

Features

- Efficiency up to 94%, no need for heatsinks!
- Pin-out compatible with LM78XX Linear Regs.
- Low profile (L*W*H=11.5*7.5*10.2mm)
- Wide input range (4.75V ~ 18V)
- Short circuit protection, thermal shutdown
- Non-standard outputs available as specials
- Low ripple and noise

Description

The R-78xx-1.0 series switching regulators are ideally suited to replace 1 Amp 78xx linear regulators and are pin compatible. Efficiencies of up to 97% means that very little energy is wasted as heat so there is no need for any heat sinks with their additional space and mounting costs.

Selection Guide

| Part Number SIP3 | Input Range (V) | Output Voltage (V) | Output Current (A) | Efficiency | |
|---------------------|-----------------|--------------------|--------------------|--------------|--------------|
| | | | | Min. Vin (%) | Max. Vin (%) |
| R-781.8-1.0 | 4.75 – 18 | 1.8 | 1.0 | 82 | 76 |
| R-782.5-1.0 | 4.75 – 18 | 2.5 | 1.0 | 87 | 81 |
| R-783.3-1.0 | 4.75 – 18 | 3.3 | 1.0 | 90 | 84 |
| R-785.0-1.0 | 6.5 – 18 | 5.0 | 1.0 | 94 | 89 |

Specifications (typical at 25°C, 10% minimum load, unless otherwise specified)

| Characteristics | Conditions | Min. | Typ. | Max. |
|--|---|--------------------------------|-----------------|-----------|
| Input Voltage Range | All Series | 4.75V | | 18V |
| Output Voltage Range | All Series | 1.5V | | 5.5V |
| Output Current | All Series | 0mA* | | 1000mA |
| Short Circuit Input Current (Vin =12V) | All Series | | | 100mA |
| Internal Power Dissipation | | | | 0.4W |
| Short Circuit Protection | | Continuous, automatic recovery | | |
| Output Voltage Accuracy (At 100% Load) | All Series | | ±2% | ±3% |
| Line Regulation (100% Load, Vin max.) | All Series | | 0.2% | 0.4% |
| Load Regulation (10 to 100% full load) | All Series | | 0.4% | 0.6% |
| Dynamic Load Stability | 100% <-> 50% load | | ±85mV | ±100mV |
| Ripple & Noise (20Mhz BW) | All Series | | 20mVp-p | 30mVp-p |
| Temperature Coefficient | -40°C ~ +85°C ambient | | | 0.015%/°C |
| Max capacitance Load | with normal start-up time, no external components | | | 470µF |
| | with <1 second start up time + diode protection circuit | | | 6800µF |
| Switching Frequency | | 280kHz | 350kHz | 430kHz |
| Quiescent Current | Vin = min. to max. at 0% load | | 5mA | 7mA |
| Operating Temperature Range | | | -40°C to +85°C | |
| Operating Case Temperature (with derating) | | | | +100°C |
| Storage Temperature Range | | | -55°C to +125°C | |
| Case Thermal Impedance | | | | 70°C/W |
| Case Material | | Non-Conductive Black Plastic | | |
| Potting Material | | Epoxy (UL94V-0) | | |
| Conducted Emissions (with filter) | EN55022 | | | Class B |
| Radiated Emissions (with filter) | EN55022 | | | Class B |
| ESD | EN61000-4-2 | | | Class A |
| Radiated Immunity | EN61000-4-3 | | | Class A |
| Fast Transient | EN61000-4-4 | | | Class A |
| Conducted Immunity | EN61000-4-6 | | | Class A |
| Magnetic Field Immunity | EN61000-4-8 | | | Class A |

