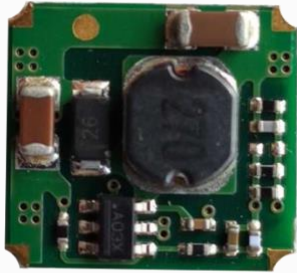


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samples

AMSROL-78NZ



SMD

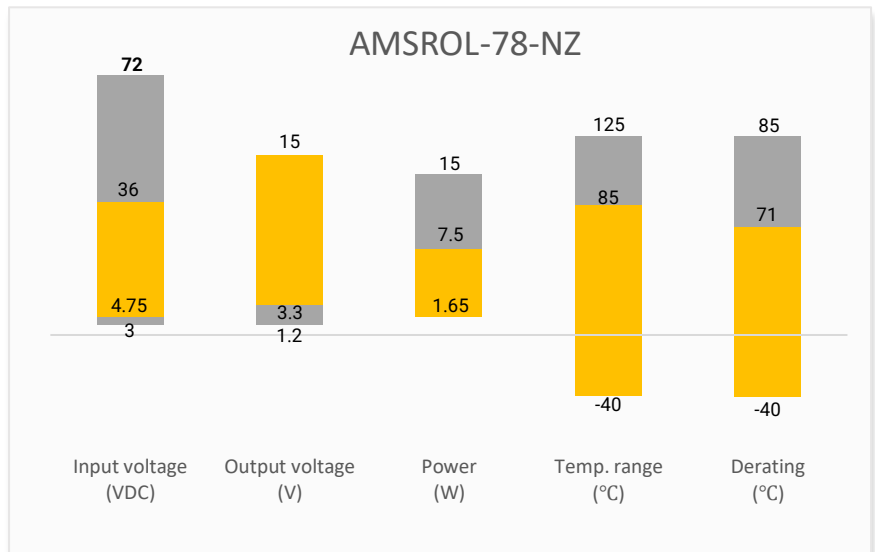
Aimtec’s AMSROL-78NZ series was developed to meet increasing market demand for compact sizes and higher efficiency. This 0.5A switching regulator hits the mark on these metrics with its 12.50 x 13.50 x 3.50mm open frame, ultra-low height design and efficiency of up to 95%. It is also a viable replacement to the LM78 linear regulator.

The series feature an ultra-wide input voltage range of 4.75-36V, continuous short-circuit and low ripple noise (typ.: 20mV). These models target a diverse range of applications such as industrial controls, IoT, grid power, instrumentation, mining and other related industries where limited board space is a key concern. This new series can accommodate operating temperature from -40°C to +85°C with full power up to 71°C.

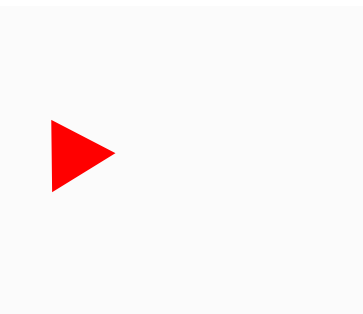
Features

- Input Range: 4.75VDC – 36VDC
- Operating Temp: -40 °C to +85 °C
- Low ripple & noise, up to 50mV(p-p) max
- Efficiency up to 95%
- ON/OFF control
- Output short circuit protection
- Regulated Output

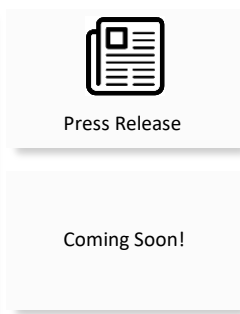
Summary



Training



Product Training Video
(click to open)



Application Notes

Applications



IoT



Industrial



Portable Equipment



Telecommunication

Models & Specifications

Single Output

| Model | Input Voltage (VDC) | Output Voltage (VDC) | Output Current Max (mA) | Maximum Capacitive Load (μ F) | Efficiency (%) Full Load |
|----------------|---------------------|----------------------|-------------------------|------------------------------------|--------------------------|
| AMSROL-783.3NZ | 24 (4.75 ~ 36) | 3.3 | 500 | 680 | 86 |
| AMSROL-7805NZ | 24 (6.5 ~ 36) | 5 | 500 | 680 | 90 |
| AMSROL-7809NZ | 24 (12 ~ 36) | 9 | 500 | 680 | 93 |
| AMSROL-7812NZ | 24 (15 ~ 36) | 12 | 500 | 680 | 94 |
| AMSROL-7815NZ | 24 (19 ~ 36) | 15 | 500 | 680 | 95 |

For input voltage exceeding 30 VDC, an input capacitor of 22 μ F/50V is required.

