

Features

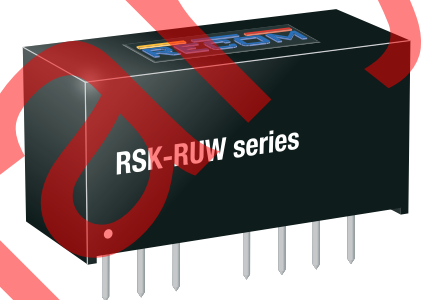
Regulated Converters

- 8:1 wide input voltage range
- SIP8 package
- Continuous short circuit protection
- No minimum load required
- 3kVDC/1min basic isolation
- 88.5% typical efficiency

RECOM
DC/DC Converter

RSK-RUW

**2 Watt
SIP8
Single Output**



UL
E224736

UL62368-1 certified
C22.2 No. 62368-1-19 certified
IEC/EN62368-1 certified
CB Report

Description

The RSK-RUW series is a state-of-the-art isolated DC/DC converter that boasts an ultra-wide 8:1 input voltage range of 4.5-36 VDC. The RSK-RUW also includes ON/OFF control for added convenience and precision. The device delivers high accuracy and tight line and load regulation, ensuring stable performance even in challenging conditions. The RSK-RUW also includes continuous short circuit protection and undervoltage lockout (UVLO) for added safety and security. This product is certified according to IEC/EN/UL 62368-1, making it suitable for use in a variety of industrial applications. With a maximum output power of 2W and the ability to operate at 0% minimum load, the RSK-RUW is very versatile. The device also offers high efficiency, with a typical value of 88.5%. Finally, the RSK-RUW offers basic grade isolation of 3kVDC/1min and an industrial operating temperature range of -40°C to 85°C without derating, making it ideal for use in demanding industrial environments.

Selection Guide

Part Number	Input Voltage Range [VDC]	Output Voltage [VDC]	Output Current [mA]	Efficiency typ. ⁽¹⁾ [%]	max. Capacitive Load ⁽²⁾ [μF]
RSK-2405SRUW/H3	4.5-36	5	400	88.5	2000

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

RSK-2405SRUW/H3

Output Voltage 24 3kVDC Isolation 05

Specifications (measured @ $t_{amb} = 25^{\circ}\text{C}$, nom. V_{IN} , full load and after warm-up unless otherwise stated)

BASIC CHARACTERISTICS					
Parameter	Condition	Min.	Typ.	Max.	
Internal Input Filter					capacitors
Input Voltage Range	nom. $V_{IN} = 24\text{VDC}$	4.5VDC		36VDC	
Under Voltage Lockout (UVLO)	DC-DC ON	4VDC		4.3VDC	
	DC-DC OFF	3.3VDC		3.6VDC	
Quiescent Current				20mA	
Minimum Load		0%			
ON/OFF CTRL	DC-DC ON	Open or $V_{CTRL} > 1.5\text{VDC}$			
	DC-DC OFF	Short to $-V_{IN}$ or $< 1.5\text{VDC}$			
Input Current of CTRL Pin	DC-DC ON			1mA	
Standby Current	DC-DC OFF		3mA	6mA	
Internal Operating Frequency		100kHz		400kHz	
Output Ripple and Noise ⁽³⁾	20MHz BW	$V_{IN} = 5\text{VDC}$		50mVp-p	
		$V_{IN} = 24\text{VDC}$		100mVp-p	

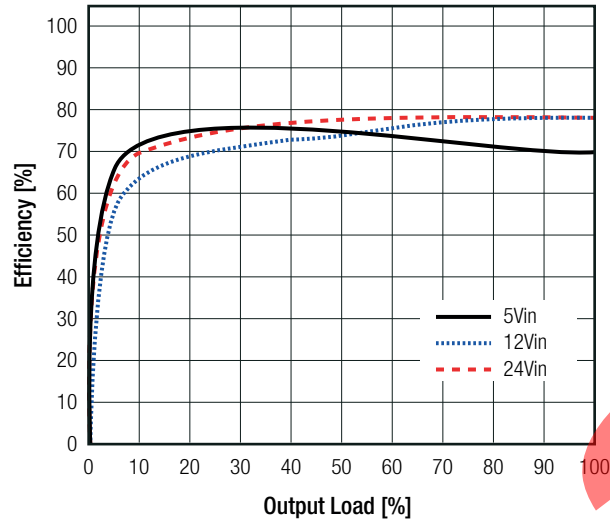
Notes:

Note3: Measurements are made with a 0.1μF MLCC across output (low ESR)

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Specifications (measured @ $t_{amb}=25^{\circ}\text{C}$, nom. V_{IN} , full load and after warm-up unless otherwise stated)

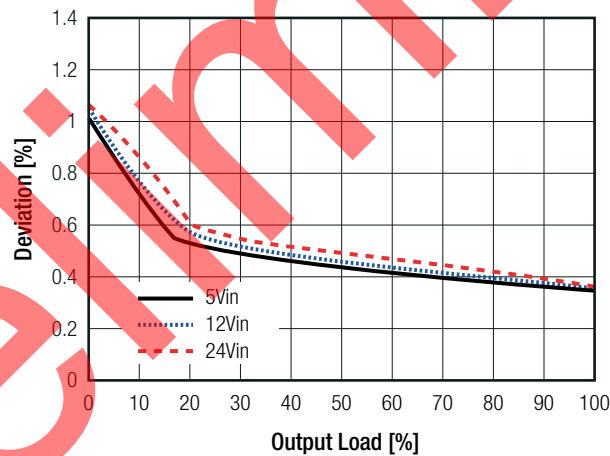
Efficiency vs. Load



REGULATIONS

Parameter	Condition	Value
Output Accuracy		$\pm 3.0\%$ typ.
Line Regulation	low line to high line	$V_{IN}=5\text{VDC}$ $\pm 1.0\%$ max.
		$V_{IN}=24\text{VDC}$ $\pm 0.5\%$ max.
Load Regulation ⁽⁴⁾	10% to 100% load	2.0% max.

Deviation vs Load



Notes:

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

PROTECTIONS

Parameter	Type	Value
Short Circuit Protection (SCP)		continuous, auto recovery
Short Circuit Input Current	$V_{IN}=5\text{VDC}$	500mA max.
	$V_{IN}=24\text{VDC}$	120mA max.
Isolation Voltage ⁽⁵⁾	1 minute	3kVDC
	I/P to O/P	1.5kVAC/50Hz
Isolation Resistance	I/P to O/P, $V_{ISO}=500\text{VDC}$	1G Ω min.
Isolation Capacitance	I/P to O/P, 100kHz/0.1V	50pF max.
Insulation Grade	according to 62368-1	basic

Notes:

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

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

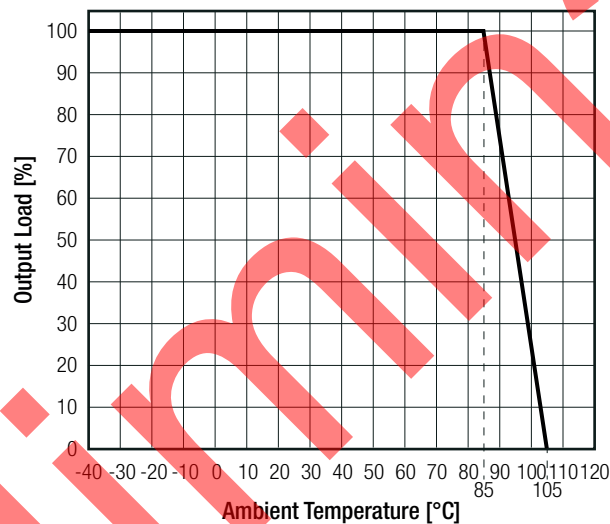
Specifications (measured @ $t_{amb} = 25^{\circ}\text{C}$, nom. V_{in} , full load and after warm-up unless otherwise stated)

ENVIRONMENTAL

Parameter	Condition			Value
Operating Temperature Range	with derating	refer to „Derating Graph“		-40°C to +105°C
Maximum Case Temperature				+115°C
Temperature Coefficient				±0.02%/K
Thermal Impedance	natural convection 0.1 m/s			36.0K/W
Operating Altitude				5000m
Operating Humidity	non-condensing			95% RH max.
Pollution Degree				PD2
MTBF	according to MIL-HDBK-217F, G.B.	V _{IN} = 5VDC	t _{AMB} = +25°C	3463 x 10 ³ hours
			t _{AMB} = +85°C	749 x 10 ³ hours
		V _{IN} = 24VDC	t _{AMB} = +25°C	3404 x 10 ³ hours
			t _{AMB} = +85°C	1034 x 10 ³ hours

