



DC/DC CONVERTER

Single Output DC/DC Converter

Series M-78-NZ
Up to 7.5 Watt | DC-DC Converter



FEATURES:

- No heatsink required
- 3 Pin SIP package
- Non-isolated
- Low ripple and noise
- RoHS compliant
- Operating temperature -40°C to +85°C
- Very high efficiency up to 96%
- Pin compatible to multiple manufacturers
- Regulated outputs



Models

Single output

| Model | Input Voltage (V) | Output Voltage (V) | Output Current max (mA) | Efficiency Vin Max (%) | Efficiency Vin Min (%) |
|------------|-------------------|--------------------|-------------------------|------------------------|------------------------|
| M-783.3-NZ | 4.5-30 | 3.3 | 500 | 77 | 90 |
| M-785.0-NZ | 6.5-30 | 5 | 500 | 81 | 94 |
| M-786.5-NZ | 8-30 | 6.5 | 500 | 85 | 95 |
| M-789.0-NZ | 11-30 | 9 | 500 | 89 | 95 |
| M-7812-NZ | 15-30 | 12 | 500 | 92 | 96 |
| M-7815-NZ | 18-30 | 15 | 500 | 93 | 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 | Conditions | Typical | Maximum | Units |
|---------------------------|------------------------|---------|---------|-------|
| Voltage range | See the table above | | | VDC |
| Filter | Capacitor | | | |
| Quiescent current | Vin=(LL-HL) at 0% load | | 13 | mA |
| Short circuit consumption | | 1.8 | | W |

Output Specifications

| Parameters | Conditions | Typical | Maximum | Units |
|--------------------------|--------------------------|---------|---------|--------|
| Voltage accuracy | 100% load | ±3 | | % |
| Short circuit protection | Continuous | | | |
| Short circuit restart | Auto recovery | | | |
| Output current limit | | | 2 | A |
| Thermal shutdown | Internal IC junction | 160 | | °C |
| Line voltage regulation | Vin=(LL-HL) at full load | ±1 | | % |
| Load voltage regulation | 10-100% load | ±0.75 | | % |
| Temperature coefficient | -40°C to +85°C ambient | ±0.02 | | %/°C |
| Ripple & Noise | 20MHz Bandwidth | 35 | | mV p-p |
| Max capacitive load | | | 1000 | uF |

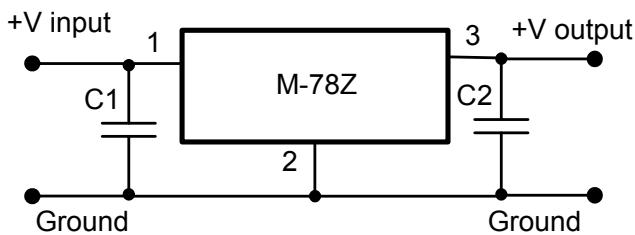
General Specifications

| Parameters | Conditions | Typical | Maximum | Units |
|--------------------------|--|---|-------------------------|-------|
| Switching frequency | 100% load | 330 | | KHz |
| 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 | % |
| Case material | Non-conductive black plastic (UL94V-0 rated) | | | |
| Weight | | 2 | | g |
| Dimensions (L x W x H) | | 0.45 x 0.30 x 0.40 inches | 11.50 x 7.55 x 10.20 mm | |
| MTBF | | > 2 000 000 hrs (MIL-HDBK-217F, Ground Benign, t=+25°C) | | |
| Soldering temperature | 1.5 mm from case for 10 sec | | 300 | °C |

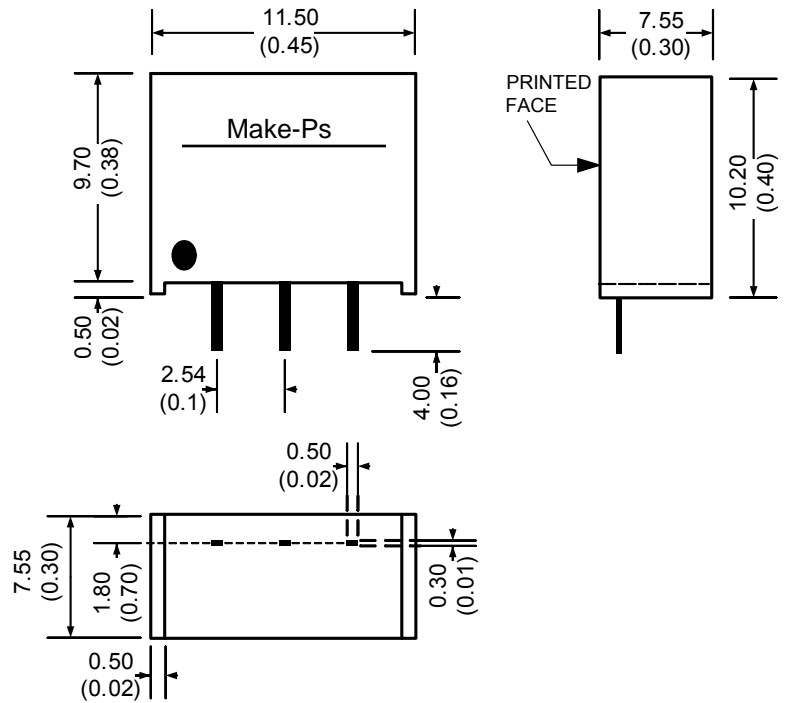
Pin Out Specifications

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

Standard Application Circuit



Dimensions

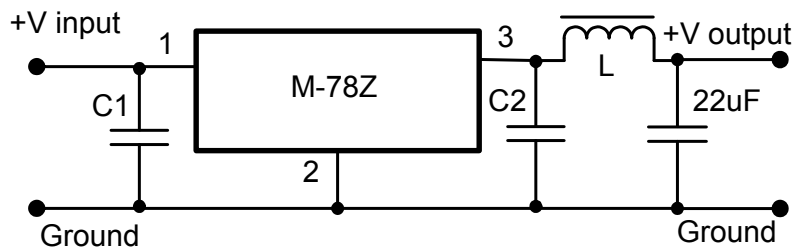


Dimensions are in mm (inch)
 Pin Tolerance: ± 0.16 mm(0.004 inch)
 Case Tolerance: ± 0.25 mm(0.01 inch)

External Capacitor values

| Model Number | C1, C3 (ceramic capacitor) | C2, C4 (ceramic capacitor) |
|--------------|-------------------------------|-------------------------------|
| M-783.3-NZ | 10uF/50V | 22uF/16V |
| M-785.0-NZ | 10uF/50V | 22uF/16V |
| M-786.5-NZ | 10uF/50V | 10uF/16V |
| M-789.0NZ | 10uF/50V | 10uF/16V |
| M-7812-NZ | 10uF/50V | 10uF/25V |
| M-7815-NZ | 10uF/50V | 10uF/25V |

Ripple and Noise Reduction



Recommended value of inductor L is between 10uH to 47uH

Derating

