

Features

- Efficiency up to 97%, Non isolated, no need for heatsinks
- Pin-out compatible with LM78XX Linears
- Very low profile (L*W*H=11.5*7.5*10.2)
- Wide input range.(4.75V ~ 34V)
- Short circuit protection, Thermal shutdown
- Non standard outputs available as specials between 1.5V ~15.5V
- Low ripple and noise
- UL94V-0 Package Material
- EMC Certified
- See Positive-to Negative Converter Application Note for use as a voltage inverter (alternative to LM79xx Linear)

INNOLINE
DC/DC-Converter

R-78xx-0.5 Series

0.5 AMP
SIP3

Single Output

Selection Guide

| Part Number | Input Range (1) (V) | Output Voltage (V) | Output Current (A) | Efficiency | |
|-------------|---------------------|--------------------|--------------------|--------------|--------------|
| | | | | Min. Vin (%) | Max. Vin (%) |
| R-781.5-0.5 | 4.75 – 30 | 1.5 | 0.5 | 73 | 63 |
| R-781.8-0.5 | 4.75 – 34 | 1.8 | 0.5 | 82 | 71 |
| R-782.5-0.5 | 4.75 – 34 | 2.5 | 0.5 | 87 | 77 |
| R-783.3-0.5 | 4.75 – 34 | 3.3 | 0.5 | 91 | 81 |
| R-785.0-0.5 | 6.5 – 34 | 5.0 | 0.5 | 94 | 86 |
| R-786.5-0.5 | 8.0 – 34 | 6.5 | 0.5 | 95 | 88 |
| R-789.0-0.5 | 11 – 34 | 9.0 | 0.5 | 96 | 92 |
| R-7812-0.5 | 15 – 34 | 12 | 0.5 | 97 | 94 |
| R-7815-0.5 | 18 – 34 | 15 | 0.5 | 97 | 95 |

Note 1:1.5V Output can be unstable with Vin>30VDC

Description

The R-78xx-Series high efficiency switching regulators are ideally suited to replace 78xx linear regulators and are pin compatible. The efficiency 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. Low ripple and noise figures and a short circuit input current of typically only 7mA round off the specifications of this versatile converter series.

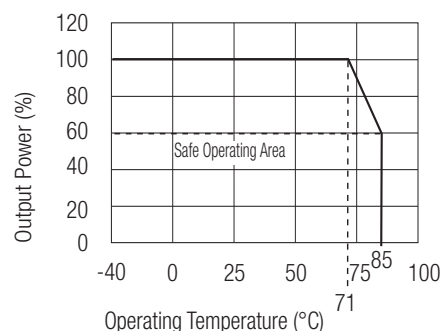
This R-78xx-0.5 is fully certified to EN 60601-1-2 (Medical Equipment), EN 55022 (Emissions), and EN55024 (Immunity) EMC Standards.



EN-55022 Certified
EN-55034 Certified
EN-60601-1-2 Certified



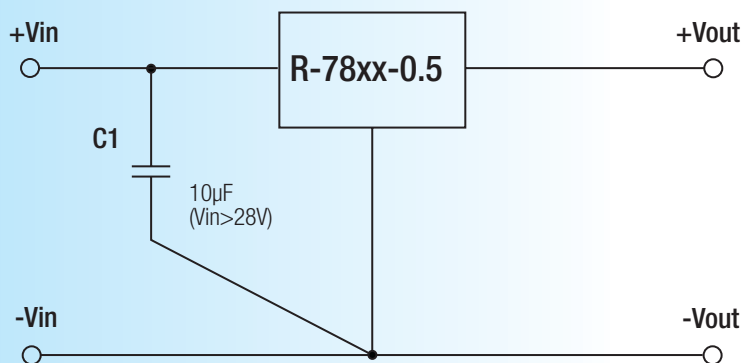
Derating-Graph (Ambient Temperature)



