

# Features

## Regulated Converters

- On/Off Pin
- 1kVDC Isolation
- UL94V-0 Package Material
- Optional Continuous Short Circuit Protected
- Internal linear regulator
- Efficiency to 70 %
- Adjustable Output Voltage

### Description

The RY series DC/DC converter is a low cost general purpose isolated converter with a built-in linear regulator to give a regulated, load-independent output. It is available with single or dual outputs. A useful feature is the CTRL pin on the single output version which allows the converter to be adjusted or controlled by an external enable signal.

### Selection Guide

| Part Number<br>SIP 7 | Input Voltage (VDC) | Output Voltage (VDC) | Output Current (mA) | Efficiency (%) | Max Capacitive Load <sup>(1)</sup> |
|----------------------|---------------------|----------------------|---------------------|----------------|------------------------------------|
| RY-xx05S             | 5, 9, 12, 15, 24    | 5                    | 200                 | 58-60          | 1200µF                             |
| RY-xx09S             | 5, 9, 12, 15, 24    | 9                    | 111                 | 56-62          | 1200µF                             |
| RY-xx12S             | 5, 9, 12, 15, 24    | 12                   | 84                  | 60-66          | 680µF                              |
| RY-xx15S             | 5, 9, 12, 15, 24    | 15                   | 66                  | 60-66          | 680µF                              |
| RY-xx24S             | 5, 9, 12, 15, 24    | 24                   | 42                  | 60-68          | 220µF                              |
| RY-xx05D             | 5, 9, 12, 15, 24    | ±5                   | ±100                | 50-58          | ±470µF                             |
| RY-xx09D             | 5, 9, 12, 15, 24    | ±9                   | ±55                 | 52-60          | ±470µF                             |
| RY-xx12D             | 5, 9, 12, 15, 24    | ±12                  | ±42                 | 58-68          | ±330µF                             |
| RY-xx15D             | 5, 9, 12, 15, 24    | ±15                  | ±33                 | 62-68          | ±330µF                             |
| RY-xx24D             | 5, 9, 12, 15, 24    | ±24                  | ±21                 | 64-70          | ±100µF                             |

xx = Input Voltage. Other input and output voltage combinations available on request.

\* add Suffix "P" for Continuous Short Circuit Protection, e.g. RY-0505S/P, RY-0505D/P

### Specifications (measured at T<sub>A</sub> = 25°C, nominal input voltage, full load and after warm-up)

|   |  |   |                             |
|---|--|---|-----------------------------|
| Input Voltage Range                               |  | ±5%   |                             |
| Output Voltage Accuracy                           |  | ±5%   |                             |
| Line Voltage Regulation                           |  | ±1% max.  |                             |
| Load Voltage Regulation (10% to 100% full load)   |  | ±1% max.  |                             |
| Minimum Load                                      |  | 0%  |                             |
| Output Ripple and Noise (20MHz limited)           |  | 100mVp-p max.                                   |                             |
| Operating Frequency                               |  | 30kHz min. / 50kHz typ. / 88kHz max.            |                             |
| Efficiency at Full Load                           |  | 54% min. / 60% typ.                             |                             |
| Isolation Voltage                                 | (tested for 1 second)<br>(rated for 1 minute)                  | 1000VDC<br>1500VAC / 60Hz                       |                             |
| Isolation Capacitance                             | Single output types<br>Dual output types                       | 30pF min. / 150pF max.<br>40pF min. / 72pF max. |                             |
| Isolation Resistance                              |  | 10 GΩ min.                                      |                             |
| Short Circuit Protection                          |  | 1 Second  |                             |
| P-Suffix  |  | Continuous                                      |                             |
| Operating Temperature Range (free air convection) |  | -40°C to +70°C (see Graph)                      |                             |
| Storage Temperature Range                         |  | -55°C to +125°C                                 |                             |
| Relative Humidity                                 |  | 95% RH  |                             |
| Package Weight                                    | RY Single & Dual output types                                  | 2.8g  |                             |
| Packing Quantity                                  |  | 25 pcs per Tube                                 |                             |
| MTBF (+25°C)                                      | } Detailed Information see<br>Application Notes chapter "MTBF" | using MIL-HDBK 217F                             | 924 x 10 <sup>3</sup> hours |
| (+70°C)   |  | using MIL-HDBK 217F                             | 135 x 10 <sup>3</sup> hours |

# ECONOLINE

## DC/DC-Converter

with 3 year Warranty



## 1 Watt

## SIP7

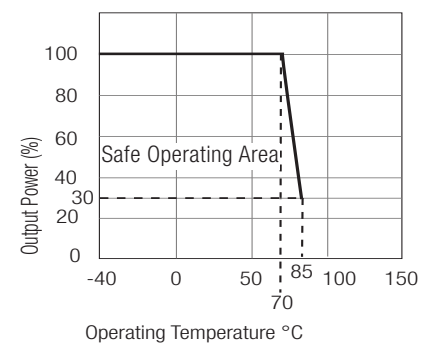
## Single & Dual Output



### EN-60950-1 Certified

# RY

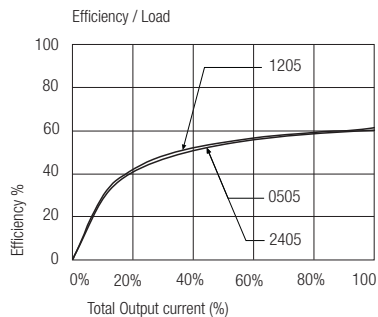
## Derating-Graph (Ambient Temperature)



