Features

Unregulated Converters

- Single output rail
- Industry standard pinout
- 1kVDC or 2kVDC/1s basic isolation
- High efficiency for low power applications
- UL94V-0 package material
- Optional continuous short circuit protection
- Fully encapsulated
- Efficiency up to 76%

RECOM
DC/DC Converter

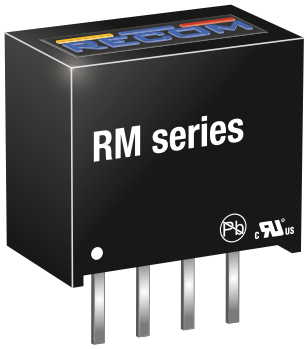
RM

0.25 Watt SIP4 Single Output

3 YEAR Warranty

Description

The RM series DC/DC converter has been designed for isolating or converting DC power rails with very light loads. Efficiencies are typically 10% higher than a comparable 0.5W or 1W converters run at the same low load.



Selection Guide

Part Number	nom. Input Voltage [VDC]	Output Voltage [VDC]	Output Current [mA]	Efficiency typ. (1) [%]	max. Capacitive Load (2) [µF]
RM-xx3.3S (3,4)	3.3, 5, 12, 15, 24	3.3	75	62-70	1000
RM-xx05S (3,4)	3.3, 5, 12, 15, 24	5	50	66-72	470
RM-xx09S (3,4)	3.3, 5, 12, 15, 24	9	28	70-72	470
RM-xx12S (3,4)	3.3, 5, 12, 15, 24	12	21	70-72	150
RM-xx15S (3,4)	3.3, 5, 12, 15, 24	15	17	70-76	150

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 and is defined as the capacitive load that will allow start up in under 1s without damage to the converter

RoHS 2+ compliant 10 from 10

REACH compliant

c UL us E358085

EAC

UL60950-1 certified
CAN/CSA-C22.2 No. 60950-1-03 certified
IEC60950-1 certified
EN60950-1 certified
EN55032 compliant

Model Numbering

RM- ___ S/ ___ ___

- ___ Input Voltage
- ___ Output Voltage
- ___ Protection (3)
- ___ Isolation Option (4)
- S/ **S**ingle

Notes:

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

Note4: add suffix „/H“ for 2kVDC isolation
or add suffix „/HP“ for continuous short circuit protection and 2kVDC isolation

Ordering Examples:

RM-1205S/P: 12V Input Voltage, 5V Output Voltage, Single Output with continuous short circuit protection
RM-0505S/HP: 5V Input Voltage, 5V Output Voltage, Single Output with 2kVDC Isolation and continuous short circuit protection

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

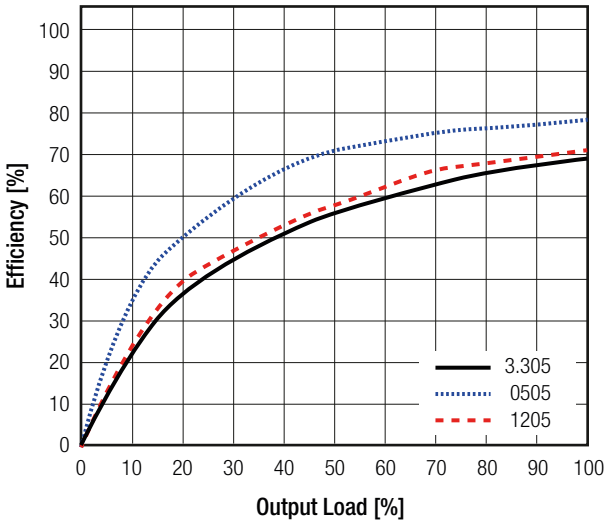
BASIC CHARACTERISTICS				
Parameter	**Condition**	**Min.**	**Typ.**	**Max.**
Input Voltage Range			±10%	
Minimum Load [5]		0%		
Internal Operating Frequency		50kHz	90kHz	105kHz
Output Ripple and Noise	20MHz BW			50mVp-p

Notes:

