

Features

- Ultrawide 4 : 1 Input Range
9 – 36 VDC and 18 – 75 VDC
- 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
- 2" x 1" Metal Package
- Insulated Baseplate
- Industry Standard Pinout
- 2 Year Product Warranty



The TEN 12 series of DC/DC converters has been designed for a wide range of applications including communications, industrial systems and battery powered mobile equipments. Key features are high power density (12W in a 2" x 1" x 0.4" package) and ultrawide input ranges of 9– 36 VDC and 18 – 75 VDC. Other features of this converter are internal filtering according to EN 55022, level A, safety approval to EN 60950 and UL 1950, wide operating temperature range and remote on/off (opt.).

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	2'400 mA	78 %
		5 VDC	2'000 mA	82 %
		12 VDC	1'000 mA	84 %
		15 VDC	800 mA	84 %
		± 5 VDC	± 1'000 mA	82 %
		± 12 VDC	± 500 mA	84 %
		± 15 VDC	± 400 mA	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	2'400 mA	78 %
		5 VDC	2'000 mA	82 %
		12 VDC	1'000 mA	84 %
		15 VDC	800 mA	84 %
		± 5 VDC	± 1'000 mA	82 %
		± 12 VDC	± 500 mA	84 %
		± 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; 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		$\pm 0.02 \%$ / °C
Output current limitation		>110% of Iout max. foldback
Short circuit protection		Hiccup mode, indefinite (automatic recovery)
Capacitive load	– single output models – dual output models	470 μ F max. 100 μ F max.

General Specifications

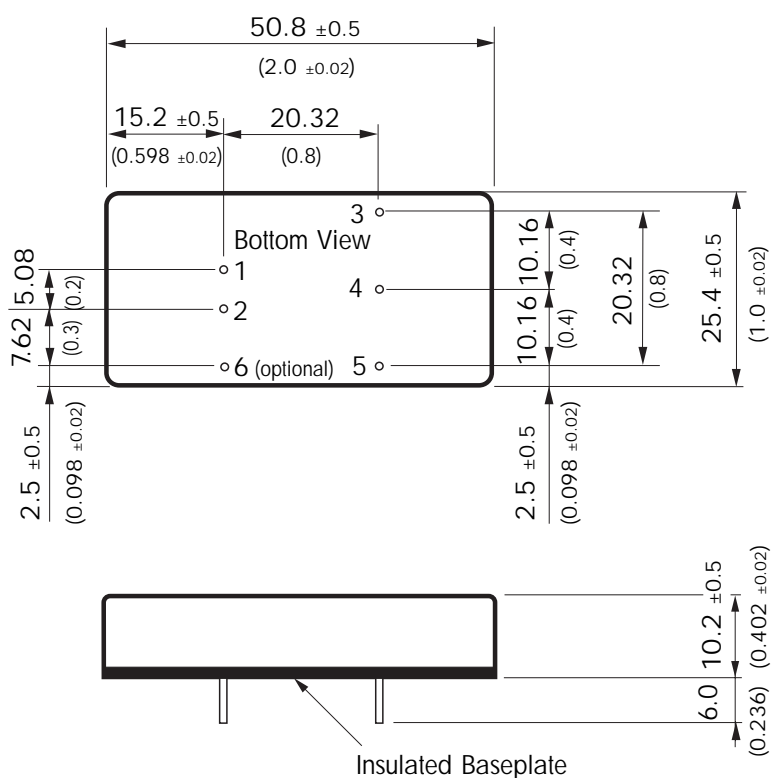
Temperature ranges	– Operating – Case temperature – Storage	– 40 °C ... + 60 °C + 95 °C max. – 40 °C ... + 125 °C
Derating		above 60°C: 3% /°C
Humidity (non condensing)		95 % rel H max.
Reliability, calculated MTBF (MIL-HDBK-217 E)		> 700'000 h @ +25 °C
Isolation voltage	Input/Output	1'500 VDC
Isolation 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 chrome-nickel plated
Baseplate	Epoxy
Potting material	Silicon rubber (flammability to UL 94 V-0)
Weight	30 g (1.2 oz)
Soldering temperature	max. 250 °C / 10 sec.

Outline Dimensions mm (inches)



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)

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

Specifications can be changed without notice