

Series AM3TIW-RZ

3 Watt | DC-DC Converter



FEATURES:

- No Minimum Load
- 24 Pin DIP Package
- Wide 4:1 Input Range
- High Efficiency up to 81%
- Over Load Protection
- Operating Temperature -40 to +85°C
- Input / Output Isolation 1500 or 3000 VDC
- Internal EMC Filter Meets EN55022 Class A
- Continuous Short Circuit Protection
- Input Under Voltage Protection

Models

Single output



| Model | Input Voltage (V) | Output Voltage (V) | Output Current Max (mA) | Isolation (VDC) | Max Capacitive Load (uF) | Input Current Full No Load (mA) | | Efficiency (%) |
|--------------------|-------------------|--------------------|-------------------------|-----------------|--------------------------|-----------------------------------|----|----------------|
| AM3TIW-2403S-RZ | 9-36 | 3.3 | 900 | 1500 | 470 | 167 | 10 | 73 |
| AM3TIW-2405S-RZ | 9-36 | 5 | 600 | 1500 | 470 | 160 | 10 | 77 |
| AM3TIW-2412S-RZ | 9-36 | 12 | 250 | 1500 | 100 | 156 | 10 | 81 |
| AM3TIW-2415S-RZ | 9-36 | 15 | 200 | 1500 | 100 | 154 | 10 | 81 |
| AM3TIW-2424S-RZ | 9-36 | 24 | 125 | 1500 | 47 | 154 | 10 | 81 |
| AM3TIW-4803S-RZ | 18-75 | 3.3 | 900 | 1500 | 470 | 84 | 7 | 75 |
| AM3TIW-4805S-RZ | 18-75 | 5 | 600 | 1500 | 470 | 80 | 7 | 79 |
| AM3TIW-4812S-RZ | 18-75 | 12 | 250 | 1500 | 100 | 78 | 7 | 81 |
| AM3TIW-4815S-RZ | 18-75 | 15 | 200 | 1500 | 100 | 77 | 7 | 81 |
| AM3TIW-4824S-RZ | 18-75 | 24 | 125 | 1500 | 47 | 77 | 7 | 81 |
| AM3TIW-2403SH30-RZ | 9-36 | 3.3 | 900 | 3000 | 470 | 167 | 10 | 73 |
| AM3TIW-2405SH30-RZ | 9-36 | 5 | 600 | 3000 | 470 | 160 | 10 | 77 |
| AM3TIW-2412SH30-RZ | 9-36 | 12 | 250 | 3000 | 100 | 156 | 10 | 81 |
| AM3TIW-2415SH30-RZ | 9-36 | 15 | 200 | 3000 | 100 | 154 | 10 | 81 |
| AM3TIW-2424SH30-RZ | 9-36 | 24 | 125 | 3000 | 47 | 154 | 10 | 81 |
| AM3TIW-4803SH30-RZ | 18-75 | 3.3 | 900 | 3000 | 470 | 84 | 7 | 75 |
| AM3TIW-4805SH30-RZ | 18-75 | 5 | 600 | 3000 | 470 | 80 | 7 | 79 |
| AM3TIW-4812SH30-RZ | 18-75 | 12 | 250 | 3000 | 100 | 78 | 7 | 81 |
| AM3TIW-4815SH30-RZ | 18-75 | 15 | 200 | 3000 | 100 | 77 | 7 | 81 |
| AM3TIW-4824SH30-RZ | 18-75 | 24 | 125 | 3000 | 47 | 77 | 7 | 81 |

