

Features

- ◆ 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
- ◆ Ultra compact DIP-24 package
- ◆ Wide 2:1 input voltage ranges
- ◆ Operating temperature range -40°C to +71°C
- ◆ Low leakage current
- ◆ Short circuit protection
- ◆ Input filter to meet EN 55022, Class A
- ◆ 3-year product warranty



The THB 6 series is a new 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 equipment, instrumentation, 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 ensures a very high reliability and a long product lifetime.

Models

Order code	Input voltage range	Output voltage	Output current max.	Efficiency typ.
THB 6-1211	9 - 18 VDC (12 VDC nominal)	5 VDC	1000 mA	75 %
THB 6-1212		12 VDC	500 mA	78 %
THB 6-1222		±12 VDC	±250 mA	78 %
THB 6-1223		±15 VDC	±200 mA	78 %
THB 6-2411	18 - 36 VDC (24 VDC nominal)	5 VDC	1000 mA	77 %
THB 6-2412		12 VDC	500 mA	80 %
THB 6-2422		±12 VDC	±250 mA	80 %
THB 6-2423		±15 VDC	±200 mA	80 %
THB 6-4811	36 - 75 VDC (48 VDC nominal)	5 VDC	1000 mA	77 %
THB 6-4812		12 VDC	500 mA	80 %
THB 6-4822		±12 VDC	±250 mA	80 %
THB 6-4823		±15 VDC	±200 mA	80 %

Input Specifications

Input current at no load / full load	12 Vin; 5 VDC model: 30 mA typ. / 570 mA typ. 12 Vin; other models: 30 mA typ. / 640 mA typ. 24 Vin; 5 VDC model: 20 mA typ. / 280 mA typ. 24 Vin; other models: 20 mA typ. / 315 mA typ. 48 Vin; 5 VDC model: 10 mA typ. / 140 mA typ. 48 Vin; other models: 10 mA typ. / 155 mA typ.
Start-up voltage / under voltage shut down	12 Vin models: 9 VDC / 8.5 VDC typ. 24 Vin models: 18 VDC / 16 VDC typ. 48 Vin models: 36 VDC / 34 VDC typ.
Recommended external input fuse (slow blow)	12 Vin models: 1.2 A 24 Vin models: 0.6 A 48 Vin models: 0.3 A
Surge voltage (1 sec. max.)	12 Vin models: 25 VDC max. 24 Vin models: 50 VDC max. 48 Vin models: 100 VDC max.
Input filter	EN 55022 class A

Output Specifications

Voltage set accuracy	±1.0 %
Regulation	– Input variation Vin min. to Vin max. 1.0 % max. – Load variation 25 – 100 %: single output models: 1.0 % max. dual output models: 2.0 % max. balanced load
Minimum load	20 % 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 mVp-p max. other models: 150 mVp-p max.
Transient Response (25% load step change)	500 µs max.
Current limitation	>120 % Iout max.
Short circuit protection	indefinite (automatic recovery)
Capacitive load	5 VDC output models: 1000 µF max. 12 VDC 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	– 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 (at 240VAC, 60Hz)	2 µA
I/O isolation capacity (at 100KHz, 1V)	7 pF typ.
I/O isolation resistance (at 500VDC)	>1000 Mohm
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 CSA C22.2 No. 60950-1-03 IEC/EN 60601-1 3rd edition, 2 x MOOP, UL 60601-1, CSA C22.2 No. 601.1
Safety approvals	– CB test certificate according IEC 60950-1 www.tracopower.com/products/thb6-cb60950.pdf – CB test certificate according IEC 60601-1(3rd edition) www.tracopower.com/products/thb6-cb60601.pdf – CSA certificate according UL 60950-1/60601-1 www.tracopower.com/products/thb6-csa.pdf – UL certificate according UL 60950-1 www.tracopower.com/products/thb6-ul60950.pdf – UL certificate according UL 60601-1 www.tracopower.com/products/thb6-ul60601.pdf

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

General Specifications

Temperature ranges	– Operating – Case – 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)		>700'000 h
Switching frequency		150 kHz typ. (puls width modulation)
Altitude during operation		up to 5'000 m (16'400 ft) approved
Environmental compliance	– Reach – RoHS	www.tracopower.com/products/thb6-reach.pdf RoHS directive 2011/65/EU

Physical Specifications

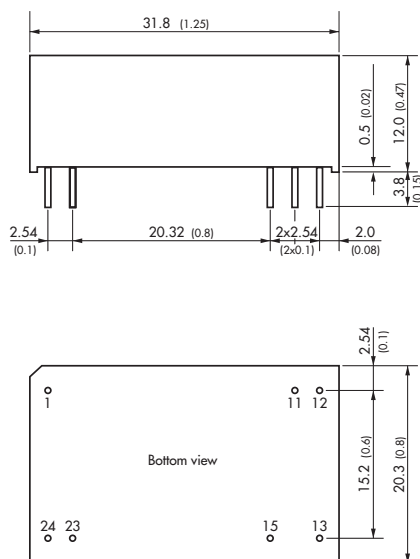
Casing material	non conductive plastic (UL 94V-0-rated)
Potting material	silicon TSE 3331 (UL 94V-0-rated)
Weight	18 g (0.63 oz)
Soldering temperature	max. 265°C / 10 sec.

Application note : www.tracopower.com/products/thb6-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 $\pm$ 0.002)
 Tolerances ± 0.25 (± 0.01)
 Pin pitch tolerances ± 0.13 (± 0.005)

Specifications can be changed any time without notice.



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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