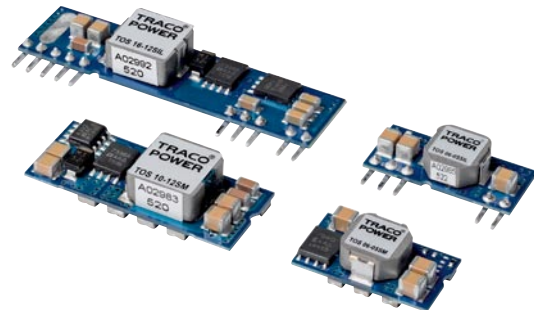




Features

- ◆ Small Size, low Profile
- ◆ SMT package or SIP version
- ◆ Cost-efficient open Frame Design
- ◆ Wide Input Voltage Ranges
- ◆ Output Voltages trim from 0.75VDC to 5.0VDC
- ◆ Delivers up to 16A with minimal derating
- ◆ Ultra high Efficiency to 96%
- ◆ Fast Transient Response
- ◆ Remote On/Off Control
- ◆ Wide Temperature Range(-40°C to 85°C)
- ◆ SMT Package fully DOSA compatible
- ◆ Lead free Design – RoHS compliant



The TOS series is a range of high performance non-isolated dc-dc converters With very high efficiency that can supply up to 16A of output current. These modules provide precisely regulated output voltages which can be set via an external resistor to a value from 0.75 VDC to 5.0VDC. These converters work over a wide input voltage range of 2.4 to 5.5VDC or 8.3 to 14.0VDC. Further features include remote On/Off, under voltage lockout, over temperature and over current protection. These products have an open-frame construction with very small footprint and are available in an industry standard SIP or in a SMT package. The TOS series is fully RoHS compliant and can withstand industry standard handling, cleaning and the high temperatures of lead-free reflow solder processes.

Models

| Order code SMT-version | Input voltage range | Output voltage range | Output current max. | Efficiency typ. |
|---------------------------|---------------------|----------------------|---------------------|-----------------|
| TOS 06-05SM | 2.4 – 5.5 VDC | 0.75 – 3.3 VDC* | 6 A | 94 % |
| TOS 10-05SM | | | 10 A | 93 % |
| TOS 16-05SM | | | 16 A | 95 % |
| TOS 06-12SM | 8.3 – 14.0 VDC | 0.75 – 5.0 VDC | 6 A | 89 % |
| TOS 10-12SM | | | 10 A | 93 % |
| TOS 16-12SM | | | 16 A | 92 % |
| SIL-version | | | | |
| TOS 06-05SIL | 2.4 – 5.5 VDC | 0.75 – 3.3 VDC* | 6 A | 94 % |
| TOS 10-05SIL | | | 10 A | 93 % |
| TOS 16-05SIL | | | 16 A | 95 % |
| TOS 06-12SIL | 8.3 – 14 VDC | 0.75 – 5.0 VDC | 6 A | 89 % |
| TOS 10-12SIL | | | 10 A | 93 % |
| TOS 16-12SIL | | | 16 A | 92 % |

* Max output voltage to be adjusted min. 0.5 VDC below impressed input voltage

Input Specifications

| | | |
|---|---------------------------------------|---|
| Input current no load | – Vin 5 VDC (at Vout min./Vout max.) | 6 A models: 20 mA / 45 mA typ. 10 A models: 25 mA / 30 mA typ. 16 A models: 25 mA / 40 mA typ. |
| | – Vin 12 VDC (at Vout min./Vout max.) | 6 A models: 17 mA / 100 mA typ. 10 A models: 40 mA / 100 mA typ. 16 A models: 40 mA / 100 mA typ. |
| Stand by input current (at remote Off) | | 6 A models: 1 mA typ. 10 A/16 A models: 2 mA typ. |
| Max. input current | – Vin 5 VDC | 6 A models: 6 A 10 A models: 10 A 16 A models: 16 A |
| | – Vin 12 VDC | 6 A models: 4.5 A 10 A models: 7 A 16 A models: 10 A |
| Start up voltage / under voltage lockout | | 5 Vin models: 2.2 VDC / 2.0 VDC typ. 12 Vin models: 7.9 VDC / 7.8 VDC typ. |
| Start up time (power/remote On till Vout set) | | 8 mS typ. |
| Reflected ripple current (with input filter) | – Vin 5 VDC | 6 A models: 35 mA typ. 10 A / 16 A models: 100 mA typ. |
| | – Vin 12 VDC | 6 A models: 30 mA typ. 10 A models: 20 mA typ. 16 A models: 20 mA typ. |
| Input filter external (recommended) | | 2 x 150 µF low ESR polymer capacitors and 2 x 47 µF ceramic capacitors |