Input Specification

| Parameters | Conditions | Typical | Maximum | Units |
|---------------------------|---|---------|---------|-------|
| Voltage range | See models table | | | VDC |
| No load input current | | 0.2 | 1.5 | mA |
| Filter | Capacitance filter | | | |
| Reverse polarity at input | Avoid / Not protected | | | |
| On/Off Control | ON – 3.2 to 8Vdc or open circuit OFF – 0 to 0.8Vdc or pin4 connected to “-V Input” OFF idle current 0.03mA typ. and 0.1mA max | | | |

* The On/Off Control pin voltage is referenced to input GND.

Output Specification

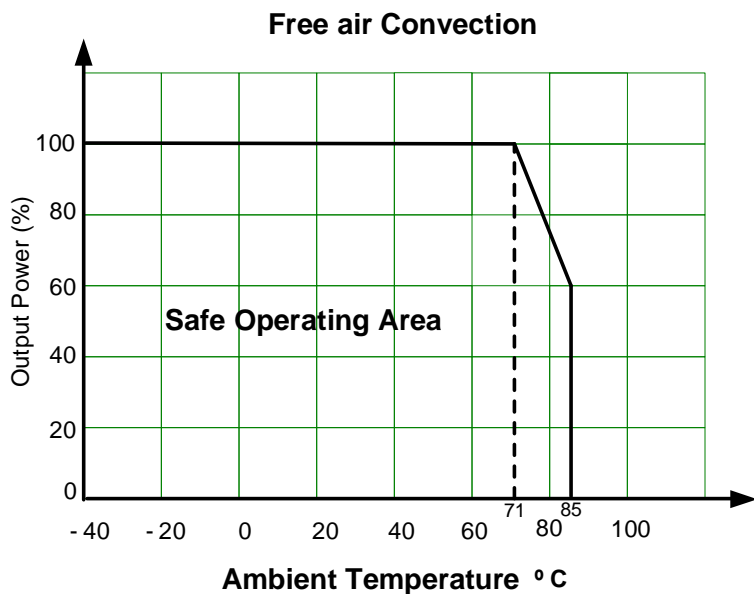
| Parameters | Conditions | Typical | Maximum | Units | |
|------------------------------|---------------------------|-----------------------------|------------|---------|----------|
| Voltage accuracy | Full load | 3.3V output model | ± 2 | ± 4 | % |
| | | Others | ± 2 | ± 3 | |
| Line regulation | Full load | ± 0.2 | ± 0.4 | % | |
| Load regulation | 10 ~ 100% load | 3.3V,5V output model | ± 0.6 | | % |
| | | Others | ± 0.3 | | |
| Short circuit protection | Continuous, Auto recovery | | | | |
| Temperature coefficient | Full load | | ± 0.03 | %/°C | |
| Ripple & Noise* | 20MHz bandwidth | 3.3V output, 20 ~ 100% load | 20 | 50 | mV pk-pk |
| | | Others, 10 ~ 100% load | 20 | 50 | |
| Transient recovery time | 25% load step change | 200 | 1000 | μ S | |
| Transient response deviation | 25% load step change | ± 50 | ± 200 | mV | |

* With light loads at or below 20%, Ripple & Noise for 3.3V output model increase to 100mVp-p max, and a load below 10% for others model increase to 150mVp-p max

