

Series AM1DR-Z

1 Watt | DC-DC Converter



FEATURES:

- RoHS compliant
- Regulated output voltage
- Low ripple and noise
- High efficiency up to 72%
- Operating temperature -40°C to + 85°C
- Input / Output Isolation 1000 & 3000VDC
- Pin compatible with multiple manufacturers
- 7 pin SIP package



Models

Single output

| Model | Input Voltage (V) | Output Voltage (V) | Output Current max (mA) | Isolation (VDC) | Input Current Full Load No Load mA | | Max Capacitive Load (uF) | Efficiency (Full load) (%) |
|-----------------|-------------------|--------------------|-------------------------|-----------------|--------------------------------------|----|--------------------------|----------------------------|
| AM1DR-0503SZ | 4.5-5.5 | 3.3 | 303 | 1000 | 333 | 23 | 220 | 60 |
| AM1DR-0505SZ | 4.5-5.5 | 5 | 200 | 1000 | 294 | 23 | 220 | 68 |
| AM1DR-0507SZ | 4.5-5.5 | 7.2 | 139 | 1000 | 299 | 25 | 220 | 67 |
| AM1DR-0509SZ | 4.5-5.5 | 9 | 111 | 1000 | 282 | 30 | 220 | 71 |
| AM1DR-0512SZ | 4.5-5.5 | 12 | 83 | 1000 | 286 | 30 | 220 | 70 |
| AM1DR-0515SZ | 4.5-5.5 | 15 | 67 | 1000 | 282 | 35 | 220 | 71 |
| AM1DR-1203SZ | 10.8-13.2 | 3.3 | 303 | 1000 | 153 | 10 | 220 | 60 |
| AM1DR-1205SZ | 10.8-13.2 | 5 | 200 | 1000 | 128 | 16 | 220 | 65 |
| AM1DR-1207SZ | 10.8-13.2 | 7.2 | 139 | 1000 | 124 | 17 | 220 | 67 |
| AM1DR-1209SZ | 10.8-13.2 | 9 | 111 | 1000 | 124 | 18 | 220 | 67 |
| AM1DR-1212SZ | 10.8-13.2 | 12 | 83 | 1000 | 117 | 18 | 220 | 71 |
| AM1DR-1215SZ | 10.8-13.2 | 15 | 67 | 1000 | 121 | 21 | 220 | 69 |
| AM1DR-2403SZ | 21.6-26.4 | 3.3 | 333 | 1000 | 72 | 7 | 220 | 64 |
| AM1DR-2405SZ | 21.6-26.4 | 5 | 200 | 1000 | 61 | 6 | 220 | 68 |
| AM1DR-2407SZ | 21.6-26.4 | 7.2 | 139 | 1000 | 62 | 7 | 220 | 67 |
| AM1DR-2409SZ | 21.6-26.4 | 9 | 111 | 1000 | 58 | 7 | 220 | 72 |
| AM1DR-2412SZ | 21.6-26.4 | 12 | 83 | 1000 | 60 | 9 | 220 | 70 |
| AM1DR-2415SZ | 21.6-26.4 | 15 | 67 | 1000 | 59 | 9 | 220 | 71 |
| AM1DR-0503SH30Z | 4.5-5.5 | 3.3 | 303 | 3000 | 333 | 23 | 220 | 60 |
| AM1DR-0505SH30Z | 4.5-5.5 | 5 | 200 | 3000 | 294 | 23 | 220 | 68 |
| AM1DR-0507SH30Z | 4.5-5.5 | 7.2 | 139 | 3000 | 299 | 25 | 220 | 67 |
| AM1DR-0509SH30Z | 4.5-5.5 | 9 | 111 | 3000 | 282 | 30 | 220 | 71 |
| AM1DR-0512SH30Z | 4.5-5.5 | 12 | 83 | 3000 | 286 | 30 | 220 | 70 |
| AM1DR-0515SH30Z | 4.5-5.5 | 15 | 67 | 3000 | 282 | 35 | 220 | 71 |
| AM1DR-1203SH30Z | 10.8-13.2 | 3.3 | 303 | 3000 | 153 | 10 | 220 | 60 |
| AM1DR-1205SH30Z | 10.8-13.2 | 5 | 200 | 3000 | 128 | 16 | 220 | 65 |
| AM1DR-1207SH30Z | 10.8-13.2 | 7.2 | 139 | 3000 | 124 | 17 | 220 | 67 |
| AM1DR-1209SH30Z | 10.8-13.2 | 9 | 111 | 3000 | 124 | 18 | 220 | 67 |
| AM1DR-1212SH30Z | 10.8-13.2 | 12 | 83 | 3000 | 117 | 18 | 220 | 71 |
| AM1DR-1215SH30Z | 10.8-13.2 | 15 | 67 | 3000 | 121 | 21 | 220 | 69 |
| AM1DR-2403SH30Z | 21.6-26.4 | 3.3 | 333 | 3000 | 72 | 7 | 220 | 64 |
| AM1DR-2405SH30Z | 21.6-26.4 | 5 | 200 | 3000 | 61 | 6 | 220 | 68 |
| AM1DR-2407SH30Z | 21.6-26.4 | 7.2 | 139 | 3000 | 62 | 7 | 220 | 67 |
| AM1DR-2409SH30Z | 21.6-26.4 | 9 | 111 | 3000 | 58 | 7 | 220 | 72 |
| AM1DR-2412SH30Z | 21.6-26.4 | 12 | 83 | 3000 | 60 | 9 | 220 | 70 |
| AM1DR-2415SH30Z | 21.6-26.4 | 15 | 67 | 3000 | 59 | 9 | 220 | 71 |

