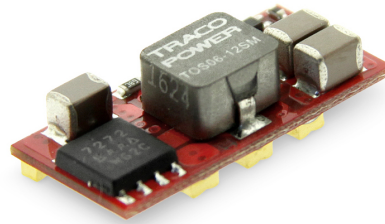


- Small size, low profile
- SMT package
- Cost-efficient open frame design
- Wide input voltage ranges
- Output voltages trim from 0.75 VDC to 5.0 VDC
- Delivers up to 6 A with minimal derating
- Ultra high efficiency to 94 %
- Fast transient response
- Remote On/Off control
- Wide temperature range  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$



The TOS 06SM series is a range of high performance non-isolated DC/DC converters with very high efficiency that can supply up to 6 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, over temperature and over current protection. These products have an open-frame construction with very small footprint and are available in a SMT package. The TOS 06SM 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 06-05SM	6'000 mA	2.4 - 5.5 VDC (5 VDC nom.)	0.75 VDC (0.75 - 3.3 VDC)	94 %
TOS 06-12SM		8.3 - 14 VDC (12 VDC nom.)	0.75 VDC (0.75 - 5.0 VDC)	89 %

### Input Specifications

Input Current	- At no load	5 Vin models: <b>45 mA typ.</b> 12 Vin models: <b>100 mA typ.</b> (at Vout max.)
Start-up Voltage		5 Vin models: <b>2.2 VDC typ.</b> 12 Vin models: <b>7.9 VDC typ.</b>
Under Voltage Lockout		5 Vin models: <b>1.6 VDC min. / 2 VDC typ. / 2.2 VDC max.</b> 12 Vin models: <b>6.5 VDC min. / 7.5 VDC typ. / 8 VDC max.</b>
Reflected Ripple Current		5 Vin models: <b>35 mA<sub>p-p</sub> typ.</b> 12 Vin models: <b>30 mA<sub>p-p</sub> typ.</b> (with input filter)
Recommended Input Fuse		5 Vin models: <b>8'000 mA</b> (fast acting) 12 Vin models: <b>6'300 mA</b> (slow blow)
Input Filter		<b>Required external filter</b> (2 x 150 µF low ESR polymer capacitor and 2 x 47 µF MLCC)

### Output Specifications

Output Voltage Adjustment		0.75 Vout models: <b>0.75 - 3.3 VDC</b> <b>0.75 - 5.0 VDC</b> (By external trim resistor) See application note: <a href="http://www.tracopower.com/overview/tos06sm">www.tracopower.com/overview/tos06sm</a> (Vin must be at least 0.5 V higher than Vout)
Voltage Set Accuracy		<b>±2% max.</b>
Regulation	- Input Variation (Vmin - Vmax) - Load Variation (0 - 100%)	<b>0.3% max.</b> <b>0.4% max.</b>
Ripple and Noise	- 20 MHz Bandwidth	<b>50 mV<sub>p-p</sub> max.</b>
Capacitive Load		<b>3'000 µF max.</b> (ESR >10 mOhm)
Minimum Load		<b>Not required</b>
Temperature Coefficient		<b>±0.4 %/K max.</b>
Start-up Time		<b>8 ms typ.</b>
Start-up Overshoot Voltage		<b>3% max.</b>
Short Circuit Protection		<b>Continuous, Automatic recovery</b>
Output Current Limitation		<b>210% typ. of Iout max.</b>
Transient Response	- Peak Variation  - Response Time	<b>130 mV typ.</b> (50% Load Step) (5 Vin model) <b>200 mV typ.</b> (50 % Load Step) (12 Vin model) (with 1 µF MLCC // 10 µF TC) <b>25 µs typ.</b> (50% Load Step) (with 1 µF MLCC // 10 µF TC)

