

## Features

## Unregulated Converters

- UL/CSA and EN Safety certified
- EN-60601 for Medical Applications
- Isolation 6.4kVDC
- Optional Continuous Short Circuit Protected
- /X2 Option for >9mm Input/Output Clearance
- Suitable for IGBT Applications

### Description

The RxxPxxS\_D Series of DC/DC Converters are certified to UL/CSA-60950 as well as EN60950 and EN60601. This makes them ideal for medical and safety applications where approved isolation is required.

### Selection Guide

Part Number SIP 7	Input Voltage (VDC)	Output Voltage (VDC)	Output Current (mA)	Efficiency Std (%)	Max Capacitive Load <sup>(1)</sup>
RxxP3.3S*	5, 9, 12, 15, 24	3.3	303	70	2200µF
RxxP05S*	5, 9, 12, 15, 24	5	200	70-75	1000µF
RxxP09S*	5, 9, 12, 15, 24	9	111	70-75	1000µF
RxxP12S*	5, 9, 12, 15, 24	12	84	70-75	470µF
RxxP15S*	5, 9, 12, 15, 24	15	66	75-80	470µF
RxxP3.3D*	5, 9, 12, 15, 24	±3.3	±151	70	±1000µF
RxxP05D*	5, 9, 12, 15, 24	±5	±100	70-75	±470µF
RxxP09D*	5, 9, 12, 15, 24	±9	±55	70-75	±470µF
RxxP12D*	5, 9, 12, 15, 24	±12	±41	70-75	±220µF
RxxP15D*	5, 9, 12, 15, 24	±15	±33	75-80	±220µF
RxxP1509D*	12, 24	+15/-9	+33/-56	70-80	±220µF
R05P1509D*	5	+15/-9	±42	70-80	+68µF/-220µF

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

\* add Suffix "P" for Continuous Short Circuit Protection, e.g. R05P05S/P, R05P05D/P

\* add Suffix "/X2" for single output with alternative pinout, e.g. R05P05S/X2, R05P05S/P/X2

### Specifications (measured at $T_A = 25^\circ\text{C}$ , nominal input voltage, full load and after warm-up)

Input Voltage Range	±10%
Output Voltage Accuracy	±5%
Line Voltage Regulation	1.2%/1% of $V_{in}$ typ.
Load Voltage Regulation	3.3, 5V output types 15% max.
(10% to 100% full load)	other output types, RxxP1509D 10% max.
Output Ripple and Noise (20MHz BW)	200mVp-p max.
Operating Frequency	20kHz min. / 50kHz typ. / 85kHz max.
	RxxP1509D 20kHz min. / 60kHz typ.
Efficiency at Full Load	65% min. / 75% typ.
Minimum Load = 0%	Specifications valid for 10% minimum load only
Isolation Voltages	(tested for 1 second) 6400VDC
	(rated for 1 minute**) 3200VAC / 60Hz
Isolation Capacitance	4pF min. / 10pF 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

continued on next page

## ECONOLINE

## DC/DC-Converter

with 3 year Warranty

# RECOM

## 1 Watt

## SIP 7 Single

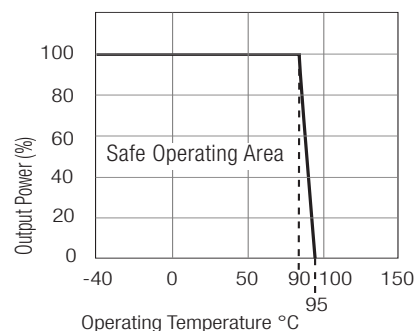
## & Dual Output



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

# RxxPxx

## 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

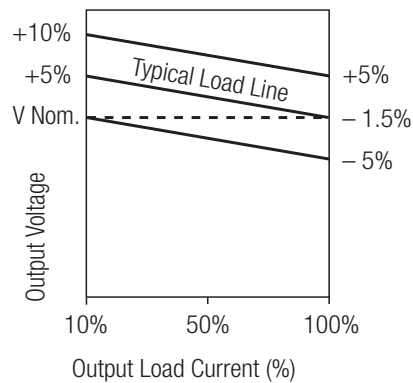
## Specifications (measured at $T_A = 25^\circ\text{C}$ , nominal input voltage, full load and after warm-up))

