



FEATURES:

- RoHS compliant
- 24 Pin DIP Package
- Low profile metal package
- High efficiency up to 85%
- Operating temperature -40°C to + 85°C
- Input / Output isolation 1500 or 3500VDC
- Pin compatible with multiple manufacturers
- Continuous short circuit protection



Models

Single output

| Model | Input Voltage (V) | Output Voltage (V) | Output Current max (mA) | Capacitive load, max (µF) | Efficiency (%) |
|----------------|-------------------|--------------------|-------------------------|---------------------------|----------------|
| AM4T-0503SZ | 4.5-9 | 3.3 | 1200 | 3300 | 73 |
| AM4T-0505SZ | 4.5-9 | 5 | 800 | 1000 | 77 |
| AM4T-0512SZ | 4.5-9 | 12 | 333 | 220 | 81 |
| AM4T-0515SZ | 4.5-9 | 15 | 266 | 100 | 82 |
| AM4T-1203SZ | 9-18 | 3.3 | 1200 | 3300 | 72 |
| AM4T-1205SZ | 9-18 | 5 | 800 | 1000 | 78 |
| AM4T-1207SZ | 9-18 | 7.2 | 555 | 470 | 78 |
| AM4T-1209SZ | 9-18 | 9 | 444 | 470 | 78 |
| AM4T-1212SZ | 9-18 | 12 | 333 | 220 | 80 |
| AM4T-1215SZ | 9-18 | 15 | 266 | 100 | 80 |
| AM4T-1218SZ | 9-18 | 18 | 222 | 47 | 80 |
| AM4T-1224SZ | 9-18 | 24 | 166 | 47 | 80 |
| AM4T-2403SZ | 18-36 | 3.3 | 1200 | 3300 | 75 |
| AM4T-2405SZ | 18-36 | 5 | 800 | 1000 | 80 |
| AM4T-2407SZ | 18-36 | 7.2 | 555 | 470 | 80 |
| AM4T-2409SZ | 18-36 | 9 | 444 | 470 | 80 |
| AM4T-2412SZ | 18-36 | 12 | 333 | 220 | 83 |
| AM4T-2415SZ | 18-36 | 15 | 266 | 100 | 80 |
| AM4T-2418SZ | 18-36 | 18 | 222 | 47 | 85 |
| AM4T-2424SZ | 18-36 | 24 | 166 | 47 | 85 |
| AM4T-4803SZ | 36-72 | 3.3 | 1200 | 3300 | 75 |
| AM4T-4805SZ | 36-72 | 5 | 800 | 1000 | 80 |
| AM4T-4807SZ | 36-72 | 7.2 | 555 | 470 | 82 |
| AM4T-4809SZ | 36-72 | 9 | 444 | 470 | 82 |
| AM4T-4812SZ | 36-72 | 12 | 333 | 220 | 80 |
| AM4T-4815SZ | 36-72 | 15 | 266 | 100 | 81 |
| AM4T-4818SZ | 36-72 | 18 | 222 | 47 | 82 |
| AM4T-4824SZ | 36-72 | 24 | 166 | 47 | 82 |
| AM4T-0503SH35Z | 4.5-9 | 3.3 | 1200 | 3300 | 73 |
| AM4T-0505SH35Z | 4.5-9 | 5 | 800 | 1000 | 77 |
| AM4T-0512SH35Z | 4.5-9 | 12 | 333 | 220 | 81 |
| AM4T-0515SH35Z | 4.5-9 | 15 | 266 | 100 | 82 |
| AM4T-1203SH35Z | 9-18 | 3.3 | 1200 | 3300 | 72 |
| AM4T-1205SH35Z | 9-18 | 5 | 800 | 1000 | 78 |
| AM4T-1207SH35Z | 9-18 | 7.2 | 555 | 470 | 78 |
| AM4T-1209SH35Z | 9-18 | 9 | 444 | 470 | 78 |
| AM4T-1212SH35Z | 9-18 | 12 | 333 | 220 | 80 |
| AM4T-1215SH35Z | 9-18 | 15 | 266 | 100 | 80 |
| AM4T-1218SH35Z | 9-18 | 18 | 222 | 47 | 80 |
| AM4T-1224SH35Z | 9-18 | 24 | 166 | 47 | 80 |
| AM4T-2403SH35Z | 18-36 | 3.3 | 1200 | 3300 | 75 |
| AM4T-2405SH35Z | 18-36 | 5 | 800 | 1000 | 80 |
| AM4T-2407SH35Z | 18-36 | 7.2 | 555 | 470 | 80 |
| AM4T-2409SH35Z | 18-36 | 9 | 444 | 470 | 80 |
| AM4T-2412SH35Z | 18-36 | 12 | 333 | 220 | 83 |
| AM4T-2415SH35Z | 18-36 | 15 | 266 | 100 | 80 |
| AM4T-2418SH35Z | 18-36 | 18 | 222 | 47 | 85 |

