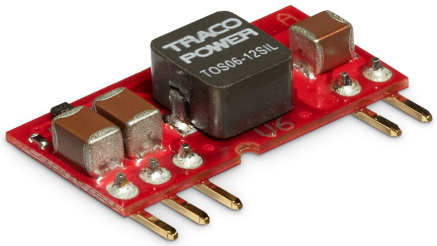
TRACO POWER

Non-Isolated DC/DC Converter (POL)

TOS 06SIL Series, 6 A

- **Small size, low profile**
- **SIP version**
- **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°C to +85°C**



cULus

UL 60950-1

The TOS 06SIL 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 and over current protection. These products have an open-frame construction with very small footprint and are available in an industry standard SIP package. The TOS 06SIL 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 06-05SIL	6'000 mA	2.4 - 5.5 VDC (5 VDC nom.)	0.75 VDC (0.75 - 3.3 VDC)	94 %
TOS 06-12SIL		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:	45 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:	35 mAp-p typ.
		12 Vin models:	30 mAp-p typ.
			(with input filter, see application note)
Recommended Input Fuse		5 Vin models:	8'000 mA (fast acting)
		12 Vin models:	6'300 mA (slow blow)
			(The need of an external fuse has to be assessed in the final application.)
Input Filter		See application note:	www.tracopower.com/overview/tos06sil

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/tos06sil
			(Vin must be at least 0.5 V higher than Vout)
Voltage Set Accuracy			±2% max.
Regulation	- Input Variation (Vmin - Vmax)		0.3% max.
	- Load Variation (0 - 100%)		0.4% max.
Ripple and Noise	- 20 MHz Bandwidth		50 mVp-p max.
Capacitive Load			3'000 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			210% typ. of Iout max.
Transient Response	- Peak Variation		130 mV typ. (50% Load Step) (5 Vin model)
			200 mV typ. (50 % Load Step) (12 Vin model)
	- Response Time		25 µs typ. (50% Load Step)
			(with 1 µF MLCC // 10 µF TC)

Safety Specifications

Safety Standards	- IT / Multimedia Equipment	UL 60950-1

General Specifications

Relative Humidity			95% max. (non condensing)
Temperature Ranges	- Operating Temperature		–40°C to +85°C
	- Case Temperature		+125°C max.
	- Storage Temperature		–55°C to +125°C
Power Derating	- High Temperature	See application note:	www.tracopower.com/overview/tos06sil
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		On: open circuit or Vin max. Off: 0 to 0.3 VDC Refers to 'Remote' and 'GND' Pin
	- Off Idle Input Current		1 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		9'300'000 h (MIL-HDBK-217F, ground benign)
Washing Process			Allowed (open product)
		See Cleaning Guideline:	www.tracopower.com/info/cleaning.pdf
Environment	- Vibration		MIL-STD-810F
	- Thermal Shock		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			THD (Through-Hole Device)
Footprint Type			SIP9
Soldering Profile			Wave Soldering 265°C / 10 s max.
Weight			2.8 g
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: 7a, 7c-I (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.)

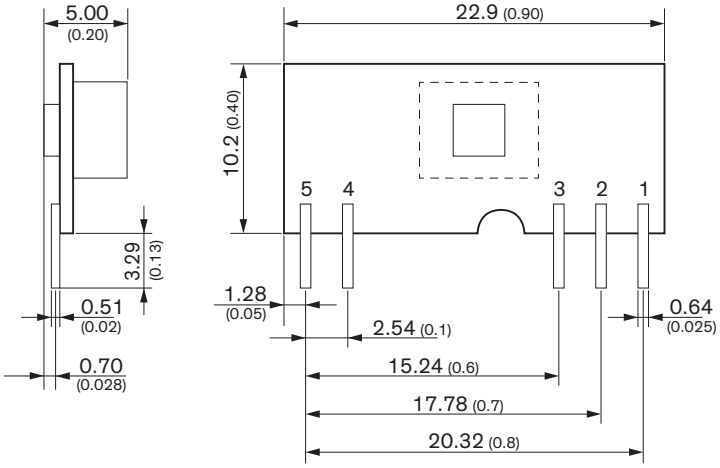
Supporting Documents

Overview Link (for additional Documents)	www.tracopower.com/overview/tos06sil

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

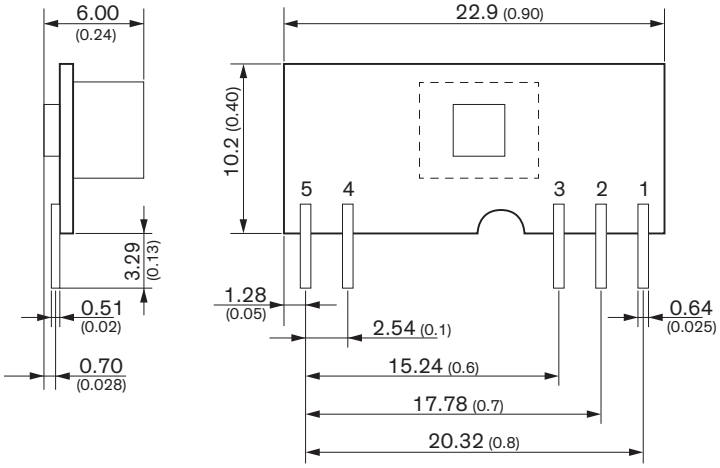
Outline Dimensions

TOS 06-05SIL



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

TOS 06-12SIL



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)