



#### Features

- ◆ Highest Power Density:  
12W in DIP 24 Package!
- ◆ Ultra-wide 4:1 Input Range
- ◆ Very high Efficiency up to 85%
- ◆ I/O-Isolation 1500V
- ◆ Input Filter meets EN 55022A without ext. Components
- ◆ Remote On/Off
- ◆ Shielded Metal Case with insulated Baseplate
- ◆ Continuous Short-circuit Protection
- ◆ Operating Temp. Range -40°C to +85°C
- ◆ Lead free Design, RoHS compliant
- ◆ 3 Year Product Warranty



The THD-12WI series is a range of high performance, isolated 12W dc/dc converter modules featuring ultra wide 4:1 input voltage ranges in a DIP-24 package with industry-standard footprint. Overload and overvoltage protection as well as remote On/Off are included as standard. Built-in filters for both input and output minimizes the need of external filtering. Full SMD-design with exclusive use of ceramic capacitors guarantees a high reliability and long product lifetime. Typical applications for these converters are industrial electronics, instrumentation, data communication systems and battery operated equipment with limited space available on the PCB.

#### Models

Order code	Input voltage range	Output voltage	Output current max.	Efficiency typ.
THD 12-2410WI	9 – 36 VDC (24 VDC nominal)	3.3 VDC	3'500 mA	84 %
THD 12-2411WI		5.1 VDC	2'400 mA	85 %
THD 12-2412WI		12 VDC	1'000 mA	85 %
THD 12-2413WI		15 VDC	800 mA	85 %
THD 12-2421WI		± 5 VDC	± 1'200 mA	82 %
THD 12-2422WI		±12 VDC	± 500 mA	85 %
THD 12-2423WI		±15 VDC	± 400 mA	85 %
THD 12-4810WI	18 – 75 VDC (48 VDC nominal)	3.3 VDC	3'500 mA	84 %
THD 12-4811WI		5.1 VDC	2'400 mA	85 %
THD 12-4812WI		12 VDC	1'000 mA	85 %
THD 12-4813WI		15 VDC	800 mA	85 %
THD 12-4821WI		± 5 VDC	± 1'200 mA	82 %
THD 12-4822WI		±12 VDC	± 500 mA	85 %
THD 12-4823WI		±15 VDC	± 400 mA	85 %

### Input Specifications

Input current (no load)	12 Vin models: t.b.a. 24 Vin models: t.b.a. 48 Vin models: t.b.a.
Input current (full load)	24 Vin models: 620 mA typ. 48 Vin models: 310 mA typ.
Input voltage variation (dv/dt)	5 V / ms, max. (complies to ETS 300 132 part. 4.4)
Start-up voltage / under voltage lockout	24 Vin models: 9 VDC / 8 VDC typ. 48 Vin models: 18 VDC / 16 VDC typ.
Surge voltage (100 msec. max.)	24 Vin models: 50 V max. 48 Vin models: 100 V max.
Conducted noise (input)	EN 55022 level A, FCC part 15, level A
ESD (input)	EN 61000-4-2, Perf. Criteria B
Fast Transient (input)	EN 61000-4-4, Perf. Criteria B
Surge (input)	EN 61000-4-5, Perf. Criteria B

