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
- Unique Reinforced Isolation Transformer System
- /X2 Option for >9mm Input/Output Clearance

ECONOLINE
DC/DC-Converter
with 3 year Warranty

RECOM

1 Watt SIP 7 Single & Dual Output

RoHS 2011/65/EU 6/6

E314885

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

RxxPxx/R

Description

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

Selection Guide

Part Number SIP 7	Reinforced Isolation (kVDC)	Input Voltage (VDC)	Output Voltage (VDC)	Output Current (mA)	Efficiency Std (%)	Max Capacitive Load[1]
RxxP3.3S*	/R6.4 & /R8	5, 9, 12, 15, 24	3.3	303	70~80	2200µF
RxxP05S*	/R6.4 & /R8	5, 9, 12, 15, 24	5	200	75-80	1000µF
RxxP09S*	/R6.4 & /R8	5, 9, 12, 15, 24	9	111	75-82	1000µF
RxxP12S*	/R6.4 & /R8	5, 9, 12, 15, 24	12	84	75-82	470µF
RxxP15S*	/R6.4 & /R8	5, 9, 12, 15, 24	15	66	75-83	470µF
RxxP3.3D*	/R6.4 & /R8	5, 9, 12, 15, 24	±3.3	±151	72-79	±1000µF
RxxP05D*	/R6.4 & /R8	5, 9, 12, 15, 24	±5	±100	75-82	±470µF
RxxP09D*	/R6.4 & /R8	5, 9, 12, 15, 24	±9	±55	75-82	±470µF
RxxP12D*	/R6.4 & /R8	5, 9, 12, 15, 24	±12	±41	75-82	±220µF
RxxP15D*	/R6.4 & /R8	5, 9, 12, 15, 24	±15	±33	75-83	±220µF

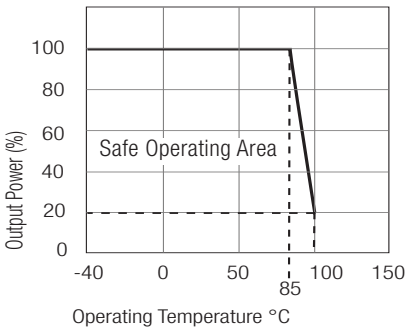
xx = Input Voltage. Other input and output voltage combinations available on request.
* add Suffix "P" for Continuous Short Circuit Protection, e.g. R05P05S/P, R05P05D/P
* add Suffix "/X2" for single output with alternative pinout, e.g. R05P05S/X2, R05P05S/P/X2
* add Suffix "/R6.4" or "/R8" for Reinforced Isolation, e.g. R05P05D/R6.4, R05P05S/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. / 75% typ.
Minimum Load = 0%		Specifications valid for 10% minimum load only.
Reinforced Isolation /R6.4	(tested for 1 second)	6400VDC
	(rated for 1 minute**)	3200VAC / 60Hz
Reinforced Isolation /R8	(tested for 1 second)	8000VDC
	(rated for 1 minute**)	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)
Case Temperature		105°C max.
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)

continued on next page

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

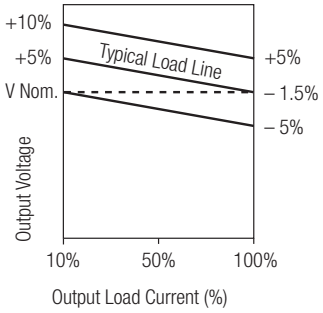
Specifications (measured at T_A = 25°C, nominal input voltage, full load and after warm-up))

MTBF (+25°C)	*Detailed Information see Application Notes chapter "MTBF"*	using MIL-HDBK 217F	2974 x 10^3 hours
(+85°C)		using MIL-HDBK 217F	728 x 10^3 hours
Reinforced Isolation			
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	EN61010-1 : 2010
CSA General Safety		Report: 2207629	UL 60950-1 1st Ed.
			C22.2 No. 60950-1-03
UL/cUL Medical Safety		Report: E314885-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

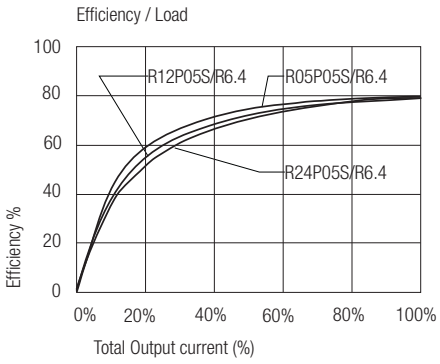
Note 1: Maximum capacitive load is defined as the capacitive load that will allow start up in under 1 second without damage to the converter.

