

Features

- ◆ Ultrawide 4 : 1 input range
- ◆ Full SMD-design
- ◆ Input filter meets EN 55022, Class A and FCC, level A without external components
- ◆ Indefinite short circuit protection
- ◆ Overvoltage protection
- ◆ I/O isolation 1500 VDC
- ◆ Extended temperature operating range -40°C to 85°C
- ◆ Remote On/Off (optional)
- ◆ Insulated baseplate
- ◆ Industry standard pinout
- ◆ 3-year product warranty



The TEN 12WI series is a family 12W DC/DC converter modules featuring ultra wide 4:1 input voltage ranges in a compact 2"x1.0" low profile package with industry-standard footprint.

A high efficiency up to 84% allows operating temperatures from -40°C to +85°C. A built-in EMI input filter complies with EN 55022, class A without any external components.

Further standard features include remote On/Off (optional), over voltage protection and continuous short-circuit protection.

Typical applications for these converters are battery operated equipment and distributed power architectures in communication and industrial electronics, everywhere where isolated, tightly regulated voltages are required.

Models

| Ordercode | Input voltage range | Output voltage | Output current max. | Efficiency typ. |
|-------------|---------------------------------|----------------|---------------------|-----------------|
| TEN 12-2410 | 9 – 36 VDC (24 VDC nominal) | 3,3 VDC | 2'400 mA | 78 % |
| TEN 12-2411 | | 5 VDC | 2'000 mA | 82 % |
| TEN 12-2412 | | 12 VDC | 1'000 mA | 84 % |
| TEN 12-2413 | | 15 VDC | 800 mA | 84 % |
| TEN 12-2421 | | ±5 VDC | ±1'000 mA | 82 % |
| TEN 12-2422 | | ±12 VDC | ±500 mA | 84 % |
| TEN 12-2423 | | ±15 VDC | ±400 mA | 84 % |
| TEN 12-4810 | 18 – 75 VDC (48 VDC nominal) | 3,3 VDC | 2'400 mA | 78 % |
| TEN 12-4811 | | 5 VDC | 2'000 mA | 82 % |
| TEN 12-4812 | | 12 VDC | 1'000 mA | 84 % |
| TEN 12-4813 | | 15 VDC | 800 mA | 84 % |
| TEN 12-4821 | | ±5 VDC | ±1'000 mA | 82 % |
| TEN 12-4822 | | ±12 VDC | ±500 mA | 84 % |
| TEN 12-4823 | | ±15 VDC | ±400 mA | 84 % |

Input Specifications

| | | |
|--------------------------------|--|--|
| Input current (no load) | 24 Vin models 48 Vin models | 40 mA typ. 20 mA typ. |
| Input current (full load) | 24 Vin; 24 Vin; 24 Vin; 48 Vin; 48 Vin; 48 Vin; | 3.3 Vout models: 425 mA typ. 5 & ±5 Vout models: 510 mA typ. other output models: 600 mA typ. 3.3 Vout models: 215 mA typ. 5 & ±5 Vout models: 255 mA typ. other output models: 300 mA typ. |
| Surge voltage (1 sec. max.) | 24 Vin models 48 Vin models | 42 V max.. 84 V max. |
| Reverse voltage protection | | 1.0 A max. |
| Conducted noise (input) | | EN 55022 level A, FCC part 15, level A |

Output Specifications

| | | |
|-------------------------------------|--|---------------------------------|
| Voltage set accuracy | | ±1 % |
| Regulation | - Input variation Vin min. to Vin max. - Load variation 10 – 90 % | ±0.5 % max. ±0.5 % max. |
| Ripple and noise (20 MHz Bandwidth) | | 50 mVpk-pk typ. |
| Temperature coefficient | | ±0.02 %/K |
| Output current limitation | | >110% of Iout max. foldback |
| Short circuit protection | | indefinite (automatic recovery) |
| Capacitive load | - single output models - dual output models | 470 µF max. 100 µF max. |

General Specifications

| | | |
|---|--|--|
| Temperature ranges | - Operating - Case temperature - Storage | -40°C to +85°C +100°C max. -55°C to +125°C |
| Derating above 60°C | | 2 %/K |
| Humidity (non condensing) | | 95 % rel H max. |
| Reliability, calculated MTTF (MIL-HDBK-217F, @+25°C, ground benign) | | >700'000 h |
| Isolation voltage (60 sec.) | - Input/Output | 1'500 VDC |
| Isolation capacity | - Input/Output | 200 pF typ |
| Isolation resistance | - Input/Output (500 VDC) | >1'000 M Ohm |
| Switching frequency (fixed) | | 400 kHz typ. (pulse width modulation PWM) |
| Remote On/Off (optional): | - On: - Off: - Off idle current: | 2.5 ... 5.5 VDC or open circuit. 0 ... 0.8 VDC or short circuit pin 2 and pin 6 10 mA max. |
| Safety standards: | | UL 1950, IEC / EN 60950 compliance up to 60 VDC input voltage (SELV limit) |
| Safety approvals | - UL/cUL | www.ul.com -> certifications -> File: E188913 |

Physical Specifications

| | | |
|-----------------------|--|----------------------------------|
| Case material | | steel, nickel plated |
| Baseplate | | non conductive FR4 |
| Potting material | | silicon rubber (UL 94 V-0 rated) |
| Weight | | 30 g (1.2 oz) |
| Soldering temperature | | max. 265 °C / 10 sec. |

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

