

1A

DC-DC
converters 

The TR10 provides a compact efficient switching regulator solution operating from a wide range DC input with popular output voltages of 3.3VDC & 5.0VDC.

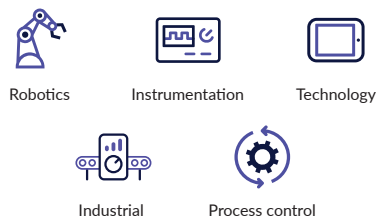
This convenient, cost-effective solution features short circuit protection and an industrial operating temperature range.



Features

- ▶ Non-isolated 1.0A switching regulator
- ▶ Regulated single outputs 3.3 & 5.0VDC
- ▶ Input range up to 28VDC
- ▶ SIP3 package
- ▶ Low 1.5mA standby input current
- ▶ Efficiency to 93%
- ▶ Class B conducted & radiated emissions
- ▶ -40°C to +85°C operating temperature
- ▶ Full load to 60°C ambient
- ▶ 3 year warranty

Applications



Dimensions

11.68 x 7.5 x 10.16mm (0.46" x 0.29" x 0.4")

Documentation

For further information click the link or scan the code

→ xppower.com



Models & ratings

Model number	Input voltage	Output voltage	Output current	Input current			Efficiency		Max. capacitive load
				No load	Full load, min. Vin	Full load, max. Vin	Min. Vin	Max. Vin	
TR10S3V3	7-28VDC	3.3VDC	1000mA	1.5mA	530mA	145mA	89%	82%	220µF
TR10S05	8-28VDC	5.0VDC	1000mA	1.5mA	670mA	210mA	93%	86%	220µF

Notes:

1. Standard tube quantity 30 pcs

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Input voltage range	7		28	VDC	See models and ratings
Input filter	Integral capacitor				
Input reflected ripple			35	mA pk-pk	Through 12μH inductor and 47μF capacitorsource values.
Input surge			30	VDC for 100ms	

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Output voltage	3.3		5	VDC	See models and ratings
Initial set accuracy			2.5	%	At full load
Minimum load	100			mA	Minimum load required to meet specification. Operation at no load will not cause damage.
Line regulation			1.0	%	
Load regulation			1.5	%	From 10% to full load
Transient response			±3	%	For 25% load change
Ripple & noise			100	mV pk-pk	20MHz bandwidth
Short circuit protection	Continuous, with auto recovery				
Maximum capacitive load					See models and ratings
Temperature coefficient			0.02	%/ °C	

General

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Efficiency		90		%	See models and ratings table
Isolation: input to output	0			VDC	Non isolated
Switching frequency		330		kHz	
Mean time between failure	3.8			Mhrs	MIL-HDBK-217F, +25°C GB
Weight		2.1 (0.004)		g (lb)	
Case material	Non-conductive black plastic UL94V-0				
Pin material	Solder Coated C5191R-H				
Potting material	Silicon, UL94V-0 rated				
Water washing	Use de-ionised water, do not soak, dry thoroughly				
Soldering temperature			+260	°C	Wave solder peak, 1.5mm from case 10s max. Not suitable for vapour phase soldering. For further details contact XP Power applications team.

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Operating temperature	-40		+85	°C	Derate from 100% load at +60°C to 40% at +85°C
Storage temperature	-55		+125	°C	
Case temperature			+105	°C	
Humidity			95	%RH	Non-condensing
Cooling	Natural convection				

Safety approvals

Safety Agency	Standard	Notes & conditions
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

EMC: emissions

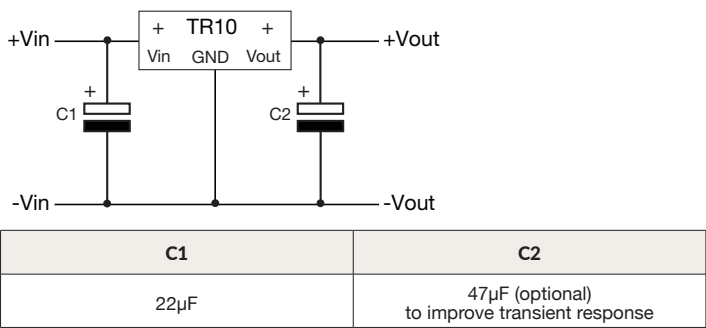
Phenomenon	Standard	Test level	Notes & conditions
Conducted	EN55032	Class B	See application notes
Radiated	EN55032	Class B	