Certifications

| | | | |
|-----------------------|---|-----------------------------|--------------------------------|
| IEC/EN General Safety | Report: SPCLVD 1407030-1 | IEC/EN-60950-1, 2nd Edition | |
| EMC | Report: 5A111502E | EN 55022, EN55024, EN61000 | |
| Package Weight | | 1.9g | |
| Packing Quantity | | 42 pcs per Tube | |
| MTBF (+25°C) | } Detailed Information see Application Notes chapter "MTBF" | using MIL-HDBK 217F | 13338 x 10 ³ hours. |
| (+71°C) | | using MIL-HDBK 217F | 3880 x 10 ³ hours. |

INNOLINE DC/DC-Converter

with 3 year Warranty

RECOM

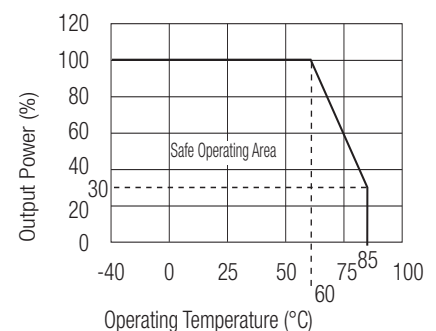
1.0 AMP SIP3 Single Output



EN-55022 Certified
EN-55024 Certified
IEC/EN-60950-1 Certified

R-78-1.0

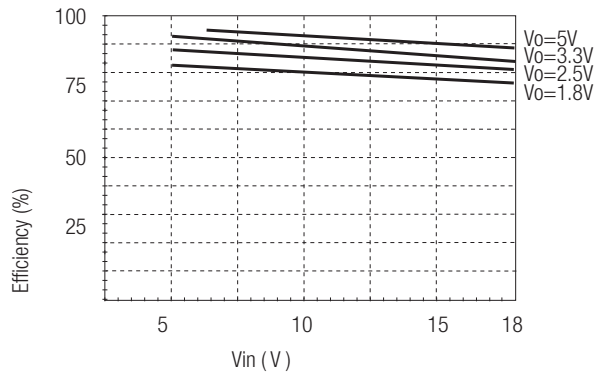
Derating-Graph (Ambient Temperature)



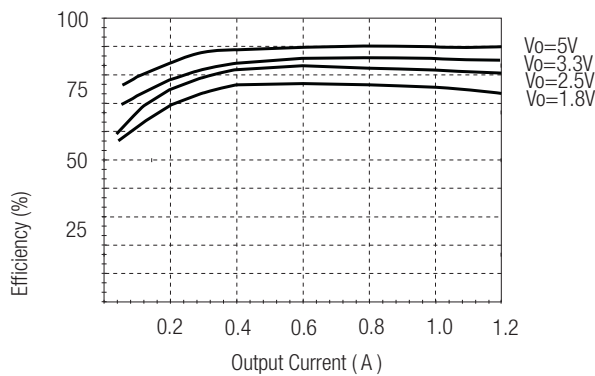
Refer to Application Notes

Characteristics

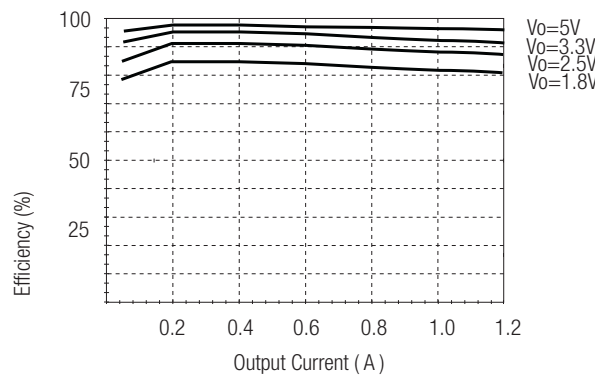
Efficiency



Efficiency Vs Vin (Full Load)

