



Series AMSRW-78-NZ

Up to 12 Watt | DC-DC Switching Regulator



FEATURES:

- 3 Pin SIP Package
- Pin-out compatible with LM78XX Linear Regulators
- Continuous Short Circuit Protection
- Thermal shutdown
- Operating temperature -40°C to +85°C
- Wide input range up to 8:1
- Very High Efficiency Up To 91%
- Low ripple and noise



Models Single output

| Model | Input Voltage (V) | Output Voltage (V) | Output Current max (mA) | Efficiency Vin Min (%) | Efficiency Vin Max (%) |
|---|-------------------|--------------------|-------------------------|------------------------|------------------------|
| AMSRW-783.3-NZ | 9 - 72 | 3.3 | 500 | 82 | 75 |
| AMSRW-7805-NZ | 9 - 72 | 5 | 500 | 87 | 81 |
| AMSRW-786.5-NZ | 9 - 72 | 6.5 | 500 | 91 | 84 |
| AMSRW-7809-NZ | 14 - 72 | 9 | 500 | 92 | 86 |
| AMSRW-7812-NZ | 17 - 72 | 12 | 500 | 93 | 89 |
| AMSRW-7815-NZ | 20 - 72 | 15 | 500 | 94 | 90 |
| AMSRW-7824-NZ | 36 - 72 | 24 | 300 | 95 | 91 |
| 90 Degree Angle Pins Version (L) | | | | | |
| AMSRW-783.3L-NZ | 9 - 72 | 3.3 | 500 | 82 | 75 |
| AMSRW-7805L-NZ | 9 - 72 | 5 | 500 | 87 | 81 |
| AMSRW-786.5L-NZ | 9 - 72 | 6.5 | 500 | 91 | 84 |
| AMSRW-7809L-NZ | 14 - 72 | 9 | 500 | 92 | 86 |
| AMSRW-7812L-NZ | 17 - 72 | 12 | 500 | 93 | 89 |
| AMSRW-7815L-NZ | 20 - 72 | 15 | 500 | 94 | 90 |
| AMSRW-7824L-NZ | 36 - 72 | 24 | 300 | 95 | 91 |

Input Specifications

| Input Specifications | Nominal | Typical | Maximum | Units |
|---------------------------|---------------------|---------|---------|-------|
| Voltage range | See the table above | | | VDC |
| Quiescent Current | Vin= Nom, min load | 1 | 5 | mA |
| Short Circuit consumption | Vin = Nominal | 0.72 | 1.2 | W |

Output Specifications

| Output Specifications | Conditions | Typical | Maximum | Units |
|--------------------------|--------------------------------|---------|---------|--------|
| Voltage accuracy | 100% load | ±2 | ±3 | % |
| Short Circuit protection | Continuous. | | | |
| Short circuit restart | Auto recovery | | | |
| Thermal shutdown | | 160 | | °C |
| Output current limit | | | 1.2 | A |
| Dynamic load stability | 10-100% load, 1 / 1.5ms | | ±100 | mV |
| Line voltage regulation | Vin=(LL-HL) at full load | ±0.4 | ±1 | % |
| Load voltage regulation | 10-100% load | ±0.3 | ±0.6 | % |
| Temperature coefficient | -40°C to +85°C ambient | | ±0.015 | %/°C |
| Ripple & Noise | 20MHz Bandwidth (10-100% load) | 60 | | mV p-p |
| Maximum Capacitive Load | | | 100 | µF |

General Specifications

| Input Specifications | Conditions | Minimum | Maximum | Units |
|-----------------------|--------------------------|-------------|---------|-------|
| Switching frequency | 100% load | 120 | 800 | KHz |
| Operating temperature | With derating above 71°C | -40 to +85 | | °C |
| Storage temperature | | -55 to +125 | | °C |
| Max Case temperature | | | 100 | °C |
| Cooling | Free air convection | | | |
| Humidity | | | 95 | % |

General Specifications (continued)

