aimtec
Your Power Partner

# Series AMSRB-78-Z

## Up to 7.5Watt | DC-DC Converter




### FEATURES:

- No heatsink required
- 3 Pin SIP package
- Non-isolated
- Low ripple and noise
- Extra low no load current
- RoHS compliant
- Operating temperature -40°C to +85°C
- Very high efficiency up to 94%
- Pin compatible to multiple manufacturers
- Highly Regulated Outputs
- Very high switching frequency

## Models

## Single output

| Model | Input Voltage (V) | Output Voltage (V) | Output Current max (mA) | Efficiency Vin Max (%) | Efficiency Vin Min (%) | Max Capacitive Load |
|---|---|---|---|---|---|---|
| AMSRB-783.3Z | 4.5 ~ 28 | 3.3 | 500 | 75 | 89 | 100µF |
| AMSRB-7805Z | 7 ~ 28 | 5 | 500 | 80 | 92 | 100µF |
| AMSRB-7812Z | 14 ~ 28 | 12 | 500 | 90 | 94 | 100µF |
| AMSRB-7815Z | 17 ~ 28 | 15 | 500 | 92 | 94 | 47µF |

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 | Conditions | Typical | Maximum | Units |
|---|---|---|---|---|
| Voltage range | See the table above | | | |
| Filter | Capacitor | | | |
| Input Current (No Load) | Maximum | | (3.3V) 1.0<br>(5V) 1.0<br>(12V) 1.5<br>(15V) 2.0 | mA |
| Input Current | Vin 4.5 / 28 Vdc Full Load<br>Vin 7 / 28 Vdc Full Load<br>Vin 14 / 28 Vdc Full Load<br>Vin 17 / 28 Vdc Full Load | 411 / 78<br>388 / 111<br>455 / 238<br>469 / 291 | | mA |
| Startup Time | | 10 | | mS |
| Input Reflected Current * | | 35 | | mA pk-pk |
| Absolute Max Stress Rating | For 100ms | | 0-30 | Vdc |

* The input reflected ripple current should be measured with a 12µH inductor and a 47µF capacitor.

## Output Specifications

| Parameters | Conditions | Typical | Maximum | Units |
|---|---|---|---|---|
| Voltage accuracy | 100% load | ±3 | | % |
| Short circuit protection | Continuous | | | |
| Short circuit restart | Auto recovery | | | |
| Output current limit | | | 500 | mA |
| Minimum load current | | | 5 | mA |
| Transient Response Deviation | | 250 | | µs |
| Line voltage regulation | | ±0.5 | | % |
| Load voltage regulation | 10-100% load | ±0.8 | | % |
| Temperature coefficient | -40°C to +85°C ambient | ±0.02 | | %/°C |
| Ripple & Noise | 20MHz Bandwidth, 10-100% load | 60 | | mV p-p |

## General Specifications

| Parameters | Conditions | Typical | Maximum | Units |
|---|---|---|---|---|
| Switching frequency | 100% load | 570 | | KHz |
| Operating temperature | See derating graph | -40 to +85 | | °C |
| Storage temperature | | -55 to +125 | | °C |
| Maximum case temperature | | | 100 | °C |
| Cooling | Free air convection | | | |

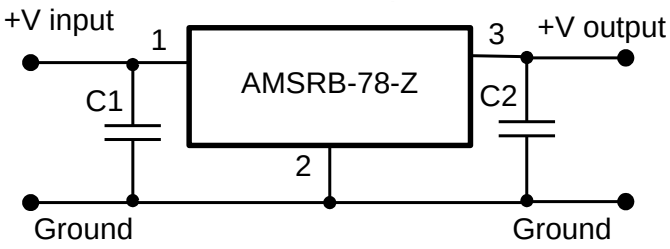
## General Specifications (continued)

| Parameters | Conditions | Typical | Maximum | Units |
|---|---|---|---|---|
| Humidity | | | 95 | % |
| Case material | Non-conductive black plastic (UL94V-0 rated) | | | |
| Weight | | 2 | | g |
| Dimensions (L x W x H) | 0.46 x 0.29 x 0.40 inches 11.68 x 7.50 x 10.15 mm | | | |
| MTBF | > 4 000 000 hrs (MIL-HDBK-217F, Ground Benign, t=+25 °C) | | | |
| Soldering temperature | 1.5 mm from case for 10 sec | | 260 | °C |

## Safety Specifications

| Parameters | | |
|---|---|---|
| Agency approvals | CE | |
| Standards | EN 55032, class B with the recommended circuit | |
| | Electrostatic Discharge Immunity | IEC 61000-4-2, Criteria A with the recommended circuit |
| | RF, Electromagnetic Field Immunity | IEC 61000-4-3, Criteria A with the recommended circuit |
| | Electrical Fast Transient/Burst Immunity | IEC 61000-4-4, Criteria A with the recommended circuit |
| | Surge Immunity | IEC 61000-4-5, Criteria A with the recommended circuit |
| | RF, Conducted Disturbance Immunity | IEC 61000-4-6, Criteria A with the recommended circuit |
| | Power frequency Magnetic Field Immunity | IEC 61000-4-8, Criteria A with the recommended circuit |

