Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

DC/DC Converters

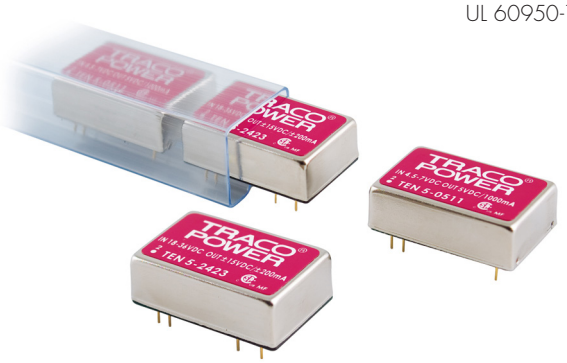
TEN 5 Series, 6 Watt

CB Scheme c SA us

UL 60950-1

Features

- Wide 2:1 input range
- Full SMD-design
- High efficiency up to 86%
- Extended operating temperature range –40°C to 85°C
- I/O isolation 1'500 VDC
- Indefinite short circuit protection
- Input filter to meet EN 55022, class A and FCC, level A without external components
- Shielded metal case with insulated baseplate
- 24-pin DIP with industry standard pinout
- High reliability, MTBF >1 Mio. h
- 3-year product warranty



The TEN 5 Series is a range of DC/DC-converter modules with wide input range of 2:1. State of the art SMD-technology guarantees a product with very high reliability and good cost /performance ratio. I/O-isolation of 1'500 VDC together with conducted noise compliance to EN 55022-A and FCC level A makes these converters ideal for a wide range of applications in communications, mobile battery powered equipments and industrial systems.

Models

Ordercode	Input voltage range	Output voltage	Output current max.	Efficiency typ.
TEN 5-0510	4.5 – 7 VDC (5 VDC nominal)	3.3 VDC	1200 mA	75 %
TEN 5-0511		5 VDC	1000 mA	79 %
TEN 5-0512		12 VDC	500 mA	82 %
TEN 5-0513		15 VDC	400 mA	82 %
TEN 5-0521		±5 VDC	±500 mA	79 %
TEN 5-0522		±12 VDC	±250 mA	82 %
TEN 5-0523		±15 VDC	±200 mA	82 %
TEN 5-1210	9 – 18 VDC (12 VDC nominal)	3.3 VDC	1200 mA	77 %
TEN 5-1211		5 VDC	1000 mA	81 %
TEN 5-1212		12 VDC	500 mA	84 %
TEN 5-1213		15 VDC	400 mA	84 %
TEN 5-1221		±5 VDC	±500 mA	81 %
TEN 5-1222		±12 VDC	±250 mA	84 %
TEN 5-1223		±15 VDC	±200 mA	84 %
TEN 5-2410	18 – 36 VDC (24 VDC nominal)	3.3 VDC	1200 mA	79 %
TEN 5-2411		5 VDC	1000 mA	83 %
TEN 5-2412		12 VDC	500 mA	86 %
TEN 5-2413		15 VDC	400 mA	86 %
TEN 5-2421		±5 VDC	±500 mA	83 %
TEN 5-2422		±12 VDC	±250 mA	86 %
TEN 5-2423		±15 VDC	±200 mA	86 %
TEN 5-4810	36 – 75 VDC (48 VDC nominal)	3.3 VDC	1200 mA	79 %
TEN 5-4811		5 VDC	1000 mA	83 %
TEN 5-4812		12 VDC	500 mA	86 %
TEN 5-4813		15 VDC	400 mA	86 %
TEN 5-4821		±5 VDC	±500 mA	83 %
TEN 5-4822		±12 VDC	±250 mA	86 %
TEN 5-4823		±15 VDC	±200 mA	86 %

Input Specifications

Input current no load	5 Vin models:	80 mA typ.
	12 Vin models:	30 mA typ.
	24 Vin models:	15 mA typ.
	48 Vin models:	8 mA typ.
Start-up voltage / under voltage shut down	5 Vin models:	4.4 VDC / 4.0 VDC (or lower)
	12 Vin models:	8.0 VDC / 8.0 VDC (or lower)
	24 Vin models:	16.0 VDC / 16.0 VDC (or lower)
	48 Vin models:	32.0 VDC / 32.0 VDC (or lower)
		long term operation at undervoltage will demage the converter!
Surge voltage (1 sec. max.)	5 Vin models:	10 V max.
	12 Vin models:	25 V max.
	24 Vin models:	50 V max.
	48 Vin models:	100 V max.
Reverse voltage protection		1.0 A max.
Conducted noise (input)		EN 55022 class A, FCC part 15, level A

