



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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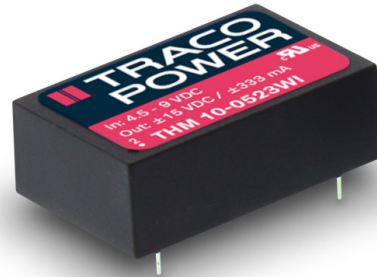
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- Ultra wide 4:1 input voltage 10 W DC/DC converter in a compact DIP-24 plastic case
- I/O isolation 5000 VACrms rated for 250 VACrms working voltage
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2xMOPP
- Risk management process according to ISO 14971 including risk management file
- Acceptance criteria for electronic assemblies according to IPC-A-610 Level 3
- Low leakage current < 2µA
- Extended operating temperature range -40°C to 90°C.
- EMC compliance to IEC 60601-1-2 4th edition and EN55032 class A
- Operating up to 5000m altitude
- 5 year product warranty



The THM-10WI series is a range of medical 10 Watt DC/DC converters in DIP-24 plastic package and with ultra-wide 4:1 input voltage range. They provide a reinforced isolation system for 5000 VACrms isolation and a very low leakage current of less than 2 µA. The units are approved to IEC/EN/ES 60601-1 3rd edition for 2 × MOPP (Means Of Patient Protection) and come along with an ISO 14971 risk management file. Design and production conform to the quality management system ISO 13485. With a high efficiency of up to 87% and highest grade components the converters can reliably operate in an ambient temperature range of -40°C up to +90°C. They constitute a reliable solution not only for medical equipment but also for demanding ranges of application such as transportation, control & measurement or IGBT drivers.

Models				
Order code	Input voltage range	Output voltage	Output current max.	Efficiency typ.
THM 10-0510WI	4.5 – 9 VDC (5 VDC nominal)	3.3 VDC	2500 mA	80.0 %
THM 10-0511WI		5.0 VDC	2000 mA	84.0 %
THM 10-0512WI		12 VDC	830 mA	86.5 %
THM 10-0513WI		15 VDC	670 mA	87.0 %
THM 10-0515WI		24 VDC	416 mA	85.5 %
THM 10-0521WI		±5.0 VDC	±1000 mA	83.0 %
THM 10-0522WI		±12 VDC	±416 mA	85.5 %
THM 10-0523WI		±15 VDC	±333 mA	86.5 %
THM 10-2410WI	9.0 – 36 VDC (24 VDC nominal)	3.3 VDC	2500 mA	83.0 %
THM 10-2411WI		5.0 VDC	2000 mA	86.5 %
THM 10-2412WI		12 VDC	830 mA	89.0 %
THM 10-2413WI		15 VDC	670 mA	89.0 %
THM 10-2415WI		24 VDC	416 mA	89.0 %
THM 10-2421WI		±5.0 VDC	±1000 mA	85.0 %
THM 10-2422WI		±12 VDC	±416 mA	89.0 %
THM 10-2423WI		±15 VDC	±333 mA	88.0 %
THM 10-4810WI	18 – 75 VDC (48 VDC nominal)	3.3 VDC	2500 mA	82.5 %
THM 10-4811WI		5.0 VDC	2000 mA	86.5 %
THM 10-4812WI		12 VDC	830 mA	89.0 %
THM 10-4813WI		15 VDC	670 mA	89.0 %
THM 10-4815WI		24 VDC	416 mA	88.5 %
THM 10-4821WI		±5.0 VDC	±1000 mA	85.0 %
THM 10-4822WI		±12 VDC	±416 mA	88.0 %
THM 10-4823WI		±15 VDC	±333 mA	88.0 %

