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
- Under voltage lock-out circuit
- 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)	24 V; 3.3 & 5.1 VDC models:	55 mA
	24 V; other models:	15 mA
	48 V; 3.3 & 5.1 VDC models:	20 mA
	48 V; other models:	7 mA
Input current (full load)	24 Vin models:	610 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	24 Vin models:	9 VDC (or lower)
	48 Vin models:	18 VDC (or lower)
Under voltage shut down (lock-out circuit)	24 Vin models:	8 VDC typ.
	48 Vin models:	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	– Input variation	Vin min. to Vin max.	0.2 % max.
	– Load variation	10 – 100 % single output models:	0.5 % max.
		dual output models balanced load:	1.0 % max.
		dual output models unbalanced load:	5.0 % max.
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)		– at power on	450 ms typ.
		– at remote on	5 ms typ.
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 t 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.

General Specifications

Temperature ranges	– Operating	–40°C to +85°C
	– Case temperature	+105°C max.
	– Storage	–55°C to +105°C
Derating	3.3 & 5.1 Vout models:	2.2 %/K above 60°C
	other models:	2.5 %/K above 65°C

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

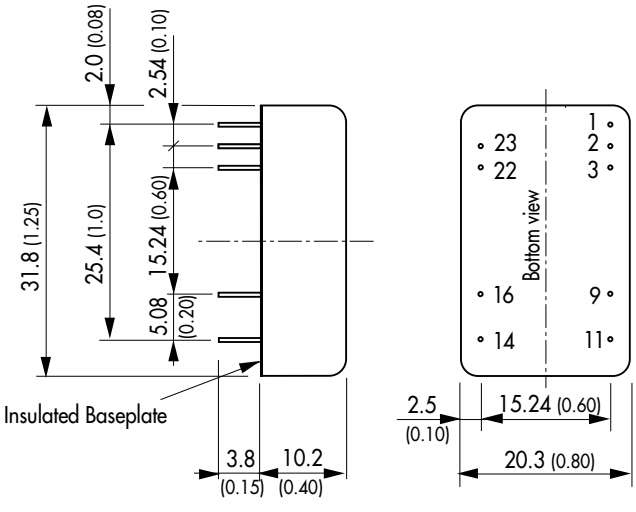
General Specifications

Humidity (non condensing)		95 % rel H max.
Reliability, calculated MTBF (MIL-HDBK-217F, at +25°C, ground benign)		>2.0 Mio h
Thermal shock		MIL–STD–810F
Isolation voltage (60sec.)	– Input/Output	1500 VDC
Isolation capacitance	– Input/Output	1500 pF max.
Switching frequency		400 kHz typ. (pulse width modulation PWM)
Safety standards		UL 60950-1, IEC/EN 60950-1
Safety approvals	– UL/cUL	www.ul.com -> certifications -> File e188913
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

Casing material	copper, nickel plated
Baseplate material	non conductive FR4
Potting material	epoxy (UL94V-0 rated)
Weight	18 g (0.62oz)
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	ntc.	Common
11	ntc.	–Vout
14	+Vout	+Vout
16	–Vout	Common
22	+Vin (Vcc)	+Vin (Vcc)
23	+Vin (Vcc)	+Vin (Vcc)

ntc = not to connect

Dimensions in [mm], () = Inch
Pin diameter ø 0.5 ±0.05 (0.02 ±0.002)
Tolerances ±0.5 (±0.02)
Pin pich tolerances ±0.35 (±0.014)