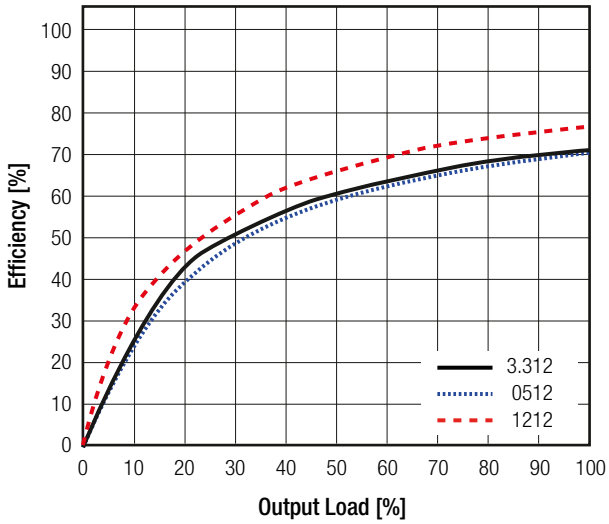
Note5: Operation below 10% load will not harm the converter, but specifications may not be met

Efficiency vs. Load

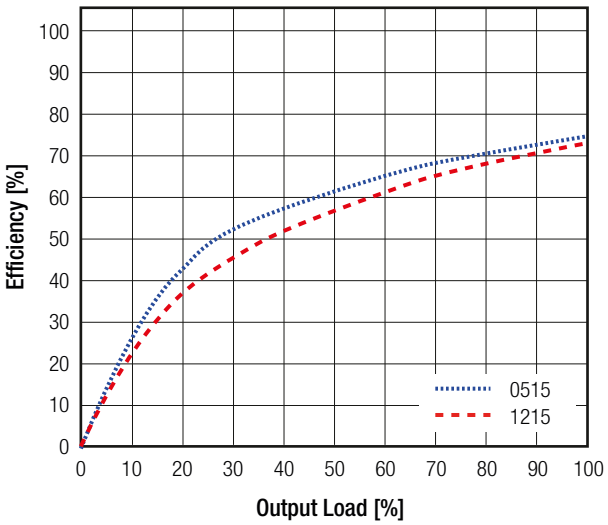
RM-xx05S



RM-xx12S



RM-xx15S



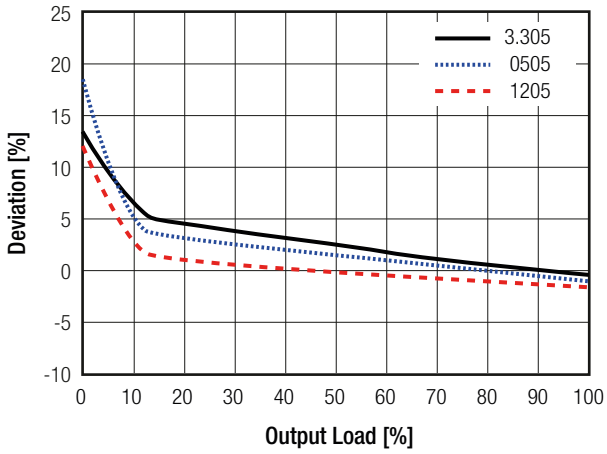
Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm up unless otherwise stated)

REGULATIONS

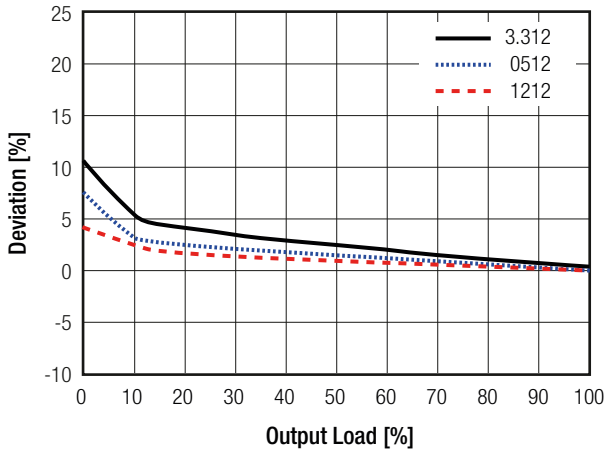
Parameter	Condition		Value
Output Accuracy			±5.0% max.
Line Regulation	low line to high line		±1.2% of 1.0% Vin typ.
Load Regulation	10% to 100% load	3.3Vout 5Vout 12, 15, 24Vout	20.0% max. 15.0% max. 10.0% max.

