Features

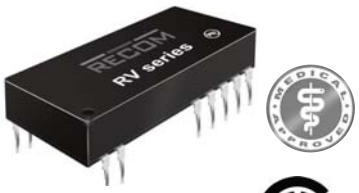
Unregulated Converters

- UL/CSA and EN-60950-1 Safety certified
- EN-60601 for Medical Applications
- 6kVDC Isolation
- Optional Continuous Short Circuit Protection
- Efficiency up to 82%
- Space Saving „Skinny DIP“ Package
- Very Low Isolation Capacitance
- Suitable for IGBT Applications

ECONOLINE
DC/DC-Converter
with 3 year Warranty

RECOM

2 Watt DIP24 Miniature Single & Dual Output



RoHS 2011/65/EU 6/6

E358085

EN-60950-1 Certified
IEC/EN-60601-1 Certified*
UL/CSA 60950-1 Certified*
***+15/-9 Version excluded**

RV

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.

Selection Guide

Part Number SIP 7	Input Voltage (VDC)	Output Voltage (VDC)	Output Current (mA)	Efficiency Std (%)	Max Capacitive Load[1]
RV-xx3.3S*	3.3, 5, 12, 15, 24	3.3	600	70	3300µF
RV-xx05S*	3.3, 5, 12, 15, 24	5	400	70-75	1200µF
RV-xx09S*	3.3, 5, 12, 15, 24	9	222	70-75	1200µF
RV-xx12S*	3.3, 5, 12, 15, 24	12	167	70-75	680µF
RV-xx15S*	3.3, 5, 12, 15, 24	15	132	75-80	680µF
RV-xx24S*	3.3, 5, 12, 15, 24	24	83	75-80	220µF
RV-xx3.3D*	3.3, 5, 12, 15, 24	±3.3	±300	70	±1500µF
RV-xx05D*	3.3, 5, 12, 15, 24	±5	±200	70-75	±470µF
RV-xx09D*	3.3, 5, 12, 15, 24	±9	±111	70-75	±470µF
RV-xx12D*	3.3, 5, 12, 15, 24	±12	±85	70-75	±220µF
RV-xx15D*	3.3, 5, 12, 15, 24	±15	±66	75-80	±220µF
RV-xx24D*	3.3, 5, 12, 15, 24	±24	±42	75-80	±100µF
RV-xx1509D	5, 12, 24	+15/-9	+67/-111	70-82	±330µF

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

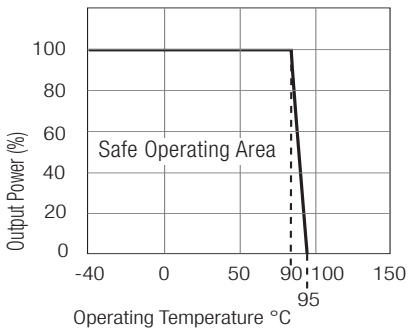
* add Suffix “P” for Continuous Short Circuit Protection, e.g. RV-0505S/P, RV-0505D/P

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	3.3V output types	20% max.
(10% to 100% full load)	5V output type	15% max.
	9V, 12V, 15V, 24V output types, RV-xx1509D	10% max.
Output Ripple and Noise (20MHz limited)		200mVp-p max.
Operating Frequency		20kHz min. / 50kHz typ. / 85kHz max.
	RV-xx1509D	20kHz min. / 47kHz typ.
Efficiency at Full Load		70% min. / 75% typ.
Minimum Load = 0%		Specifications valid for 10% minimum load only.
Isolation Voltage	(tested for 1 second)	6000VDC
	(rated for 1 minute**)	3000VAC / 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, without derating)		-40°C to +90°C (see Graph)
Storage Temperature Range		-55°C to +125°C

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

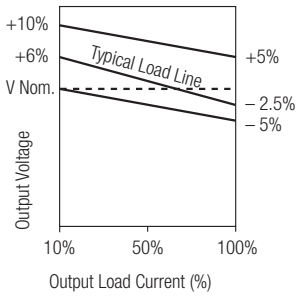
Specifications (measured at T_A = 25°C, nominal input voltage, full load and after warm-up))