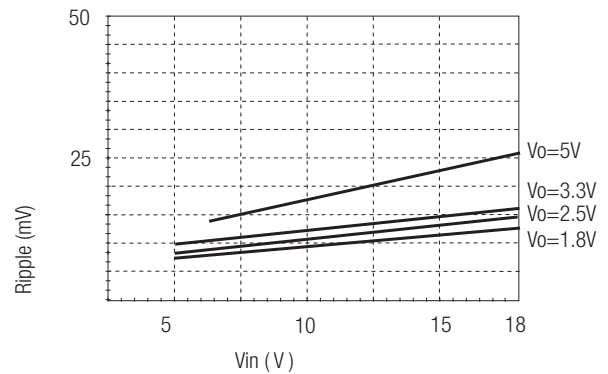


Efficiency Vs Load (Vin=Max)

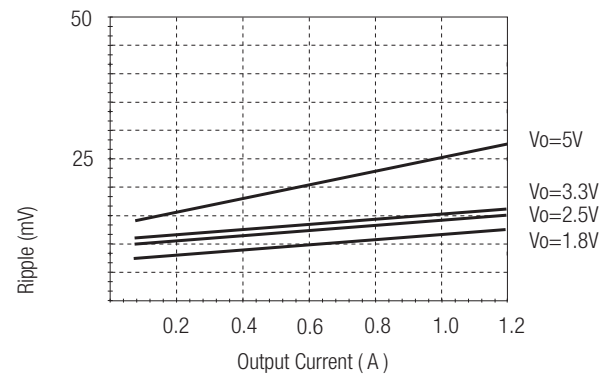


Efficiency Vs Load (Vin=Min)

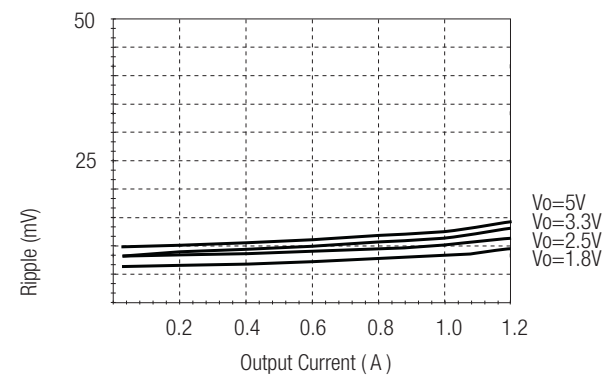
Ripple



Ripple Vs Vin (Full Load)



Ripple Vs Load (Vin=Max)



Ripple Vs Load (Vin=Min)

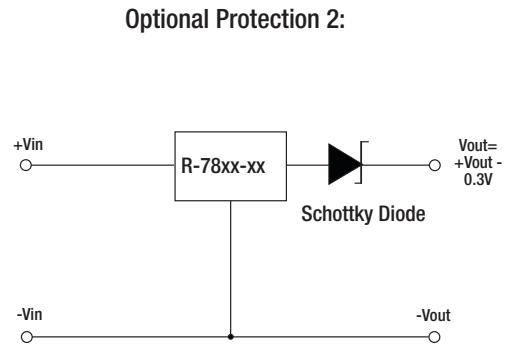
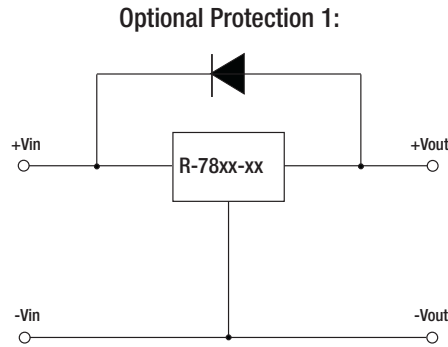
R-78-1.0

*Note: Operation under no load will not damage these devices, however they may not meet all specifications. A minimum load of 10mA is recommended

