

**FEATURES:**

- SMD Package
- I/O Isolation 1500 & 3000 VDC
- Ultra Low Ripple and Noise
- Industry Standard Pinout
- Single Output Models
- Operating temperature -40°C to + 105°C
- Efficiency up to 79%
- Continuous Short Circuit Protection



### Models

#### Single output

| Model               | Input Voltage (V) | Output Voltage (V) | Output Current Max   Min (mA) |   | Input Current Full   No Load (mA) |    | Isolation (VDC) | Max Capacitive Load(uF) | Efficiency (%) |
|---------------------|-------------------|--------------------|-------------------------------|---|-----------------------------------|----|-----------------|-------------------------|----------------|
| AM1/4LS-0305S-NZ ‡  | 2.97-3.63         | 5                  | 50                            | 5 | 104                               | 20 | 1500            | 220                     | 71             |
| AM1/4LS-0503S-NZ    | 4.5-5.5           | 3.3                | 76                            | 8 | 68                                | 15 | 1500            | 220                     | 72             |
| AM1/4LS-0505S-NZ    | 4.5-5.5           | 5                  | 50                            | 5 | 68                                | 15 | 1500            | 220                     | 67             |
| AM1/4LS-1205S-NZ    | 10.8-13.2         | 5                  | 50                            | 5 | 27                                | 10 | 1500            | 220                     | 66             |
| AM1/4LS-1209S-NZ    | 10.8-13.2         | 9                  | 28                            | 3 | 27                                | 10 | 1500            | 220                     | 73             |
| AM1/4LS-1212S-NZ    | 10.8-13.2         | 12                 | 21                            | 2 | 27                                | 10 | 1500            | 220                     | 77             |
| AM1/4LS-2405S-NZ    | 21.6-26.4         | 5                  | 50                            | 5 | 15                                | 8  | 1500            | 220                     | 54             |
| AM1/4LS-0505SH30-NZ | 4.5-5.5           | 5                  | 50                            | 5 | 68                                | 15 | 3000            | 220                     | 67             |
| AM1/4LS-1205SH30-NZ | 10.8-13.2         | 5                  | 50                            | 5 | 27                                | 10 | 3000            | 220                     | 66             |

‡ With Momentary short circuit protection of 1 second

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.

NOTE: AM1/4LS-1209S-NZ and AM1/4LS-0505SH30-NZ will be discontinued (EOL) by December 30, 2021; for new designs, please refer to AM1LS-JZ series.

### 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        | -0.7-5    |         | VDC    |
|                                | 5 Vin          | -0.7-9    |         |        |
|                                | 12 Vin         | -0.7-18   |         |        |
|                                | 24Vin          | -0.7-30   |         |        |
| Peak Input Voltage time        |                | 1         |         | s      |
| Input Reflected Ripple Current | 3.3 & 5V Input | 20        |         | mA p-p |
|                                | 12 & 24V Input | 5         |         |        |

### Isolation Specifications

| Parameters         | Conditions   | Typical     | Maximum | Units |
|--------------------|--------------|-------------|---------|-------|
| Tested I/O voltage | 60 sec, <1mA | 1500 & 3000 |         | VDC   |
| Resistance         | 500VDC       | >1000       |         | MOhm  |
| Capacitance        |              | 20          |         | pF    |

### Output Specifications

| Parameters               | Conditions                       | Typical | Maximum | Units    |
|--------------------------|----------------------------------|---------|---------|----------|
| Voltage accuracy         | 100% load (see tolerance chart)  | ±2.5    |         | %        |
| Short Circuit protection | Continuous, unless marked with ‡ |         |         |          |
| Short circuit restart    | Auto-Recovery                    |         |         |          |
| Line voltage regulation  | For ±1% of Vin, 3.3Vout          |         | ±1.5    | % of Vin |
|                          | For ±1% of Vin, other models     |         | ±1.2    | % of Vin |
| Load voltage regulation  | 10% - 100% load, 3.3Vout         | 15      | 20      | %        |
|                          | 10% - 100% load, 5 / 9Vout       | 12      | 15      | %        |
|                          | 10% - 100% load, 12Vout          | 7       | 10      | %        |

|                         |   |    |       |        |
|-------------------------|---|----|-------|--------|
| Temperature coefficient | 100% load                               |    | ±0.03 | %/°C   |
| Ripple & Noise          | 20MHz Bandwidth, 1.5KV isolation models | 20 | 120   | mV p-p |
|                         | 20MHz Bandwidth, 3KV isolation models   | 20 | 50    | mV p-p |