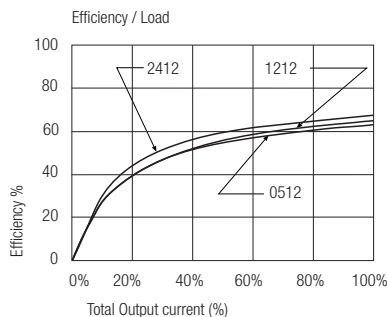
Refer to Application Notes

## Typical Characteristics

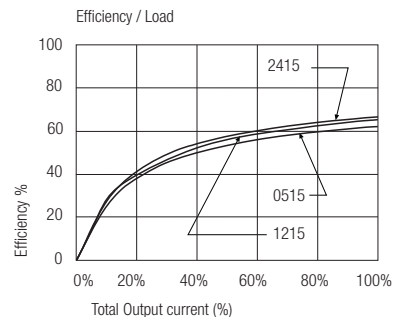
### RY-xx05S



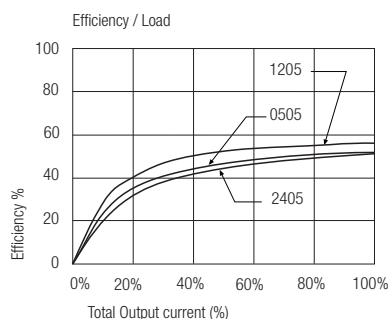
### RY-xx12S



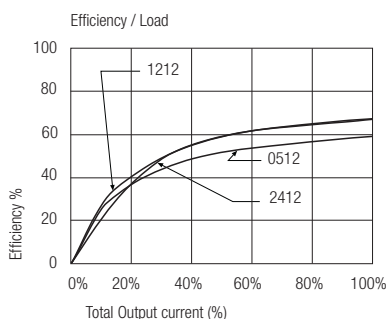
### RY-xx15S



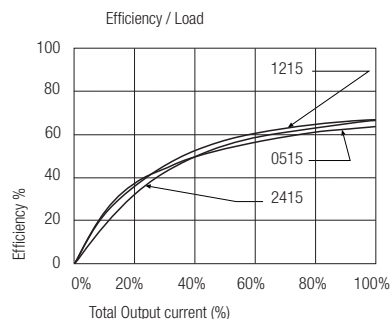
### RY-xx05D



### RY-xx12D



### RY-xx15D



#### Notes

Note 1 Maximum capacitive load is defined as the capacitive load that will allow start up in under 1 second without damage to the converter

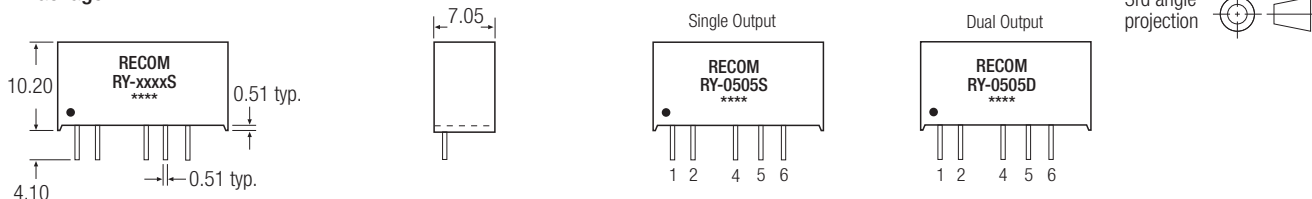
#### Certifications

EN General Safety Report: PS-R7219C1 EN60950-1:2001 + A11:2004

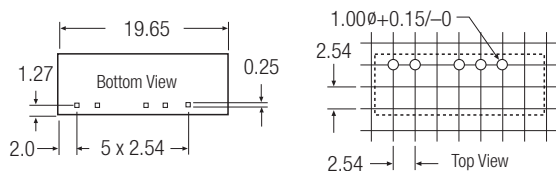
RY

## Package Style and Pinning (mm)

### 7 PIN SIP Package



### Recommended Footprint Details



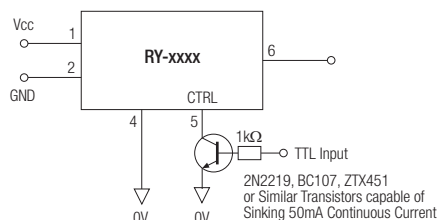
### RX Pin Connections

| Pin # | Single | Dual  |
|-------|--------|-------|
| 1     | +Vin   | +Vin  |
| 2     | -Vin   | -Vin  |
| 4     | -Vout  | -Vout |
| 5     | CTRL   | Com   |
| 6     | +Vout  | +Vout |

XX.X ± 0.5 mm  
XX.XX ± 0.25 mm

## Typical On/Off Control and Adjustable Output Applications

### On/Off Control



### Adjustable Output

