



FEATURES:

- Switching Regulator
- Low Noise
- Wide Input
- Non-Isolated
- Adjustable Output Voltage
- Thermal Shutdown
- SMD Package
- Efficiency Up To 96%
- Remote On/Off
- Short Circuit Protection
- High MTBF
- RoHS Compliant



Models
Single output

| Model | Input Voltage (V) | Output Voltage (V) | Output Current max (mA) | Efficiency Vin Max (%) | Efficiency Vin Min (%) |
|----------------|-------------------|--------------------|-------------------------|------------------------|------------------------|
| AMSRL-783.3-NZ | 4.5-28 | 3.3 | 500 | 75 | 90 |
| AMSRL-7805-NZ | 6-28 | 5 | 500 | 81 | 94 |
| AMSRL-7812-NZ | 14-28 | 12 | 500 | 90 | 95 |
| AMSRL-7815-NZ | 17-28 | 15 | 500 | 92 | 96 |

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.

Input Specifications

| Parameters | Nominal | Typical | Maximum | Units |
|-------------------|---|---------|---------|-------|
| Voltage range | See Models table above | | | |
| Start up time | | 2 | | ms |
| On/Off Control | ON –open or 1.5V < Vc < 6V ; OFF –GND or 0V < VC < 1V , 2uA | | | |
| Quiescent Current | Vin = min to max at 0% load | 10 | | mA |

Output Specifications

| Parameters | Conditions | Typical | Maximum | Units |
|----------------------------------|--------------------------|----------|---------|--------|
| Voltage accuracy | At 100% load | ±3 | | % |
| Short Circuit protection | Continuous, hiccup mode | | | |
| Short circuit restart | Auto-Recovery | | | |
| Thermal shutdown | Internal IC Junction | 160 | | °C |
| Dynamic load stability | 10-100% load | ±75 | | mV |
| Line voltage regulation | Vin=(LL-HL) at full load | ±0.5 | | % |
| Load voltage regulation | 10-100% load | ±1 | | % |
| Temperature coefficient | -40°C to +85°C ambient | 0.02 | | %/°C |
| Ripple & Noise | 20MHz Bandwidth | 25 | | mV p-p |
| Voltage adjustment range (V adj) | 3.3 | 1.8-5.5 | | VDC |
| | 5 | 2.5-8.0 | | |
| | 12 | 4.5-13.5 | | |
| | 15 | 4.5-15.5 | | |
| Maximum Capacitive Load | | | 1000 | uF |

General Specifications

| Parameters | Conditions | Typical | Maximum | Units |
|--------------------------|---------------------------|-------------|---------|-------|
| Switching frequency | 100% load | 1.4 | | MHz |
| Operating temperature | With derating above 71 °C | -40 to +85 | | °C |
| Storage temperature | | -55 to +125 | | °C |
| Maximum case temperature | | | 100 | °C |
| Cooling | Free Air Convection | | | |
| Humidity | | | 95 | % RH |
| Case material | Plastic (UL94-V0) | | | |
| Weight | | 2.3 | | g |

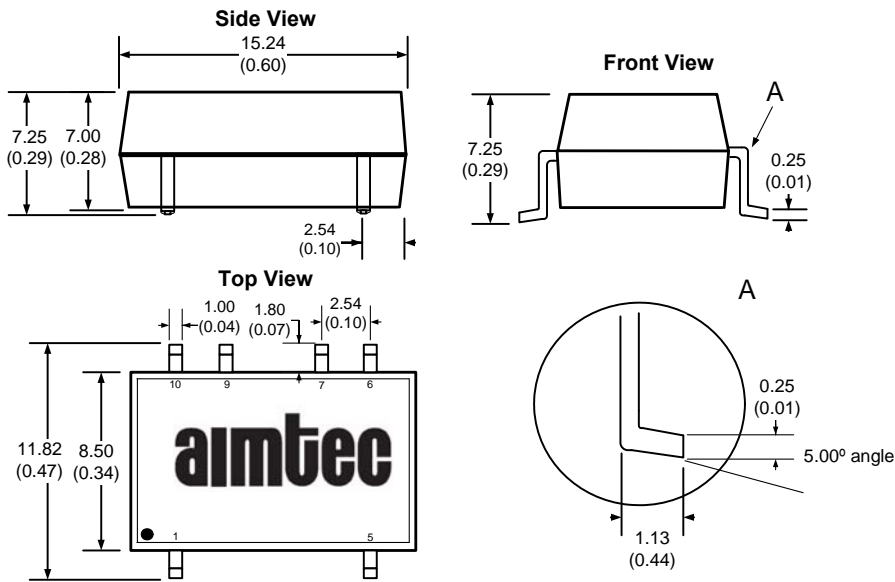
General Specifications (continued)

| Parameters | Conditions | Typical | Maximum | Units |
|--------------------------------|----------------------------|--|-------------------------|-------|
| Dimensions (L x W x H) | | 0.60 x 0.47 x 0.29 Inches | 15.24 x 11.82 x 7.25 mm | |
| MTBF | | > 2 000 000 hrs (MIL-HDBK-217F, Ground Benign, t=+25 °C) | | |
| Maximum Soldering Temperature | 1.5mm from case for 10 sec | | 300 | °C |
| Turn on Transient process time | | 50 | | us |
| Off idle current | | 30 | | uA |

