

# Features

## Unregulated Converter

- 3kVDC & 4kVDC Isolation
- Optimal Continuous Short Circuit Protected
- Custom Solutions Available
- UL94V-0 Package Material
- Efficiency to 84 %

### Description

The RK and RH Series DC/DC-Converter complements Recom's industrial range of converters with very high isolations of 3kV and 4kVDC. The extended operating temperature range covering -40°C to +85°C is a standard feature. The converters are EN-60601-1 certified, making them suitable for medical applications.

### Selection Guide

Part Number	SIP 7	(4kV)	Input Voltage (VDC)	Output Voltage (VDC)	Output Current (mA)	Efficiency (%)	Max Capacitive Load <sup>(1)</sup>
RK-xx05S	(H)		5, 12, 15, 24	5	200	70-78	1000µF
RK-xx09S	(H)		5, 12, 15, 24	9	111	70-80	1000µF
RK-xx12S	(H)		5, 12, 15, 24	12	84	78-82	470µF
RK-xx15S	(H)		5, 12, 15, 24	15	66	80-82	470µF
RH-xx05D	(H)		5, 12, 15, 24	±5	±100	74-78	±470µF
RH-xx09D	(H)		5, 12, 15, 24	±9	±56	76-79	±470µF
RH-xx12D	(H)		5, 12, 15, 24	±12	±42	78-84	±220µF
RH-xx15D	(H)		5, 12, 15, 24	±15	±33	80-84	±220µF

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

\* add Suffix "P" for Continuous Short Circuit Protection, e.g. RK-0505S/P, RK-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)	1.8V, 3.3V output types 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	RK types RH types	50kHz min. / 100kHz typ. / 105kHz max. 57kHz 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)	3000VDC 1500VAC / 60Hz
Isolation Voltage	H-Suffix H-Suffix	(tested for 1 second) (rated for 1 minute)
Isolation Capacitance	RK types RH types	20pF min. / 75pF max. 20pF min. / 65pF max.
Isolation Resistance		15 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
Relative Humidity		95% RH
Package Weight		2.6g
H-Suffix		2.8g
Packing Quantity		25 pcs per Tube
MTBF (+25°C)	RK types RH types	992 x 10 <sup>3</sup> hours 1012 x 10 <sup>3</sup> hours
(+85°C)	RK types RH types	145 x 10 <sup>3</sup> hours 151 x 10 <sup>3</sup> hours
using MIL-HDBK 217F		

*Detailed Information see Application Notes chapter "MTBF"*

# ECONOLINE

## DC/DC-Converter

with 3 year Warranty



## 1 Watt

## SIP7

## Single & Dual Output



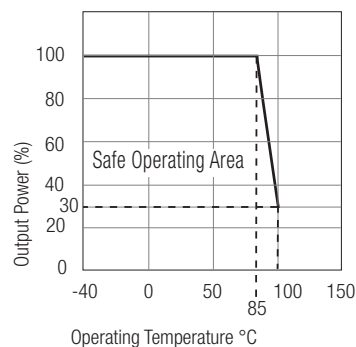
EN-60950-1 Certified

EN-60601-1 Certified

# RK & RH

## Derating-Graph

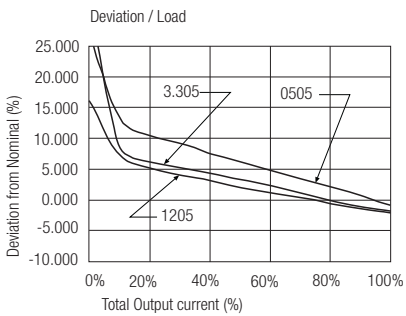
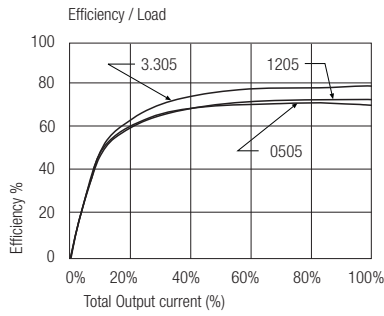
(Ambient Temperature)