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

| Characteristics | Conditions | Min. | Typ. | Max. |
|---|--|---------------------|--------------------------------|-------------------------------|
| Input Voltage Range | 1.5V | 4.75 | | 30.0V |
| | 1.8V to 15.5V | 4.75 | | 34.0V |
| Output Voltage Range (for customized parts) | All Series | 1.25 | | 15.5V |
| Output Current | All Series | 0 | | 500mA |
| Output Current Limit | All Series | | | 2000mA |
| Short Circuit Input Current | All Series | | 10 | 30mA |
| Internal Power Dissipation | | | | 0.4W |
| Short Circuit Protection | | | Continuous, automatic recovery | |
| Output Voltage Accuracy (At 100% Load) | All Series | | ±2 | ±3% |
| Line Voltage Regulation (Vin = min. to max. at full load) | 1.5V to 6.5V | | 0.2 | 0.4% |
| | 9V to 15.5V | | 0.1 | 0.2% |
| Load Regulation (10 to 100% full load) | 1.5V to 6.5V | | 0.4 | 0.6% |
| | 9V to 15.5V | | 0.25 | 0.4% |
| Dynamic Load Stability | 100% <-> 50% load | | ±75mV | |
| | 100% <-> 10% load | | | ±100mV |
| Ripple & Noise (without Output Capacitor) | 1.5V to 6.5V | | 20mVp-p | 30mVp-p |
| | 9V to 15.5V | | 30mVp-p | 40mVp-p |
| Ripple & Noise (with Output Capacitor=100µF) | 1.5V to 6.5V | | 15mVp-p | 20mVp-p |
| | 9V to 15.5V | | 25mVp-p | 35mVp-p |
| Temperature Coefficient | -40°C ~ +85°C ambient | | | 0.015%/°C |
| Max capacitance Load | | | | 220µF |
| Switching Frequency | | 280 | 330 | 380kHz |
| Quiescent Current | Vin = min. to max. at 0% load | | 5 | 7mA |
| Operating Temperature Range | | -40°C | | +85°C |
| Operating Case Temperature | | | | +100°C |
| Storage Temperature Range | | -55°C | | +125°C |
| Case Thermal Impedance | | | | 70°C / W |
| Thermal Shutdown | Internal IC junction | | +160°C | |
| Package Weight | | | | 1.9g |
| MTBF (+25°C) | } Detailed Information see Application Notes chapter "MTBF" | using MIL-HDBK 217F | | 21098 x 10 ³ hours |
| | | using MIL-HDBK 217F | | 4212 x 10 ³ hours |

Standard Application Circuit



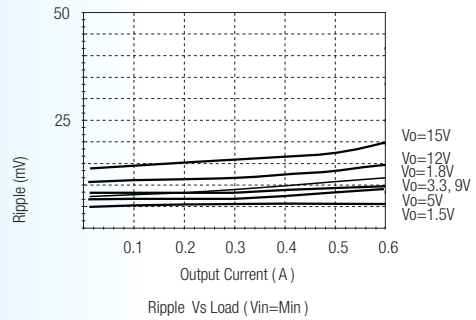
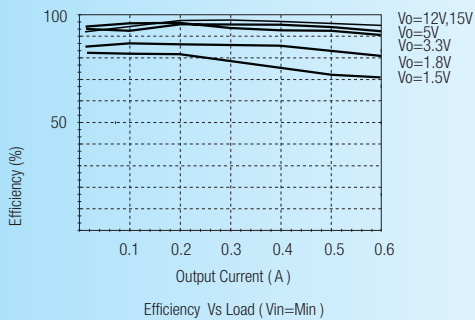
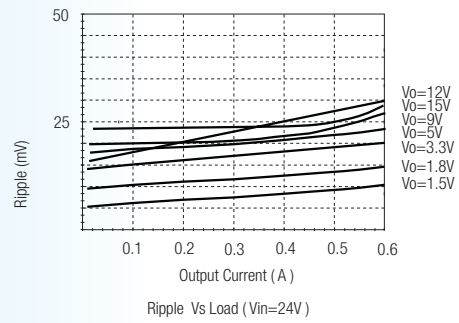
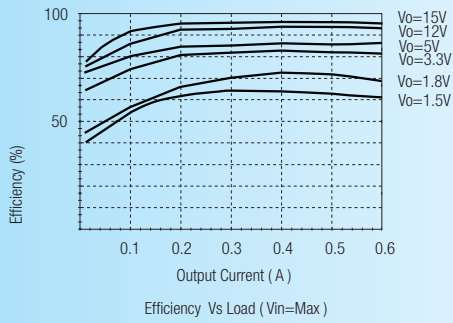
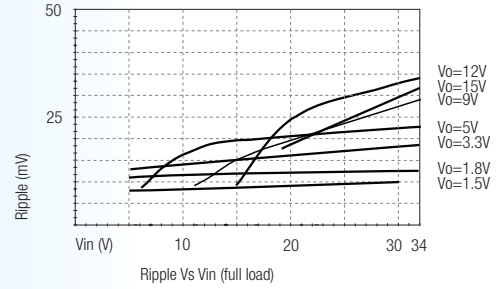
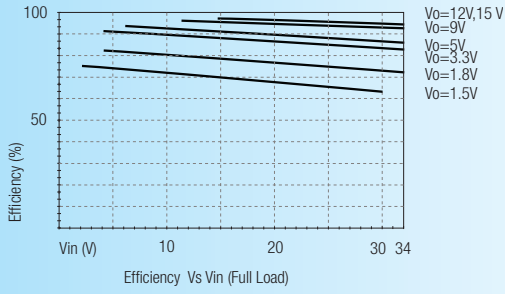
Add a blocking diode to Vout if current can flow backwards into the output, as this can damage the converter.