Deviation vs. Load

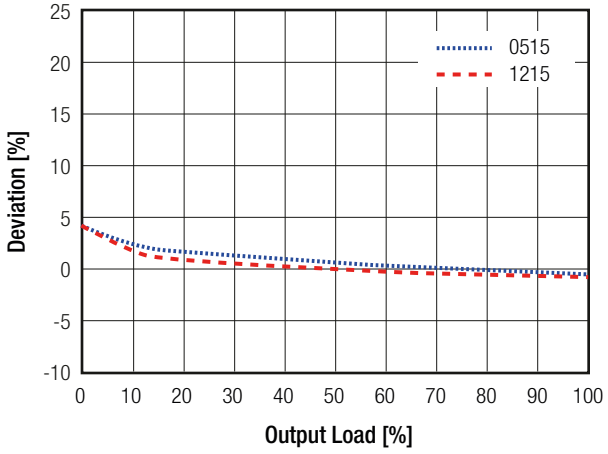
RM-xx05S



RM-xx12S



RM-xx15S



PROTECTIONS

Parameter	Type			Value
Short Circuit Protection (SCP)	without suffix with suffix "/P"			1 second continuous
Isolation Voltage [6]	I/P to O/P	without suffix	tested for 1 second rated for 1 minute	1kVDC 500VAC/60Hz
		with suffix "/H"	tested for 1 second rated for 1 minute	2kVDC 1.4kVAC/60Hz
Isolation Resistance				10GΩ min.
Isolation Capacitance				25pF min. / 82pF max.
Insulation Grade				basic

Notes:

Note6: For repeat Hi-Pot testing, reduce the time and/or the test voltage

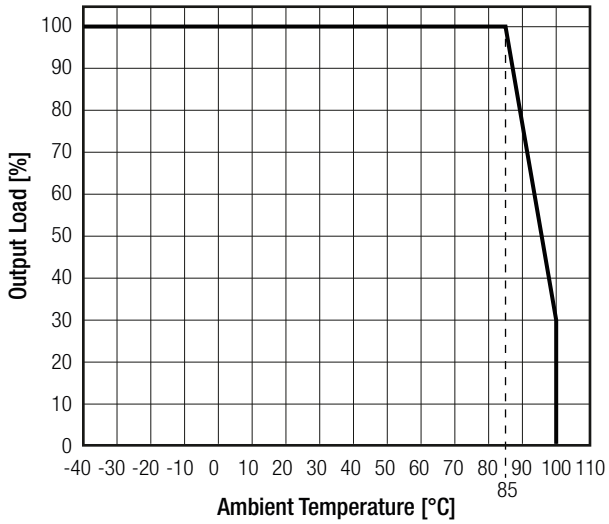
Note7: Refer to local wiring regulations if input over-current protection is also required. Recommended fuse: T0.5A slow blow type

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

ENVIRONMENTAL

Parameter	Condition		Value
Operating Temperature Range	full load @ free air convection (see graph)		-40°C to +85°C
Operating Altitude			2000m
Operating Humidity	non-condensing		95% RH max.
Pollution Degree			PD2
MTBF	according to MIL-HDBK-217F, G.B.	+25°C +85°C	1327 x 10^3 hours 302 x 10^3 hours

Derating Graph
(@ free air convection)

