

# 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	SIP 7	(2kV)	Input Voltage (VDC)	Output Voltage (VDC)	Output Current (mA)	Efficiency (%)	Max Capacitive Load <sup>(1)</sup>
RB-xx3.3S	(H)		3.3, 5, 12, 15, 24	3.3	303	75	2200µF
RB-xx05S	(H)		3.3, 5, 12, 15, 24	5	200	70-78	1000µF
RB-xx09S	(H)		3.3, 5, 12, 15, 24	9	111	70-78	1000µF
RB-xx12S	(H)		3.3, 5, 12, 15, 24	12	84	78-80	470µF
RB-xx15S	(H)		3.3, 5, 12, 15, 24	15	66	80-84	470µF
RB-xx24S	(H)		3.3, 5, 12, 15, 24	24	42	74-85	220µF
RB-xx3.3D	(H)		3.3, 5, 12, 15, 24	±3.3	±152	70	±1000µF
RB-xx05D	(H)		3.3, 5, 12, 15, 24	±5	±100	70-78	±470µF
RB-xx09D	(H)		3.3, 5, 12, 15, 24	±9	±56	76-79	±470µF
RB-xx12D	(H)		3.3, 5, 12, 15, 24	±12	±42	78-82	±220µF
RB-xx15D	(H)		3.3, 5, 12, 15, 24	±15	±33	80-84	±220µF
RB-xx24D	(H)		3.3, 5, 12, 15, 24	±24	±21	80-84	±100µF

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<sub>A</sub> = 25°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 Vin typ.	
Load Voltage Regulation (10% to 100% full load)	3.3V output type 5V output type 9V, 12V, 15V, 24V output types	20% max. 15% max. 10% max.	
Output Ripple and Noise (20MHz limited)	Single output types Dual output types	100mVp-p max. ±75mVp-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) (rated for 1 minute)	1000VDC 500VAC / 60Hz	
Isolation Voltage	H-Suffix H-Suffix	(tested for 1 second) (rated for 1 minute)	2000VDC 1000VAC / 60Hz
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)	
Storage Temperature Range		-55°C to +125°C	

# ECONOLINE

## DC/DC-Converter

with 3 year Warranty

# RECOM

## 1 Watt

## SIP7

## Single & Dual Output

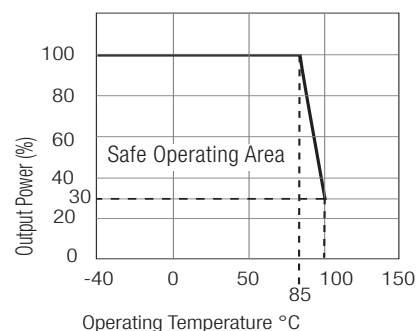


E358085

**EN-60950-1 Certified**  
**UL-60950-1 Certified**  
**EN-60601-1 Certified\***  
 (\*/H suffix)

# RB

## Derating-Graph (Ambient Temperature)



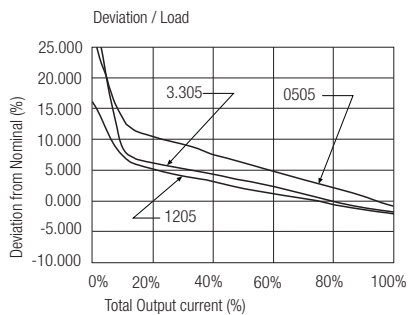
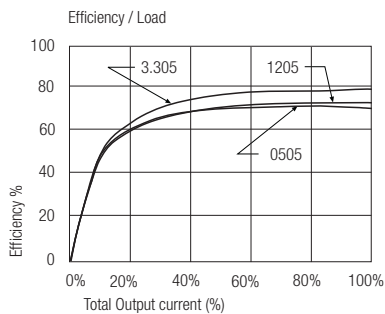
Refer to Application Notes