Models

Dual output

| Model | Input Voltage (V) | Output Voltage (V) | Output Current max (mA) | Isolation (VDC) | Max Capacitive Load (uF) | Input Current Full No Load (mA) | | Efficiency (%) |
|--------------------|-------------------|--------------------|-------------------------|-----------------|--------------------------|-----------------------------------|----|----------------|
| AM3TIW-2403D-RZ | 9-36 | ±3.3 | ±450 | 1500 | ±220 | 167 | 10 | 75 |
| AM3TIW-2405D-RZ | 9-36 | ±5 | ±300 | 1500 | ±220 | 160 | 10 | 79 |
| AM3TIW-2412D-RZ | 9-36 | ±12 | ±125 | 1500 | ±100 | 156 | 10 | 81 |
| AM3TIW-2415D-RZ | 9-36 | ±15 | ±100 | 1500 | ±100 | 156 | 15 | 81 |
| AM3TIW-2424D-RZ | 9-36 | ±24 | ±63 | 1500 | ±47 | 159 | 20 | 81 |
| AM3TIW-4803D-RZ | 18-75 | ±3.3 | ±450 | 1500 | ±220 | 84 | 7 | 77 |
| AM3TIW-4805D-RZ | 18-75 | ±5 | ±300 | 1500 | ±220 | 78 | 7 | 81 |
| AM3TIW-4812D-RZ | 18-75 | ±12 | ±125 | 1500 | ±100 | 78 | 7 | 81 |
| AM3TIW-4815D-RZ | 18-75 | ±15 | ±100 | 1500 | ±100 | 78 | 7 | 81 |
| AM3TIW-4824D-RZ | 18-75 | ±24 | ±63 | 1500 | ±47 | 81 | 10 | 79 |
| AM3TIW-2403DH30-RZ | 9-36 | ±3.3 | ±450 | 3000 | ±220 | 167 | 10 | 75 |
| AM3TIW-2405DH30-RZ | 9-36 | ±5 | ±300 | 3000 | ±220 | 160 | 10 | 79 |
| AM3TIW-2412DH30-RZ | 9-36 | ±12 | ±125 | 3000 | ±100 | 156 | 10 | 81 |
| AM3TIW-2415DH30-RZ | 9-36 | ±15 | ±100 | 3000 | ±100 | 156 | 15 | 81 |
| AM3TIW-2424DH30-RZ | 9-36 | ±24 | ±63 | 3000 | ±47 | 159 | 20 | 81 |
| AM3TIW-4803DH30-RZ | 18-75 | ±3.3 | ±450 | 3000 | ±220 | 84 | 7 | 77 |
| AM3TIW-4805DH30-RZ | 18-75 | ±5 | ±300 | 3000 | ±220 | 78 | 7 | 81 |

Models

Dual output (continued)

| Model | Input Voltage (V) | Output Voltage (V) | Output Current max (mA) | Isolation (VDC) | Max Capacitive Load (uF) | Input Current Full No Load (mA) | | Efficiency (%) |
|--------------------|-------------------|--------------------|-------------------------|-----------------|--------------------------|-----------------------------------|----|----------------|
| AM3TIW-4812DH30-RZ | 18-75 | ±12 | ±125 | 3000 | ±100 | 78 | 7 | 81 |
| AM3TIW-4815DH30-RZ | 18-75 | ±15 | ±100 | 3000 | ±100 | 78 | 7 | 81 |
| AM3TIW-4824DH30-RZ | 18-75 | ±24 | ±63 | 3000 | ±47 | 81 | 10 | 79 |

Input Specifications

| Parameters | Nominal | Typical | Maximum | Units |
|--------------------------------|------------------------------|--|-----------|--------|
| Voltage range | 24 48 | 9-36 18-75 | | VDC |
| Filter | π (Pi) Network | | | |
| Startup time | | 20 | | ms |
| Absolute Maximum Rating | 24 Vin 48 Vin | | 50 100 | VDC |
| Input Reflected Ripple Current | Refer to application circuit | 20 | | mA p-p |
| Under Voltage Lockout | 24 Vin 48 Vin | (Model On / Off) 8.5 / 7.0 (Model On / Off) 16.5 / 14.5 | | VDC |

Isolation Specifications

| Parameters | Conditions | Typical | Rated | Units |
|--------------------|------------|---------|--------------|-------|
| Tested I/O voltage | 60 sec | | 1500 or 3000 | VDC |
| Resistance | | > 1000 | | MOhm |
| Capacitance | | 1000 | | pF |

