



**THE DATASHEET OF  
RI-0512S**



# Features

- 1kVDC/1 second basic isolation
- Optional continuous short circuit protection
- UL94 V-0 package material
- No heatsink required
- Efficiency up to 85%

# Unregulated Converters

## RI

**2 Watt  
SIP4  
Single Output**



### Description

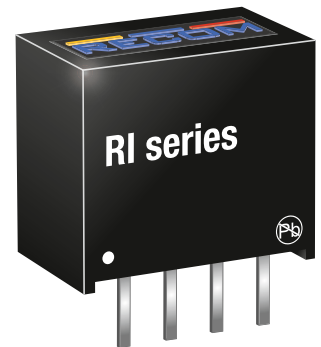
The RI series has been specifically designed for applications where board space is at a premium since these 2 Watt converters have only a slightly larger foot print than the RO series 1 Watt converters. With efficiencies up to 85%, the full output power is available over the operating temperature range -40°C to +85°C and the converters can be used in ambient temperatures of up to 100°C with derating. The wide selection of input voltage and output voltage options plus an I/O-Isolation of 1kVDC as standard makes these converters suitable for many industrial applications.

### Selection Guide

Part Number	nom. Input Voltage [VDC]	Output Voltage [VDC]	Output Current [mA]	Efficiency typ. <sup>(1)</sup> [%]	max. Capacitive Load <sup>(2)</sup> [µF]
RI-xx05S <sup>(3)</sup>	5, 12, 15, 24	5	400	78-83	1200
RI-xx12S <sup>(3)</sup>	5, 12, 15, 24	12	167	80-85	680
RI-xx15S <sup>(3)</sup>	5, 12, 15, 24	15	133	80-85	680

#### 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



### Model Numbering



#### Notes:

- Note3: standard part is without Continuous Short Circuit Protection  
 add suffix „/P“ for Continuous Short Circuit Protection

#### Ordering Examples:

RI-123.3S/P: 12V Input Voltage, 3.3V Output Voltage, Single Output with continuous short circuit protection  
 RI-0509S: 5V Input Voltage, 9V Output Voltage, Single Output

EN60950-1 certified  
 IEC60950-1 certified

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

**BASIC CHARACTERISTICS**

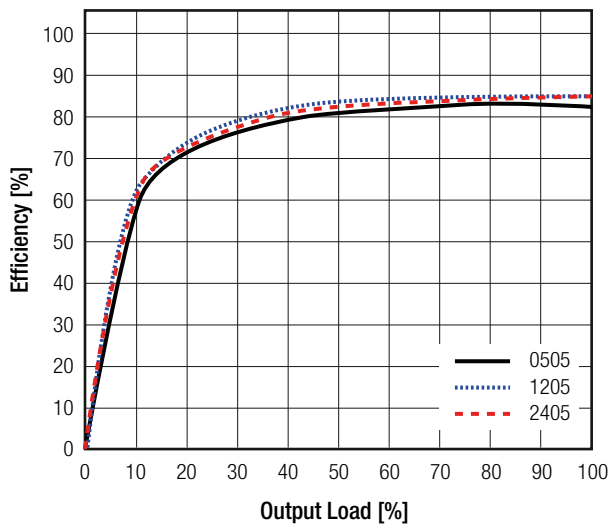
Parameter	Condition	Min.	Typ.	Max.
Input Voltage Range			±10%	
Minimum Load <sup>(4)</sup>		0%		
Internal Operating Frequency		20kHz	50kHz	85kHz
Output Ripple and Noise	20MHz BW			200mVp-p

