

# Features

## Unregulated Converters

- Ultra-compact - only 8.3 x 8.3 x 6.8mm
- 1kVDC or 2kVDC Isolation
- No External Components Required
- Optional Continuous Short Circuit Protected
- Fully Encapsulated
- UL and EN Certified, CB Report
- Efficiency to 84%

### Description

The RNM series DC/DC converters are ultra-compact isolated single output converters for applications where board space is at a premium. Despite their small size, the converters are fully featured with a full industrial operating temperature range of -40°C to +85°C without derating (+100°C with derating), 1kVDC or 2kVDC isolation and optional short circuit protection. The converters are also UL-60950 and EN-60950 certified and have a CB Report.

### Selection Guide

Part Number	Input Voltage (2kV) (VDC)	Output Voltage (VDC)	Output Current (mA)	Efficiency (%)
RNM-xx3.3S	(H) 3.3, 5, 12, 15	3.3	303	75
RNM-xx05S	(H) 3.3, 5, 12, 15	5	200	70-78
RNM-xx09S	(H) 3.3, 5, 12, 15	9	111	70-78
RNM-xx12S	(H) 3.3, 5, 12, 15	12	83	76-78
RNM-xx15S	(H) 3.3, 5, 12, 15	15	66	78-84

xx = Input Voltage (other input and output voltage combinations available on request)

\* add Suffix "P" for Continuous Short Circuit Protection, e.g. RNM-0505S/P, RNM-0505S/HP

### Specifications (measured at T<sub>A</sub> = 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 (10% to 100% full load)	3.3V output type 5V output type 9V, 12V and 15V output types	20% max. 15% max. 10% max.	
Output Ripple and Noise (20MHz limited)		100mVp-p max.	
Operating Frequency		50kHz min. / 100kHz typ. / 105kHz max.	
Efficiency at Full Load		70% min.	
No Load Power Consumption		101mW min. / 126mW typ. / 220mW max.	
Maximum Capacitive Load		33µF	
Isolation Voltage	(tested for 1 second)	1000VDC min.	
Rated Working Voltage	(long term isolation)	see Application Notes	
Isolation Voltage	H-Suffix (tested for 1 second)	2000VDC min.	
Rated Working Voltage	H-Suffix (long term isolation)	see Application Notes	
Isolation Capacitance		20pF min. / 75pF max.	
Isolation Resistance		10 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		1.1g	
Packing Quantity		60 pcs per Tube	
MTBF (+25°C)	Detailed Information see Application Notes chapter "MTBF"	using MIL-HDBK 217F	977 x 10 <sup>3</sup> hours
(+85°C)		using MIL-HDBK 217F	189 x 10 <sup>3</sup> hours

# ECONOLINE

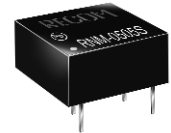
DC/DC-Converter



1 Watt

DIP6

Single Output



E-224736

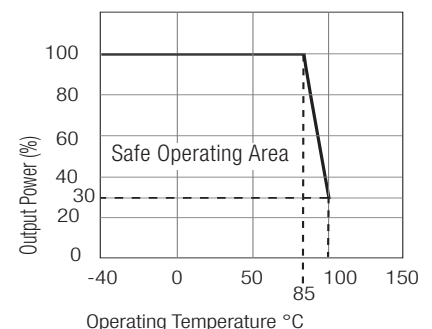


UL-60950-1 Certified  
EN-60950-1 Certified

# RNM

## Derating-Graph

(Ambient Temperature)



