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# Features

## Unregulated Converters

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

### 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 1KVDC 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)

**ECONOLINE**  
DC/DC-Converter

**RECOM**

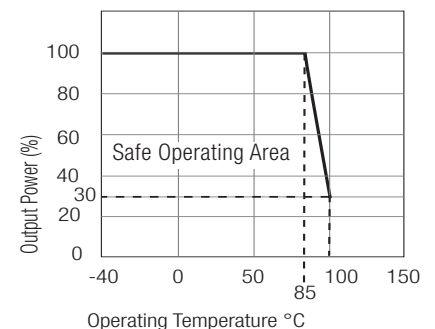
## 1 Watt SIP7 Single & Dual Output



**EN-60950-1 Certified**

**RB**

## Derating-Graph (Ambient Temperature)



**Refer to Application Notes**

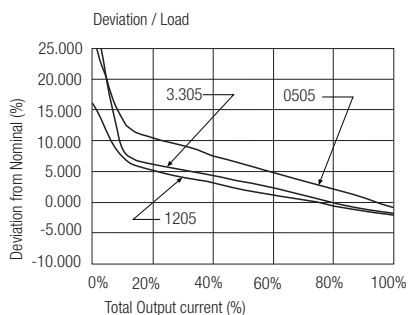
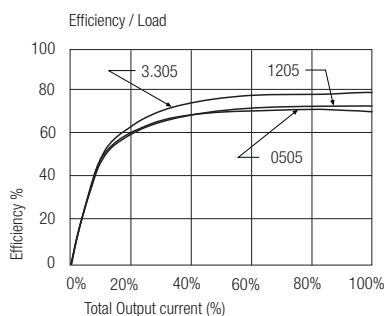
[www.recom-electronic.com](http://www.recom-electronic.com)

### Specifications - continued

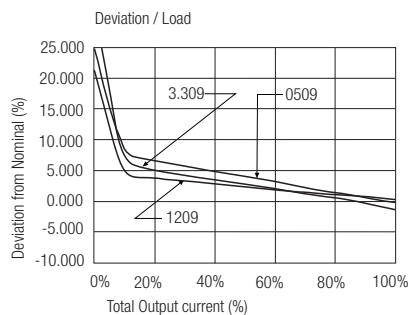
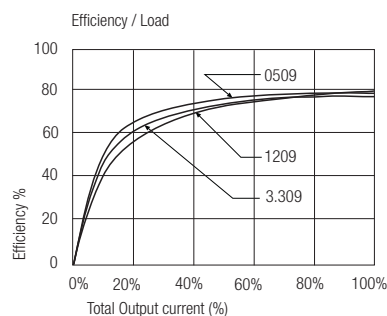
Storage Temperature Range	-55°C to +125°C		
Relative Humidity	95% RH		
Package Weight	2.2g		
Packing Quantity	30 pcs per Tube		
MTBF (+25°C)	} Detailed Information see Application Notes chapter "MTBF"	using MIL-HDBK 217F	1012 x 10 <sup>3</sup> hours
(+85°C)		using MIL-HDBK 217F	151 x 10 <sup>3</sup> hours

### Typical Characteristics - Single Output

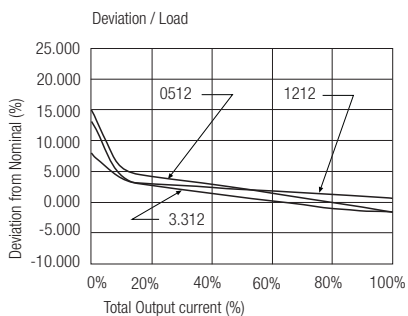
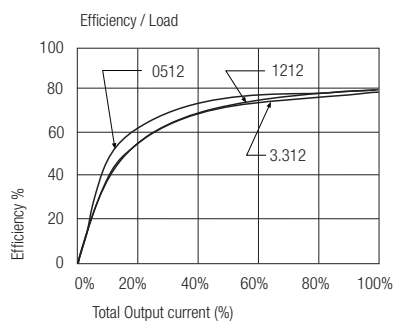
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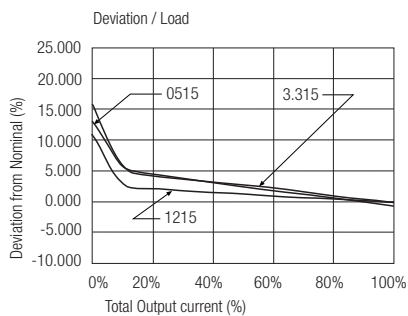
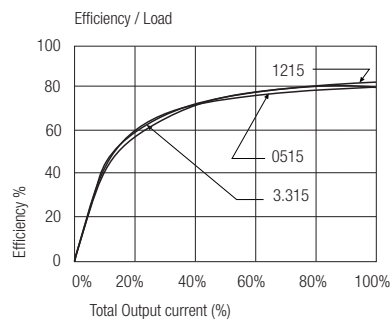
## RB-xx09S