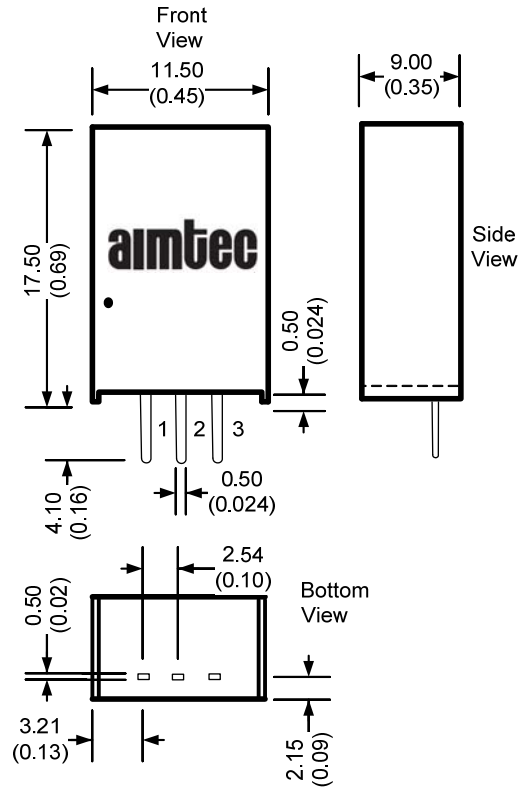
| Input Specifications | Conditions | Minimum | Maximum | Units |
|------------------------|--|---------|-------------------------|-------|
| Case material | Non-conductive black plastic (UL94V-0 rated) | | | |
| Weight | 4 | | | g |
| Dimensions (L x W x H) | 0.45 X 0.35 X 0.69 inch | | 11.50 X 9.00 X 17.50 mm | |
| MTBF | > 3 500 000hrs (MIL-HDBK-217F, Ground Benign, t=+25°C) | | | |
| | > 1 500 000hrs (MIL-HDBK-217F, Ground Benign, t=+71°C) | | | |
| Soldering Temperature | 1.5 mm from case for 10 sec | | 300 | °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.