Output Specifications

| | | |
|--|--|---|
| Voltage set accuracy | | ± 2 % max. (see page 3 for set up) |
| Voltage balance (dual output models) | | ± 1 % max. |
| Regulation | – Input variation | ± 0.3 % max. |
| | – Load variation 0 – 100 % | ± 0.4 % max. |
| Dynamic load response max. peak variation / response time | – 50% load change (upper half) with external 1 µF ceramic- and 10 µF tantalum capacitors | |
| | Vin 5 VDC, 6 A models: | 130 mV / 60 µS typ. |
| | Vin 12 VDC, 6 A models: | 200 mV / 35 µS typ. |
| | Vin 5 VDC, 10 A models: | 200 mV / 25 µS typ. |
| | Vin 12 VDC, 10 A models: | 200 mV / 25 µS typ. |
| | Vin 5 VDC, 16 A models: | 300 mV / 25 µS typ. |
| | Vin 12 VDC, 16 A models: | 200 mV / 25 µS typ. |
| | – 50% load change (upper half) with external 2 x 150 µF polymer capacitors | |
| | Vin 5 VDC, 6 A models: | 50 mV / 100 µS typ. |
| | Vin 12 VDC, 6 A models: | 50 mV / 50 µS typ. |
| Vin 5 VDC, 10 A models: | 100 mV / 100 µS typ. | |
| Vin 12 VDC, 10 A models: | 100 mV / 25 µS typ. | |
| Vin 5 VDC, 16 A models: | 150 mV / 100 µS typ. | |
| Vin 12 VDC, 16 A models: | 100 mV / 50 µS typ. | |
| Ripple and noise (20 MHz Bandwidth) | | 5 Vin models: 50 mV pk-pk max. 12 Vin models: 75 mV pk-pk max. |
| Temperature coefficient | | ±0.4% typ. |
| Over current protection | | at 200% of Iout max. typ. |
| Short circuit protection | | indefinite, automatic recovery |
| Capacitive load | – ESR < 1 mOhm | 1000 µF max. |
| | – ESR < 10 mOhm | 6 A models: 3000 µF max. 10 A / 16 A models: 5000 µF max. |

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

General Specifications

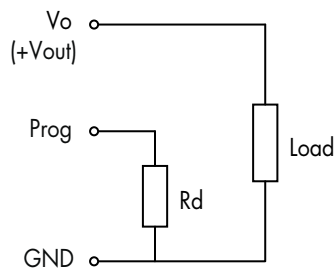
| | | |
|---|------------------------------------|--|
| Temperature ranges | - Operating - Storage | -40 °C ... +85 °C -55 °C ... +125 °C |
| Derating | | derating graphs will be published soon. For specific demand ask factory. |
| Over temperature protection | | @ 125°C typ. |
| Humidity (non condensing) | | 95 % rel H max. |
| Reliability, calculated MTBF (Bellcore TR-NWT-000332) | 6 A models: 10 A / 16 A models: | >20 mio. h @ 40 °C >14 mio. h @ 40 °C |
| Switching frequency | | 300 kHz typ. (pulse width modulation - PWM) |
| Remote On/Off (reference to GND) | | On: 1 VDC ... Vin max. or open circuit. Off: 0 ... 0.3 VDC |

Physical Specifications

| | | |
|-------------------|------------------------------------|---|
| Weight | 6 A models: 10 A / 16 A models: | 2.8 g 6 g |
| Soldering profile | - SIL - Version - SMT - Version | max. 265 °C / 10 sec. (wave soldering) peak temp. 245°C for 10 sec. max., 217°C for 90 sec. max. (Convection reflow solder process is recommended) |

Full instruction manual can be downloaded under:
www.tracopower.com/products/tos_application.pdf

Output Voltage Adjustment



5 VDC input models: $R_d [\text{Ohm}] = \frac{21070}{V_o - 0.7525} - 5110$

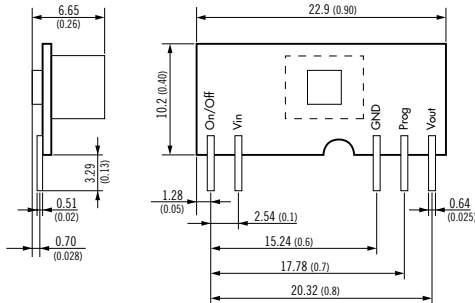
12 VDC input models: $R_d [\text{Ohm}] = \frac{10570}{V_o - 0.7525} - 1000$

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

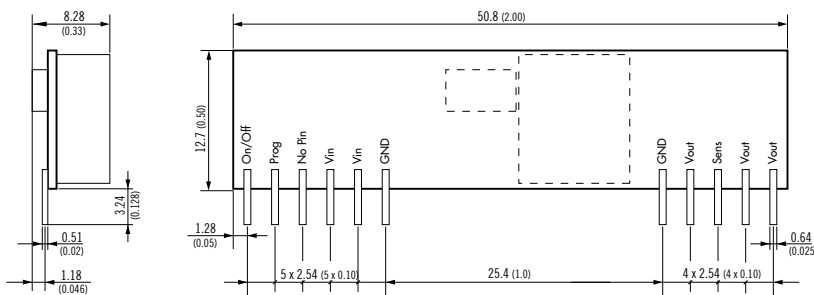
Outline Dimensions mm (inches)

Single-in-Line (SIL-Version)

6 A output Models

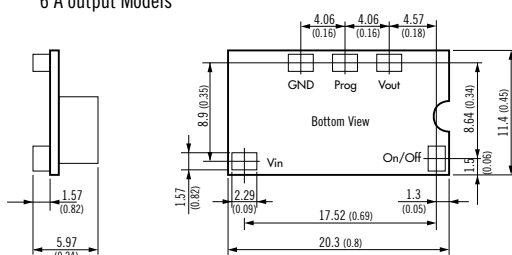


10A & 16A output models

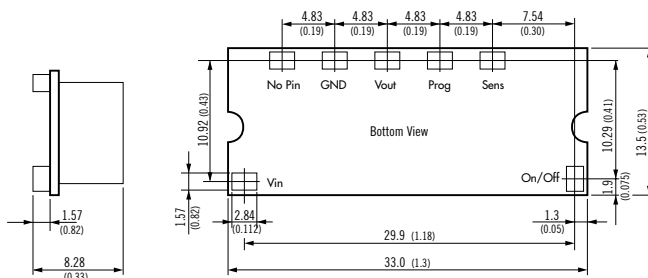


Surface Mount (SMT-Version)

6 A output Models



10A & 16A output models



Specifications can be changed any time without notice