

Features

Regulated Converters

- 4:1 wide input voltage range
- SIP8 package
- Continuous short circuit protection
- No minimum load required
- 3kVDC/1min basic isolation
- 86% typical efficiency

Description

The RS3K-Z series is a state-of-the-art DC/DC converter with a wide 4:1 input voltage range from 9 to 36 VDC, ensuring reliable performance in a wide range of applications. The RS3K-Z is also equipped with an ON/OFF control, allowing for quick and easy power management. High accuracy and tight line and load regulation ensure that the device operates stably even under challenging conditions. It is also equipped with continuous short circuit protection and undervoltage lockout (UVLO) for added safety. With IEC/EN/UL 62368-1 certification, 3W maximum output power, 0% minimum load, and high 86% typical efficiency, the RS3K-Z is an excellent choice for industrial applications. The device is designed to operate within an industrial temperature range of -40°C to 80°C without derating.

Selection Guide

Part Number	Input Voltage Range [VDC]	Output Voltage [VDC]	Output Current [mA]	Efficiency typ. ⁽¹⁾ [%]	max. Capacitive Load ⁽²⁾ [μF]
RS3K-2405SZ/H3	9-36	5	600	84	4700
RS3K-2424SZ/H3	9-36	24	125	86	1500

Notes:

Note1: Efficiency is tested at minimum input and full load at +25°C ambient

Note2: Max Cap Load is tested at nominal input and full resistive load

Model Numbering

RS3K-24 SZ/H3
Output Voltage 3kVDC Isolation

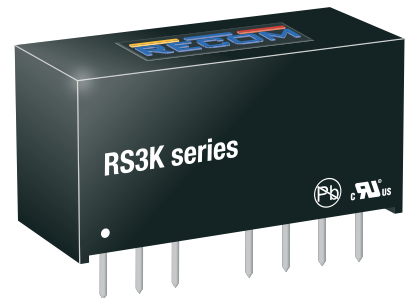
Specifications (measured @ $t_{amb}=25^{\circ}\text{C}$, nom. V_{IN} , full load and after warm-up unless otherwise stated)

BASIC CHARACTERISTICS					
Parameter	Condition	Min.	Typ.	Max.	
Internal Input Filter					capacitors
Input Voltage Range	nom. $V_{IN}=24\text{VDC}$	9VDC		36VDC	
Under Voltage Lockout (UVLO)	DC-DC ON	8.2VDC		8.8VDC	
	DC-DC OFF	5.6VDC		6.2VDC	
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		50mVp-p	80mVp-p	
Notes: Note3: Measurements are made with a 0.1μF MLCC across output (low ESR)					
continued on next page					

