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

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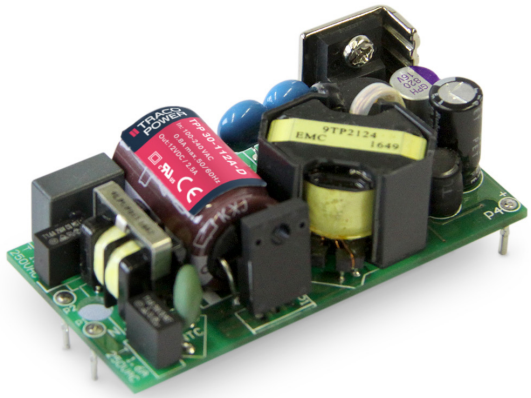
TRACO POWER

AC/DC Medical Power Supply

TPP 30A-D Series, 30 Watt

- **High power density power supply (open frame)**
- **Certification according to IEC/EN/ES 60601-1 3rd edition for 2×MOPP**
- **Low leakage current <100 µA rated for BF applications**
- **EMC emission and immunity to IEC 60601-1-2 4th edition**
- **Risk management process according to ISO 14971 including risk management file**
- **Acceptance criteria for electronic assemblies according to IPC-A-610 Level 3**
- **Protection class I and II**
- **Operating up to 5000m altitude**
- **Ready to meet ErP directive, no load power consumption**
- **5 year product warranty**



ErP ready · CE · CB Scheme · prepared · cULus ES 60601-1 UL 60950-1

The TPP 30A-D AC/DC power supplies feature a reinforced double I/O isolation system according to medical safety standards IEC/EN/ES 60601-1 3rd edition for 2 × MOPP approved for an operating altitude of 5000 m. The earth leakage current is below 100 µA what makes the units suitable for BF (body floating) applications. The excellent efficiency of up to 91.5% offers a high power density in the packaging format 1.36" x 2.74". The full load operating temperature range covers –40°C to +60°C while it goes up to 85°C with 50% load derating. The units operate in compliance to the medical EMC emission and immunity levels according to latest standard IEC 60601-1-2 4th edition.

Models

Order Code	Output Power (max.)	Output Voltage	Output Current (max.)	Efficiency (typ.)
TPP 30-103A-D	20 W	3.3 VDC	6‘000 mA	84.0 %
TPP 30-105A-D	30 W	5.0 VDC	6‘000 mA	87.0 %
TPP 30-109A-D		9.0 VDC	3‘340 mA	88.0 %
TPP 30-112A-D		12 VDC	2‘500 mA	90.5 %
TPP 30-115A-D		15 VDC	2‘000 mA	90.5 %
TPP 30-124A-D		24 VDC	1‘250 mA	89.5 %
TPP 30-136A-D		36 VDC	840 mA	90.0 %
TPP 30-148A-D		48 VDC	630 mA	91.5 %

Input Specifications

Input voltage range	– AC range (universal input)		85 – 264 VAC (derating of 4 %/V below 90 VAC input required)
	– DC range		120 – 370 VDC
Input frequency			47 – 63 Hz
Input current at full load	– at 115 VAC / 230 VAC		0.80 A max. / 0.40 A max.
Input protection			T1.6 A/250 VAC (internal fuse)
Input inrush current	– at 230 VAC		40 A max.
Zero load power consumption			0.05 W typ. (acc. ErP directive)

Output Specifications

Voltage adjustment			±10%
Voltage set accuracy			±1%
Regulation	– Input variation (Vin min. to Vin max.)		0.2% max.
	– Load variation (0 to 100%)	3.3 & 5.0 Vout models:	0.7% max.
		other output models:	0.5% max.
Minimum load			not required
Temperature coefficient			±0.02%/K
Hold-up time	– at 115 VAC		16 ms typ.
Start-up time			1500 ms max.
Rise time			40 ms typ.
Ripple and noise (20 MHz Bandwidth)		3.3, 5.0 & 9.0 Vout models:	50 mVp-p typ. w. cap. 10µF/25V 1206 X7R MLCC
		12, 15, 24 & 36 Vout models:	50 mVp-p typ. w. cap. 1µF/50V 1206 X7R MLCC
		48 Vout model:	50 mVp-p typ. w. cap. 0.1µF/100V 1206 X7R MLCC
Transient response	– Peak deviation (25% load step change)		3% max.
	– Recovery time		500 µs typ.
Overvoltage protection			125 – 140% of nominal Vout
Current limitation			at 140% Iout typ.
Short circuit protection			continuous (automatic recovery), hiccup
Capacitive load		3.3 Vout model:	10‘000 µF max.
		5 Vout model:	12‘000 µF max.
		9 Vout model:	3‘720 µF max.
		12 Vout model:	2‘085 µF max.
		15 Vout model:	1‘350 µF max.
		24 Vout model:	520 µF max.
		36 Vout model:	235 µF max.
		48 Vout model:	130 µF max.

