



**THE DATASHEET OF
AM1S-0505SH30Z**





FEATURES:

- RoHS compliant
- 4 Pin SIP Package
- Low ripple and noise
- High efficiency up to 83%
- Operating temperature -40°C to + 85°C
- Input / Output isolation 1000 and 3000VDC
- Pin compatible with multiple manufacturers

Models
Single output



| Model | Input Voltage (V) | Output Voltage (V) | Output Current max (mA) | Isolation (VDC) | Max Capacitive Load (µF) | Input Current Full Load No Load (mA) | | Efficiency (%) |
|----------------|-------------------|--------------------|-------------------------|-----------------|--------------------------|--|----|----------------|
| AM1S-0303SZ | 2.97-3.63 | 3.3 | 303 | 1000 | 220 | 421 | 25 | 72 |
| AM1S-0305SZ | 2.97-3.63 | 5 | 200 | 1000 | 220 | 394 | 25 | 77 |
| AM1S-0307SZ | 2.97-3.63 | 7.2 | 138.9 | 1000 | 220 | 384 | 25 | 79 |
| AM1S-0309SZ | 2.97-3.63 | 9 | 111.1 | 1000 | 220 | 404 | 30 | 75 |
| AM1S-0312SZ | 2.97-3.63 | 12 | 100 | 1000 | 220 | 473 | 45 | 77 |
| AM1S-0315SZ | 2.97-3.63 | 15 | 66.6 | 1000 | 220 | 384 | 35 | 79 |
| AM1S-0318SZ | 2.97-3.63 | 18 | 55.5 | 1000 | 220 | 399 | 35 | 76 |
| AM1S-0324SZ | 2.97-3.63 | 24 | 50 | 1000 | 220 | 461 | 53 | 79 |
| AM1S-0503SZ | 4.5-5.5 | 3.3 | 303 | 1000 | 220 | 257 | 20 | 78 |
| AM1S-0505SZ | 4.5-5.5 | 5 | 200 | 1000 | 220 | 247 | 25 | 81 |
| AM1S-0507SZ | 4.5-5.5 | 7.2 | 138.9 | 1000 | 220 | 241 | 16 | 83 |
| AM1S-0509SZ | 4.5-5.5 | 9 | 111.1 | 1000 | 220 | 250 | 26 | 80 |
| AM1S-0512SZ | 4.5-5.5 | 12 | 100 | 1000 | 220 | 300 | 25 | 80 |
| AM1S-0515SZ | 4.5-5.5 | 15 | 66.6 | 1000 | 220 | 244 | 35 | 82 |
| AM1S-0518SZ | 4.5-5.5 | 18 | 55.5 | 1000 | 220 | 247 | 25 | 81 |
| AM1S-0524SZ | 4.5-5.5 | 24 | 50 | 1000 | 220 | 289 | 35 | 83 |
| AM1S-1203SZ | 10.8-13.2 | 3.3 | 303 | 1000 | 220 | 107 | 15 | 78 |
| AM1S-1205SZ | 10.8-13.2 | 5 | 200 | 1000 | 220 | 105 | 16 | 79 |
| AM1S-1207SZ | 10.8-13.2 | 7.2 | 138.9 | 1000 | 220 | 100 | 16 | 83 |
| AM1S-1209SZ | 10.8-13.2 | 9 | 111.1 | 1000 | 220 | 107 | 15 | 78 |
| AM1S-1212SZ | 10.8-13.2 | 12 | 100 | 1000 | 220 | 125 | 20 | 80 |
| AM1S-1215SZ | 10.8-13.2 | 15 | 66.6 | 1000 | 220 | 105 | 15 | 79 |
| AM1S-1218SZ | 10.8-13.2 | 18 | 55.5 | 1000 | 220 | 104 | 20 | 80 |
| AM1S-1224SZ | 10.8-13.2 | 24 | 50 | 1000 | 220 | 123 | 25 | 71 |
| AM1S-2403SZ | 21.6-26.4 | 3.3 | 303 | 1000 | 220 | 54 | 8 | 77 |
| AM1S-2405SZ | 21.6-26.4 | 5 | 200 | 1000 | 220 | 52 | 8 | 80 |
| AM1S-2407SZ | 21.6-26.4 | 7.2 | 138.9 | 1000 | 220 | 54 | 10 | 77 |
| AM1S-2409SZ | 21.6-26.4 | 9 | 111.1 | 1000 | 220 | 54 | 7 | 77 |
| AM1S-2412SZ | 21.6-26.4 | 12 | 100 | 1000 | 220 | 62 | 8 | 80 |
| AM1S-2415SZ | 21.6-26.4 | 15 | 66.6 | 1000 | 220 | 51 | 8 | 81 |
| AM1S-2418SZ | 21.6-26.4 | 18 | 55.5 | 1000 | 220 | 52 | 8 | 80 |
| AM1S-2424SZ | 21.6-26.4 | 24 | 50 | 1000 | 220 | 60 | 9 | 83 |
| AM1S-0303SH30Z | 2.97-3.63 | 3.3 | 303 | 3000 | 220 | 421 | 25 | 72 |
| AM1S-0305SH30Z | 2.97-3.63 | 5 | 200 | 3000 | 220 | 394 | 25 | 77 |
| AM1S-0307SH30Z | 2.97-3.63 | 7.2 | 138.9 | 3000 | 220 | 384 | 25 | 79 |
| AM1S-0309SH30Z | 2.97-3.63 | 9 | 111.1 | 3000 | 220 | 404 | 30 | 75 |
| AM1S-0312SH30Z | 2.97-3.63 | 12 | 100 | 3000 | 220 | 473 | 45 | 77 |
| AM1S-0315SH30Z | 2.97-3.63 | 15 | 66.6 | 3000 | 220 | 384 | 35 | 79 |
| AM1S-0318SH30Z | 2.97-3.63 | 18 | 55.5 | 3000 | 220 | 399 | 35 | 76 |
| AM1S-0324SH30Z | 2.97-3.63 | 24 | 50 | 3000 | 220 | 461 | 53 | 79 |
| AM1S-0503SH30Z | 4.5-5.5 | 3.3 | 303 | 3000 | 220 | 257 | 20 | 78 |
| AM1S-0505SH30Z | 4.5-5.5 | 5 | 200 | 3000 | 220 | 247 | 25 | 81 |
| AM1S-0507SH30Z | 4.5-5.5 | 7.2 | 138.9 | 3000 | 220 | 241 | 16 | 83 |
| AM1S-0509SH30Z | 4.5-5.5 | 9 | 111.1 | 3000 | 220 | 250 | 26 | 80 |
| AM1S-0512SH30Z | 4.5-5.5 | 12 | 100 | 3000 | 220 | 300 | 25 | 80 |
| AM1S-0515SH30Z | 4.5-5.5 | 15 | 66.6 | 3000 | 220 | 244 | 35 | 82 |
| AM1S-0518SH30Z | 4.5-5.5 | 18 | 55.5 | 3000 | 220 | 247 | 25 | 81 |
| AM1S-0524SH30Z | 4.5-5.5 | 24 | 50 | 3000 | 220 | 289 | 35 | 83 |
| AM1S-1203SH30Z | 10.8-13.2 | 3.3 | 303 | 3000 | 220 | 107 | 15 | 78 |
| AM1S-1205SH30Z | 10.8-13.2 | 5 | 200 | 3000 | 220 | 105 | 16 | 79 |

