

Features

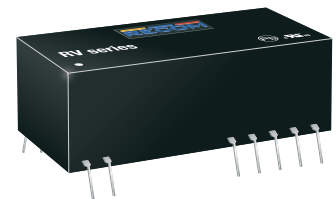
Unregulated Converters

- UL/CSA/IEC/EN safety certified and CB report
- 6kVDC/1s isolation
- Optional continuous short circuit protection
- Efficiency up to 82%
- Space saving package
- Very low isolation capacitance
- Suitable for IGBT application

RECOM
DC/DC Converter

RV

**2 Watt
DIP24
miniature
Single and Dual
Output**



UL60950-1 certified
CAN/CSA-C22.2 No. 60950-1-07 certified
IEC/EN60950-1 certified
UL62368-1 certified
CAN/CSA-C22.2 No. 62368-1-14 certified
IEC/EN62368-1 certified
CB report

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

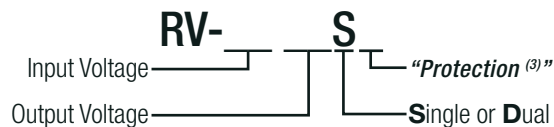
Part Number	nom. Input Voltage [VDC]	Output Voltage [VDC]	Output Current [mA]	Efficiency typ. ⁽¹⁾ [%]	max. Capacitive Load ⁽²⁾ [μF]
RV-xx3.3S ⁽³⁾	3.3, 5, 12, 15, 24	3.3	600	70	3300
RV-xx05S ⁽³⁾	3.3, 5, 12, 15, 24	5	400	70-75	1200
RV-xx09S ⁽³⁾	3.3, 5, 12, 15, 24	9	222	70-75	1200
RV-xx12S ⁽³⁾	3.3, 5, 12, 15, 24	12	167	70-75	680
RV-xx15S ⁽³⁾	3.3, 5, 12, 15, 24	15	132	75-80	680
RV-xx24S ⁽³⁾	3.3, 5, 12, 15, 24	24	83	75-80	220
RV-xx3.3D ⁽³⁾	3.3, 5, 12, 15, 24	±3.3	±300	70	±1500
RV-xx05D ⁽³⁾	3.3, 5, 12, 15, 24	±5	±200	70-75	±470
RV-xx09D ⁽³⁾	3.3, 5, 12, 15, 24	±9	±111	70-75	±470
RV-xx12D ⁽³⁾	3.3, 5, 12, 15, 24	±12	±85	70-75	±220
RV-xx15D ⁽³⁾	3.3, 5, 12, 15, 24	±15	±66	75-80	±220
RV-xx24D ⁽³⁾	3.3, 5, 12, 15, 24	±24	±42	75-80	±100
RV-xx1509D	5, 12, 24	+15/-9	+67/-111	70-82	±330

Notes:

Note1: Efficiency is tested at nominal input and full load at +25°C ambient

Note2: Max Cap Load is tested at nominal input and full resistive load

Model Numbering



Notes:

Note3: standard part is without continuous short circuit protection
add suffix „/P“ for continuous short circuit protection

