

Unregulated DC/DC Converter

TME Series, 1 Watt

- Unregulated outputs
- I/O isolation voltage 1'000VDC
- Efficiency up to 80%
- Operating temperature range -40 °C to +85 °C
- 3-year product warranty



The TME series is a range of sub-miniature, isolated DC/DC-converters in a SIP-package, which requires only 0.7 cm² of board space. They provide a cost effective solution to generate supplementary, isolated voltages. Full SMD-design and a 100% production test of parameters ensure a high reliability of this product.

Models				
Order Code	Input Voltage Range	Output Voltage nom.	Output Current max.	Efficiency typ.
TME 0303S	2.97 - 3.63 VDC (3.3 VDC nom.)	3.3 VDC	260 mA	74 %
TME 0305S		5 VDC	200 mA	77 %
TME 0503S	4.5 - 5.5 VDC (5 VDC nom.)	3.3 VDC	260 mA	72 %
TME 0505S		5 VDC	200 mA	69 %
TME 0509S		9 VDC	110 mA	76 %
TME 0512S		12 VDC	84 mA	77 %
TME 0515S		15 VDC	67 mA	78 %
TME 1205S	10.8 - 13.2 VDC (12 VDC nom.)	5 VDC	200 mA	71 %
TME 1209S		9 VDC	110 mA	77 %
TME 1212S		12 VDC	84 mA	79 %
TME 1215S		15 VDC	67 mA	80 %
TME 2405S	21.6 - 26.4 VDC (24 VDC nom.)	5 VDC	200 mA	70 %
TME 2409S		9 VDC	110 mA	76 %
TME 2412S		12 VDC	84 mA	79 %
TME 2415S		15 VDC	67 mA	79 %

Input Specifications

Input Current	- At no load	3.3 Vin models: 35 mA typ. 5 Vin models: 30 mA typ. 12 Vin models: 13 mA typ. 24 Vin models: 7 mA typ.
	- At full load	3.3 Vin models: 351 mA typ. (3.3 Vout model) 394 mA typ. (5 Vout model) 5 Vin models: 238 mA typ. (3.3 Vout model) 290 mA typ. (5 Vout model) 260 mA typ. (9 Vout model) 262 mA typ. (12 Vout model) 258 mA typ. (15 Vout model) 12 Vin models: 117 mA typ. (5 Vout model) 107 mA typ. (9 Vout model) 106 mA typ. (12 Vout model) 105 mA typ. (15 Vout model) 24 Vin models: 60 mA typ. (5 Vout model) 54 mA typ. (9 Vout model) 53 mA typ. (12 Vout model) 53 mA typ. (15 Vout model)
Surge Voltage		3.3 Vin models: 6 VDC max. (1 s max.) 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		3.3 Vin models: 750 mA (slow blow) 5 Vin models: 750 mA (slow blow) 12 Vin models: 750 mA (slow blow) 24 Vin models: 750 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.
Regulation	- Input Variation (1% Vin step)	1.5% max.
(Unregulated)	- Load Variation	See application note: www.tracopower.com/tme-cc/
Ripple and Noise	- 20 MHz Bandwidth	150 mVp-p max. 100 mVp-p typ.
Capacitive Load		33 µF max.
Minimum Load		See application note: www.tracopower.com/tme-cc/ (Operation at lower load will not damage the converter, but it may not meet all specifications)
Temperature Coefficient		±0.02 %/K max.
Start-up Time		2.9 ms max.
Short Circuit Protection		Limited 0.5 s max., Automatic recovery

Safety Specifications

Over Voltage Category	Not mains connected
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General Specifications

Relative Humidity		95% max. (non condensing)
Temperature Ranges	- Operating Temperature	-40°C to +85°C
	- Case Temperature	+105°C max.
	- Storage Temperature	-50°C to +125°C

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

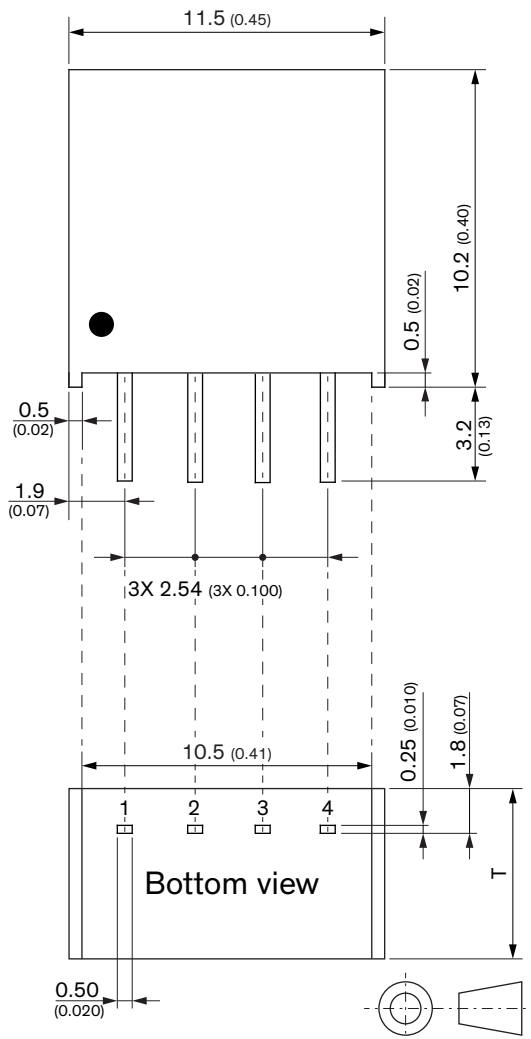
Power Derating	- High Temperature	3.33 %/K above 70°C (5 Vout models) 4.0 %/K above 75°C (other models)
See application note: www.tracopower.com/tme-cc/		
Cooling System		Natural convection (20 LFM)
Regulator Topology		Push-Pull Converter
Switching Frequency		50 - 110 kHz (PFM) 90 kHz typ. (PFM)
Insulation 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.
Isolation Capacitance	- Input to Output, 100 kHz, 1 V	60 pF typ. 100 pF max.
Reliability	- Calculated MTBF	2'000'000 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)
Base Material		Non-conductive Plastic (UL 94 V-0 rated)
Potting Material		Epoxy (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		SIP4
Soldering Profile		Lead-Free Wave Soldering 260°C / 10 s max.
Weight	3.3 Vin models: 1.3 g 5 Vin models: 1.3 g 12 Vin models: 1.3 g 24 Vin models: 1.7 g	
Thermal Impedance	- Case to Ambient	78.0 K/W typ.
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: No Exemptions

Additional Information

Supporting Documents	www.tracopower.com/overview/tme
Frequently Asked Questions	www.tracopower.com/glossary-faq
Glossary	www.tracopower.com/info/glossary.pdf
Service Portal	www.tracoserviceportal.com

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Outline Dimensions



T: 6.1 (0.24) for 3.3Vin & 5Vin & 12Vin Models
T: 7.1 (0.28) for 24Vin Models

Dimensions in mm (inch)

Tolerance: x.x ±0.25 (x.xx ±0.01)

$$x.xx \pm 0.13 \text{ (} x.xxx \pm 0.005 \text{)}$$

Pin tolerance: ± 0.05 (± 0.002)

Pinout	
Pin	Single
1	-Vin (GND)
2	+Vin (Vcc)
3	-Vout
4	+Vout

Avoid routing PCB traces under the converter.