

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 $+85^{\circ}\text{C}$ operating temperature range and optional continuous short circuit protection.

Selection Guide

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

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

* add Suffix "P" for Continuous Short Circuit Protection, e.g. 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	$\pm 10\%$	
Output Voltage Accuracy	$\pm 5\%$	
Line Voltage Regulation	1.2%/1% of V_{in} typ.	
Load Voltage Regulation	3.3V output type	20% max.
(10% to 100% full load)	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	$\pm 75\text{mVp-p}$ 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)	1000VDC
	(rated for 1 minute**)	500VAC / 60Hz
Isolation Voltage	H-Suffix (tested for 1 second)	2000VDC
	H-Suffix (rated for 1 minute**)	1000VAC / 60Hz
Isolation Capacitance	20pF min. / 75pF max.	
Isolation Resistance	10 $\text{G}\Omega$ min.	
Short Circuit Protection	1 Second	
P-Suffix	Continuous	
Operating Temperature Range (free air convection)	-40°C to $+85^{\circ}\text{C}$ (see Graph)	
Storage Temperature Range	-55°C to $+125^{\circ}\text{C}$	
Relative Humidity	95% RH	

continued to next page

ECONOLINE

DC/DC-Converter

with 3 year Warranty

RECOM

1 Watt

SIP7

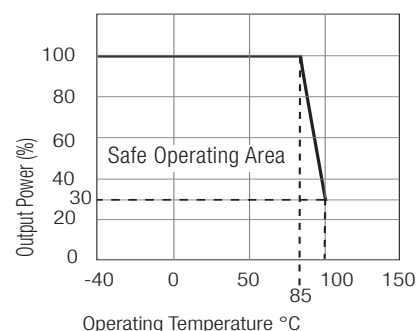
Single & Dual Output



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

RB

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.

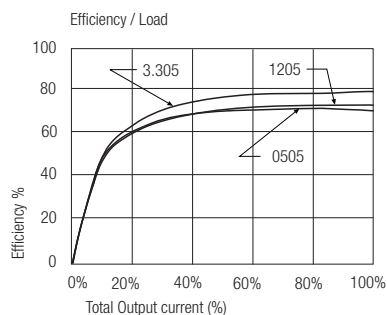
Refer to Application Notes

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

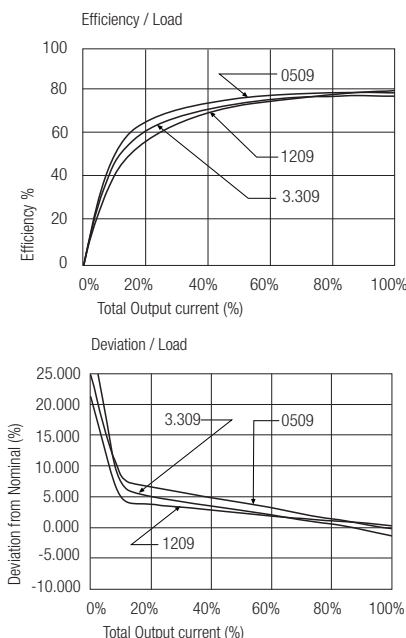
Package Weight	2.2g		
Packing Quantity	25 pcs per Tube		
MTBF (+25°C)	} Detailed Information see Application Notes chapter "MTBF"	using MIL-HDBK 217F	1012 x 10 ³ hours
(+85°C)		using MIL-HDBK 217F	151 x 10 ³ hours
Certifications			
CB Test Report	Report: E22406		IEC 60950-1:2005 2nd Ed.
UL General Safety	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		

