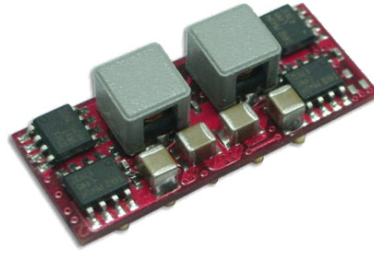


- **Small size, low profile**
- **SMT package**
- **Cost-efficient open frame design**
- **Wide input voltage ranges**
- **Output voltages trim from 0.8 VDC to 3.6 VDC**
- **Delivers up to 30 A with minimal derating**
- **Ultra high efficiency to 93 %**
- **Fast transient response**
- **Remote On/Off control**
- **Wide temperature range -40°C to $+85^{\circ}\text{C}$**



The TOS 30SM series is a range of high performance non-isolated DC/DC converters with very high efficiency that can supply up to 30 A of output current. These modules provide precisely regulated output voltages which can be set via an external resistor to a value from 0.8 VDC to 3.6 VDC. These converters work over a wide input voltage range of 4.5 to 5.5 VDC or 6.0 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 an SMT package. The TOS 30SM 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 30-05SM	30'000 mA	4.5 - 5.5 VDC (5 VDC nom.)	0.8 VDC (0.8 - 3.63 VDC)	93 %
TOS 30-12SM		6 - 14 VDC (12 VDC nom.)	0.8 VDC (0.8 - 3.63 VDC)	92 %

Note - 12 Vin model: 20 A output voltage higher than 2.75 VDC

Input Specifications

Input Current	- At no load	5 Vin models: 180 mA typ. 12 Vin models: 200 mA typ. (at Vout max.)
Under Voltage Lockout		5 Vin models: 3 VDC min. / 4 VDC typ. / 4.4 VDC max. 12 Vin models: 4 VDC min. / 4.5 VDC typ. / 5.5 VDC max.
Recommended Input Fuse		5 Vin models: 35'000 mA (fast acting) 12 Vin models: 30'000 mA (fast acting) (The need of an external fuse has to be assessed in the final application.)
Input Filter		Internal Capacitor

Output Specifications

Output Voltage Adjustment		0.8 Vout models: 0.8 - 3.63 VDC 0.8 - 3.63 VDC (By external trim resistor) See application note: www.tracopower.com/overview/tos30sm (Vout < Vin - 0.5 VDC)
Voltage Set Accuracy		± 1.5% max.
Regulation	- Input Variation (Vmin - Vmax) - Load Variation (0 - 100%)	0.1% max. 0.4% max.
Ripple and Noise	- 20 MHz Bandwidth	75 mVp-p typ.
Capacitive Load		10'000 µF max. (ESR ≥ 10 mOhm)
Minimum Load		Not required
Temperature Coefficient		± 0.5 %/K max.
Start-up Time		2.5 ms typ.
Start-up Overshoot Voltage		3% max.
Short Circuit Protection		Continuous, Automatic recovery
Output Current Limitation		150% typ. of Iout max.
Transient Response	- Peak Variation - Response Time	350 mV typ. (50% to 100% Load Step) 25 µs typ. (50% to 100% Load Step) (1 µF MLCC // 10 µF T/C)
Load Share Accuracy		10%

General Specifications

Relative Humidity		95% max. (non condensing)
Temperature Ranges	- Operating Temperature - Storage Temperature	-40°C to +85°C -55°C to +125°C
Power Derating	- High Temperature	See application note: www.tracopower.com/overview/tos30sm
Over Temperature Protection Switch Off	- Protection Mode - Measurement Point	125°C typ. (Automatic recovery) See application note: www.tracopower.com/overview/tos30sm
Cooling System		Natural convection (20 LFM)
Sense Function		62.5% max. of Vout nom. (= 0.5 VDC max.)
Remote Control	- Voltage Controlled Remote - Off Idle Input Current	On: 3.0 VDC to Vin max. or open circuit Off: -0.3 to 1.2 VDC Refers to 'Remote' and 'GND' Pin 3.3 mA max.
Switching Frequency		261 - 339 kHz (PWM) 300 kHz typ. (PWM)
Insulation System		Non-isolated
Reliability	- Calculated MTBF	1'260'000 h (MIL-HDBK-217F, ground benign)
Moisture Sensitivity (MSL)		Level 2a (J-STD-033C)

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

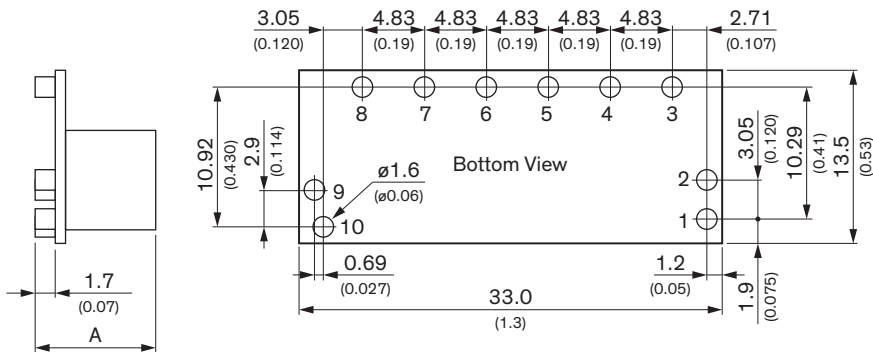
Environment	- Vibration - Thermal Shock	MIL-STD-810F MIL-STD-810F
Pin Material		Copper
Pin Foundation Plating		Nickel (3 - 5 µm)
Pin Surface Plating		Gold (50 - 75 nm), matte
Soldering Profile		Reflow Soldering (J-STD-020E)
Connection Type		SMD (Surface-Mount Device)
Weight		6 g
Environmental Compliance	- Reach - RoHS	www.tracopower.com/info/reach-declaration.pdf www.tracopower.com/info/rohs-declaration.pdf

Supporting Documents

Overview Link (for additional Documents)

www.tracopower.com/overview/tos30sm

Outline Dimensions



TOS 30-05SM: A = 9.40 (0.37)
TOS 30-12SM: A = 7.80 (0.31)

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	Remote On/Off
2	GND (option)
3	Share (option)
4	+Sense
5	Trim
6	+Vout
7	GND
8	SEQ
9	GND (option)
10	+Vin

For SEQ description see Application-Note

Recommended Solder Pad Layout