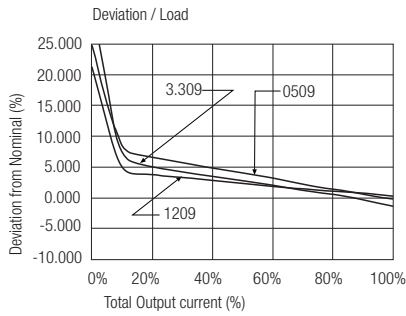
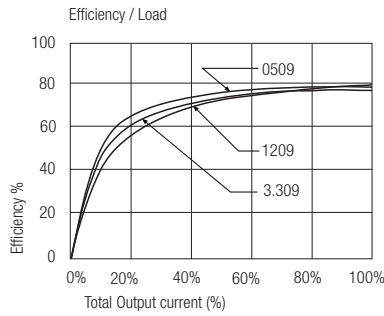
Refer to Application Notes

Typical Characteristics

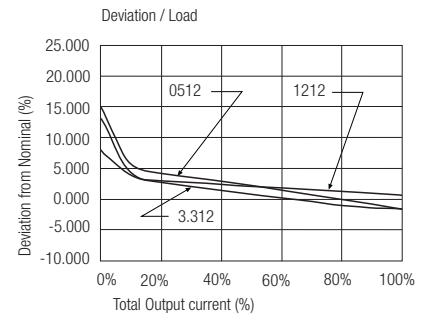
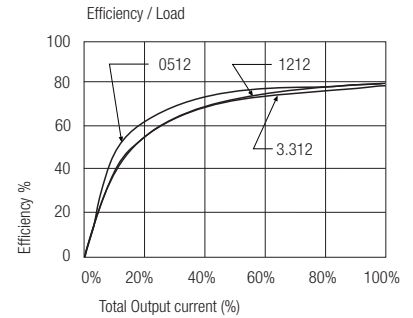
**RK-xx05S**



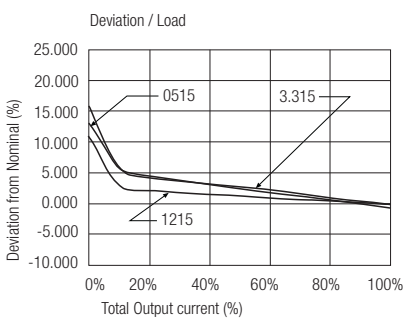
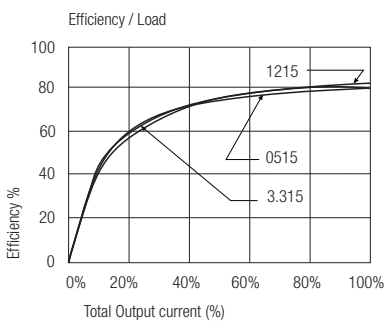
**RK-xx09S**



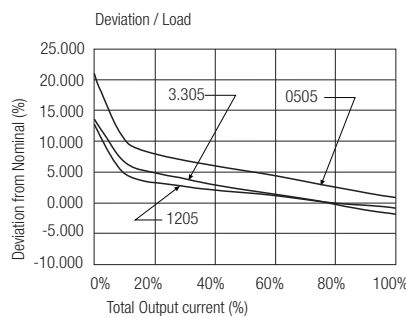
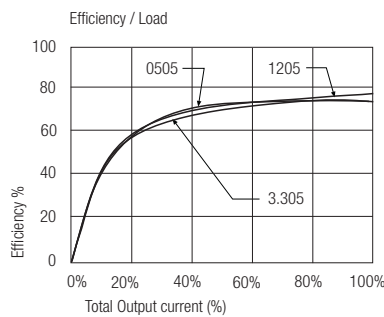
**RK-xx12S**



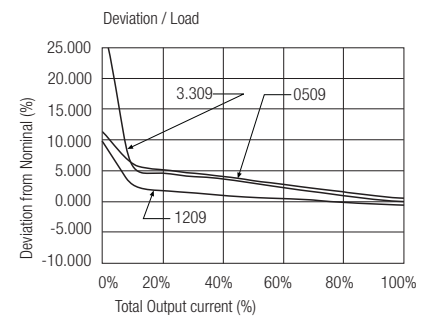
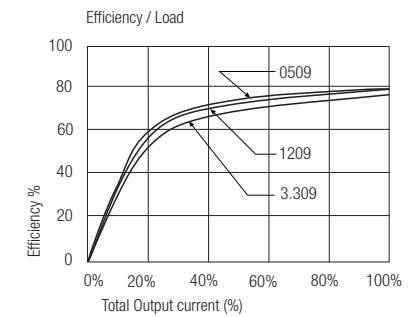
**RK-xx15S**



