

## Features

## Unregulated Converters

Rev.0

- Safety standards and approval: EN 60950 certified, rated for 250VAC
- Optional Continuous Short Circuit Protected
- 3kVDC & 4kVDC Isolation
- 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	(4kV)	Input Voltage (VDC)	Output Voltage (VDC)	Output Current (mA)	Efficiency (%)
RK-xx05S	(H)	5, 12, 15, 24	5	200	70-78
RK-xx09S	(H)	5, 12, 15, 24	9	111	70-80
RK-xx12S	(H)	5, 12, 15, 24	12	84	78-82
RK-xx15S	(H)	5, 12, 15, 24	15	66	80-82
RH-xx05D	(H)	5, 12, 15, 24	±5	±100	74-78
RH-xx09D	(H)	5, 12, 15, 24	±9	±56	76-79
RH-xx12D	(H)	5, 12, 15, 24	±12	±42	78-84
RH-xx15D	(H)	5, 12, 15, 24	±15	±33	80-84

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 $T_A = 25^\circ\text{C}$ , 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)	1.8V, 3.3V output types	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	RK types	50kHz min. / 100kHz typ. / 105kHz max.
	RH types	57kHz min. / 100kHz typ. / 105kHz max.
Efficiency at Full Load		70% min. / 80% typ.
No Load Power Consumption	RK types	101mW min. / 126mW typ. / 238mW max.
	RH types	87mW min. / 130mW typ. / 228mW max.
Maximum Capacitive Load		33µF / ±10µF
Isolation Voltage	(tested for 1 second)	3000VDC min.
Rated Working Voltage	(long term isolation)	see Application Notes
Isolation Voltage	H-Suffix (tested for 1 second)	4000VDC min.
Rated Working Voltage	H-Suffix (long term isolation)	see Application Notes
Isolation Capacitance	RK types	20pF min. / 75pF max.
	RH types	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
MTBF (+25°C)	RK types	992 x 10 <sup>3</sup> hours
	RH types	1012 x 10 <sup>3</sup> hours
(+85°C)	RK types	145 x 10 <sup>3</sup> hours
	RH types	151 x 10 <sup>3</sup> hours
	using MIL-HDBK 217F	

*Detailed Information see Application Notes chapter "MTBF"*

using MIL-HDBK 217F

## ECONOLINE

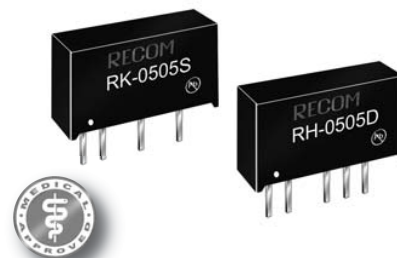
DC/DC-Converter

# RK & RH Series

1 Watt

SIP7

Single & Dual Output

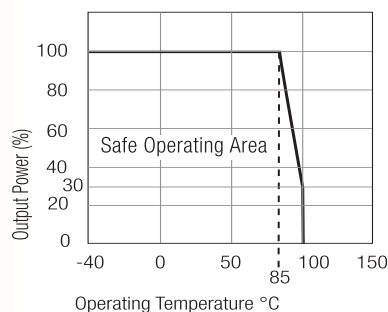


EN-60950-1 Certified

EN-60601-1 Certified

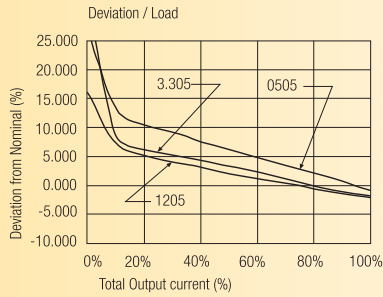
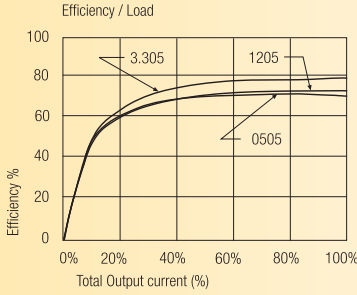
# RECOM

## Derating-Graph (Ambient Temperature)

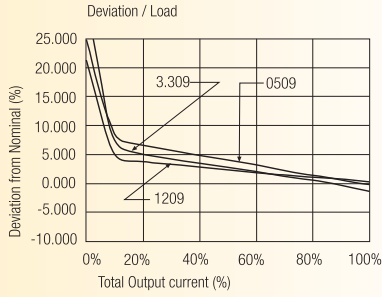
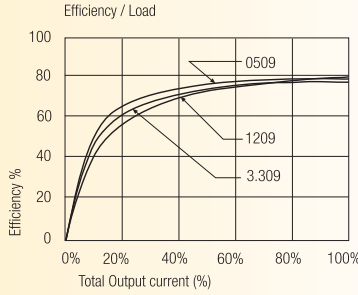


Typical Characteristics

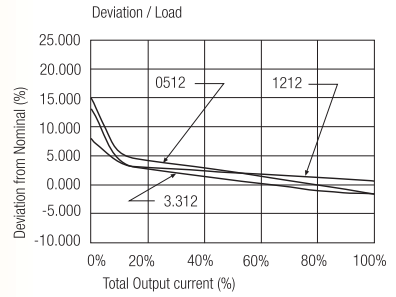
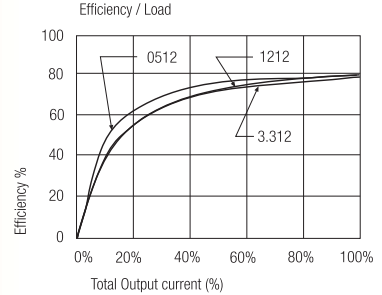
**RK-xx05S**



