

Features

- ◆ Supplementary and reinforced insulation
- ◆ I/O isolation 3000 VACrms rated for 300 Vrms working voltage
- ◆ Medical safety to UL 60601-1 and IEC/EN 60601-1 3rd edition, 2 x MOOP
- ◆ Industrial safety to IEC/EN/UL 60950-1
- ◆ Isolation test voltage 6000 Vpk
- ◆ Wide 2:1 input voltage ranges
- ◆ Extended operating temperature range -40°C to 71°C max.
- ◆ Input filter meets EN55022, class A
- ◆ Continuous short-circuit protection
- ◆ High reliability
- ◆ 3-year product warranty



The THB-3 series is a range of high performance, regulated DC/DC converters in a DIP-24 plastic package. A reinforced I/O-isolation system and a wide 2:1 input voltage range make this product the best choice for many demanding applications like transportation systems, industrial controls, medical equipments, instrumentations, everywhere where high basic-, supplementary- or reinforced insulation is required to meet requested safety standards.

A high efficiency allows safe operation in a temperature range of -40°C to +71°C. Other features of this product are over voltage protection and internal EMI-input filter to meet EN 55022, class A without additional components. Full SMD-design with exclusive use of ceramic capacitors ensure a very high reliability and a long product lifetime.

Models

Order code	Input voltage range	Output voltage	Output current max.	Efficiency typ.
THB 3-0511	4.5 – 9 VDC (5 VDC nominal)	5 VDC	600 mA	70 %
THB 3-0512		12 VDC	250 mA	75 %
THB 3-0515		24 VDC	125 mA	76 %
THB 3-0522		±12 VDC	±125 mA	75 %
THB 3-0523		±15 VDC	±100 mA	75 %
THB 3-1211	9 – 18 VDC (12 VDC nominal)	5 VDC	600 mA	74 %
THB 3-1212		12 VDC	250 mA	80 %
THB 3-1215		24 VDC	125 mA	81 %
THB 3-1222		±12 VDC	±125 mA	80 %
THB 3-1223		±15 VDC	±100 mA	80 %
THB 3-2411	18 – 36 VDC (24 VDC nominal)	5 VDC	600 mA	78 %
THB 3-2412		12 VDC	250 mA	83 %
THB 3-2415		24 VDC	125 mA	84 %
THB 3-2422		±12 VDC	±125 mA	83 %
THB 3-2423		±15 VDC	±100 mA	83 %
THB 3-4811	36 – 75 VDC (48 VDC nominal)	5 VDC	600 mA	78 %
THB 3-4812		12 VDC	250 mA	83 %
THB 3-4815		24 VDC	125 mA	84 %
THB 3-4822		±12 VDC	±125 mA	83 %
THB 3-4823		±15 VDC	±100 mA	83 %

Input Specifications

Input current at no load / full load	5 Vin models: 40 mA typ. / 880 mA typ. 12 Vin models: 30 mA typ. / 320 mA typ. 24 Vin models: 20 mA typ. / 155 mA typ. 48 Vin models: 10 mA typ. / 95 mA typ.
Start-up voltage / under voltage shut down	5 Vin models: 4.5 VDC / 4.0 VDC 12 Vin models: 9 VDC / 8.5 VDC 24 Vin models: 18 VDC / 17 VDC 48 Vin models: 36 VDC / 34 VDC
Recommended external input fuse (slow blow)	5 Vin models: 2.0 A 12 Vin models: 1.0 A 24 Vin models: 0.5 A 48 Vin models: 0.25 A
Surge voltage (1 sec. max.)	5 Vin models: 11 VDC max. 12 Vin models: 25 VDC max. 24 Vin models: 50 VDC max. 48 Vin models: 100 VDC max.
Reverse voltage protection	0.3 A max.
Input filter	EN 55022 class A, FCC part 15, class A