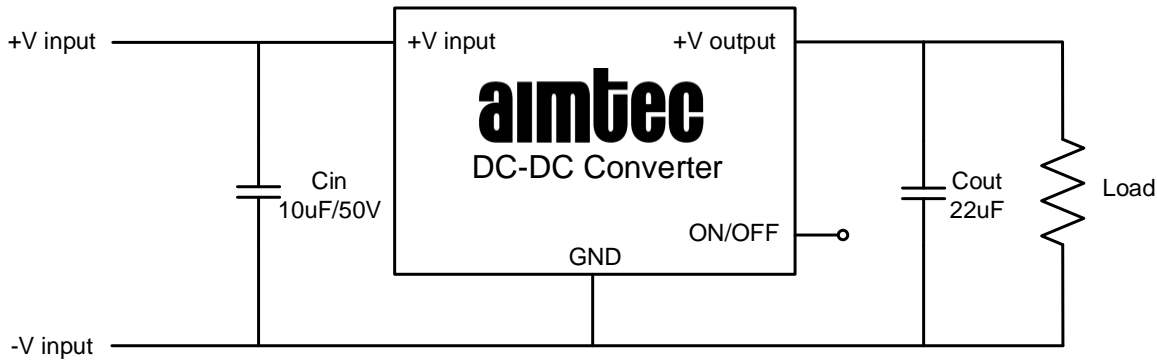
| General Specifications | | | | |
|------------------------------|--|-------------|---------|-------|
| Parameters | Conditions | Typical | Maximum | Units |
| Switching frequency | Full load | 700 | | KHz |
| Operating temperature | With derating at 71 °C | -40 to +85 | | °C |
| Storage temperature | | -55 to +125 | | °C |
| Reflow soldering temperature | Peak temp $\leq 245^{\circ}\text{C}$, 60 sec max at 217°C , please refer to IPC/JEDEC J-STD-020D.1. | | | |
| Cooling | Free air convection | | | |
| Humidity | Non-condensing | | 95 | % RH |
| Weight | | 0.9 | | g |
| Dimensions (L x W x H) | 0.49 x 0.53 x 0.14 inches, 12.50 x 13.50 x 3.50mm | | | |
| MTBF | > 2 000 000 hrs (MIL-HDBK -217F, $t=+25^{\circ}\text{C}$) / Full Load | | | |

| Safety Specifications | | |
|-----------------------|--|--|
| Parameters | | |
| Standards | Designed to meet EN 62368 | |
| | EMC - Conducted and radiated emission | CISPR32/EN55032, CLASS B with recommended circuit |
| | Electrostatic Discharge Immunity | IEC 61000-4-2, Contact $\pm 4\text{KV}$, Criteria B |
| | RF, Electromagnetic Field Immunity | IEC 61000-4-3, 10V/m, Criteria A |
| | Electrical Fast Transient/Burst Immunity | IEC 61000-4-4, $\pm 1\text{KV}$, Criteria B with recommended circuit |
| | Surge Immunity | IEC 61000-4-5, line to line $\pm 1\text{KV}$, Criteria B with recommended circuit |
| | RF, Conducted Disturbance Immunity | IEC 61000-4-6, 3Vr.m.s, Criteria A |