Derating Graph

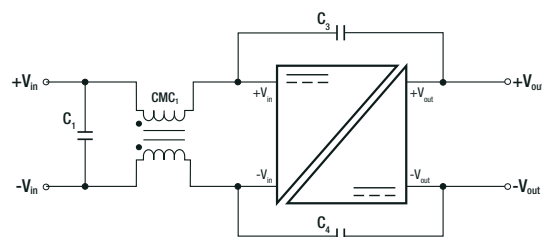
(@ Chamber and natural convection 0.1 m/s)



SAFETY AND CERTIFICATIONS

Certificate Type (Safety)	Report / File Number	Standard
Audio/Video, information and communication technology equipment - Part1: Safety requirements 3rd Edition	E491408-A6024-UL	UL62368-1, 3rd Edition, 2019
		CAN/CSA-C22.2 No. 62368-1-19 3rd Edition
Audio/Video, information and communication technology equipment - Part1: Safety requirements 3rd Edition (CB Scheme)	085-220180901-000	IEC62368-1:2018 3rd Edition
		EN IEC 62368-1:2020+A11:2020
RoHS2		RoHS 2011/65/EU + AM2015/863
EMC Compliance	Condition	Standard / Criterion
Electromagnetic Compatibility of Multimedia Equipment - Emission Requirements	with external filter	EN55032, Class B

EMC Filtering Suggestions according to EN55032



Component List Class B

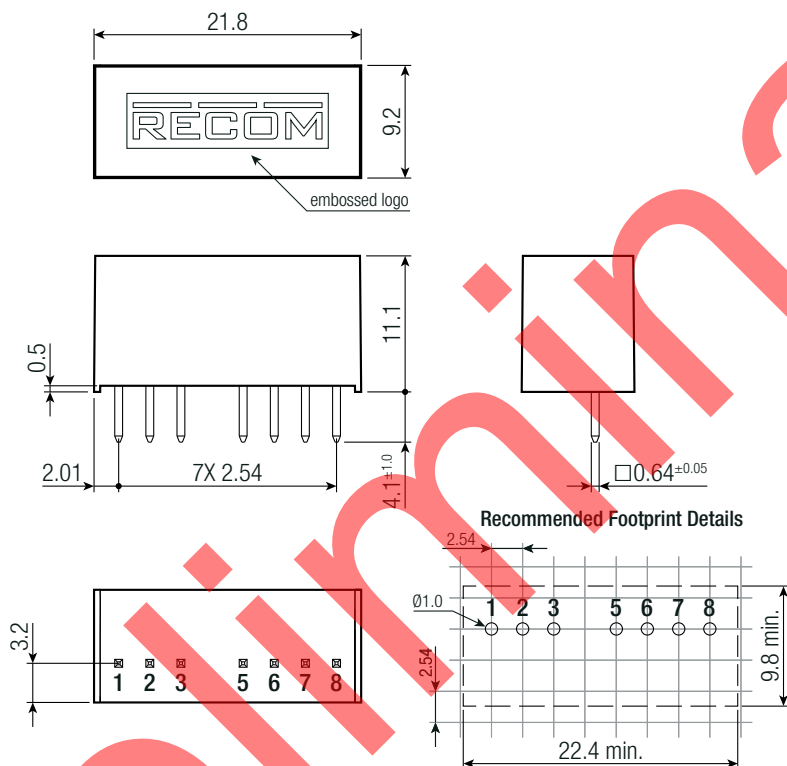
C1/C2	CMC1	C3/C4
10 μF	11 μH	3kV

Specifications (measured @ $t_{amb}=25^{\circ}\text{C}$, nom. V_{IN} , full load and after warm-up unless otherwise stated)

DIMENSION AND PHYSICAL CHARACTERISTICS

Parameter	Type	Value
Material	case	black plastic, (UL94 V-0)
	potting	PU (UL94 V-0)
	PCB	FR4, (UL94 V-0)
Dimension (LxWxH)		21.8 x 9.2 x 11.1mm
Weight		4.7g typ.

Dimension Drawing (mm)



Pinning Information

Pin #	Single
1	-Vin
2	+Vin
3	CTRL
5	NC
6	+Vout
7	-Vout
8	NC

NC= no connection

Tolerance:
xx.x = $\pm 0.5\text{mm}$
xx.xx = $\pm 0.25\text{mm}$

PACKAGING INFORMATION

Parameter	Type	Value
Packaging Dimension (LxWxH)	tube	520.0 x 11.5 x 19.0mm
Packaging Quantity	tube	22pcs
Storage Temperature Range		-50°C to +125°C
Storage Humidity	non-condensing	95% RH max.

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