

## Features

### Unregulated Converters

- Safety standards and approvals: EN 60950 certified, rated for 250VAC (LVD test report)
- UL-60950-1 / CSA C22.2 certified
- 6kVDC Isolation
- UL94V-0 Package Material
- Internal SMD Construction
- Fully Encapsulated
- Efficiency to 82%

**ECONOLINE**

DC/DC-Converter

# RV Series

### Selection Guide

| Part Number     | Input Voltage (VDC)   | Rated Output Voltage (VDC) | Output Current Full Load (mA) |
|-----------------|-----------------------|----------------------------|-------------------------------|
| DIP24 Miniature |                       |                            |                               |
| RV-xx3.3S       | 3.3, 5, 9, 12, 15, 24 | 3.3                        | 600                           |
| RV-xx05S        | 3.3, 5, 9, 12, 15, 24 | 5                          | 400                           |
| RV-xx09S        | 3.3, 5, 9, 12, 15, 24 | 9                          | 222                           |
| RV-xx12S        | 3.3, 5, 9, 12, 15, 24 | 12                         | 167                           |
| RV-xx15S        | 3.3, 5, 9, 12, 15, 24 | 15                         | 133                           |
| RV-xx24S        | 3.3, 5, 9, 12, 15, 24 | 24                         | 83                            |
| RV-xx3.3D       | 3.3, 5, 12, 15, 24    | ±3.3                       | ±300                          |
| RV-xx05D        | 3.3, 5, 12, 15, 24    | ±5                         | ±200                          |
| RV-xx09D        | 3.3, 5, 12, 15, 24    | ±9                         | ±111                          |
| RV-xx12D        | 3.3, 5, 12, 15, 24    | ±12                        | ±83                           |
| RV-xx15D        | 3.3, 5, 12, 15, 24    | ±15                        | ±67                           |
| RV-xx24D        | 3.3, 5, 12, 15, 24    | ±24                        | ±42                           |

xx = Input Voltage Range

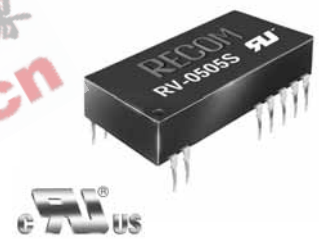
### Description

The RV Series of DC/DC Converters are fully certified to EN 60950: 2000. This makes them ideal for all Telecom and safety applications where approved isolation is required and UL-60950-1 / CSA C22.2.

### Specifications (Core Operating Area)

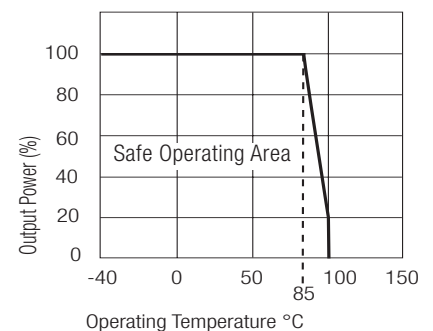
|   |   |                              |
|---|---|------------------------------|
| Input Voltage Range                               | ±10%  |                              |
| Output Voltage Accuracy                           | ±5%   |                              |
| Line Voltage Regulation                           | 1.2%/1% of Vin max.   |                              |
| Load Voltage Regulation (10% to 100% full load)   | 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)           | 200mVp-p max.   |                              |
| Operating Frequency                               | 20kHz min. / 50kHz typ. / 85kHz max.  |                              |
| Efficiency at Full Load                           | 70% min. / 75% typ.   |                              |
| No Load Power Consumption                         | 282mW min. / 338mW typ. / 400mW max.  |                              |
| Isolation Voltage (tested for 1 second)           | 6.000VDC min.   |                              |
| Rated Working Voltage (long term isolation)       | see Application Notes   |                              |
| Isolation Capacitance                             | 2pF min. / 12pF max.  |                              |
| Isolation Resistance                              | 15 GΩ min.  |                              |
| Short Circuit Protection                          | 1 Second  |                              |
| Operating Temperature Range (free air convection) | -40°C to +85°C (see Graph)  |                              |
| Storage Temperature Range                         | -55°C to +125°C   |                              |
| Relative Humidity                                 | MSL Level 1   | 95% RH                       |
| Package Weight                                    | 9g  |                              |
| MTBF (+25°C)                                      | Detailed Information see Application Notes chapter "MTBF" using MIL-HDBK 217F | 1154 x 10 <sup>3</sup> hours |
| (+85°C)   |   | 168 x 10 <sup>3</sup> hours  |

