

## Features

### Unregulated Converters

- High Isolation 2W Converter
- Approved for Medical Applications
- Custom Solutions Available
- 3kVDC and 4kVDC Isolation Options
- UL94V-0 Package Material
- Optional Continuous Short Circuit Protected
- Efficiency to 84 %
- Suitable for IGBT Applications

#### Description

The RKZ Series of 2W DC/DC Converters are certified to EN 60950-1 and to the medical standard EN-60601-1. This makes them suitable for high end industrial applications such as IGBT driver circuitry as well as standard medical applications.  
The RUZ converters are pin-compatible with the RK and RH converter series, offering a simple way to upgrade a 1W high isolation supply to 2W.

#### Selection Guide

Part Number	4kV	Input Voltage (VDC)	Output Voltage (VDC)	Output Current (mA)	Efficiency (%)	Max Capacitive Load <sup>(1)</sup>
RKZ-xx05S*	(H)	5, 12, 24	5	400	82-84	1500µF
RKZ-xx12S*	(H)	5, 12, 24	12	168	82-87	330µF
RKZ-xx15S*	(H)	5, 12, 24	15	132	82-84	330µF
RKZ-xx05D*	(H)	5, 12, 24	±5	±200	70-83	±680µF
RKZ-xx12D*	(H)	5, 12, 24	±12	±84	82-84	±220µF
RKZ-xx15D*	(H)	5, 12, 24	±15	±66	82-88	±220µF
RKZ-xx1509D*	(H)	5, 12, 24	+15/-9	+67/-111	70-81	±330µF

xx = Input Voltage. Other input and output voltage combinations available on request.

\* add Suffix "P" for Continuous Short Circuit Protection, e.g. RKZ-0515D/P,

\* add Suffix „H" for 4kV Isolation, e.g. RKZ-0515D/HP has 4kV Isolation and is Short Circuit Protected.

#### 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	low line to high line @ 100% load	1.2%/1% of Vin typ.
Load Voltage Regulation	5V type	15% max.
(10% to 100% load)	Other types, RKZ-xx1509D	10% max.
Output Ripple and Noise	20MHz limited	150mVp-p max.
Operating Frequency	20kHz min. / 50kHz typ. / 85kHz max.	
	RKZ-xx1509D	20kHz min. / 51kHz 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	120pF max.	
Isolation Resistance	10 GΩ min.	
Short Circuit Protection	only with „P"-Suffix	continuous
Operating Temperature Range (free air convection, without derating)	-40°C to +85°C (see Graph)	
Storage Temperature Range	-55°C to +125°C	
Relative Humidity	5% - 95% RH	
Package Weight	2.8g	
Material	Case	UL94V-0, black plastic
	Potting	UL94V-0, Epoxy
Packing Quantity	25 pcs per Tube	
MTBF (+25°C)	Detailed Information see Application Notes chapter "MTBF"	using MIL-HDBK 217F 18300 x 10 <sup>3</sup> hours
(+85°C)		using MIL-HDBK 217F 8070 x 10 <sup>3</sup> hours

continued on next page

## ECONOLINE

### DC/DC-Converter

with 3 year Warranty

RECOM

2 Watt

SIP7

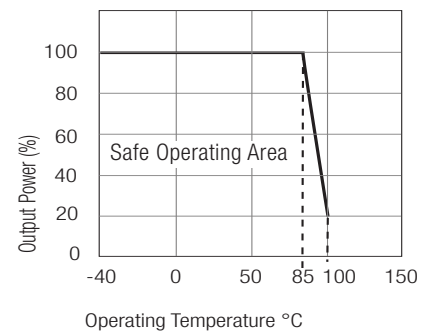
Single & Dual Output



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

**RKZ**

## 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)

#### Certifications

EN General Safety

Report: SPCLVD1109103

EN60950-1:2006 + A12:2011

EN Medical safety

Report: SPCMDD1205098-4

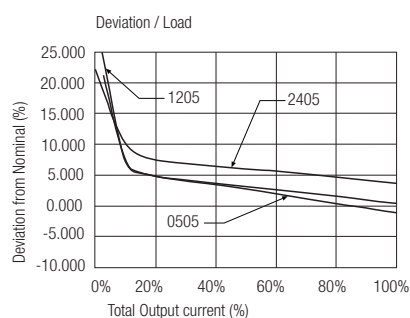
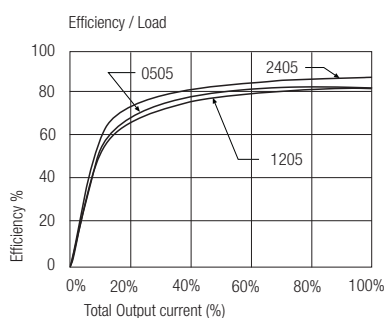
IEC/EN 60601-1:2006, 3rd Edition