Input Specifications

Input current no load	5 Vin models: 20 mA typ. 24 Vin models: 6 mA typ. 48 Vin models: 4 mA typ.
Surge voltage (3 sec. max.)	5 Vin models: 16 V max. 24 Vin models: 50 V max. 48 Vin models: 100 V max.
Start-up voltage	5 Vin models: 4.5 VDC (or lower) 24 Vin models: 9 VDC (or lower) 48 Vin models: 18 VDC (or lower)
Startup time	30 ms typ.
Under voltage shut down	5 Vin models: 4 VDC typ. 24 Vin models: 8 VDC typ. 48 Vin models: 16 VDC typ.
Conducted noise	– Conducted & Radiated input suppression EN 55011 limits to IEC 60601-1-2 4th edition EN 55032 class A (internal filter) EN 55032 class B with external components
EMC immunity	– Generic for Medical equipment – ESD (electrostatic discharge) – Radiated immunity – Fast transient / surge (with external input capacitor / diode) – Conducted immunity – Magnetic field immunity IEC/EN 60601-1-2 4th edition EN 61000-4-2, air ±8 kV, contact ±6 kV, perf. criteria A EN 61000-4-3, 10 V/m, perf. criteria A EN 61000-4-4, ±2 kV, perf. criteria A EN 61000-4-5, ±2 kV perf. criteria A 5 Vin models: Nippon chemi-con KY 1000 µF/ 25 V and reverse diode (Vishay V10P45) in parallel 24 Vin models: Nippon chemi-con KY 470 µF/ 50 V 48 Vin models: Nippon chemi-con KY 330 µF/ 100 V EN 61000-4-6, 10 Vrms, perf. criteria A EN 61000-4-8 100 A/m, continuous, perf. criteria A 1000 A/m, 1 sec., perf. criteria A
External input fuse required (recommended values, slow blow type)	5 Vin models: 10 A 24 Vin models: 5 A 48 Vin models: 2.5 A

Output Specifications

Voltage set accuracy	±1 % max.
Regulation	– Input variation single output: 0.2 % max. dual output: 0.5 % max. – Load variation 0 – 100 % single output: 0.2 % max. dual output: 1.0 % max. – Cross regulation dual output: 5.0 % max. (asymmetrical load 25/100%)
Minimum load	not required
Ripple and noise (20 MHz Bandwidth)	3.3 & 5.0 VDC models: 30 mVp-p typ. with cap. 10 µF/25V X7R MLCC 12 & 15 VDC models: 40 mVp-p typ. with cap. 10 µF/25V X7R MLCC 24 VDC models: 50 mVp-p typ. with cap. 4.7 µF/50V X7R MLCC
Transient response	– Recovery time (25% load step change) 250 µs typ.
Over load protection	at 150 % typ. of lout rated (hiccup mode)
Short circuit protection	Continuous, automatic recovery

Output Specifications (continued)

Over voltage protection	-Single output	3.3 VDC models: 3.7 – 5.4 VDC 5.0 VDC models: 5.6 – 7.0 VDC 12 VDC models: 13.5 – 19.6 VDC 15 VDC models: 18.3 – 22.0 VDC 24 VDC models: 29.1 – 32.5 VDC
	-Dual output	±5 VDC models: 5.6 – 7.0 VDC ±12 VDC models: 13.5 – 18.2 VDC ±15 VDC models: 17.0 – 22.0 VDC
Capacitive load	-Single output	3.3 VDC models: 3'000 µF max. 5.0 VDC models: 2'500 µF max. 12 VDC models: 430 µF max. 15 VDC models: 350 µF max. 24 VDC models: 125 µF max.
	-Dual output	±5 VDC models: 1440 µF max. (each output) ±12 VDC models: 550 µF max. (each output) ±15 VDC models: 180 µF max. (each output)

General Specifications

Temperature ranges	- Operating - Rated according to IEC/EN 60601-1 - Case temperature - Storage temperature	-40°C to +90°C (with derating) -40°C to +50°C (without derating) +105°C max. -55°C to +125°C
Derating		3.5%/K above 75°C
Thermal impedance		18°C/W typ.
Humidity (non condensing)		5 % to 95 % rel H max.
Isolation voltage (50Hz, 60sec)	- to meet ES/IEC/EN 60601-1	5000 VACrms, rated for 250 VACrms working voltage, 2 × MOPP
Clearance/creepage		8 mm min.
Leakagecurrent (at 240VAC, 60Hz)		2 µA max.
Isolation capacitance (input/output)		17 pF max.
Altitude during operation		5000 m
Temperature coefficient		±0.02 %/K typ.
Reliability, calculated MTBF (MIL-HDBK-217F at +25°C, ground benign)		3'850'000 h
Switching frequency		300 kHz ±30 kHz (pulse width modulation)
Vibration and thermal shock resistance		according to MIL-STD-810F
Safety standards/approvals	- Medical equipment - Certification documents	ANSI/AAMI ES60601-1:2005/(R)2012, IEC/EN60601-1 3rd edition www.tracopower.com/products/overview/thm10wi
Environmental compliance	- Reach - RoHS	www.tracopower.com/products/reach-declaration.pdf RoHS directive 2011/65/EU

