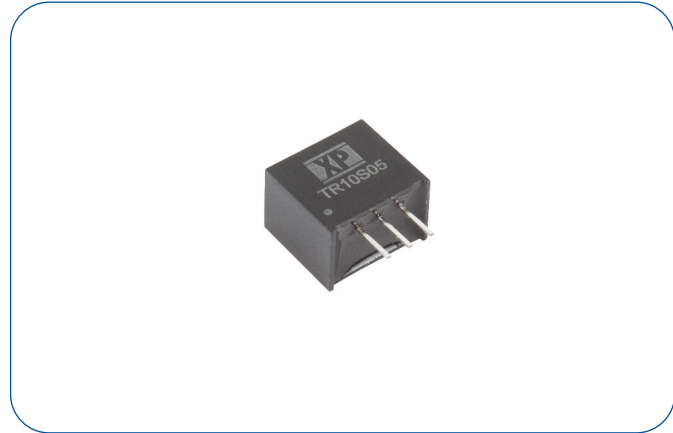


### 1 Amp

- 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



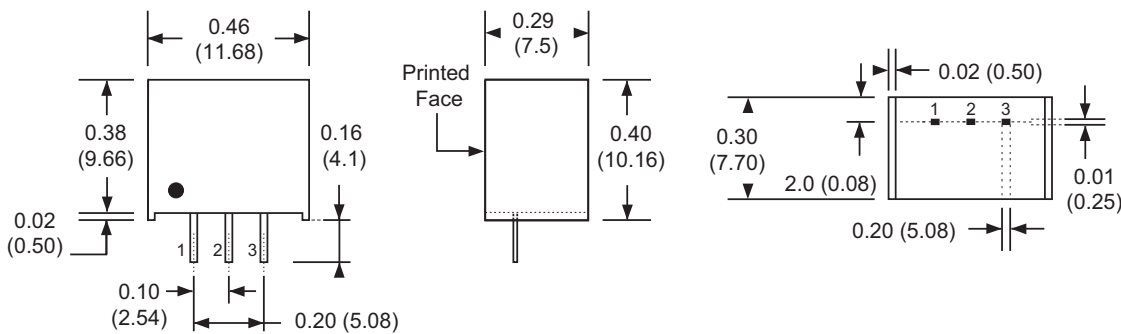
#### Dimensions:

**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 $\mu$ F	89%	82%	TR10S3V3
8-28 V	5.0 V	1000 mA	1.5 mA	670 mA	210 mA	220 $\mu$ F	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 $\pm$ 0.002 (0.5 $\pm$ 0.05)

4. Pin pitch tolerance:  $\pm$ 0.014 ( $\pm$ 0.35)
5. Case tolerance:  $\pm$ 0.02 ( $\pm$ 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 $\mu$ H inductor and 47 $\mu$ F capacitor
Input Surge			30	VDC for 100 ms	

### Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage	3.3		5	VDC	See Models and Ratings table
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			$\pm 3$	%	For 25% load change
Ripple & Noise			100	mV pk-pk	20 MHz bandwidth
Short Circuit Protection					Continuous, with auto recovery
Maximum Capacitive Load					See Models and Ratings table
Temperature Coefficient			0.02	%/ $^{\circ}$ 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 $^{\circ}$ C GB
Weight		0.004 (2.1)		lb (g)	

### Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating Temperature	-40		+85	$^{\circ}$ C	Derate from 100% load at +60 $^{\circ}$ C to 40% at +85 $^{\circ}$ C
Storage Temperature	-55		+125	$^{\circ}$ C	
Case Temperature			+105	$^{\circ}$ C	
Humidity			95	%RH	Non-condensing
Cooling					Natural convection

### EMC: Emissions

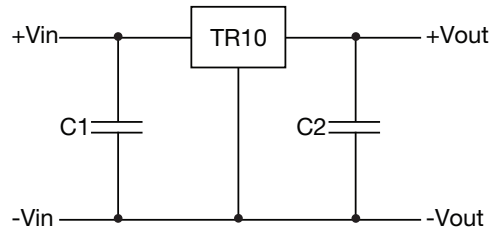
Phenomenon	Standard	Test Level	Notes & Conditions
Conducted	EN55032	Class B	See Application Note
Radiated	EN55032	Class B	

### EMC: Immunity

Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
ESD Immunity	EN61000-4-2	$\pm 6$ kV/ $\pm 8$ kV	A	Contact discharge/Air discharge
Radiated Immunity	EN61000-4-3	20 Vrms	A	
EFT/Burst	EN61000-4-4	$\pm 2.0$ kV	A	External input capacitor required 330 $\mu$ F/100 V
Surges	EN61000-4-5	$\pm 0.5$ kV	A	External input capacitor required 330 $\mu$ F/100 V
Conducted Immunity	EN61000-4-6	10 V rms	A	
Magnetic Fields	EN61000-4-8	100 A/m	A	

### Application Note

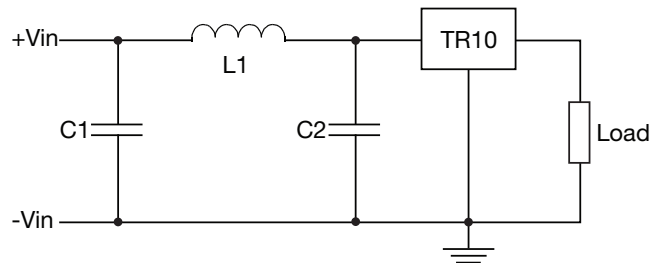
#### Standard Application



C1 = 22  $\mu$ F

C2 = 47  $\mu$ F (optional) to improve transient response

#### EMI Filter



C1 = 10  $\mu$ F, 50 V  
L1 = 22  $\mu$ H  
C2 = 10  $\mu$ F, 50 V

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