| | | | | | | | | |
|----------------|-----------|-----|-------|------|-----|-----|----|----|
| AM1S-1207SH30Z | 10.8-13.2 | 7.2 | 138.9 | 3000 | 220 | 100 | 16 | 83 |
| AM1S-1209SH30Z | 10.8-13.2 | 9 | 111.1 | 3000 | 220 | 107 | 15 | 78 |
| AM1S-1212SH30Z | 10.8-13.2 | 12 | 100 | 3000 | 220 | 125 | 20 | 80 |
| AM1S-1215SH30Z | 10.8-13.2 | 15 | 66.6 | 3000 | 220 | 105 | 15 | 79 |
| AM1S-1218SH30Z | 10.8-13.2 | 18 | 55.5 | 3000 | 220 | 104 | 20 | 80 |
| AM1S-1224SH30Z | 10.8-13.2 | 24 | 50 | 3000 | 220 | 123 | 25 | 71 |
| AM1S-2403SH30Z | 21.6-26.4 | 3.3 | 303 | 3000 | 220 | 54 | 8 | 77 |
| AM1S-2405SH30Z | 21.6-26.4 | 5 | 200 | 3000 | 220 | 52 | 8 | 80 |
| AM1S-2407SH30Z | 21.6-26.4 | 7.2 | 138.9 | 3000 | 220 | 54 | 10 | 77 |
| AM1S-2409SH30Z | 21.6-26.4 | 9 | 111.1 | 3000 | 220 | 54 | 7 | 77 |
| AM1S-2412SH30Z | 21.6-26.4 | 12 | 100 | 3000 | 220 | 62 | 8 | 80 |
| AM1S-2415SH30Z | 21.6-26.4 | 15 | 66.6 | 3000 | 220 | 51 | 8 | 81 |
| AM1S-2418SH30Z | 21.6-26.4 | 18 | 55.5 | 3000 | 220 | 52 | 8 | 80 |
| AM1S-2424SH30Z | 21.6-26.4 | 24 | 50 | 3000 | 220 | 60 | 9 | 83 |

