

DC/DC Converters

TME Series, 1 Watt

Features

- Single-in-line package (SIP)
- ◆ I/O isolation 1'000 VDC
- Unregulated device
- ♦ High efficiency up to 80%
- ◆ Operating temperature -40°C to +85°C
- ♦ Industry standard pinout
- ◆ 100% burn-in (8 h)
- Lead free design, RoHS compliant
- 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				
Ordercode	Input voltage	Output voltage	Output current max.	Efficiency typ.
TME 0303S		3.3 VDC	260 mA	74 %
TME 0305S	3.3 VDC ±10%	5.0 VDC	200 mA	77 %
TME 0503S		3.3 VDC	260 mA	72 %
TME 0505S	5 VDC ±10%	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	12 VDC ±10%	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	24 VDC ±10%	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 current no load /full load 3.3 Vin models: 5 Vin models: 13 mA / 170 mA typ. 12 Vin models: 13 mA / 110 mA typ. 7 mA / 55 mA typ. 3.3 Vin models: 9 V max. 12 Vin models: 18 V max. 19 Vin models: 18 V max. 19 V max. 19 V max. 19 V max. 19 V max. 24 Vin models: 24 Vin models: 24 Vin models: 25 Vin models: 26 V max. 26 V max. 27 V max. 28 V max. 29 V max. 29 V max. 20 V max. 21 Vin models: 20 V max. 21 Vin models: 21 Vin models: 21 V max. 22 Vin models: 21 V max. 23 V V max. 24 Vin models: 24 Vin models: 25 V V max. 26 V max. 27 V max. 28 V max. 29 V max. 20 V max. 20 V max. 20 V V max. 20 V V max. 20 V V max. 21 V max. 21 V max. 22 Vin models: 21 V max.	Input Specifications			
S Vin models: 12 Vin models: 12 Vin models: 24 Vin models: 24 Vin models: 24 Vin models: 30 V max. 30 V max. Reflected input ripple current capacitors Constitution			5 Vin models: 12 Vin models:	30 mA / 270 mA typ. 13 mA / 110 mA typ.
Input filter Internal capacitors Output Specifications Voltage set accuracy	Surge voltage (1 s max.)		5 Vin models: 12 Vin models:	9 V max. 18 V max.
Output Specifications Voltage set accuracy ±1 % typ. / ±3 % max. Regulation - Input variation (1 % change of input voltage) 1.2 % typ. / 1.5 % max. 4 to 14 % max. (depending on model) 4 to 14 % max. (depending on model) Ripple and noise (20 MHz Bandwidth) 150 mVp·p max. Temperature coefficient ±0.01 %/K typ. / ±0.02 %/K max. Short circuit protection limited 0.5 s max. Capacitive load 33 μF max. General Specifications Temperature ranges - Operating - Case temperature +90°C max. - Storage -50°C to +125°C Derating 5 VDC output models: 3.3 %/K above 70°C 4.0 %/K above 75°C 4.0 %/K above 75°C Humidity (non condensing) 95 % rel H max. Reliability, calculated MTTF (MIL+DBK:217F, @+25°C ground benign) >2'000'000 h Isolation voltage (60 sec.) Input/Output 60 pF typ.	Reflected input ripple current			can be reduced by ext. 1 – 3.3 µF polyester film capacitor
Voltage set accuracy Regulation - Input variation (1 % change of input voltage) - Load variation (20 – 100 %) Ripple and noise (20 MHz Bandwidth) 150 mVp-p max. Temperature coefficient ±0.01 %/K typ. / ±0.02 %/K max. Short circuit protection Iimited 0.5 s max. Capacitive load General Specifications Temperature ranges - Operating - Case temperature - Storage - Storage 5 VDC output models: other output models: A0 %/K above 70°C 4.0 %/K above 75°C Humidity (non condensing) 95 % rel H max. Reliability, calculated MTTF (MIL-HDBK-217F, @+25°C ground benign) Input/Output 1000 VDC Isolation capacity Input/Output	Input filter			Internal capacitors
Regulation — Input variation (1 % change of input voltage) — Load variation (20 – 100 %) — Load	Output Specification	S		
Load variation (20 − 100 %) 4 to 14 % max. (depending on model)	Voltage set accuracy			±1 % typ. / ±3 % max.
