



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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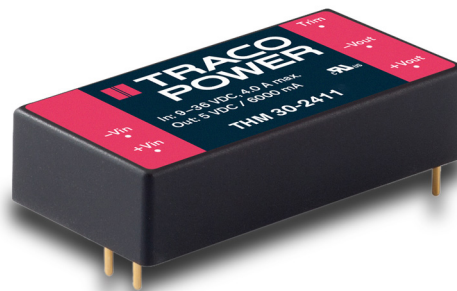
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- Wide 2:1 input voltage 30 W DC/DC converter in a 2 × 1 " plastic case
- I/O isolation 5000 VACrms rated for 250 VACrms working voltage
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2×MOPP
- Risk management process according to ISO 14971 including risk management file
- Acceptance criteria for electronic assemblies according to IPC-A-610 Level 3
- Low leakage current < 2.5 µA
- Extended operating temperature range –40°C to 80°C.
- EMC compliance to IEC 60601-1-2 4th edition and EN55032 class A
- Operating up to 5000m altitude
- 5 year product warranty



CB
Scheme
IEC 606010-1 ES 60601-1

The THM-30 series is a range of medical 30 Watt DC/DC converters in 2.0" x 1.0" plastic package and with wide 2:1 input voltage range. They provide a reinforced isolation system for 5000 VACrms isolation and a very low leakage current of less than 2.5 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 90% and highest grade components the converters can reliably operate in an ambient temperature range of –40°C up to +80°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 30-1211	9.0 – 18 VDC (12 VDC nominal)	5.0 VDC	6000 mA	88.5 %
THM 30-1212		12 VDC	2500 mA	88.5 %
THM 30-1213		15 VDC	2000 mA	89.5 %
THM 30-1215		24 VDC	1250 mA	89.0 %
THM 30-1221		±5 VDC	±3000 mA	86.0 %
THM 30-1222		±12 VDC	±1250 mA	88.5 %
THM 30-1223		±15 VDC	±1000 mA	89.0 %
THM 30-2411	18 – 36 VDC (24 VDC nominal)	5.0 VDC	6000 mA	88.5 %
THM 30-2412		12 VDC	2500 mA	89.0 %
THM 30-2413		15 VDC	2000 mA	90.5 %
THM 30-2415		24 VDC	1250 mA	89.5 %
THM 30-2421		±5 VDC	±3000 mA	86.0 %
THM 30-2422		±12 VDC	±1250 mA	90.0 %
THM 30-2423		±15 VDC	±1000 mA	90.0 %
THM 30-4811	36 – 75 VDC (48 VDC nominal)	5.0 VDC	6000 mA	89.0 %
THM 30-4812		12 VDC	2500 mA	89.0 %
THM 30-4813		15 VDC	2000 mA	90.0 %
THM 30-4815		24 VDC	1250 mA	89.0 %
THM 30-4821		±5 VDC	±3000 mA	86.5 %
THM 30-4822		±12 VDC	±1250 mA	90.0 %
THM 30-4823		±15 VDC	±1000 mA	89.5 %

Input Specifications

Input current no load		12 Vin models: 11 mA typ. 24 Vin models: 9 mA typ. 48 Vin models: 9 mA typ.
Surge voltage (3 sec. max.)		12 Vin models: 25 V max. 24 Vin models: 50 V max. 48 Vin models: 100 V max.
Start-up voltage		12 Vin models: 9 VDC (or lower) 24 Vin models: 18 VDC (or lower) 48 Vin models: 36 VDC (or lower)
Startup time		60 ms max. (30 ms typ.)
Under voltage shut down (lock-out circuit)		12 Vin models: 7.8 - 8.6 VDC 24 Vin models: 15.8 - 17.4 VDC 48 Vin models: 32 - 34 VDC
Input filter		Pi-type
Conducted noise	– Conducted & Radiated input suppression	EN 55011 limits to IEC 60601-1-2 4th edition EN55032 class A (internal filter) EN55032 class B with external components www.tracopower.com/overview/thm30
	– Filter proposal	
EMC immunity	– Generic for Medical equipment	IEC/EN 60601-1-2 4th edition EN 61000-4-2, air ± 15 kV, contact ± 8 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 12 Vin models: 2 pcs. Nippon chemi-con KY 220 μ F / 100 V 1 pcs. TVS - SMDJ36A, 36V, 3000 W) 24 Vin models: 2 pcs. Nippon chemi-con KY 220 μ F / 100 V 1 pcs. TVS - SMDJ58A, 58V, 3000 W) 48 Vin models: 2 pcs. Nippon chemi-con KY 220 μ F / 100 V 1 pcs. TVS - SMDJ120A, 120V, 3000 W) 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
	– ESD (electrostatic discharge)	
	– Radiated immunity	
	– Fast transient / surge (with external input capacitor / diode)	
	– Conducted immunity	
	– Magnetic field immunity	
External input fuse required (recommended values, slow blow type)		12 Vin models: 6.3 A 24 Vin models: 3.15 A 48 Vin models: 1.6 A

Output Specifications

Voltage set accuracy		± 1 % max.
Output voltage adjustment range (single output models only)	5 & 12 VDC models:	± 10 %
	15 & 24 VDC models:	$-10 / +20$ %
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 %)
Temperature coefficient		± 0.02 %/K typ.
Minimum load		not required
Ripple and noise (20 MHz Bandwidth)	(\pm)5.0 VDC models:	50 mVp-p typ. with cap. 10 μ F/25 V X7R MLCC
	(\pm)12 VDC models:	75 mVp-p typ. with cap. 10 μ F/25 V X7R MLCC
	± 15 VDC models:	75 mVp-p typ. with cap. 10 μ F/25 V X7R MLCC
	15 VDC models:	100 mVp-p typ. with cap. 10 μ F/25 V X7R MLCC
	24 VDC models:	100 mVp-p typ. with cap. 4.7 μ F/50 V X7R MLCC
Transient response	– Recovery time (25% load step change)	250 μ s typ.

