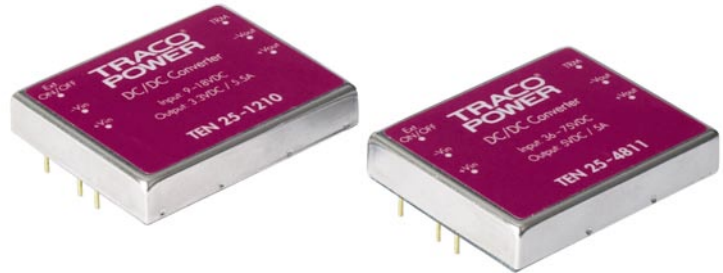




#### Features

- ◆ Wide 2:1 Input Range
- ◆ Very high Efficiency up to 89%
- ◆ Extended Operating Temperature
- ◆ Range -40°C to +85°C
- ◆ Adjustable Output Voltage
- ◆ Remote On/Off
- ◆ 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
- ◆ Lead free Design - RoHS compliant
- ◆ 3 Year Product Warranty



The TEN 25 series is a range of isolated DC/DC converters with high power density in a 51x41x9.5mm 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 +85°C. Other features are internal EMI-filter to meet EN55022, class A 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	9 – 18 VDC	3.3 VDC	5'500 mA	81 %
TEN 25-1211		5 VDC	5'000 mA	84 %
TEN 25-1212		12 VDC	2'500 mA	88 %
TEN 25-1213		15 VDC	2'000 mA	88 %
TEN 25-1222		± 12 VDC	± 1'250 mA	88 %
TEN 25-1223		± 15 VDC	± 1'000 mA	88 %
TEN 25-2410	18 – 36 VDC	3.3 VDC	5'500 mA	82 %
TEN 25-2411		5 VDC	5'000 mA	85 %
TEN 25-2412		12 VDC	2'500 mA	89 %
TEN 25-2413		15 VDC	2'000 mA	89 %
TEN 25-2422		± 12 VDC	± 1'250 mA	89 %
TEN 25-2423		± 15 VDC	± 1'000 mA	89 %
TEN 25-4810	36 – 75 VDC	3,3 VDC	5'500 mA	82 %
TEN 25-4811		5 VDC	5'000 mA	85 %
TEN 25-4812		12 VDC	2'500 mA	89 %
TEN 25-4813		15 VDC	2'000 mA	89 %
TEN 25-4822		± 12 VDC	± 1'250 mA	89 %
TEN 25-4823		± 15 VDC	± 1'000 mA	89 %

### Input Specifications

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

### Output Specifications

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

### General Specifications

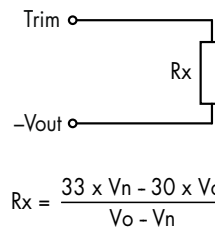
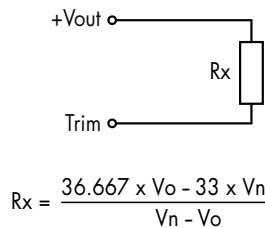
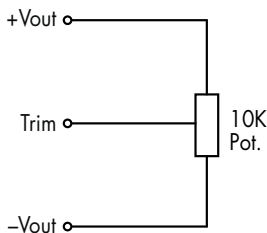
Temperature ranges	– Operating –40 °C ... +85 °C – Case temperature +100 °C max. – Storage –55 °C ... +125 °C
Load derating	2.5%/K above 60°C
Humidity (non condensing)	95 % rel H max.
Reliability, calculated MTBF (MIL-HDBK-217 E)	> 1'000'000 h @ +25 °C
Isolation voltage (60 sec.)	– Input/Output 1'500 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)
Remote On/Off:	– On: 2.5...100 VDC or open circuit. – Off: –0.7...1.0 VDC or short circuit pin 3 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	CSA (File no.: 226037)

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

**Physical Specifications**

Case material	copper, nickel plated
Baseplate	non conductive FR4
Potting material	silicon rubber (UL 94 V-0 rated)
Weight	48g (1.69oz)
Soldering temperature	max. 265°C / 10 sec.

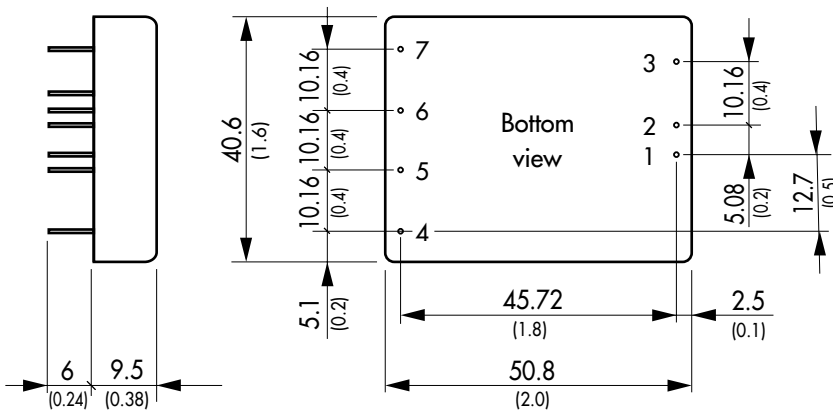
**Output Voltage Adjustments**



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

Nominal output voltage at open Trim input.

**Outline Dimensions**



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

Dimensions in [mm], ( ) = Inch  
 Pin diameter: 1.0 ±0.05 (0.04 ±0.002)  
 Pin pitch tolerances: ±0.25 (±0.01)  
 Case tolerances: ±0.5 (±0.02)

Specifications can be changed any time without notice