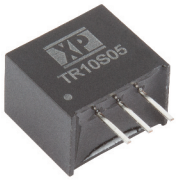
TR10 Series

DC-DC Converter

XP Power

1 Amp

- 3 Pin Switching Regulator
- SIP Package
- -40 °C to +85 °C Operation
- Full Load to 60 °C Ambient
- Wide Input Range to 28 V
- Class B Conducted & Radiated Emissions
- MTBF >3.8 MHrs
- 3 Year Warranty



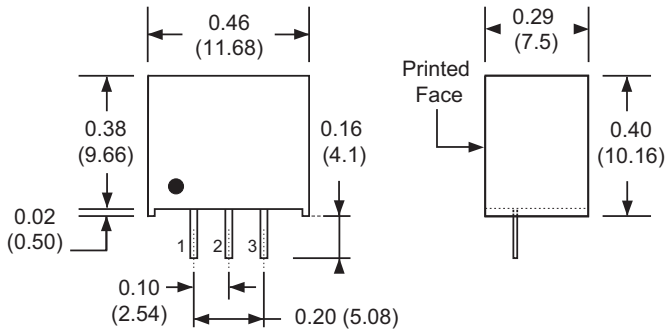
Dimensions:

TR10:
0.46 x 0.29 x 0.4" (11.68 x 7.5 x 10.16 mm)

Models & Ratings

Input Voltage	Output Voltage	Output Current	Input Current			Max. Capacitive Load	Efficiency		Model Number
			No Load	Full Load, min. Vin	Full Load, max. Vin		Min. Vin	Max. Vin	
7-28 V	3.3 V	1000 mA	1.5 mA	530 mA	145 mA	220 µF	89%	82%	TR10S3V3
8-28 V	5.0 V	1000 mA	1.5 mA	670 mA	210 mA	220 µF	93%	86%	TR10S05

Mechanical Details



Pin Connections	
Pin	Single
1	+Vin
2	Ground
3	+Vout

Notes

1. All dimensions are in inches (mm)
2. Weight: 0.004 lbs (2.1 g) approx.
3. Pin diameter: 0.02±0.002 (0.5±0.05)
4. Pin pitch tolerance: ±0.014 (±0.35)
5. Case tolerance: ±0.02 (±0.5)

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage Range	7		28	VDC	See Models and Ratings table
Input Filter	Capacitor				
Input Reflected Ripple			35	mA pk-pk	Through 12 µH inductor and 47 µF capacitor
Input Surge			30	VDC for 1000 ms	

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage	3.3		5	VDC	See Models and Ratings table
Initial Set Accuracy			±5	%	At 70% 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	20 MHz bandwidth. Measured using 0.1 µF ceramic capacitor
Short Circuit Protection					Continuous, with auto recovery
Maximum Capacitive Load					See Models and Ratings table
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		300		kHz	5 V/12-24 V input
Mean Time Between Failure	3.8			MHrs	MIL-HDBK-217F, +25 °C GB
Weight		0.004 (2.1)		lb (g)	

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			+100	°C	
Humidity			95	%RH	Non-condensing
Cooling					Natural convection

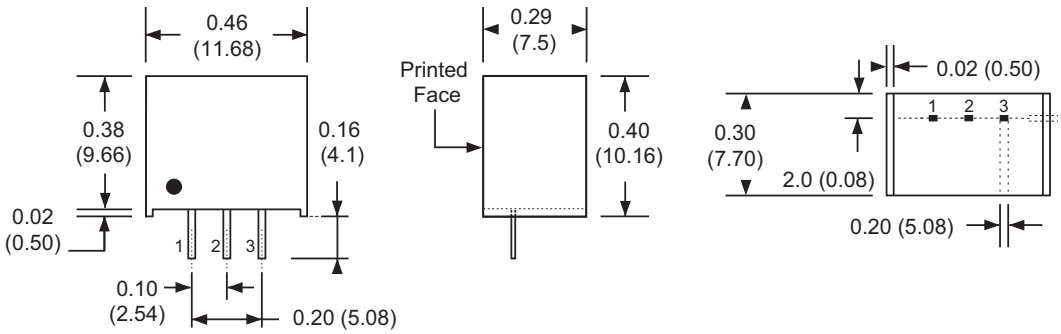
EMC: Emissions

Phenomenon	Standard	Test Level	Notes & Conditions
Conducted	EN55032	Class B	See Application Note
Radiated	EN55032	Class B	

EMC: Immunity

Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
ESD Immunity	EN61000-4-2	±4 kV/±8 kV	A	Contact discharge/Air discharge
Radiated Immunity	EN61000-4-3	10 Vrms	A	
EFT/Burst	EN61000-4-4	3	A	External input capacitor required 330 µF/100 V
Surges	EN61000-4-5	1	A	External input capacitor required 330 µF/100 V
Conducted Immunity	EN61000-4-6	3 V rms	A	
Magnetic Fields	EN61000-4-8	1 A/m	A	

Mechanical Details



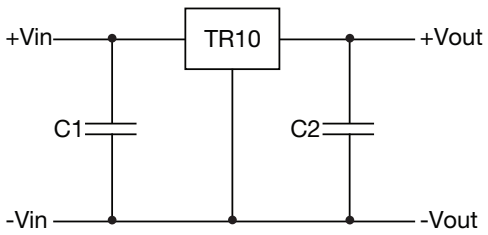
Pin Connections	
Pin	Single
1	+Vin
2	Ground
3	+Vout

Notes

1. All dimensions are in inches (mm)
2. Weight: 0.004 lbs (2.1 g) approx.
3. Pin diameter: 0.02±0.002 (0.5±0.05)
4. Pin pitch tolerance: ±0.014 (±0.35)
5. Case tolerance: ±0.02 (±0.5)

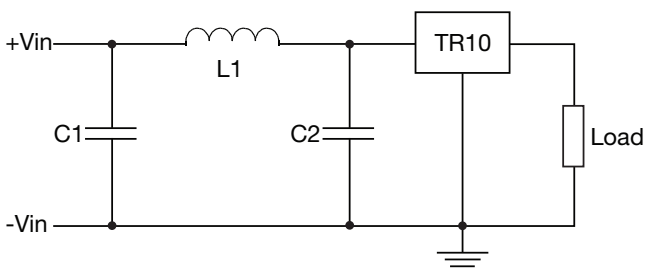
Application Note

Standard Application



C1 = 22 µF
C2 = 47 µF (optional) to improve transient response

EMI Filter



C1 = 10 µF, 50 V
L1 = 22 µH
C2 = 10 µF, 50 V

C1, C2 and L1 should be placed as close to the TR10 as possible