

## Features

## Unregulated Converters

Rev.1

- Low Cost 1W Converter
- Power Sharing on Dual Output Version
- Industry Standard Pinout
- 1kVDC & 2kVDC Isolation Options
- Optional Continuous Short Circuit Protected
- UL94V-0 Package Material
- Efficiency to 85 %

## ECONOLINE

DC/DC-Converter

# RB Series

## 1 Watt

## SIP7

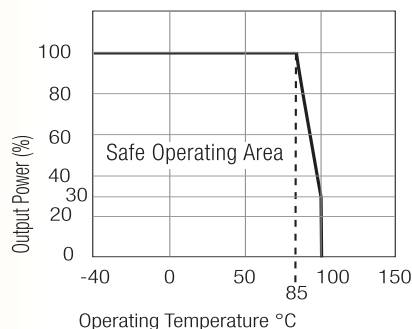
## Single & Dual Output



EN-60950-1 Certified

RECOM

## Derating-Graph (Ambient Temperature)



### Description

The RB series DC/DC converter has been designed for isolating or converting DC power rails in general purpose applications. Although low cost, it does not compromise on features and offers 1KV or 2kVDC isolation, a -40°C to +85°C operating temperature range and optional continuous short circuit protection.

### Selection Guide

Part Number	(2kV)	Input Voltage (VDC)	Output Voltage (VDC)	Output Current (mA)	Efficiency (%)
RB-xx3.3S	(H)	3.3, 5, 12, 15, 24	3.3	303	75
RB-xx05S	(H)	3.3, 5, 12, 15, 24	5	200	70-78
RB-xx09S	(H)	3.3, 5, 12, 15, 24	9	111	70-78
RB-xx12S	(H)	3.3, 5, 12, 15, 24	12	84	78-80
RB-xx15S	(H)	3.3, 5, 12, 15, 24	15	66	80-84
RB-xx24S	(H)	3.3, 5, 12, 15, 24	24	42	74-85
RB-xx3.3D	(H)	3.3, 5, 12, 15, 24	±3.3	±152	70
RB-xx05D	(H)	3.3, 5, 12, 15, 24	±5	±100	70-78
RB-xx09D	(H)	3.3, 5, 12, 15, 24	±9	±56	76-79
RB-xx12D	(H)	3.3, 5, 12, 15, 24	±12	±42	78-82
RB-xx15D	(H)	3.3, 5, 12, 15, 24	±15	±33	80-84
RB-xx24D	(H)	3.3, 5, 12, 15, 24	±24	±21	80-84

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

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

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

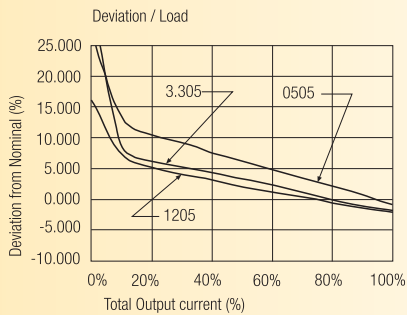
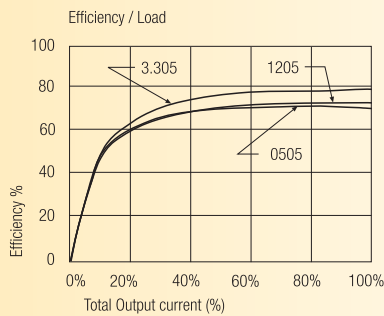
Input Voltage Range			±10%
Output Voltage Accuracy			±5%
Line Voltage Regulation			1.2%/1% of $V_{in}$ typ.
Load Voltage Regulation (10% to 100% full load)	3.3V output type	20% max.	
	5V output type	15% max.	
	9V, 12V, 15V, 24V output types	10% max.	
Output Ripple and Noise (20MHz limited)	Single output types	100mVp-p max.	
	Dual output types	±75mVp-p max.	
Operating Frequency	50kHz min. / 100kHz typ. / 105kHz max.		
Efficiency at Full Load	70% min. / 80% typ.		
No Load Power Consumption	Single	101mW min. / 126mW typ. / 238mW max.	
	Dual	87mW min. / 130mW typ. / 228mW max.	
Maximum Capacitive Load	33µF / ±10µF		
Isolation Voltage	(tested for 1 second)	1000VDC min.	
Rated Working Voltage	(long term isolation)	see Application Notes	
Isolation Voltage	H-Suffix	(tested for 1 second)	2000VDC min.
Rated Working Voltage	H-Suffix	(long term isolation)	see Application Notes
Isolation Capacitance	20pF min. / 75pF 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)		