Output Specifications

| Parameters | Conditions | Typical | Maximum | Units |
|--------------------------|--|-------------------------------|---------|--------|
| Voltage accuracy | | ±2 | | % |
| Voltage balance | | ±2 | | % |
| Short Circuit protection | | Continuous | | |
| Short circuit restart | | Auto Recovery | | |
| Over load protection | | 160% Iout | | |
| Line voltage regulation | | ±0.5 | | % |
| Load voltage regulation | 0 – 100% load | ±1.2 | | % |
| Transient Recovery Time | | 300 | | µsec |
| Transient Deviation | | ±3 (Single output 3.3V) ±5 | | % |
| Cross Regulation (Dual) | 25% min load one output & 100% load on other | ±5 | | % |
| Temperature coefficient | | ±0.02 | | %/°C |
| Ripple & Noise * | | 80 (24V dual Models) 100 | | mV p-p |

*- 20MHz Bandwidth measured with 1µf capacitor

General Specifications

| Parameters | Conditions | Typical | Maximum | Units |
|-----------------------|-------------------|-------------------------|---------|-------|
| Switching frequency | 100% load | 330 | | KHz |
| Operating temperature | Derating above 70 | -40 to +85 | | °C |
| Storage temperature | | -55 to +125 | | °C |
| Max Case temperature | | | 100 | °C |
| Cooling | | Free air convection | | |
| Humidity | | | 95 | % |
| Case material | | Plastic (UL94V-0 rated) | | |
| Weight | | 13 | | g |

General Specifications (continued)

| Parameters | Conditions | Typical | Maximum | Units |
|------------------------|--|---------------------------|--------------------------|-------|
| Dimensions (L x W x H) | Tolerance ± 0.5 mm or ± 0.02 inches | 1.25 x 0.80 x 0.40 inches | 31.80 x 20.30 x 10.20 mm | |
| MTBF | >800 000 hrs (MIL-HDBK -217F, Ground Benign, $t=+25^{\circ}\text{C}$) | | | |

NOTE: All specifications in this datasheet are measured at an ambient temperature of 25°C , humidity < 75%, nominal input voltage and at rated output load unless otherwise specified.

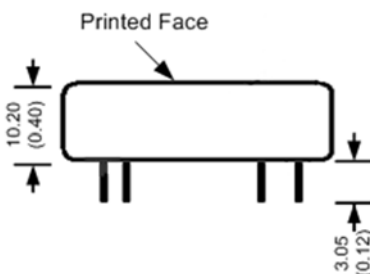
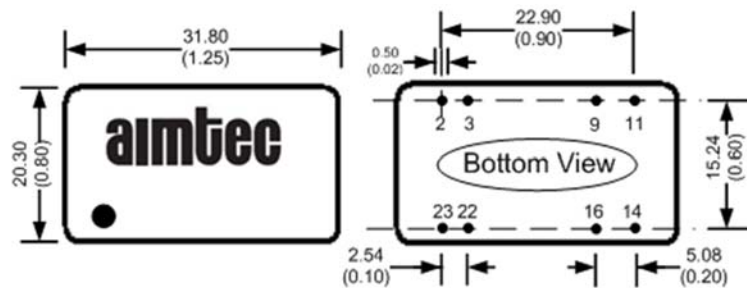
Safety Specifications

| Parameters | |
|--------------------------------|--------------------------------|
| Agency Approval | CE, UL |
| Standards | IEC/EN 60950-1 |
| | EN 55022 Class A |
| | EN 55024 Class A |
| | IEC61000-4-2, Perf. Criteria A |
| | IEC61000-4-3, Perf. Criteria A |
| | IEC61000-4-4, Perf. Criteria A |
| | IEC61000-4-5, Perf. Criteria A |
| | IEC61000-4-6, Perf. Criteria A |
| IEC61000-4-8, Perf. Criteria A | |