Models

Single output (continued)

| Model | Input Voltage (V) | Output Voltage (V) | Output Current max (mA) | Capacitive load, max (µF) | Efficiency (%) |
|----------------|-------------------|--------------------|-------------------------|---------------------------|----------------|
| AM4T-2424SH35Z | 18-36 | 24 | 166 | 47 | 85 |
| AM4T-4803SH35Z | 36-72 | 3.3 | 1200 | 3300 | 75 |
| AM4T-4805SH35Z | 36-72 | 5 | 800 | 1000 | 80 |
| AM4T-4807SH35Z | 36-72 | 7.2 | 555 | 470 | 82 |
| AM4T-4809SH35Z | 36-72 | 9 | 444 | 470 | 82 |
| AM4T-4812SH35Z | 36-72 | 12 | 333 | 220 | 80 |
| AM4T-4815SH35Z | 36-72 | 15 | 266 | 100 | 81 |
| AM4T-4818SH35Z | 36-72 | 18 | 222 | 47 | 82 |
| AM4T-4824SH35Z | 36-72 | 24 | 166 | 47 | 82 |

Models

Dual output

| Model | Input Voltage (V) | Output Voltage (V) | Output Current max (mA) | Capacitive load, max (µF) | Efficiency (%) |
|----------------|-------------------|--------------------|-------------------------|---------------------------|----------------|
| AM4T-0503DZ | 4.5-9 | ±3.3 | ±600 | ±680 | 76 |
| AM4T-0505DZ | 4.5-9 | ±5 | ±400 | ±470 | 79 |
| AM4T-0512DZ | 4.5-9 | ±12 | ±166 | ±100 | 81 |
| AM4T-0515DZ | 4.5-9 | ±15 | ±133 | ±47 | 81 |
| AM4T-1203DZ | 9-18 | ±3.3 | ±600 | ±680 | 73 |
| AM4T-1205DZ | 9-18 | ±5 | ±400 | ±470 | 78 |
| AM4T-1207DZ | 9-18 | ±7.2 | ±277 | ±220 | 80 |
| AM4T-1209DZ | 9-18 | ±9 | ±220 | ±220 | 80 |
| AM4T-1212DZ | 9-18 | ±12 | ±166 | ±100 | 80 |
| AM4T-1215DZ | 9-18 | ±15 | ±133 | ±47 | 80 |
| AM4T-1218DZ | 9-18 | ±18 | ±111 | ±22 | 79 |
| AM4T-1224DZ | 9-18 | ±24 | ±83 | ±22 | 79 |
| AM4T-2403DZ | 18-36 | ±3.3 | ±600 | ±680 | 73 |
| AM4T-2405DZ | 18-36 | ±5 | ±400 | ±470 | 79 |
| AM4T-2407DZ | 18-36 | ±7.2 | ±277 | ±220 | 80 |
| AM4T-2409DZ | 18-36 | ±9 | ±220 | ±220 | 80 |
| AM4T-2412DZ | 18-36 | ±12 | ±166 | ±100 | 82 |
| AM4T-2415DZ | 18-36 | ±15 | ±133 | ±47 | 80 |
| AM4T-2418DZ | 18-36 | ±18 | ±111 | ±22 | 78 |
| AM4T-2424DZ | 18-36 | ±24 | ±83 | ±22 | 78 |
| AM4T-4803DZ | 36-72 | ±3.3 | ±600 | ±680 | 72 |
| AM4T-4805DZ | 36-72 | ±5 | ±400 | ±470 | 78 |
| AM4T-4807DZ | 36-72 | ±7.2 | ±277 | ±220 | 78 |
| AM4T-4809DZ | 36-72 | ±9 | ±220 | ±220 | 78 |
| AM4T-4812DZ | 36-72 | ±12 | ±166 | ±100 | 80 |
| AM4T-4815DZ | 36-72 | ±15 | ±133 | ±47 | 80 |
| AM4T-4818DZ | 36-72 | ±18 | ±111 | ±22 | 80 |
| AM4T-4824DZ | 36-72 | ±24 | ±83 | ±22 | 80 |
| AM4T-0503DH35Z | 4.5-9 | ±3.3 | ±600 | ±680 | 76 |
| AM4T-0505DH35Z | 4.5-9 | ±5 | ±400 | ±470 | 79 |
| AM4T-0512DH35Z | 4.5-9 | ±12 | ±166 | ±100 | 81 |
| AM4T-0515DH35Z | 4.5-9 | ±15 | ±133 | ±47 | 81 |
| AM4T-1203DH35Z | 9-18 | ±3.3 | ±600 | ±680 | 73 |
| AM4T-1205DH35Z | 9-18 | ±5 | ±400 | ±470 | 78 |
| AM4T-1207DH35Z | 9-18 | ±7.2 | ±277 | ±220 | 80 |
| AM4T-1209DH35Z | 9-18 | ±9 | ±220 | ±220 | 80 |
| AM4T-1212DH35Z | 9-18 | ±12 | ±166 | ±100 | 80 |
| AM4T-1215DH35Z | 9-18 | ±15 | ±133 | ±47 | 80 |
| AM4T-1218DH35Z | 9-18 | ±18 | ±111 | ±22 | 79 |
| AM4T-1224DH35Z | 9-18 | ±24 | ±83 | ±22 | 79 |
| AM4T-2403DH35Z | 18-36 | ±3.3 | ±600 | ±680 | 73 |
| AM4T-2405DH35Z | 18-36 | ±5 | ±400 | ±470 | 79 |