Typical Characteristics - Single Output

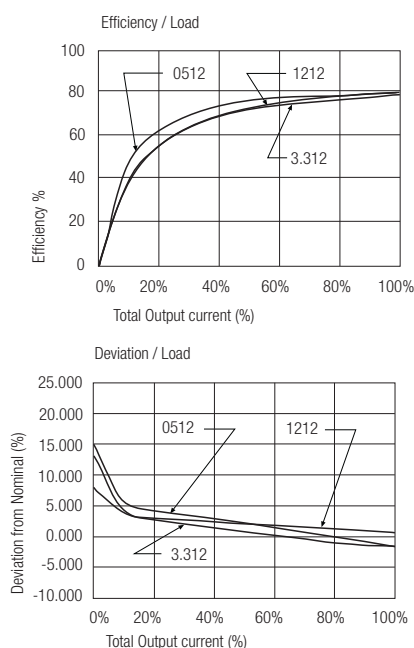
RB-xx05S



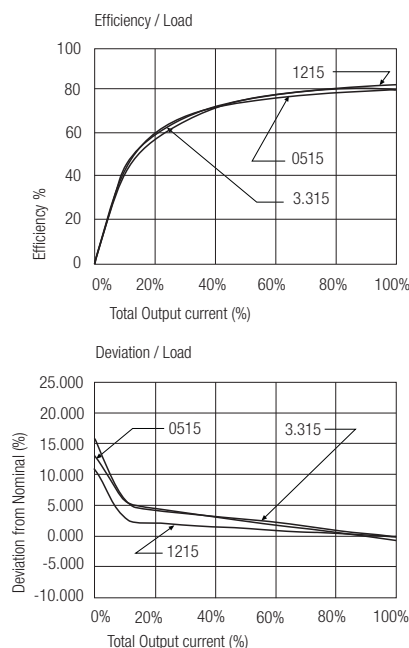
RB-xx09S



RB-xx12S

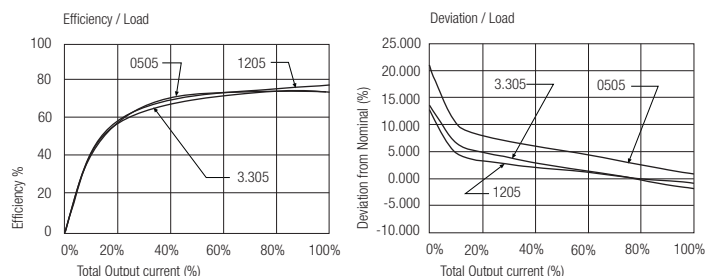


RB-xx15S

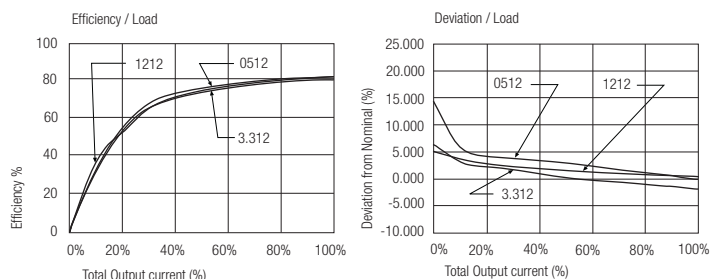


Typical Characteristics - Dual Outputs

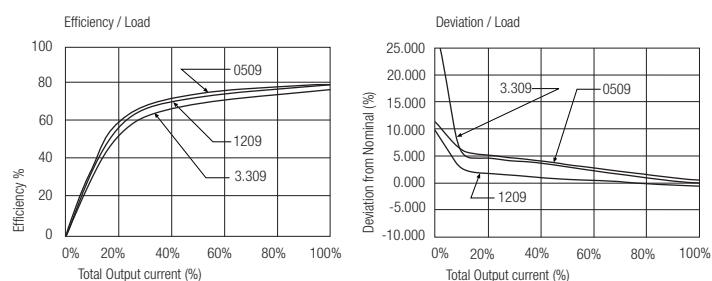
RB-xx05D



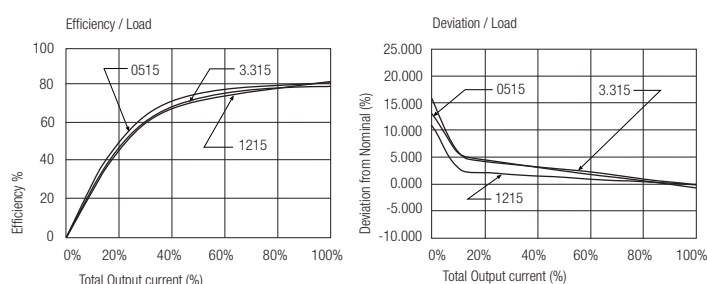
RB-xx12D



RB-xx09D



RB-xx15D

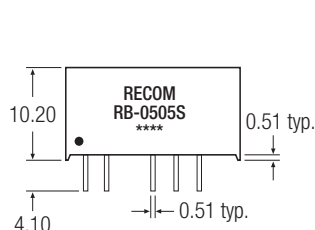


Notes

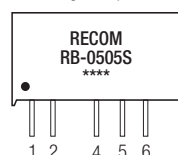
Note 1 Maximum capacitive load is defined as the capacitive load that will allow start up in under 1 second without damage to the converter.

Package Style and Pinning (mm)

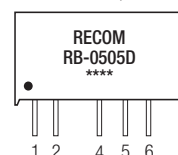
SIP7 Package



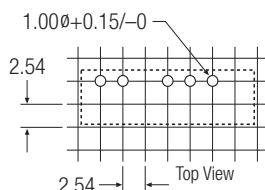
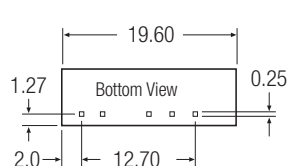
Single Output



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

The product information and specifications are subject to change without prior notice. RECOM products are not authorized for use in safety-critical applications (such as life support) without RECOM's explicit written consent. A safety-critical application is defined as an application where a failure of a RECOM product may reasonably be expected to endanger or cause loss of life, inflict bodily harm or damage property. The buyer shall indemnify and hold harmless RECOM, its affiliated companies and its representatives against any damage claims in connection with the unauthorized use of RECOM products in such safety-critical applications.