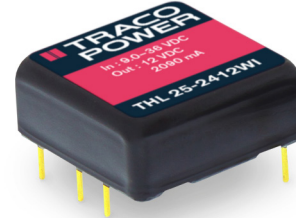


Features

- ◆ Highest power density 25W converter!
Ultra compact design: 1.0" x 1.0" x 0.4"
- ◆ Shielded metal case with isolated baseplate
- ◆ Ultra wide 4 : 1 input voltage ranges
- ◆ Very high efficiency up to 90%
- ◆ Output voltage adjustable
- ◆ Remote On/Off control
- ◆ Operating temp. range -40°C to $+80^{\circ}\text{C}$
and up to $+85^{\circ}\text{C}$ with heat-sink
- ◆ I/O isolation voltage 1500 VDC
- ◆ 3-year product warranty



The THL 25WI series is the latest generation of dc-dc converter modules with highest power density. The product achieves 25 Watt output power and comes in a metal case with small dimensions of only 1.0"x 1.0"x 0.4".

All models have a wide 4:1 input voltage range and precisely regulated output voltages. High efficiency of up to 90% makes this product very reliable and applicable in temperature ranges of up to $+80^{\circ}\text{C}$ or up to $+85^{\circ}\text{C}$ with optional mounted heat sink. Typical applications are in mobile equipments, instrumentation, distributed power architectures in communication and industrial electronics and everywhere where space on the PCB is critical.

Models

| Order code | Input voltage range | Output voltage | Output current max. | Efficiency typ. |
|---------------|--------------------------------|---------------------------------|---------------------|-----------------|
| THL 25-2410WI | 9 – 36 VDC (24 VDC nominal) | 3.3 VDC | 6000 mA | 87 % |
| THL 25-2411WI | | 5.0 VDC | 5000 mA | 89 % |
| THL 25-2412WI | | 12 VDC | 2090 mA | 89 % |
| THL 25-2413WI | | 15 VDC | 1670 mA | 90 % |
| THL 25-2422WI | | ± 12 VDC | ± 1040 mA | 89 % |
| THL 25-2423WI | | ± 15 VDC | ± 840 mA | 89 % |
| THL 25-4810WI | | 18 – 75 VDC (48 VDC nominal) | 3.3 VDC | 6000 mA |
| THL 25-4811WI | 5.0 VDC | | 5000 mA | 90 % |
| THL 25-4812WI | 12 VDC | | 2090 mA | 90 % |
| THL 25-4813WI | 15 VDC | | 1670 mA | 90 % |
| THL 25-4822WI | ± 12 VDC | | ± 1040 mA | 89 % |
| THL 25-4823WI | ± 15 VDC | | ± 840 mA | 89 % |

Input Specifications

| | |
|--|---|
| Input current at no load (at nominal input voltage) | 24 Vin models: 85 mA typ. 48 Vin models: 45 mA typ. |
| Recommended input fuse (slow blow) | 24 Vin models: 2500 mA 48 Vin models: 1250 mA |
| Start-up voltage | 24 Vin models: 9 VDC (or lower) 48 Vin models: 18 VDC (or lower) |
| Surge voltage (0.1 sec. max.) | 24 Vin models: 50 V max. 48 Vin models: 100 V max. |
| Reflected input ripple current | 24 Vin models: 50 mAp-p typ. 48 Vin models: 30 mAp-p typ. |
| Conducted noise (input) | EN 55022 class A with external L/C EN 55022 class B with external filter |
| ESD (electrostatic discharge) | EN 61000-4-2, air ± 8 kV, contact ± 6 kV, perf. criteria A |
| Radiated immunity | EN 61000-4-3, 10 V/m, perf. criteria A |
| Fast transient / surge (with external input capacitor) | EN 61000-4-4, ± 2 kV, perf. criteria A EN 61000-4-5, ± 1 kV perf. criteria A external input capacitor: Nippon chemi-con KY 220 μ F, 100 V, ESR 48 mOhm |
| Conducted immunity | EN 61000-4-6, 10 Vrms, perf. criteria A |

Output Specifications

| | |
|-------------------------------------|---|
| Voltage set accuracy | ± 1 % |
| Output voltage adj. range | ± 10 % for single output models only. Trim up via resistor between Trim and -Vout Trim down via resistor between Trim and +Vout resistor values see application note |
| Regulation | <ul style="list-style-type: none"> - Input variation (Vmin - Vmax) 0.2 % max. - Load variation single output models: 0.2 % max. (0 - 100 % load) dual output models: 1.0 % max. (0 - 100 % balanced load) -Cross regulation dual output models: 5.0 % max. (25 - 100 % asymmetrical load) |
| Minimum load | not required |
| Start up time | 30 ms |
| Ripple and noise (20 MHz bandwidth) | 3.3 & 5.0 VDC models: 100 mVp-p typ. 12 & 15 VDC models: 150 mVp-p typ. |
| Temperature coefficient | ± 0.02 %/K |
| Output current limitation | at 150 % of Iout max., hiccup |
| Short circuit protection | indefinite, hiccup automatic recovery |
| Over voltage protection | shutdown at +20% of nominal output |
| Transient recovery time | 250 μ s typ. (25% load step change) |
| Transient response deviation | ± 5 % max. (25% load step change) |
| Max. capacitive load | <ul style="list-style-type: none"> 3.3 VDC models: 10'300 μF 5 VDC models: 6'800 μF 12 VDC models: 1'200 μF 15 VDC models: 750 μF ± 12 VDC models: 680 μF (each output) ± 15 VDC models: 380 μF (each output) |

