

Features

Regulated Converters

- Low cost
- 1:1 Input voltage range
- Efficiency up to 81%
- 4kVDC/1 second isolation
- IEC/EN/UL 62368-1 certified
- Post regulated

RECOM
DC/DC Converter

RYK

**1 Watt
SIP7
Single Output**



cUL
E224736

Description

The RYK DC/DC converters are typically used in cost sensitive general purpose power isolation and voltage matching applications. Despite their low cost, they are fully specified converters with a built-in linear regulator to give a regulated, load-independent output. The converters are equipped with 4kVdc isolation, industrial operating temperature range of -40°C to +105°C without derating, and UL/EN certifications.

Selection Guide

Part Number	nom. Input Voltage [VDC]	Output Voltage [VDC]	Output Current [mA]	Efficiency typ. ⁽¹⁾ [%]	max. Capacitive Load ⁽²⁾ [μF]
RYK-0505S/H	5	5	200	81	3000
RYK-053.3S/H	5	3.3	303	75	3000

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



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

BASIC CHARACTERISTICS				
Parameter	Condition	Min.	Typ.	Max.
Internal Input Filter		internal capacitors		
Input Voltage Range			±10%	
Absolute Maximum Input Voltage ⁽³⁾				6VDC
Input Current	5Vout 3.3Vout			250mA 230mA
Start-up Time				50ms
Minimum Load		0%		
Internal Operating Frequency	100% load			1MHz
Output Ripple and Noise ⁽⁴⁾	20MHz BW		60mVp-p	

Notes:

Note3: An 4.7μF/10V MLCC at input terminal is recommended if transient input voltage above 6VDC.

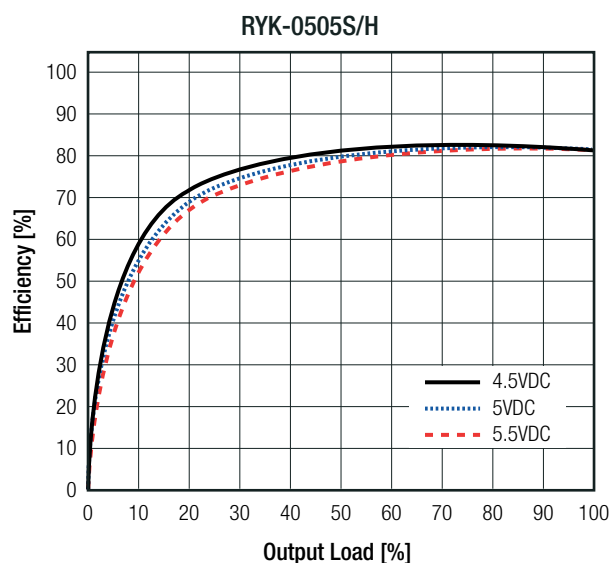
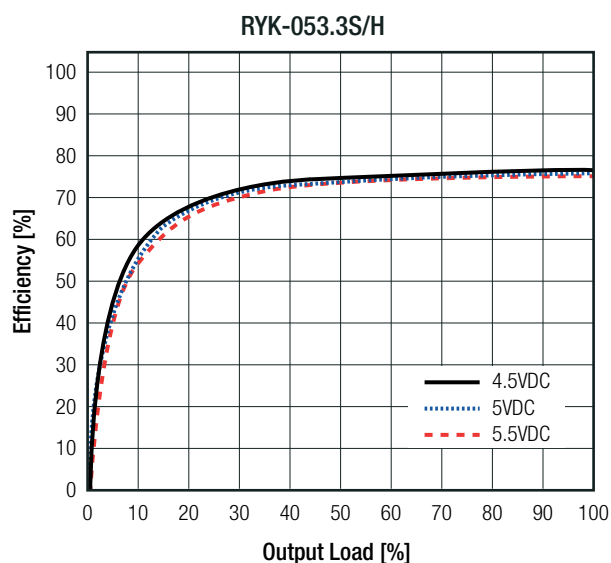
Note4: Measurements are made with a 0.1μF MLCC across output. (low ESR)

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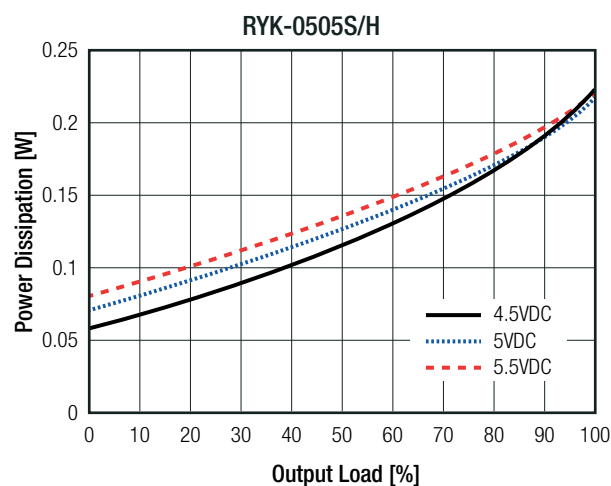
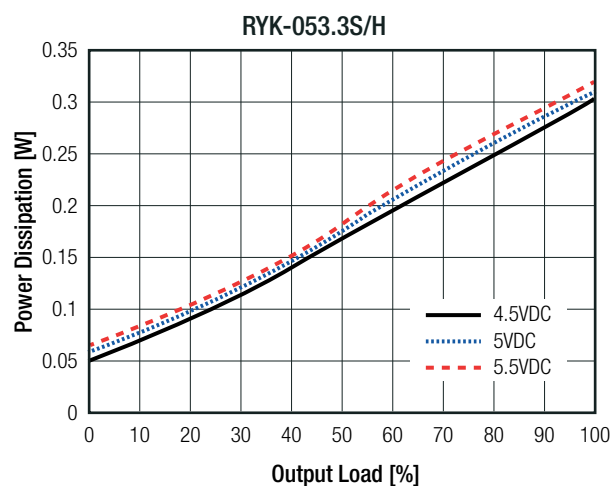
UL62368-1 certified
CAN/CSA-C22.2 No. 62368-1 certified
IEC/EN62368-1 certified
EN55032 compliant

