

Features

Unregulated Converter

- 3kVDC or 4kVDC Isolation
- Optional Continuous Short Circuit Protected
- Custom Solutions Available
- UL94V-0 Package Material
- Efficiency to 84 %
- Suitable for IGBT Applications

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 $+90^{\circ}\text{C}$ is a standard feature. The converters are EN-60601-1 certified, making them suitable for medical as well as IGBT driver applications.

Selection Guide

Part Number	(4kV)	Input Voltage (VDC)	Output Voltage (VDC)	Output Current (mA)	Efficiency (%)	Max Capacitive Load ⁽¹⁾
RK-xx05S*	(H)	5, 12, 15, 24	5	200	70-78	1000 μF
RK-xx09S*	(H)	5, 12, 15, 24	9	111	70-80	1000 μF
RK-xx12S*	(H)	5, 12, 15, 24	12	84	78-82	470 μF
RK-xx15S*	(H)	5, 12, 15, 24	15	66	80-82	470 μF
RH-xx05D*	(H)	5, 12, 15, 24	± 5	± 100	74-78	$\pm 470\mu\text{F}$
RH-xx09D*	(H)	5, 12, 15, 24	± 9	± 56	76-79	$\pm 470\mu\text{F}$
RH-xx12D*	(H)	5, 12, 15, 24	± 12	± 42	78-84	$\pm 220\mu\text{F}$
RH-xx15D*	(H)	5, 12, 15, 24	± 15	± 33	80-84	$\pm 220\mu\text{F}$
RH-xx1509D*	(H)	5, 12, 24	+15/-9	+33/-56	70-81	+220/-470 μF

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		$\pm 10\%$
Output Voltage Accuracy		$\pm 5\%$
Line Voltage Regulation		1.2%/1% of V_{in} typ.
Load Voltage Regulation (10% to 100% full load)	5V output type	15% max.
	9V, 12V, 15V, 24V output types	10% max.
	RH-xx1509D	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	RK types	50kHz min. / 100kHz typ. / 105kHz max.
	RH types	57kHz min. / 100kHz typ. / 105kHz max.
	RK-xx1509D	50kHz min. / 88kHz typ.
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 G Ω min.
Short Circuit Protection		1 Second
P-Suffix		Continuous
Operating Temperature Range (free air convection, without derating)		-40°C to $+90^{\circ}\text{C}$ (see Graph)
Storage Temperature Range		-55°C to $+125^{\circ}\text{C}$
Relative Humidity		95% RH

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ECONOLINE

DC/DC-Converter

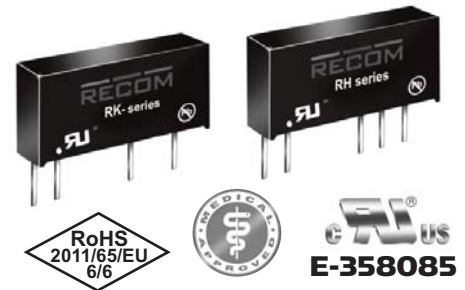
with 3 year Warranty

RECOM

1 Watt

SIP7

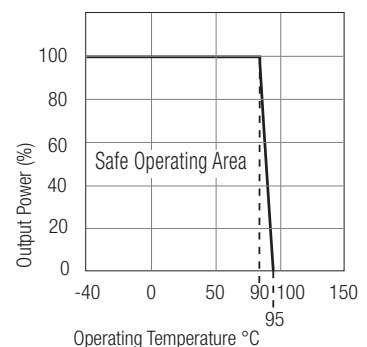
Single & Dual Output



EN-60950-1 Certified
IEC/EN-60601-1 Certified**
UL-60950-1 Certified**
**** +15/-9 Version excluded**

RK_RH

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		2.6g	
H-Suffix		2.8g	
Packing Quantity		25 pcs per Tube	
MTBF (+25°C)	} Detailed Information see Application Notes chapter "MTBF"	RK types	992 x 10 ³ hours
(+85°C)		RH types	1012 x 10 ³ hours
using MIL-HDBK 217F		RK types	145 x 10 ³ hours
		RH types	151 x 10 ³ hours