**RH-xx05D**

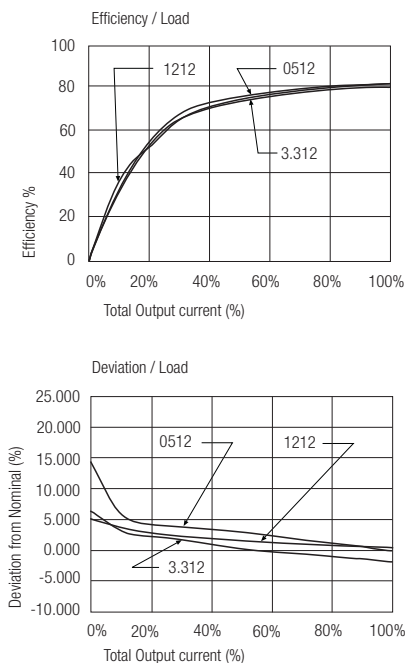


**RH-xx09D**

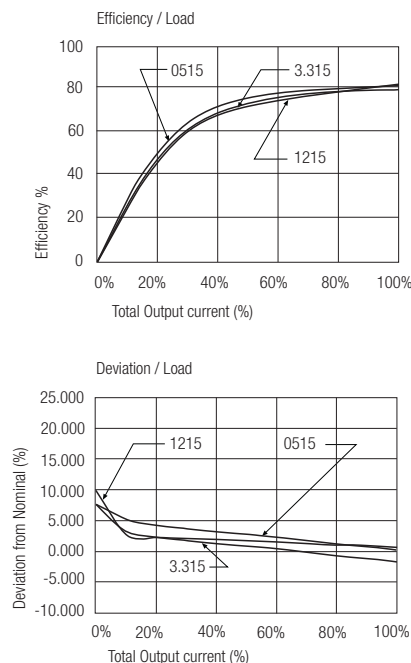


**Typical Characteristics**

**RH-xx12D**



**RH-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.

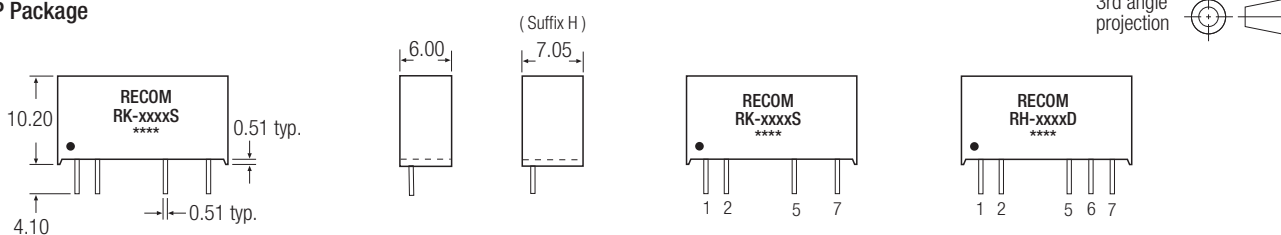
**Certifications**

EN General Safety Report: SPCLVD1109103 EN60950-1: 2006 + A11:2009 +A1:2010 + A12:2011

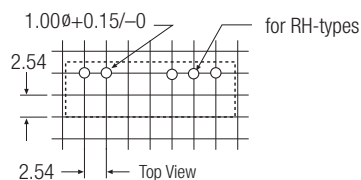
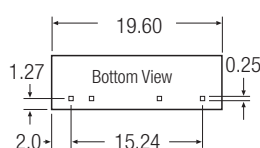
EN Medical safety Report: PS090301601 EN 60601-1

**Package Style and Pinning (mm)**

**7 PIN SIP Package**



**Recommended Footprint Details**



**Pin Connections**

**RK-xxxxS**

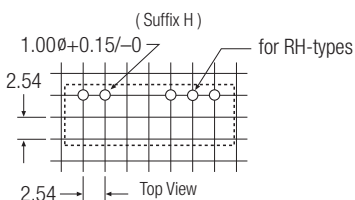
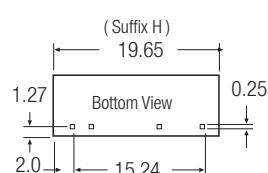
Pin #	Single
1	+Vin
2	-Vin
5	-Vout
7	+Vout

**Pin Connections**

**RH-xxxxD**

Pin #	Dual
1	+Vin
2	-Vin
5	-Vout
6	Com
7	+Vout

**Recommended Footprint Details**



XX.X ± 0.5 mm  
XX.XX ± 0.25 mm