Output Specifications

Voltage set accuracy		1.0 %
Regulation	– Input variation Vin min. to Vin max.	0.3 % max.
	– Load variation 20 – 100 %	
	single output models:	1.0 % max.
	dual output models balanced load:	2.0 % max.
	dual output models unbalanced load:	5.0 % max. (25 % / 100 %)
Minimum load		5 % of rated max current (operation at lower load condition is safe but a higher output ripple will be experienced)
Ripple and noise (20 MHz Bandwidth)		50 mVpk-pk typ., 75 mVpk-pk max.
Temperature coefficient		±0.02 %/K
Output current limitation		>120 % of Iout max., foldback
Short-circuit protection		indefinite (automatic recovery)
Start up time (nominal Vin and constant resistive load)		10 ms typ. (for power on and remote on)
Capacitive load	single output models:	6800 µF max.
	dual output models:	1000 µF max. (each output)

General Specifications

Temperature ranges	– Operating	–40°C to +85°C
	– Case temperature	+90°C max.
	– Storage	–50°C to +125°C
Derating		3.3 %/K above 70°C
Humidity (non condensing)		95 % rel H max.
Reliability, calculated MTBF (MIL-HDBK-217F, at +25°C, ground benign)		>1 Mio. h
Isolation voltage (60 sec.)	– Input/Output	1'500 VDC
Isolation capacitance	– Input/Output	380 pF typ.
Isolation resistance	– Input/Output	>1'000 M Ohm (500 VDC)
Switching frequency		300 kHz typ. (Pulse frequency modulation PFM)
Safety standards		UL 60950-1, IEC/EN 60950-1
Environmental compliance	– Reach	www.tracopower.com/info/reach-declaration.pdf
	– RoHS	directive 2011/65/EU

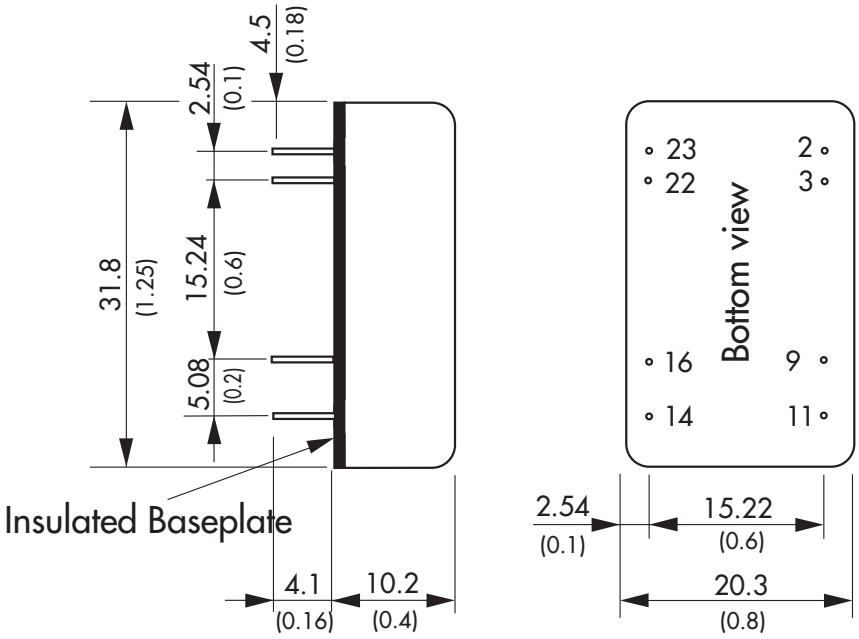
All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

Physical Specifications

Casing material	steel, metal
Baseplate material	non conductive FR4
Potting material	epoxy (UL 94V-0 rated)
Weight	16.9 g (0.59 oz)
Soldering temperature	max. 260°C / 10 sec.

Supporting documents: www.tracopower.com/overview/ten5

Outline Dimensions



Pin-Out		
Pin	**Single**	**Dual**
2	–Vin (GND)	–Vin (GND)
3	–Vin (GND)	–Vin (GND)
9	No pin	Common
11	No con.	–Vout
14	+Vout	+Vout
16	–Vout	Common
22	+Vin (Vcc)	+Vin (Vcc)
23	+Vin (Vcc)	+Vin (Vcc)

Dimensions in [mm], () = Inch
Pin diameter ø 0.5 ±0.05 (0.02 ±0.002)
Tolerances ±0.25 (±0.01)
Pin pitch tolerances ±0.13 (±0.005)