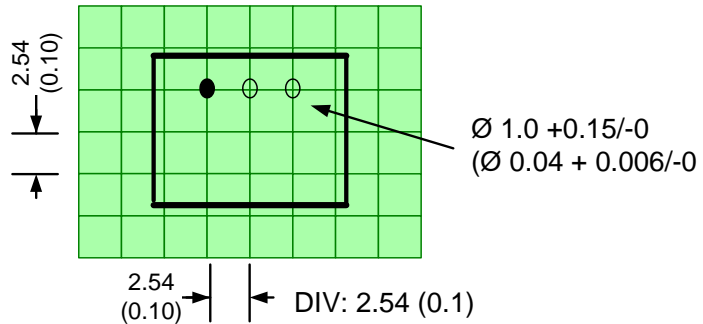
Pin Out Specifications

| Pin | Single |
|-----|--------|
| 1 | +Vin |
| 2 | GND |
| 3 | +Vout |

Dimensions

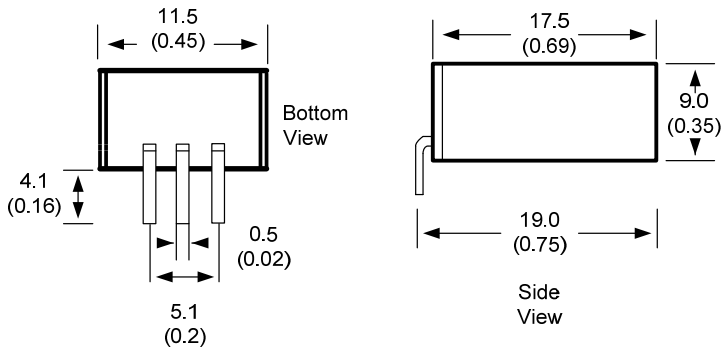


Footprint

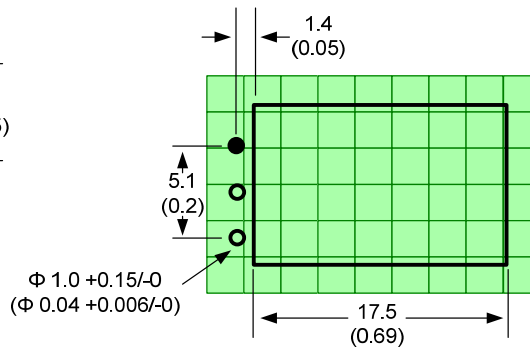


Dimensions are typical values: mm (inch)
General Tolerance: ± 0.25 (± 0.01)
Pin Tolerance: ± 0.1 (± 0.004)

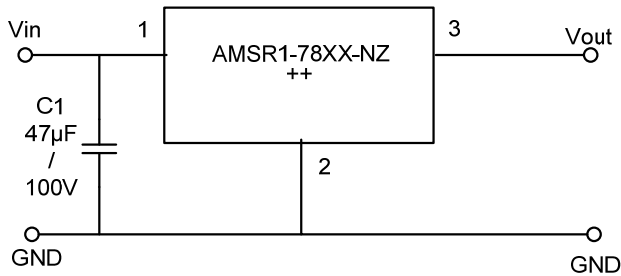
L Models



Footprint

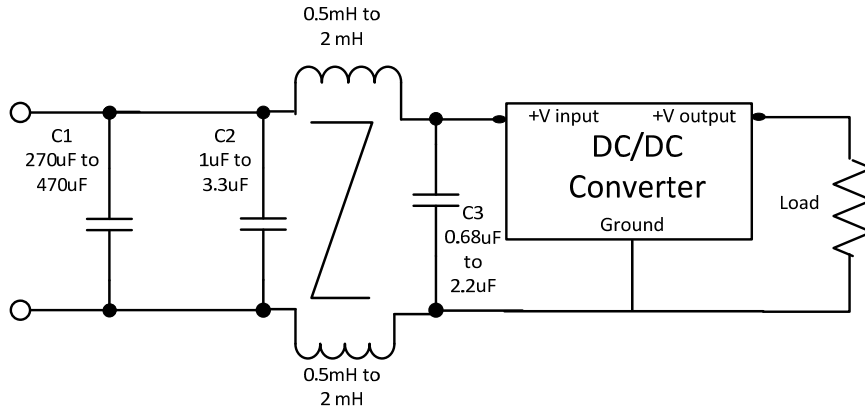


Typical Application Circuit



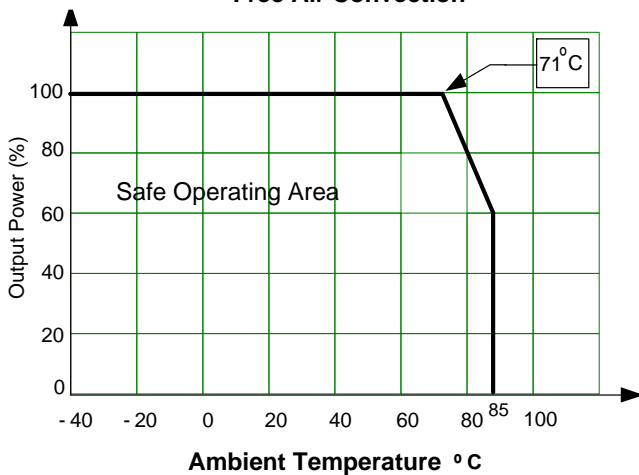
Abrupt low to high inputs may damage the regulator. C1 capacitor is required to filter potentially damaging voltage spikes if high voltage is applied. Typical value is (47µF / 100V). **NOTE: This part is not designed for parallel operation.**

Recommended Circuits for EN55022, class B compliance Conducted and Radiated Emissions



Derating

Free Air Convection



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