## 2 Watt DIP24 Miniature Single & Dual Output



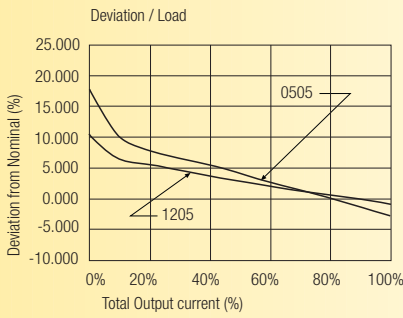
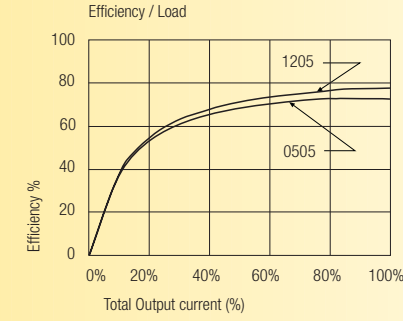
**RECOM**

## Derating-Graph (Ambient Temperature)

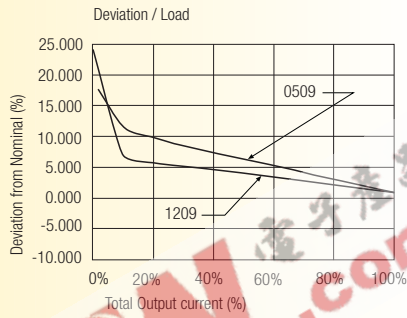
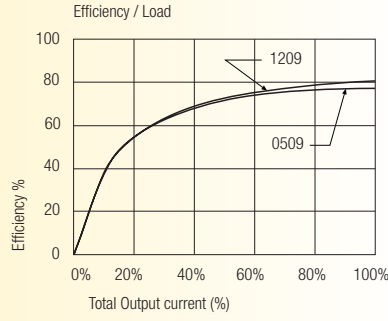


**Typical Characteristics**

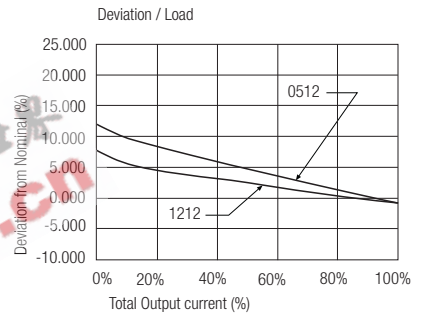
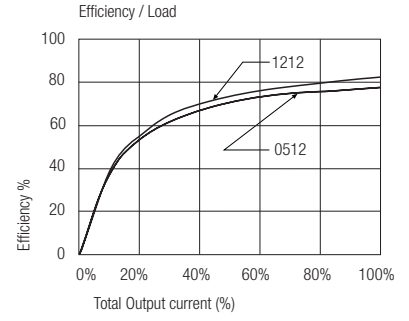
**RV-xx05S**



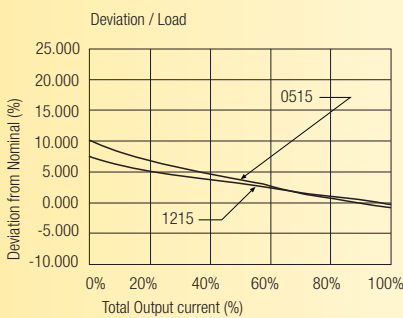
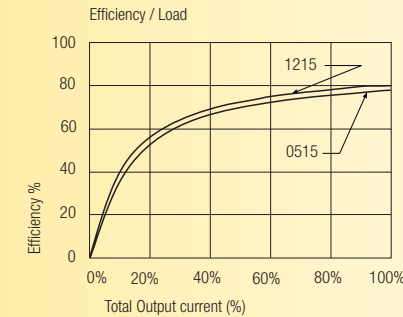
**RV-xx09S**



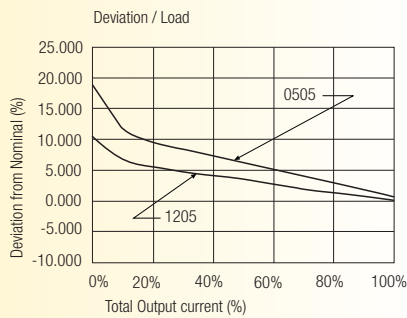
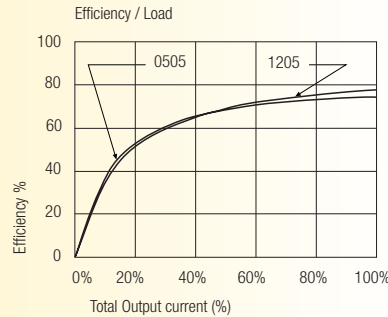
**RV-xx12S**



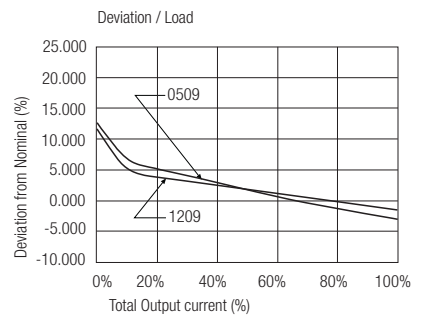
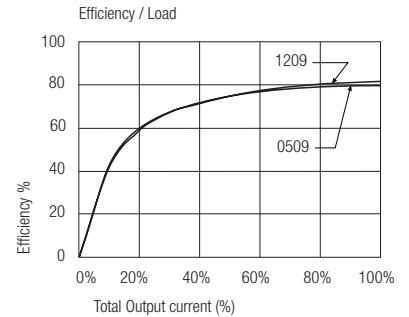
**RV-xx15S**