Output Specifications

Voltage set accuracy	±1 %
Regulation	– Input variation Vin min. to Vin max.: 0.5 % max. – Load variation 25 – 100 %: single output models: 1.0 % max.. dual output models: 2.0 % max. balanced load
Minimum load	15 % of rated max. output current. (Operation at lower load is safe but major deviations to specified data may occur)
Ripple and noise (20 MHz Bandwidth)	5 VDC models: 100 mVpk-pk max. other models: 150 mVpk-pk max.
Transient response (25% load step change)	150 µs typ.
Current limitation	>120 % Iout max.
Short circuit protection	indefinite (automatic recovery)
Capacitive load	5 VDC output models: 1000 µF max. other single output models: 470 µF max. dual output models: 220 µF max. (each output)

Isolation / Safety Standards

Isolation test voltage (flash tested 1 sec.)	6000 Vpk
I/O isolation voltage (50Hz, 60sec.)	– according IEC/EN 60601-1: 3000 VACrms, rated for 300 Vrms working voltage, 2 x MOOP – according IEC/EN 60950-1: 4800 VACrms, rated for 300 Vrms working voltage
Leakage current	2 µA (at 240VAC, 60Hz)
Isolation capacitance	– Input/Output: 13 pF max.. (at 100KHz, 1V)
Isolation resistance	– Input/Output: >1000 Mohm (at 500VDC)
Safety standards	IEC 60950-1:2005 (2nd ed.) +A1:2009 and/or EN 60950-1:2006 +A1:2010 +A11:2009 +12:2011, UL 60950-1 (2nd ed.) CSA C22.2 No. 60950-1-03 IEC 60601-1 3rd edition, 2 x MOOP, EN 60601-1 + A11:2011 UL 60601-1, CSA C22.2 No. 601.1

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

General Specifications

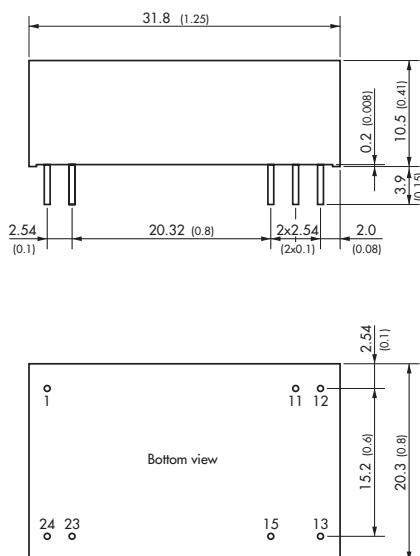
Safety approvals	<ul style="list-style-type: none"> - CB test certificate according IEC 60950-1 - CB test certificate according IEC 60601-1(3rd edition) - CSA certificate according UL 60950-1 - CSA certificate according UL 60601-1 - UL certificate according UL 60950-1 	www.tracopower.com/products/thb3-cb60950.pdf www.tracopower.com/products/thb3-cb60601.pdf www.tracopower.com/products/thb3-csa60950.pdf www.tracopower.com/products/thb3-csa60601.pdf www.ul.com File E188913, copy: e188913qqgq2.pdf
Temperature ranges	<ul style="list-style-type: none"> - Operating - Casing - Storage 	-40°C to +71°C +95°C max. -40°C to +125°C
Derating		3.0 %/K above 60°C
Humidity (non condensing)		95 % rel H max.
Temperature coefficient		±0.02 %/K typ.
Reliability, calculated MTBF (MIL-HDBK-217F, at +25°C, ground benign)		>1 Mio. h
Switching frequency		150 kHz typ. (puls width modulation)
Casing material		non conductive plastic (UL 94V-0-rated)
Potting material		Silicon TSE 3331 (UL 94V-0-rated)
Weight		16.2 g (0.57 oz)
Soldering temperature		max. 265°C / 10 sec.
Altitude during operation		up to 5'000 m (16'400 ft) approved
Environmental compliance	<ul style="list-style-type: none"> - Reach - RoHS 	www.tracopower.com/products/thb3-reach.pdf according RoHS directive 2011/65/EU

Application note : www.tracopower.com/products/thb3-application.pdf



- 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.

Outline Dimensions



Pin-Out		
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)

Dimensions in [mm], () = Inch
 Pin diameter $\varnothing 0.6 \pm 0.05$ (0.024 ± 0.002)
 Tolerances ± 0.25 (± 0.001)
 Pin pitch tolerances ± 0.13 (± 0.005)

Specifications can be changed without notice!. Make sure you are using the latest documentation, downloadable at www.tracopower.com



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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