Input Specifications

| Parameters | Nominal | Typical | Maximum | Units |
|----------------------------------|-----------|-----------|---------|--------|
| Voltage range | 3.3 | 2.97-3.63 | | VDC |
| | 5 | 4.5-5.5 | | |
| | 12 | 10.8-13.2 | | |
| | 24 | 21.6-26.4 | | |
| Filter | Capacitor | | | |
| Absolute Maximum Rating | 3.3 Vin | 0-6 | | VDC |
| | 5 Vin | 0-7 | | |
| | 12 Vin | 0-15 | | |
| | 24 Vin | 0-28 | | |
| Peak Input Voltage time | | 100 | | ms |
| Input reflected ripple current * | | 20 | | mA p-p |

* Measured with a 12μH source inductor and a 47μF (ESR<1Ω at 100KHz) source capacitor.

Isolation Specifications

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

Output Specifications

| Parameters | Conditions | Typical | Maximum | Units |
|-------------------------|------------------------------------|---------|---------|----------|
| Voltage accuracy | | | ±3 | % |
| Line voltage regulation | For 1% change of Vin | | ±1.2 | % of Vin |
| Load voltage regulation | Load 20 – 100% | | ±10 | % |
| | 3.3V output models, Load 20 – 100% | | ±20 | % |
| Temperature coefficient | | ±0.02 | | %/°C |
| Ripple & Noise | At 20MHz Bandwidth | | 100 | mV p-p |
| Capacitive load | | | 220 | μF |

General Specifications

| Parameters | Conditions | Typical | Maximum | Units |
|------------------------|--|-------------|---------|-------|
| Switching frequency | 100% load , Variable | 80 | | KHz |
| Operating temperature | Full Load without Derating | -40 to +85 | | °C |
| Storage temperature | | -40 to +125 | | °C |
| Max Case temperature | | | 100 | °C |
| Cooling | Free air convection | | | |
| Humidity | | | 95 | % |
| Case material | Non-conductive black plastic UL94-VO | | | |
| Weight | | 1.5 | | g |
| Dimensions (L x W x H) | 0.46 x 0.24 x 0.40 inches 11.68 x 6.00 x 10.15 mm | | | |
| MTBF | >1 121 000 hrs(MIL-HDBK -217F, Ground Benign, t=+25°C) | | | |

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

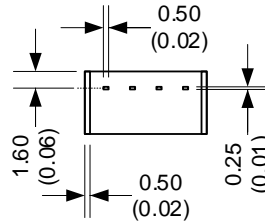
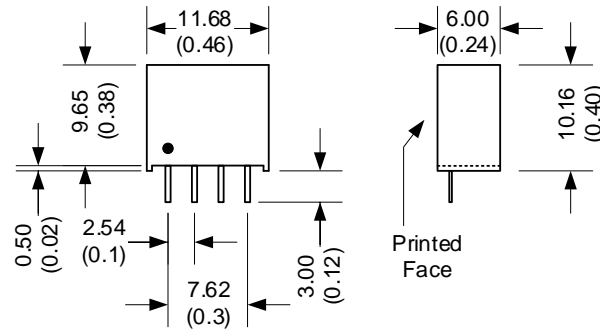
Safety Specifications

| Standards | |
|------------------|---|
| Agency approvals | CE |
| Safety | EN55032 (Radiated Emissions) class B |
| | IEC61000-4-2(ESD) Criteria A |
| | IEC61000-4-3(Radiated immunity) Criteria A |
| | IEC61000-4-4(EFT) Criteria A, with the recommended EFT/Surge external circuit |
| | IEC61000-4-5(Surge) Criteria A, with the recommended EFT/Surge external circuit |
| | IEC61000-4-6(CS) Criteria A |
| | IEC61000-4-8(PFMF) Criteria A |