**RV-xx05D**

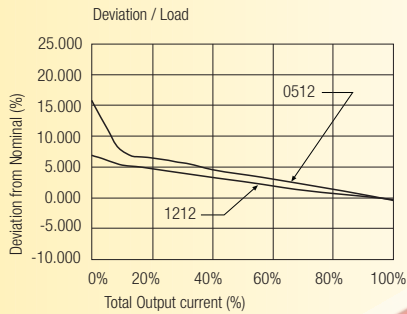
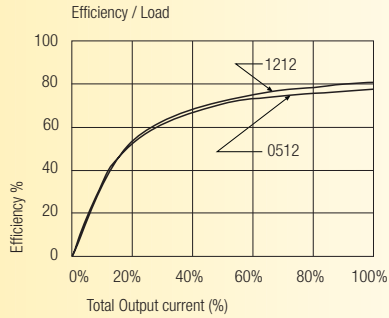


**RV-xx09D**

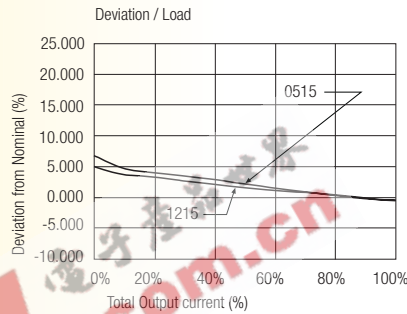
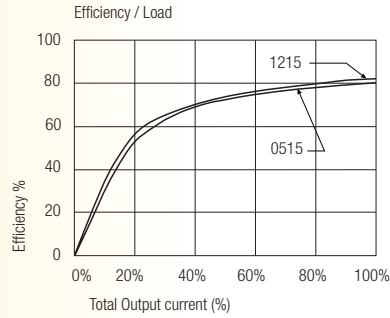


**Typical Characteristics**

**RV-xx12D**

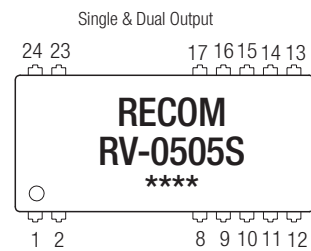
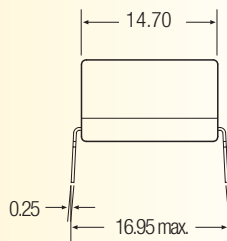
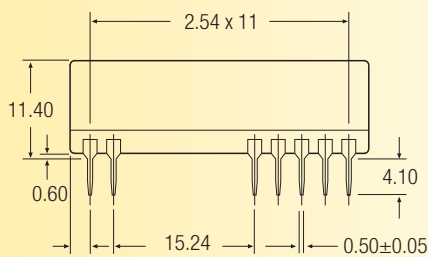


**RV-xx15D**

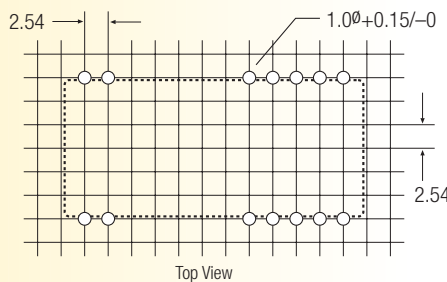
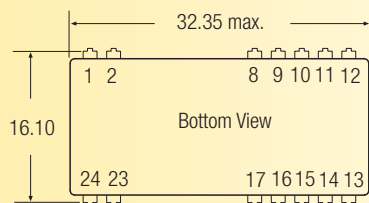


**Package Style and Pinning (mm)**

**24 PIN DIP Miniature Package Style**



**Recommended Footprint Details**



**Pin Connections**

| Pin #              | Single |
|--------------------|--------|
| 1                  | +Vin   |
| 2                  | -Vin   |
| 8, 9, 11, 14,      | NC     |
| 10 & 15            | -Vout  |
| 12 & 13            | +Vout  |
| 16, 17, 23 & 24    | NC     |
| NC = No Connection |        |

**Pin Connections**

| Pin #              | Dual  |
|--------------------|-------|
| 1                  | +Vin  |
| 2                  | -Vin  |
| 8 & 17             | -Vout |
| 9, 11, 14,         | NC    |
| 16, 23 & 24        | NC    |
| 10 & 15            | Com   |
| 12 & 13            | +Vout |
| NC = No Connection |       |

XX.X ± 0.5 mm  
XX.XX ± 0.25 mm