General Specifications

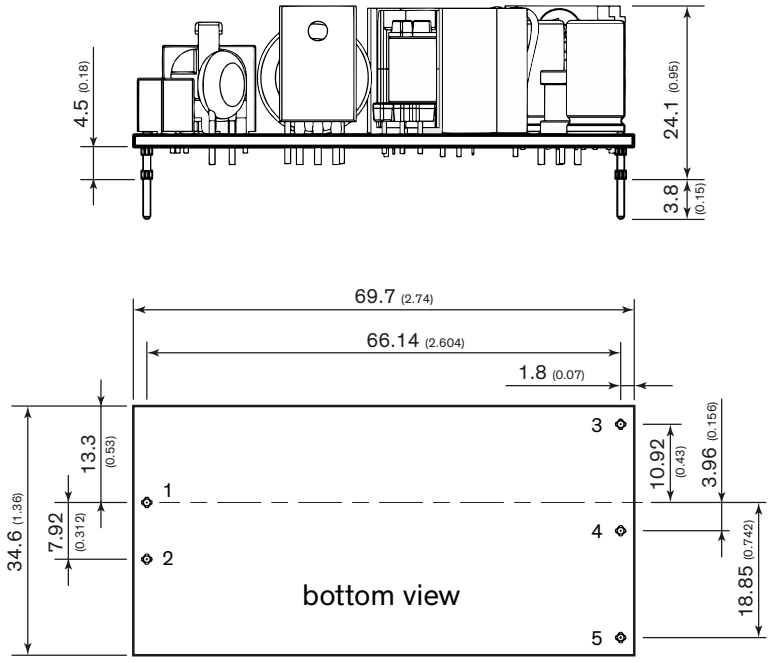
Temperature ranges	– Operating		–40°C to +85°C
	– Storage		–40°C to +100°C
Output power derating	– Temperature	3.3, 5 & 9 Vout models:	2.25 %/K above +60°C
		other output models:	3.6 %/K above +75°C
	– Low input voltage		4.0 %/V below 90 VAC
Humidity (non condensing)			5 – 95 % rel. H.
Altitude during operation			5000 m max.
Switching frequency (at 230 VAC)			30 – 60 kHz (pulse width modulation)
Isolation voltage	– Input / Output (60 s)		4000 VAC (2 × MOPP insulation)
	– Input / Floating (60 s)		1500 VAC (1 × MOPP insulation)
	– Output / Floating (60 s)		1500 VAC (1 × MOPP insulation)
Leakage current (at 264 VAC / 60Hz)			100 µA max.

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

General Specifications (continued)

Isolation resistance (at 500 VDC)		100 MOhm min.
Reliability	– calculated MTBF at +25°C acc. to MIL-HDBK-217F	3‘341‘000 h
Weight		58 g (2.05 oz)
EMI emission	– Conducted & Radiated input suppression	EN 55011 limits to IEC 60601-1-2 4th edition EN 55032 class B (internal filter)
	– Harmonic current emissions	IEC / EN 61000-3-2, class A
	– Voltage flicker	IEC / EN 61000-3-3, (class tba.)
EMC immunity		EN 55024, EN 60601-1-2 4th edition
	– ESD (electrostatic discharge)	EN 61000-4-2, air ±15 kV, contact ±8 kV, perf. criteria A
	– Radiated immunity	EN 61000-4-3, 20 V/m, perf. criteria A
	– Fast transient	EN 61000-4-4, ±2 kV, perf. criteria A
	– Surge	EN 61000-4-5, ±1 kV perf. criteria A
	– Conducted immunity	EN 61000-4-6, 20 Vrms, perf. criteria A
	– Magnetic field immunity	EN 61000-4-8, 30 A/m, perf. criteria A
	– Voltage dip and interruptions	EN 61000-4-11, 1 cycle perf. cirteria A, 250 cycle perf. criteria B
Safety standards and certification		UL/IEC/EN 60950-1, UL/IEC/EN 62368-1 UL/IEC/EN 60601-1 3rd edition ANSI/AAMI ES60601-1:2005(R)2012 IEC/EN 60335-1, IEC/EN 61558
	– Certification documents	www.tracopower.com/overview/tpp30a-d
Shock and vibration		Vibration acc. IEC 60068-2-6 Shock acc. IEC 60068-2-27
Environmental compliance	– Reach	www.tracopower.com/info/reach-declaration.pdf
	– RoHS	RoHS directive 2011/65/EU
Protection class		class II prepared
Connection		PCB mount

Outline Dimensions



Print thickness: 1.6 mm (0.06 inch)

Pin diameter: 1.0 mm (0.04 inch)

PCB Pinout	
Pin	**Single**
1	Neutral
2	Line
3	+Vout
4	–Vout
5	Trim

Dimension in mm, () = inch
Tolerances: x.x ±0.5 (±0.02)
x.xx ±0.25 (±0.01)
Pin pitch tolerance: ±0.25 (±0.010)
Pin dimension tolerance: ±0.10 (±0.004)