### Output Specifications

Voltage set accuracy	± 1.2 %
Regulation	<ul style="list-style-type: none"> <li>- Input variation Vin min. to Vin max. 0.2 % max.</li> <li>- Load variation 10 – 100 % <ul style="list-style-type: none"> <li>single output models: 0.5 % max.</li> <li>dual output models balanced load: 1.0 % max.</li> <li>dual output models unbalanced load: 5.0 % max.</li> </ul> </li> </ul>
Transient response setting time (25% load step change)	250 µs
Ripple and noise (20 MHz Bandwidth)	85 mVpk-pk max.
Temperature coefficient	± 0.02 % /K
Start up time (nominal Vin and constant resistive load)	<ul style="list-style-type: none"> <li>- at power on 450 ms typ.</li> <li>- at remote on 5 ms typ.</li> </ul>
Output current limitation	150% typ. of Iout max., constant current
Over-voltage protection (only single output models)	3.3 VDC models: 3.9 VDC 5.1 VDC models: 6.2 VDC 12 VDC models: 15 VDC 15 VDC models: 18 VDC
Short circuit protection	indefinite, automatic recovery
Minimum load	10% of rated max. current (operation at lower load condition will not damage these converters, however, they may not meet all listed specifications)
Capacitive load	3.3 & 5.1 Vout models: 2000 µF max. 12 Vout models: 430 µF max. 15 Vout models: 300 µF max. ± 5 Vout models: ± 1250 µF max. ± 12 Vout models: ± 200 µF max. ± 15 Vout models: ± 120 µF max.

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

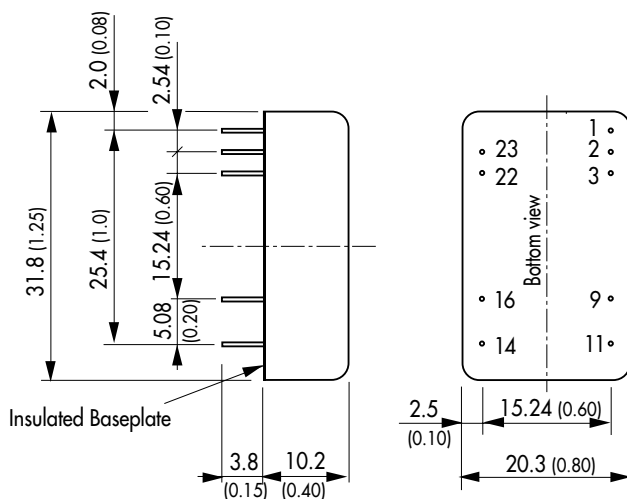
**General Specifications**

Temperature ranges	- Operating - Case temperature - Storage	-40 °C ... + 85 °C +105 °C max. -55 °C ... +105 °C
Derating	3.3 & 5.1 Vout models: other models:	2.2%/K above 60°C 2.5%/K above 65°C
Humidity (non condensing)		95 % rel H max.
Reliability, calculated MTBF (MIL-HDBK-217F ground benign)		t.b.a
Thermal shock		MIL-STB-810D
Isolation voltage (60sec.)	- Input/Output	1'500 VDC
Isolation capacity	- Input/Output	1'500 pF max.
Switching frequency		400 kHz typ. (pulse width modulation PWM)
Safety standards		UL 60950-1, EN 60950-1, IEC 60950-1
Safety approvals		UL/cUL pending
Remote On/Off	- On: - Off: - Off idle current:	3.0 ... 12 VDC or open circuit (referenced to -Vin) 0 ... 1.2 VDC or short circuit pin 1 and pin 2/3 2.5 mA

**Physical Specifications**

Case material	copper, nickel plated
Baseplate material	non conductive FR4
Potting material	epoxy (UL94V-0 rated)
Weight	18 g (0.62 oz)
Soldering temperature	max. 265 °C / 10 sec.

**Outline Dimensions**



**Pin-Out**

Pin	Single	Dual
1	Remote On/Off	Remote On/Off
2	-Vin (GND)	-Vin (GND)
3	-Vin (GND)	-Vin (GND)
9	No con.	Common
11	No con.	-Vout
14	+Vout	+Vout
16	-Vout	Common
22	+Vin (Vcc)	+Vin (Vcc)
23	+Vin (Vcc)	+Vin (Vcc)

Dimensions in [mm], ( ) = Inch  
Pin diameter  $\varnothing 0.5 \pm 0.05$  (0.02  $\pm$  0.002)  
Tolerances  $\pm 0.5$  (0.02)  
Pin pitch tolerances  $\pm 0.35$  (0.014)

Specifications can be changed any time without notice