

## Features

- Efficiency up to 96%, no need for heatsinks!
- Pin-out compatible with LM78XX Linear Regs.
- Low profile (L\*W\*H=11.6\*8.5\*10.4mm)
- Wide input range (5V ~ 42V)
- Short circuit protection, thermal shutdown
- Non standard outputs available as specials
- Low ripple and noise
- See Innoline App Notes for use as a positive-to-negative inverter (alternative to 79xx regulator)

## Selection Guide

| Part Number<br>SIP3 | Input Range<br>(V) | Output Voltage<br>(V) | Output Current<br>(A) | Efficiency<br>Min. Vin (%) | Max. Vin (%) |
|---------------------|--------------------|-----------------------|-----------------------|----------------------------|--------------|
| R-78C1.8-1.0        | 5 – 42             | 1.8                   | 1.0                   | 80                         | 71           |
| R-78C3.3-1.0        | 7 – 42             | 3.3                   | 1.0                   | 89                         | 79           |
| R-78C5.0-1.0        | 8 – 42             | 5                     | 1.0                   | 93                         | 85           |
| R-78C9.0-1.0        | 12 – 42            | 9                     | 1.0                   | 95                         | 90           |
| R-78C12-1.0         | 15 – 42            | 12                    | 1.0                   | 96                         | 92           |
| R-78C15-1.0         | 18 – 42            | 15                    | 1.0                   | 96                         | 94           |

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

| Characteristics                        | Conditions                                              | Min.    | Typ.                           | Max.            |
|----------------------------------------|---------------------------------------------------------|---------|--------------------------------|-----------------|
| Input Voltage Range                    | All Series                                              | Vout+3V |                                | 42V             |
| Output Voltage Range                   | All Series                                              | 1.8V    |                                | 15V             |
| Output Current                         | All Series                                              | 0mA*    |                                | 1000mA          |
| Output Current Limit                   | All Series                                              |         |                                | 3000mA          |
| Short Circuit Input Current (Vin =24V) | All Series                                              |         | 65mA                           |                 |
| No Load Input Current                  |                                                         |         | 1mA                            |                 |
| 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%                           |                 |
| Load Regulation (10 to 100% full load) | All Series                                              |         | 0.4%                           |                 |
| Dynamic Load Stability                 | 100% <-> 50% load                                       |         |                                | ±75mV           |
|                                        | 100% <-> 10% load                                       |         |                                | ±200mV          |
| Ripple & Noise (20Mhz BW Limited)      | Vin = 24V, Vout =1.8V-15V                               |         | 75mVp-p                        | 100mVp-p        |
| With 10µF MLCC output capacitor        | Full Load                                               |         | 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                    |                                                         |         | 350kHz                         |                 |
| Operating Temperature Range            |                                                         | -40°C   |                                | +85°C           |
| Maximum Case Temperature               |                                                         |         |                                | +100°C          |
| Storage Temperature Range              |                                                         | -55°C   |                                | +125°C          |
| Case Thermal Impedance                 |                                                         |         |                                | 70°C/W          |
| Thermal Shutdown                       | Internal IC junction                                    |         |                                | +160°C          |
| 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         |
| Package Weight                         |                                                         |         |                                | 2g              |
| Packing Quantity                       |                                                         |         |                                | 42 pcs per Tube |

**INNOLINE**  
DC/DC-Converter  
with 3 year Warranty

**RECOM**

## 1.0 AMP SIP3 Single Output



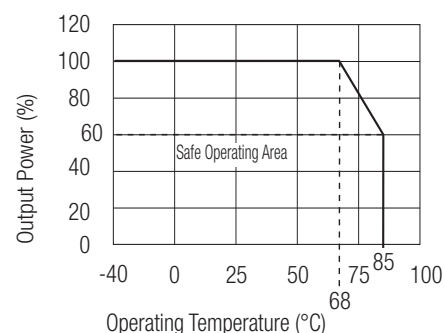
**EN-60950-1 Certified**

## R-78C-1.0

### Description

The R-78Cxx-1.0 series switching regulators are ideally suited to replace 1 Amp 78xx linear regulators and are pin compatible. Efficiencies of up to 96% means that very little energy is wasted as heat and the high input voltage is a useful feature.

