

## Features

### Unregulated Converters

- Micro Size SIP 6 Package
- Industry Standard Pinout
- Power Sharing on Dual Output Version
- 3kVDC Isolation
- Optional Continuous Short Circuit Protected
- Efficiency to 85 %

#### Description

The RBM Micro Size DC/DC-Converter complements Recom's industrial range of converters. This range is widely used for pcb distributed power systems and combines small package size, high efficiency, 3kVDC isolation and low output ripple.

The extended operating temperature range covering  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$  is a standard feature. The full rated power can be taken from a single pin of this dual output converter, provided this does not exceed 1 Watt.

#### Selection Guide

| Part Number<br>SIP 6 Micro Size | Input Voltage<br>(VDC) | Output Voltage<br>(VDC) | Output Current<br>(mA) | Efficiency<br>(%) | Max Capacitive Load <sup>(1)</sup> |
|---------------------------------|------------------------|-------------------------|------------------------|-------------------|------------------------------------|
| RBM-xx05S                       | 5, 12                  | 5                       | 200                    | 70-78             | 1000 $\mu\text{F}$                 |
| RBM-xx12S                       | 5, 12                  | 12                      | 83                     | 78-80             | 470 $\mu\text{F}$                  |
| RBM-xx15S                       | 5, 12                  | 15                      | 66                     | 80-84             | 470 $\mu\text{F}$                  |
| RBM-xx05D                       | 5, 12                  | $\pm 5$                 | $\pm 100$              | 74-78             | $\pm 470\mu\text{F}$               |
| RBM-xx12D                       | 5, 12                  | $\pm 12$                | $\pm 41$               | 80-82             | $\pm 220\mu\text{F}$               |
| RBM-xx15D                       | 5, 12                  | $\pm 15$                | $\pm 33$               | 80-84             | $\pm 220\mu\text{F}$               |

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

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

#### Specifications (measured at $T_A = 25^{\circ}\text{C}$ , nominal input voltage, full load and after warm-up)

|                                                   |                                                              |                                         |
|---------------------------------------------------|--------------------------------------------------------------|-----------------------------------------|
| Input Voltage Range                               | $\pm 10\%$                                                   |                                         |
| Output Voltage Accuracy                           | $\pm 5\%$                                                    |                                         |
| Line Voltage Regulation                           | 1.2%/1% of $V_{in}$ typ.                                     |                                         |
| Load Voltage Regulation                           | 5V output type                                               | 15% max                                 |
| (10% to 100% full load)                           | 12, 15V output types                                         | 10% max                                 |
| Output Ripple and Noise (20MHz limited)           | 100mVp-p max.                                                |                                         |
| Operating Frequency                               | 50kHz min. / 100kHz typ. / 105kHz max.                       |                                         |
| Efficiency at Full Load                           | 70% min. / 80% typ.                                          |                                         |
| Minimum Load = 0%                                 | Specifications valid for 10% minimum load only.              |                                         |
| Isolation Voltage                                 | (tested for 1 second)<br>(rated for 1 minute**)              | 3000VDC<br>1500VAC / 60Hz               |
| Isolation Capacitance                             | 20pF min. / 65pF max.                                        |                                         |
| Isolation Resistance                              | 15 G $\Omega$ min.                                           |                                         |
| Short Circuit Protection                          | 1 Second                                                     |                                         |
| P-Suffix                                          | Continuous                                                   |                                         |
| Operating Temperature Range (free air convection) | $-40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$ (see Graph)   |                                         |
| Storage Temperature Range                         | $-55^{\circ}\text{C}$ to $+125^{\circ}\text{C}$              |                                         |
| Relative Humidity                                 | 95% RH                                                       |                                         |
| Package Weight                                    | 1.3g                                                         |                                         |
| Packing Quantity                                  | 30 pcs per Tube                                              |                                         |
| MTBF ( $+25^{\circ}\text{C}$ )                    | Detailed Information see<br>Application Notes chapter "MTBF" | using MIL-HDBK 217F 1005 x $10^3$ hours |
| ( $+85^{\circ}\text{C}$ )                         |                                                              | using MIL-HDBK 217F 195 x $10^3$ hours  |

#### Certifications

|                   |                                                              |                                           |
|-------------------|--------------------------------------------------------------|-------------------------------------------|
| CB Test Report    | Report: US/15348/UL                                          | IEC 60950-1:2005 2nd Ed.                  |
| UL General Safety | Report: E358085                                              | UL 60950-1 2nd Ed.                        |
| EN General Safety | Report: SPCLVD1109103                                        | EN60950-1:2001 + A11:2004                 |
| EN Medical Safety | Report: MDD1205098-4 + RM1205098-4IEC/EN 60601-1 3rd Edition | Medical Report + ISO14971 Risk Assessment |