Input capacitor needed only if Vin>28VDC.

Characteristics

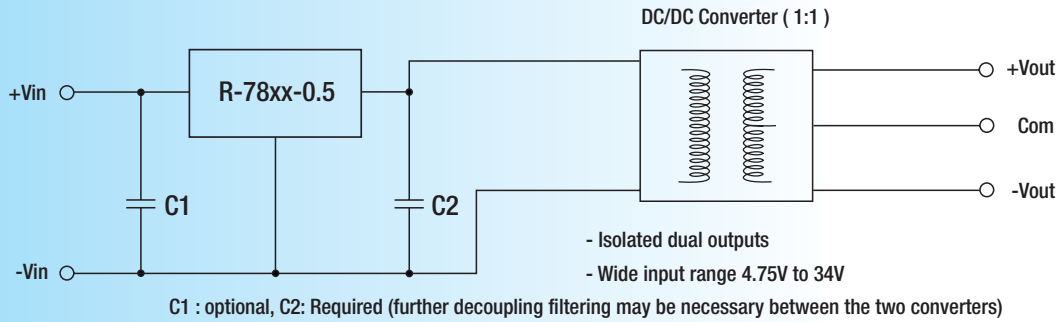
Efficiency

Ripple

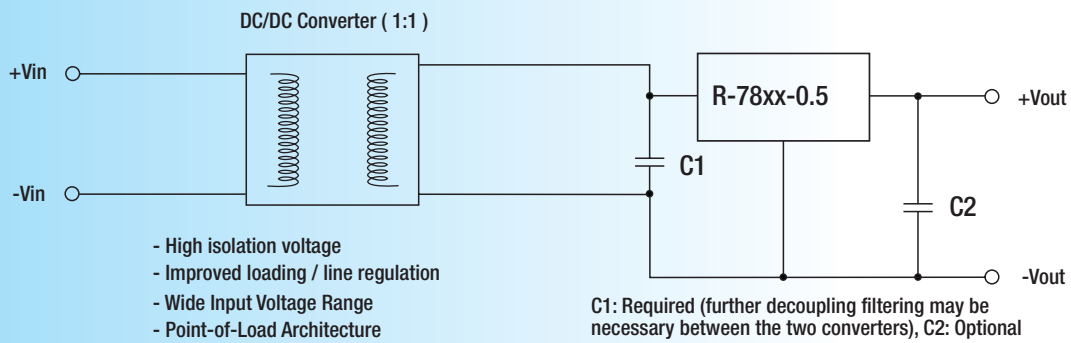


Application Examples

High efficiency, isolated, dual unregulated outputs

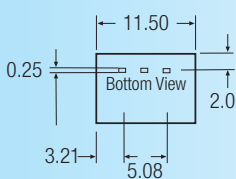
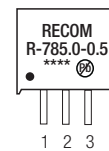
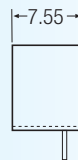
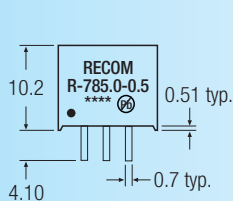


Isolated (up to 6KV), wide Input range regulated output

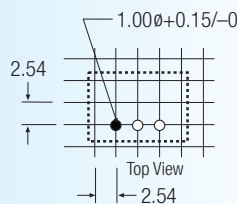


Package Style and Pinning (mm)

SIP3 PIN Package



Recommended Footprint Details



Pin Connections

| Pin # | Connection |
|-------|------------|
| 1 | +Vin |
| 2 | GND |
| 3 | +Vout |

xx.x \pm 0.5mm

xx.xx \pm 0.25mm