## General Specifications

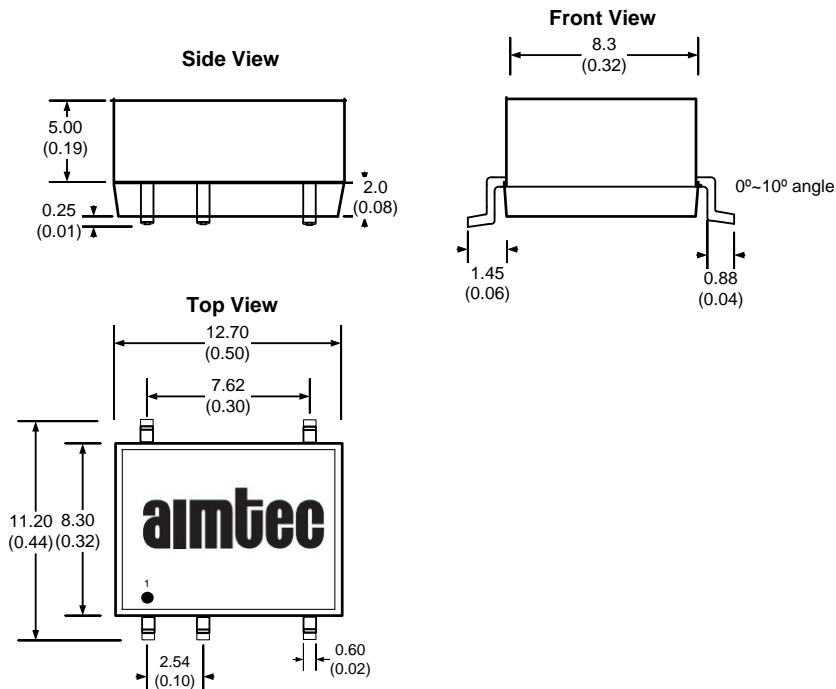
| Parameters                    | Conditions   | Typical                 | Maximum | Units |
|-------------------------------|--|-------------------------|---------|-------|
| Switching frequency           | 100% load  | 100                     |         | KHz   |
| Operating temperature         | With derating above +100                                 | -40 to +105             |         | °C    |
| Storage temperature           |  | -55 to +125             |         | °C    |
| Cooling                       | Free air convection                                      |                         |         |       |
| Humidity                      | Non Condensing   |                         | 95      | % RH  |
| Case material                 | Epoxy resin (UL94-V0)                                    |                         |         |       |
| Weight                        |  | 1.5                     |         | g     |
| Dimensions (L x W x H)        | 0.50 x 0.44 x 0.28 inches                                | 12.70 x 11.20 x 7.25 mm |         |       |
| MTBF                          | >3500K hrs (MIL-HDBK -217F, Ground Benign, t=+25°C)hours |                         |         |       |
| Maximum soldering temperature | 1.5mm from case for 10 sec                               |                         | 300     | °C    |
| Maximum case temperature      |  |                         | 115     | °C    |

## Safety Specifications

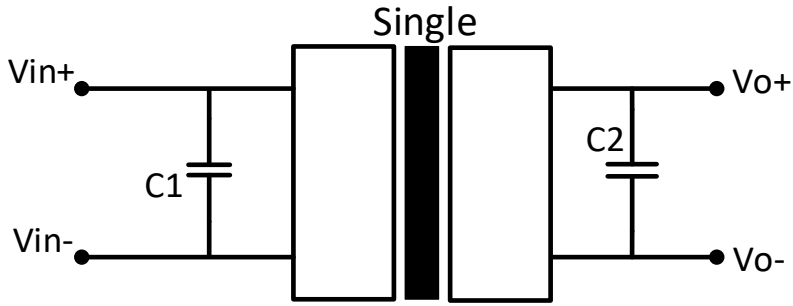
| Parameters      |  |
|-----------------|--|
| Agency Approval |  |
| Standards       | EN55032 Class B (see recommended circuit)<br>IEC 61000-4-2, Contact ±8kV, Criteria B |

## Pin Out Specifications and Dimensions

| Pin | Single    |
|-----|-----------|
| 1   | - V Input |
| 2   | + V Input |
| 3   | No Pin    |
| 4   | -V Output |
| 5   | +V Output |
| 6   | No Pin    |
| 7   | No Pin    |
| 8   | N.C.      |

