

# Features

## Unregulated Converter

- 3kVDC Et 4kVDC Isolation
- Optional 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		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	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.	
Minimum Load = 0%	Specifications valid for 10% minimum load only.		
Isolation Voltage	(tested for 1 second)	3000VDC	
	(rated for 1 minute)	1500VAC / 60Hz	
Isolation Voltage	H-Suffix (tested for 1 second)	4000VDC	
	H-Suffix (rated for 1 minute)	2000VAC / 60Hz	
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	
Packing Quantity		25 pcs per Tube	
MTBF (+25°C) (+85°C) using MIL-HDBK 217F	} Detailed Information see Application Notes chapter "MTBF"	RK types	992 x 10 <sup>3</sup> hours
		RH types	1012 x 10 <sup>3</sup> hours
	RK types	145 x 10 <sup>3</sup> hours	
	RH types	151 x 10 <sup>3</sup> hours	

# ECONOLINE

## DC/DC-Converter

with 3 year Warranty

# RECOM

## 1 Watt

## SIP7

## Single & Dual Output



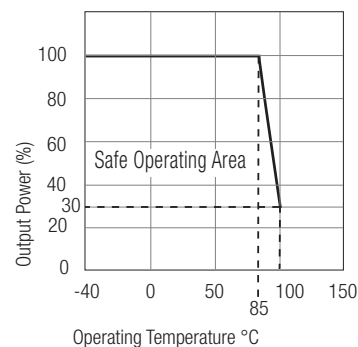
**EN-60950-1 Certified**

**EN-60601-1 Certified**

# RK & RH

## Derating-Graph

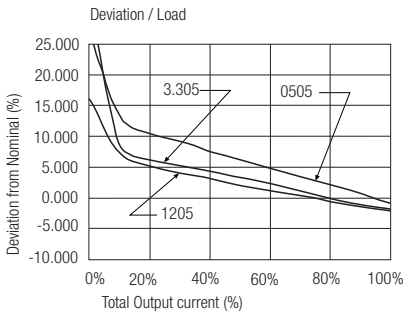
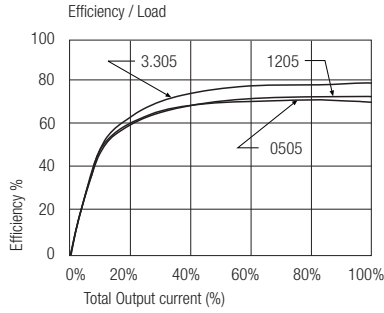
(Ambient Temperature)



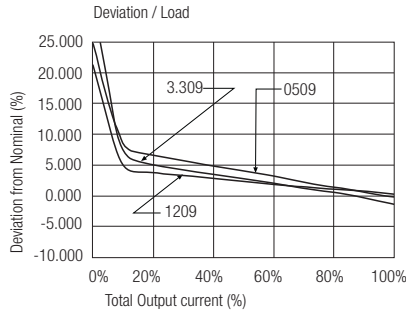
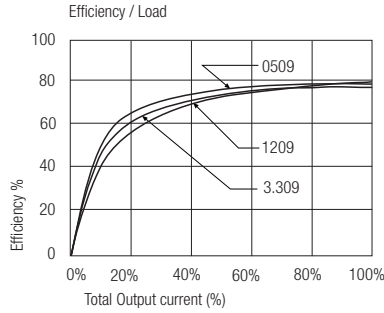
Refer to Application Notes

Typical Characteristics

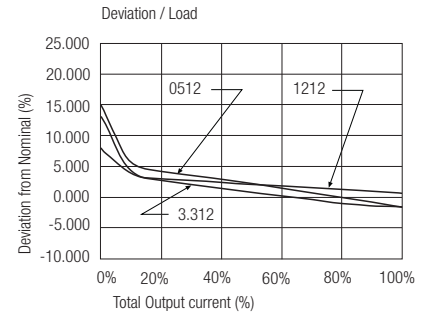
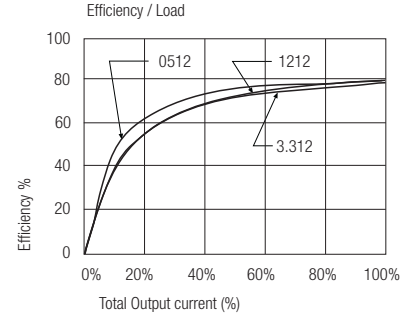
**RK-xx05S**



