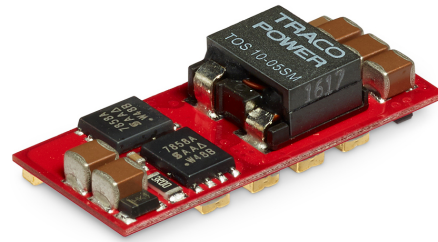


- Small size, low profile
- SMT package
- Cost-efficient open frame design
- Wide input voltage ranges
- Output voltages trim from 0.75 VDC to 5.0 VDC
- Delivers up to 10 A with minimal derating
- Ultra high efficiency to 95 %
- Fast transient response
- Remote On/Off control
- Wide temperature range -40°C to $+85^{\circ}\text{C}$



UL 62368-1

The TOS 10SM series is a range of high performance non-isolated DC/DC converters with very high efficiency that can supply up to 10 A of output current. These modules provide precisely regulated output voltages which can be set via an external resistor to a value from 0.75 VDC to 5.0 VDC. These converters work over a wide input voltage range of 2.4 to 5.5 VDC or 8.3 to 14.0 VDC. Further features include remote On/Off, under voltage lockout and over current protection. These products have an open-frame construction with very small footprint and are available in a SMT package. The TOS 10SM series is fully RoHS compliant and can withstand industry standard handling, cleaning and the high temperatures of lead-free reflow solder processes.

Models				
Order Code	Output Current max.	Input Voltage Range	Output Voltage nom. (adjustable)	Efficiency typ.
TOS 10-05SM	10'000 mA	2.4 - 5.5 VDC (5 VDC nom.)	0.75 VDC (0.75 - 3.3 VDC)	95 %
TOS 10-12SM		8.3 - 14 VDC (12 VDC nom.)	0.75 VDC (0.75 - 5.0 VDC)	93 %

Input Specifications

Input Current	- At no load	5 Vin models: 130 mA typ. 12 Vin models: 100 mA typ. (at Vout max.)
Start-up Voltage		5 Vin models: 2.2 VDC typ. / 2.4 VDC max. 12 Vin models: 7.9 VDC typ. / 8.3 VDC max.
Under Voltage Lockout		5 Vin models: 1.6 VDC min. / 2 VDC typ. / 2.2 VDC max. 12 Vin models: 6.5 VDC min. / 7.5 VDC typ. / 8 VDC max.
Reflected Ripple Current		5 Vin models: 100 mA _{p-p} typ. 12 Vin models: 20 mA _{p-p} typ. (with input filter, see application note)
Recommended Input Fuse		5 Vin models: 15'000 mA (fast acting) 12 Vin models: 10'000 mA (fast acting) (The need of an external fuse has to be assessed in the final application.)
Input Filter		See application note: www.tracopower.com/overview/tos10sm

Output Specifications

Output Voltage Adjustment		0.75 Vout models: 0.75 - 3.3 VDC 0.75 - 5.0 VDC (By external trim resistor) See application note: www.tracopower.com/overview/tos10sm (Vin must be at least 0.5 V higher than Vout)
Voltage Set Accuracy		±2% max.
Regulation	- Input Variation (Vmin - Vmax) - Load Variation (0 - 100%)	0.3% max. 0.4% max.
Ripple and Noise	- 20 MHz Bandwidth	50 mV _{p-p} max.
Capacitive Load		5'000 µF max. (ESR >10 mOhm)
Minimum Load		Not required
Temperature Coefficient		±0.4 %/K max.
Start-up Time		8 ms typ.
Start-up Overshoot Voltage		3% max.
Short Circuit Protection		Continuous, Automatic recovery
Output Current Limitation		200% typ. of Iout max.
Transient Response	- Peak Variation - Response Time	200 mV typ. (50% Load Step) (5 Vin model) 200 mV typ. (50 % Load Step) (12 Vin model) 25 µs typ. (50% Load Step) (with 1 µF MLCC 10 µF TC)

Safety Specifications

Safety Standards	- IT / Multimedia Equipment	UL 60950-1 UL 62368-1
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General Specifications

Relative Humidity		95% max. (non condensing)
Temperature Ranges	- Operating Temperature - Case Temperature - Storage Temperature	-40°C to +85°C +115°C max. -55°C to +125°C
Power Derating	- High Temperature	Depending on model See application note: www.tracopower.com/overview/tos10sm
Cooling System		Natural convection (20 LFM)

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

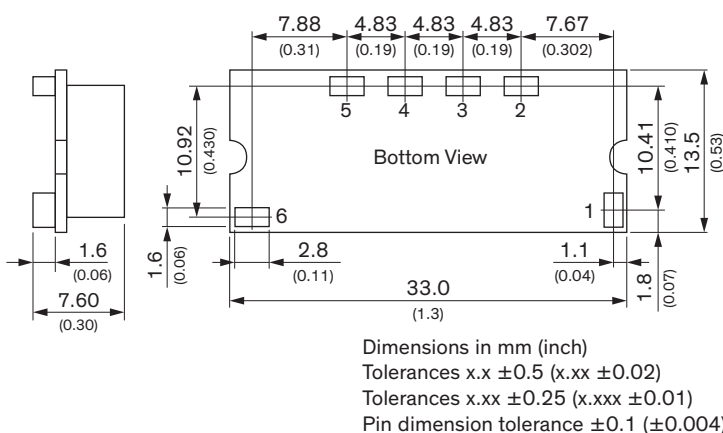
Remote Control	- Voltage Controlled Remote - Off Idle Input Current	On: open circuit or Vin max. Off: 0 to 0.3 VDC Refers to 'Remote' and 'GND' Pin 2 mA typ. (12 Vin model: Open circuit or (Vin - 4 V) to Vin max. for on state)
Switching Frequency		270 - 330 kHz (PWM) 300 kHz typ. (PWM)
Insulation System		Non-isolated
Reliability	- Calculated MTBF	3'300'000 h (MIL-HDBK-217F, ground benign)
Moisture Sensitivity (MSL)		Level 2a (J-STD-033C)
Washing Process		According to Cleaning Guideline www.tracopower.com/info/cleaning.pdf
Environment	- Vibration - Thermal Shock	MIL-STD-810F MIL-STD-810F
Pin Material		Copper
Pin Foundation Plating		Nickel (3 - 5 µm)
Pin Surface Plating		Gold (50 - 75 nm), matte
Housing Type		Open Frame
Mounting Type		PCB Mount
Connection Type		SMD (Surface-Mount Device)
Soldering Profile		Reflow Soldering (J-STD-020E) 245°C / 10 s max.
Weight		6 g
Environmental Compliance	- REACH Declaration - RoHS Declaration	www.tracopower.com/info/reach-declaration.pdf REACH SVHC list compliant REACH Annex XVII compliant www.tracopower.com/info/rohs-declaration.pdf Exemptions: 7a, 7c-l (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/tos10sm

Outline Dimensions



Pinout	
Pin	Function
1	Remote On/Off
2	+Sense
3	Trim
4	+Vout
5	GND
6	+Vin

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

Recommended Solder Pad Layout

