

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 TEN 12-2411 TEN 12-2412 TEN 12-2413 TEN 12-2421 TEN 12-2422 TEN 12-2423	9 – 36 VDC	3,3 VDC 5 VDC 12 VDC 15 VDC ± 5 VDC ± 12 VDC ± 15 VDC	2'400 mA 2'000 mA 1'000 mA 800 mA ± 1'000 mA ± 500 mA ± 400 mA	78 % 82 % 84 % 84 % 82 % 84 % 84 %
TEN 12-4810 TEN 12-4811 TEN 12-4812 TEN 12-4813 TEN 12-4821 TEN 12-4822 TEN 12-4823	18 – 75 VDC	3,3 VDC 5 VDC 12 VDC 15 VDC ± 5 VDC ± 12 VDC ± 15 VDC	2'400 mA 2'000 mA 1'000 mA 800 mA ± 1'000 mA ± 500 mA ± 400 mA	78 % 82 % 84 % 84 % 82 % 84 % 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; 3.3 Vout models: 24 Vin; 5 & ± 5 Vout models: 24 Vin; other output models: 48 Vin; 3.3 Vout models: 48 Vin; 5 & ± 5 Vout models: 48 Vin; other output models:	425 mA typ. 510 mA typ. 600 mA typ. 215 mA typ. 255 mA typ. 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		$\pm 1 \%$
Regulation	– Input variation Vin min. to Vin max. – Load variation 10 – 90 %	$\pm 0.5 \%$ max. $\pm 0.5 \%$ max.
Ripple and noise (20 MHz Bandwidth)		50 mVpk-pk typ.
Temperature coefficient		$\pm 0.02 \%$ / K
Output current limitation		>110% of Iout max. foldback
Short circuit protection		indefinite (automatic recovery)
Capacitive load	– single output models – dual output models	470 μ F max. 100 μ F max.

General Specifications

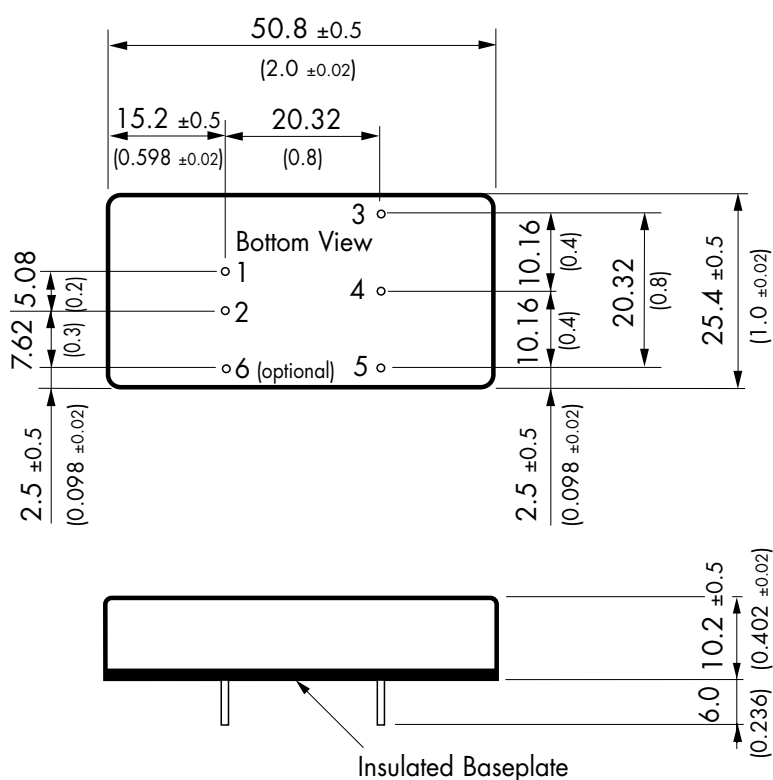
Temperature ranges	– Operating – Case temperature – Storage	– 40 °C ... + 85 °C + 100 °C max. – 55 °C ... + 125 °C
Derating above 60°C		2% / K
Humidity (non condensing)		95 % rel H max.
Reliability, calculated MTBF (MIL-HDBK-217 E)		> 700'000 h @ +25 °C
Isolation voltage	Input/Output	1'500 VDC
Isolation 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, EN 60950, IEC 60950 Compliance up to 60 VDC input voltage (SELV limit)
Safety approvals:		cUL/UL File E188913

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

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. 260 °C / 10 sec.

Outline Dimensions mm (inches)



Pin diameter $\varnothing 1.0 \pm 0.05$ (0.039) ± 0.002

Pin-Out		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	−Vin (GND)	−Vin (GND)
3	+Vout	+Vout
4	No pin	Common
5	−Vout	−Vout
6	Remote on/off (option)	Remote on/off (option)

Specifications can be changed without notice