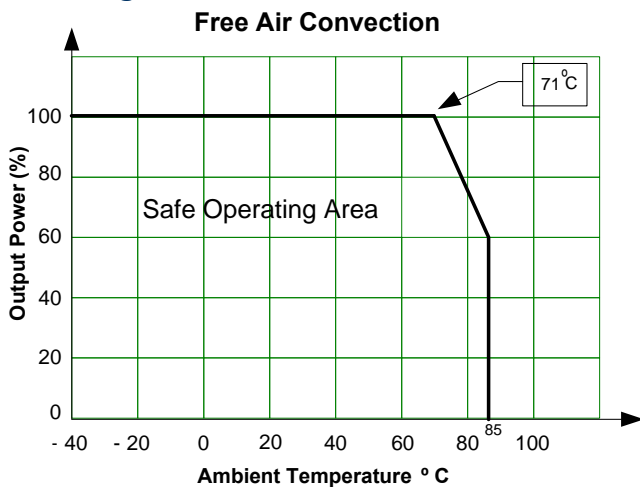
Pin Out Specifications

| Pin | Single |
|-----|-----------|
| 1 | +V input |
| 5 | +V output |
| 6 | V adj |
| 7 | Ground |
| 9 | Ground |
| 10 | ON/OFF |

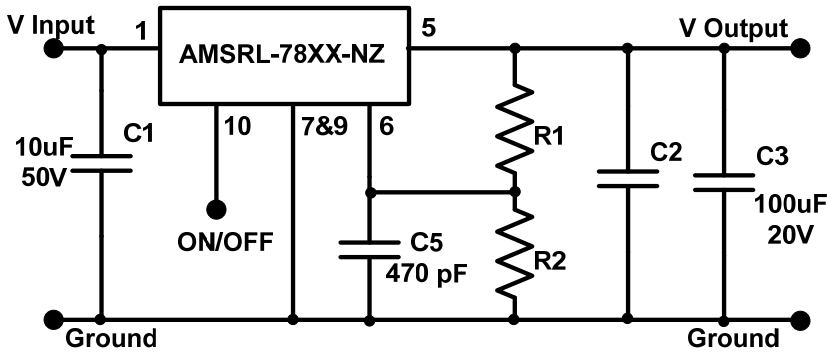
Dimensions



Derating



Application Circuit



| Model Number | C2 (uF) |
|----------------|---------|
| AMSRL-783.3-NZ | 22 |
| AMSRL-7805-NZ | 22 |
| AMSRL-7812-NZ | 10 |
| AMSRL-7815-NZ | 10 |

It is recommended that ceramic capacitors are used for C2 & C3.
It is recommended to install C3 to improve performance.
C1 & C2 are required and should be installed as close to the converter as possible

| Model Number | Nominal Output (V) | Vout Adjusted Up | Vout Adjusted Down |
|----------------|--------------------|---|---|
| | | R2 (KΩ) | R1 (KΩ) |
| AMSRL-783.3-NZ | 3.3 | $\frac{= 75.1 - (10 \times V_{out})}{V_{out} - 3.3}$ | $\frac{= (61 \times V_{out}) - 75.1}{3.3 - V_{out}}$ |
| AMSRL-7805-NZ | 5 | $\frac{= 90.72 - (10 \times V_{out})}{V_{out} - 5}$ | $\frac{= (61 \times V_{out}) - 90.72}{5 - V_{out}}$ |
| AMSRL-7812-NZ | 12 | $\frac{= 280.81 - (20 \times V_{out})}{V_{out} - 12}$ | $\frac{= (71 \times V_{out}) - 280.81}{12 - V_{out}}$ |
| AMSRL-7815-NZ | 15 | $\frac{= 269.37 - (15 \times V_{out})}{V_{out} - 15}$ | $\frac{= (66 \times V_{out}) - 269.37}{15 - V_{out}}$ |

If it is needed to adjust the output voltage higher or lower than the converter's nominal value use the equations in the table above to calculate appropriate resistor values, insuring that the voltage is within the adjustment range for the converter used. If no voltage adjustment is needed connect a 470pF ceramic capacitor from pin 6 to ground.

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