

# Features

## Unregulated Converters

- UL/CSA and EN Safety certified
- EN-61010 for Test, Measurement and Lab. Use
- EN-60601 for Medical Applications
- Standard Isolation 6.4kVDC
- Optional Reinforced Isolation 6.4kVDC or 8kVDC
- Optional Continuous Short Circuit Protected
- Unique Reinforced Isolation Transformer System

### Selection Guide

Part Number	Standard Isolation (kVDC)	Reinforced Isolation (kVDC)	Input Voltage (VDC)	Output Voltage (VDC)	Output Current (mA)	Efficiency Std (/R) (%)	Max Capacitive Load <sup>(1)</sup>
RxxP3.3S	5.2	/R6.4 & /R8	5, 9, 12, 15, 24	3.3	303	70 (70~80)	2200µF
RxxP05S	5.2	/R6.4 & /R8	5, 9, 12, 15, 24	5	200	70-75 (75-80)	1000µF
RxxP09S	5.2	/R6.4 & /R8	5, 9, 12, 15, 24	9	111	70-75 (75-82)	1000µF
RxxP12S	5.2	/R6.4 & /R8	5, 9, 12, 15, 24	12	84	70-75 (75-82)	470µF
RxxP15S	5.2	/R6.4 & /R8	5, 9, 12, 15, 24	15	66	75-80 (75-83)	470µF
RxxP3.3D	5.2	/R6.4 & /R8	5, 9, 12, 15, 24	±3.3	±151	70 (72-79)	±1000µF
RxxP05D	5.2	/R6.4 & /R8	5, 9, 12, 15, 24	±5	±100	70-75 (75-82)	±470µF
RxxP09D	5.2	/R6.4 & /R8	5, 9, 12, 15, 24	±9	±55	70-75 (75-82)	±470µF
RxxP12D	5.2	/R6.4 & /R8	5, 9, 12, 15, 24	±12	±41	70-75 (75-82)	±220µF
RxxP15D	5.2	/R6.4 & /R8	5, 9, 12, 15, 24	±15	±33	75-80 (75-83)	±220µF

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

No suffix is functional isolation e.g. R05P05S

\* 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

\* add Suffix "/R6.4" or "/R8" for Reinforced Isolation, e.g. R05P05D/R6.4, R05P05S/P/X2/R8

### 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 (10% to 100% full load)	3.3, 5V output types other output types	15% max. 10% max.
Output Ripple and Noise (20MHz BW)	200mVp-p max.	
Operating Frequency	20kHz min. / 50kHz typ. / 85kHz max.	
Efficiency at Full Load	65% min. / 75% typ.	
Minimum Load = 0%	Specifications valid for 10% minimum load only.	
Isolation Voltages		
Standard Isolation	(tested for 1 second) (rated for 1 minute)	6400VDC 3200VAC / 60Hz
Reinforced Isolation /R6.4	(tested for 1 second) (rated for 1 minute)	6400VDC 3200VAC / 60Hz
Reinforced Isolation /R8	(tested for 1 second) (rated for 1 minute)	8000VDC 4000VAC / 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)	-40°C to +85°C (see Graph)	
Storage Temperature Range	-55°C to +125°C	
Relative Humidity	95% RH	
Package Weight	4.3g	
Packing Quantity	25 pcs per Tube	

cont.

## ECONOLINE

### DC/DC-Converter

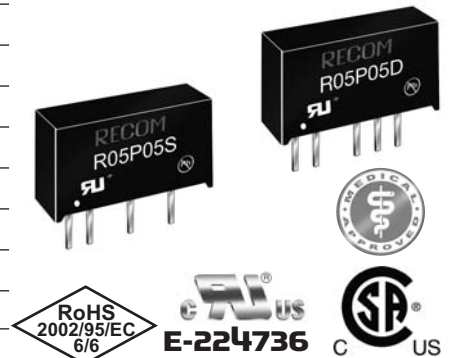
with 3 year Warranty

# RECOM

## 1 Watt

## SIP 7 Single

## & Dual Output



**EN-60950-1 Certified**

**EN-60601-1 Certified**

**UL/CSA 60950-1 Certified**

**UL/CSA 60601-1 Certified (/R)**

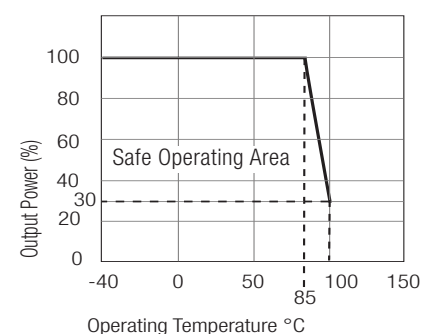
**EN-61010-1 Certified (/R)**

# RxxPxx(/R)

### Description

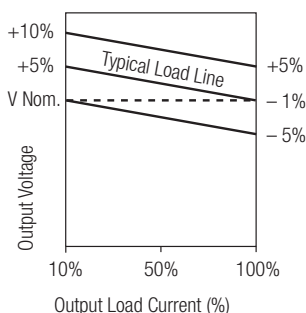
The RxxPxxS\_D Series of DC/DC Converters are certified to UL/CSA-60950 and UL/CSA 60601. This makes them ideal for medical and safety applications where approved or reinforced isolation is required. The reinforced versions are also EN61010-1 certified for Lab Equipment Safety.

