

## Features

### Unregulated Converters

- Twin Independent Outputs
- Output/Output Isolation 1kVDC
- Power Sharing on Outputs
- Input/Output Isolation 1kVDC
- No Heatsink Required
- UL94V-0 Package Material
- Optional Continuous Short Circuit Protected
- No External Components Required
- Custom Solutions Available
- Efficiency to 84%

## ECONOLINE

DC/DC-Converter

# RU Series

1 Watt

SIP7

Isolated

Dual Output



### Selection Guide

| Part Number | Input Voltage (VDC)    | Output Voltage (V1VDC) | Output Voltage (V2VDC) | Output Current (mA) | Efficiency (%) |
|-------------|------------------------|------------------------|------------------------|---------------------|----------------|
| SIP 7       | (VDC)                  | (V1VDC)                | (V2VDC)                | (mA)                | (%)            |
| RU-xx1.81.8 | 1.8, 3.3, 5, 9, 12, 24 | 1.8                    | 1.8                    | 278/278             | 70             |
| RU-xx3.33.3 | 1.8, 3.3, 5, 9, 12, 24 | 3.3                    | 3.3                    | 152/152             | 70             |
| RU-xx053.3  | 1.8, 3.3, 5, 9, 12, 24 | 5                      | 3.3                    | 100/152             | 70             |
| RU-xx0505   | 1.8, 3.3, 5, 9, 12, 24 | 5                      | 5                      | 100/100             | 70-78          |
| RU-xx0509   | 1.8, 3.3, 5, 9, 12, 24 | 5                      | 9                      | 100/55              | 75             |
| RU-xx0512   | 1.8, 3.3, 5, 9, 12, 24 | 5                      | 12                     | 100/42              | 75             |
| RU-xx0515   | 1.8, 3.3, 5, 9, 12, 24 | 5                      | 15                     | 100/33              | 78             |
| RU-xx0909   | 1.8, 3.3, 5, 9, 12, 24 | 9                      | 9                      | 55/55               | 75-80          |
| RU-xx1212   | 1.8, 3.3, 5, 9, 12, 24 | 12                     | 12                     | 42/42               | 78-80          |
| RU-xx1515   | 1.8, 3.3, 5, 9, 12, 24 | 15                     | 15                     | 33/33               | 80-82          |
| RU-xx2424   | 1.8, 3.3, 5, 9, 12, 24 | 24                     | 24                     | 21/21               | 80-84          |

xx = Input Voltage

\* add Suffix "P" for Continuous Short Circuit Protection, e.g. RU-050505/P

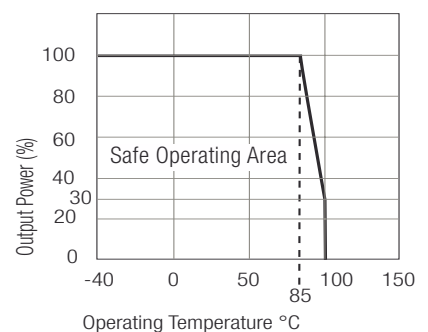
### Specifications (Core Operating Area)

|   |   |                       |                              |
|---|---|-----------------------|------------------------------|
| Input Voltage Range                               | ±10%  |                       |                              |
| Output Voltage Accuracy                           | ±5%   |                       |                              |
| Line Voltage Regulation                           | 1.2%/1% of Vin typ.   |                       |                              |
| Load Voltage Regulation (10% to 100% full load)   | 1.8V, 3.3V output types                                     | 20% max.              |                              |
|   | 5V output type  | 15% max.              |                              |
|   | 9V, 12V, 15V, 24V output types                              | 10% max.              |                              |
| Output Ripple and Noise (20MHz limited)           | 75mVp-p max.  |                       |                              |
| Operating Frequency                               | 50kHz min. / 100kHz typ. / 105kHz max.                      |                       |                              |
| Efficiency at Full Load                           | 70% min. / 80% typ.   |                       |                              |
| No Load Power Consumption                         | 87mW min. / 130mW typ. / 220mW max.                         |                       |                              |
| Isolation Voltage                                 | <sup>1)</sup> (tested for 1 second)                         | 1000VDC min.          |                              |
| Rated Working Voltage                             | <sup>1)</sup> (long term isolation)                         | see Application Notes |                              |
| Isolation Capacitance                             | 20pF min. / 94pF max.                                       |                       |                              |
| Isolation Resistance                              | 10 GΩ min.  |                       |                              |
| Short Circuit Protection                          | 1 Second  |                       |                              |
| P-Suffix  | Continuous  |                       |                              |
| Operating Temperature Range (free air convection) | -40°C to +85°C (see Graph)                                  |                       |                              |
| Storage Temperature Range                         | -55°C to +125°C   |                       |                              |
| Relative Humidity                                 | 95% RH  |                       |                              |
| Package Weight                                    | 2.7g  |                       |                              |
| MTBF (+25°C)                                      | } Detailed Information see Application Notes chapter "MTBF" | using MIL-HDBK 217F   | 1012 x 10 <sup>3</sup> hours |
| (+85°C)   |   | using MIL-HDBK 217F   | 151 x 10 <sup>3</sup> hours  |

<sup>1)</sup> Input/Output and Output V1/Output V2

## Derating-Graph

(Ambient Temperature)



**Typical Characteristics**

**RU-xx0505**



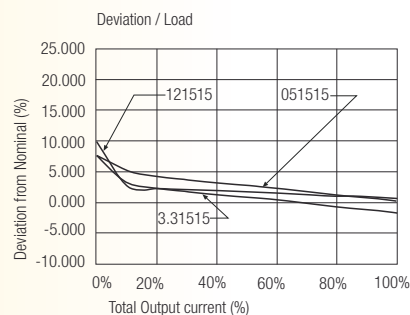
**RU-xx0909**



**RU-xx1212**



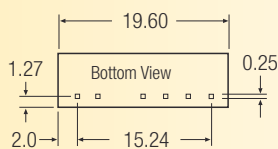
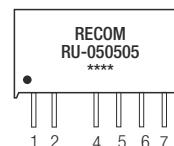
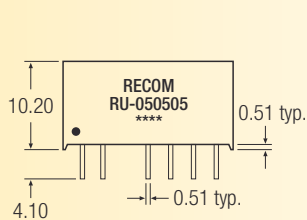
**RU-xx1515**



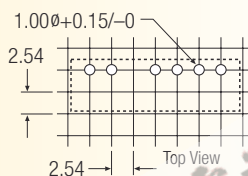
**Package Style and Pinning (mm)**

7 PIN SIP Package

3rd angle projection 



Recommended Footprint Details



Pin Connections

| Pin # | Single  |
|-------|---------|
| 1     | +Vin    |
| 2     | -Vin    |
| 4     | +Vout 1 |
| 5     | -Vout 1 |
| 6     | +Vout 2 |
| 7     | -Vout 2 |

XX.X ± 0.5 mm  
XX.XX ± 0.25 mm