

## Features

- Efficiency up to 95%, no Need for Heatsinks!
- Industry Standard Pin-Out
- 1.5A Start-Up Overload Capacity
- Non-Isolated Regulator with very low Standby Current
- Wide Input Range (7V ~ 42V)
- Short Circuit Protection
- Fixed Switching Frequency (350kHz), Shielded Magnetics

## Description

The R-78T is a switching regulator with a wide input voltage range and a low profile SMD package. Three output voltages are available as standard: 3.3V, 5V and 12V. Due to the 1.5A start-up overload capability, the R-78T can be used to replace 1A or 1.5A regulators in many applications. These modules come with three different styles to be pin-compatible with existing solutions, but at a lower cost.

## Selection Guide

| Part Number<br>SIP3 | Input Range<br>(V) | Output Voltage<br>(V) | Output Current<br>(A) | Efficiency      |                 |
|---------------------|--------------------|-----------------------|-----------------------|-----------------|-----------------|
|                     |                    |                       |                       | Min. Vin<br>(%) | Max. Vin<br>(%) |
| R-78T3.3-1.0*       | 7 – 42             | 3.3                   | 1.0                   | 88              | 79              |
| R-78T5.0-1.0*       | 8 – 42             | 5.0                   | 1.0                   | 92              | 85              |
| R-78T12-1.0*        | 15 – 42            | 12                    | 1.0                   | 95              | 92              |

\*add suffix /FC, /AC or /AL for required pinning option

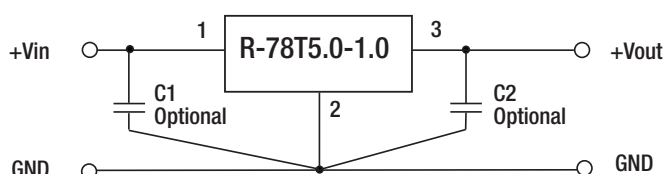
\* add suffix -R for tape&reel packing e.g. R-78T3.3-1.0/FC-R.

-Tray for Tray packaging, e.g. R-78T5.0-1.0/AC-Tray For more details see Application Notes.

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

|                                |                                 |                                     |
|--------------------------------|---------------------------------|-------------------------------------|
| Input Voltage Range            | 3.3V<br>5V<br>12V               | 7-42VDC<br>8-42VDC<br>15-42VDC      |
| No Load Input Current          |                                 | 1mA typ.                            |
| Input Filter                   |                                 | C Filter                            |
| Voltage Accuracy               |                                 | ±2% typ. / ±3% max.                 |
| Line Regulation                | (LL to HL at Full Load)         | ±0.2% typ.                          |
| Load Regulation                | (10-100%)                       | ±0.4% typ.                          |
| Minimum Load                   |                                 | 10%                                 |
| Ripple & Noise (20MHz Limited) |                                 | 50mVp-p typ. / 100mVp-p max.        |
| Transient Response 50mA/uS     | 100% - 50% Load                 | ±250mV max.                         |
| Operating Frequency            |                                 | 350KHz typ.                         |
| Current Limit                  |                                 | 1.5A / 10sec max.                   |
| Short Circuit Protection       |                                 | Current limited to 3.5A typ.        |
| Operating Temperature          |                                 | -40°C to 85°C                       |
| Storage Temperature            |                                 | -55°C to 125°C                      |
| Humidity                       |                                 | 5% to 95% RH max.                   |
| Dimension                      | suffix /AC or /AL<br>suffix /FC | 23 x 27.2 x 10mm<br>23 x 29.4 x 8mm |
| Weight                         |                                 | 4.5g typ.                           |
| Cooling Method                 |                                 | Free Air Convection                 |
| MTBF (25°C)                    | MIL-HDBK-217F                   | 367 x 10 <sup>3</sup> hours         |

## Standard Application Circuit

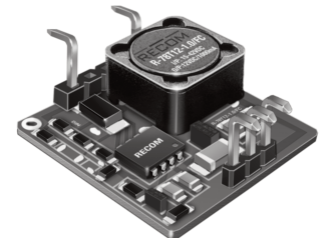


## INNOLINE DC/DC-Converter

with 3 year Warranty

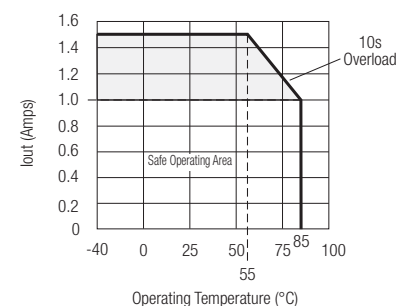
# RECOM

## 1.0 AMP SMD Single Output



## R-78T-1.0

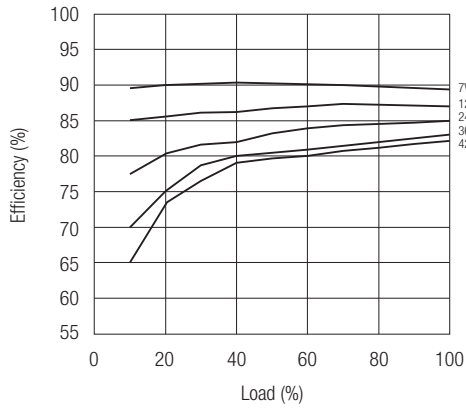
## Derating-Graph (Ambient Temperature)



