

Features

Unregulated Converters

- UL/CSA and EN Safety certified
- EN-61010 for Test, Measurement and Lab Use
- EN-60601 for Medical Applications
- Reinforced Isolation 6.4kVDC or 8kVDC
- Optional Continuous Short Circuit Protected
- Compact SIP7 Package
- Efficiency to 88%
- Very Low Isolation Capacitance
- /X2 Version with >9mm Input/Output Clearance

Description

The RxxP2xx_S_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.

Selection Guide

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

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

* 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°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	3.3, 5V output types	15% max.
(10% to 100% full load)	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	/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

continued on next page

**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.

ECONOLINE

DC/DC-Converter

with 3 year Warranty

RECOM

2 Watt

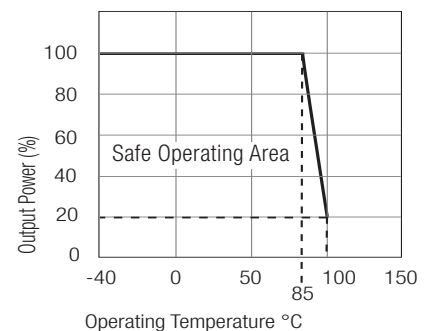
SIP 7 Single & Dual Output



EN-60950-1 Certified
EN-60601-1 Certified
UL/CSA 60950-1 Certified
UL-60601 Certified
EN-61010-1 Certified
IEC-60601-1 CB Report

RxxP2xx/R

Derating-Graph (Ambient Temperature)



Refer to Application Notes

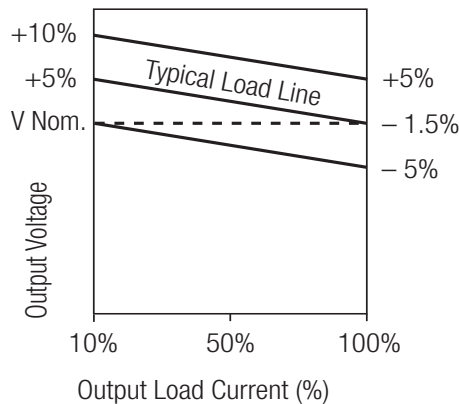
Specifications (measured at $T_A = 25^\circ\text{C}$, nominal input voltage, full load and after warm-up)

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	
Potting Material		Silicone Rubber Compound (UL94V-0)	
MTBF (+25°C)	} Detailed Information see Application Notes chapter "MTBF"	Reinforced	1154 x 10 ³ hours
(+85°C)		Reinforced	168 x 10 ³ hours
Reinforced Isolation	Transformer Creepage	Reinforced Types	5.5 mm min.
	Transformer Clearance	Reinforced Types	5.5 mm min.
	PCB Creepage & Clearance	Reinforced Types	4.95 mm min.
Certifications			
Measurement, Control and Laboratory Use Safety		Report: T1301251-313	EN 61010-1 : 2010
CSA General Safety		Report: 2207629	UL 60950-1 1st Edition C22.2 No. 60950-1-03
UL/cUL Medical Safety		Report: 314885-A5	UL60601-1 1st Edition
CSA Medical Safety		Report: 2207629	CAN/CSA-22.2 No 601.1-M90
EN General Safety		Report: SPCLVD1310079-1	EN60950-1 : 2006
CB/EN Medical Safety		Report: CA-10169-A1-UL	IEC/EN 60601-1 3rd Edition
ANSI/AAMI Medical Safety		Report: E314885-A5	ES60601-1 3rd Edition

Notes

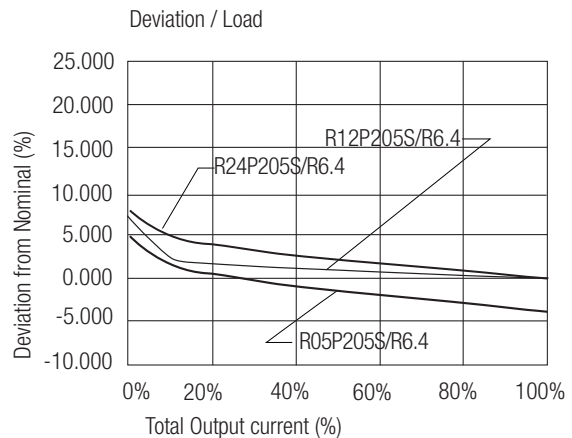
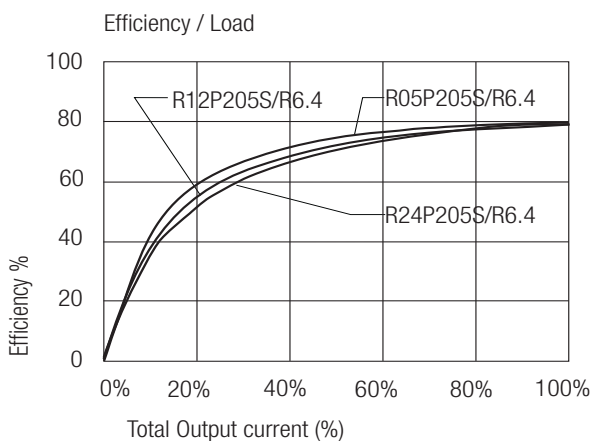
Note 1 Maximum capacitive load is defined as the capacitive load that will allow start up in under 1 second without damage to the converter.