Models

Dual output (continued)

| Model | Input Voltage (V) | Output Voltage (V) | Output Current max (mA) | Capacitive load, max (μF) | Efficiency (%) |
|----------------|-------------------|--------------------|-------------------------|---------------------------|----------------|
| AM4T-2407DH35Z | 18-36 | ±7.2 | ±277 | ±220 | 80 |
| AM4T-2409DH35Z | 18-36 | ±9 | ±220 | ±220 | 80 |
| AM4T-2412DH35Z | 18-36 | ±12 | ±166 | ±100 | 82 |
| AM4T-2415DH35Z | 18-36 | ±15 | ±133 | ±47 | 80 |
| AM4T-2418DH35Z | 18-36 | ±18 | ±111 | ±22 | 78 |
| AM4T-2424DH35Z | 36-72 | ±24 | ±83 | ±22 | 78 |
| AM4T-4803DH35Z | 36-72 | ±3.3 | ±600 | ±680 | 72 |
| AM4T-4805DH35Z | 36-72 | ±5 | ±400 | ±470 | 78 |
| AM4T-4807DH35Z | 36-72 | ±7.2 | ±277 | ±220 | 78 |
| AM4T-4809DH35Z | 36-72 | ±9 | ±220 | ±220 | 78 |
| AM4T-4812DH35Z | 36-72 | ±12 | ±166 | ±100 | 80 |
| AM4T-4815DH35Z | 36-72 | ±15 | ±133 | ±47 | 80 |
| AM4T-4818DH35Z | 36-72 | ±18 | ±111 | ±22 | 80 |
| AM4T-4824DH35Z | 36-72 | ±24 | ±83 | ±22 | 80 |

Input Specifications

| Parameters | Nominal | Typical | Maximum | Units |
|----------------------------------|----------------|---------|---------|--------|
| Voltage range | 5 | 4.5-9 | | VDC |
| | 12 | 9-18 | | VDC |
| | 24 | 18-36 | | VDC |
| | 48 | 36-72 | | VDC |
| Filter | π (Pi) Network | | | |
| Absolute Maximum Rating | 5 Vin | -0.7-15 | | VDC |
| | 12 Vin | -0.7-24 | | VDC |
| | 24 Vin | -0.7-40 | | VDC |
| | 48 Vin | -0.7-80 | | VDC |
| Peak Input Voltage time | | 100 | | ms |
| Input Reflected ripple current * | | 35 | | mA p-p |

* The input reflected ripple current should be measured with connected 12μH inductor and a 47μF capacitor.