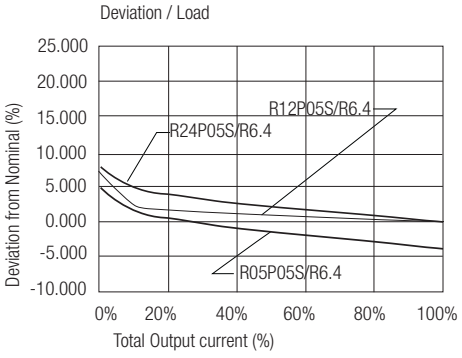
Tolerance Envelope



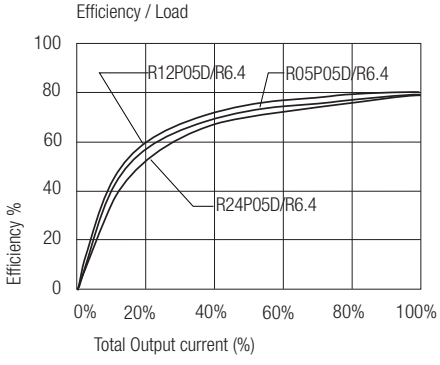
Typical Characteristics - Reinforced Version

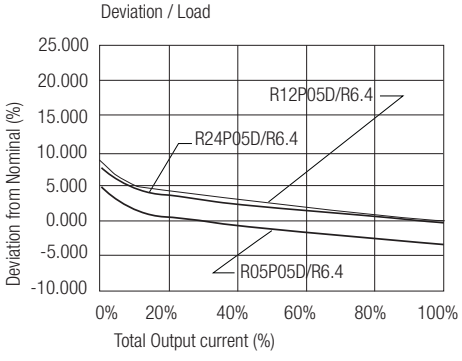
RxxP05S/R6.4
RxxP05S/R8





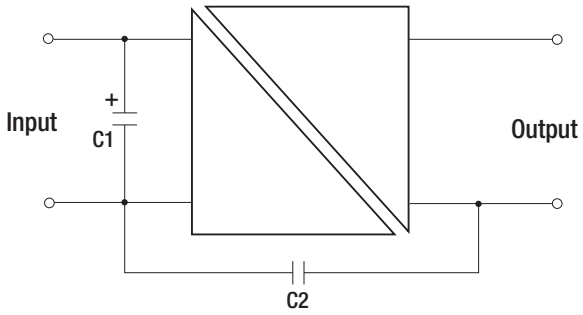
RxxP05D/R6.4
RxxP05D/R8





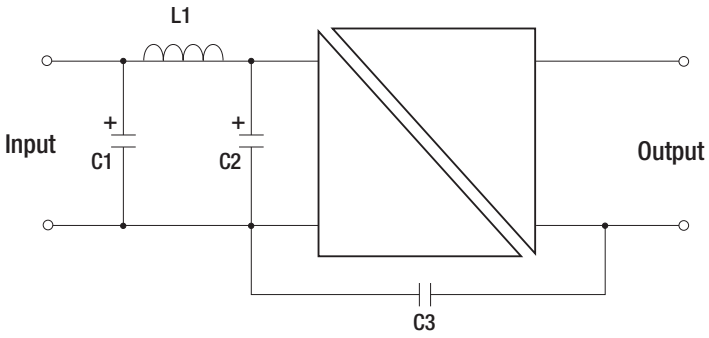
EMC Filter Suggestions for EN55022 Class A and B

EN55022 Class A



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

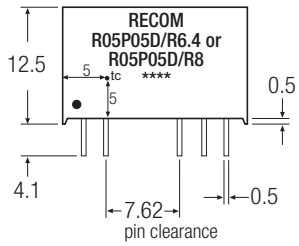
EN55022 Class B

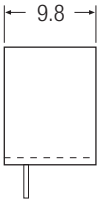


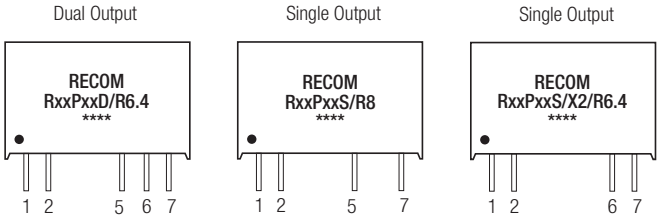
	C1	L1	C2	C3
RxxPxx/R6.4	10µF	470µH WE 7447471471	10µF	2n2F 8kV Vishay HGZ222MBP
RxxPxx/R8	10µF	470µH WE 7447471471	10µF	2n5F 10kV Vishay HGZ222MBP