Ordering Examples

RV-053.3S/P = 5V Input, 3.3V Output, Single, short circuit protection

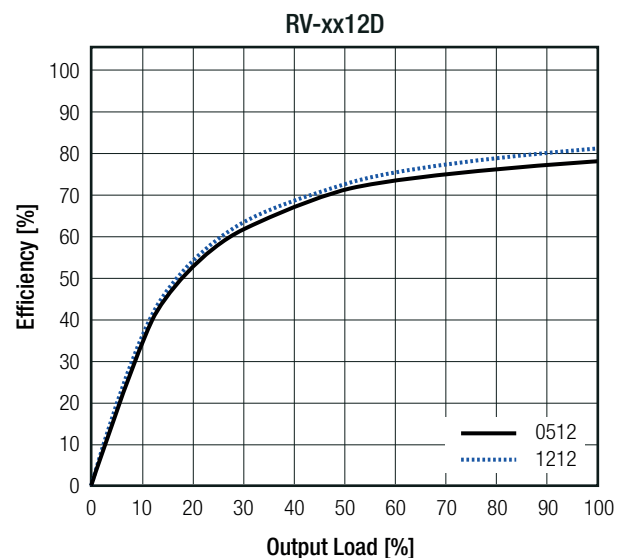
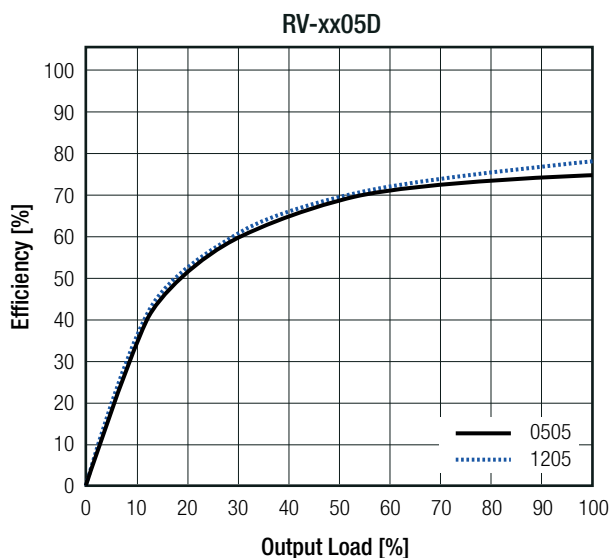
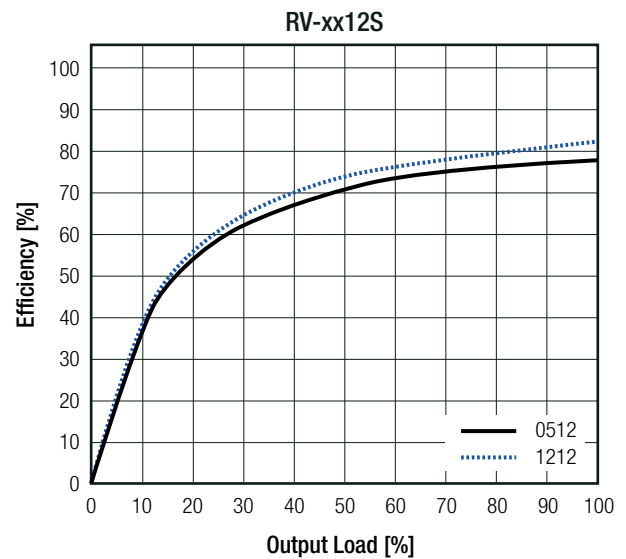
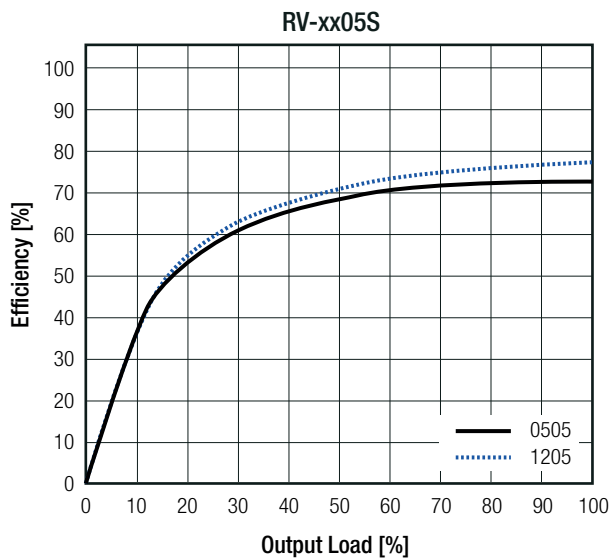
RV-1212D = 12V Input, 12V Output, Dual

Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

BASIC CHARACTERISTICS

Parameter	Condition	Min.	Typ.	Max.
Input Voltage Range			±10%	
Minimum Load		0%		
Internal Operating Frequency	all others RV-XX1509D	20kHz 20kHz	50kHz 47kHz	85kHz
Output Ripple and Noise	20MHz BW			200mVp-p

Efficiency vs. Load



REGULATIONS

Parameter	Condition		Value
Output Accuracy			±5.0% typ.
Line Regulation	low line to high line		±1.2% of 1.0% Vin typ.
Load Regulation ⁽⁴⁾	10% to 100% load	3.3Vout	20.0% max.
		5Vout	15.0% max.
		9, 12, 15, 24 and +15/-9Vout	10.0% max.

