



Features

- ◆ Smallest 15W Converter
Ultra compact Size: 27.9 x 23.9 x 8.5mm
- ◆ Ultra Wide 4:1 Input Voltage Range
- ◆ 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-15WI series is a new generation of high performance 15W dc-dc converters with ultra-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 15-2410WI	9 – 36 VDC (24 VDC nominal)	3.3 VDC	4'000 mA	84 %
TON 15-2411WI		5.0 VDC	3'000 mA	84 %
TON 15-2412WI		12 VDC	1'300 mA	85 %
TON 15-2413WI		15 VDC	1'000 mA	86 %
TON 15-4810WI	18 – 75 VDC (48 VDC nominal)	3.3 VDC	4'000 mA	86 %
TON 15-4811WI		5.0 VDC	3'000 mA	86 %
TON 15-4812WI		12 VDC	1'300 mA	87 %
TON 15-4813WI		15 VDC	1'000 mA	88 %

Add suffix **SM** for surface mount version

Input Specifications

Input current at no load	24 V; 3.3/5 Vout models:	50 mA typ.
	24 V; 12/15 Vout models:	20 mA typ.
	24 V; 3.3/5 Vout models:	40 mA typ.
	24 V; 12/15 Vout models:	15 mA typ.
Input current at full load	24 V; 3.3 Vout models:	690 mA typ.
	24 V; other output models:	800 mA typ.
	48 V; 3.3 Vout models:	340 mA typ.
	48 V; other output models:	390 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:	9 VDC / 8 VDC (typ.)
	48 V models:	18 VDC / 16 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, see note 1	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)		250 µs typ.
Short circuit protection		indefinite (automatic recovery)
Over load protection		<150 % 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		TBD
Humidity (non condensing)		95 % rel H max.
Reliability, calculated MTBF (MIL-HDBK-217 F)		TBD @ 25°C
Isolation voltage (60 sec)	– Input / Output	2'250 VDC (complies with basic insulation rating per EN 60950-1)
	– Input / Output	>1'000 M Ohm
Isolation resistance	– Input / Output	>1'000 M Ohm
	– Input / Output	1000 pF max.
Switching frequency (Pulse width modulation PWM)	3.3 / 5 Vout models:	300 kHz typ.
	12 / 15 Vout models:	400 kHz typ.

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

General Specifications

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.
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

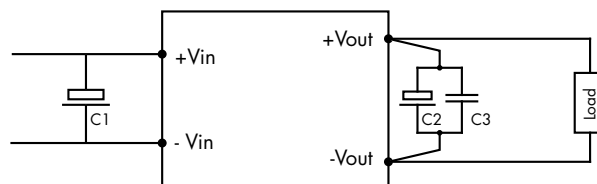
Physical Specifications

Weight	10.5g (0.36 oz)
Soldering profile	– Trough Hole Version max. 265 °C / 10 sec. (wave soldering) – SMD Version lead-free reflow solder process as per IPC/JEDEC J-STD-020C peak temp. 245°C (20 sec. max.)

Output Voltage Adjustment



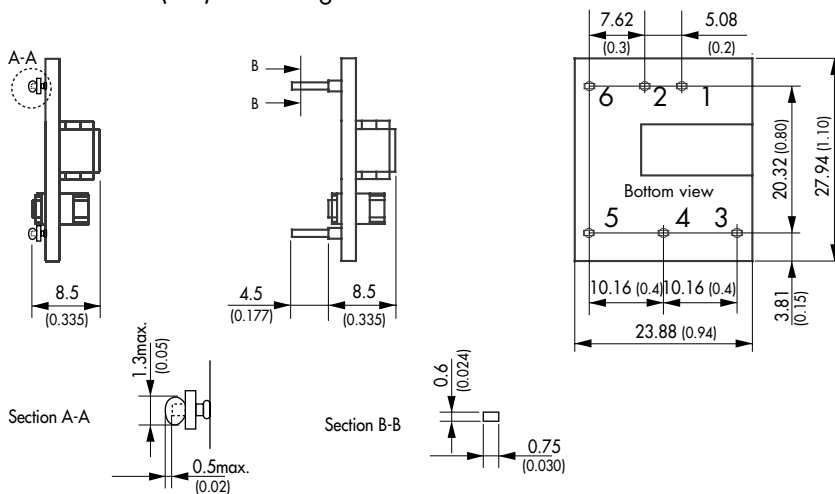
Note 1 Recommended circuit to reduce conducted noise and output ripple & noise:



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

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 any time without notice