Package Weight	4.3g		
Packing Quantity	25 pcs per Tube		
MTBF (+25°C)	Detailed Information see Application Notes chapter "MTBF"	using MIL-HDBK 217F	2974 x 10 <sup>3</sup> hours
(+85°C)		using MIL-HDBK 217F	728 x 10 <sup>3</sup> hours
Certifications			
UL/cUL General Safety	Report: E358085-A8	UL 60950-1 2nd Ed.	
EN General Safety	Report: SPCLVD1305069	EN60950-1:2006 + A12: 2011	
EN Medical Safety	Report: SPCMDD1205098-4	IEC/EN60601-1:2006, 3rd Edition	

## Notes

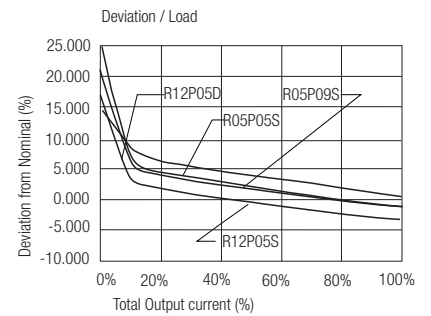
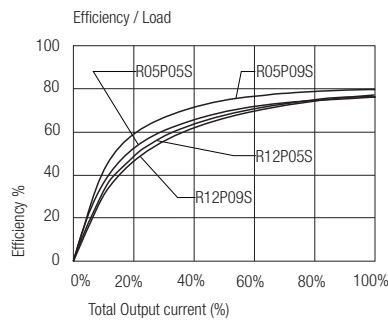
Note 1 Maximum capacitive load is defined as the capacitive load that will allow start up in under 1 second without damage to the converter.

## Tolerance Envelope

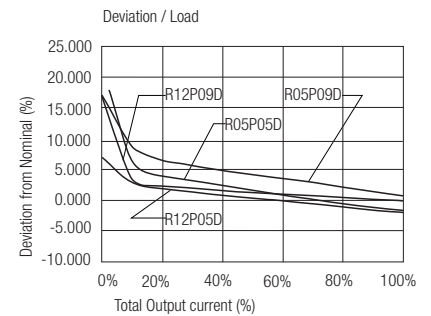
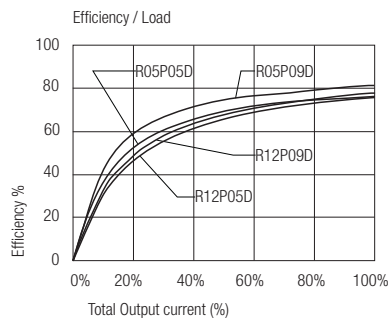


## Typical Characteristics

RxxP05S  
RxxP09S

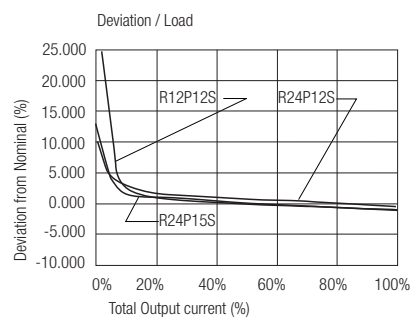
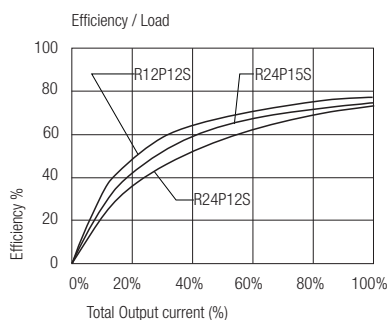


RxxP05D  
RxxP09D

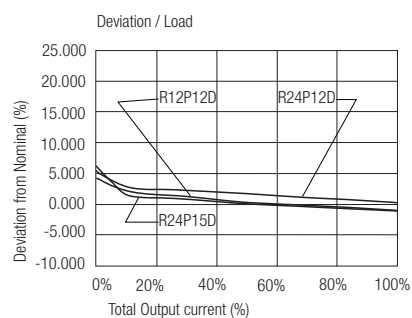
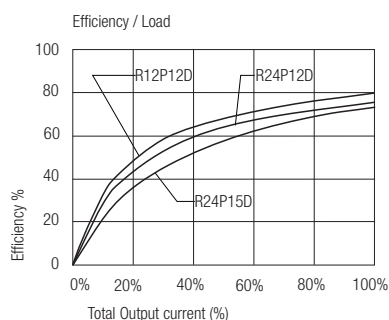