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

Efficiency vs. Load



Power Dissipation vs. Load

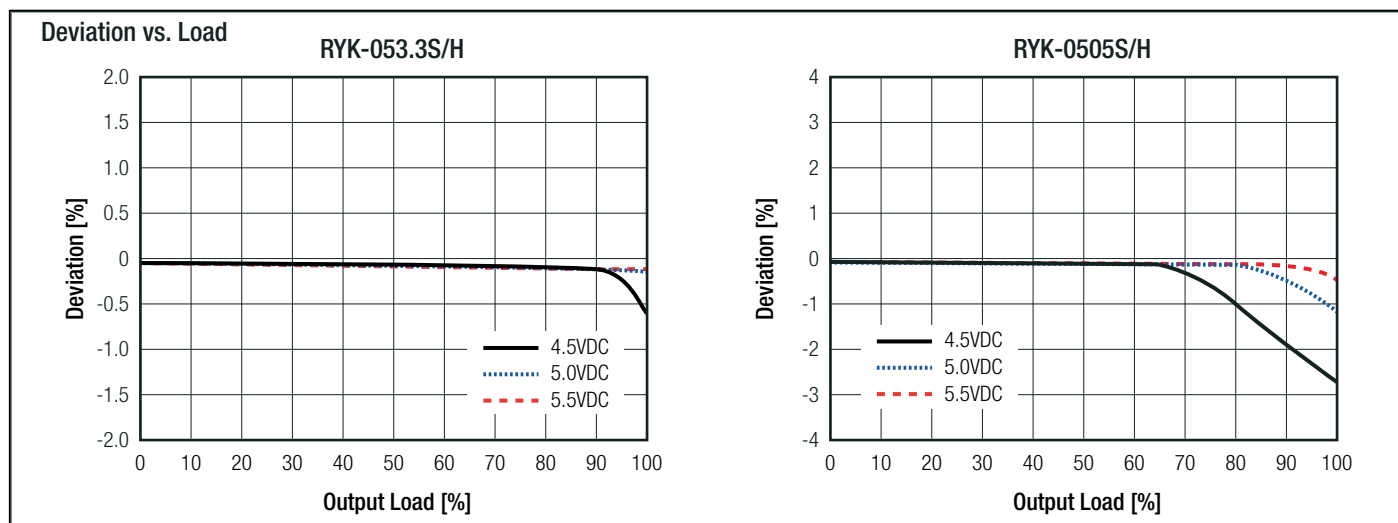


REGULATIONS

Parameter	Condition		Output Current	Value
Output Accuracy	5Vout		0-150mA >150mA	±1.0% max. refer to „Deviation vs. Load“
	3.3Vout		0-250mA >250mA	±1.0% max. refer to „Deviation vs. Load“
Line Regulation	low line to high line	5Vout	0-150mA >150mA	±1.0% max. refer to „Deviation vs. Load“
		3.3Vout	0-250mA >250mA	±0.5% max. refer to „Deviation vs. Load“
Load Regulation	0% to 75% load 75% to 100% load	5Vout		±1.0% max. refer to „Deviation vs. Load“
	0% to 80% load 80% to 100% load	3.3Vout		±1.0% max. refer to „Deviation vs. Load“

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



PROTECTIONS

Parameter	Type	Value
Short Circuit Protection (SCP)	short circuit impedance	<0.1Ω
Isolation Voltage ⁽⁵⁾	I/P to O/P	1 second
		1 minute
Isolation Resistance	I/P to O/P, V _{ISO} = 500VDC	4kVDC
Isolation Capacitance	I/P to O/P, 100kHz/0.1V	3kVDC
		1GΩ min.
		10pF typ.