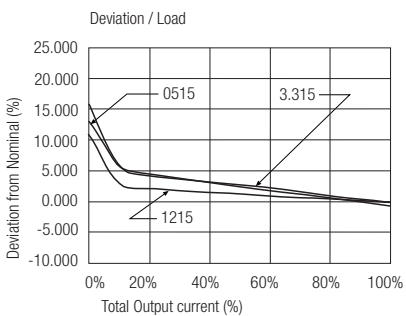
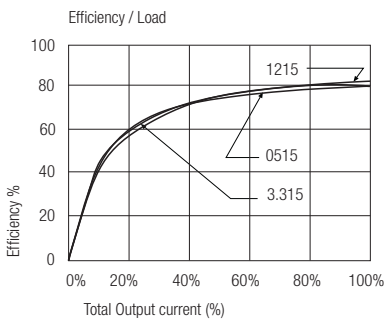
**RK-xx09S**



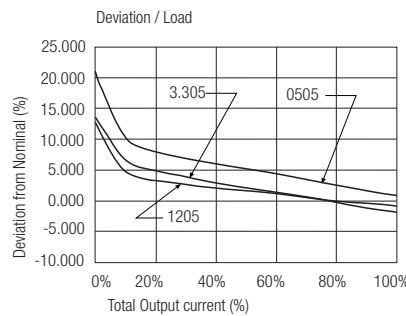
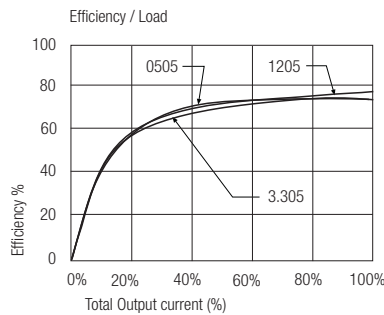
**RK-xx12S**



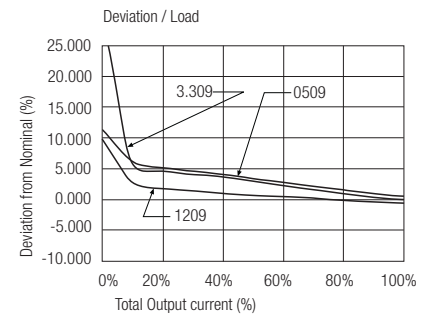
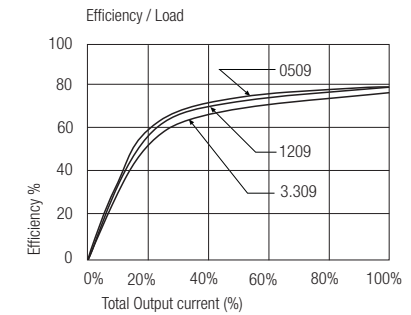
**RK-xx15S**