Isolation Specifications

| Parameters | Conditions | Typical | Rated | Units |
|--------------------------------------|------------|---------|--------------|-------|
| Tested I/O voltage | 60 sec | | 1500 or 3500 | VDC |
| Metal case/Input & Output Resistance | 60 sec | | 1000 | VDC |
| Capacitance | | > 1000 | | MOhm |
| | | 500 | | pF |

Output Specifications

| Parameters | Conditions | Typical | Maximum | Units |
|--------------------------|----------------------------------|---------|---------|--------|
| Voltage accuracy | 5Vin, 3.3V/±3.3V models | ±2 | | % |
| | Others | ±1 | | % |
| Short circuit protection | Continuous, auto recovery | | | |
| Line voltage regulation | | ±0.5 | | % |
| Load voltage regulation | 0 – 100% load, 3.3V/±3.3V Models | ±1.5 | | % |
| | 0 – 100% load, others | ±0.5 | | % |
| Temperature coefficient | | ±0.02 | | %/°C |
| Ripple & Noise * | At 20MHz Bandwidth | 60 | | mV p-p |

* Measured with a 1μF CC.

General Specifications

| Parameters | Conditions | Typical | Maximum | Units |
|-----------------------|---|------------|---------|-------|
| Switching frequency | 100% load | 266 | | KHz |
| Operating temperature | Full Load without Derating (except 5Vin models) | -40 to +85 | | °C |
| Derating | 5Vin models, 60 to 85°C | 2.5 | | %/°C |

| | | | | |
|------------------------------|--|--|-----|----|
| Storage temperature | | -40 to +125 | | °C |
| Max Case temperature | | | 100 | °C |
| Cooling | Free air convection | | | |
| Humidity | | | 95 | % |
| Case material | Nickel coated copper | | | |
| Weight | | 17 | | g |
| Dimensions (L x W x H) | Tolerance ± 0.5 mm or ± 0.02 inches | 1.25 x 0.8 x 0.4 inches 31.75 x 20.32 x 10.16 mm | | |
| MTBF | >1 121 000 hrs (MIL-HDBK -217F, Ground Benign, $t=+25^{\circ}\text{C}$) | | | |
| Manual soldering temperature | 1.5mm from case for 10sec | | 260 | °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

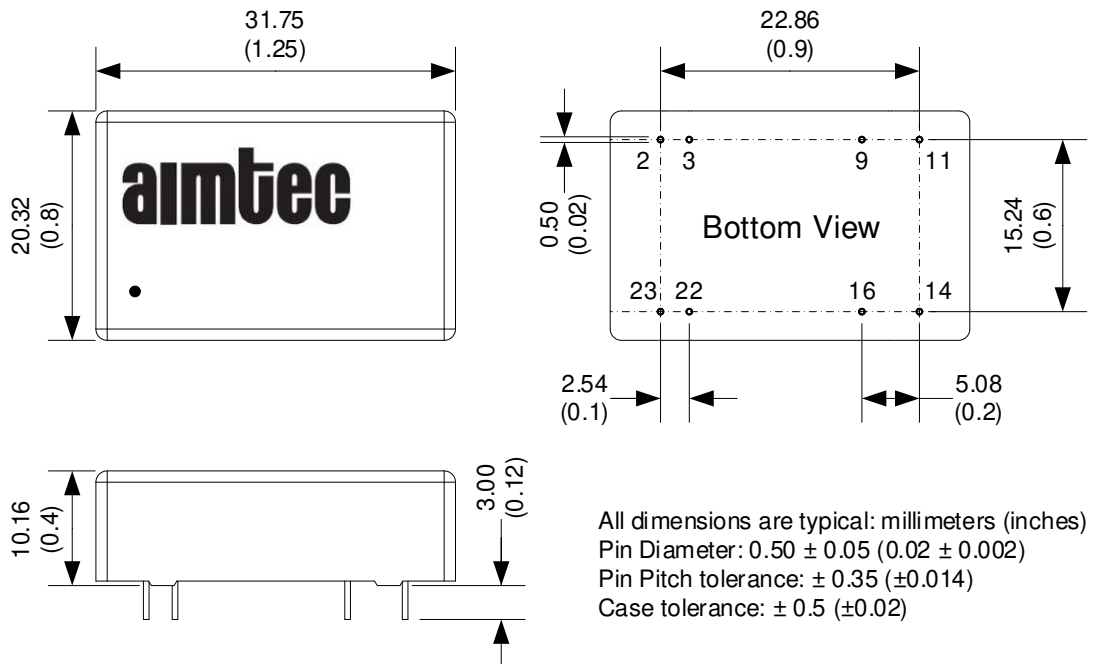
Parameters

| | |
|-----------------|---|
| Agency Approval | UL, CE (except 5Vin models) |
| Standards | Designed to meet IEC/EN/UL60950-1, 62368-1 |
| | EN55032 Class A, with recommended circuit |
| | IEC61000-4-2, Perf. Criteria A |
| | IEC61000-4-3, Perf. Criteria A |
| | IEC61000-4-4, Perf. Criteria A with recommended circuit |
| | IEC61000-4-5, Perf. Criteria A with recommended circuit |
| | IEC61000-4-6, Perf. Criteria A |
| | IEC61000-4-8, Perf. Criteria A |