**Notes:**

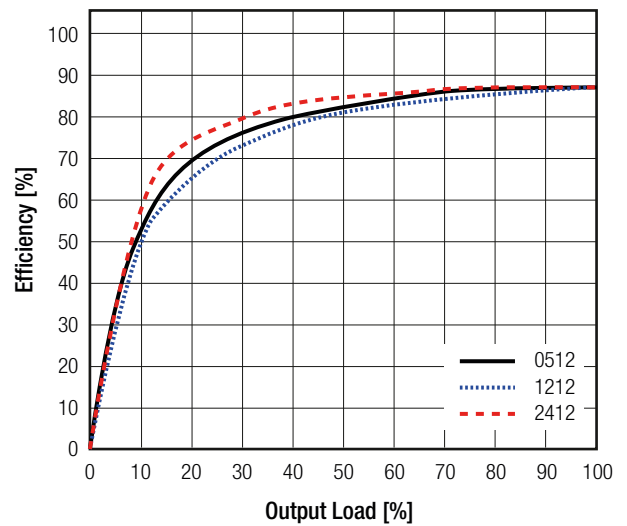
Note4: Operation below 10% load will not harm the converter, but specifications may not be met

**Efficiency vs. Load**

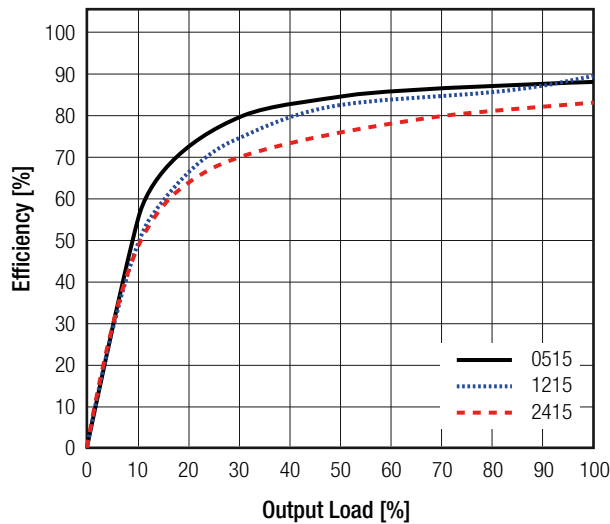
**RI-xx05S**



**RI-xx12S**



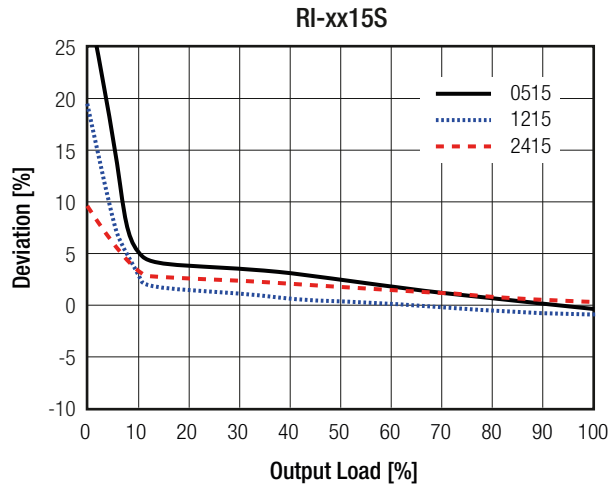
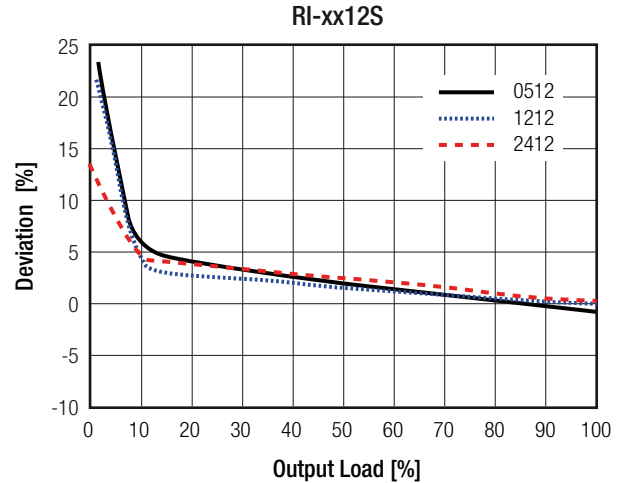
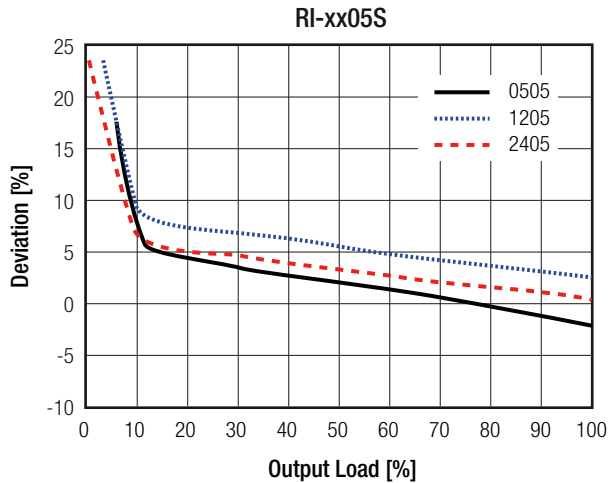
**RI-xx15S**