**RH-xx05D**

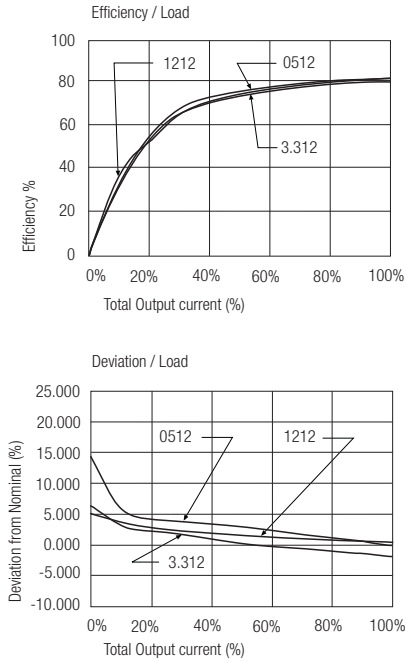


**RH-xx09D**

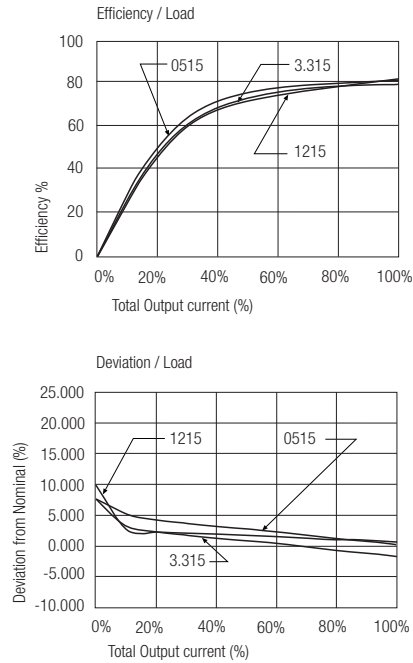


**Typical Characteristics**

**RH-xx12D**



**RH-xx15D**



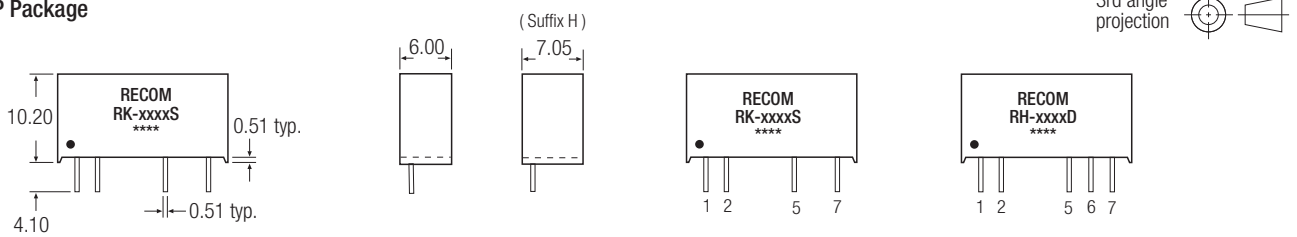
**Notes**  
 Note 1 Maximum capacitive load is defined as the capacitive load that will allow start up in under 1 second without damage to the converter.

**Certifications**

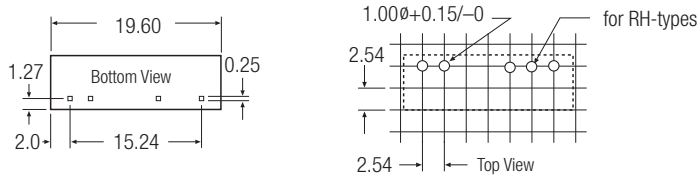
EN General Safety	Report: SPCLVD1109103	EN60950-1: 2006 + A11:2009 + A1:2010 + A12:2011
EN Medical safety	Report: PS090301601	EN 60601-1
EN Medical Safety	Report: MDD1205098-4 + RM1205098-4	IEC/EN 60601-1 3rd Edition Medical Report + ISO14971 Risk Assessment

**Package Style and Pinning (mm)**

**7 PIN SIP Package**

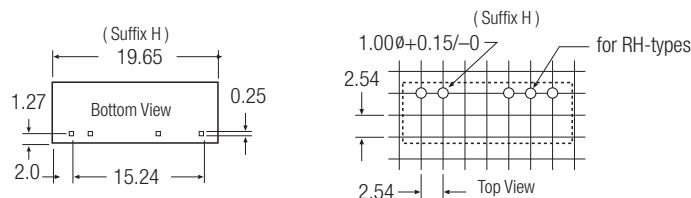


**Recommended Footprint Details**



Pin Connections RK-xxxxS		Pin Connections RH-xxxxD	
Pin #	Single	Pin #	Dual
1	+Vin	1	+Vin
2	-Vin	2	-Vin
5	-Vout	5	-Vout
7	+Vout	6	Com
		7	+Vout

**Recommended Footprint Details**



XX.X ± 0.5 mm  
 XX.XX ± 0.25 mm