## Derating-Graph (Ambient Temperature)

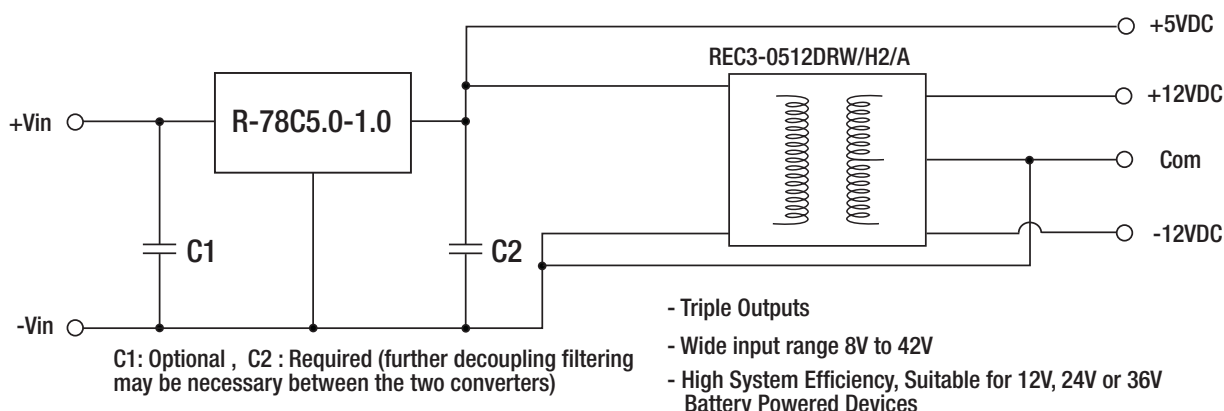


## Specifications ( typical at 25°C, 10% minimum load, unless otherwise specified )

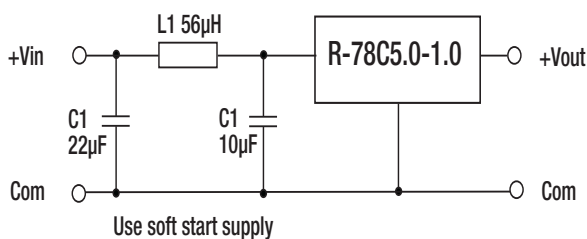
|                |                                 |                                                      |
|----------------|---------------------------------|------------------------------------------------------|
| Certifications | General Safety<br>Standby Power | EN 60950-1:2006 + A11:2009 + A1:2010<br>EN62301:2005 |
| MTBF (+25°C)   | using MIL-HDBK 217F             | 8600 x 10 <sup>3</sup> hours.                        |
| (+68°C)        | using MIL-HDBK 217F             | 3880 x 10 <sup>3</sup> hours.                        |

## Application Examples

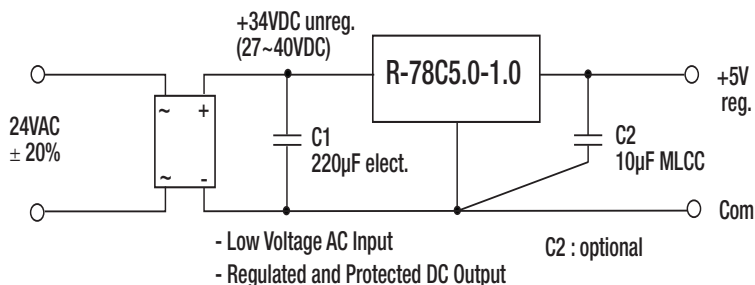
### High efficiency regulated outputs



### Standard Application Circuit with Class B EMC filter

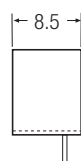
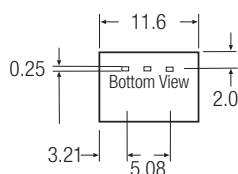
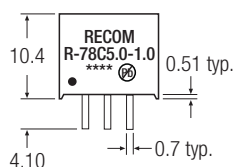


### Low Voltage AC input, regulated DC output

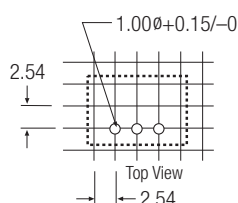


## Package Style and Pinning (mm)

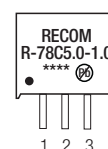
### SIP3 PIN Package



### Recommended Footprint Details



3rd angle projection



### Pin Connections

| Pin # |         |
|-------|---------|
| 1     | +Vin    |
| 2     | GND     |
| 3     | +Vout   |
| xx.x  | ±0.5mm  |
| xx.xx | ±0.25mm |