

Features

Unregulated Converter

- 3kVDC & 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 ⁽¹⁾
SIP 7	(4kV)					
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_A = 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	1.8V, 3.3V output types	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	±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)	RK types	992 x 10 ³ hours
	RH types	1012 x 10 ³ hours
(+85°C)	RK types	145 x 10 ³ hours
	RH types	151 x 10 ³ hours
using MIL-HDBK 217F		

Detailed Information see Application Notes chapter "MTBF"

ECONOLINE

DC/DC-Converter

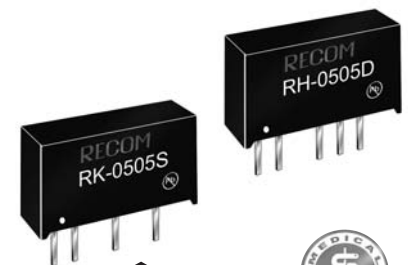
with 3 year Warranty

RECOM

1 Watt

SIP7

Single & Dual Output



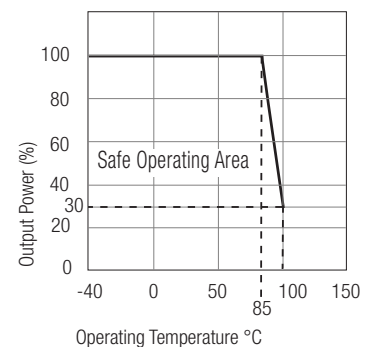
EN-60950-1 Certified

EN-60601-1 Certified

RK & RH

Derating-Graph

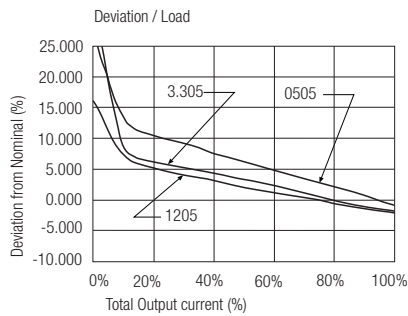
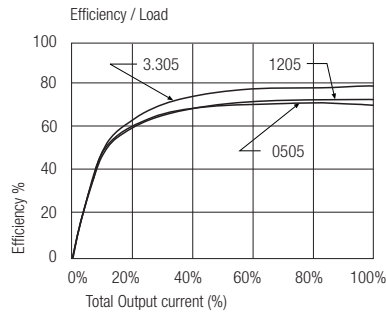
(Ambient Temperature)



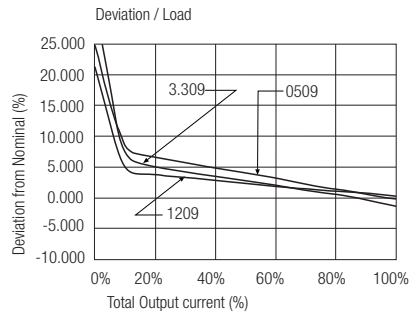
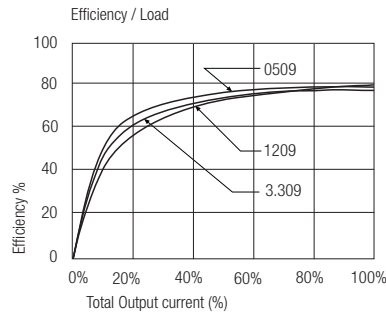
Refer to Application Notes

Typical Characteristics

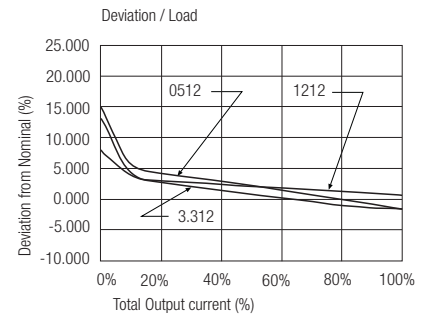
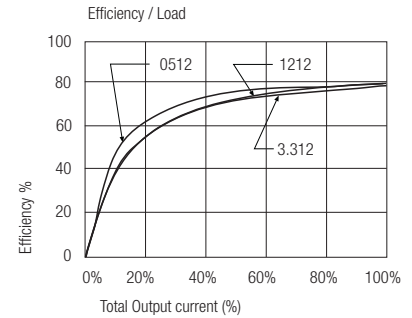
RK-xx05S