Refer to Application Notes

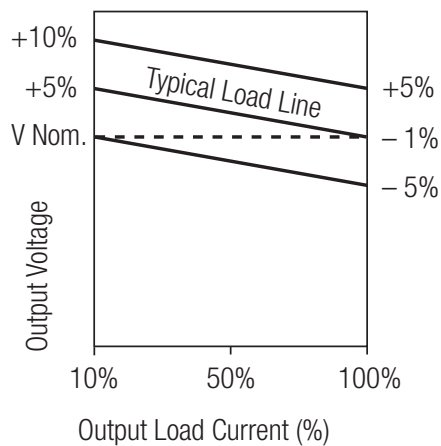
www.recom-electronic.com

### Specifications (cont.)

#### Certifications

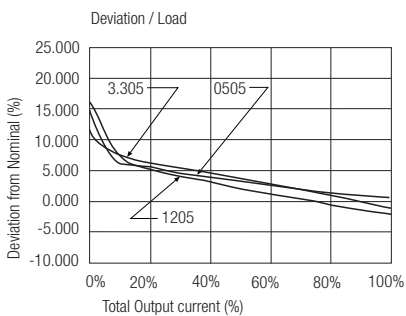
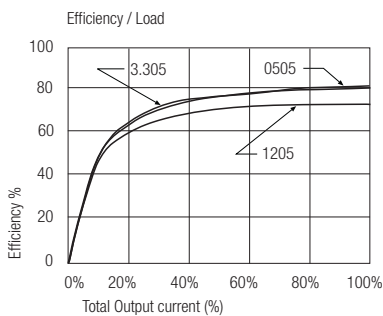
CB Test Report		Report: US/14402/UL
UL General Safety	Report: E322406	UL 60950-1 1st Ed.
EN General Safety	Report: PS080804950	EN60950-1

#### Tolerance Envelope

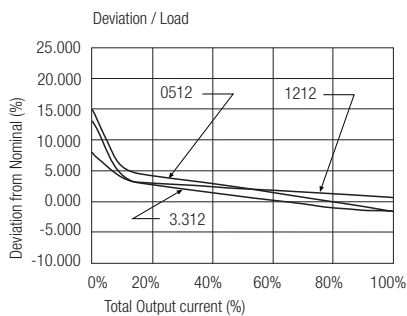
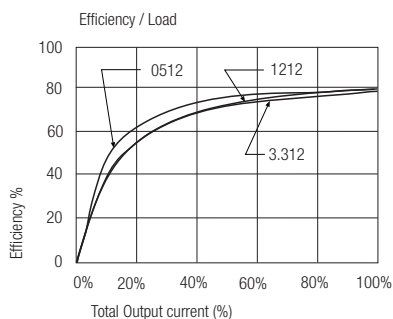


### Typical Characteristics

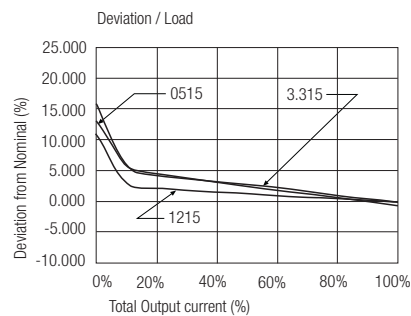
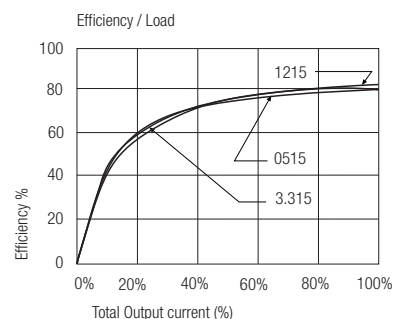
## RNM-xx05S



## RNM-xx12S



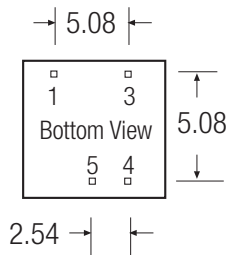
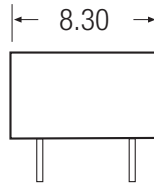
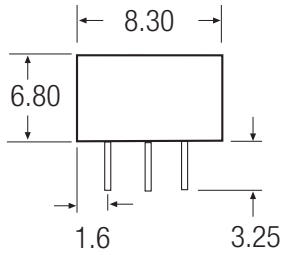
## RNM-xx15S



### Package Style and Pinning (mm)

4 PIN DIP Package

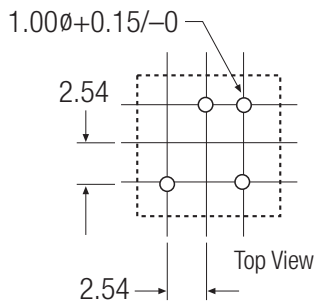
3rd angle projection 



#### RNM Pin Connections

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

XX.XX ± 0.25 mm



#### Recommended Footprint Details