

Features

Unregulated Converters

- UL/CSA and EN Safety certified
- EN-61010 for Test, Measurement and Lab. Use
- EN-60601 for Medical Applications
- Standard 6kVDC Isolation
- Optional 6.4kVDC or 8kV Reinforced Isolation
- Optional Continuous Short Circuit Protection
- Unique Transformer System (Patent Pending)
- Efficiency to 88%

Selection Guide

Part Number SIP 7	Standard Isolation (kVDC)	Reinforced Isolation (kVDC)	Input Voltage (VDC)	Output Voltage (mA)	Output Current (%)	Efficiency Std(/R) (%)	Max Capacitive Load ⁽¹⁾
RV-xx3.3S	6	/R6.4 & /R8	3.3, 5, 12, 15, 24	3.3	600	70 (70-78)	3300µF
RV-xx05S	6	/R6.4 & /R8	3.3, 5, 12, 15, 24	5	400	70-75 (76-80)	1200µF
RV-xx09S	6	/R6.4 & /R8	3.3, 5, 12, 15, 24	9	222	70-75 (78-85)	1200µF
RV-xx12S	6	/R6.4 & /R8	3.3, 5, 12, 15, 24	12	167	70-75 (78-85)	680µF
RV-xx15S	6	/R6.4 & /R8	3.3, 5, 12, 15, 24	15	132	75-80 (78-88)	680µF
RV-xx3.3D	6	/R6.4 & /R8	3.3, 5, 12, 15, 24	±3.3	±300	70 (70-78)	±1500µF
RV-xx05D	6	/R6.4 & /R8	3.3, 5, 12, 15, 24	±5	±200	70-75 (75-82)	±470µF
RV-xx09D	6	/R6.4 & /R8	3.3, 5, 12, 15, 24	±9	±111	70-75 (76-84)	±470µF
RV-xx12D	6	/R6.4 & /R8	3.3, 5, 12, 15, 24	±12	±85	70-75 (78-86)	±220µF
RV-xx15D	6	/R6.4 & /R8	3.3, 5, 12, 15, 24	±15	±66	75-80 (78-86)	±220µF

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

No suffix is 6kVDC functional isolation

* add Suffix "P" for Continuous Short Circuit Protection, e.g. RV-0505S/P, RV-0505D/P

* add Suffix "/R6.4" or "/R8" for Reinforced Isolation, e.g. RV-0505S/R6.4, RV-0505D/P/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	3.3V output types 20% max.
(10% to 100% full load)	5V output type 15% max.
	9V, 12V, 15V, 24V output types 10% max.
Output Ripple and Noise (20MHz limited)	200mVp-p max.
Operating Frequency	20kHz min. / 50kHz typ. / 85kHz max.
Efficiency at Full Load	70% min. / 75% typ.
Minimum Load = 0%	Specifications valid for 10% minimum load only.
Isolation Voltage - Standard Part	(tested for 1 second) 6000VDC
	(rated for 1 minute) 3000VAC / 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	2pF min. / 12pF 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	9g
Packing Quantity	15 pcs per Tube
	cont.

ECONOLINE

DC/DC-Converter

RECOM

2 Watt DIP24 Miniature Single & Dual Output



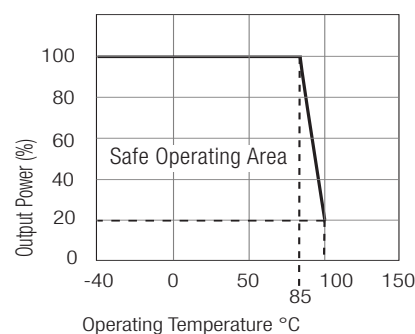
EN-60950-1 Certified
UL/CSA-60950-1 Certified
UL/CSA-60601-1 Certified
EN-61010-1 Certified (/R only)

RV (R)

Description

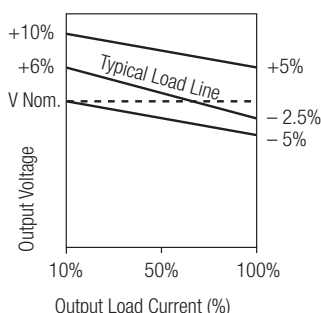
Very high isolation in a small size are the main features of this miniature DIP24 converter, ideal for highly sophisticated industrial, test and measurement and medical designs where board space is at a premium.

