

Features

- ◆ Compact design in SMD or DIP package
- ◆ Wide 2:1 input voltage range
- ◆ Fully regulated outputs
- ◆ Low ripple and noise
- ◆ No minimum load required
- ◆ Temperature range -40°C to $+85^{\circ}\text{C}$ without derating
- ◆ I/O isolation 1500 VDC
- ◆ Continuous short-circuit protection
- ◆ Remote On/Off control
- ◆ Fully RoHS compliant
- ◆ 3-year product warranty



The TDR-2 series is a family of compact 2 W dc/dc-converters with 2:1 input voltage ranges and tightly regulated output voltages even under no load conditions. The product is available in SMD-package or in DIP-package. They work with high efficiency over the full load range and come with a remote On/Off input.

The usability in temperature ranges of up to 85°C without power derating, continuous short circuit protection and excellent immunity against environmental influences make these converters very reliable.

A TDR-2 converter is the ideal solution for space critical high end applications in communication equipment, instrumentation and industrial electronics.

Models

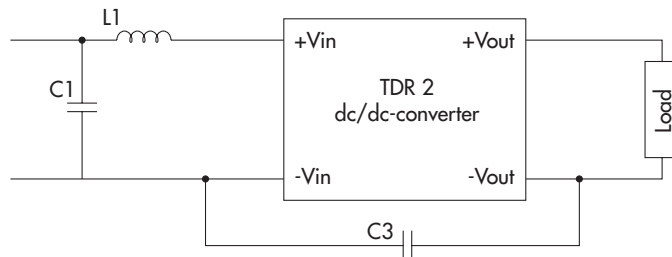
Order code DIP models	Order code SMD models	Input voltage range	Output voltage	Output current max.	Efficiency typ.
TDR 2-0511	TDR 2-0511SM	4.5 – 9.0 VDC (5 VDC nominal)	5.0 VDC	400 mA	80 %
TDR 2-0512	TDR 2-0512SM		12 VDC	167 mA	81 %
TDR 2-0513	TDR 2-0513SM		15 VDC	134 mA	83 %
TDR 2-0522	TDR 2-0522SM		± 12 VDC	± 83 mA	81 %
TDR 2-0523	TDR 2-0523SM		± 15 VDC	± 67 mA	82 %
TDR 2-1211	TDR 2-1211SM	9 – 18 VDC (12 VDC nominal)	5.0 VDC	400 mA	81 %
TDR 2-1212	TDR 2-1212SM		12 VDC	167 mA	81 %
TDR 2-1213	TDR 2-1213SM		15 VDC	134 mA	84 %
TDR 2-1222	TDR 2-1222SM		± 12 VDC	± 83 mA	83 %
TDR 2-1223	TDR 2-1223SM		± 15 VDC	± 67 mA	82 %
TDR 2-2411	TDR 2-2411SM	18 – 36 VDC (24 VDC nominal)	5.0 VDC	400 mA	81 %
TDR 2-2412	TDR 2-2412SM		12 VDC	167 mA	84 %
TDR 2-2413	TDR 2-2413SM		15 VDC	134 mA	84 %
TDR 2-2422	TDR 2-2422SM		± 12 VDC	± 83 mA	84 %
TDR 2-2423	TDR 2-2423SM		± 15 VDC	± 67 mA	84 %
TDR 2-4811	TDR 2-4811SM	36 – 75 VDC (48 VDC nominal)	5.0 VDC	400 mA	81 %
TDR 2-4812	TDR 2-4812SM		12 VDC	167 mA	82 %
TDR 2-4813	TDR 2-4813SM		15 VDC	134 mA	82 %
TDR 2-4822	TDR 2-4822SM		± 12 VDC	± 83 mA	83 %
TDR 2-4823	TDR 2-4823SM		± 15 VDC	± 67 mA	83 %

General Specifications

Temperature ranges	- Operating - Storage	-40°C to +85°C (with no derating) -55°C to +125°C
Humidity (non condensing)		5 % to 90 % rel. H max.
Thermal shock		acc. MIL-STD-810F
Vibration		acc. MIL-STD-810F
Reliability, calculated MTF (MIL-HDBK-217F, @ +25°C, ground benign)		>2.8 Mio h
Isolation voltage (60 sec.)	- Input/Output	1500 VDC
Isolation capacity	- Input/Output	50 pF max.
Isolation resistance	- Input/Output (500 VDC)	>10 GOhm
Safety standard (designed to meet)		IEC/EN 60950-1, UL 60950-1
Switching frequency		100 kHz (PWM)
Remote On/Off	- On: - Off: - Off stand by input current	open or high impedance 2...4 mA current applied via 1KOhm resistor 2.5 mA max.