Tolerance Envelope



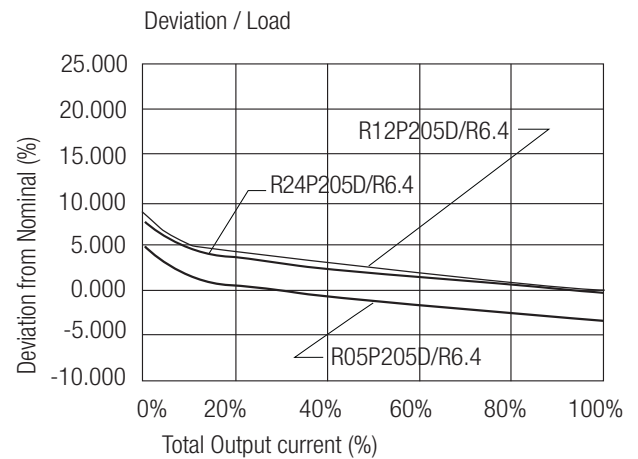
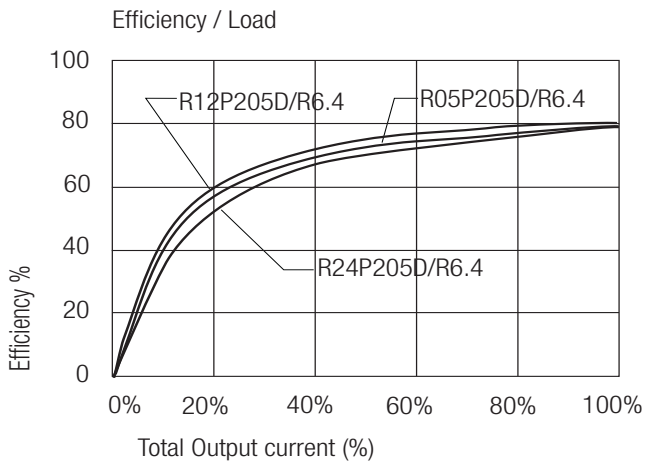
Typical Characteristics

RxxP205S/R6.4 and RxxP205S/R8



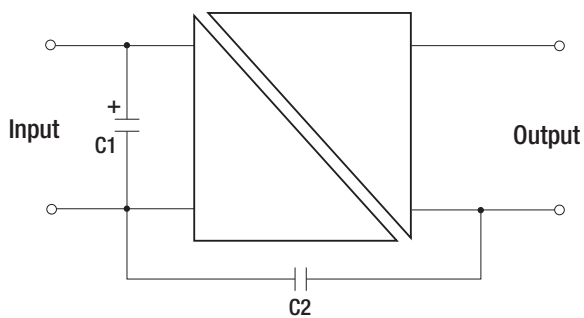
Typical Characteristics

RxxP205D/R6.4 and RxxP205D/R8



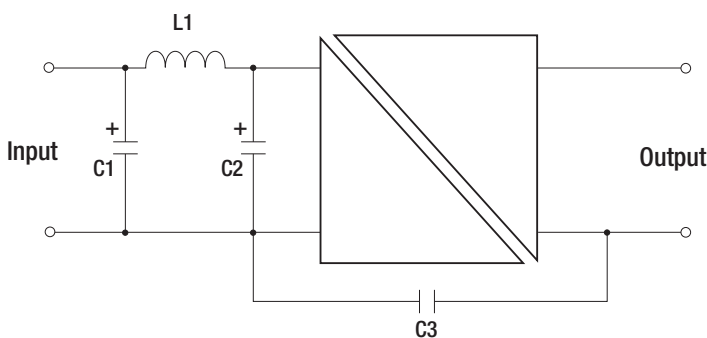
EMC Filter Suggestions for EN55022 Class A and B

EN55022 Class A



	C1	C2
RxxP2xx/R6.4	10µF	2n2F 8kV Vishay HGZ222MBP
RxxP2xx/R8	10µF	2n5F 10kV Vishay HGZ222MBP

