

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°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 SIP 7	(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	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
RH-xx1509D*	(H)	5, 12, 24	+15/-9	+33/-56	70-81	+220/-470µF

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	5V output type	15% max.
(10% to 100% full load)	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	±75mVp-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)
	H-Suffix	(rated for 1 minute)
		4000VDC
		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, without derating)	-40°C to +90°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)	} Detailed Information see Application Notes chapter "MTBF"	RK types
		992 x 10 ³ hours
		RH types
		1012 x 10 ³ hours
(+85°C)	}	RK types
		145 x 10 ³ hours
using MIL-HDBK 217F	}	RH types
		151 x 10 ³ hours

ECONOLINE

DC/DC-Converter

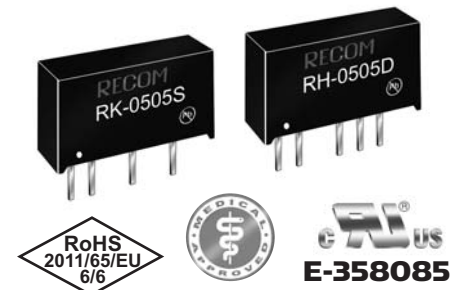
with 3 year Warranty

RECOM

1 Watt

SIP7

Single & Dual Output

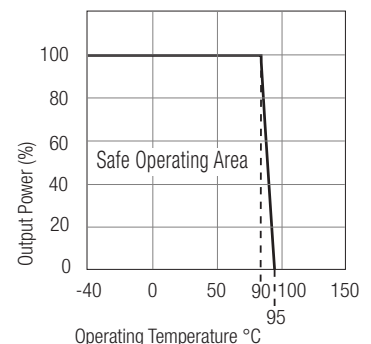


EN-60950-1 Certified
IEC/EN-60601-1 Certified*
UL-60950-1 Certified*
*** +15/-9 Version excluded**

RK_RH

Derating-Graph

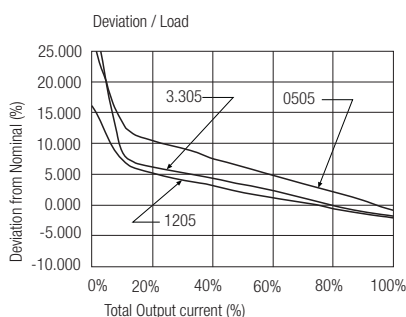
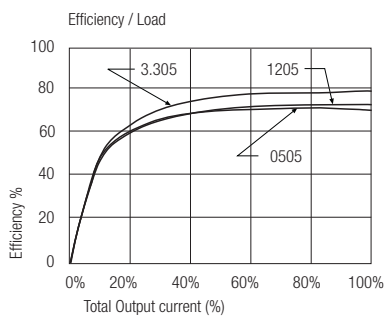
(Ambient Temperature)



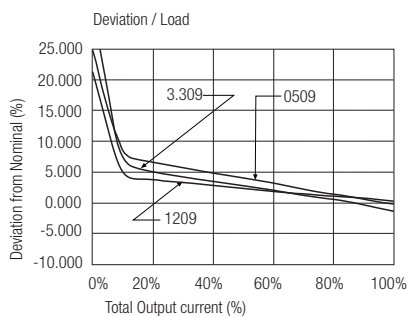
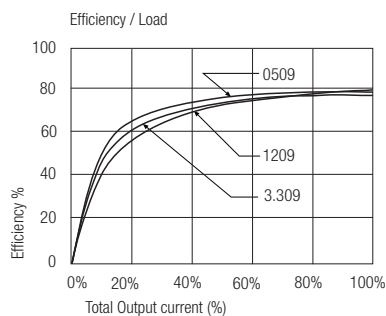
Refer to Application Notes