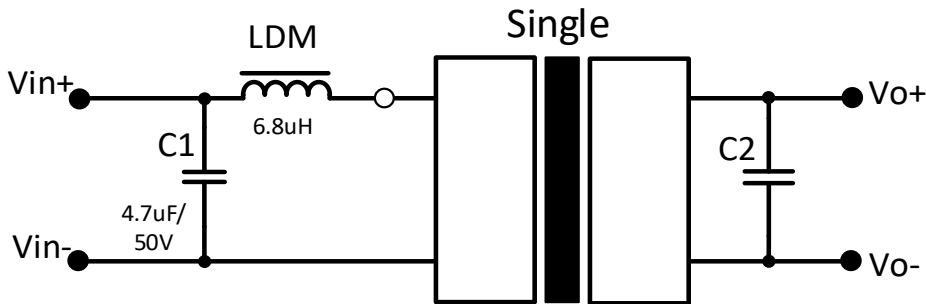


**Typical Application Circuits**

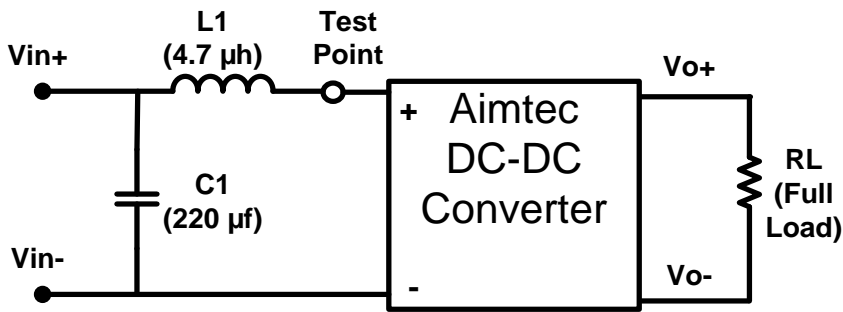


| Vin (VDC) | C1 (µF) | Vout (VDC) | C2 (µF) |
|-----------|---------|------------|---------|
| 3.3/5     | 4.7     | 3.3 & 5    | 10      |
| 12        | 2.2     | 12         | 2.2     |
| 24        | 1       | 15         | 1       |

