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!

Contact us

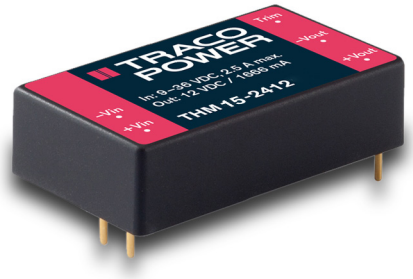
Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

TRACO POWER

DC/DC Converter

THM 15 Series, 15 Watt

- **Wide 2:1 input voltage 15 W DC/DC converter in a 1.6 × 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 85°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 60601-1

cULus ES 60601-1

The THM 15 series is a range of medical 15 Watt DC/DC converters in 1.6” 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 +85°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 15-1211	9.0 – 18 VDC (12 VDC nominal)	5.0 VDC	3000 mA	89.0 %
THM 15-1212		12 VDC	1250 mA	88.5 %
THM 15-1213		15 VDC	1000 mA	89.0 %
THM 15-1215		24 VDC	625 mA	89.0 %
THM 15-1221		±5 VDC	±1500 mA	86.0 %
THM 15-1222		±12 VDC	±625 mA	89.0 %
THM 15-1223		±15 VDC	±500 mA	89.0 %
THM 15-2411	18 – 36 VDC (24 VDC nominal)	5.0 VDC	3000 mA	90.0 %
THM 15-2412		12 VDC	1250 mA	90.0 %
THM 15-2413		15 VDC	1000 mA	90.0 %
THM 15-2415		24 VDC	625 mA	90.0 %
THM 15-2421		±5 VDC	±1500 mA	86.0 %
THM 15-2422		±12 VDC	±625 mA	90.0 %
THM 15-2423		±15 VDC	±500 mA	90.0 %
THM 15-4811	36 – 75 VDC (48 VDC nominal)	5.0 VDC	3000 mA	89.5 %
THM 15-4812		12 VDC	1250 mA	88.0 %
THM 15-4813		15 VDC	1000 mA	89.0 %
THM 15-4815		24 VDC	625 mA	88.5 %
THM 15-4821		±5 VDC	±1500 mA	86.0 %
THM 15-4822		±12 VDC	±625 mA	88.5 %
THM 15-4823		±15 VDC	±500 mA	89.0 %

Input Specifications

Input current no load		12 Vin models:	12 mA typ.
		24 Vin models:	10 mA typ.
		48 Vin models:	9 mA typ.
Surge voltage (3 s 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 editon EN55032 class A (internal filter) EN55032 class B with external components
	– Filter proposal		www.tracopower.com/overview/thm15
EMC immunity	– Generic for Medical equipment		IEC/EN 60601-1-2 4th edition
	– ESD (electrostatic discharge)		EN 61000-4-2, air ±15 kV, contact ±8 kV, perf. criteria A
	– Radiated immunity		EN 61000-4-3, 10 V/m, perf. criteria A
	– Fast transient / surge		EN 61000-4-4, ±2 kV, perf. criteria A
	(with external input capacitor / diode)		EN 61000-4-5, ±2 kV perf. criteria A
		12 Vin models:	2 pcs. Nippon chemi-con KY 220 µF / 100 V 1 pcs. TVS - SMDJ36A, 36V, 3000 W)
		24 Vin models:	2 pcs. Nippon chemi-con KY 220 µF / 100 V 1 pcs. TVS - SMDJ58A, 58V, 3000 W)
		48 Vin models:	2 pcs. Nippon chemi-con KY 220 µF / 100 V 1 pcs. TVS - SMDJ120A, 120V, 3000 W)
	– Conducted immunity		EN 61000-4-6, 10 Vrms, perf. criteria A
	– Magnetic field immunity		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)		12 Vin models:	3.15 A
		24 Vin models:	1.6 A
		48 Vin models:	0.8 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)		(±)5.0 VDC models:	50 mVp-p typ. with cap. 10 µF/25 V X7R MLCC
		(±)12 VDC models:	75 mVp-p typ. with cap. 10 µF/25 V X7R MLCC
		(±)15 VDC models:	75 mVp-p typ. with cap. 10 µF/25 V X7R MLCC
		24 VDC models:	100 mVp-p typ. with cap. 4.7 µF/50 V X7R MLCC
Transient response	– Recovery time (25% load step change)		250 µs typ.

Output Specifications (continued)

Over current limitation			at 150 % typ. max. of Iout rated (hiccup mode) at 185 % typ. max. of Iout 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: 12 VDC models: 15 VDC models: 24 VDC models:	3‘800 µF max. 650 µF max. 530 µF max. 190 µF max.
	–Dual output	±5 VDC models: ±12 VDC models: ±15 VDC models:	1‘900 µF max. (each output) 380 µF max. (each output) 270 µF max. (each output)

General Specifications

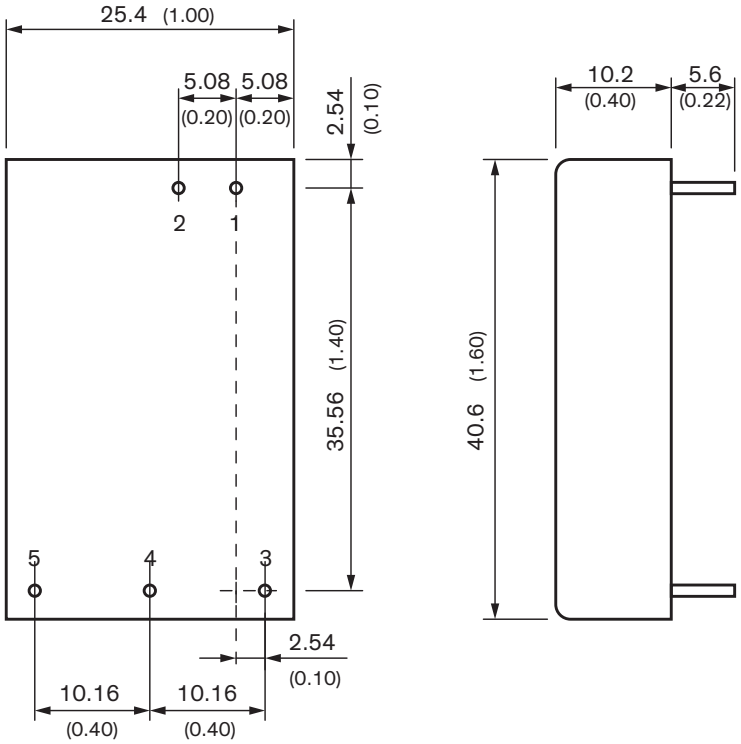
Temperature ranges	– Operating – Case temperature – Storage temperature	–40°C to +85°C +105°C max. –55°C to +125°C
Derating		2.5 %/K above 65°C
Overtemperature protection		at 115°C typ.
Thermal impedance		15.3 K/W typ.
Humidity (non condensing)		5 % to 95 % rel H max.
Isolation voltage (50 Hz, 60 s)		5000 VACrms, reinforced
Clearance/creepage		8 mm min.
Leakage current (at 240 VAC, 60 Hz)		2.5 µA max.
Isolation capacitance (input/output)		20 pF typ.
Altitude during operation		5000 m
Reliability, calculated MTBF (MIL-HDBK-217F at +25°C, ground benign)		2‘080‘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/thm15
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	24 g (0.85oz)
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 ø 1.0 ±0.1 (0.04 ±0.004)