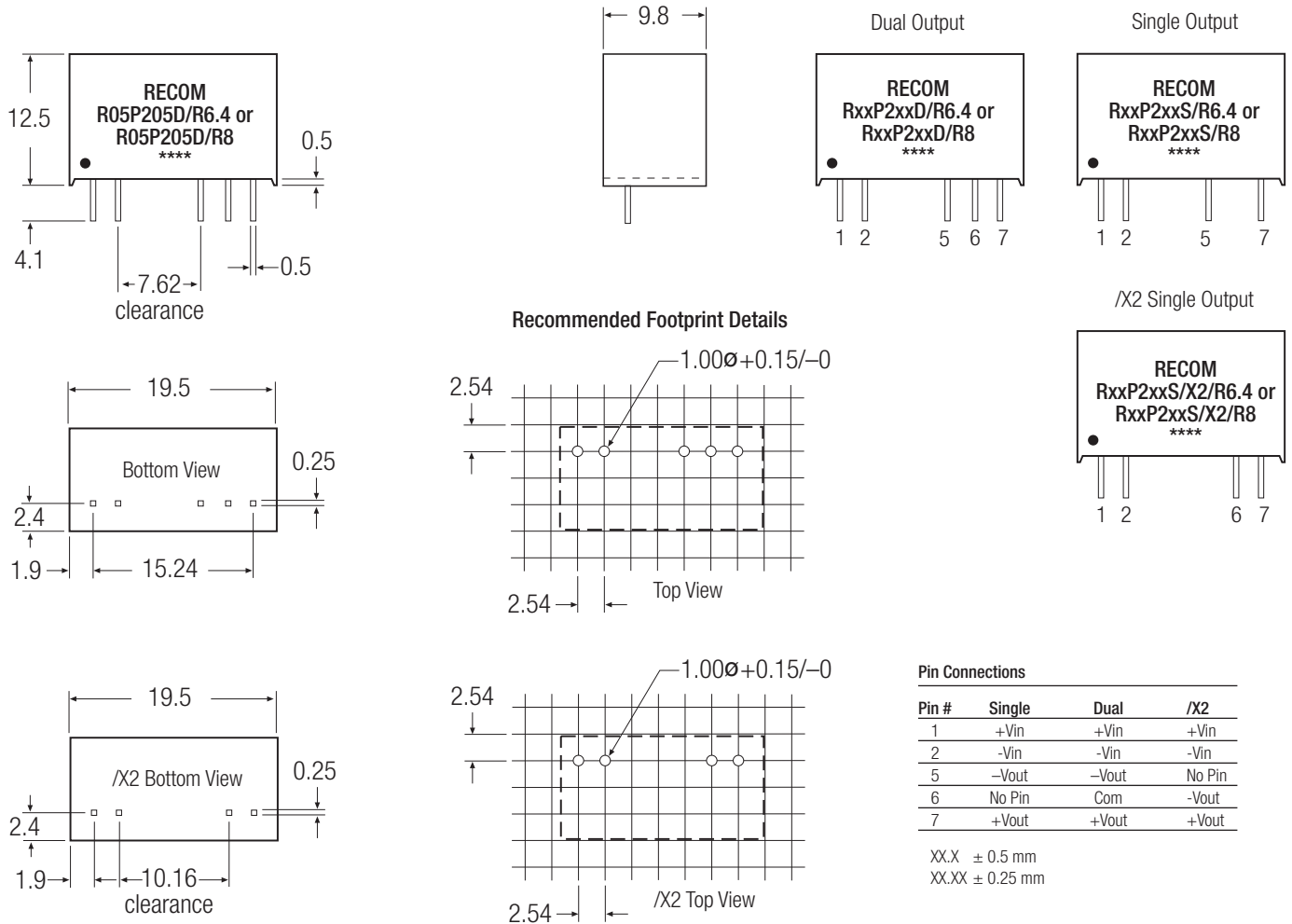
EN55022 Class B



	C1	L1	C2	C3
RxxP2xx/R6.4	10µF	470µH WE 7447471471	10µF	2n2F 8kV Vishay HGZ222MBP
RxxP2xx/R8	10µF	470µH WE 7447471471	10µF	2n5F 10kV Vishay HGZ222MBP

Package Style and Pinning (mm)

7 PIN SIP Package



The product information and specifications are subject to change without prior notice. RECOM products are not authorized for use in safety-critical applications (such as life support) without RECOM's explicit written consent. A safety-critical application is defined as an application where a failure of a RECOM product may reasonably be expected to endanger or cause loss of life, inflict bodily harm or damage property. The buyer shall indemnify and hold harmless RECOM, its affiliated companies and its representatives against any damage claims in connection with the unauthorized use of RECOM products in such safety-critical applications.