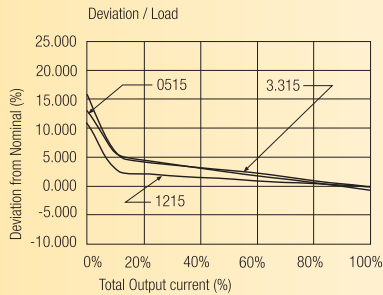
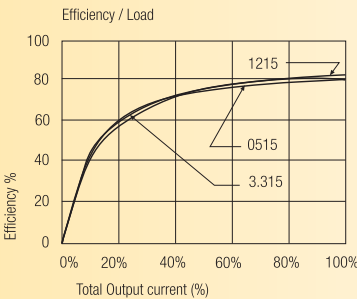
**RK-xx09S**



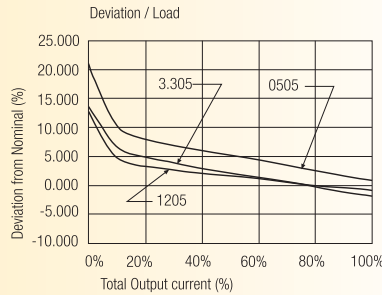
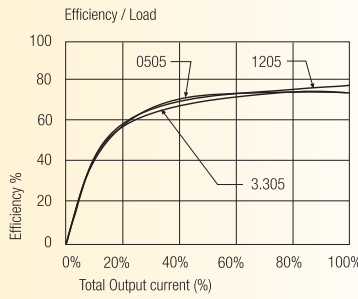
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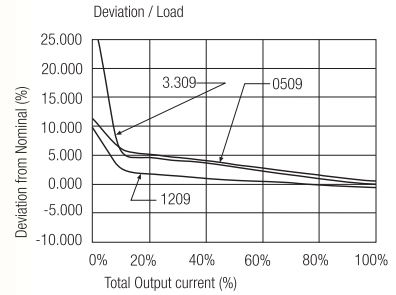
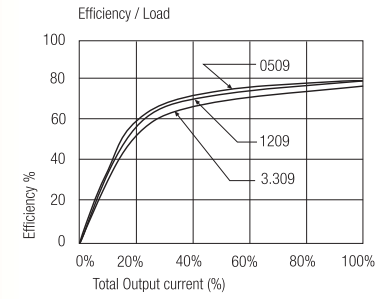
**RK-xx15S**



**RH-xx05D**

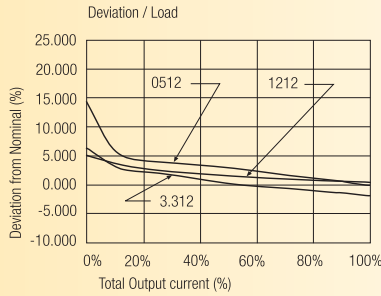
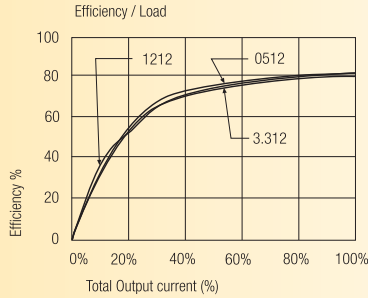


**RH-xx09D**

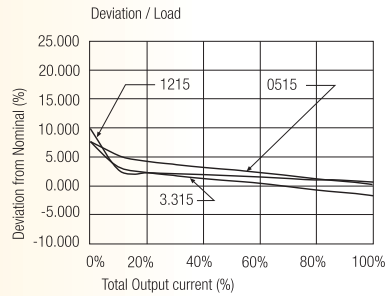
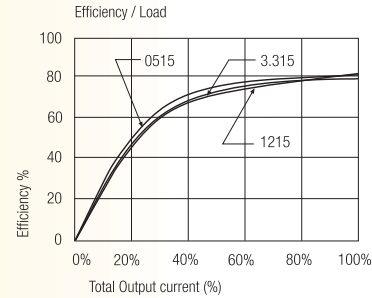


**Typical Characteristics**

**RH-xx12D**

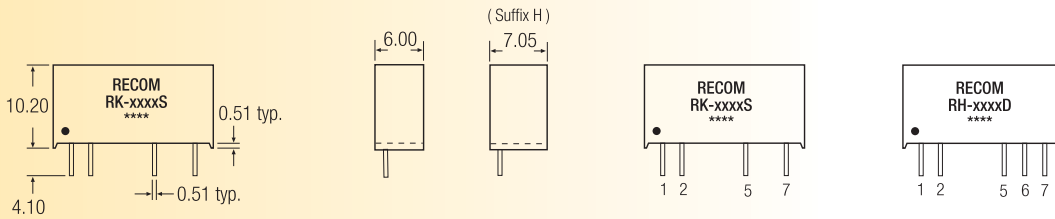


**RH-xx15D**

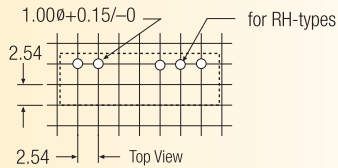
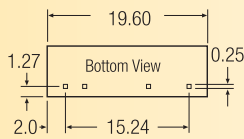


**Package Style and Pinning (mm)**

**7 PIN SIP Package**



**Recommended Footprint Details**



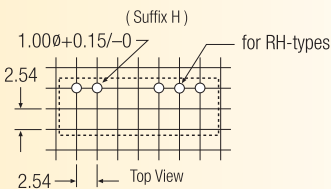
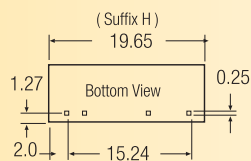
**Pin Connections  
RK-xxxxS**

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