Pin Out Specifications

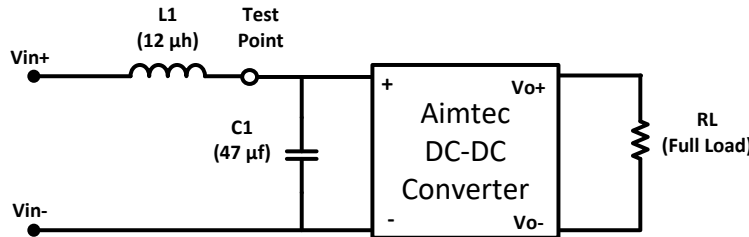
| Pin | Single |
|-----|------------|
| 1 | - V Input |
| 2 | +V Input |
| 3 | - V Output |
| 4 | +V Output |

Dimensions



Unit: mm(inch)
 Case tolerance: $\pm 0.5(0.02)$
 Pin pitch and length tolerance: $\pm 0.35(0.014)$
 Pin tolerance: $\pm 0.5(0.02)$

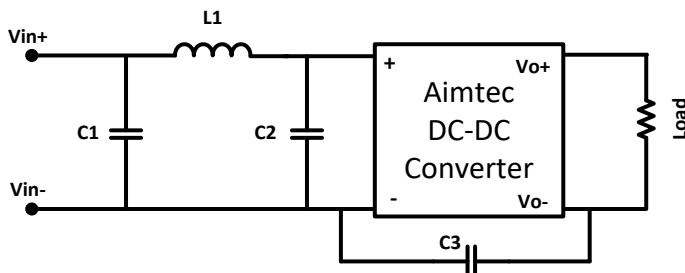
Input Reflected Ripple Test Circuit



* Tested at full load, and nominal input

EMI Filtering

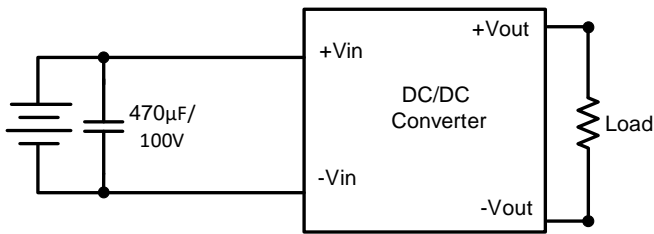
To meet conducted emissions, the following circuit is recommended with the external components as noted in the table below.