Output Specifications

Over current limitation		at 150 % typ. of lout rated (hiccup mode) at 185 % max. of lout rated (hiccup mode)
Short-circuit protection		Continuous, automatic recovery
Overvoltage protection	(±)5.0 VDC models: (±)12 VDC models: (±)15 VDC models: 24 VDC models:	6.2 VDC typ. 15 VDC typ. 20 VDC typ. 30 VDC typ.
Capacitive load	–Single output	5.0 VDC models: 7'200 µF max. 12 VDC models: 1'200 µF max. 15 VDC models: 1'000 µF max. 24 VDC models: 375 µF max.
	–Dual output	±5 VDC models: 3'600 µF max. (each output) ±12 VDC models: 750 µF max. (each output) ±15 VDC models: 500 µF max. (each output)

General Specifications

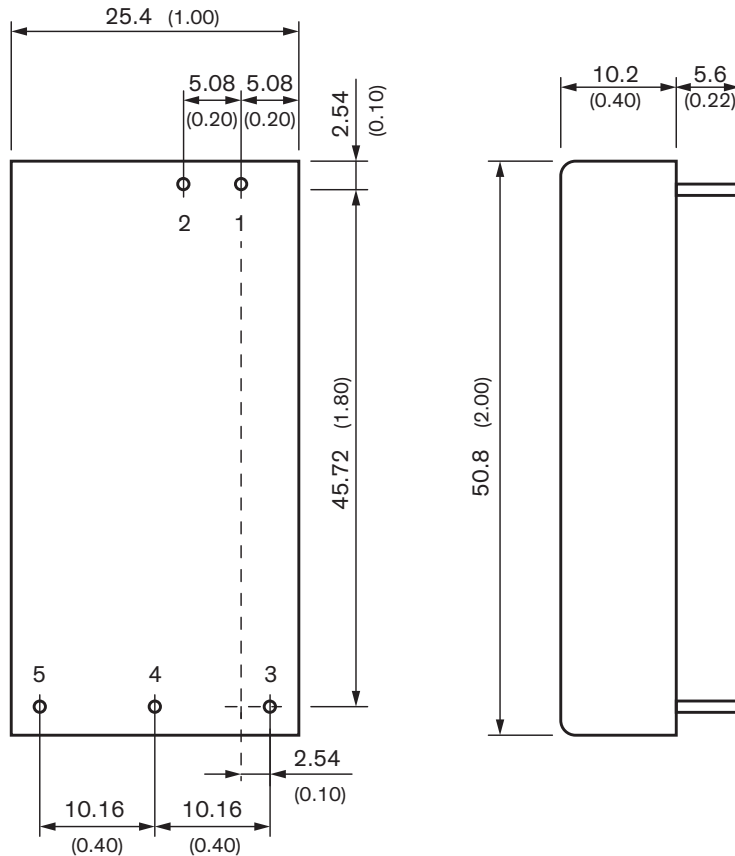
Temperature ranges	– Operating – Case temperature – Storage temperature	–40°C to +80°C +105°C max. –55°C to +125°C
Derating	(±)5 VDC models: other models:	1.67 %/K above 45°C 2 %/K above 55°C
Overtemperature protection		at 115°C typ.
Thermal impedance		12.9 K/W typ.
Humidity (non condensing)		5 % to 95 % rel H max.
Isolation voltage (50Hz, 60s)		5000 VACrms reinforced
Clearance/creepage		8 mm min.
Leakage current (at 240VAC, 60Hz)		2.5 µA max.
Isolation capacitance (input/output)		20 pF typ.
Altitude during operation		5000 m
Temperature coefficient		±0.02 %/K typ.
Reliability, calculated MTBF (MIL-HDBK-217F at +25°C, ground benign)		1'137'000 h
Switching frequency		225 – 285 kHz (pulse width modulation)
Vibration and thermal shock resistance		according to MIL-STD-810F
Safety standards/approvals	– Medical equipment – Certification documents	ANSI/AAMI ES 60601-1:2005/(R)2012, IEC/EN 60601-1 3rd edition www.tracopower.com/overview/thm30
Environmental compliance	– Reach – RoHS	www.tracopower.com/products/reach-declaration.pdf RoHS directive 2011/65/EU

Physical Specifications

Casing material	non-conductive plastic
Base material	non-conductive plastic
Potting material	silicone (UL94 V-0 rated)
Package weight	32 g (1.13 oz)
Soldering temperature	max. 265°C / 10 s

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

Outline Dimensions



Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	-Vin (GND)	-Vin (GND)
3	+Vout	+Vout
4	-Vout	Common
5	Trim	-Vout

Dimensions in [mm], () = Inch

Tolerances ± 0.5 (± 0.02)

± 0.25 (± 0.01)

Pin pitch tolerances ± 0.25 (± 0.01)

Pin \varnothing 1.0 ± 0.1 (0.04 ± 0.004)