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

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

### Deviation vs. Load



PROTECTIONS			
Parameter	Type		Value
Short Circuit Protection (SCP)	without suffix with suffix "/P"		1 second continuous
Isolation Voltage <sup>(6)</sup>	I/P to O/P	tested for 1 second tested for 1 minute	1kVDC 500VAC/60Hz
Isolation Resistance			10GΩ min.
Isolation Capacitance			30pF min./ 85pF max.
Insulation Grade			basic

#### Notes:

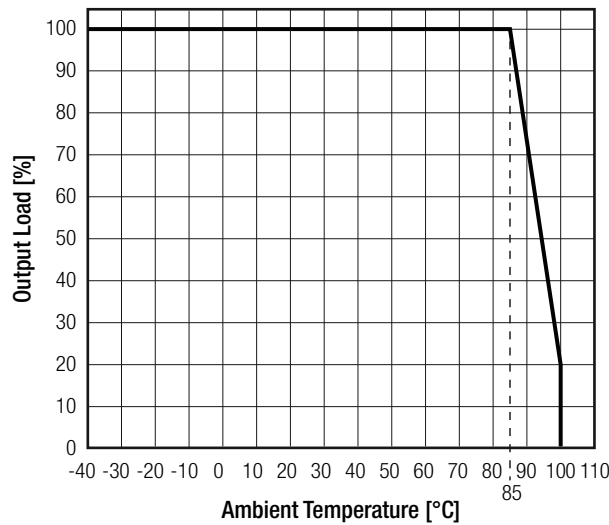
Note5: For repeat Hi-Pot testing, reduce the time and/or the test voltage

Note6: Refer to local wiring regulations if input over-current protection is also required. Recommended fuse: T2A slow blow type

**Specifications** (measured @ Ta= 25°C, nom. Vin and full load 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	17900 x 10 <sup>3</sup> hours
		+85°C	7800 x 10 <sup>3</sup> hours

