



### Features

- ◆ **Smallest 15W Converter**  
Ultra compact Size: 27.9 x 23.9 x 8.5mm
- ◆ **Cost efficient open Frame Design with Industry Standard Pin-out**
- ◆ **Surface-mount (SM) and Through-hole Version**
- ◆ **I/O Isolation Voltage 2250V, rated for basic Insulation**
- ◆ **Extended Operating Temperature Range: -40°C to +85°C**
- ◆ **Input Filter meets EN55022, Class A**
- ◆ **Under Voltage Lockout**
- ◆ **Remote On/Off**
- ◆ **Lead free Design, RoHS compliant**
- ◆ **3 Years Product Warranty**



The TON-15 series is a new generation of high performance 15W dc-dc converters with wide input voltage range and precisely regulated output voltage. The ultra compact open frame design with industry standard pin-out provides the designer now a 50% smaller, cost efficient alternative to existing 10 to 15W converters in the market. Built-in filters for both input and output minimize the need for external filtering.

Further features include remote On/Off, output voltage trimming, over voltage protection, under voltage lockout and short circuit protection. Typical applications are distributed power systems, instrumentation and industrial electronics, everywhere where space on the PCB is a critical factor.

### Models

Order code	Input voltage range	Output voltage	Output current max.	Efficiency typ.
TON 15-2410	18 – 36 VDC	3.3 VDC	3'500 mA	84 %
TON 15-2411		5.1 VDC	3'000 mA	84 %
TON 15-2412		12 VDC	1'250 mA	85 %
TON 15-2413		15 VDC	1'000 mA	86 %
TON 15-4810	36 – 75 VDC	3.3 VDC	3'500 mA	85 %
TON 15-4811		5.1 VDC	3'000 mA	86 %
TON 15-4812		12 VDC	1'250 mA	87 %
TON 15-4813		15 VDC	1'000 mA	88 %

Add suffix **SM** for surface mount version

### Input Specifications

Input current at no load	24 V models: 40 mA typ. 48 V models: 20 mA typ.
Input current at full load	24 V; 3.3 Vout models: 600 mA typ. 24 V; other output models: 760 mA typ. 48 V; 3.3 Vout models: 300 mA typ. 48 V; other output models: 380 mA typ.
Input voltage variation (dv/dt)	5 V / ms, max. (complies with ETS 300 132 part. 4.4)
Start-up voltage / Under voltage lockout	24 V models: 17 VDC / 14.5 VDC (typ.) 48 V models: 33 VDC / 31 VDC (typ.)
Surge voltage (100 msec. max.)	24 V models: 50 V max. 48 V models: 100 V max.
Conducted input noise (no ext. components)	EN 55022 level A, FCC part 15, level A

### Output Specifications

Voltage set accuracy	±1%
Output voltage adjustment	±10 %
Regulation	– Input variation Vin min. to Vin max. 0.2 % max. – Load variation 0 – 100 % 0.2 % max.
Temperature coefficient	±0.02 % /K
Ripple and noise (20 MHz Bandwidth) with a 1µF M/C and a 10µF T/C	3.3 / 5 Vout models: 75 mVpk-pk max. 12 / 15 Vout models: 100 mVpk-pk max.
Start up time (nominal Vin and constant resistive load)	30 ms typ.
Transient response setting time (25% load step chang)	300 µs typ.
Short circuit protection	indefinite (automatic recovery)
Over load protection	110-140 % of Iout max., foldback
Over voltage protection	3.3 Vout models: 3.7 – 5.4 Vout 5 Vout models: 5.6 – 7.0 Vout 12 Vout models: 13.5 – 19.6 Vout 15 Vout models: 16.8 – 20.5 Vout
Capacitive load	3.3 Vout & 5.0 Vout models: 1'000 µF max. 12 Vout models: 330 µF max. 15 Vout models: 220 µF max.