Pin Out Specifications

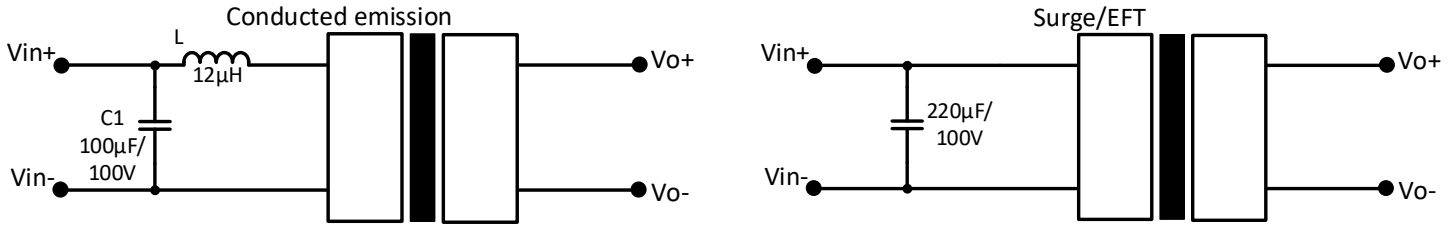
| Pin | 1500 and 3500VDC | |
|-----|------------------|-----------|
| | Single | Dual |
| 2 | -V Input | -V Input |
| 3 | -V Input | -V Input |
| 9 | No pin | Common |
| 11 | N.C. | -V Output |
| 14 | +V Output | +V Output |
| 16 | -V Output | Common |
| 22 | +V Input | +V Input |
| 23 | +V Input | +V Input |

Dimensions

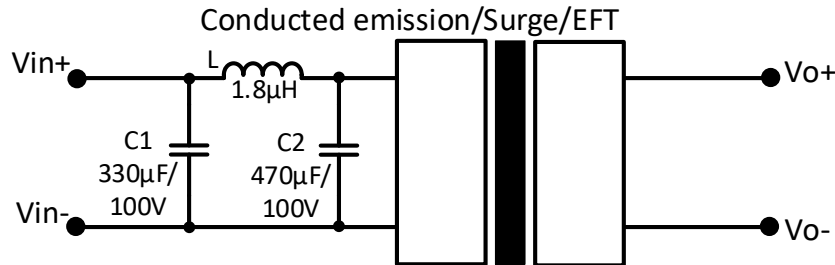


Recommended Circuits

For 12, 24, 48Vin models

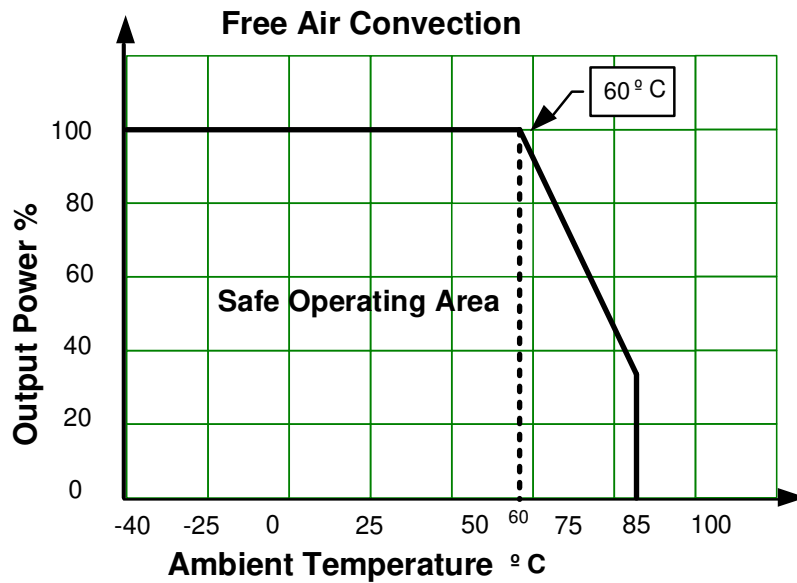


For 5Vin models



Derating

For 5Vin models



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