#### Notes

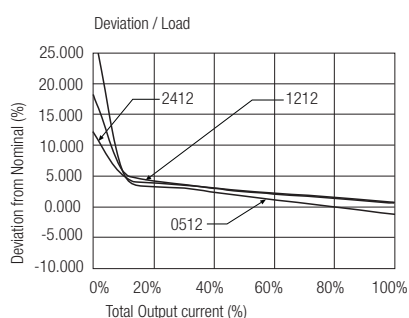
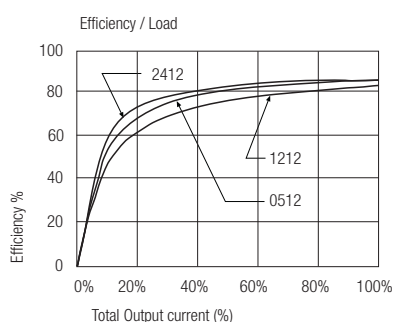
Note 1 Maximum capacitive load is defined as the capacitive load that will allow start up in under 1 second without damage to the converter.

### Typical Characteristics

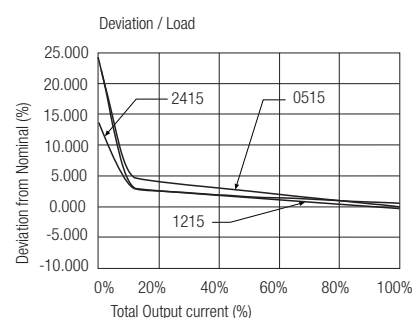
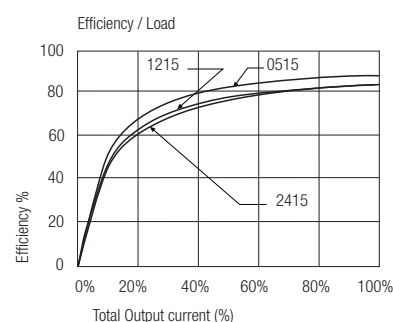
## RKZ-xx05S



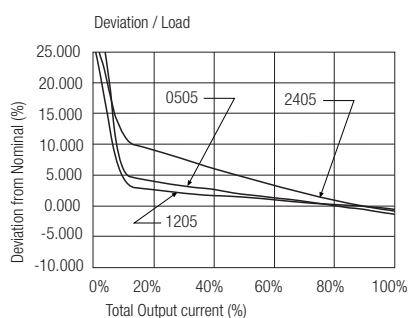
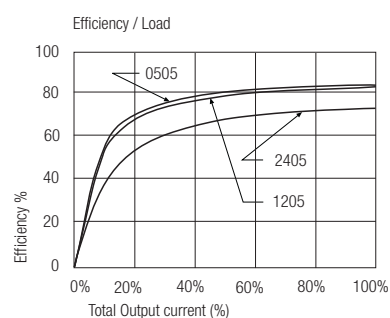
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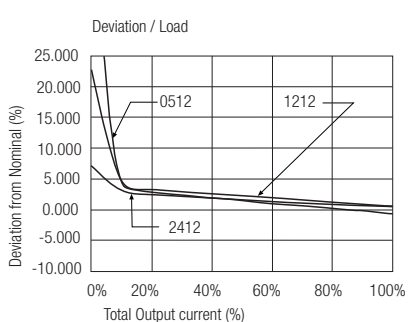
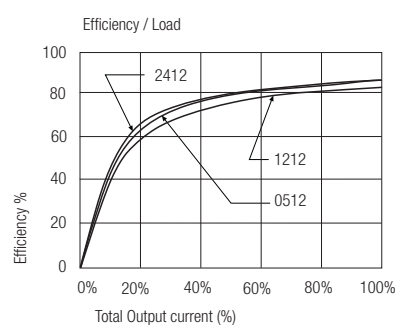
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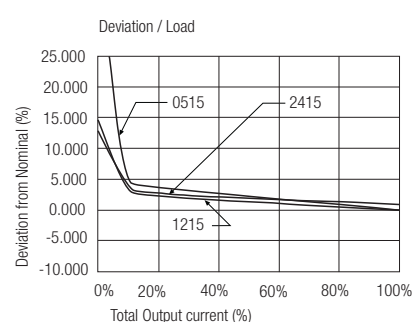
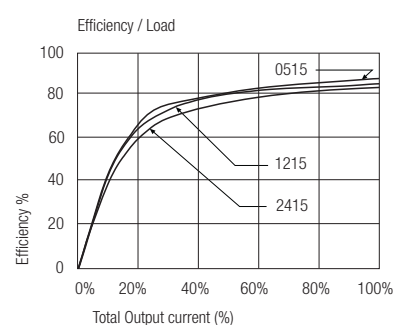
## RKZ-xx05D