Pin Out Specifications

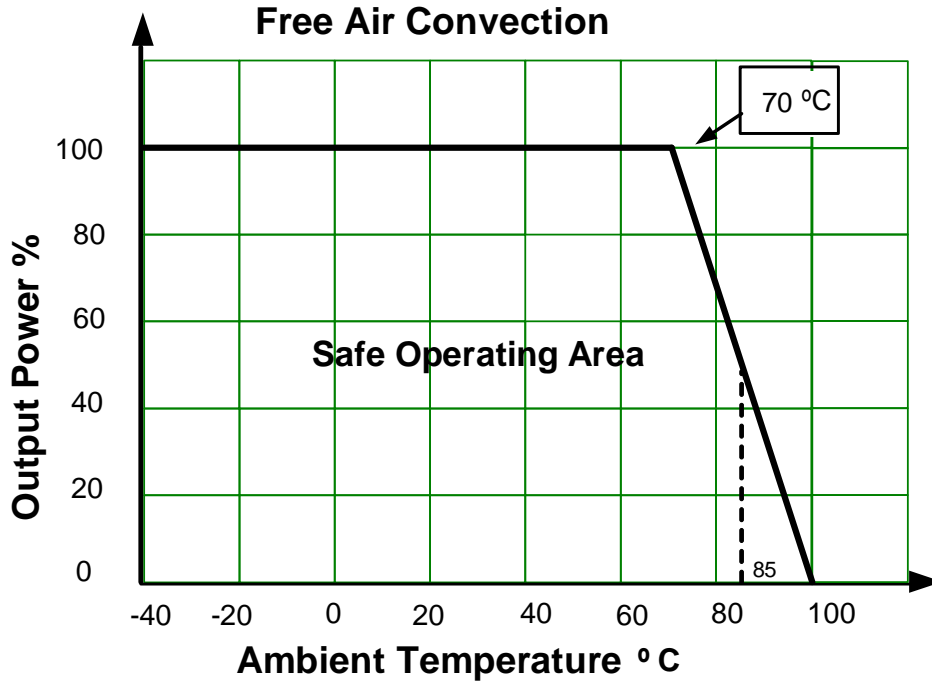
| Pin | Single | Dual |
|-----|-----------|-----------|
| 2 | -V Input | -V Input |
| 3 | -V Input | -V Input |
| 9 | Omitted | Common |
| 11 | N.C. | -V Output |
| 14 | +V Output | +V Output |
| 16 | -V Output | Common |
| 22 | +V Input | +V Input |
| 23 | +V Input | +V Input |

Dimensions

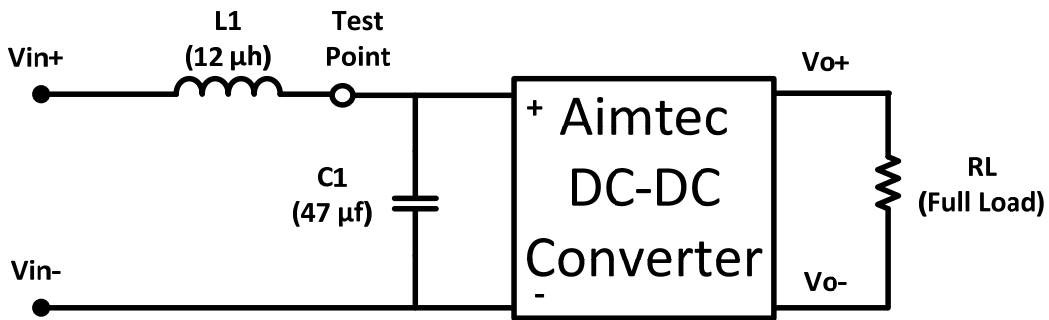


All dimensions are typical: millimeters (inches)
 Pin Diameter: 0.50 ± 0.05 (0.02 ± 0.002)
 Pin Pitch Tolerance: ± 0.35 (± 0.014)
 Case Tolerance: ± 0.5 (± 0.02)