Relative Humidity			95% RH
Package Weight			9g
Packing Quantity			15 pcs per Tube
MTBF (+25°C) } *Detailed Information see*		using MIL-HDBK 217F	1154 x 10^3 hours
(+85°C) } *Application Notes chapter "MTBF"*		using MIL-HDBK 217F	168 x 10^3 hours
Certifications	UL/cUL General Safety	Report: E358085	UL 60950-1 2nd Ed.
	EN General Safety	Report: SPCLVD1109103	EN60950-1:2006 + A12: 2011
	EN Medical Safety	Report: SPCMDD1205098-4	IEC/EN60601-1:2006, 3rd Edition

Notes

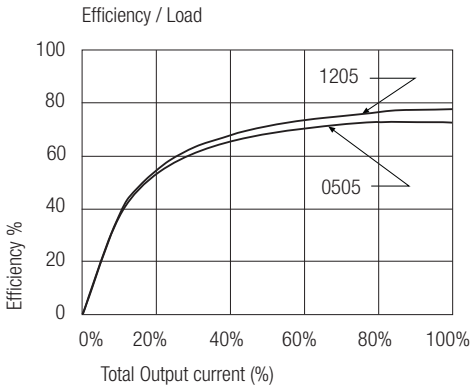
Note 1 Maximum capacitive load is defined as the capacitive load that will allow start up in under 1 second without damage to the converter.

