

Features

Unregulated Converters

- UL/CSA and EN Safety certified
- EN-61010 for Test, Measurement and Lab. Use
- EN-60601 for Medical Applications
- Standard Isolation 5.2kVDC
- Optional Reinforced Isolation 6.4kVDC or 8kVDC
- Optional Continuous Short Circuit Protected
- Unique Transformer System (Patent Pending)
- Compact SIP7 Package
- Efficiency to 88%

Selection Guide

Part Number SIP 7	Standard Isolation (kVDC)	Reinforced Isolation (kVDC)	Input Voltage (VDC)	Output Voltage (VDC)	Output Current (mA)	Efficiency Std (/R) (%)	Max Capacitive Load ⁽¹⁾
RxxP23.3S	5.2	/R6.4 & /R8	5, 12, 15, 24	3.3	600	70 (72-78)	3300µF
RxxP205S	5.2	/R6.4 & /R8	5, 12, 15, 24	5	400	70-75 (79-84)	1200µF
RxxP209S	5.2	/R6.4 & /R8	5, 12, 15, 24	9	222	70-75 (80-87)	1200µF
RxxP212S	5.2	/R6.4 & /R8	5, 12, 15, 24	12	167	70-75 (80-87)	680µF
RxxP215S	5.2	/R6.4 & /R8	5, 12, 15, 24	15	132	75-80 (80-88)	680µF
RxxP23.3D	5.2	/R6.4 & /R8	5, 12, 15, 24	±3.3	±300	70 (73-80)	±1500µF
RxxP205D	5.2	/R6.4 & /R8	5, 12, 15, 24	±5	±200	70-75 (79-85)	±470µF
RxxP209D	5.2	/R6.4 & /R8	5, 12, 15, 24	±9	±111	70-75 (80-87)	±470µF
RxxP212D	5.2	/R6.4 & /R8	5, 12, 15, 24	±12	±85	70-75 (80-87)	±330µF
RxxP215D	5.2	/R6.4 & /R8	5, 12, 15, 24	±15	±66	75-80 (80-88)	±330µF

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

No suffix is functional isolation e.g. R05P205S

* add Suffix "P" for Continuous Short Circuit Protection, e.g. R05P205S/P, R05P205D/P

* add Suffix "/X2" for single output with alternative pinout, e.g. R05P205S/X2, R05P205S/P/X2

* add Suffix "/R6.4" or "/R8" for Reinforced Isolation, e.g. R05P205D/R6.4, R05P205S/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 15% max. other output types 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. / 80% max.
Minimum Load = 0%	Specifications valid for 10% minimum load only.
Isolation Voltage	(tested for 1 minute) 5200VDC (rated for 1 minute) 2600VAC / 60Hz
/R6.4	(tested for 1 second) 6400VDC (rated for 1 minute) 3200VAC / 60Hz
/R8	(tested for 1 second) 8000VDC (rated for 1 minute) 4000VAC / 60Hz
Isolation Capacitance	1.5pF 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

cont.

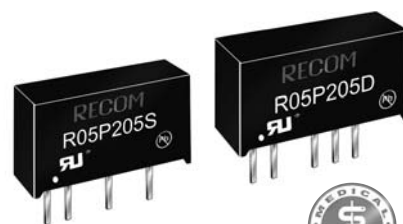
ECONOLINE

DC/DC-Converter

RECOM

2 Watt

SIP 7 Single & Dual Output



EN-60950-1 Certified

EN-60601-1 Certified

UL/CSA 60950-1 Certified

UL/CSA 60601-1 Certified

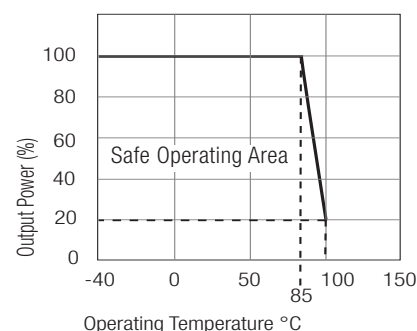
EN-61010-1 Certified (/R only)

RxxP2xx(R)

Description

The RxxP2xxS_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. The /X2 version has an input/output clearance of more than 9mm.