General Specifications

| | | |
|---|--|---|
| Temperature ranges | <ul style="list-style-type: none"> - Operating (natural convection 20 LFM) - Operating with heat sink (natural convection 20 LFM) - Case temperature - Storage | <ul style="list-style-type: none"> -40°C to +80°C (with derating) -40°C to +85°C (with derating) +105°C max. -50°C to +125°C |
| Load derating | <ul style="list-style-type: none"> - without heat sink - with heat sink | <ul style="list-style-type: none"> 2.0 %/K above +55°C 2.5 %/K above +65°C |
| Thermal impedance | <ul style="list-style-type: none"> - Natural convection - Natural convection with heat sink | <ul style="list-style-type: none"> 17.6°C/W 14.8°C/W |
| Humidity (non condensing) | | 95 % rel H max. |
| Reliability, calculated MTBF (MIL-HDBK-217F, at +25°C, ground benign) | | >315'000 h |
| Isolation voltage (60sec.) | - Input/Output | 1500 VDC |
| Isolation capacitance | - Input/Output | 2000 pF max. |
| Isolation resistance | - Input/Output (500 VDC) | >1000 MOhm |
| Remote On/Off | <ul style="list-style-type: none"> - On: - Off: - Off idle current: | <ul style="list-style-type: none"> 3.5 ... 15 VDC or open circuit 0 ... 1.2 VDC or short circuit pin 6 and pin 2 3 mA typ. |
| Switching frequency (fixed) | | 285 kHz typ. (pulse width modulation PWM) |
| Altitude during operation | | 4'000 m max. (13'123 ft) approved |
| Safety standards (designed to meet) | | UL/cUL 60950-1, IEC/EN 60950-1 |
| Safety approvals | <ul style="list-style-type: none"> - CSA certificate of compliance - CB test certificate - Certification documents | <ul style="list-style-type: none"> CAN/CSA-C22.2 No 60950-1-07, Am 1:2011 ANSI/UL Std No 60950-1, 2nd Ed, AM 1:2011 IEC 60950-1:2005 2nd Ed, Am 1:2009 www.tracopower.com/overview/thl25wi |
| Environmental compliance | <ul style="list-style-type: none"> - Reach - RoHS | <ul style="list-style-type: none"> www.tracopower.com/info/reach-declaration.pdf RoHS directive 2011/65/EU |

Physical Specifications

| | |
|-----------------------|---|
| Casing material | aluminium alloy, black anodized coating |
| Baseplate | non conductive FR4 |
| Potting material | epoxy (UL 94V-0 rated) |
| Pin material | copper alloy with gold plated subplate |
| Weight | 16.5 g (0.58 oz) |
| Soldering temperature | max. 260°C / 10sec. |

Supporting documents : www.tracopower.com/overview/thl25wi

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

Outline Dimensions



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

Dimensions in [mm], () = Inch
 Pin diameter \varnothing 1.0 (0.04)
 Pin pitch tolerances: ± 0.25 (± 0.01)
 Tolerances: ± 0.5 (± 0.02)

Heat-Sink (optional)

Order code: THL-HS1

(cont.: heat-sink, thermal pad, 2 clamps)

Material: Aluminum

Finish: Anodic treatment (black)

Weight: 4 g (0.14 oz) without converter

Thermal impedance after assembling: 15.8 K/W

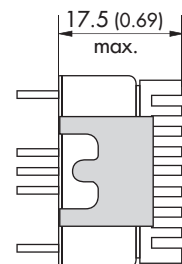
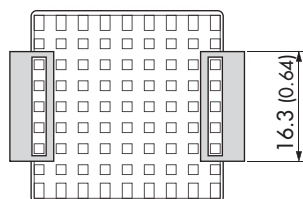
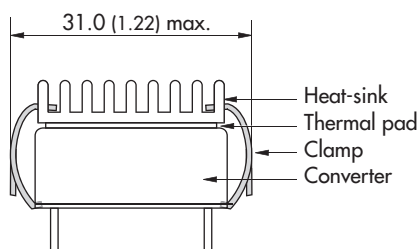


Note:

The product label on converter has to be removed before mounting the heat-sink.

For volume orders converters will be supplied with mounted heat-sink. Please contact factory for quotation.

Separate heat-sinks are only available for prototypes and small quantity orders.



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