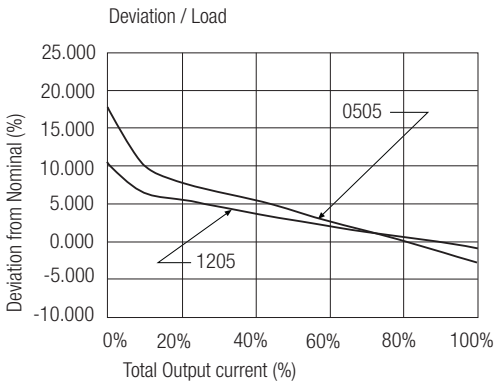
Tolerance Envelope



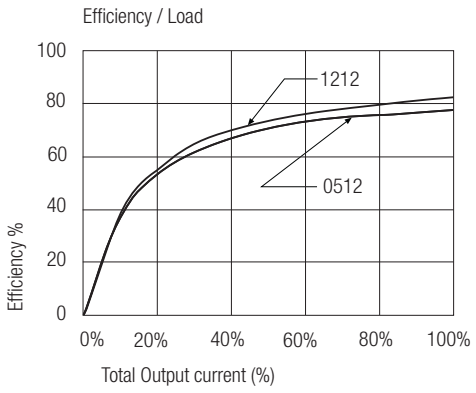
Typical Characteristics

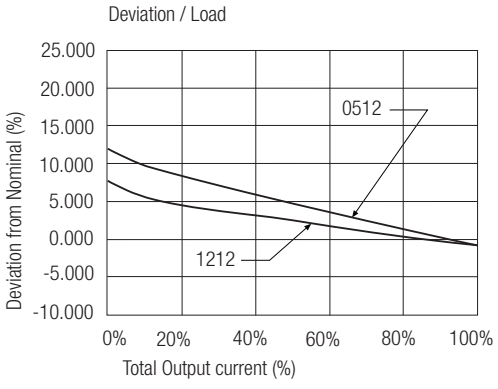
RV-xx05S





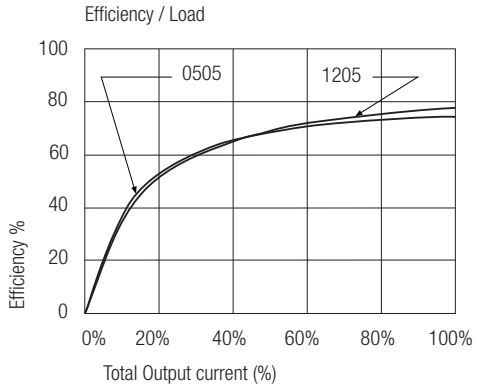
RV-xx12S

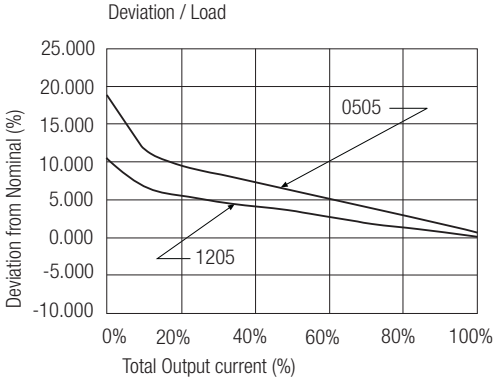




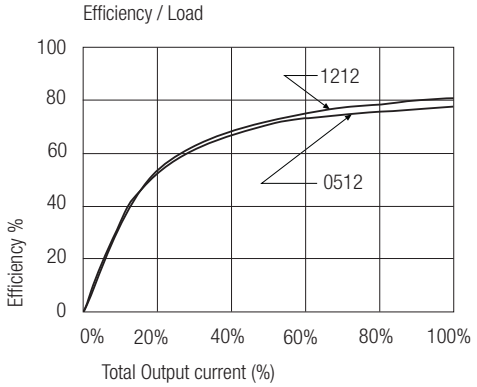
Typical Characteristics

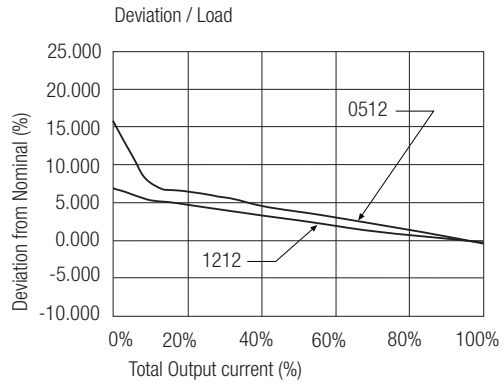
RV-xx05D





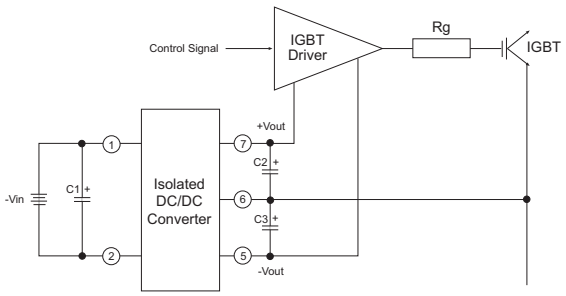
RV-xx12D





Applications

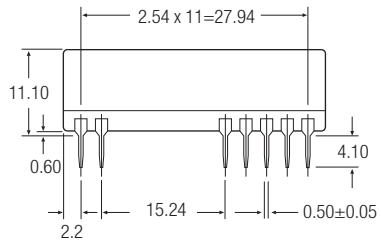
IGBT Application Circuit

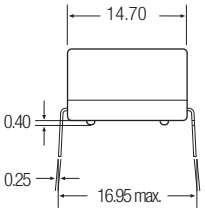


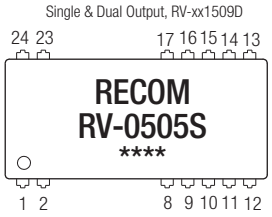
RV

Package Style and Pinning (mm)

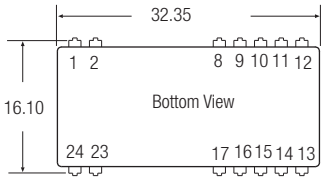
24 PIN DIP Miniature Package Style

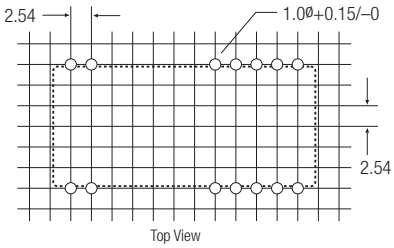






Recommended Footprint Details





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

RV