## RKZ-xx12D

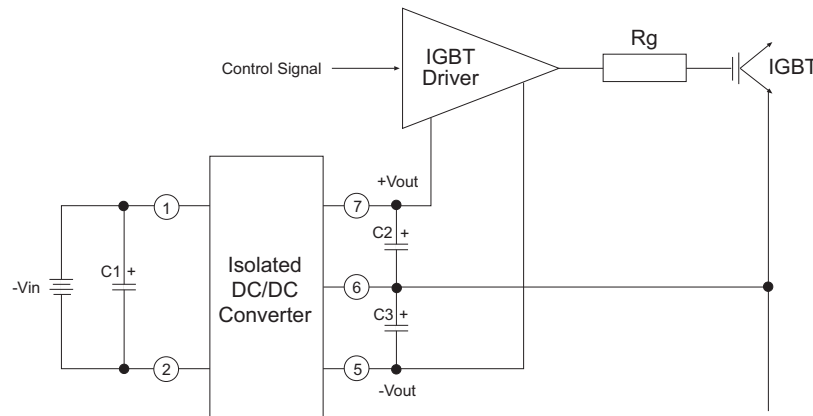


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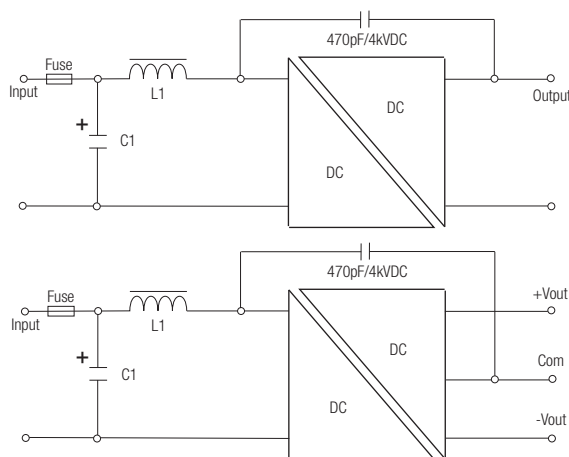


Application

**IGBT Application Circuit**



EMC Filter Suggestion for EN55022 Class B



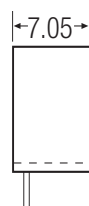
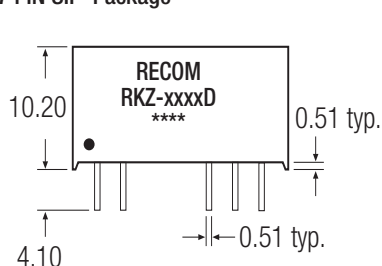
Standard and /H versions

C1	L1	Vin
10μF	4.7μH	5V
4.7μF	22μH	12V
2.2μF	47μH	24V

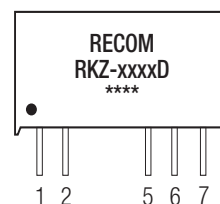
C1 = MLCC  
L1 = SMD Inductor

Package Style and Pinning (mm)

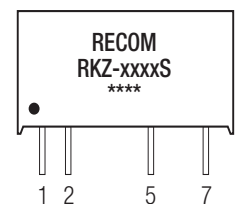
7 PIN SIP Package



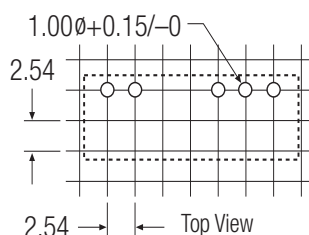
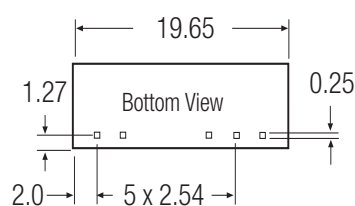
Dual Output



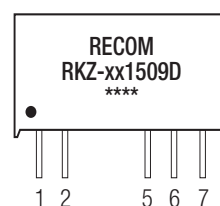
Single Output



Recommended Footprint Details



+15/-9 Output



Pin Connections

Pin #	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
5	-Vout	-Vout
6	No Pin	Com
7	+Vout	+Vout

NC = No Connection

XX.X ± 0.5 mm

XX.XX ± 0.25 mm

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