Notes:

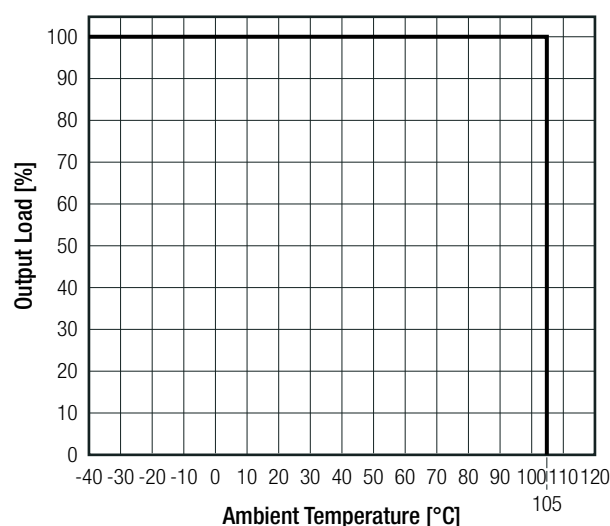
Note5: For repeat Hi-Pot testing, reduce the time and/or the test voltage

ENVIRONMENTAL

Parameter	Condition		Value
Operating Temperature Range	@ natural convection 0.1m/s	full load	-40°C to +105°C
Maximum Case Temperature			120°C
Operating Altitude			2000m
Operating Humidity	non-condensing		95% RH max.
Pollution Degree			PD2
MTBF	according to MIL-HDBK-217F, G.B.	+85°C	2500 x 10 ³ hours

Derating Graph

(@ Chamber and natural convection 0.1 m/s)

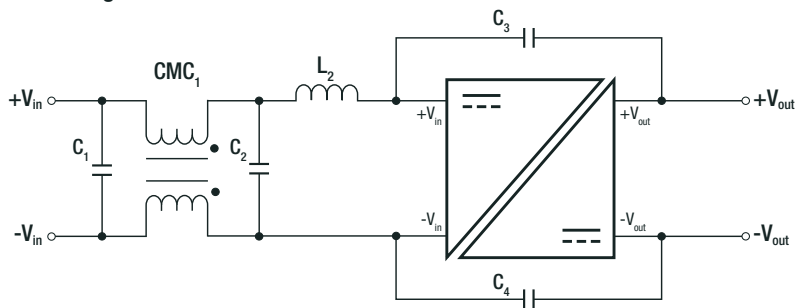


Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

SAFETY AND CERTIFICATIONS

Certificate Type (Safety)	File Number	Standard
Audio/video, information and communication technology equipment. Safety requirements	E518942-A6001-UL	UL62368-1:2014 CAN/CSA-C22.2 No. 62368-1:2014
Audio/Video, information and communication technology equipment - Part1: Safety requirements (CB Scheme)	E518942-A6001-CB-1	IEC62368-1:2014 2nd Edition
Audio/Video, information and communication technology equipment - Part1: Safety requirements (LVD)		EN62368-1:2014 + A11:2017
RoHS2+		RoHS-2011/65/EU + AM-2015/863
EMC Compliance	Condition	Standard / Criterion
Electromagnetic compatibility of multimedia equipment – Emission Requirements	with external filter refer to “EMC Filtering”	EN55032

EMC Filtering Suggestions according to EN55032



Component List Class A

C2	L2	C3,C4
10μF	RLS-226 , 22μH	470pF

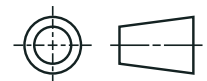
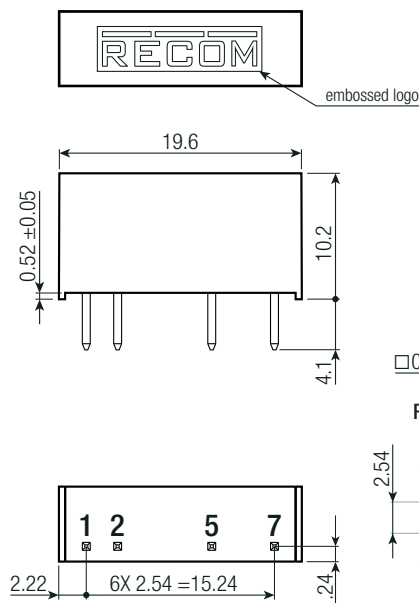
Component List Class B

C1,C2	CMC1	L2	C3,C4
10μF	9μH	RLS-226 , 22μH	470pF

DIMENSION AND PHYSICAL CHARACTERISTICS

Parameter	Type	Value
Material	case	black plastic, (UL94V-0)
	PCB	FR4, (UL94V-0)
Dimension (LxWxH)		19.6 x 6.0 x 14.3mm
Weight		1.7g typ.

Dimension Drawing (mm)



Pinning Information

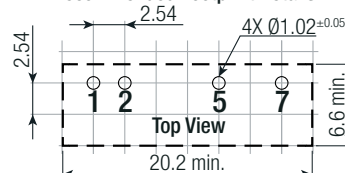
Pin #	Single
1	+Vin
2	-Vin
3,4,6	NC
5	-Vout
7	+Vout

NC= no connection

Tolerance: xx.x= ±0.5mm

xx.xx= ±0.25mm

Recommended Footprint Details



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

PACKAGING INFORMATION

Parameter	Type	Value
Packaging Dimension (LxWxH)	tube	520.0 x 9.20 x 19.00mm
Packaging Quantity		25pcs
Storage Temperature Range	non-condensing	-50°C to +125°C
Storage Humidity		95% RH max.

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