

DC/DC converters TESD100



Features

- Class: Industrial
- Cases with mounting flanges; or copper case (optional)
- Output current up to 20 A, output power 100 W; one output channel
- Input voltage ranges: 10,5...36 VDC, 18...75 **(84)** VDC
- Power density up to **1988** W/dm³
- Low profile 13 mm design
- Case operating temperature range: -60°C...+125°C
- Magnetic feedback without optocouplers
- Output voltage adjustment, remote on/off
- Max capacitance 30000 µF for U_{out}=27 VDC

Description

Ultra-compact isolated DC/DC converters (modules) are especially designed for industrial applications and harsh environment operation. These compact units (75 x 53 x 13 mm) have output power up to 100 W and wide operating temperature range between -60...+125°C. The absence of optocouplers in the converter's circuit empowers safeness during unit's entire lifetime even when performing in conditions of ionizing radiations and at high temperature. These modules have full protection complex against over current, shorting and overheating, can be switched on/off by a signal and be connected in parallel or in series.

These modules are built using specially designed electronic components and sealed with heat-conducting potting material. They have wide operating temperature range and a thermal protection chip. These modules undergo special thermal and limit tests, including burn-in-tests with extreme on/off modes. They are available in metal cases with mounting flanges.

Upon customers' request this module can be produced in copper case with protecting coating, allowing its installation on aluminum heatsink and providing a positive effect on the modules EMC and heat transfer.

Upon customers request a low-cost version of a module is available.

Ordering information

TESD 100 - 24W S 12 - U T B

1 2 3 4 5 6 7 8

- 1 - «TESD» Series
- 2 - Max output power, W
- 3 - Input voltages
 - 12W - 12 VDC (10,5...36 VDC)
 - 24W - 24 VDC (18...75 (84) VDC)
- 4 - Index of output channels quantity
 - S – one
- 5 - Nominal output voltage, VDC (two signs for a channel)
- 6 - Index of case design
 - U – metal case with flanges
- 7 - Index of operating temperature range of the case
 - T –60°C...+125°C
- 8 - Index of low cost version
 - B – Low cost version (customer-considered simplified construction)

Technical information

Standard models with one output

| Module | Input voltage range | Output power | Output voltage / nominal output current | Typical efficiency ¹ |
|-------------------|---------------------|--------------|---|---------------------------------|
| TESD100-12WS05-XX | 10,5...36 VDC | 100 W | 5 VDC / 20 A | 78% |
| TESD100-12WS12-XX | 10,5...36 VDC | 100 W | 12 VDC / 8,33 A | 84% |
| TESD100-12WS15-XX | 10,5...36 VDC | 100 W | 15 VDC / 6,67 A | 84% |
| TESD100-12WS24-XX | 10,5...36 VDC | 100 W | 24 VDC / 4,17 A | 86% |
| TESD100-12WS27-XX | 10,5...36 VDC | 100 W | 27 VDC / 3,7 A | 86% |
| TESD100-12WS48-XX | 10,5...36 VDC | 100 W | 48 VDC / 2,1 A | 86% |
| TESD100-24WS05-XX | 18...75 (84) VDC | 100 W | 5 VDC / 20 A | 79% |
| TESD100-24WS12-XX | 18...75 (84) VDC | 100 W | 12 VDC / 8,33 A | 85% |
| TESD100-24WS15-XX | 18...75 (84) VDC | 100 W | 15 VDC / 6,67 A | 85% |
| TESD100-24WS24-XX | 18...75 (84) VDC | 100 W | 24 VDC / 4,17 A | 87% |
| TESD100-24WS27-XX | 18...75 (84) VDC | 100 W | 27 VDC / 3,7 A | 87% |
| TESD100-12WS48-XX | 18...75 (84) VDC | 100 W | 48 VDC / 2,1 A | 87% |

Modules with non-standard output voltage from 3 to 80 VDC with maximal output current up to 20 A, could be delivered by request.

¹ - Typical efficiency are stated for module which were set to an aluminum test heatsink (170x170x6mm) through a heat-conducting paste.