### Specifications - continued

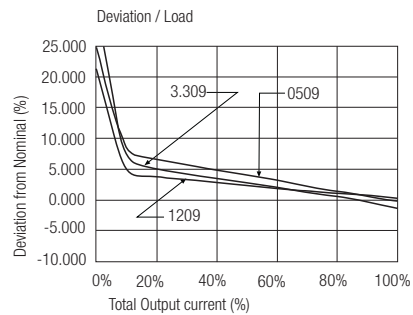
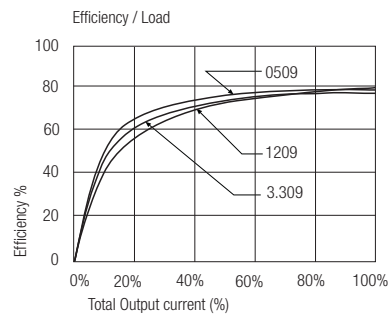
Relative Humidity	95% RH		
Package Weight	2.2g		
Packing Quantity	25 pcs per Tube		
MTBF (+25°C)	} Detailed Information see using MIL-HDBK 217F	1012 x 10 <sup>3</sup> hours	
(+85°C)		} Application Notes chapter "MTBF" using MIL-HDBK 217F	151 x 10 <sup>3</sup> hours

### Typical Characteristics - Single Output

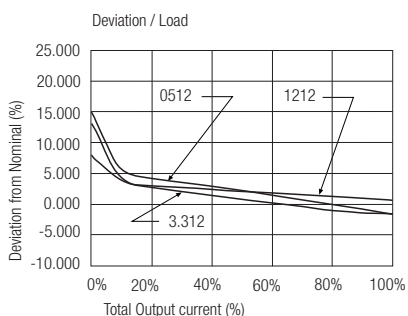
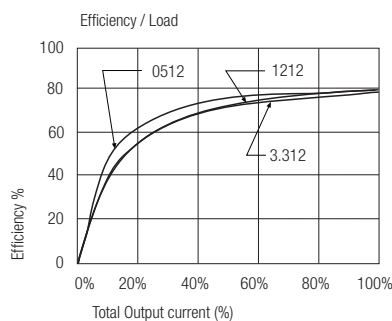
#### RB-xx05S



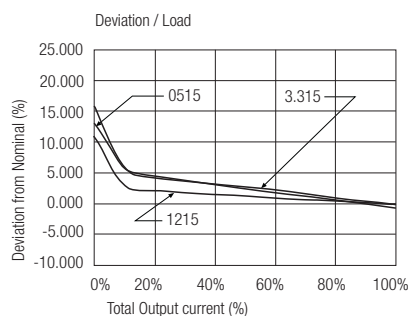
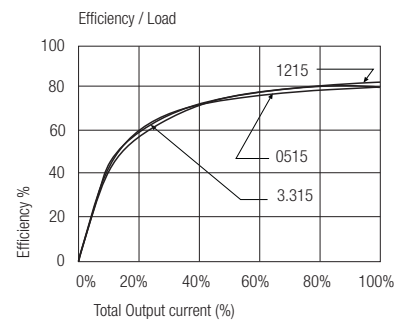
#### RB-xx09S