Refer to Application Notes

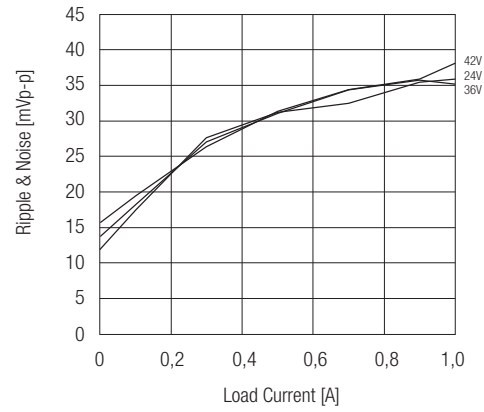
Typical Characteristics

## Efficiency

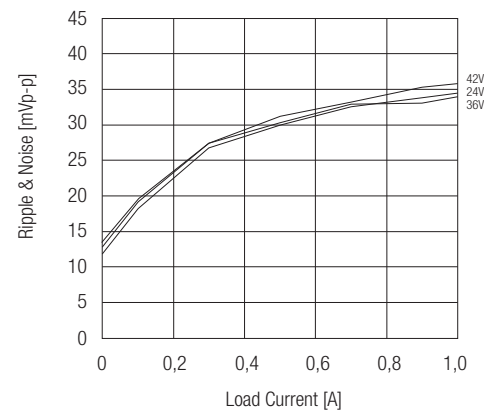
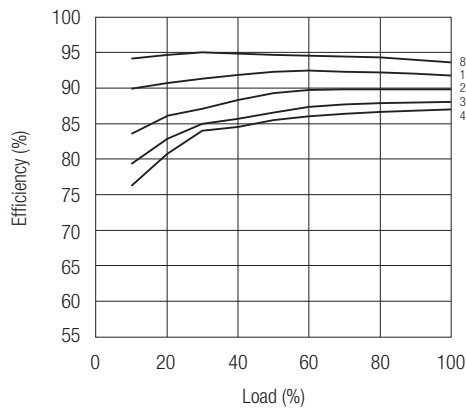


R-78T3.3-1.0

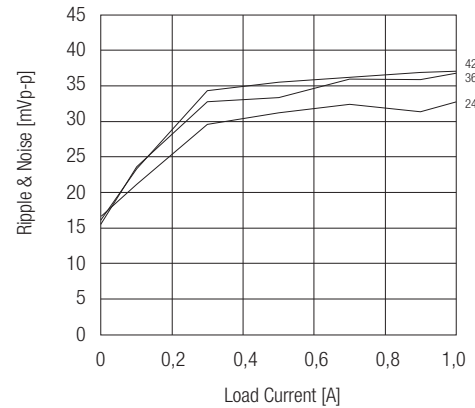
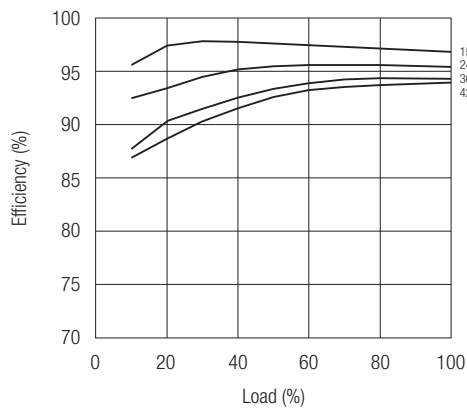
## Ripple



R-78T5.0-1.0



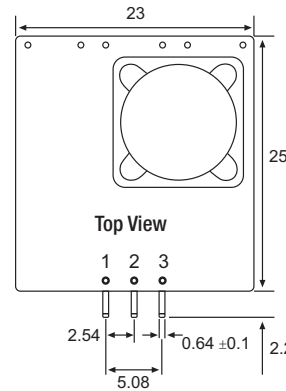
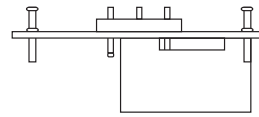
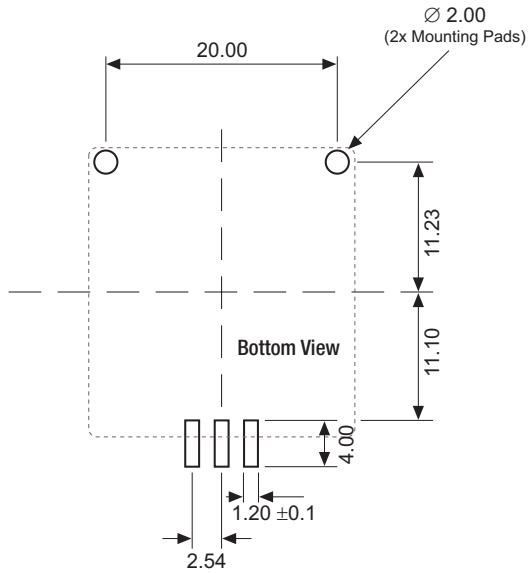
R-78T12-1.0