Temperature coefficient ±0.01 %/K typ. / ±0.02 %/K max. Short circuit protection limited 0.5 s max. Capacitive load 33 μF max. General Specifications Temperature ranges Operating -40°C to +85°C +90°C max50°C to +125°C Derating 5 VDC output models: 0.3 %/K above 70°C 4.0 %/K above 75°C Humidity (non condensing) 95 % rel H max. Reliability, calculated MTTF (MIL-HDBK-217F, @+25°C ground benign) >2′000′000 h Isolation voltage (60 sec.) Input/Output 10′000 VDC Isolation capacity Input/Output 60 pF typ.	Regulation			
Short circuit protection limited 0.5 s max. Capacitive load 33 µF max. General Specifications Temperature ranges - Operating - Case temperature - Storage - Storage - Operating - Storage - Operating - Operati	Ripple and noise (20 MHz	Bandwidth)		150 mVp-p max.
Capacitive load General Specifications Temperature ranges - Operating - Case temperature - Storage Derating 5 VDC output models: other output models: 4.0 %/K above 70°C 4.0 %/K above 75°C Humidity (non condensing) Reliability, calculated MTTF (MIL-HDBK-217F, @+25°C ground benign) Isolation voltage (60 sec.) Input/Output Input/Output 60 pF typ.	Temperature coefficient			± 0.01 %/K typ. / ± 0.02 %/K max.
Temperature ranges - Operating - Case temperature - Storage Derating 5 VDC output models: other output models: 4.0 %/K above 70°C 4.0 %/K above 75°C Humidity (non condensing) Reliability, calculated MTTF (MIL-HDBK-217F, @+25°C ground benign) Isolation voltage (60 sec.) Input/Output Input/Output 60 pF typ.	Short circuit protection			limited 0.5 s max.
Temperature ranges - Operating - 40°C to +85°C +90°C max 5torage - 5 VDC output models: 3.3 %/K above 70°C other output models: 4.0 %/K above 75°C - 4.0	Capacitive load			33 μF max.
- Case temperature - Storage 5 VDC output models: other output models: 4.0 %/K above 70°C 4.0 %/K above 75°C Humidity (non condensing) 95 % rel H max. Reliability, calculated MTTF (MIL-HDBK-217F, @+25°C ground benign) Isolation voltage (60 sec.) Input/Output Input/Output 60 pF typ.	General Specificatio	ns		
ther output models: 4.0 %/K above 75°C Humidity (non condensing) 95 % rel H max. Reliability, calculated MTTF (MIL-HDBK-217F, @+25°C ground benign) >2′000′000 h Isolation voltage (60 sec.) Input/Output 1′000 VDC Isolation capacity Input/Output 60 pF typ.	Temperature ranges	- Case temperature		+90°C max.
Reliability, calculated MTTF (MIL-HDBK-217F, @+25°C ground benign) >2′000′000 h Isolation voltage (60 sec.) Input/Output 1′000 VDC Isolation capacity Input/Output 60 pF typ.				
Isolation voltage (60 sec.) Input/Output 1'000 VDC Isolation capacity Input/Output 60 pF typ.	Humidity (non condensing)			95 % rel H max.
Isolation capacity Input/Output 60 pF typ.	Reliability, calculated MTTF (MIL-HDBK-217F, @+25°C ground benign)			>2′000′000 h
	Isolation voltage (60 sec.)	Input/Output		1'000 VDC
Isolation resistance Input/Output >1'000 Mohm	Isolation capacity	Input/Output		60 pF typ.
	Isolation resistance	Input/Output		>1′000 Mohm
Switching frequency 50 to 110 kHz (Frequency modulation)	Switching frequency			50 to 110 kHz (Frequency modulation)

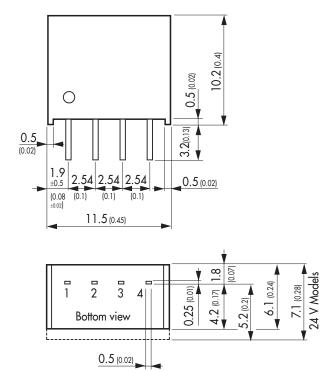
All specifications valid at nominal input voltage, full load and $+25^{\circ}\text{C}$ after warm-up time unless otherwise stated.





Physical Specifications		
Casing material		non conductive black plastic (UL 94-VO rated)
Package weight	3.3 / 5.0 / 12 Vin models	
-	24 Vin models	1.7 g (0.06 oz)
Soldering temperature		max. 265°C / 10 s

Outline Dimensions mm (inches)



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

Tolerances $\pm 0.25 (\pm 0.01)$ Pin pich tolerance ± 0.13 (± 0.005) pins $\pm 0.05 (\pm 0.002)$