**Specifications - continued**

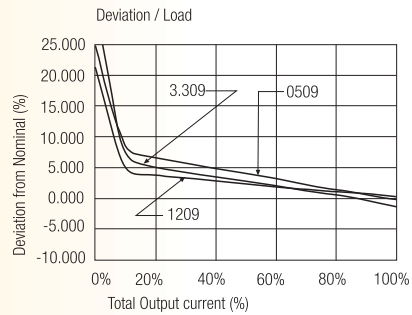
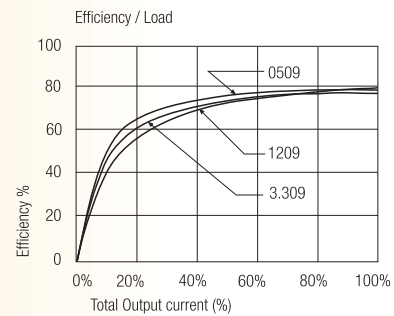
Storage Temperature Range	-55°C to +125°C		
Relative Humidity	95% RH		
Package Weight	2.2g		
MTBF (+25°C)	} Detailed Information see Application Notes chapter "MTBF"	using MIL-HDBK 217F	1012 x 10 <sup>3</sup> hours
(+85°C)		using MIL-HDBK 217F	151 x 10 <sup>3</sup> hours

**Typical Characteristics - Single Output**

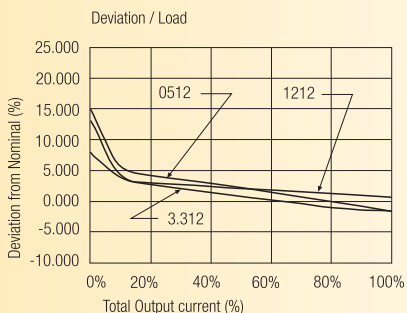
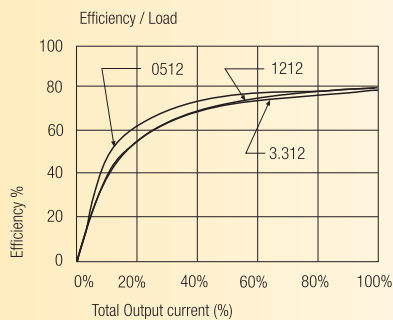
**RB-xx05S**



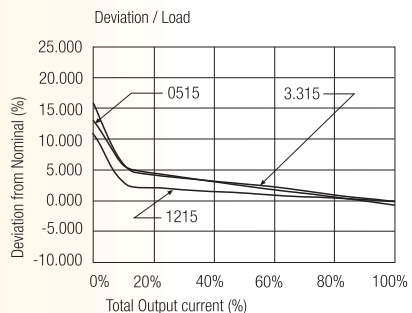
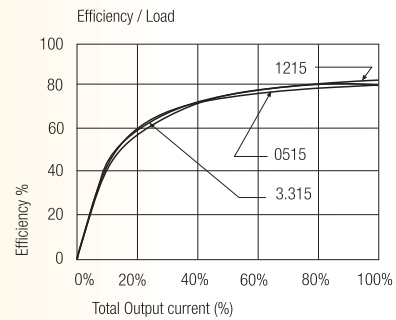
**RB-xx09S**