Derating-Graph (Ambient Temperature)



Refer to Application Notes

Tolerance Envelope



Specifications (continued)

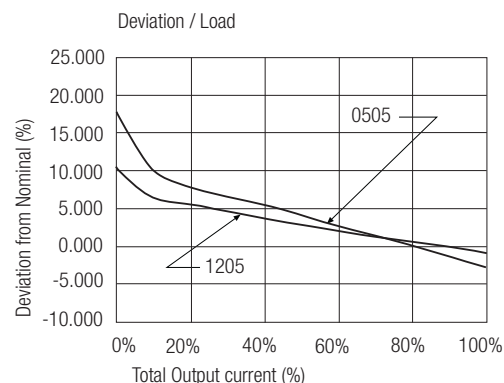
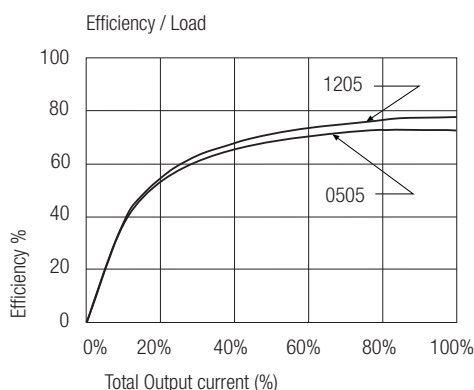
MTBF (+25°C) (+85°C)	Detailed Information see Application Notes chapter "MTBF" using MIL-HDBK 217F		1154 x 10 ³ hours 168 x 10 ³ hours
Reinforced Isolation	Transformer Creepage	/R6.4 Types	5.5 mm min.
	Transformer Clearance	/R6.4 Types	5.5 mm min.
	PCB Creepage & Clearance	/R6.4 Types	4.8 mm min.
Certifications	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.
Measurement, Control and Laboratory Use Safety		Recognised as Reinforced Isolation	Supplement to Report: 2219431
Certifications	UL General Safety	Report: IL091212010M1	EN 61010-1 : 2001
Standard Part		Report: E248550	UL 60950-1 1st Ed. C22.2 No. 60950-1-03 EN60950-1:2000
	EN General Safety	Report: LVD-2K02066	
	EN Medical Safety	Report: PS090301601	EN60601-1:1990 + A13: 1996

Notes

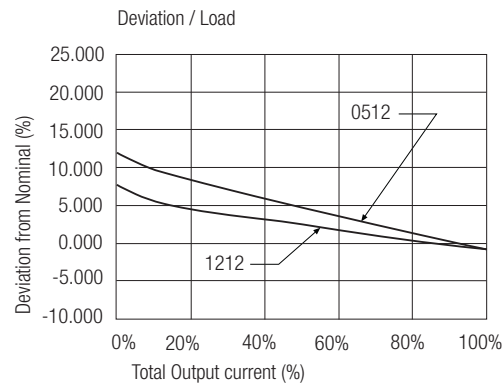
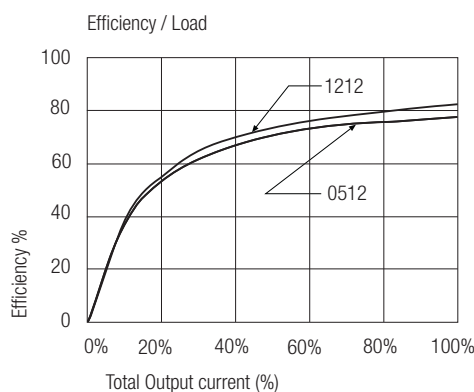
Note 1 Maximum capacitive load is defined as the capacitive load that will allow start up in under 1 second without damage to the converter.