Input Specifications

| Parameters | Nominal | Typical | Maximum | Units |
|--------------------------------|-----------|-----------|---------|-------|
| Voltage range | 5 | 4.5-5.5 | | VDC |
| | 12 | 10.8-13.2 | | |
| | 24 | 21.6-26.4 | | |
| Filter | Capacitor | | | |
| Turn on Transient process time | | | 100 | ms |
| Start up time | | 200 | | ms |

Input Specifications (continued)

| Parameters | Nominal | Typical | Maximum | Units |
|-------------------------|---------------------------|---------------------|---------|-------|
| Absolute Maximum Rating | 5 Vin 12 Vin 24 Vin | 0-7 0-15 0-28 | | VDC |
| Peak Input Voltage time | | 100 | | ms |

Isolation Specifications

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

Output Specifications

| Parameters | Conditions | Typical | Maximum | Units |
|-------------------------|-----------------------------------|---------|---------|--------|
| Voltage accuracy | | ±2 | | % |
| Line voltage regulation | | ±0.5 | | % |
| Load voltage regulation | 0% to 100% load, Others | ±0.5 | | % |
| | 0% to 100% load, 3.3V Vout models | ±1.0 | | % |
| Temperature coefficient | | ±0.02 | | %/°C |
| Ripple & Noise | At 20MHz Bandwidth | 50 | | mV p-p |
| Capacitive load | | | 220 | µF |
| Rising time | | 50 | | ms |

