Input Specifications

Input Current	- At no load	12 Vin models:	40 mA typ.
		24 Vin models:	20 mA typ.
		48 Vin models:	10 mA typ.
	- At full load	12 Vin models:	440 mA max. (3.3 Vout model)
			610 mA max. (5 Vout model)
			610 mA max. (12 Vout model)
			610 mA max. (15 Vout model)
			610 mA max. (24 Vout model)
			530 mA max. (5 / -5 Vout model)
			610 mA max. (12 / -12 Vout model)
			610 mA max. (15 / -15 Vout model)
		24 Vin models:	220 mA max. (3.3 Vout model)
			300 mA max. (5 Vout model)
			300 mA max. (12 Vout model)
			300 mA max. (15 Vout model)
			300 mA max. (24 Vout model)
			260 mA max. (5 / -5 Vout model)
			300 mA max. (12 / -12 Vout model)
			300 mA max. (15 / -15 Vout model)
		48 Vin models:	110 mA max. (3.3 Vout model)
			150 mA max. (5 Vout model)
			150 mA max. (12 Vout model)
			150 mA max. (15 Vout model)
			150 mA max. (24 Vout model)
			130 mA max. (5 / -5 Vout model)
			150 mA max. (12 / -12 Vout model)
			150 mA max. (15 / -15 Vout model)
Surge Voltage		12 Vin models:	25 VDC max. (1 s max.)
		24 Vin models:	50 VDC max. (1 s max.)
		48 Vin models:	100 VDC max. (1 s max.)
Start-up Voltage		12 Vin models:	7 VDC min. / 8 VDC typ. / 9 VDC max.
		24 Vin models:	14 VDC min. / 16 VDC typ. / 18 VDC max.
		48 Vin models:	32 VDC min. / 34 VDC typ. / 36 VDC max.
Under Voltage Lockout		12 Vin models:	8.5 VDC max.
		24 Vin models:	16 VDC max.
		48 Vin models:	35 VDC max.
Reflected Ripple Current		12 Vin models:	30 mA typ.
		24 Vin models:	20 mA typ.
		48 Vin models:	15 mA typ.
Recommended Input Fuse		12 Vin models:	1'500 mA (slow blow)
		24 Vin models:	700 mA (slow blow)
		48 Vin models:	350 mA (slow blow)
			(The need of an external fuse has to be assessed in the final application.)
Input Filter			Internal Pi-Type
Short Circuit Input Power			3 W max.

Output Specifications

Voltage Set Accuracy			±2% max.
Regulation	- Input Variation (Vmin - Vmax)	single output models:	0.5% max.
		dual output models:	0.5% max.
	- Load Variation (0 - 100%)	single output models:	1.2% max.
		dual output models:	1.2% max. (Output 1)
			1.2% max. (Output 2)
	- Voltage Balance (symmetrical load)	dual output models:	2% max.

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

Ripple and Noise	- 20 MHz Bandwidth		80 mVp-p max.
Capacitive Load	- single output	3.3 Vout models:	470 µF max.
		5 Vout models:	470 µF max.
		12 Vout models:	100 µF max.
		15 Vout models:	100 µF max.
		24 Vout models:	47 µF max.
	- dual output	5 / -5 Vout models:	100 / 100 µF max.
		12 / -12 Vout models:	100 / 100 µF max.
		15 / -15 Vout models:	100 / 100 µF max.
Minimum Load			Not required
Temperature Coefficient			±0.02 %/K max.
Short Circuit Protection			Continuous, Automatic recovery
Overload Protection			Foldback Mode
Output Current Limitation			110% min. of Iout max. 145% typ. of Iout max.
Transient Response	- Response Deviation		3% typ. / 5% max. (75% to 100% Load Step)
	- Response Time		300 µs typ. / 600 µs max. (75% to 100% Load Step)

Safety Specifications

Safety Standards	- IT / Multimedia Equipment	CSA-C22.2, No. 60950-1 EN 60950-1 EN 62368-1 IEC 60950-1 IEC 62368-1 UL 60950-1 UL 62368-1
	- Certification Documents	www.tracopower.com/overview/ten6n
Pollution Degree		PD 3
Over Voltage Category		Not mains connected

EMC Specifications

EMI Emissions	- Conducted Emissions	EN 55032 class A (internal filter)

