

Features

- Wide 2 : 1 Input Range
- Very High Efficiency up to 89%
- Operating Temp. Range
– 40°C to +71°C
- Continuous Short-Circuit Protection
- Over Voltage Protection
- I/O-Isolation 1500 VDC
- Input Filter meets EN 55022, Class A and FCC, Level A without external Components
- Industry Standard Pinout
- Low Profile
- Six-side Shielded Metal Case with insulated Baseplate
- 2 Year Product Warranty



The TEN 25 series is a new range of isolated DC/DC converters with high power density in a 50x40x9.3mm shielded metal case. All 18 models have a wide 2:1 input voltage range. The very high efficiency allows a safe operating temperature range of -40°C to +71°C. Other features are internal EMI-filter to meet EN55022, classA and Remote ON/OFF. Typical applications for these converter modules are industrial electronics, communication systems, battery operated equipment and distributed power systems.

Models

Ordercode	Input voltage range	Output voltage	Output current max.	Efficiency typ.
TEN 25-1210 TEN 25-1211 TEN 25-1212 TEN 25-1213 TEN 25-1222 TEN 25-1223	9 – 18 VDC	3,3 VDC	5'500 mA	81 %
		5 VDC	5'000 mA	84 %
		12 VDC	2'500 mA	88 %
		15 VDC	2'000 mA	88 %
		± 12 VDC	± 1'250 mA	88 %
		± 15 VDC	± 1'000 mA	88 %
TEN 25-2410 TEN 25-2411 TEN 25-2412 TEN 25-2413 TEN 25-2422 TEN 25-2423	18 – 36 VDC	3,3 VDC	5'500 mA	82 %
		5 VDC	5'000 mA	85 %
		12 VDC	2'500 mA	89 %
		15 VDC	2'000 mA	89 %
		± 12 VDC	± 1'250 mA	89 %
		± 15 VDC	± 1'000 mA	89 %
TEN 25-4810 TEN 25-4811 TEN 25-4812 TEN 25-4813 TEN 25-4822 TEN 25-4823	36 – 75 VDC	3,3 VDC	5'500 mA	82 %
		5 VDC	5'000 mA	85 %
		12 VDC	2'500 mA	89 %
		15 VDC	2'000 mA	89 %
		± 12 VDC	± 1'250 mA	89 %
		± 15 VDC	± 1'000 mA	89 %

Input Specifications

Input current no load	12 Vin models: 24 Vin models: 48 Vin models:	40 mA max. 20 mA max. 10 mA max.
Input current (full load)	12 Vin; 3.3 / 5 Vout models: 12 Vin; other output models: 24 Vin; 3.3 / 5 Vout models: 24 Vin; other output models: 48 Vin; 3.3 / 5 Vout models: 48 Vin; other output models:	1870 mA typ. / 2480 mA typ. 2840 mA typ. 920 mA typ. / 1220 mA typ. 1400 mA typ. 460 mA typ. / 610 mA typ. 700 mA typ.
Start-up voltage / under voltage shut down	12 Vin models: 24 Vin models: 48 Vin models:	8.8 VDC / 8.3 VDC (typ.) 17.5 VDC / 16.5 VDC (typ.) 35.0 VDC / 33.0 VDC (typ.)
Surge voltage (1000 msec. max.)	12 Vin models: 24 Vin models: 48 Vin models:	25 V max. 50 V max.. 100 V max.
Conducted noise (input)	EN 55022 class A, FCC part 15, level A	

Output Specifications

Voltage set accuracy	$\pm 1 \%$	
Output voltage adj. range	$\pm 10\%$	
Regulation	– Input variation Vin min. to Vin max. – Load variation 10 – 100 % – single output models – dual output models balanced load – dual output models unbalanced load	$\pm 0.3 \%$ max. $\pm 0.5 \%$ max. $\pm 1.0 \%$ max. $\pm 2.0 \%$ max.
Ripple and noise (20 MHz Bandwidth)	80 mVpk-pk max.	
Temperature coefficient	$\pm 0.02 \%/^{\circ}\text{C}$ max.	
Output current limitation	> 110% of Iout max., constant current	
Short circuit protection	hiccup mode, indefinite (automatic recovery)	
Capacitive load	3.3 & 5 Vout models: 12 & 15 Vout models: dual output models:	10'000 μF 1'000 μF 330 μF

General Specifications

Temperature ranges	– Operating – Case temperature – Storage	– 40 °C ... + 71 °C + 100 °C max. – 55 °C ... + 125 °C
Derating	2% / °C above 50 °C	
Humidity (non condensing)	95 % rel H max.	
Reliability, calculated MTBF (MIL-HDBK-217 E)	> 1'000'000 h @ + 25 °C	
Isolation voltage	– Input / Output	1'500 VDC
Isolation capacity	– Input / Output	1200 pF typ.
Isolation resistance	– Input / Output (500 VDC)	> 1'000 MOhm
Switching frequency (fixed)	330 kHz typ. (puls width modulation)	

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

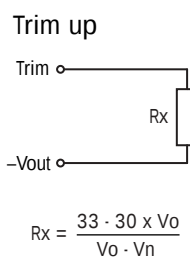
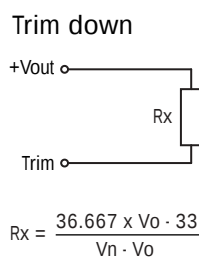
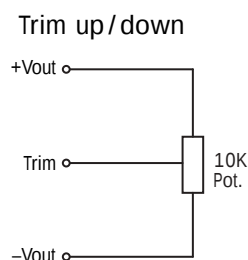
General Specifications

Remote ON/OFF:	– ON: 2.5...100 VDC or open circuit. – OFF: -1.0...1.0 VDC or short circuit pin 4 and pin 2 – Standby current: 5 mA max.
Safety standards	UL /cUL 60950, IEC/EN 60950 compliance up to 60 VDC input voltage (SELV limit)
Safety approvals	UL /cUL pending

Physical Specifications

Case material	metal
Baseplate	non conductive plastic
Potting material	silicon rubber (UL 94 V-0 rated)
Weight	48g (1.69oz)
Soldering temperature	max. 250 °C / 10 sec.

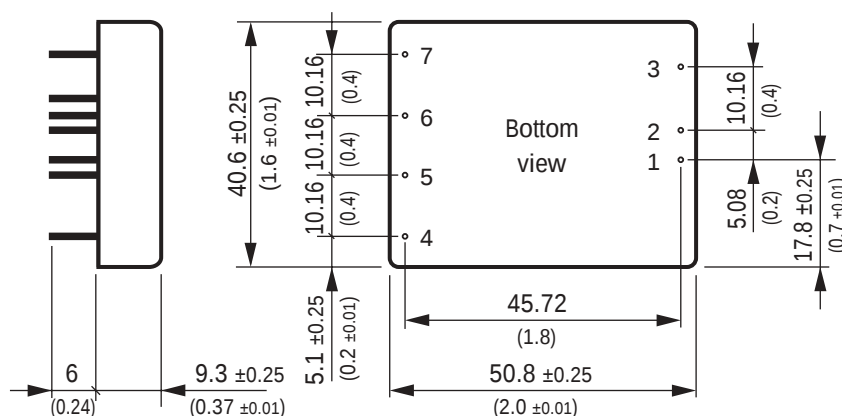
Output Voltage Adjustment



V_o = adjusted output voltage [VDC]
 V_n = nominal output voltage [VDC]
 R_x = trim resistor [ohm]

Nominal output voltage at open Trim input.

Outline Dimensions mm (inches)



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

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

Specifications can be changed without notice