</td>
<td>±1 % max</td>
</tr>
<tr>
<td>Regulation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Input variation</td>
<td>0.2 % max.</td>
<td>0.5 % max.</td>
</tr>
<tr>
<td>- Load variation 0 – 100%</td>
<td>0.5 % max.</td>
<td>1.0 % max. balanced load</td>
</tr>
<tr>
<td>- Load variation 10 – 90%</td>
<td>0.3 % max.</td>
<td>0.8 % max. balanced load</td>
</tr>
<tr>
<td>- Load cross regulation 25/100% (asymmetrical)</td>
<td>5.0 % max.</td>
<td>(dual output models)</td>
</tr>
</tbody>
</table>

- Minimum load: no minimum load
- Temperature coefficient: ±0.02 %/K
- Ripple and noise (20 MHz bandwidth): 60 mVp-p typ. (with 1 µF/25 V)
- Output current limitation: at 150 % of Iout max. hiccup
- Short circuit protection: continuous, automatic recovery
- Over voltage protection (single output models only):
  - 3.3 VDC models: 3.9 VDC
  - 5.1 VDC models: 6.2 VDC
  - 12 VDC models: 15 VDC
  - 15 VDC models: 18 VDC
- Start up time (nominal Vin and constant resistive load): 60 ms typ. (for power on and remote on)
- Transient response setting time (25% load step change): 250 µs typ.
- Capacitive load:
  - 3.3 VDC models: 4700 µF max.
  - 5.1 VDC models: 3300 µF max.
  - 12 VDC models: 6000 µF max.
  - 15 VDC models: 4000 µF max.
  - ±5 VDC models: ±1500 µF max.
  - ±12 VDC models: ±288 µF max.
  - ±15 VDC models: ±200 µF max.

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

**Temperature ranges**
- Operating: -40°C to +85°C (with derating)
- Case temperature: +105°C max.
- Storage: -55°C to +125°C

**Power derating**
- ±5 VDC models: 2.5 %/K above 60°C
- Other models: 3.3 %/K above 70°C

**Thermal impedance**
- Natural convection: 20°K/W

**Humidity (non-condensing)**
- 5% to 95% rel. H max.

**Reliability, calculated MTBF**
- MIL-HDBK-217F, at +25°C, ground benign: >1'600'000 h

**Isolation voltage (60sec.)**
- Input/Output: 1500 VDC

**Isolation capacitance**

**Isolation resistance**
- Input/Output (500 VDC): >1'000 MOhm

**Remote On/Off**
- On: 3.0 ... 12 VDC or open circuit
- Off: 0 ... 1.2 VDC or short circuit pin 1 and pin 2
- Off idle current: 2.5 mA

**Altitude during operation**
- 4’000 m max.

**Switching frequency**
- 330 kHz typ. (pulse width modulation PWM)

**Thermal shock, mechanical shock & vibration**
- EN 61373, MIL-STD-810F

**Safety standards**
- UL/cUL 60950-1, IEC/EN 60950-1
- Certification documents: www.tracopower.com/overview/thd15win

**Environmental compliance**
- Reach: www.tracopower.com/overview/thd15win
- RoHS: RoHS directive 2011/65/EU

**Physical Specifications**

**Casing material**
- nickel coated copper

**Baseplate**
- non conductive FR4

**Potting material**
- silicon (UL 94V-0 rated)

**Weight**
- 14.4 g (0.51 oz)

**Soldering temperature**
- max. 265°C / 10 sec.

**Outline Dimensions**

**Pin-Out**

<table>
<thead>
<tr>
<th>Pin</th>
<th>Single</th>
<th>Dual</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Remote On/Off</td>
<td>Remote On/Off</td>
</tr>
<tr>
<td>2</td>
<td>–Vin (GND)</td>
<td>–Vin (GND)</td>
</tr>
<tr>
<td>3</td>
<td>–Vin (GND)</td>
<td>–Vin (GND)</td>
</tr>
<tr>
<td>9</td>
<td>NC</td>
<td>Common</td>
</tr>
<tr>
<td>11</td>
<td>NC</td>
<td>–Vout</td>
</tr>
<tr>
<td>14</td>
<td>+Vout</td>
<td>+Vout</td>
</tr>
<tr>
<td>16</td>
<td>–Vout</td>
<td>Common</td>
</tr>
<tr>
<td>22</td>
<td>+Vin (Vcc)</td>
<td>+Vin (Vcc)</td>
</tr>
<tr>
<td>23</td>
<td>+Vin (Vcc)</td>
<td>+Vin (Vcc)</td>
</tr>
</tbody>
</table>

Dimensions in [mm], | = Inch
Pin diameter Ø 0.5 (0.02)
Pin pitch tolerances: ±0.35 (±0.014)
Tolerances: ±0.5 (±0.02)

Specifications can be changed without notice! Make sure you are using the latest documentation, downloadable at www.tracopower.com