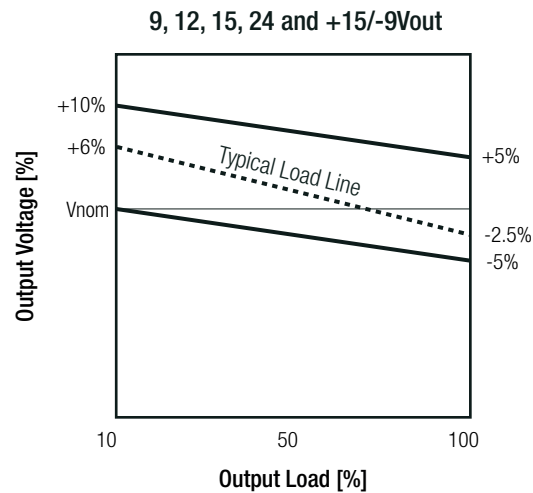
continued on next page

Specifications (measured @ $T_a = 25^\circ\text{C}$, nom. V_{in} , full load and after warm-up unless otherwise stated)

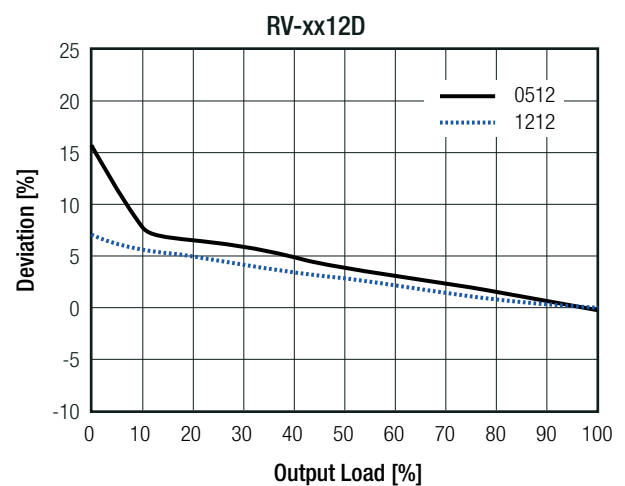
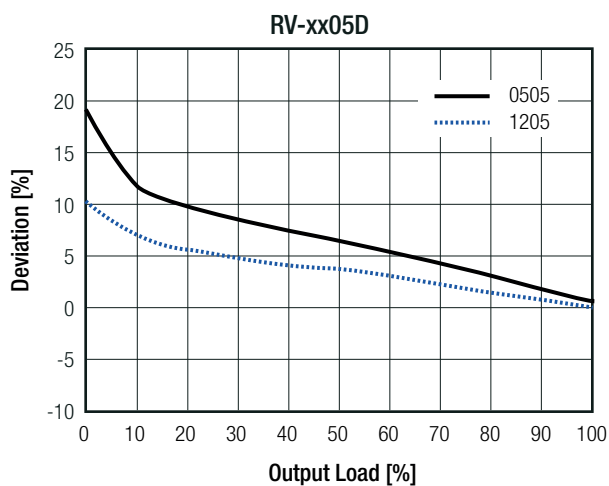
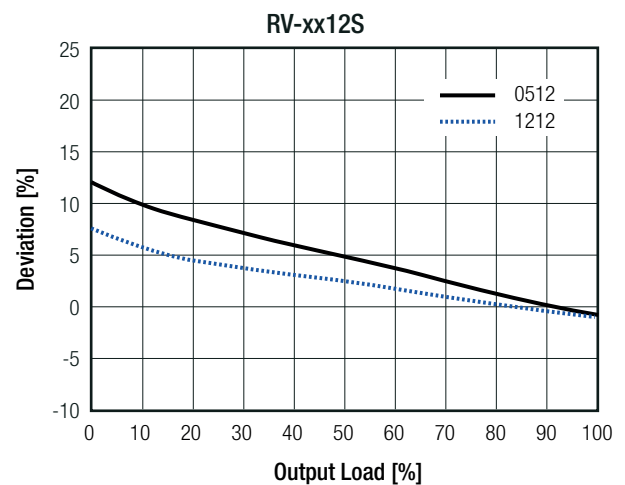
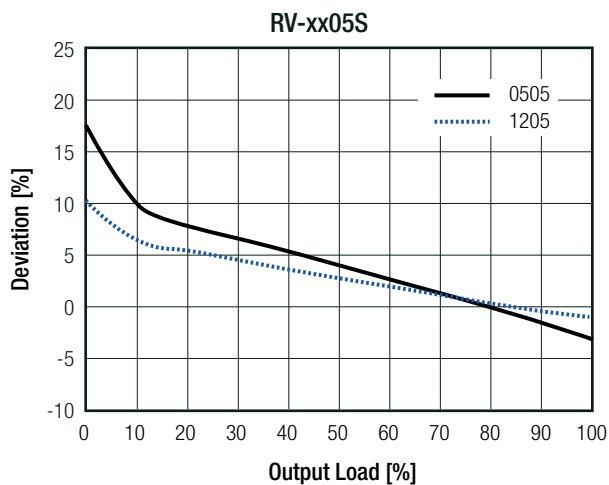
Notes:

Note4: Operation below 10% load will not harm the converter, but specifications may not be met

Tolerance Envelope



Deviation vs. Load



Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

PROTECTIONS

Parameter	Type		Value
Short Circuit Protection (SCP)	without suffix with suffix "/P"		1 second continuous
Isolation Voltage ⁽⁵⁾	I/P to O/P	tested for 1 second rated for 1 minute	6kVDC 3kVAC/60Hz
Isolation Resistance			15GΩ min.
Isolation Capacitance			2pF min. / 12pF max.
Insulation Grade			basic (IEC/EN60950-1, IEC/EN62368-1) functional (IEC/EN60601-1)

Notes:

Note5: For repeat Hi-Pot testing, reduce the time and/or the test voltage

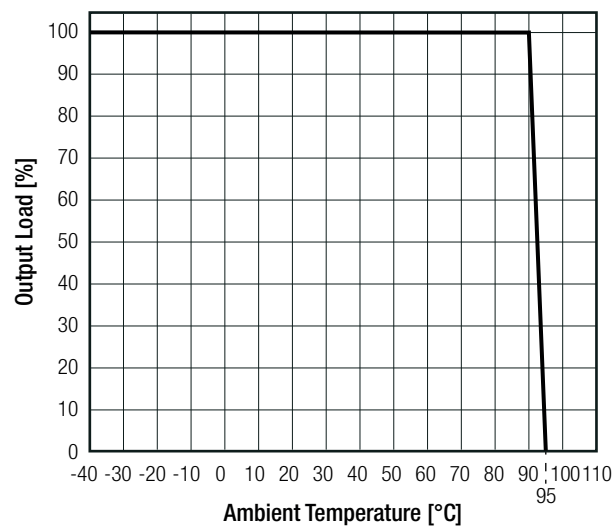
Note6: Refer to local safety regulations if input over-current protection is required. Recommended fuse: slow blow type

ENVIRONMENTAL

Parameter	Condition		Value
Operating Temperature Range	full load @ free air convection (see graph)		-40°C to +90°C
Operating Altitude			3000m
Operating Humidity	non-condensing		95% RH max.
Pollution Degree			PD2
MTBF	according to MIL-HDBK-217F, G.B.	+25°C +85°C	1154 x 10 ³ hours 168 x 10 ³ hours

