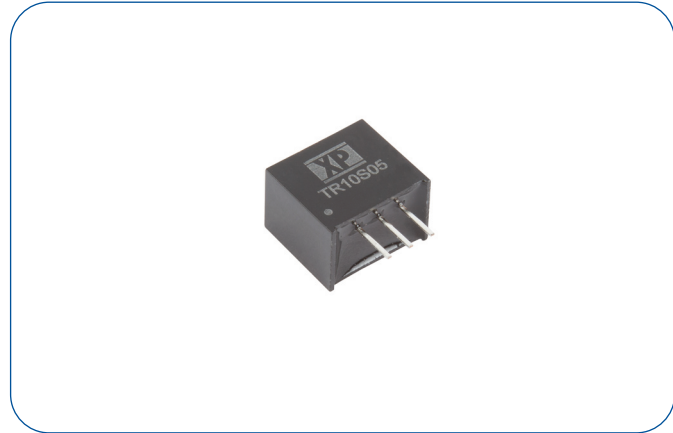


1 Amp

- 1A Switching Regulator
- Regulated Single Outputs of 3.3V and 5V DC
- Wide Input Range to 28V
- SIP3 Package
- Non Isolated
- High Efficiency to 93%
- Class B Conducted & Radiated Emissions
- Short Circuit Protection
- Low 1.5mA Standby Input Current
- -40°C to +85°C Operation
- MTBF >3.8Mhrs
- 3 Year Warranty



Dimensions:

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

The TR10 provides a compact efficient switching regulator solution operating from a wide range DC input with popular regulated output voltages of 3.3V and 5V. This convenient, cost-effective solution features short circuit protection and an industrial operating temperature range.

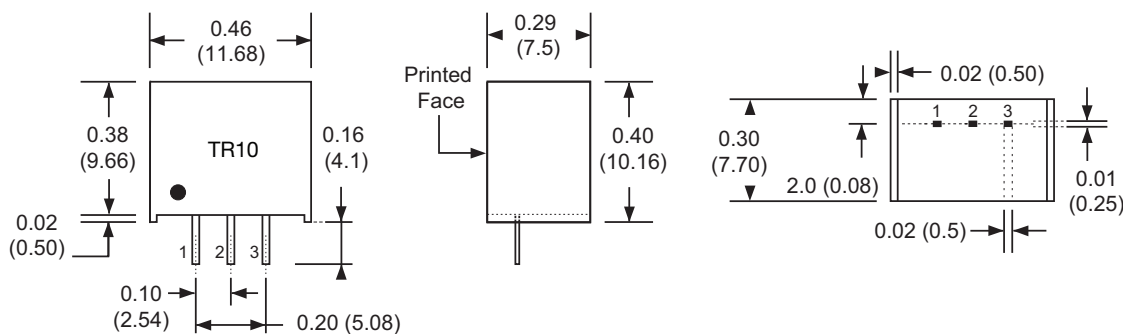
Models & Ratings

| Input Voltage | Output Voltage | Output Current | Input Current | | | Max. Capacitive Load | Efficiency with full load | | 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 μ F | 89% | 82% | TR10S3V3 |
| 8-28 V | 5.0 V | 1000 mA | 1.5 mA | 670 mA | 210 mA | 220 μ F | 93% | 86% | TR10S05 |

Notes

- Standard tube quantity 30 pcs

Mechanical Details



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

Notes

- All dimensions are in inches (mm)
- Weight: 0.004 lbs (2.1 g) approx.
- Pin diameter: 0.02 \pm 0.002 (0.5 \pm 0.05)
- Pin pitch tolerance: \pm 0.014 (\pm 0.35)
- 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 | Integral capacitor | | | | |
| Input Reflected Ripple | | | 35 | mA pk-pk | Through 12 μ H inductor and 47 μ 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) | |
| Case Material | Non-conductive black plastic UL94V-0 | | | | |
| Pin Material | Solder Coated C5191R-H | | | | |
| Potting Material | Silicon, UL94V-0 rated | | | | |
| Soldering Temperature | | | 260 | $^{\circ}$ 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 | $^{\circ}$ 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

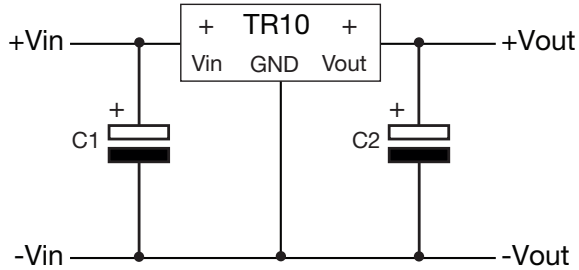
| Phenomenon | Standard | Test Level | Notes & Conditions |
|------------|----------|------------|----------------------|
| Conducted | EN55032 | Class B | See Application Note |
| Radiated | EN55032 | Class B | |

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 μ F/100 V |
| Surges | EN61000-4-5 | \pm 0.5 kV | A | External input capacitor required 330 μ F/100 V |
| Conducted Immunity | EN61000-4-6 | 10 V rms | A | |
| Magnetic Fields | EN61000-4-8 | 100 A/m | A | |

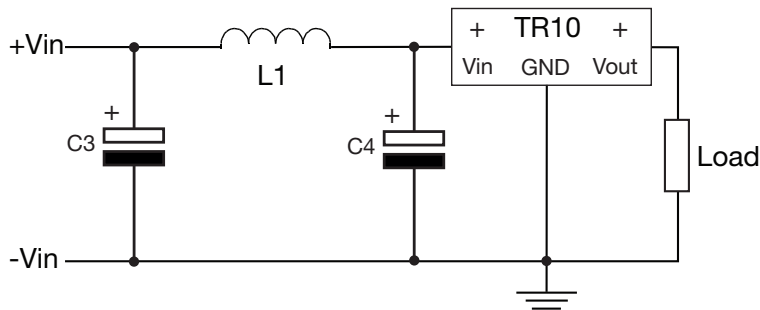
Application Notes

Standard Application



| C1 | C2 |
|------------|--|
| 22 μ F | 47 μ F (optional) to improve transient response |

Input Filter to meet Class B Conducted Emissions



| C3 | L1 | C4 |
|---|------------|------------------|
| 10 μ F, 50 V | 22 μ H | 10 μ F, 50 V |
| C3, C4 and L1 should be placed as close to the TR10 as possible | | |

Derating Curve