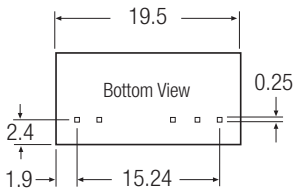
Package Style and Pinning (mm)

7 PIN SIP Package

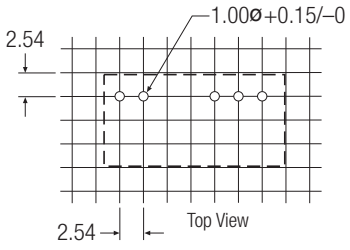


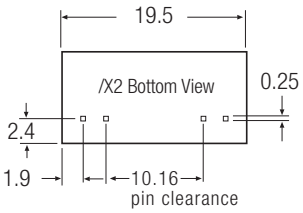


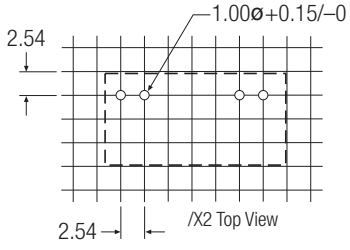




Recommended Footprint Details







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 ± 0.5 mm
XX.XX ± 0.25 mm

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

RECOM:

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 R09P3.3S/P/X2/R8 R12P05S/P/X2/R6.4 R12P05S/P/X2/R8 R12P09S/P/X2/R6.4 R12P09S/P/X2/R8 R05P05S/P/X2/R6.4 R05P05S/P/X2/R8 R05P09S/P/X2/R6.4 R05P09S/P/X2/R8 R12P12S/P/X2/R6.4 R12P12S/P/X2/R8 R12P15S/P/X2/R6.4 R12P15S/P/X2/R8 R15P05S/P/X2/R8 R15P09S/P/X2/R6.4 R15P09S/P/X2/R8 R15P12S/P/X2/R6.4 R15P12S/P/X2/R8 R15P15S/P/X2/R6.4 R15P15S/P/X2/R8 R15P3.3S/P/X2/R6.4 R15P3.3S/P/X2/R8 R24P05S/P/X2/R6.4 R24P05S/P/X2/R8 R24P09S/P/X2/R8 R24P12S/P/X2/R6.4 R24P15S/P/X2/R6.4 R24P15S/P/X2/R8 R24P3.3S/P/X2/R6.4 R24P3.3S/P/X2/R8 R05P15S/P/X2/R6.4 R05P15S/P/X2/R8 R09P12S/P/X2/R6.4 R05P3.3S/P/X2/R6.4 R05P3.3S/P/X2/R8 R09P05S/P/X2/R6.4 R09P05S/P/X2/R8 R12P3.3S/P/X2/R8 R15P05S/P/X2/R6.4 R12P3.3S/P/X2/R6.4 R24P12S/P/X2/R8 R24P09S/P/X2/R6.4 R05P05D/P/R6.4 R05P05D/P/R8 R05P05D/R6.4 R05P05D/R8 R05P05S/P/R6.4 R05P05S/P/R8 R05P05S/R6.4 R05P05S/R8 R05P05S/X2/R6.4 R05P05S/X2/R8 R05P09D/P/R6.4 R05P09D/P/R8 R05P09D/R6.4 R05P09D/R8 R05P09S/P/R6.4 R05P09S/P/R8 R05P09S/R6.4 R05P09S/R8 R05P09S/X2/R6.4 R05P09S/X2/R8 R05P12D/P/R6.4 R05P12D/P/R8 R05P12D/R6.4 R05P12D/R8 R05P12S/P/R6.4 R05P12S/P/R8 R05P12S/R6.4 R05P12S/R8 R05P12S/X2/R6.4 R05P12S/X2/R8 R05P15D/P/R6.4 R05P15D/P/R8 R05P15D/R6.4 R05P15D/R8 R05P15S/P/R6.4 R05P15S/P/R8 R05P15S/R6.4 R05P15S/R8 R05P15S/X2/R6.4 R05P15S/X2/R8 R05P3.3D/P/R6.4 R05P3.3D/P/R8 R05P3.3D/R6.4 R05P3.3D/R8 R05P3.3S/P/R6.4 R05P3.3S/P/R8 R05P3.3S/R6.4 R05P3.3S/R8 R05P3.3S/X2/R6.4 R05P3.3S/X2/R8