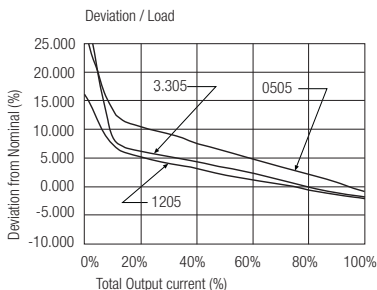
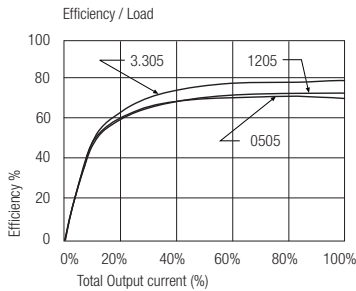
Certifications

EN General Safety	Report: SPCLVD1109103
EN Medical Safety	Report: SPCMDD1205098-4
UL General Safety	Report: E358085

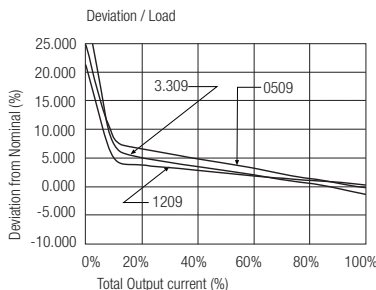
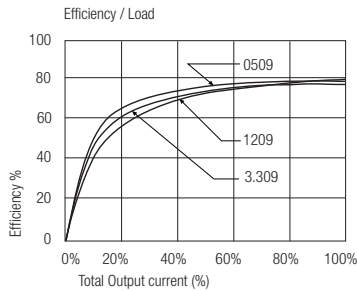
EN60950-1: 2006 + A12:2011
IEC/EN 60601-1: 2006, 3rd Edition
UL60950-1, 2nd Edition

Typical Characteristics

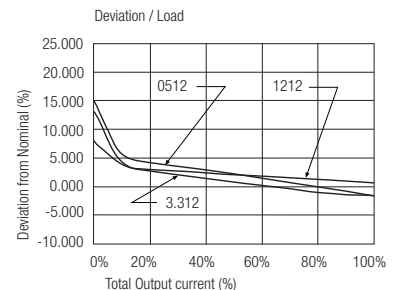
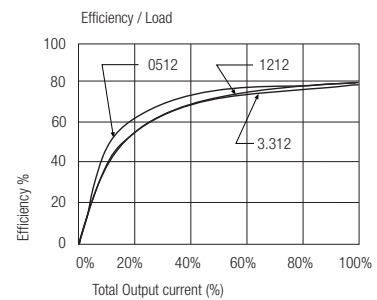
RK-xx05S



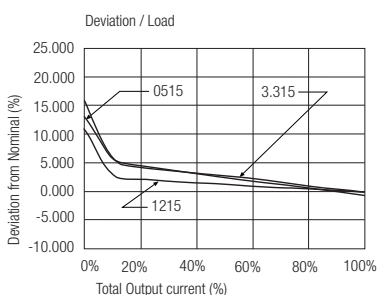
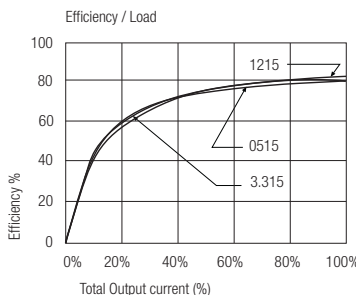
RK-xx09S



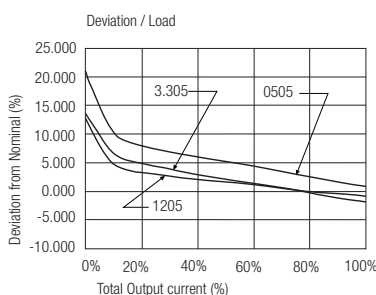
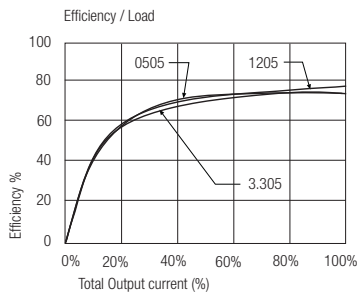
RK-xx12S



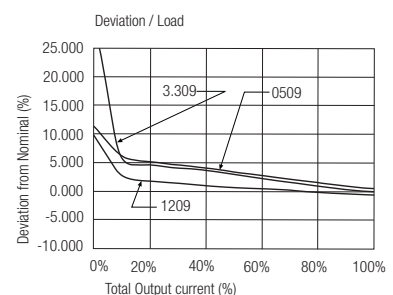
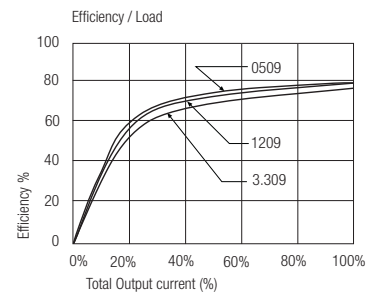
RK-xx15S