General Specifications

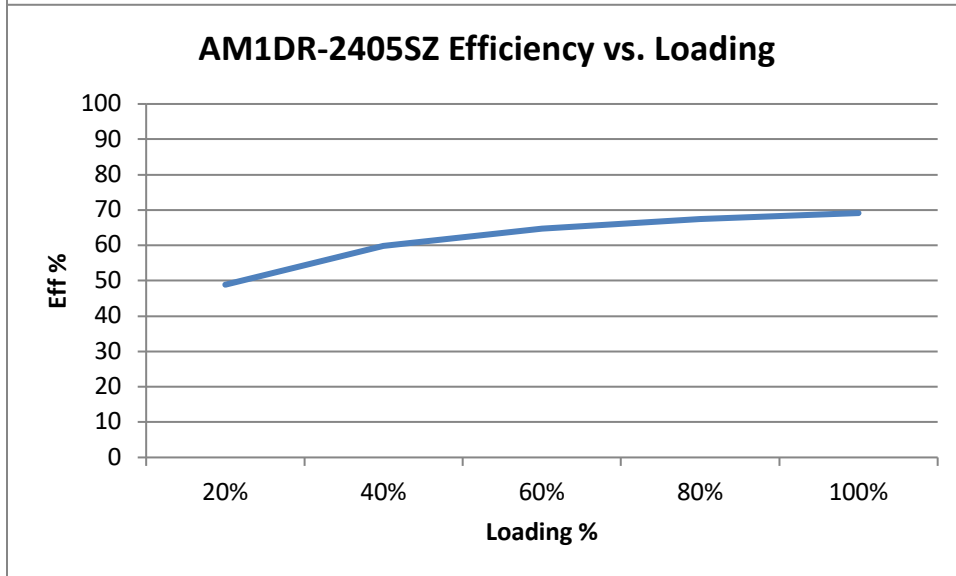
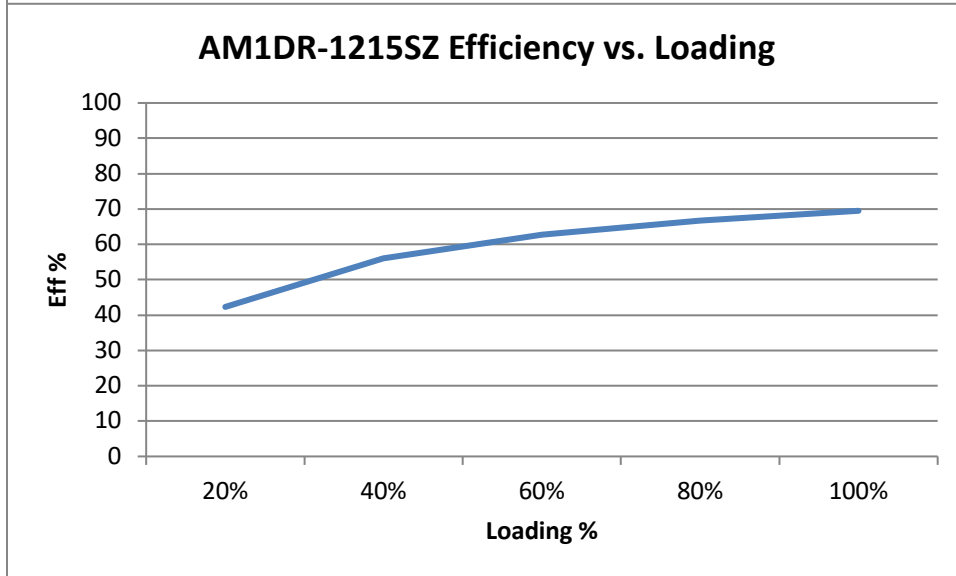
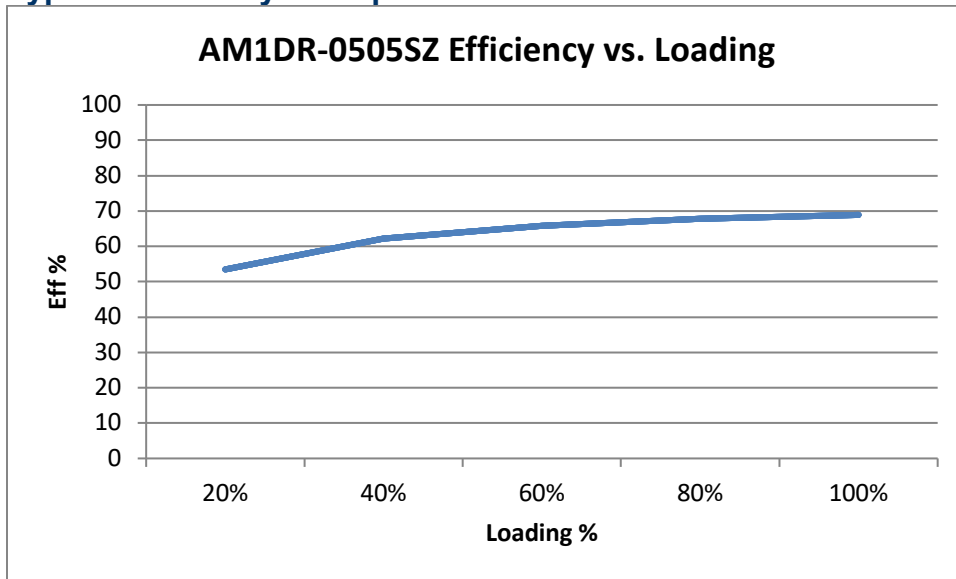
| Parameters | Conditions | Typical | Maximum | Units |
|------------------------|----------------------------|---|-------------------------|-------|
| Switching frequency | 100% load(Variable) | 50 | | KHz |
| Max Case temperature | | | +95 | °C |
| Operating temperature | Full Load without Derating | -40 to +85 | | °C |
| Storage temperature | | -55 to +125 | | °C |
| Derating | | Not Required | | |
| Cooling | | Free air convection | | |
| Humidity | | | 95 | % |
| Case material | | Non conductive black plastic | | |
| Weight | | 2.8 | | g |
| Dimensions (L x W x H) | | 0.77 x 0.28 x 0.39 inch | 19.50 x 7.20 x 10.00 mm | |
| MTBF | | >3 500 000 hrs (MIL-HDBK -217F, Ground Benign, t=+25°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 Approvals | CE |
| Safety Standards | EN 55032, Class B(With recommended EMC circuit) IEC61000-4-2 IEC61000-4-3 IEC61000-4-4 IEC61000-4-6 IEC61000-4-8 |

