Features

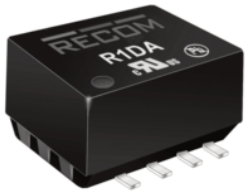
Unregulated Converter

- Fully RoHS 6/6 Conform
- Full Power at 100°C Ambient Temperature
- 1kVDC Isolation
- Suitable for Fully Automated Assembly (including Vapor Phase Soldering)
- Optional Continuous Short Circuit Protection

ECONOLINE
DC/DC-Converter

RECOM

1 Watt SMD Dual Independent Outputs



RoHS 2011/65/EU 6/6

E358085

UL-60950-1-Certified
EN-60950-1-Certified

R1DA

Description

The R1DA converters are of the enclosed open frame type, i.e. they are not potted.The converters are typically used in general purpose and industrial low power isolation and voltage matching applications where an SMD converter is required. The converter series feature an extended ambient temperature operating range of -40°C to +100°C without derating and optional continuous short circuit protection.In addition to single, dual and independent outputs, two isolation options and three different case formats, the converters are also available prepacked as tape and reel for use with automatic insertion machines.

Selection Guide

Part Number SMD	Input Voltage (VDC)	Output Voltage (VDC)	Output Current (mA)	Efficiency typ. (%)	Max Capacitive Load[1]**
R1DA**xx3.33.3	3.3, 5, 9, 12, 15, 24	3.3/3.3	150/150	75	470µF/470µF
R1DA**xx0505	3.3, 5, 9, 12, 15, 24	5/5	100/100	72-78	470µF/470µF
R1DA**xx0909	3.3, 5, 9, 12, 15, 24	9/9	56/56	74-78	220µF/220µF
R1DA**xx1212	3.3, 5, 9, 12, 15, 24	12/12	42/42	75-80	68µF/68µF
R1DA**xx1515	3.3, 5, 9, 12, 15, 24	15/15	33/33	75-82	68µF/68µF

xx = Input Voltage (other input and output voltage combinations available on request
* add Suffix "P" for Continuous Short Circuit Protection, e. g. R1DA-050505/P
* add Suffix -R for Tape & Reel Packing e.g. R1DA-050505-R. For more Details see Application Notes.

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

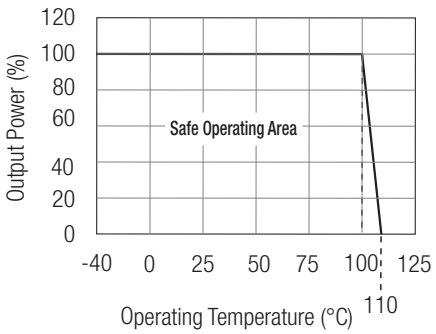
Input Voltage Range		±10%
Output Voltage Accuracy		-1% typ., ±5% max.
Line Voltage Regulation (Low Line to High Line @ max. Load)	All Variants	1% typ.
Load Regulation (10% to 100% Load)	3.3V output types	15% typ., 20% max.
	5V output types	12%typ. / 15% max.
	9V output types	7% typ., 10% max.
	12V, 15V output types	6% typ., 10% max.
Output Ripple and Noise (20MHz BW limited)		50 mVp-p typ. / 100mVp-p max.
Operating Frequency		20kHz min. / 50kHz typ. / 90kHz max.
Efficiency at Full Load		See Selection Guide
Minimum Load = 0%		Specifications valid for 10% minimum Load only
Isolation Voltage Input/Output	(tested for 1 second)	1000VDC
Isolation Voltage Output/Output	(rated for 1 minute**)	500VAC / 60Hz
Isolation Capacitance		75pF max.
Isolation Resistance	V_{iso}=500V	10 GΩ min.
Short Circuit Protection		1 Second
P-Suffix		Continuous
Operating Temperature Range		-40°C to +100°C (see Graph)
Storage Temperature Range		-50°C to +125°C
Reflow Temperature	RoHS compliant	245°C (30 sec), Peak 255°C (5 sec) max.
Vapor Phase Process	(for more details see Application Notes)	230°C (90 sec) max.
Relative Humidity		95% RH
Humidity Susceptibility Test		1000 hrs / 90% humidity / +85°C ambient

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.