## Typical Characteristics

### RxxP12S RxxP15S

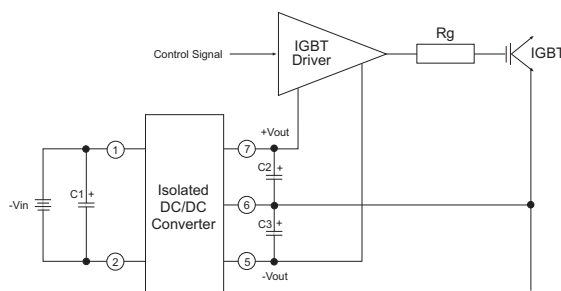


### RxxP12D RxxP15D



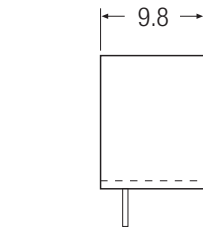
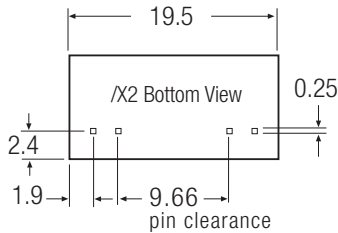
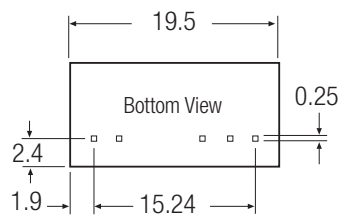
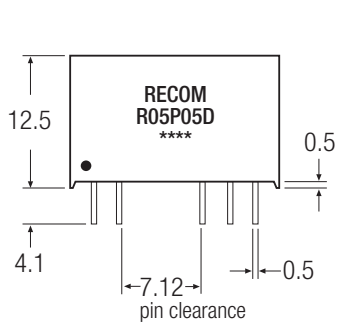
## Application

### IGBT Application Circuit

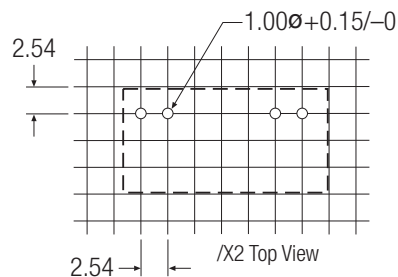
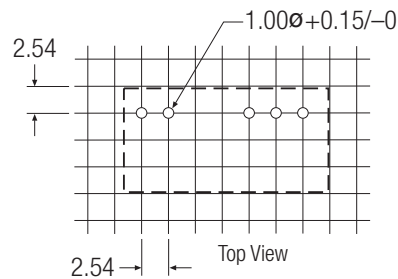


**Package Style and Pinning (mm)**

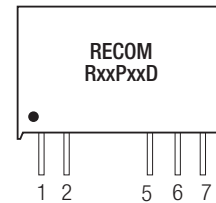
**7 PIN SIP Package**



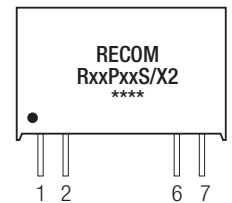
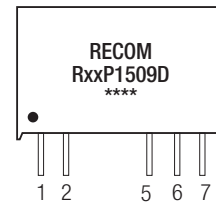
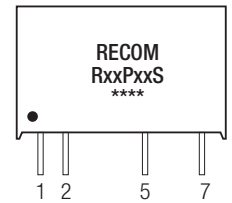
**Recommended Footprint Details**



**Dual Output**



**Single Output**



**Pin Connections**

Pin #	Single	Dual	/X2
1	+Vin	+Vin	+Vin
2	-Vin	-Vin	-Vin
5	-Vout	-Vout	No Pin
6	No Pin	Com	-Vout
7	+Vout	+Vout	+Vout

XX.X  $\pm 0.5$  mm

XX.XX  $\pm 0.25$  mm

# Mouser Electronics

Authorized Distributor

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## RECOM:

[R05P05S](#) [R05P12S](#) [R12P12S](#) [R24P05S](#) [R24P12S](#) [R09P09S/P/X2/R6.4](#) [R09P09S/P/X2/R8](#) [R09P12S/P/X2/R8](#)  
[R05P12S/P/X2/R6.4](#) [R05P12S/P/X2/R8](#) [R09P15S/P/X2/R6.4](#) [R09P15S/P/X2/R8](#) [R09P3.3S/P/X2/R6.4](#)  
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