Derating

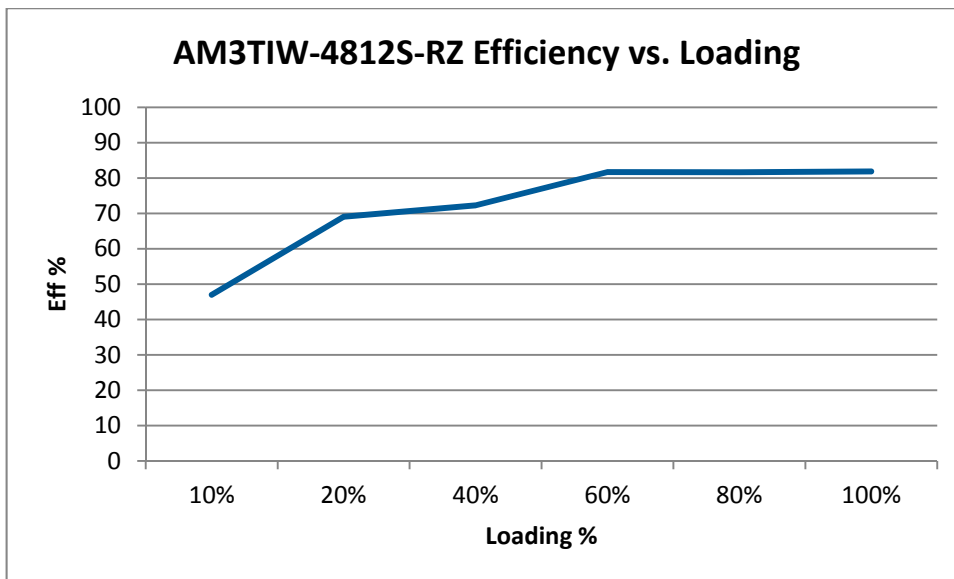
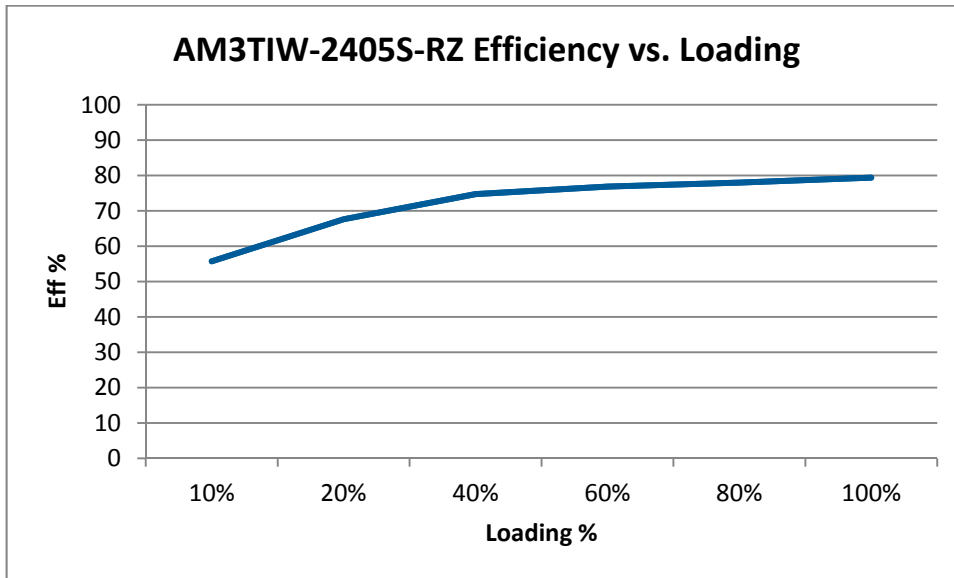


Input Reflected Ripple Current Test Circuit



* Tested at full load, and nominal input

Typical Efficiency Example Charts



NOTE: **1.** Datasheets are updated as needed and as such, specifications are subject to change without notice. Once printed or downloaded, datasheets are no longer controlled by Aimtec; refer to www.aimtec.com for the most current product specifications. **2.** Product labels shown, including safety agency certifications on labels, may vary based on the date manufactured. **3.** Mechanical drawings and specifications are for reference only. **4.** All specifications are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage and at rated output load unless otherwise specified. **5.** Aimtec may not have conducted destructive testing or chemical analysis on all internal components and chemicals at the time of publishing this document. CAS numbers and other limited information are considered proprietary and may not be available for release. **6.** This product is not designed for use in critical life support systems, equipment used in hazardous environments, nuclear control systems or other such applications which necessitate specific safety and regulatory standards other the ones listed in this datasheet. **7.** Warranty is in accordance with Aimtec's standard Terms of Sale available at www.aimtec.com.