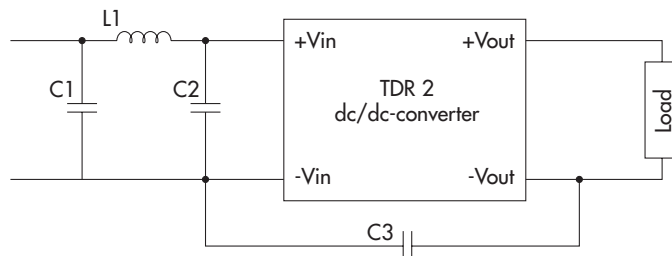
EMC Consideration

Recommended filter for
EN 55022 class A compliance



Input models	C1	C3	L1 value	order code (SMD type)	datasheet
5 VDC	10 µF / 25 V 1812 MLCC	220pF / 3 kV 1808 MLCC	2.2 µH	TCK-059	www.tracopower.com/products/tck059.pdf
12 VDC	6.8 µF / 50 V 1812 MLCC		18 µH	TCK-046	www.tracopower.com/products/tck046.pdf
24 VDC	4.7 µF / 50 V 1812 MLCC				
48 VDC	4.7 µF / 100 V 1812 MLCC				

Recommended filter for
EN 55022 class B compliance



Input models	C1 & C2	C3	L1 value	order code (SMD type)	datasheet
5 VDC	10 µF / 25 V 1812 MLCC	220pF / 3 kV 1808 MLCC	2.2 µH	TCK-059	www.tracopower.com/products/tck059.pdf
12 VDC	2.2 µF / 50 V 1812 MLCC		18 µH	TCK-046	www.tracopower.com/products/tck046.pdf
24 VDC			27 µH	TCK-063	www.tracopower.com/products/tck063.pdf
48 VDC			18 µH	TCK-046	www.tracopower.com/products/tck046.pdf

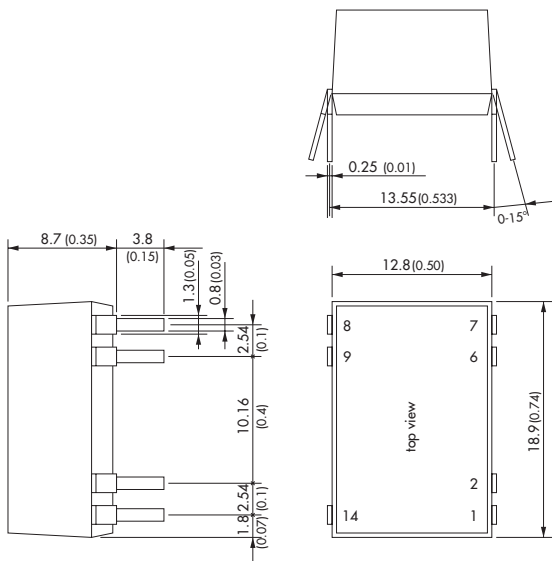
All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

Physical Specifications

Casing material	non-conductive plastic (UL94V-0 rated)
Package weight	4.5 g (0.16 oz)
Soldering profile for DIP-package models	max. 265°C / 10 sec. (wave soldering)
Lead-free reflow solder process for SMD-package models	as per J-STD-020D.01 (to find at: www.jedec.org - free registration required)
Moisture sensivity level (for SMD-package models)	level 2a as per J-STD-033B.01 (to find at: www.jedec.org - free registration required)

Outline Dimensions

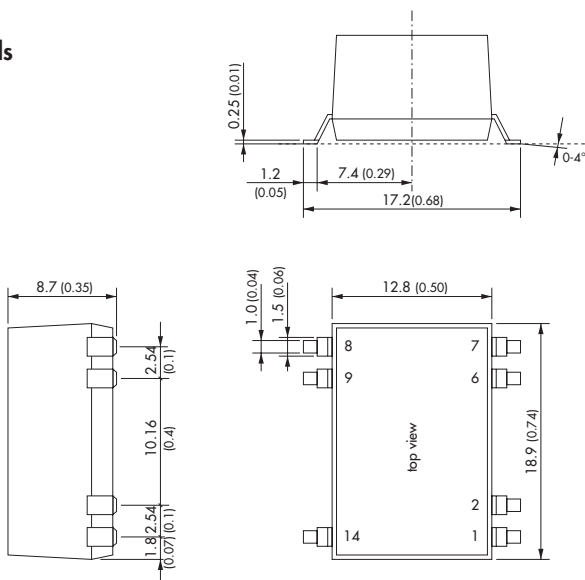
DIP-Models



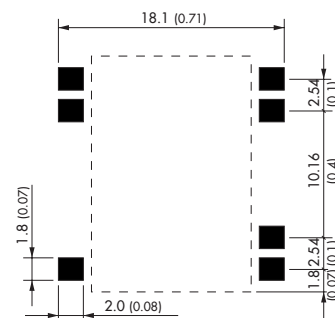
Pin-Out		
Pin	Single	Dual
1	-Vin (GND)	-Vin (GND)
2	Remote On/Off	Remote On/Off
6	NC	Common
7	NC	-Vout
8	+Vout	+Vout
9	-Vout	Common
14	+Vin (Vcc)	+Vin (Vcc)

NC = not to connect

SMD-Models



Recommended Solder Pad Dimension:



Dimensions in [mm], () = Inch
Tolerances: ±0.5 (±0.02)
Pin pitch tolerances: ±0.25 (±0.01)

Specifications can be changed any time without notice.