Typical Characteristics

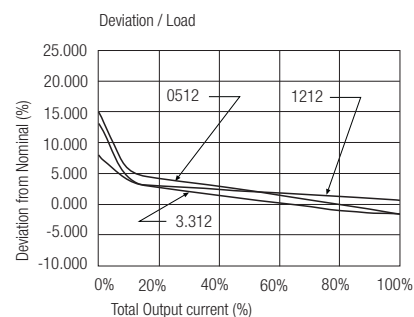
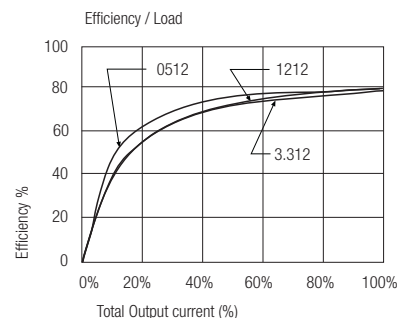
RK-xx05S



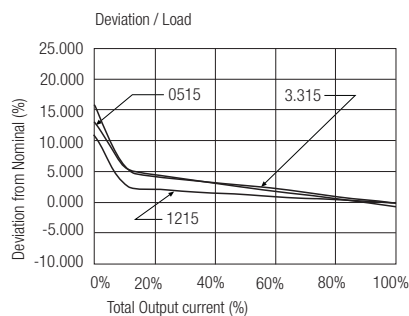
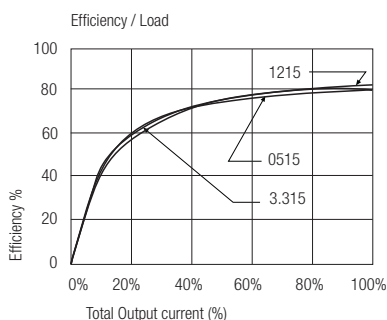
RK-xx09S



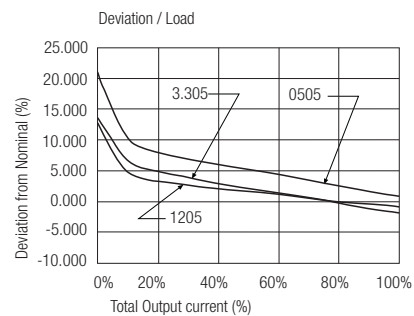
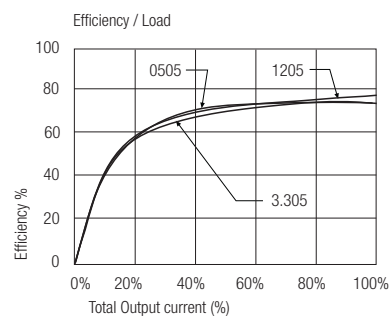
RK-xx12S



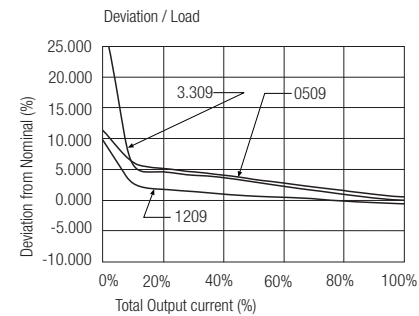
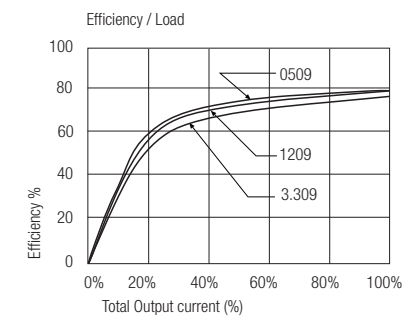
RK-xx15S