### General Specifications

Temperature ranges	– Operating –40 °C ... +85 °C – Storage –55 °C ... +125 °C
Derating	3%/K above 70°C
Humidity (non condensing)	95 % rel H max.
Reliability, calculated MTBF (MIL-HDBK-217 F)	800'000h @ 25°C
Isolation (Input/Output)	– Voltage 2'250 VDC (complies with basic insulation rating per EN 60950-1) – Capacity 1000 pF max. – Resistance >1'000 M Ohm
Remote On/Off	– On: 3.0 ... 15 VDC or open circuit. – Off: 0 ... 1.2 VDC or short circuit pin 6 and pin 2 – Off idle current: 20 mA typ.
Switching frequency (Pulse width modulation PWM)	3.3 / 5 Vout models: 270 kHz typ. 12 / 15 Vout models: 470 kHz typ.

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

**General Specifications**

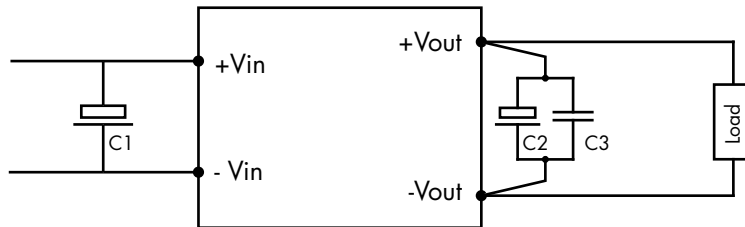
Vibration	10-55Hz, 2G, 30 minutes along X,Y,Z
Safety standards	UL 60950-1, EN 60950-1, IEC 60950-1
Safety approvals	UL/cUL File E188913

**Physical Specifications**

Weight	10.5g (0.36 oz)
Soldering profile	<ul style="list-style-type: none"> <li>- Trough Hole Version</li> <li>- SMD Version</li> </ul>
	max. 265 °C / 10 sec. (wave soldering) peak temp. 245°C for 10 sec. max., 217°C for 90 sec. max. (Convection reflow solder process is recommended)

**Note 1**

Recommended circuit to reduce conducted noise and output ripple & noise:

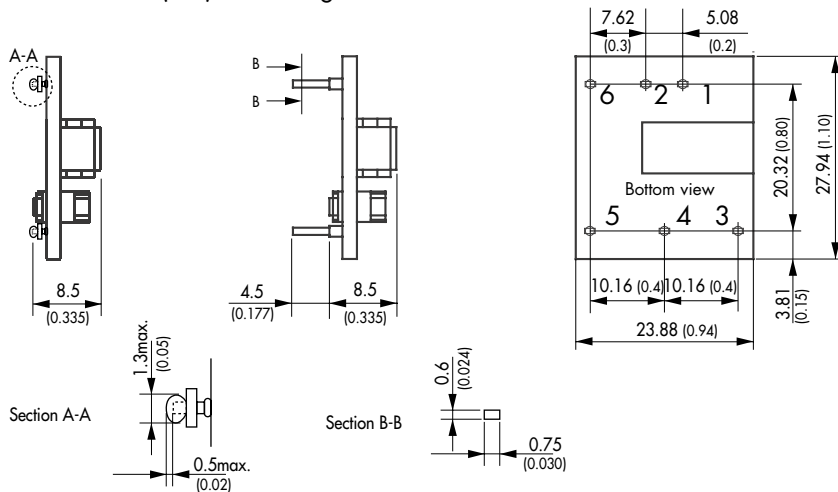


- C1: 33µF low ESR electrolytic capacitor
- C2: 10µF low ESR electrolytic capacitor
- C3: 1µ film capacitor

Application notes can be downloaded under:  
[www.tracopower.com/products/ton15\\_application.pdf](http://www.tracopower.com/products/ton15_application.pdf)

**Outline Dimensions**

SMD Version (SM)      Trough Hole Version



Pin-Out	
Pin	Single
1	+Vin (Vcc)
2	-Vin (GND)
3	+Vout
4	Trim
5	-Vout
6	Remote On/Off

Dimensions in [mm], ( ) = Inch  
 Tolerances ±0.35 (0.014)

Specifications can be changed without notice