**Derating Graph**  
(@ free air convection)

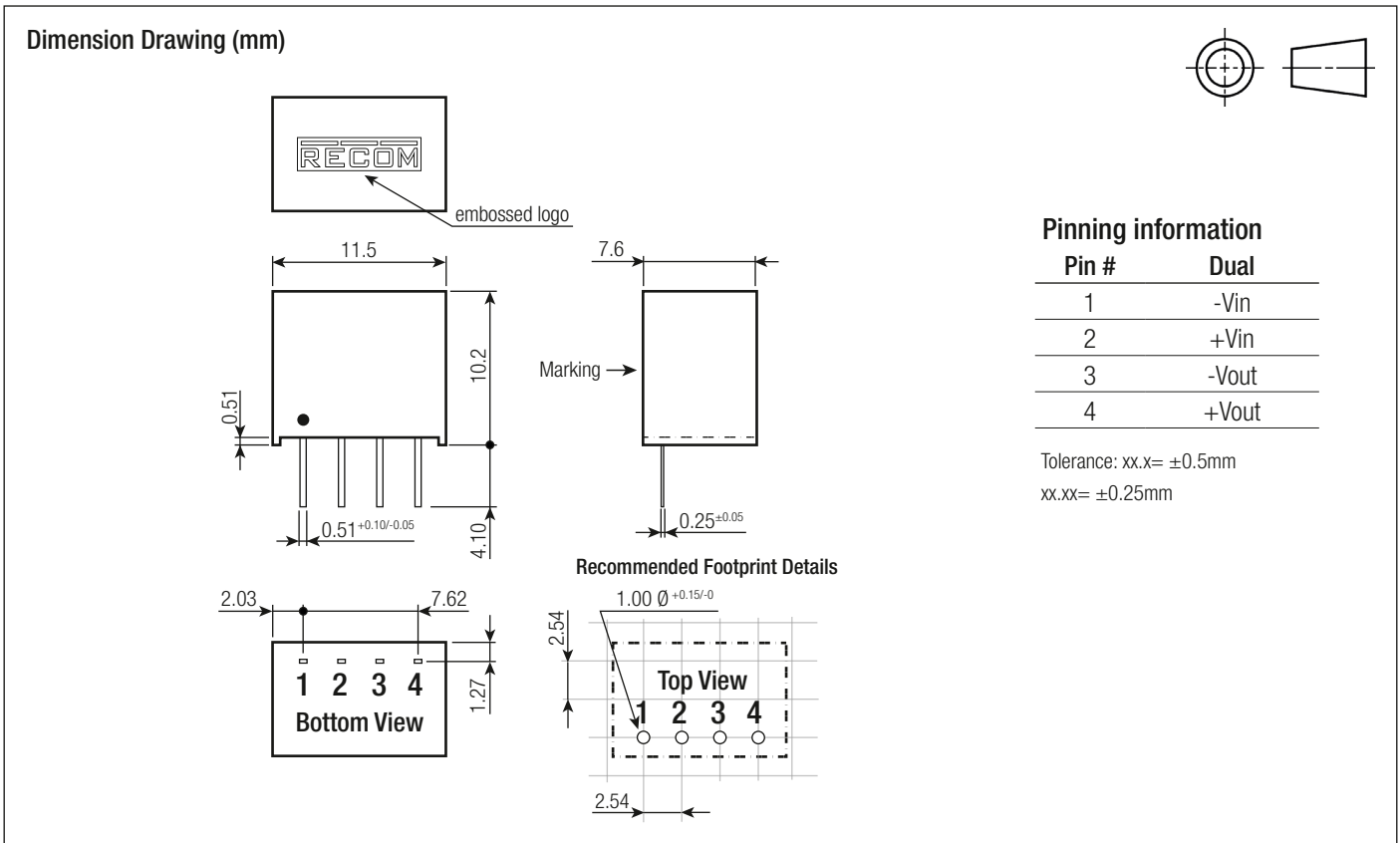


SAFETY AND CERTIFICATIONS		
Certificate Type (Safety)	Report / File Number	Standard
Information Technology Equipment, General Requirements for Safety	1602031	IEC60950-1:2005, 2nd Edition + A2:2013 EN60950-1:2006 + A2:2013
EAC	RU-AT.49.09571	TP TC 004/2011
RoHs 2+		RoHS-2011/65/EU + AM-2015/863

DIMENSION AND PHYSICAL CHARACTERISTICS		
Parameter	Type	Value
Material	case	non-conductive black plastic (UL94 V-1)
	potting	epoxy, (UL94 V-0)
	PCB	FR4, (UL94 V-0)
Dimension (LxWxH)		11.5 x 7.6 x 10.2mm
Weight		2.0g typ.

continued on next page

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





**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.

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.

## Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

-  [View RI-0512S on WIN SOURCE](#)
-  [Recom Power Information](#)

## Optimize Your Supply Chain with WIN SOURCE Solutions

-  Global Sourcing Solution
-  Obsolete Management
-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management