Typical Characteristics

RV-xx05S

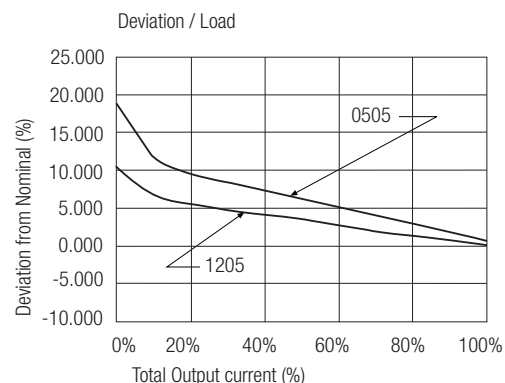
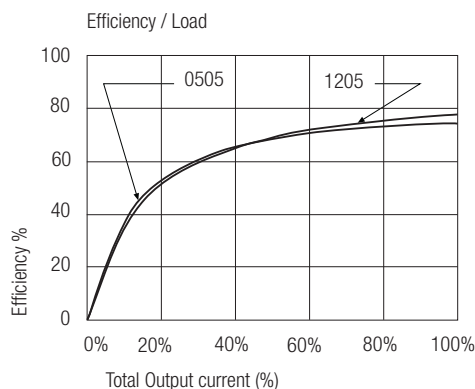


RV-xx12S

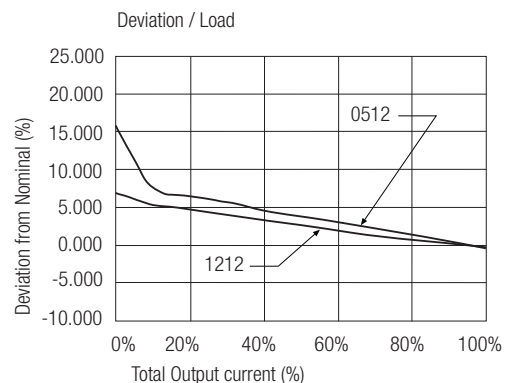
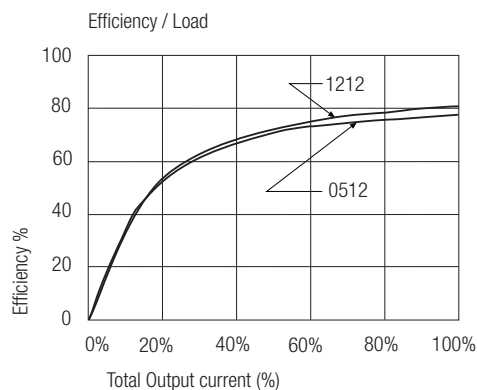


Typical Characteristics

RV-xx05D

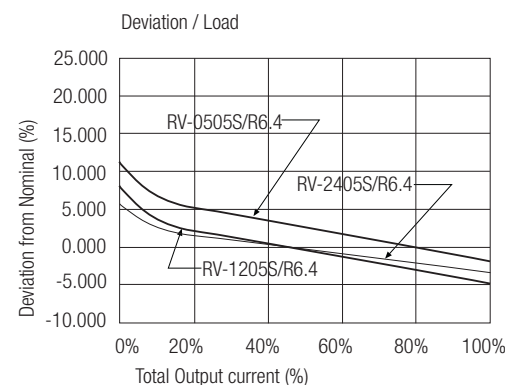
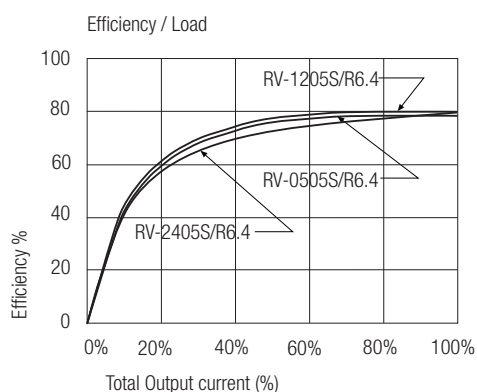


