TRACO POWER

Unregulated DC/DC Converter

TRA 3 Series, 3 Watt

Not recommended for new designs

- **Unregulated outputs**
- **Highest power density 3W SIP-Converter**
- **Industry standard pinout**
- **High efficiency up to 89%**
- **I/O isolation voltage 1000 VDC**
- **Operating temperature range −40°C to +95°C**
- **3-year product warranty**



UL 62368-1 IEC 62368-1

The TRA 3 series are miniature, I/O-isolated 3W DC/DC-converters with unregulated outputs. They are the ideal solution to power drivers and circuits where unregulated DC/DC converters do not meet the input voltage range at load change

Models

Order Code	Input Voltage Range	Output Voltage nom.	Output Current max.	Efficiency typ.
TRA 3-0511*	4.5 - 5.5 VDC (5 VDC nom.)	5 VDC	600 mA	83 %
TRA 3-0519*		9 VDC	333 mA	87 %
TRA 3-0512*		12 VDC	250 mA	86 %
TRA 3-0513*		15 VDC	200 mA	88 %
TRA 3-1211*	10.8 - 13.2 VDC (12 VDC nom.)	5 VDC	600 mA	84 %
TRA 3-1219*		9 VDC	333 mA	88 %
TRA 3-1212*		12 VDC	250 mA	88 %
TRA 3-1213*		15 VDC	200 mA	89 %
TRA 3-2411*	21.6 - 26.4 VDC (24 VDC nom.)	5 VDC	600 mA	82 %
TRA 3-2419*		9 VDC	333 mA	85 %
TRA 3-2412*		12 VDC	250 mA	86 %
TRA 3-2413*		15 VDC	200 mA	85 %

Note * Not recommended for new designs

Input Specifications

Input Current	- At no load	5 Vin models:	50 mA typ.
		12 Vin models:	40 mA typ.
		24 Vin models:	30 mA typ.
	- At full load	5 Vin models:	700 mA max.
		12 Vin models:	285 mA max.
		24 Vin models:	150 mA max.
Surge Voltage		5 Vin models:	9 VDC max. (1 s max.)
		12 Vin models:	18 VDC max. (1 s max.)
		24 Vin models:	30 VDC max. (1 s max.)
Recommended Input Fuse		5 Vin models:	2'000 mA (slow blow)
		12 Vin models:	1'000 mA (slow blow)
		24 Vin models:	500 mA (slow blow)
			(The need of an external fuse has to be assessed in the final application.)
Input Filter			Internal Capacitor

Output Specifications

Voltage Set Accuracy			±3% max. (at 80% load)
Regulation	- Input Variation (1% Vin step)		1.2% max.
(Unregulated)	- Load Variation	See application note:	www.tracopower.com/tra3-cc
Ripple and Noise	- 20 MHz Bandwidth		100 mVp-p max.
Capacitive Load			220 µF max.
Minimum Load		See application note:	www.tracopower.com/tra3-cc
			(Operation at lower load will not damage the converter, but it may not meet all specifications)
Temperature Coefficient			±0.02 %/K max.
Short Circuit Protection			Limited 0.5 s max., Automatic recovery

Safety Specifications

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/tra3-safety-cert
Pollution Degree		PD 3
Over Voltage Category		Not mains connected

General Specifications

Relative Humidity			95% max. (non condensing)
Temperature Ranges	- Operating Temperature		–40°C to +95°C
	- Case Temperature		+105°C max.
	- Storage Temperature		–50°C to +125°C
Power Derating	- High Temperature		5.0 %/K above 85°C
		See application note:	www.tracopower.com/tra3-cc
Cooling System			Natural convection (20 LFM)
Altitude During Operation			6'000 m max.
Switching Frequency			60 kHz min. (PWM)
Insulation System			Functional Insulation
Isolation Test Voltage	- Input to Output, 60 s		1'000 VDC
	- Input to Output, 1 s		1'200 VDC
Isolation Resistance	- Input to Output, 500 VDC		1'000 MΩ min.

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

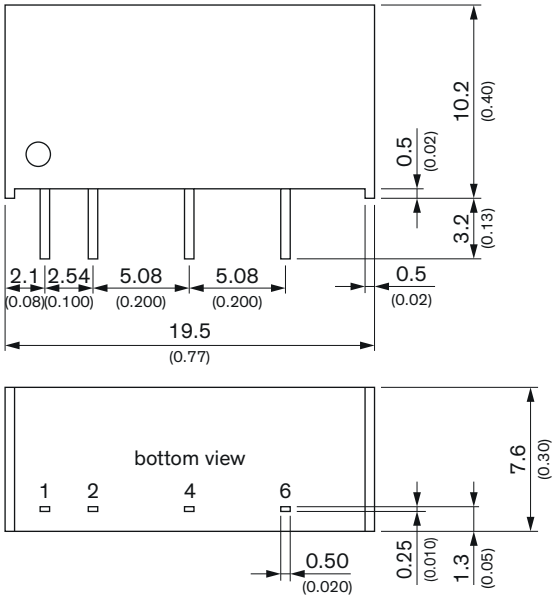
Isolation Capacitance	- Input to Output, 100 kHz, 1 V	60 pF typ. 120 pF max.
Reliability	- Calculated MTBF	4'901'000 h (MIL-HDBK-217F, ground benign)
Washing Process		According to Cleaning Guideline www.tracopower.com/info/cleaning.pdf
Housing Material		Non-conductive Plastic (UL 94 V-0 rated)
Potting Material		Silicone (UL 94 V-0 rated)
Pin Material		Nickel-Iron (Alloy 42)
Pin Foundation Plating		Nickel (1 µm min.)
Pin Surface Plating		Tin (3 - 5 µm), matte
Housing Type		Plastic Case
Mounting Type		PCB Mount
Connection Type		THD (Through-Hole Device)
Footprint Type		SIP7
Soldering Profile		Lead-Free Wave Soldering 260°C / 10 s max.
Weight		2.2 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: 7(a), 7(c)-I (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule).)
	- SCIP Reference Number	482311f2-60f6-4845-a3ce-39ba02ae88f0

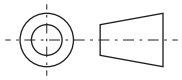
Additional Information

Supporting Documents	www.tracopower.com/overview/tra3
Frequently Asked Questions	www.tracopower.com/glossary-faq
Glossary	www.tracopower.com/info/glossary.pdf

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

Outline Dimensions





Dimensions in mm (inch)
Tolerances: x.x ±0.25 (x.xx ±0.01)
x.xx ±0.13 (x.xxx ±0.005)
Pins: ±0.05 (±0.002)

Pinout	
Pin	**Function**
1	+Vin (Vcc)
2	–Vin (GND)
4	–Vout
6	+Vout

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