#### RB-xx12S

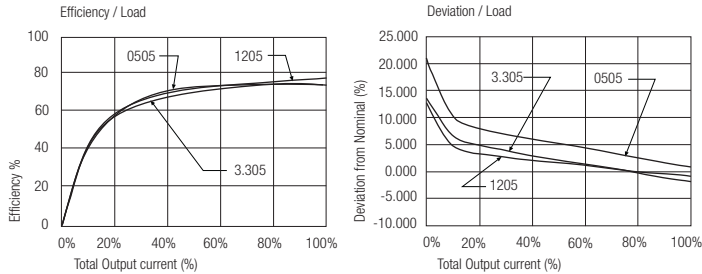


#### RB-xx15S

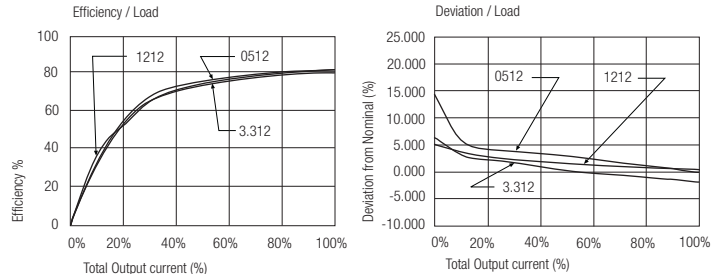


Typical Characteristics - Dual Outputs

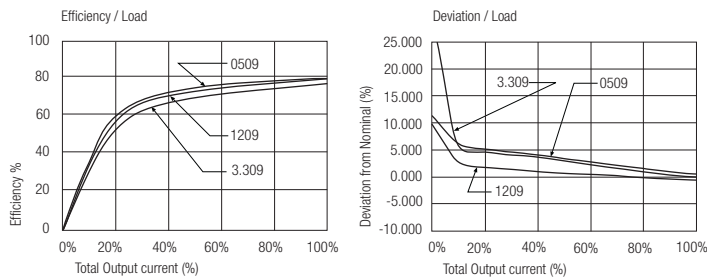
**RB-xx05D**



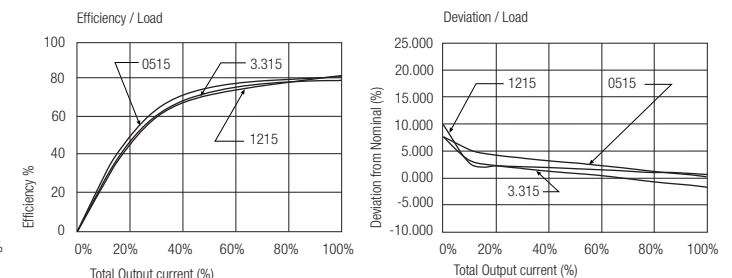
**RB-xx12D**



**RB-xx09D**



**RB-xx15D**



Notes

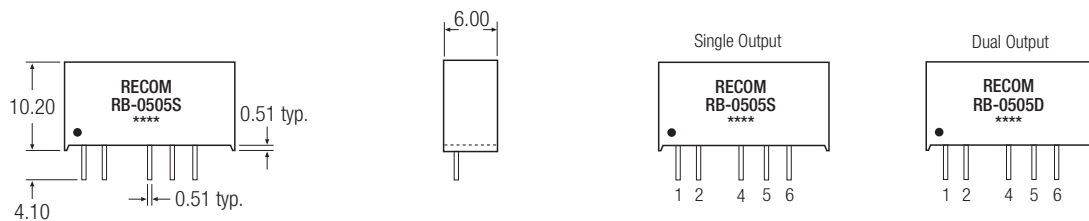
Note 1 Maximum capacitive load is defined as the capacitive load that will allow start up in under 1 second without damage to the converter.

Certifications

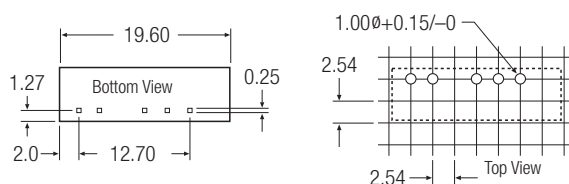
CB Test Report	Report: SPCLVD1109103	IEC 60950-1:2005 2nd Ed.
UL General Safety	Report: E358085	UL 60950-1 2nd Ed.
EN General Safety	Report: SPCLVD1109103	EN60950-1:2006 + A12:2011
EN Medical Safety	Report: MDD1112018 + RM1112018	IEC/EN 60601-1 3rd Edition Medical Report + ISO14971 Risk Assessment

Package Style and Pinning (mm)

SIP7 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