Optional Protection Circuit

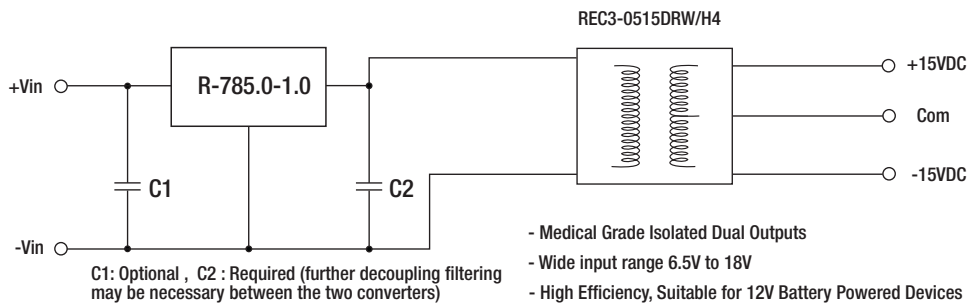
Add a blocking diode to Vout if current can flow backwards into the output, as this can damage the converter when it is powered down.

The diode can either be fitted across the device if the source is low impedance or fitted in series with the output (recommended).

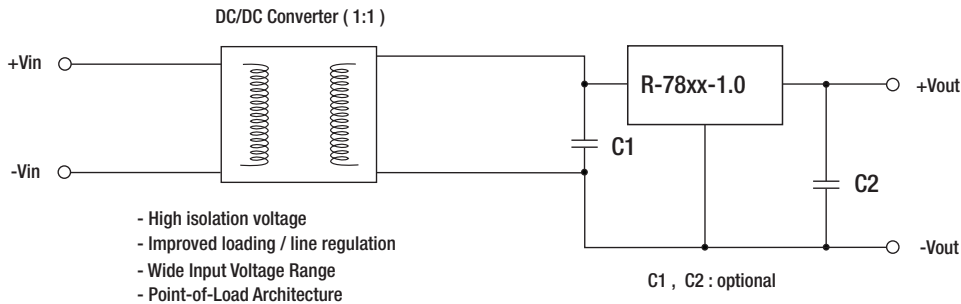


Application Examples

High efficiency, isolated, dual regulated outputs



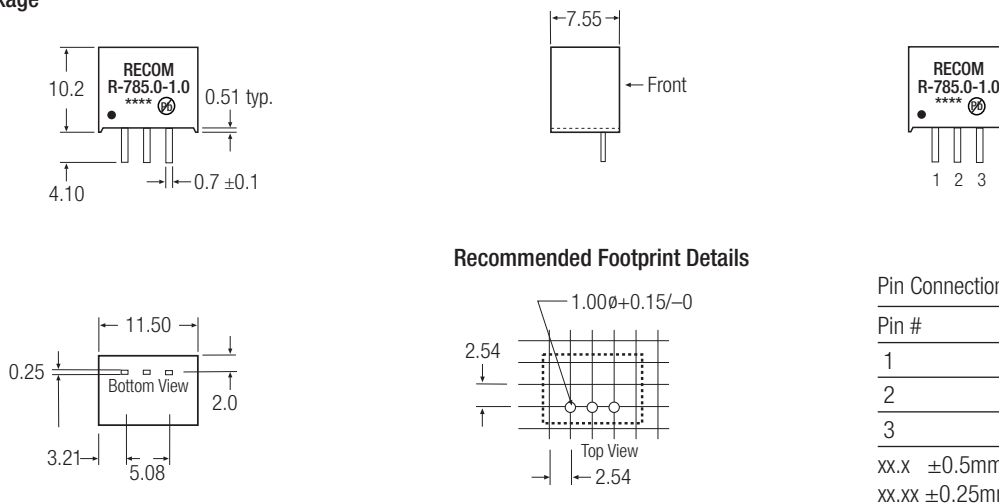
Isolated (up to 6KV), wide Input range regulated output



R-78xx-1.0

Package Style and Pinning (mm)

SIP3 PIN Package



The product information and specifications are subject to change without prior notice. All products are designed for non-safety critical commercial and industrial applications. The Buyer agrees to implement safeguards that anticipate the consequences of any failures that might cause harm, loss of life and/or damage property.