### General Specifications

Relative Humidity		<b>95% max.</b> (non condensing)
Temperature Ranges	- Operating Temperature - Storage Temperature	<b>-40°C to +85°C</b> <b>-55°C to +125°C</b>
Power Derating	- High Temperature	See application note: <a href="http://www.tracopower.com/overview/tos06sm">www.tracopower.com/overview/tos06sm</a>
Over Temperature Protection Switch Off	- Protection Mode - Measurement Point	<b>140°C typ.</b> (Automatic recovery) <b>See Application-Note</b>
Cooling System		<b>Natural convection</b> (20 LFM)
Remote Control	- Voltage Controlled Remote  - Off Idle Input Current	<b>On: open circuit or Vin max.</b> <b>Off: 0 to 0.3 VDC</b> <b>1 mA typ.</b> (12 Vin model: Open circuit or (Vin - 4 V) to Vin max. for on state)

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

Switching Frequency	270 - 330 kHz (PWM) 300 kHz typ. (PWM)
Insulation System	Non-isolated
Reliability	- Calculated MTBF 9'300'000 h (MIL-HDBK-217F, ground benign)
Moisture Sensitivity (MSL)	Level 2a (J-STD-033C)
Environment	- Vibration - Thermal Shock MIL-STD-810F MIL-STD-810F
Soldering Profile	Reflow Soldering (J-STD-020E) 245°C / 10 s max.
Weight	2.8 g
Environmental Compliance	- Reach - RoHS <a href="http://www.tracopower.com/info/reach-declaration.pdf">www.tracopower.com/info/reach-declaration.pdf</a> <a href="http://www.tracopower.com/info/rohs-declaration.pdf">www.tracopower.com/info/rohs-declaration.pdf</a>

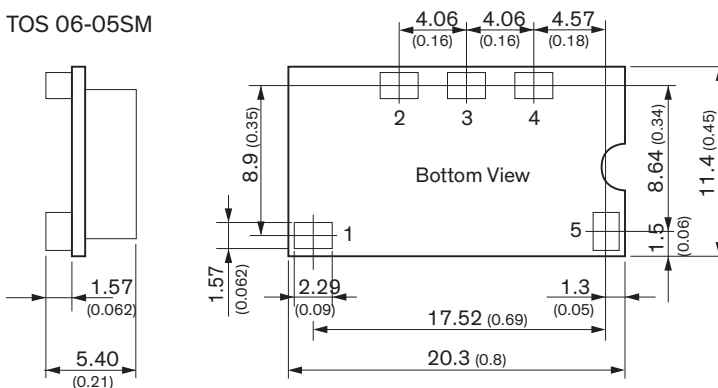
### Supporting Documents

Overview Link (for additional Documents)

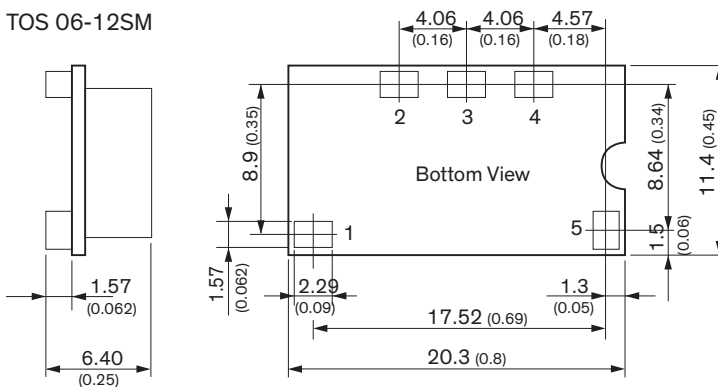
[www.tracopower.com/overview/tos06sm](http://www.tracopower.com/overview/tos06sm)

### Outline Dimensions

TOS 06-05SM



TOS 06-12SM



Dimensions in mm (inch)  
Tolerances x.x ±0.5 (x.xx ±0.02)  
Tolerances x.xx ±0.25 (x.xxx ±0.01)  
Pin dimension tolerance ±0.1 (±0.004)

### Pinout

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