Derating-Graph
(Ambient Temperature)

R1DA-0505



Refer to Application Notes

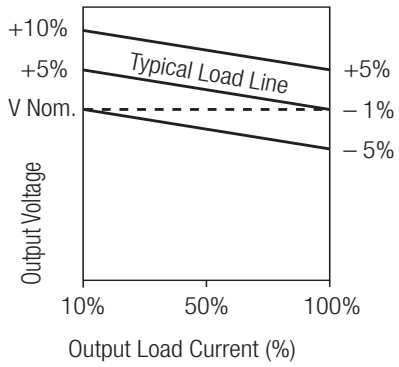
Specifications (measured at T_A = 25°C, nominal input voltage, full load and after warm-up

Package Weight		1.2g
Packing Quantity		33 pcs per tube / 500 pcs per reel
MTBF	Using MIL-HDBK 217F (+25°C)	1045 x 10^3 hours
	Using MIL-HDBK 217F (+85°C)	183 x 10^3 hours
Detailed Information see Application Notes chapter „MTBF“		
Certifications		
EN General Safety	Report: 10010807-2009	EN-60950-1. 2nd Edition
Conducted Emissions		EN55022 Class B with Filter
Radiated Emissions		EN55022 Class B with FIlter
UL General Safety	Report: E358085	UL60950-1, 2nd Edition

Notes

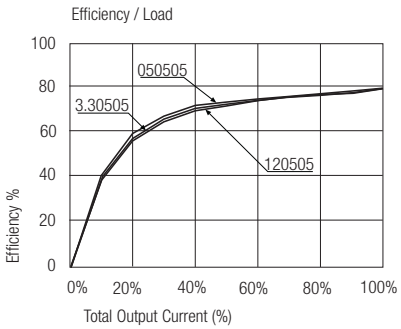
Note 1: Maximum capacitive load is defined as the capacitive load that will allow start up in under 1 second without damage to the converter.