RV-xx12D

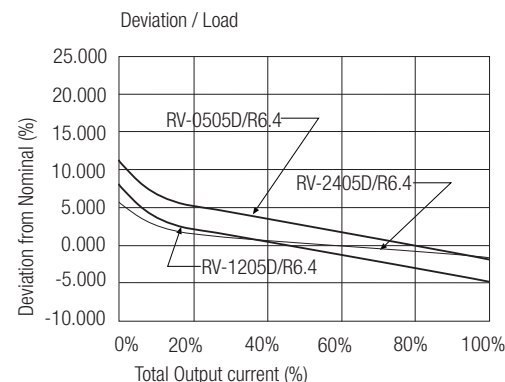
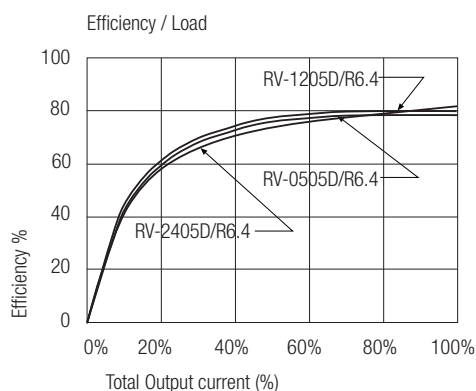


Typical Characteristics - Reinforced Isolation Versions

RV-xx05S/R6.4 RV-xx05S/R8

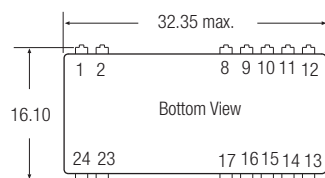
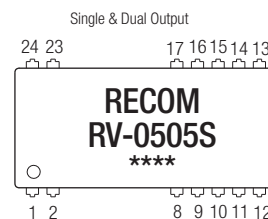
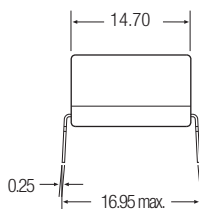
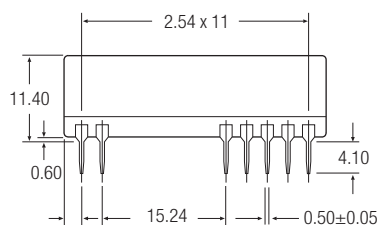


RV-xx05D/R6.4 RV-xx05D/R8

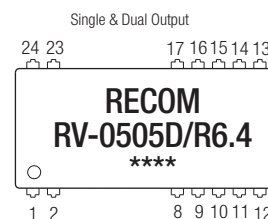
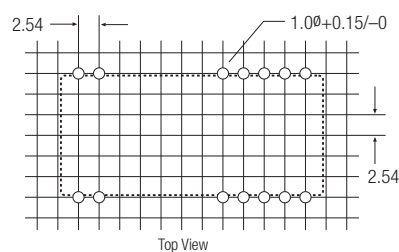


Package Style and Pinning (mm)

24 PIN DIP Miniature Package Style



Recommended Footprint Details



Pin Connections

Pin #	Single
1	+Vin
2	-Vin
8, 9, 11, 14	NC
10, 15	-Vout
12 & 13	+Vout
16, 17, 23, 24	NC

NC = No Connection

Pin Connections

Pin #	Dual
1	+Vin
2	-Vin
8, 17	-Vout
9, 11, 14, 16, 23, 24	NC
10 & 15	Com
12, 13	+Vout

NC = No Connection

XX.X ± 0.5 mm
XX.XX ± 0.25 mm