Emissions - immunity

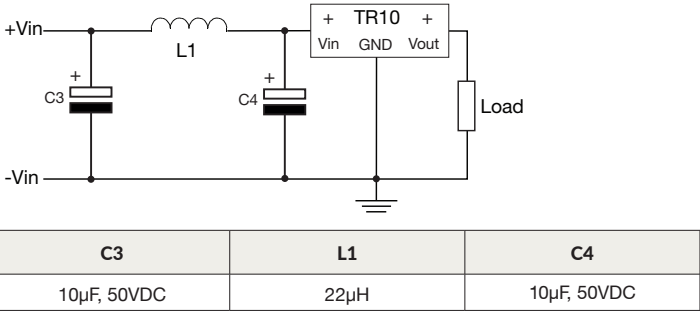
Phenomenon	Standard	Test level	Criteria	Notes & conditions
ESD immunity	EN61000-4-2	±6kV contact/±8kV air	A	External input capacitor required 330µF/100VDC
Radiated immunity	EN61000-4-3	20Vrms	A	
EFT/burst	EN61000-4-4	±2.0kV	A	
Surge	EN61000-4-5	±0.5kV	A	
Conducted	EN61000-4-6	10Vrms	A	
Magnetic fields	EN61000-4-8	100A/m	A	

Application notes

Standard application

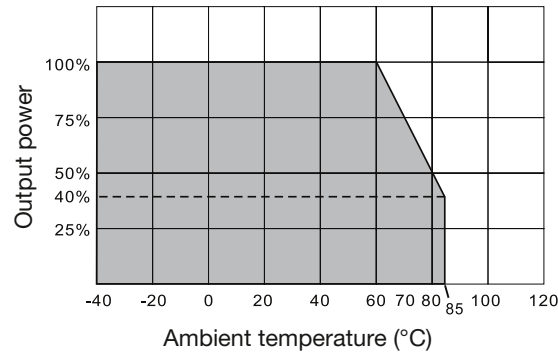


Input filter to meet Class B conducted emissions

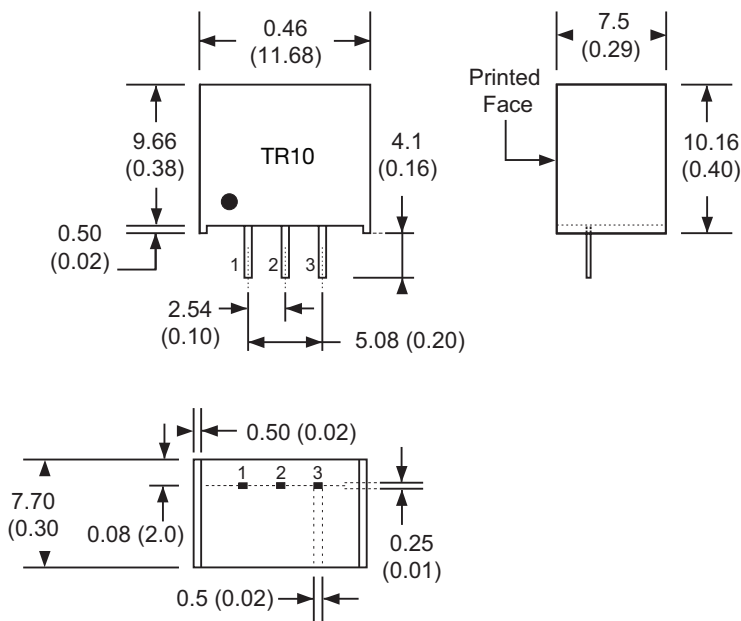


C3, C4 and L1 should be placed as close to the TR10 as possible. Suggested capacitor type MLCC with low ESR For inductor use saturation current higher than 2A with a low DCR rating. Suggested size to be 5 x 5mm minimum.

Derating curve



Mechanical details



Pin connections	
Pin	Function
1	+Vin
2	Ground
3	+Vout

Notes:

1. All dimensions are in mm (inches).

2. Weight: 2.1g (0.004lbs) typical.

3. Pin diameter 0.5±0.05 (0.02±0.002)
3. Pin pitch tolerance: ±0.35 (±0.014)

5. Case and pin tolerances: ±0.5 (±0.02).