**EMI Recommended Circuit (Class B)**

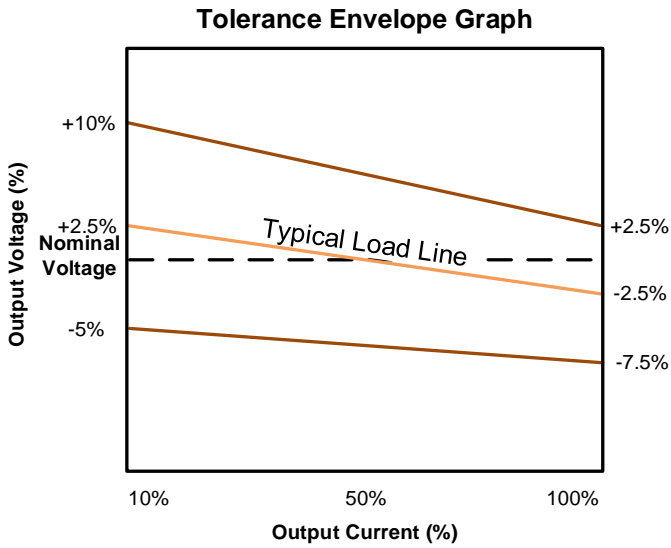


**Input Reflected Ripple Current Test Circuit**

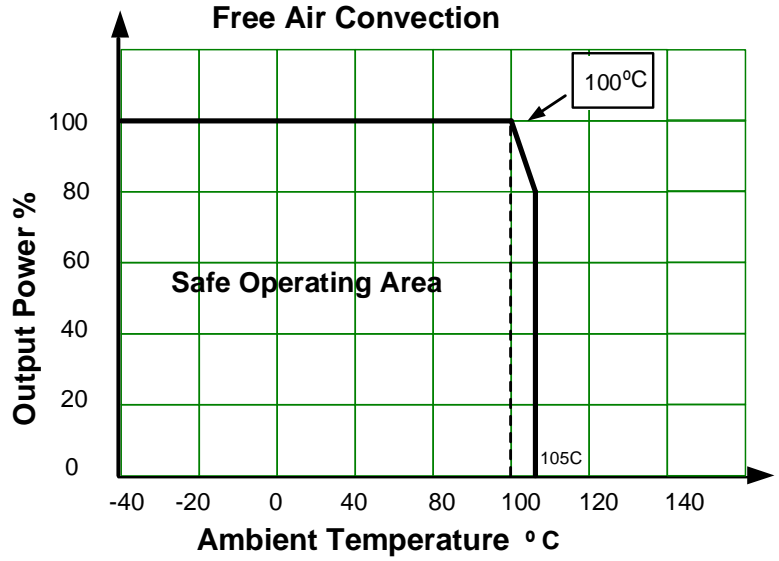


\* Tested at full load, and nominal input

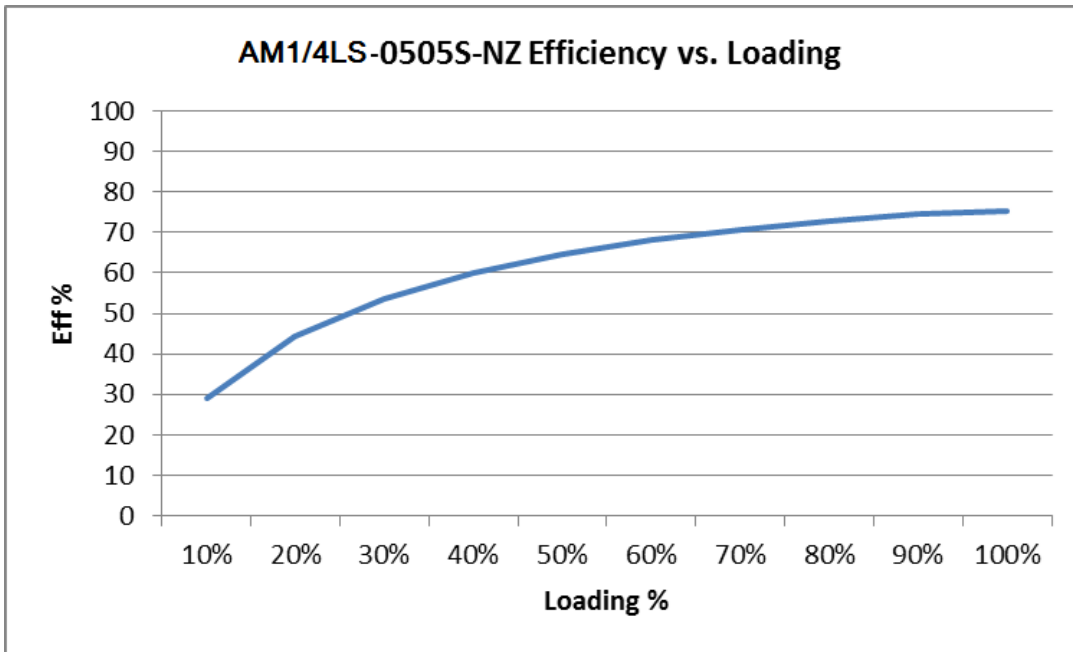
**Load Accuracy Tolerance Graph**

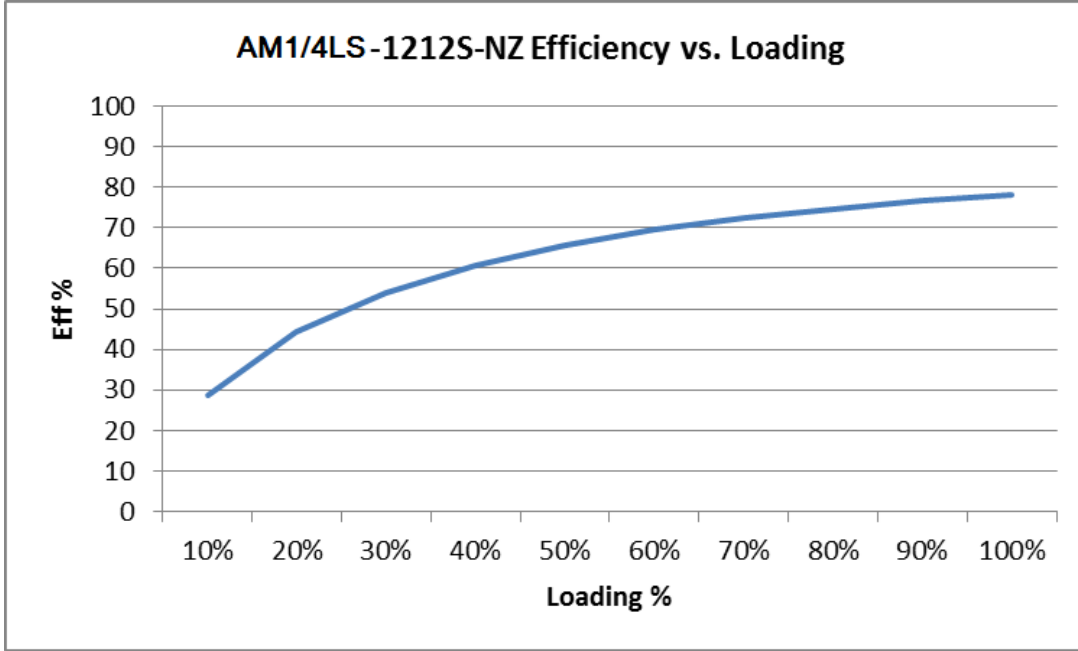


**Derating**



**Typical Efficiency vs. Loading**





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