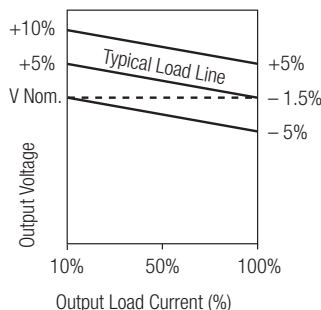
Derating-Graph (Ambient Temperature)



Refer to Application Notes

www.recom-electronic.com

Tolerance Envelope



Specifications (continued)

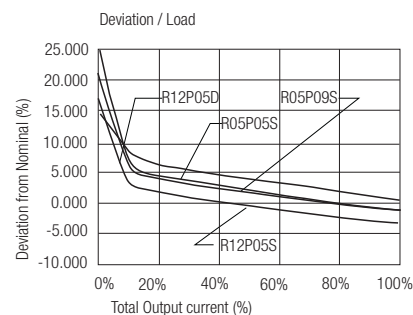
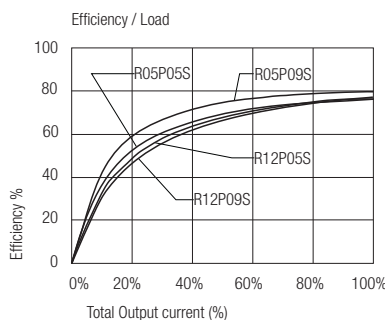
Package Weight	4.3g		
Packing Quantity	25 pcs per Tube		
MTBF (+25°C)	Single/Dual	2113/2434 x 10 ³ hours	
} Detailed Information see Application Notes chapter "MTBF"	Reinforced	1154 x 10 ³ hours	
	Single/Dual	299/334 x 10 ³ hours	
(+85°C)	Reinforced	168 x 10 ³ hours	
using MIL-HDBK 217F	Reinforced Isolation	Transformer Creepage	/R6.4 Types 5.5 mm min.
		Transformer Clearance	/R6.4 Types 5.5 mm min.
		PCB Creepage & Clearance	/R6.4 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.
Standard Part			C22.2 No. 60950-1-03
	EN General Safety	Report: PS-R7219C1	EN60950-1:2001 + A11: 2004
	EN Medical Safety	Report: PS090301601	EN60601-1:1990 + A13: 1996

Notes

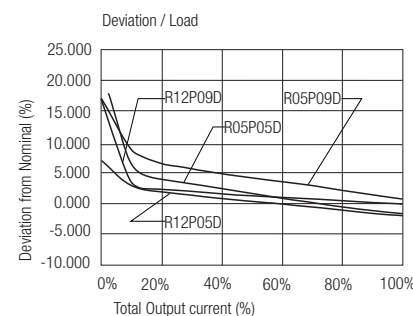
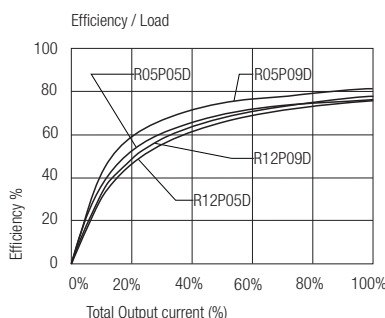
Note 1 Maximum capacitive load is defined as the capacitive load that will allow start up in under 1 second without damage to the converter.

Typical Characteristics

RxxP205/09S

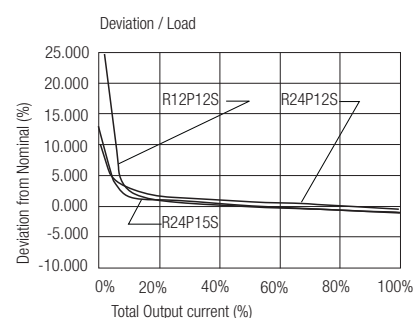
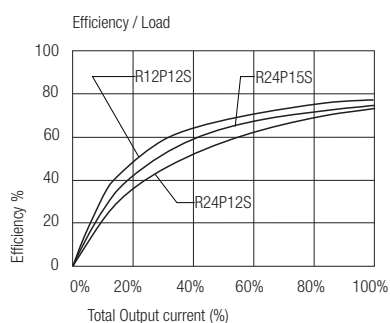


RxxP205/09D

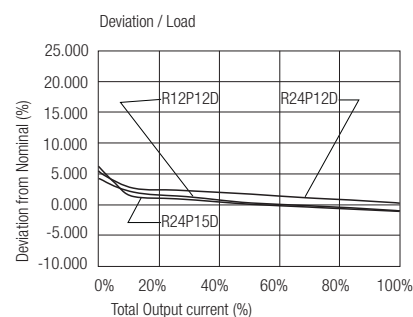
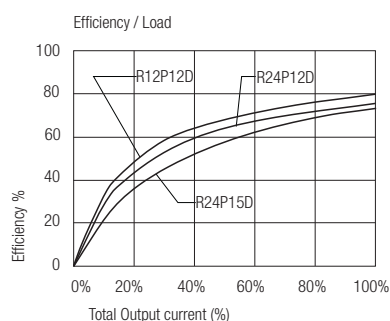


