0.5 Amps
TR Series

- 3 Pin SIP 3T Switching Regulator
- Wide Input Range
- Continuous Short-circuit Protection
- Pin Compatible with LM78MXX
- Efficiency up to 94%
- -40 °C to +85 °C Operating Temperature
- 3 Year Warranty

**Specification**

**Input**
- Input Voltage Range: See table
- Input Current: See table
- Input Reflected Ripple: 35 mA pk-pk through 12 µH inductor and 47 µF capacitor, 5 Hz to 20 MHz
- Input Filter: External capacitor (see application notes)

**Output**
- Output Voltage: See table
- Minimum Load: 5 mA
- Line Regulation: ±0.5% max
- Load Regulation: ±0.8% from 10% to 100% load
- Setpoint Accuracy: ±3%
- Turn-on Time: See note 6
- Ripple & Noise: 60 mV pk-pk with 10% minimum load, 20 MHz bandwidth
- Maximum Capacitive Load: 110 µF for S3V3, S05 and S12 models, 47 µF for S15 models
- Short Circuit Protection: Indefinite (automatic recovery)
- Temperature Coefficient: 0.02%/°C

**General**
- Efficiency: See table
- Isolation Voltage: Non-isolated
- Switching Frequency: 570 kHz typical
- Package Style: 3 pin SIP
- MTBF: >4.0 MHrs to MIL-HDBK-217F at 25 ºC, GB

**Environmental**
- Operating Temperature: -40 °C to +85 °C, S3V3 and S05, derate from 100% load at 70 ºC to 40% load at 85 ºC, S12 and S15 derate from 100% load at 65 ºC to 40% load at 85 ºC
- Operating Humidity: 95% RH
- Case Temperature: +100 ºC max
- Storage Temperature: -40 ºC to +125 ºC
- Cooling: Convection-cooled

**Notes**
1. All dimensions in inches (mm)
2. Weight: 0.004 lbs (1.8 g)
3. Pin pitch tolerance: ±0.014 (±0.35)
4. Case tolerance: ±0.02 (±0.5)
5. Efficiency range given for maximum Vin to minimum Vin
6. For maximum reliability, ensure turn on time is >1 ms by placing a 22 µF capacitor between +Vin and GND

**Model Numbers**

<table>
<thead>
<tr>
<th>Input Voltage</th>
<th>No Load Input Current</th>
<th>Output Voltage</th>
<th>Output Current</th>
<th>Efficiency</th>
<th>Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.5-28.0 VDC</td>
<td>1.0 mA</td>
<td>3.3 V</td>
<td>500 mA</td>
<td>75-89%</td>
<td>TR05S3V3</td>
</tr>
<tr>
<td>7.0-28.0 VDC</td>
<td>1.0 mA</td>
<td>5.0 V</td>
<td>500 mA</td>
<td>80-92%</td>
<td>TR05S05</td>
</tr>
<tr>
<td>14.0-28.0 VDC</td>
<td>1.5 mA</td>
<td>12.0 V</td>
<td>500 mA</td>
<td>90-94%</td>
<td>TR05S12</td>
</tr>
<tr>
<td>17.0-28.0 VDC</td>
<td>2.0 mA</td>
<td>15.0 V</td>
<td>500 mA</td>
<td>92-94%</td>
<td>TR05S15</td>
</tr>
</tbody>
</table>

**Mechanical Details**

**Application Notes**

Input Filter to meet Class B Conducted Emissions

**Notes**

- 1. All dimensions in inches (mm)
- 2. Weight: 0.004 lbs (1.8 g)
- 3. Pin pitch tolerance: ±0.014 (±0.35)
- 4. Case tolerance: ±0.02 (±0.5)
- 5. Efficiency range given for maximum Vin to minimum Vin
- 6. For maximum reliability, ensure turn on time is >1 ms by placing a 22 µF capacitor between +Vin and GND