Derating Graph

(@ free air convection)



Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

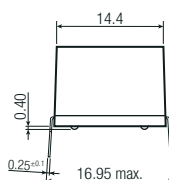
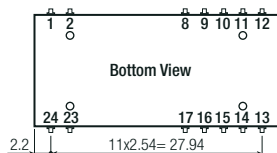
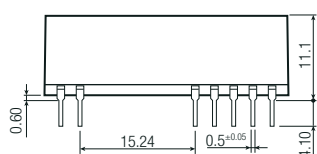
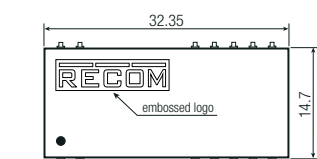
SAFETY AND CERTIFICATIONS

Certificate Type (Safety)	Report / File Number	Standard
Information Technology Equipment, General Requirements for Safety	E224736-A56-UL	CAN/CSA-C22.2 No. 60950-1-07, 2nd Edition, 2014 UL No. 60950-1, 2nd Edition, 2014
Information Technology Equipment, General Requirements for Safety (LVD)	LVD1602031	IEC60950-1:2005, 2nd Edition + A2:2013 EN60950-1:2006 + A2:2013
Audio/Video, information and communication technology equipment - Part1: Safety requirements	E224736-A56-UL	CAN/CSA-C22.2 No. 62368-1-14, 2nd Edition UL62368-1, 2nd Edition, 2014
Medical Electrical Equipment Part 1: General Requirements for Basic Safety and Essential Performance	WD-SE-R-180541-A0	IEC60601-1:2005 + A1:2012, 3rd Edition EN60601-1:2006 + A12:2014
Audio/Video, information and communication technology equipment - Part1: Safety requirements	ATTCB106076	EN62368-1:2014 + A11:2017
Audio/Video, information and communication technology equipment - Part1: Safety requirements (CB Scheme)		IEC62368-1:2014 2nd Edition
EAC	RU-AT.49.09571	TP TC 004/2011
RoHS 2		RoHS-2011/65/EU + AM-2015/863

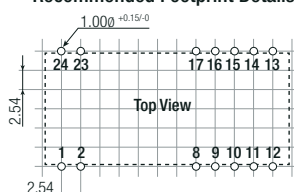
DIMENSION AND PHYSICAL CHARACTERISTICS

Parameter	Type	Value
Material	case potting PCB	non-conductive black plastic, (UL94 V-0) epoxy, (UL94 V-0) FR4, (UL94 V-0)
Dimension (LxWxH)		32.35 x 14.7 x 11.1mm
Weight		9.0g typ.

Dimension Drawing (mm)