Specifications for DC/DC converters TESD100*

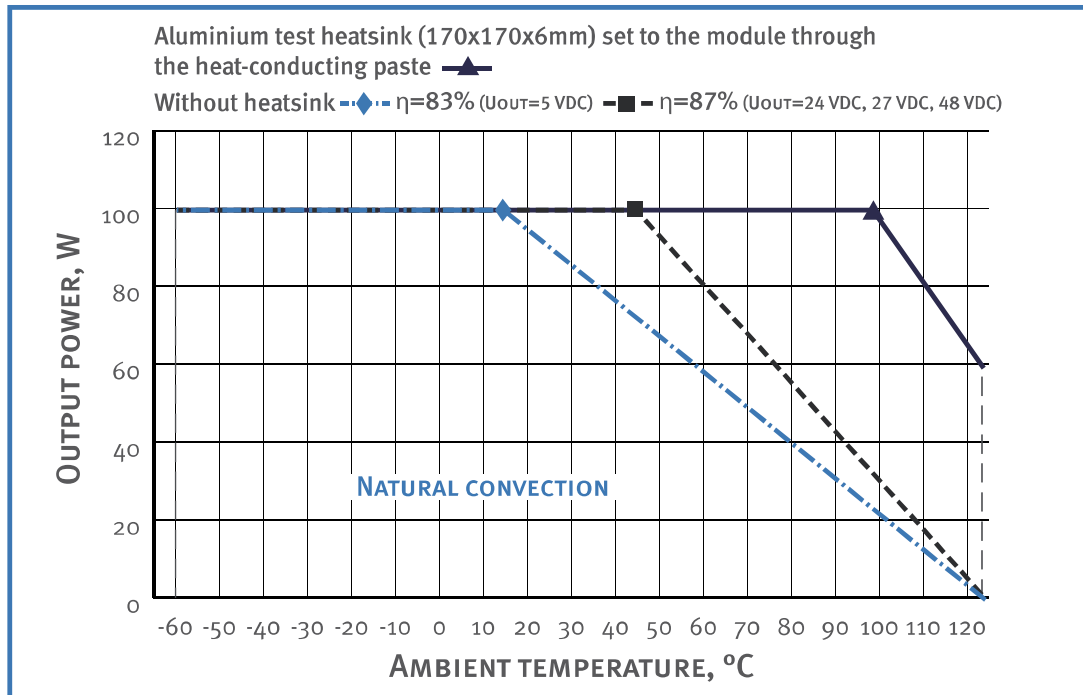
| Input specifications | |
|---|--|
| Input voltage range / transitional deviation, 1 sec 12W | =10,5...36 VDC / =10,5...40 VDC |
| Input voltage range / transitional deviation, 1 sec 24W | =18...75 VDC / =17...84 VDC |
| Input filter | P-type |
| Output specifications | |
| Output voltage adjustment | ±5% Uout |
| Instability of output voltage in accordance to changing of output current from 10 to 100% | ±2% |
| Instability of output voltage in accordance to changing of input voltage | ±0,5% |
| Ripple and noise (peak-to-peak) (20 MHz) | <2% Uout |
| Short circuit protection** | >150% Iout nom, auto repair |
| Overvoltage protection** | <130 % Uout |
| Over current protection level** | Pout ... 1.3·Pout |
| Remote On/Off | Shuts down outputs by applying 0...1,1VDC or connection of output «ON» and «- IN», I≤5mA |
| The maximum output power without the heatsink, Tamb=50°C | 69 W |
| General specifications | |
| Case temperature (operating) | -60°C ...+125°C *** |
| Case temperature (storage) | -60°C ...+125°C |
| Output power derating (natural convection) | See diagram (dashed, dash-dotted curve) |
| Output power with heatsink | See diagram (solid curve) |
| High humidity | 100% @35 °C |
| Thermal resistance case — environment without heat sink | 5,3 °C/W |
| Conversion frequency | 400 kHz typ. |
| Insulation voltage input/output | =1500 VDC |
| Insulation voltage input/case | =1500 VDC |
| Insulation voltage output/case | =1000 VDC |
| Isolation resistance @ 500 VDC | >20 MOhm |
| EMC standards | EN 55022, class A; EN 55022, class B with additional filter |
| Safety standard | IEC/ EN 60950 |
| Typical MTBF (Tcase = 50°C; Pout = 0,7 Pout max) | 100 000 hrs |
| Cooling metod | Free air convection or forced air cooling |
| Weight (max) | 110 g |

* All specifications are valid for normal climatic conditions, Uin.nom., Iout.nom., unless otherwise stated.

** Parameters are stated for the information purposes and could not be used at long term work, exciding maximum output current, at work outside of a range of operating temperatures.