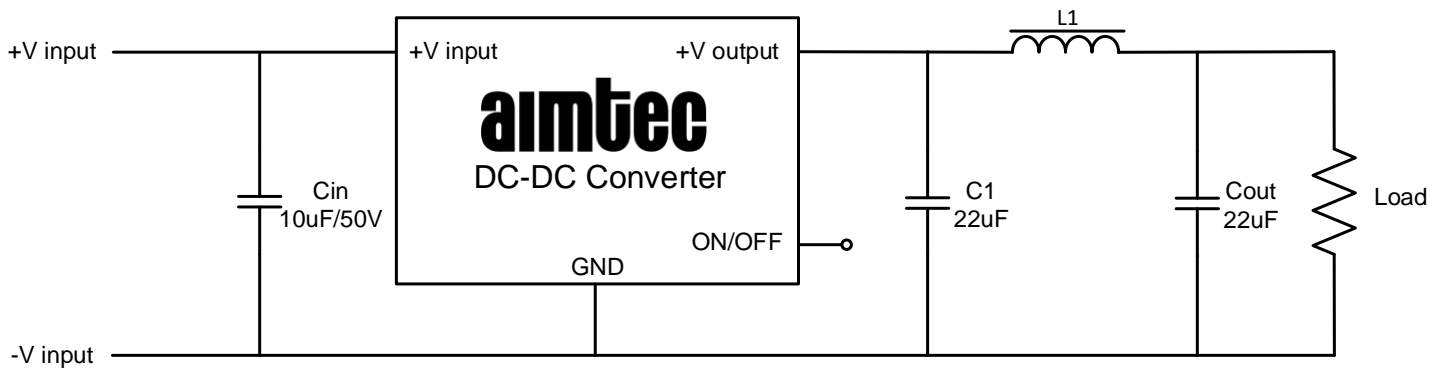
Derating



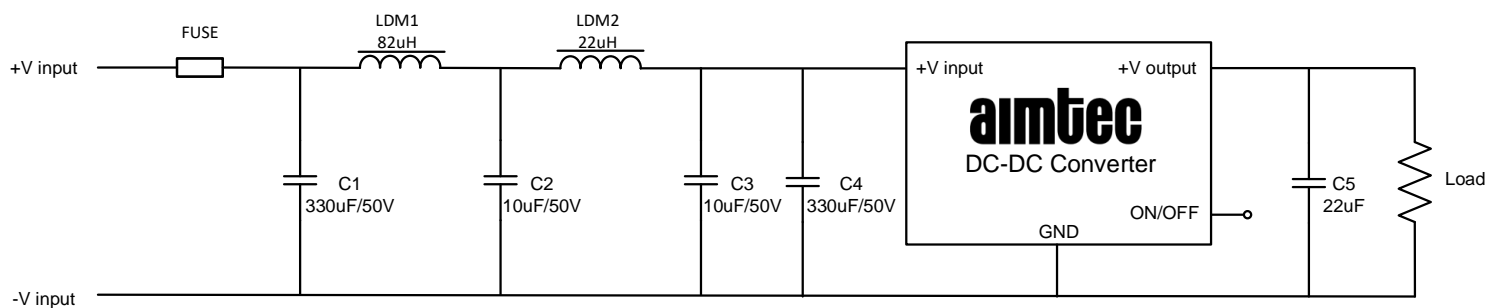
Typical Application Circuit



Note : To further reduce the output ripple and noise. We suggested the use of a "LC" filter at the output terminals, with an inductor value (L) of 10uH to 47uH.



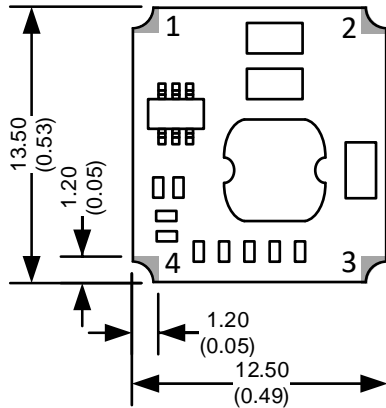
EMC Recommended Circuit



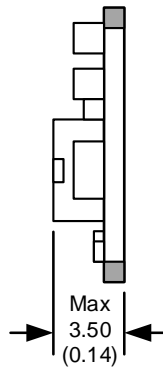
Fuse : Choose according to actual input current.

Dimensions

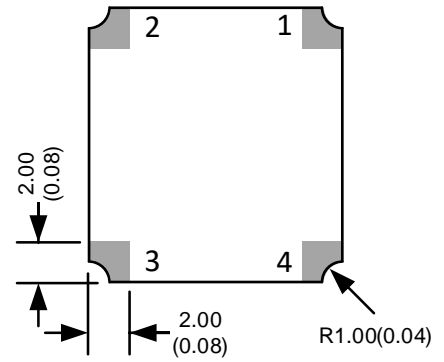
Top View



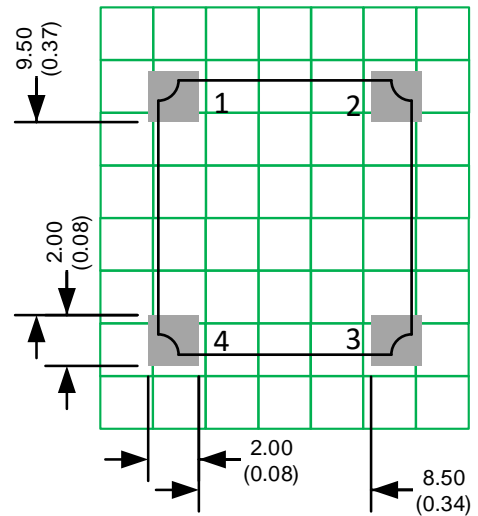
Right View



Bottom View



Notes:
All dimensions are typical in millimeters (inches).
General tolerance ± 0.25 (± 0.01)



Note : Grid 2.54*2.54 mm

| Pin Out Specifications | |
|------------------------|-----------|
| Pin | Function |
| 1 | +V Input |
| 2 | -V Input |
| 3 | +V Output |
| 4 | ON/OFF |

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