Recommended Footprint Details



Pinning Information

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

NC= No Connection

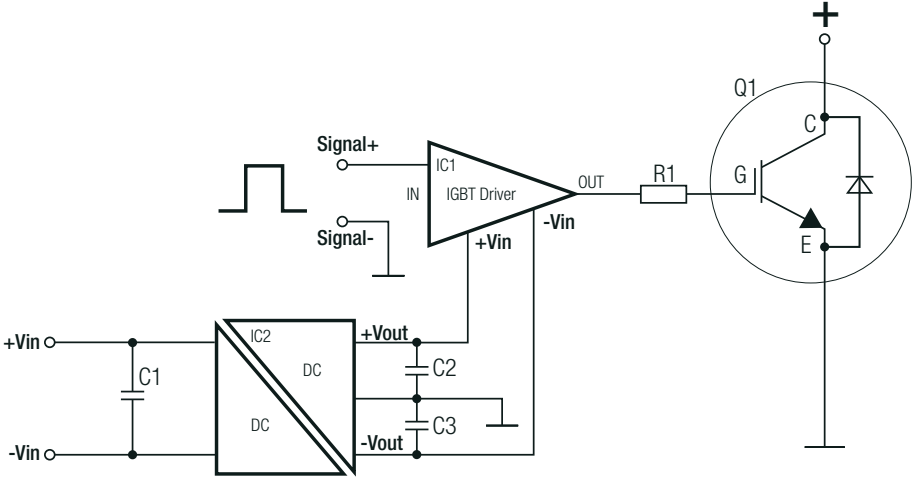
Tolerance: xx.x= ±0.5mm

xx.xx= ±0.25mm

Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

INSTALLATION AND APPLICATION

IGBT Application Circuit



PACKAGING INFORMATION

Parameter	Type	Value
Packaging Dimension (LxWxH)	tube	530.0 x 21.0 x 18.0mm
Packaging Quantity	tube	15pcs
Storage Temperature Range		-55°C to +125°C
Storage Humidity	non-condensing	95% RH max.

The product information and specifications may be subject to changes even without prior written notice. The product has been designed for various applications; its suitability lies in the responsibility of each customer. The products are not authorized for use in safety-critical applications without RECOM's explicit written consent. A safety-critical application is an application where a failure may reasonably be expected to endanger or cause loss of life, inflict bodily harm or damage property. The applicant 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.

Mouser Electronics

Authorized Distributor

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

RECOM:

[RV-0505D](#) [RV-0505D/P](#) [RV-0505S](#) [RV-0505S/P](#) [RV-0509D](#) [RV-0509D/P](#) [RV-0509S](#) [RV-0509S/P](#) [RV-0512D](#) [RV-0512D/P](#) [RV-0512S](#) [RV-0512S/P](#) [RV-0515D](#) [RV-0515D/P](#) [RV-0515S](#) [RV-0515S/P](#) [RV-0524D](#) [RV-0524D/P](#) [RV-0524S](#) [RV-0524S/P](#) [RV-053.3D](#) [RV-053.3D/P](#) [RV-053.3S](#) [RV-053.3S/P](#) [RV-0905D](#) [RV-0905D/P](#) [RV-0905S](#) [RV-0905S/P](#) [RV-0909D](#) [RV-0909D/P](#) [RV-0909S](#) [RV-0909S/P](#) [RV-0912D](#) [RV-0912D/P](#) [RV-0912S](#) [RV-0912S/P](#) [RV-0915D](#) [RV-0915D/P](#) [RV-0915S](#) [RV-0915S/P](#) [RV-0924D](#) [RV-0924D/P](#) [RV-0924S](#) [RV-0924S/P](#) [RV-093.3D](#) [RV-093.3D/P](#) [RV-093.3S](#) [RV-093.3S/P](#) [RV-1205D](#) [RV-1205D/P](#) [RV-1205S](#) [RV-1205S/P](#) [RV-1209D](#) [RV-1209D/P](#) [RV-1209S](#) [RV-1209S/P](#) [RV-1212D](#) [RV-1212D/P](#) [RV-1212S](#) [RV-1212S/P](#) [RV-1215D](#) [RV-1215D/P](#) [RV-1215S](#) [RV-1215S/P](#) [RV-1224D](#) [RV-1224D/P](#) [RV-1224S](#) [RV-1224S/P](#) [RV-123.3D](#) [RV-123.3D/P](#) [RV-123.3S](#) [RV-123.3S/P](#) [RV-1505D](#) [RV-1505D/P](#) [RV-1505S](#) [RV-1505S/P](#) [RV-1509D](#) [RV-1509D/P](#) [RV-1509S](#) [RV-1509S/P](#) [RV-1512D](#) [RV-1512D/P](#) [RV-1512S](#) [RV-1512S/P](#) [RV-1515D](#) [RV-1515D/P](#) [RV-1515S](#) [RV-1515S/P](#) [RV-1524D](#) [RV-1524D/P](#) [RV-1524S](#) [RV-1524S/P](#) [RV-153.3D](#) [RV-153.3D/P](#) [RV-153.3S](#) [RV-153.3S/P](#) [RV-2405D](#) [RV-2405D/P](#) [RV-2405S](#) [RV-2405S/P](#)