General Specifications

Relative Humidity			95% max. (non condensing)
Temperature Ranges	- Operating Temperature		–40°C to +85°C
	- Case Temperature		+100°C max.
	- Storage Temperature		–50°C to +125°C
Power Derating	- High Temperature		2.5 %/K above 60°C (3.3 & 5.0 VDC models) 3.3 %/K above 70°C (other models)
Cooling System			Natural convection (20 LFM)
Altitude During Operation			6'000 m max.
Switching Frequency			330 kHz typ. (PWM)
Insulation System			Functional Insulation
Isolation Test Voltage	- Input to Output, 60 s		1'500 VDC
	- Input to Output, 1 s		1'800 VDC
Isolation Resistance	- Input to Output, 500 VDC		1'000 MΩ min.
Isolation Capacitance	- Input to Output, 100 kHz, 1 V		1'000 pF typ.
Reliability	- Calculated MTBF		1'000'000 h (MIL-HDBK-217F, ground benign)
Washing Process			Allowed (hermetical product)
		See Cleaning Guideline:	www.tracopower.com/info/cleaning.pdf
Housing Material			Non-conductive Plastic (UL 94 V-0 rated)
Potting Material			Epoxy (UL 94 V-0 rated)
Pin Material			Copper Alloy (C6801)

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

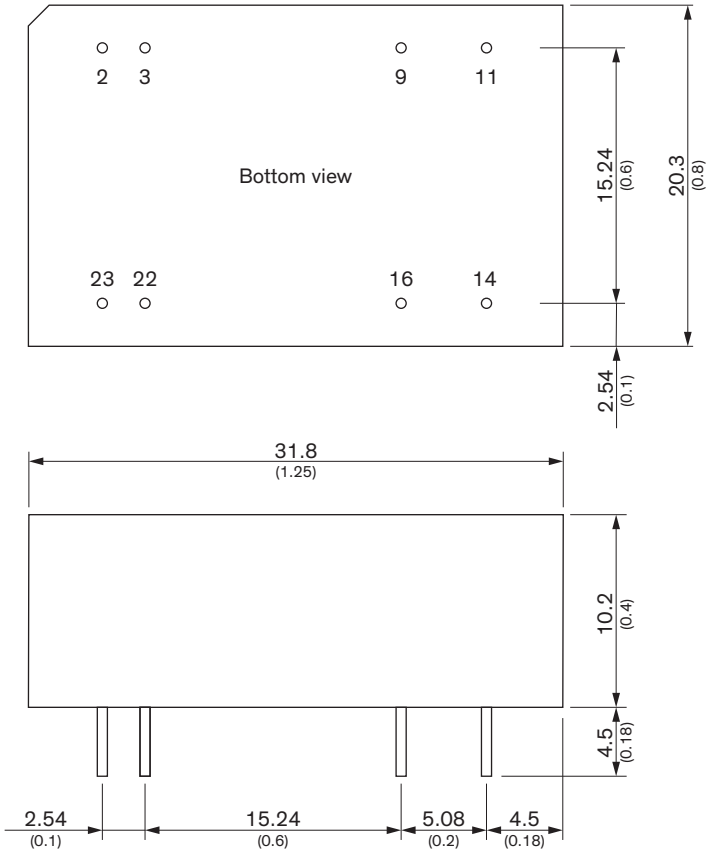
Pin Foundation Plating		Nickel (2.5 µm min.)
Pin Surface Plating		Gold (75 - 125 nm), glossy
Housing Type		Plastic Case
Mounting Type		PCB Mount
Connection Type		THD (Through-Hole Device)
Footprint Type		DIP24
Soldering Profile		Wave Soldering 260°C / 10 s max.
Weight		12.7 g
Environmental Compliance	- REACH Declaration	www.tracopower.com/info/reach-declaration.pdf REACH SVHC list compliant REACH Annex XVII compliant
	- RoHS Declaration	www.tracopower.com/info/rohs-declaration.pdf Exemptions: 7a (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule). The SCIP number is provided on request.)

Supporting Documents

Overview Link (for additional Documents)	www.tracopower.com/overview/ten6n

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

Outline Dimensions



Pinout		
Pin	**Single**	**Dual**
2	–Vin (GND)	–Vin (GND)
3	–Vin (GND)	–Vin (GND)
9	no Pin	Common
11	NC	–Vout
14	+Vout	+Vout
16	–Vout	Common
22	+Vin (Vcc)	+Vin (Vcc)
23	+Vin (Vcc)	+Vin (Vcc)

NC: Not connected

Dimensions in mm (inch)
Pin diameter Ø 0.5 ±0.05 (Ø 0.02 ±0.002)
Tolerances x.x ±0.5 (x.xx ±0.02)
x.xx ±0.25 (x.xxx ±0.01)

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

TRACO Power:

TEN 6-2411N TEN 6-1215N TEN 6-2422N TEN 6-4813N TEN 6-1223N TEN 6-4811N TEN 6-2413N TEN 6-4812N TEN 6-4822N TEN 6-1212N TEN 6-4821N TEN 6-2410N TEN 6-1213N TEN 6-1221N TEN 6-1222N TEN 6-4815N TEN 6-4823N TEN 6-1211N TEN 6-1210N TEN 6-2412N TEN 6-2421N TEN 6-2415N TEN 6-2423N TEN 6-4810N