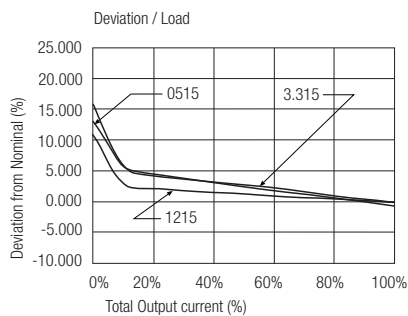
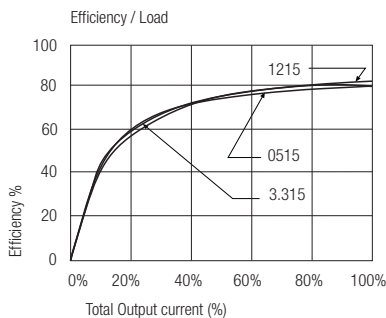
RK-xx09S



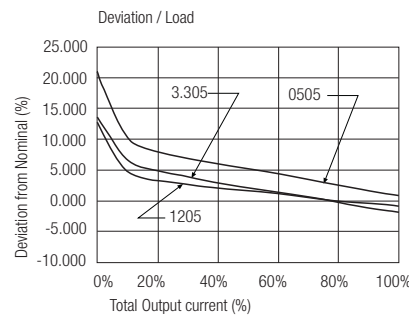
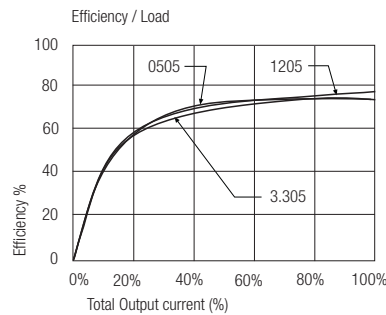
RK-xx12S



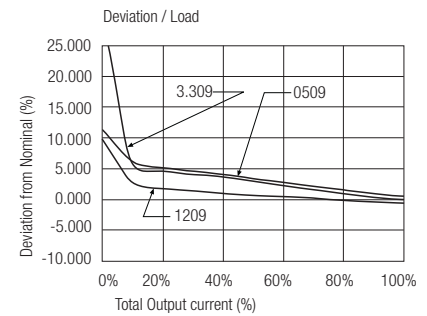
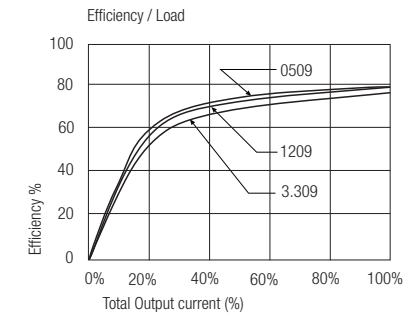
RK-xx15S