**RB-xx12S**

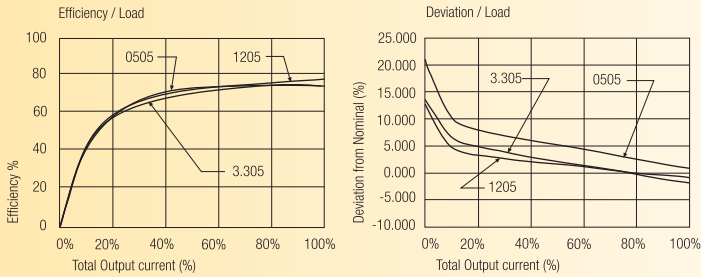


**RB-xx15S**

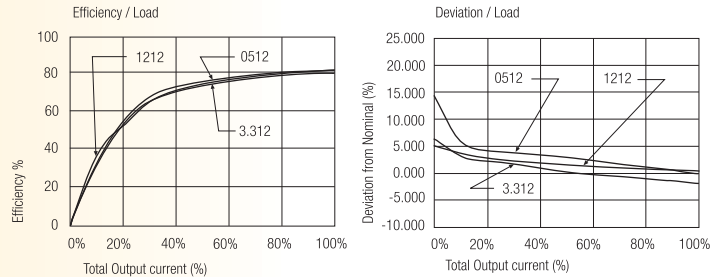


**Typical Characteristics - Dual Outputs**

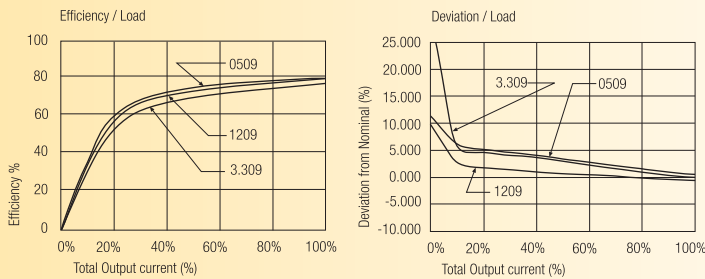
**RB-xx05D**



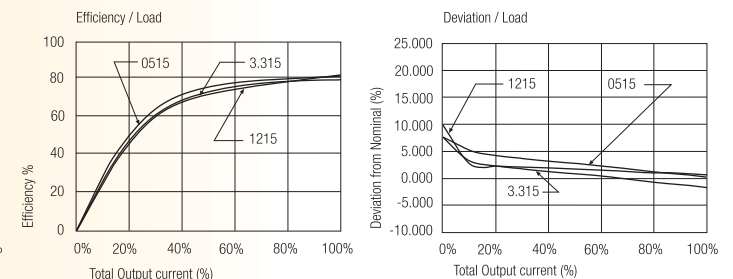
**RB-xx12D**



**RB-xx09D**

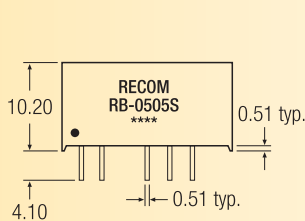


**RB-xx15D**

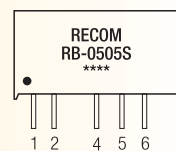


**Package Style and Pinning (mm)**

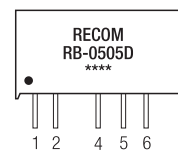
**7 PIN SIP Package**



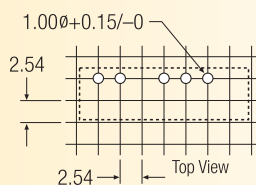
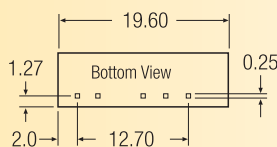
Single Output



Dual Output



**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