## ECONOLINE

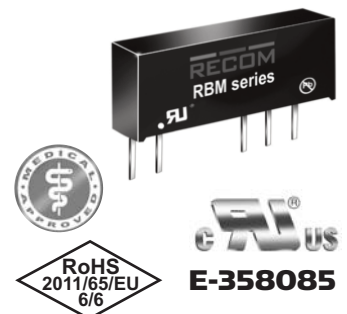
### DC/DC-Converter

with 3 year Warranty

RECOM

## 1 Watt

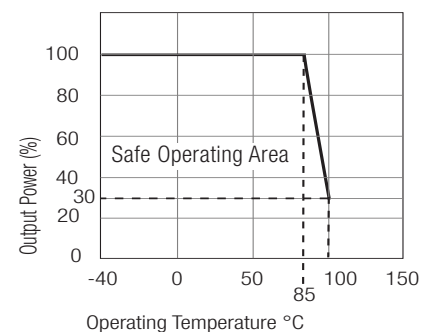
## SIP 6 Micro Size, Single & Dual Output



**EN-60950-1 Certified**  
**UL-60950-1 Certified**  
**EN-60601-1 Certified**

## RBM

## Derating-Graph (Ambient Temperature)



\*\*Any data referred to in this datasheet are of indicative nature and based on our practical experience only. For further details, please refer to our Application Notes.

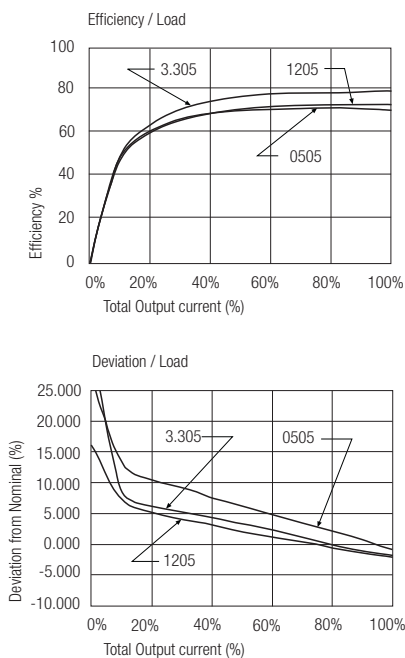
**Refer to Application Notes**

**Specifications** (measured at  $T_A = 25^\circ\text{C}$ , nominal input voltage, full load and after warm-up)

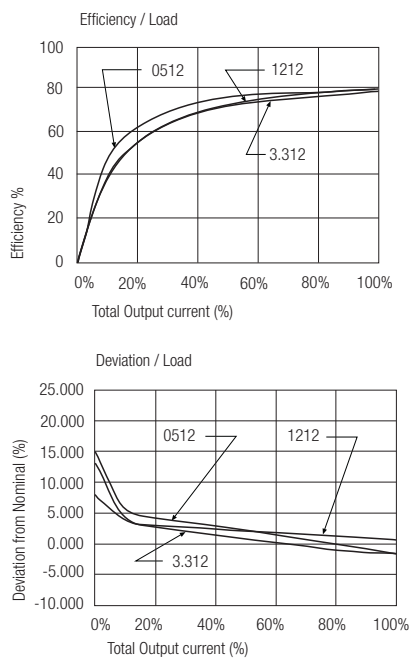
Notes  
Note 1 Maximum capacitive load is defined as the capacitive load that will allow start up in under 1 second without damage to the converter.