## Derating-Graph (Ambient Temperature)



Refer to Application Notes

**Tolerance Envelope**



**Specifications (continued)**

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
Reinforced Isolation			
Transformer Clearance	Reinforced Types	5.5 mm min.	
PCB Creepage & Clearance	Reinforced Types	4.8 mm min.	
Certifications	CB Report: Medical Safety	Ref: CA/11158/CSA	IEC60601-1:1988 + A1: 1991 + A2:1995
Reinforced Part	CSA Medical Safety	Report: 227629	C22.2 601-1 2nd Ed. UL 60601-1 1st Ed.
	CSA General Safety	Report: 2219431	C22.2 No. 60950-1-03 UL 60950-1 1st Ed.
		Recognised as Reinforced Isolation	Supplement to Report: 2219431
Measurement, Control and Laboratory Use Safety		Report: IL091212010M1	EN 61010-1 : 2001
Certifications	UL General Safety	Report: E248550	UL 60950-1 1st Ed. C22.2 No. 60950-1-03
Standard Part	EN General Safety	Report: PS-R7219C1	EN60950-1:2001 + A11: 2004
	EN Medical Safety	Report: PS090301601	EN60601-1:1990 + A13: 1996

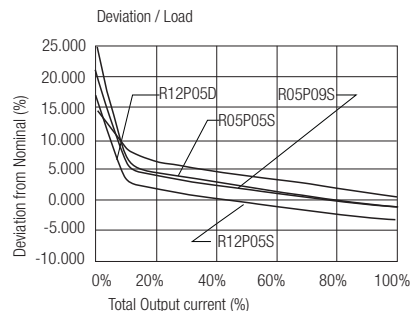
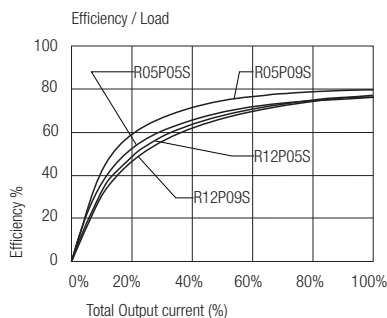
Notes

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.

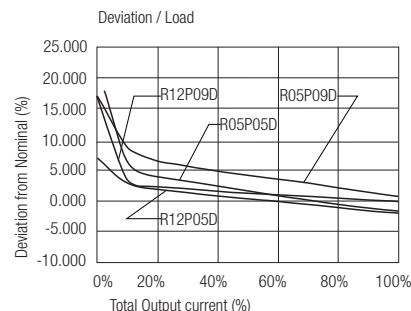
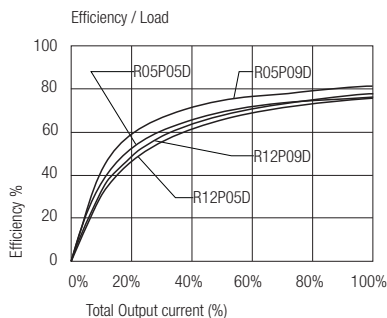
**Typical Characteristics**

RxxPxx(/R)

## RxxP05/09S

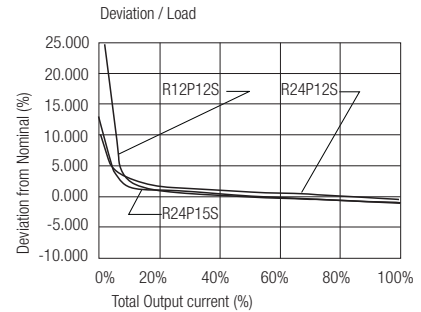
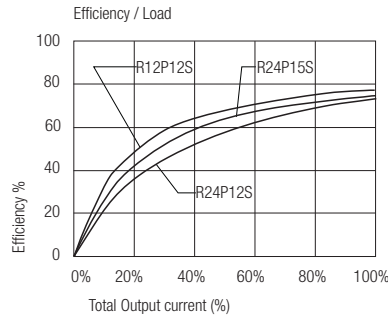


## RxxP05/09D

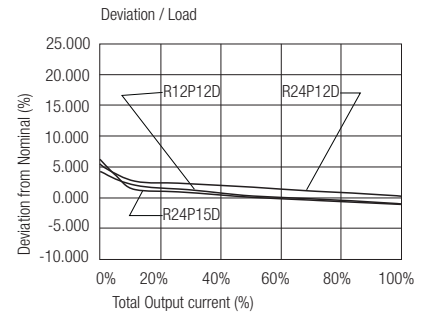
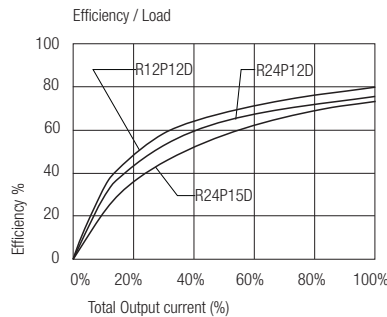