Typical Characteristics

RxxP212/15S



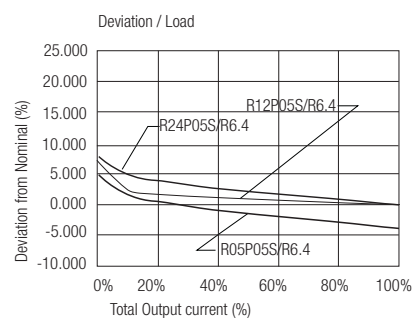
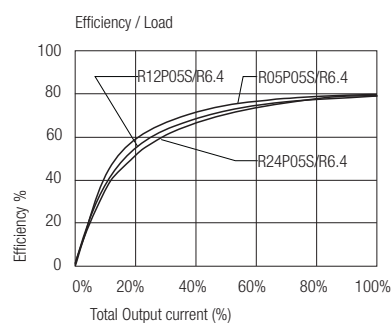
RxxP212/15D



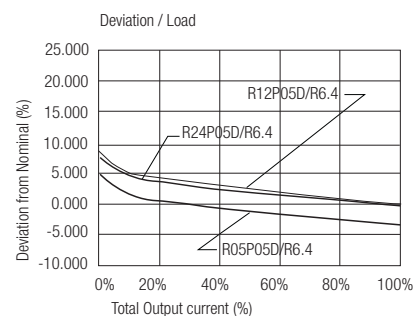
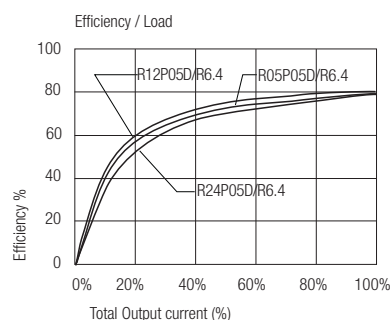
Typical Characteristics - Reinforced Version

RxxP2xx(/R)

RxxP205S/R6.4 RxxP205S/R8



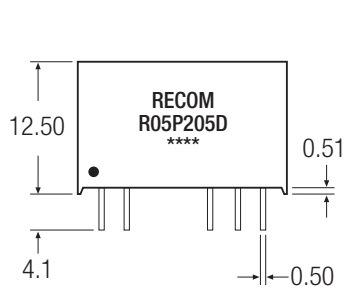
RxxP205D/R6.4 RxxP205D/R8



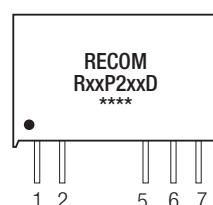
Package Style and Pinning (mm)

7 PIN SIP Package

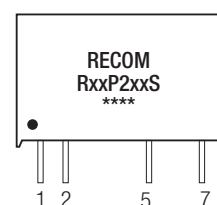
3rd angle projection



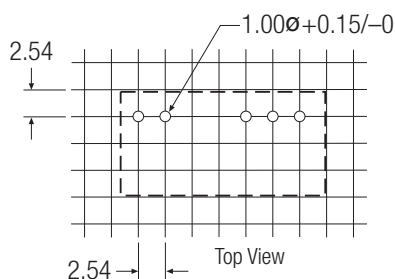
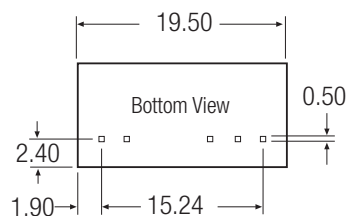
Dual Output



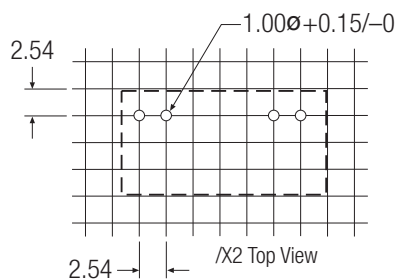
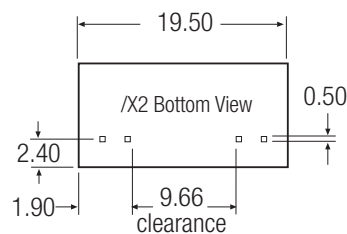
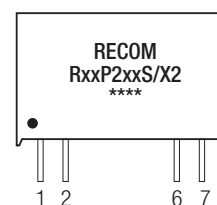
Single Output



Recommended Footprint Details



/X2 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 ± 0.5 mm
XX.XX ± 0.25 mm