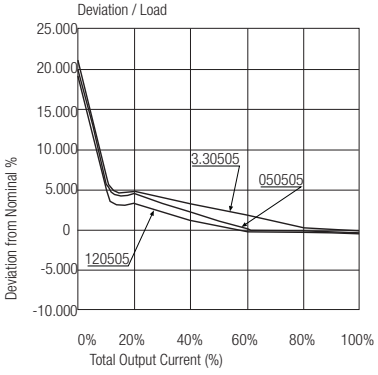
Tolerance Envelope



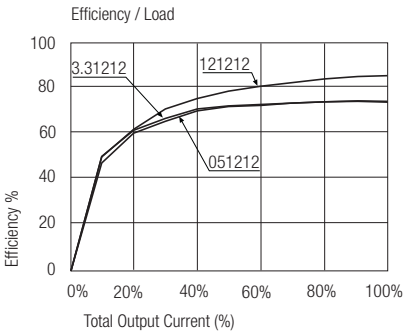
Typical Characteristics

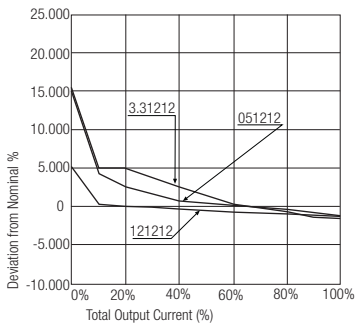
R1DA-xx0505





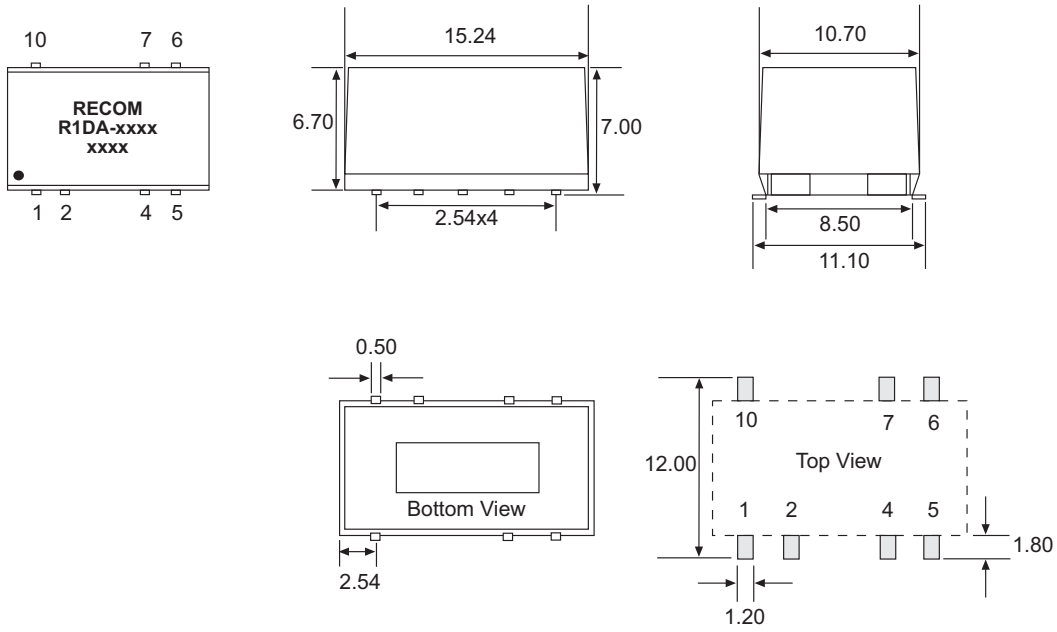
R1DA-xx1212





Package Style and Pinning (mm)

2 PIN Dual SMD Package

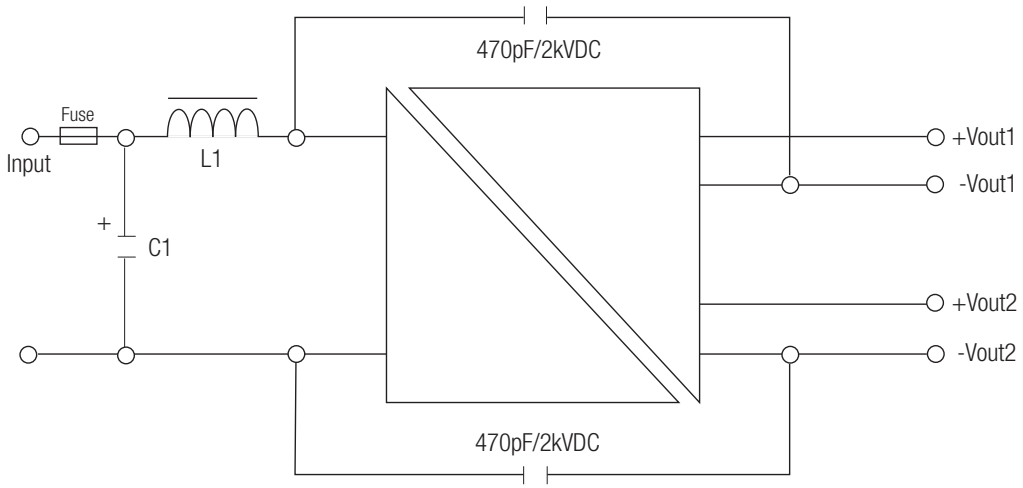


Pin Connections

Pin #	Function
1	–Vin
2	+Vin
4	-Vout1
5	+Vout1
6	-Vout2
7	+Vout2
10	NC

NC= No Connection

EMC Filtering - Suggestion for EN55022 Class B (Conducted and emitted)



Standard

C1	L1	Vin
2.2µF	4.7µH	3.3V
2.2µF	4.7µH	5V
2.2µF	10µH	9V
2.2µF	10µH	12V
2.2µF	10µH	15V
2.2µF	22µH	24V

/P versions

C1	L1	Vin
4.7µF	10µH	3.3V
4.7µF	10µH	5V
4.7µF	10µH	9V
4.7µF	10µH	12V
4.7µF	22µH	15V

C1 = MLCC
L1 = SMD Inductor

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