Package Style and Pinning (mm)

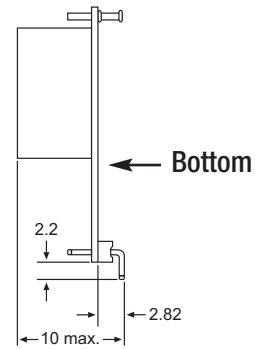
### R-78Txx-1.0/AC

Recommended Footprint



Pin Connections

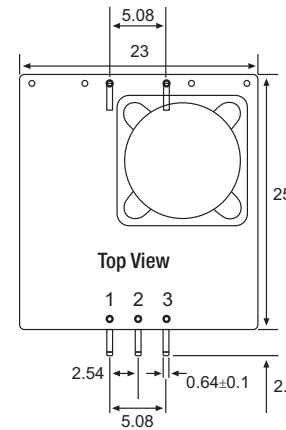
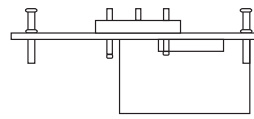
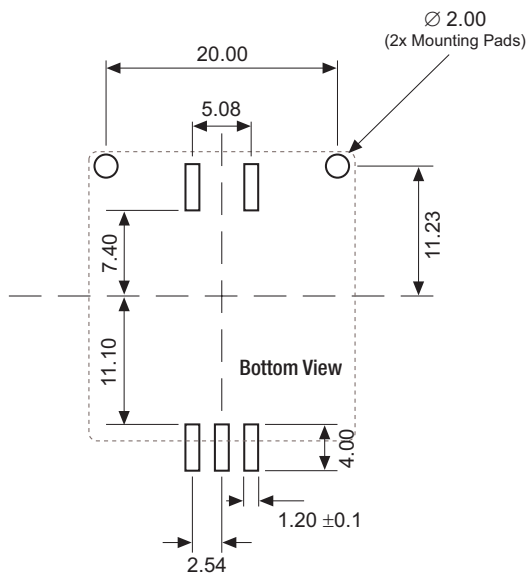
| Pin # | Connection |
|-------|------------|
| 1     | +Vin       |
| 2     | GND        |
| 3     | +Vout      |



Tolerance  $\pm 0.5$ mm unless otherwise specified

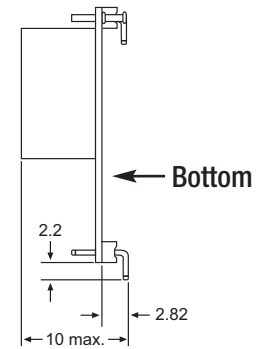
### R-78Txx-1.0/AL

Recommended Footprint



Pin Connections

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

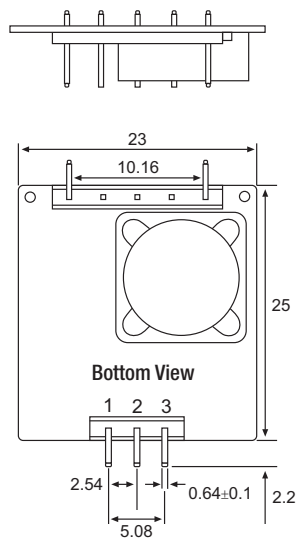
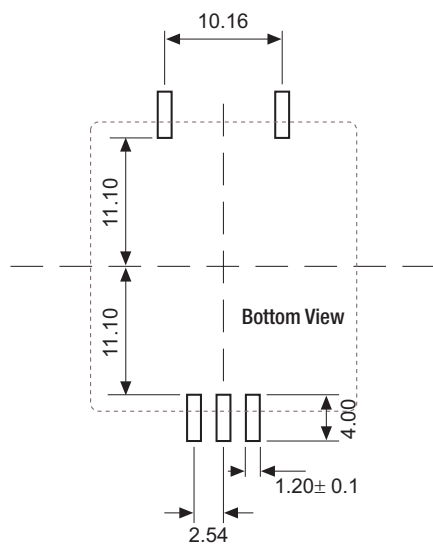


Tolerance  $\pm 0.5$ mm unless otherwise specified

Package Style and Pinning (mm)

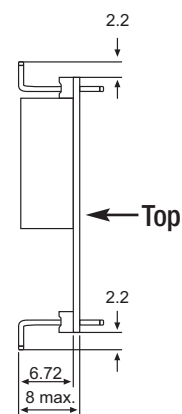
## R-78Txx-1.0/FC

### Recommended Footprint



### Pin Connections

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



Tolerance  $\pm 0.5\text{mm}$  unless otherwise specified