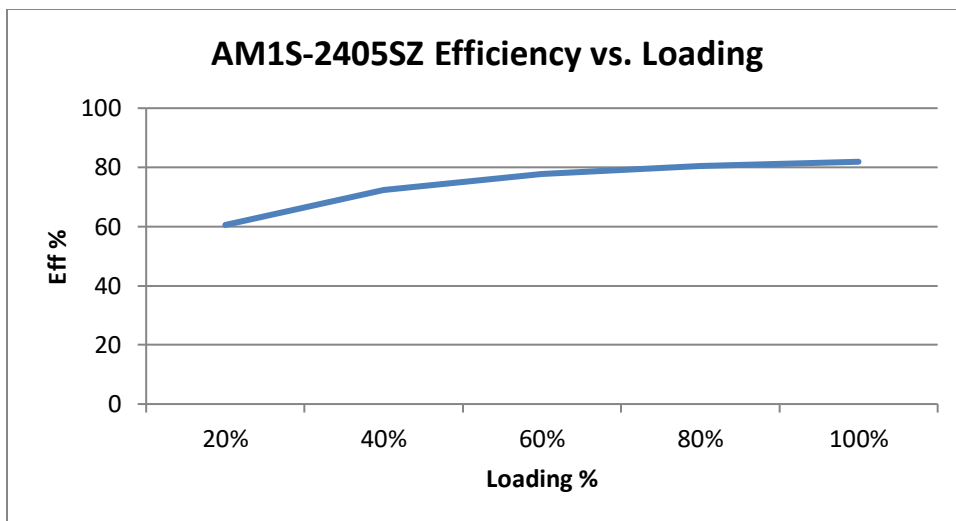
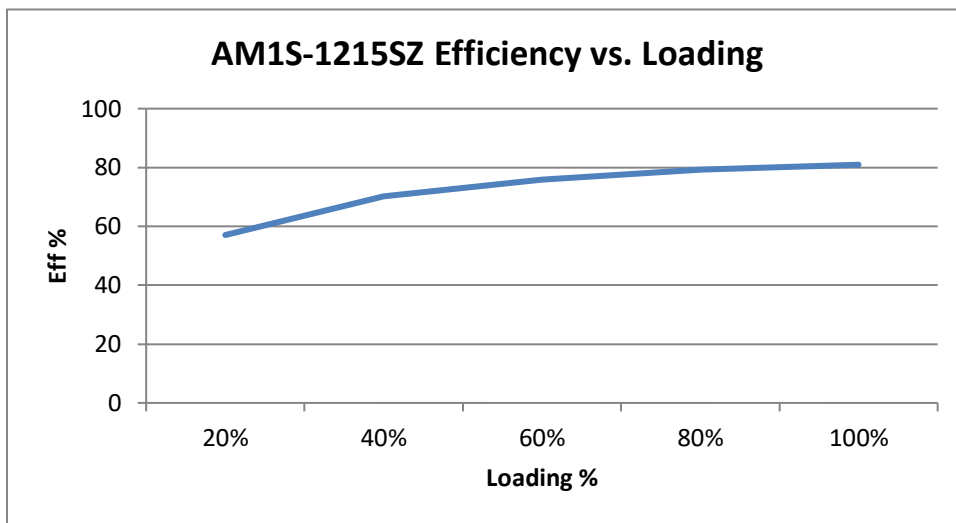
| Model | C1 | L1 | C2 | C3 |
|--------|--------------------|------------|--------------------|-------------|
| 5Vin | 2.2 μ F / 100V | 18 μ H | | |
| 12 Vin | 2.2 μ F / 100V | 18 μ H | | |
| 24 Vin | 2.2 μ F / 100V | 18 μ H | 2.2 μ F / 100V | 470pF / 2KV |

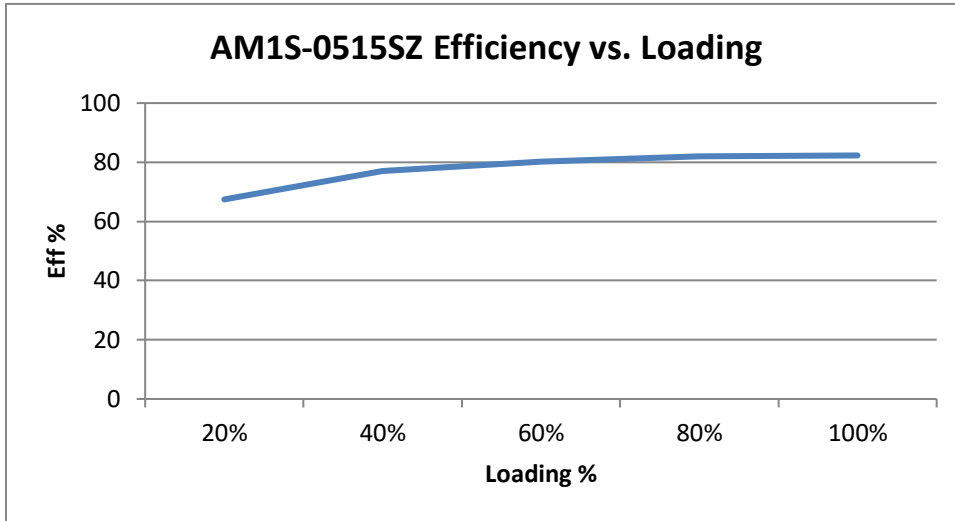
Additionally, in order to meet IEC 61000-4-4 and 61000-4-5 and external capacitor is recommended (ex. Nippon KY series of size 470 μ F / 100V).

EFT/Surge Application circuit



Typical Efficiency Chart Examples





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 than the ones listed in this datasheet. **7.** Warranty is in accordance with Aimtec's standard Terms of Sale available at www.aimtec.com.

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