RH-xx05D



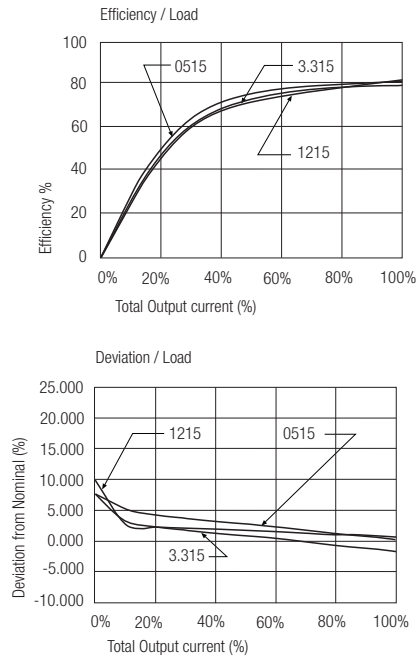
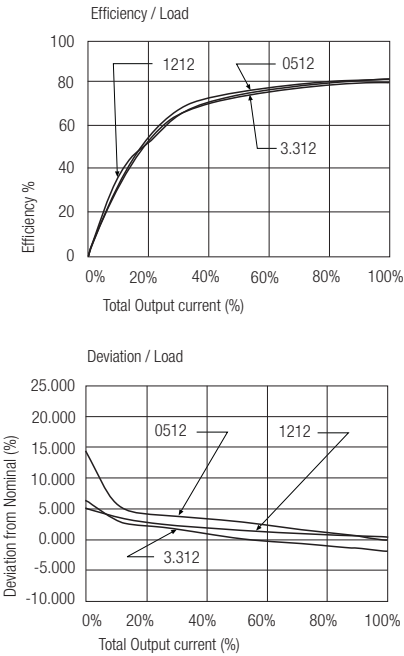
RH-xx09D



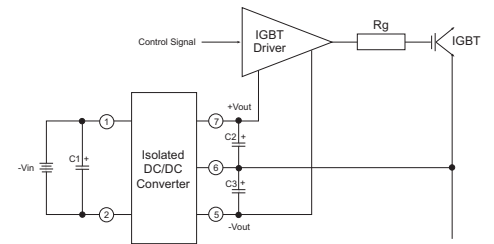
Typical Characteristics

RH-xx12D

RH-xx15D



IGBT Application Circuit

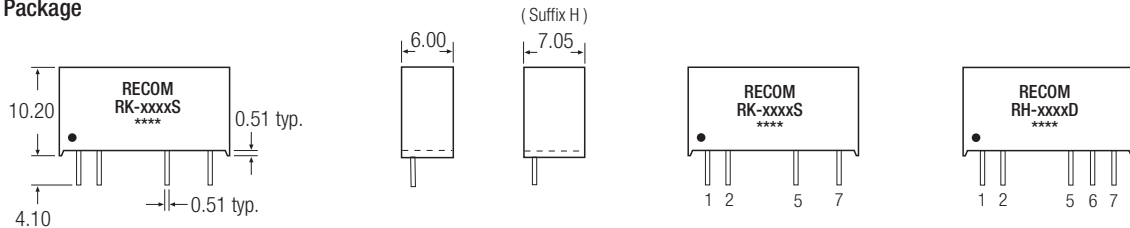


Notes

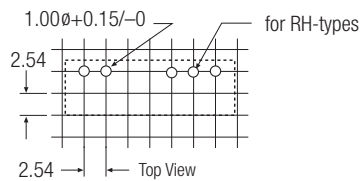
Note 1 Maximum capacitive load is defined as the capacitive load that will allow start up in under 1 second without damage to the converter.

Package Style and Pinning (mm)

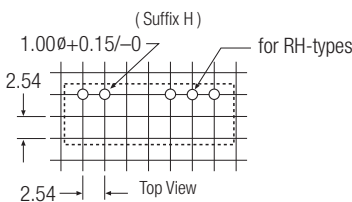
7 PIN SIP Package



Recommended Footprint Details



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

XX.X ± 0.5 mm
XX.XX ± 0.25 mm

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