RH-xx05D

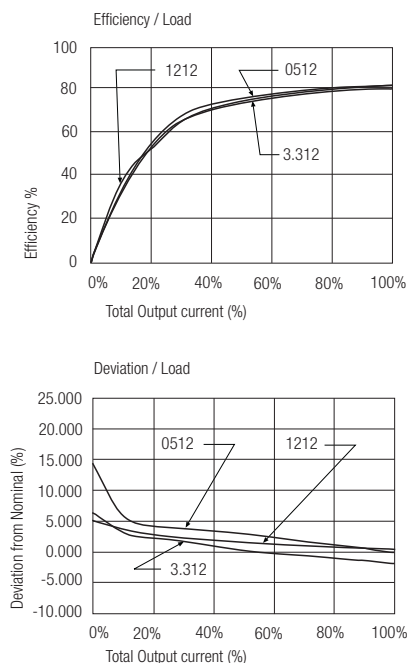


RH-xx09D

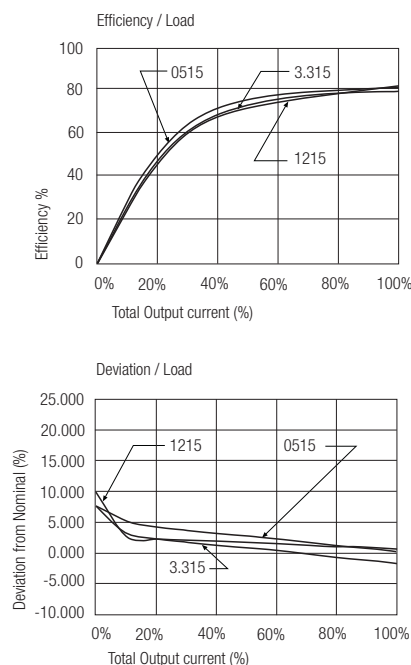


Typical Characteristics

RH-xx12D



RH-xx15D



Notes

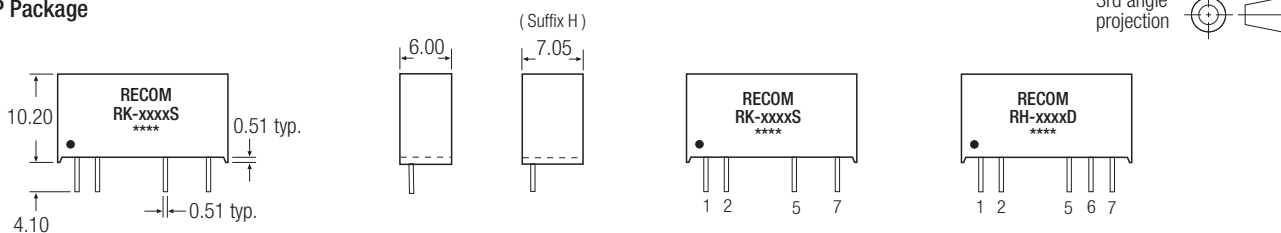
Note 1 Maximum capacitive load is defined as the capacitive load that will allow start up in under 1 second without damage to the converter.

Certifications

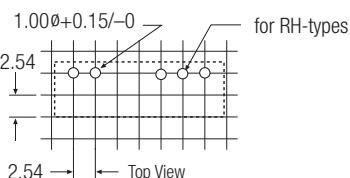
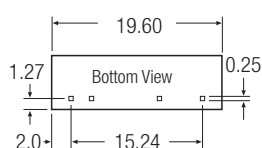
EN General Safety	Report: SPCLVD1109103	EN60950-1: 2006 + A11:2009 + A1:2010 + A12:2011
EN Medical safety	Report: PS090301601	EN 60601-1
EN Medical Safety	Report: MDD1205098-4 + RM1205098-4	IEC/EN 60601-1 3rd Edition Medical Report + ISO14971 Risk Assessment

Package Style and Pinning (mm)

7 PIN SIP Package



Recommended Footprint Details



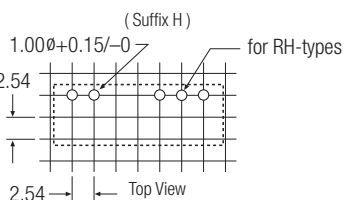
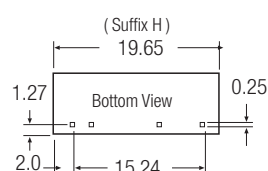
**Pin Connections
RK-xxxxS**

Pin #	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