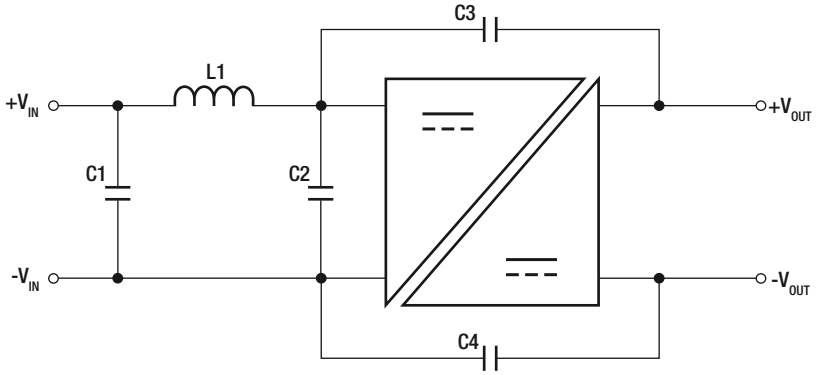


SAFETY AND CERTIFICATIONS

Certificate Type (Safety)	Report / File Number	Standard
Information Technology Equipment, General Requirements for Safety	1602031	IEC60950-1:2005, 2nd Edition + A2:2013 EN60950-1:2006 + A2:2013
Information Technology Equipment, General Requirements for Safety	E358085-A4-UL	UL60950-1, 2nd Edition:2007 CAN/CSA C22.2 No. 60950-1-03, 2nd Edition:2007
EAC	RU-AT.49.09571	TP TC 004/2011
RoHs 2+		RoHS-2011/65/EU + AM-2015/863

EMC Compliance	Condition	Standard / Criterion
Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement	with external filter	EN55032, Class B

EMC Filtering Suggestions according to EN55032



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

Component List Class A

Model	C1	C2	C4 (safety)
3.3, 5Vin	10µF 100V, MLCC	N/A	-
12, 15, 24Vin			2.2nF, 5KV, Johanson

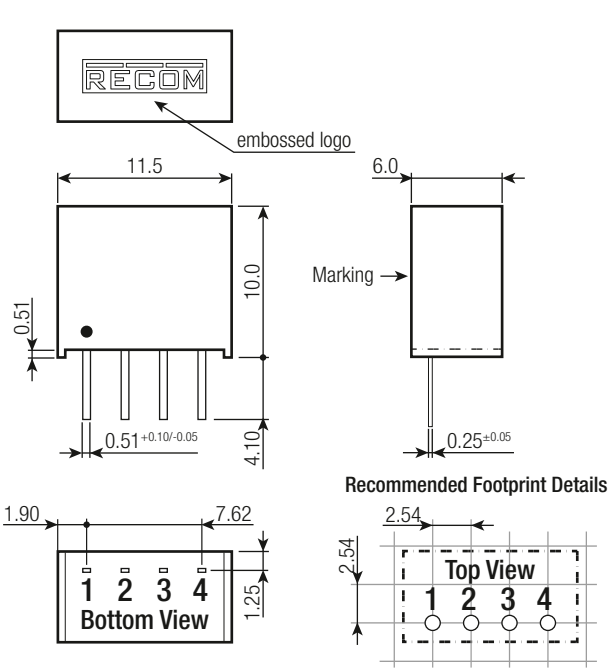
Component List Class B

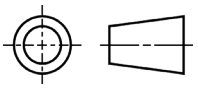
Model	L1	C1	C3 (safety)	C4(safety)
all types	22µH choke RP4532Z-220K	10µF MLCC, 100V	1nF 5KV, Johanson	2.2nF 5KV, Johanson

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)		11.5 x 6.0 x 10.0mm
Weight		1.4g typ.

Dimension Drawing (mm)





Pinning information

Pin #	Single
1	-Vin
2	+Vin
3	-Vout
4	+Vout

Tolerance:
xx.x= ±0.5mm
xx.xx= ±0.25mm

PACKAGING INFORMATION

Parameter	Type	Value
Packaging Dimension (LxWxH)	tube	520.0 x 16.0 x 9.0mm
Packaging Quantity	tube	42pcs
Storage Temperature Range		-55°C to + 125°C
Storage Humidity		95% RH max.