*** Thermal protection chip starts operating at 118°...125 °C.

Output power vs an ambient temperature at input voltage =18...75 (84) VDC (copper case)



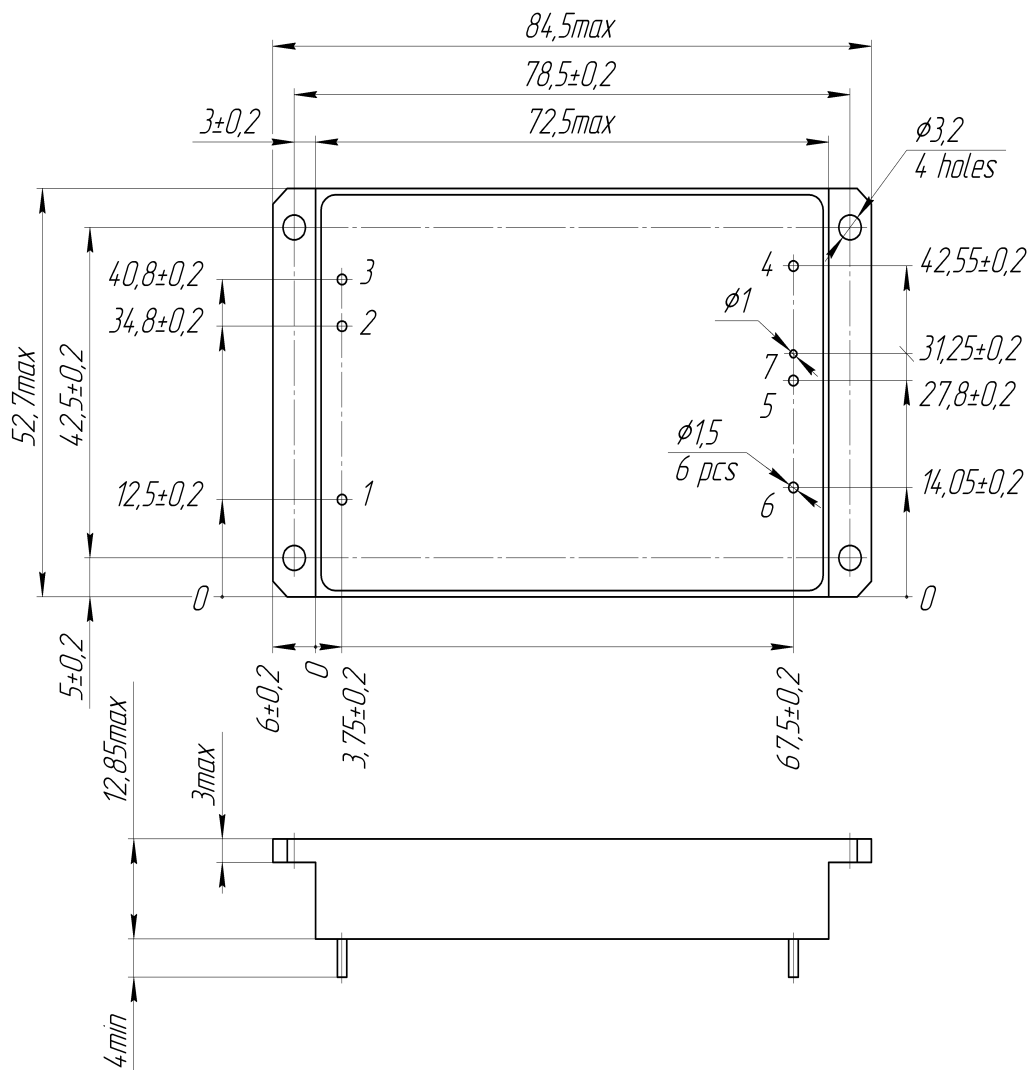
Dropping parts of the dashed and dash-dotted curves are in accordance with the **maximum temperature of the case**. Output power must not exceed the values which are limited by corresponding curve for a given ambient temperature.

At points ◆, ■ and ▲ simultaneously present several extreme worst-case conditions, such as the combination of maximum case temperature and maximum output power. Continuous module operation at these points should be avoided.

Pin out

| Nº Pin | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---------------|-----|-----|----|------|-------|------|-----|
| Single output | +IN | -IN | ON | CASE | + OUT | -OUT | ADJ |

Single output model with flanges (V case type)



Certificates

Certificate ISO*
CE conformity declaration

*Management system of Alexander Electric is ISO certified

Note

The label with sign "remove before use" can be placed on the top surface of the module and must be removed before installation.

Please, note that all information in this material is for reference only. Further detailed information (including: additional requirements, manuals and circuit schemes) is found on our website <http://www.teslaelectric-eu.com>.

Contact information

<http://www.teslaelectric-eu.com>, e-mail: contact@teslaelectric-eu.com, phone/fax: +420 266 107 303

According to company's policy in view of constant improvements of the production design the manufacturer reserves the right to itself change the contents of promotional materials without prior notification.