Typical Characteristics

## RxxP12/15S

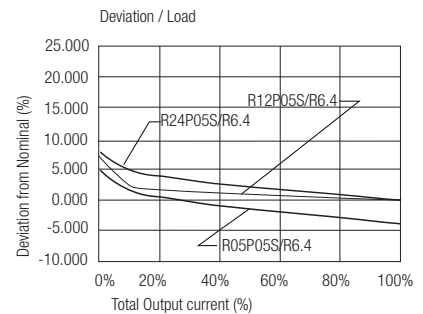
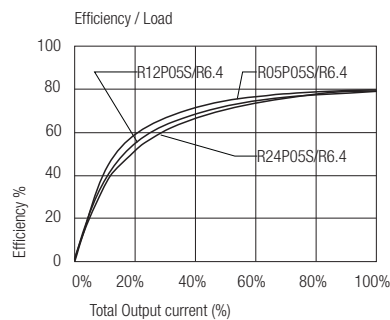


## RxxP12/15D

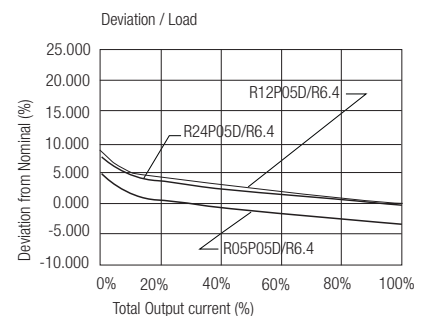
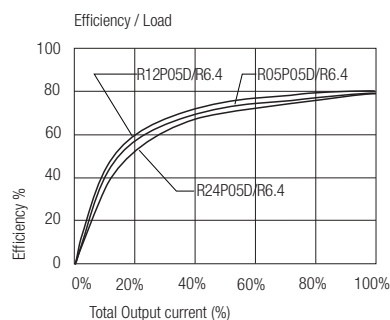


Typical Characteristics - Reinforced Version

## RxxP05S/R6.4 RxxP05S/R8



## RxxP05D/R6.4 RxxP05D/R8

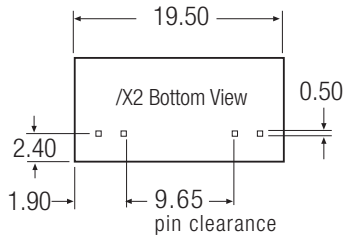
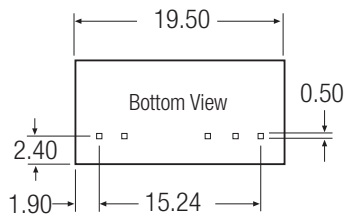
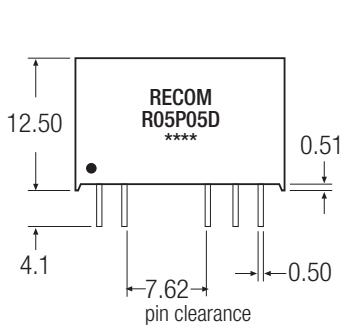


RxxPxx(R)

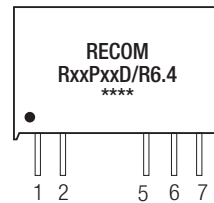
**Package Style and Pinning (mm)**

7 PIN SIP Package

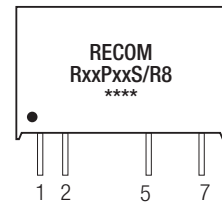
3rd angle projection 



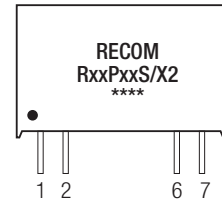
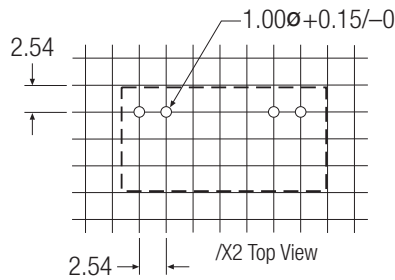
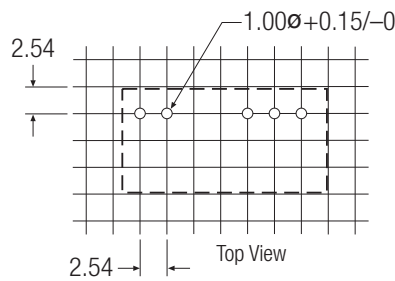
Dual Output



Single Output



**Recommended Footprint Details**



**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