RH-xx05D

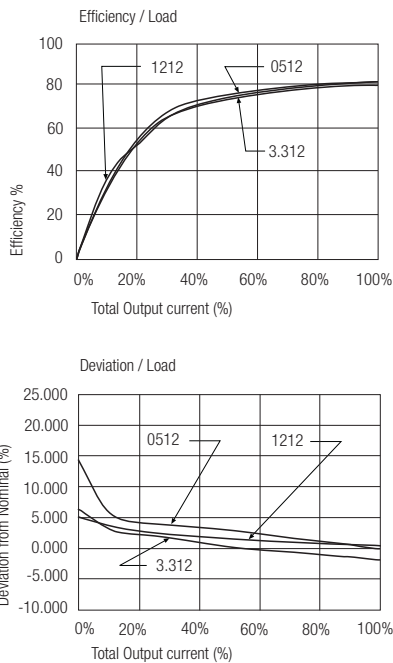


RH-xx09D

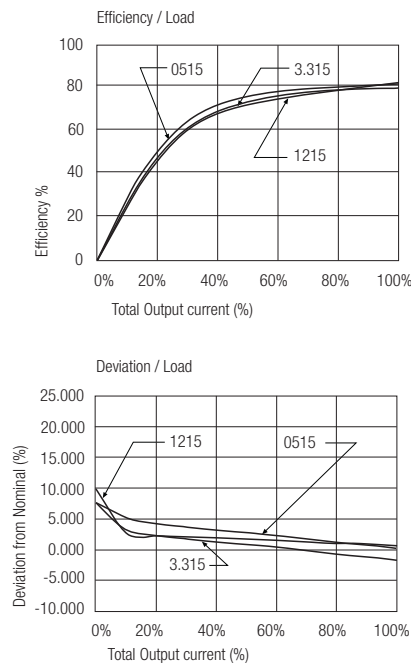


Typical Characteristics

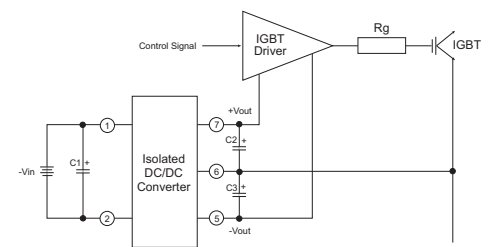
RH-xx12D



RH-xx15D



IGBT Application Circuit



Notes

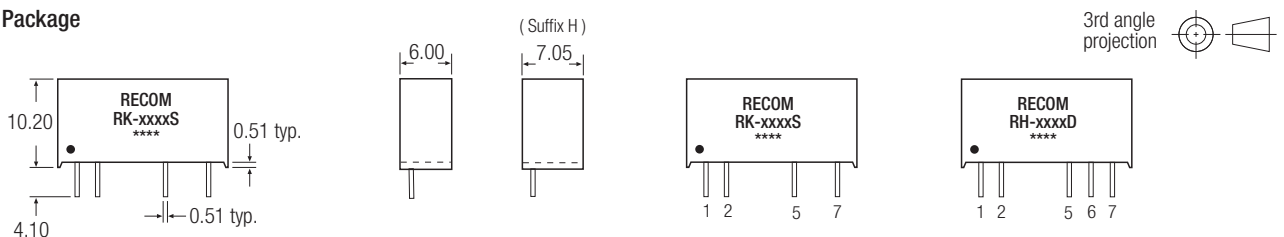
Note 1 Maximum capacitive load is defined as the capacitive load that will allow start up in under 1 second without damage to the converter.

Certifications

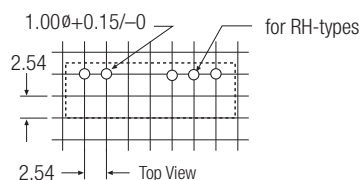
EN General Safety	Report: SPCLVD1109103	EN60950-1: 2006 + A12:2011
EN Medical Safety	Report: SPCMD1205098-4	IEC/EN 60601-1: 2006, 3rd Edition
UL General Safety	Report: E358085	UL60950-1, 2nd Edition

Package Style and Pinning (mm)

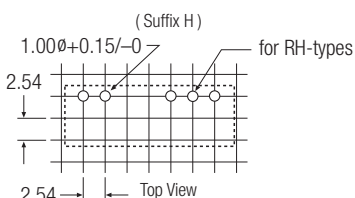
7 PIN SIP Package



Recommended Footprint Details



Recommended Footprint Details



Pin Connections
RK-xxxxS

Pin #	Single
1	+V _{in}
2	-V _{in}
5	-V _{out}
7	+V _{out}

Pin Connections
RH-xxxxD

Pin #	Dual
1	+V _{in}
2	-V _{in}
5	-V _{out}
6	Com
7	+V _{out}

XX.X $\pm$ 0.5 mm
XX.XX $\pm$ 0.25 mm