## RB-xx12S

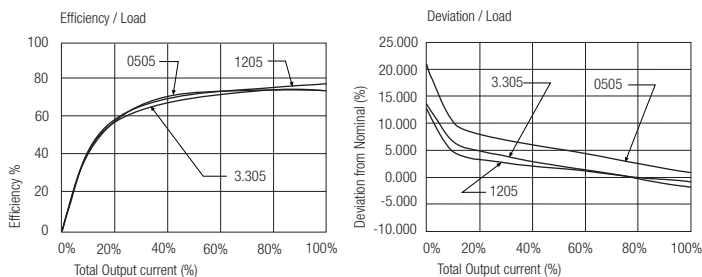


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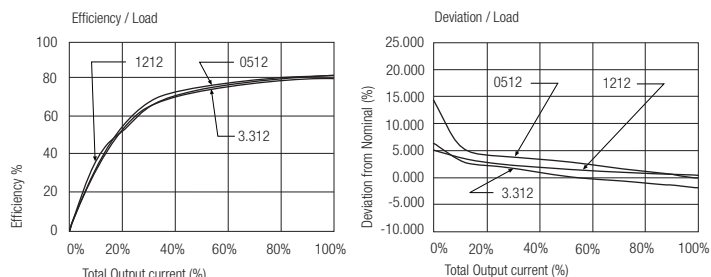


## Typical Characteristics - Dual Outputs

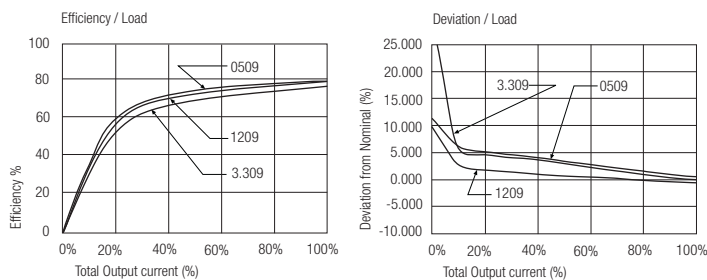
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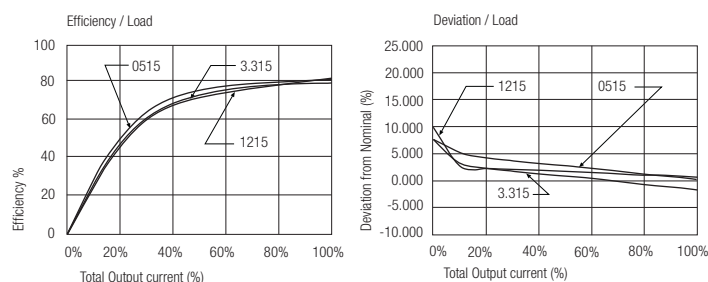
### RB-xx12D



### RB-xx09D

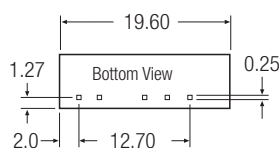
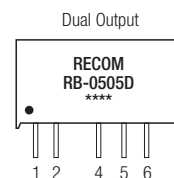
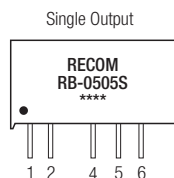
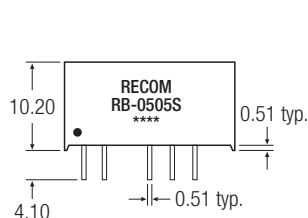


### RB-xx15D

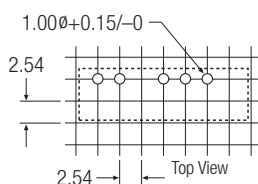


## Package Style and Pinning (mm)

### 7 PIN SIP 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