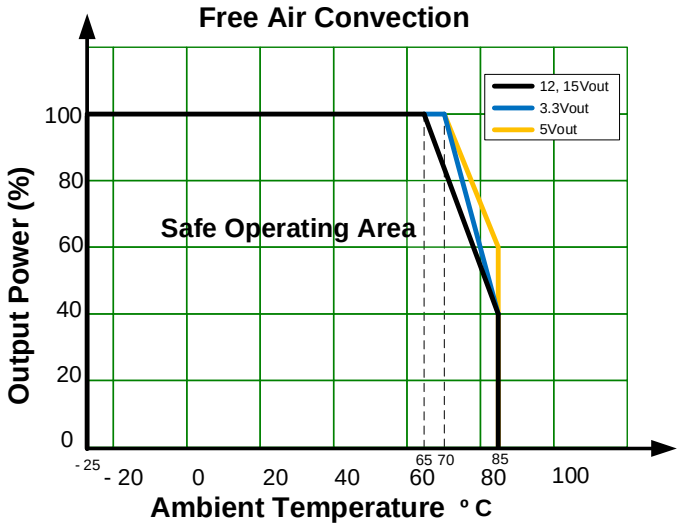
## Standard Application Circuit




## External Capacitor values

| Model Number | C1 (ceramic capacitor) | C2 (ceramic capacitor) |
|---|---|---|
| AMSRB-7805Z | 22uF/50V | 47uF/16V |

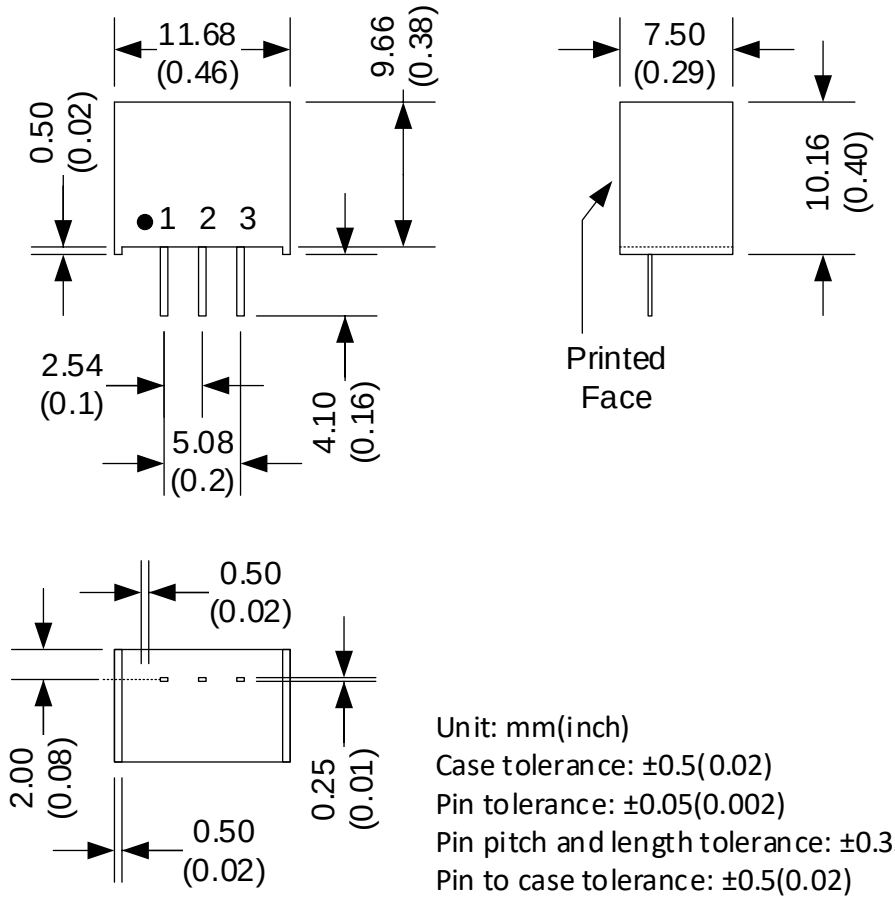
## Derating



## Pin Out Specifications

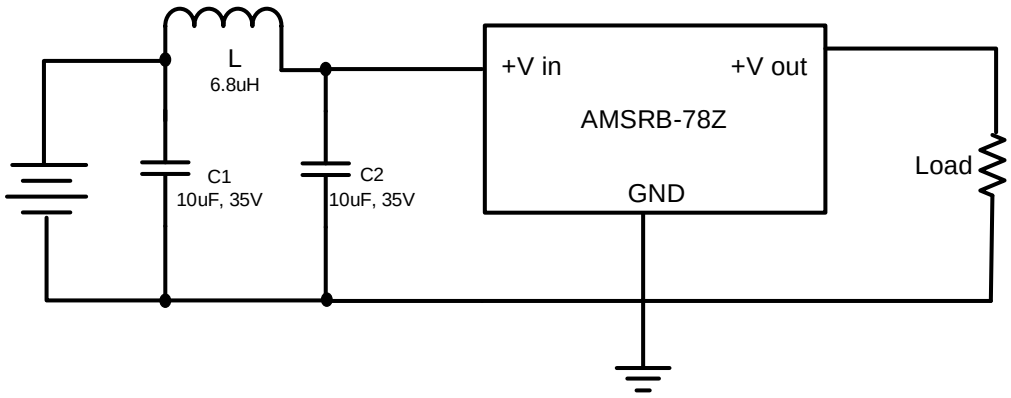
| Pin | Positive Output |
|---|---|
| 1 | +V Input |
| 2 | Ground |
| 3 | +V Output |

## Dimensions




Unit: mm(inch)
Case tolerance: ±0.5(0.02)
Pin tolerance: ±0.05(0.002)
Pin pitch and length tolerance: ±0.35(0.014)
Pin to case tolerance: ±0.5(0.02)

## EMI & EMS Class B Solution Circuit




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