## Typical Characteristics

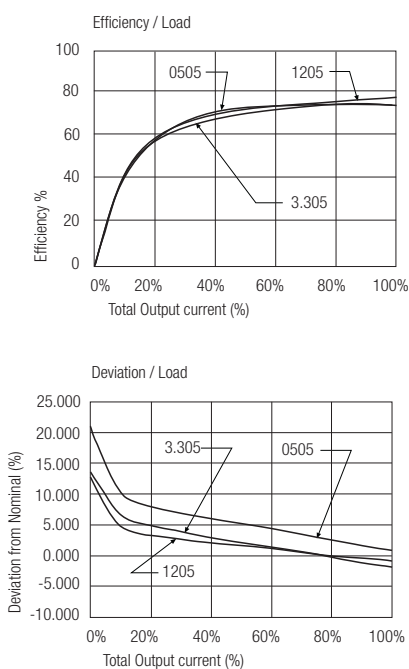
### RBM-xx05S



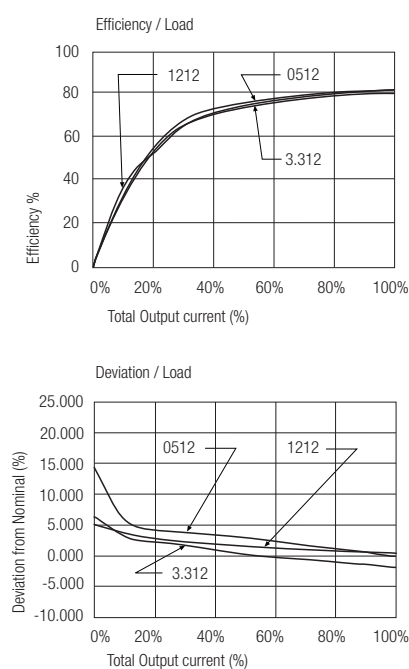
### RBM-xx12S



### RBM-xx05D

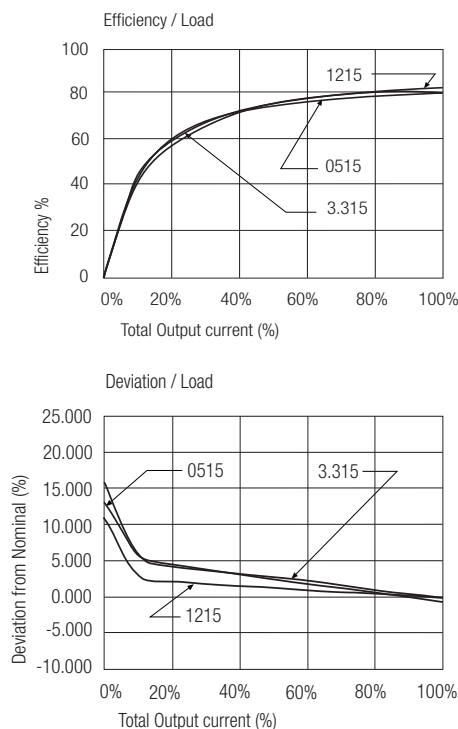


### RBM-xx12D

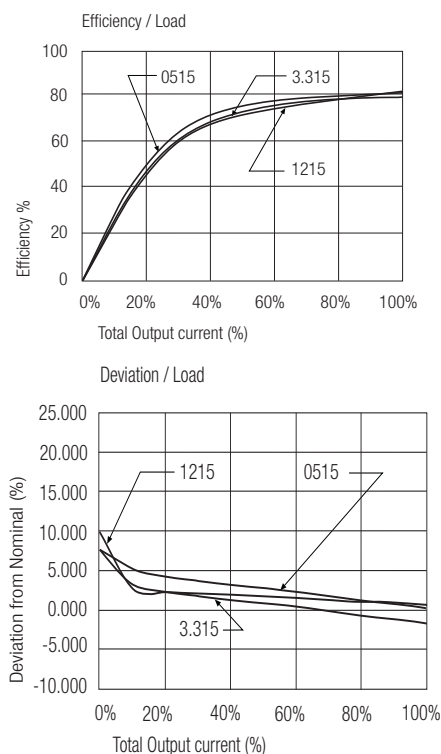


Typical Characteristics

**RBM-xx15S**

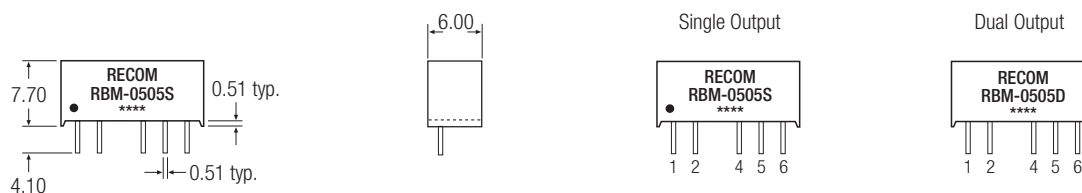


**RBM-xx15D**

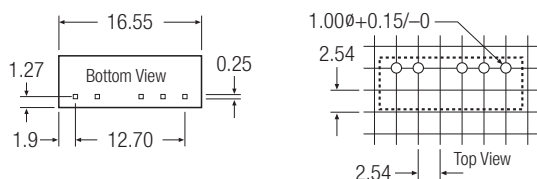


Package Style and Pinning (mm)

SIP6 Micro Size Package



Recommended Footprint Details



Pin Connections

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

NC = No Connection  
XX.X ± 0.5 mm  
XX.XX ± 0.25 mm