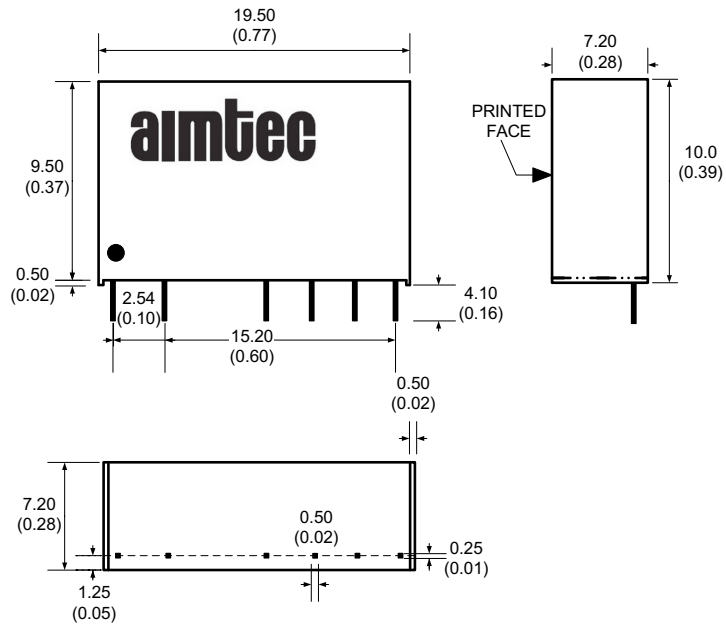
Typical Efficiency Example Charts



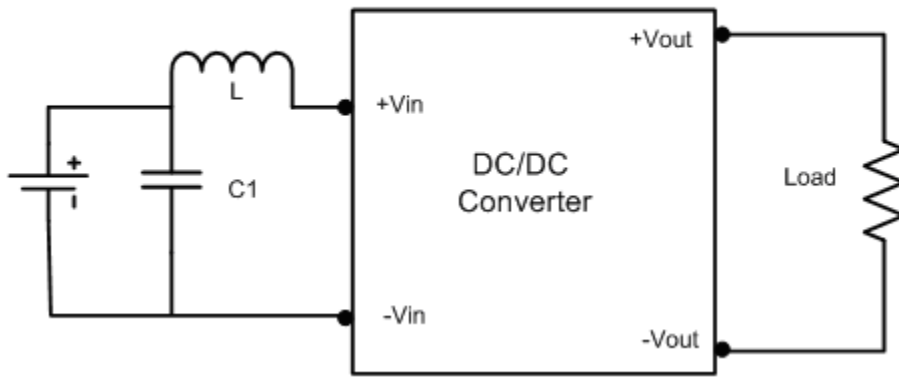
Pin Out Specifications

| Pin | 1000VDC | 3000VDC |
|-----|------------|------------|
| 1 | + V Input | + V Input |
| 2 | - V Input | - V Input |
| 4 | - V Output | No pin |
| 5 | No pin | - V Output |
| 6 | + V Output | No pin |
| 7 | No pin | + V Output |

Dimensions



Radiated and Conducted Emissions Application circuit:



| C1 | L1 |
|------------|-------|
| 470µF/100V | 12 µH |

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.