Physical Specifications

Casing material	non-conductive black plastic
Base material	non-conductive black plastic
Potting material	silicone (UL94 V-0 rated)
Package weight	14 g (0.48oz)
Soldering temperature	max. 265°C / 10 sec

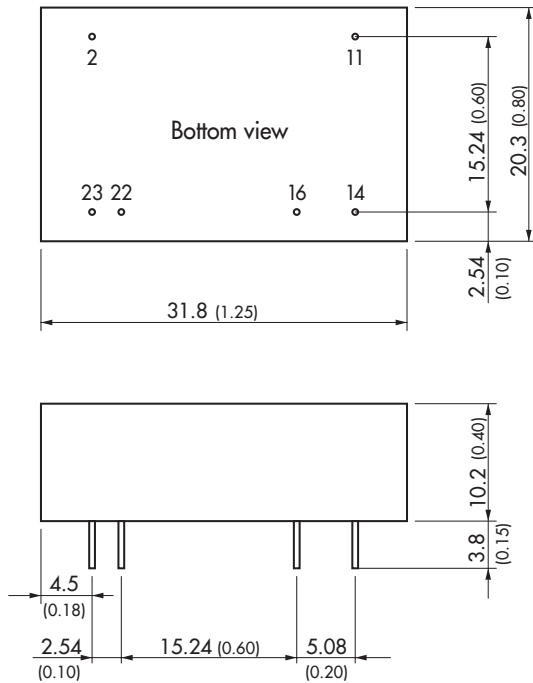


- The component is not be used in an oxygen rich environment.
- The component is not to be used in conjunction with flammable anaesthetics and agents.
- The component has to be disposed appropriately. Please refer to local regulations (Waste Electrical and Electronic Equipment).
- A modification of the component is not allowed.

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

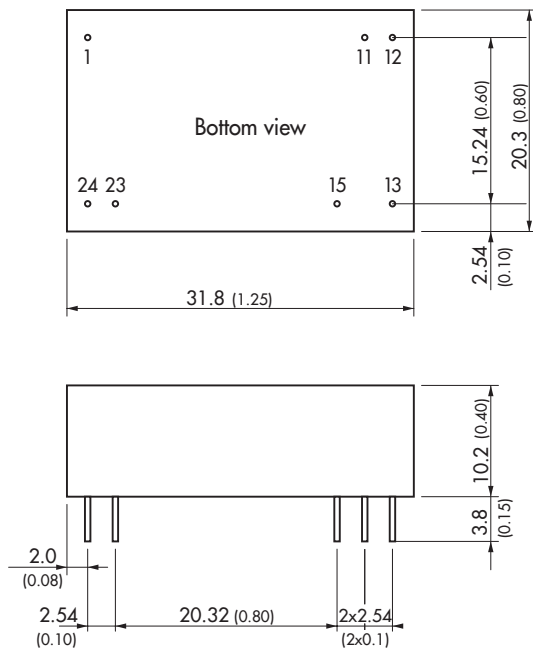
Outline Dimensions

Standard pinning



Standard Pinout		
Pin	Single	Dual
2	-Vin (GND)	-Vin (GND)
11	No con.	-Vout
14	+Vout	+Vout
16	-Vout	Common
22	+Vin (Vcc)	+Vin (Vcc)
23	+Vin (Vcc)	+Vin (Vcc)

Optional pinning: suffix **-A1**



Optional Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
11	No pin	Common
12	-Vout	No pin
13	+Vout	-Vout
15	No pin	+Vout
23	-Vin (GND)	-Vin (GND)
24	-Vin (GND)	-Vin (GND)

Remark: No suffix **-A1** for 5 Vin models. Corresponding parts are with THM 10 series by default. see www.tracopower.com/overview/thm10

Dimensions in [mm], () = Inch
 Tolerances ± 0.5 (± 0.02)
 Pin $\varnothing 0.6 \pm 0.1$ (0.024 ± 0.004)
 Pin pitch tolerances ± 0.25 (± 0.01)