RECOM
DC/DC Converter

RS3K-Z

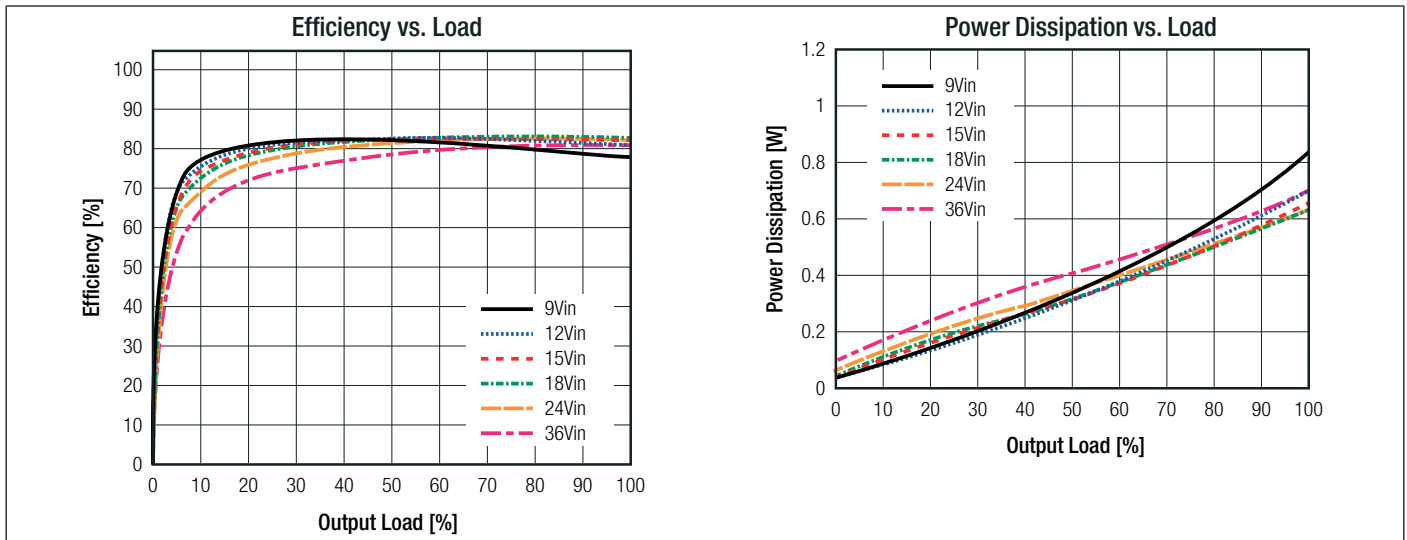
3 Watt
SIP8
Single Output



UL
E224736

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

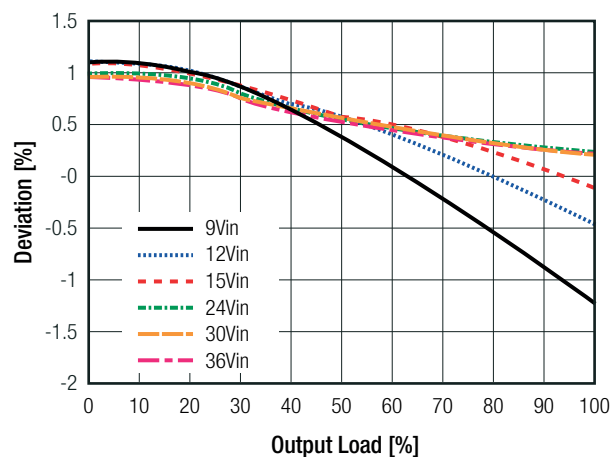
Specifications (measured @ $t_{amb}=25^{\circ}\text{C}$, nom. V_{in} , full load and after warm-up unless otherwise stated)



REGULATIONS

Parameter	Condition		Value
Output Accuracy	RS3K-2405SZ/H3		$\pm 3.0\%$ typ.
	RS3K-2424SZ/H3		$\pm 2.0\%$ typ.
Line Regulation	low line to high line	RS3K-2405SZ/H3	$\pm 2.0\%$ max.
		RS3K-2424SZ/H3	$\pm 1.5\%$ max.
Load Regulation	10% to 100% load	RS3K-2405SZ/H3	2.5% max.
		RS3K-2424SZ/H3	1.5% 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	nom. V _{IN} = 24VDC		120mA max.	
Isolation Voltage ⁽⁴⁾	1 minute	I/P to O/P	3kVDC	
			1.5kVAC/50Hz	
Isolation Resistance	I/P to O/P, V _{iso} = 500VDC		1GΩ min.	
Isolation Capacitance	I/P to O/P, 100kHz/0.1V		50pF max.	
Insulation Grade	according to 62368-1		basic	

Notes:

Note4: For repeat Hi-Pot testing, reduce the time and/or the test voltage

Note5: Refer to local safety regulations if input over-current protection is also required. Recommended fuse: slow blow type

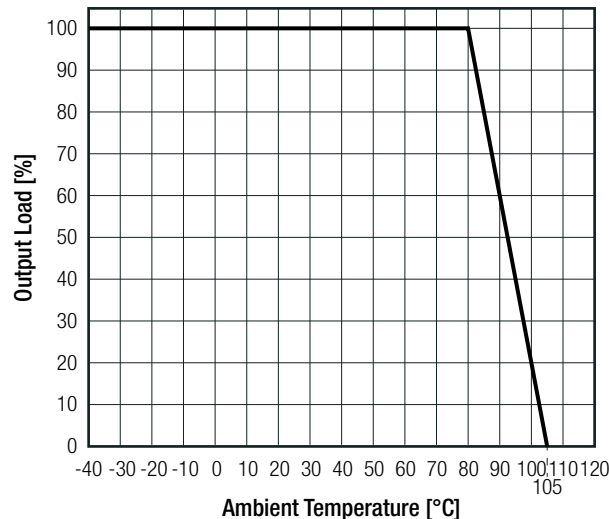
Specifications (measured @ $t_{amb} = 25^{\circ}\text{C}$, nom. V_{in} , full load and after warm-up unless otherwise stated)

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			39.05K/W
Operating Altitude				5000m
Operating Humidity	non-condensing			95% RH max.
Pollution Degree				PD2
MTBF	according to MIL-HDBK-217F, G.B.	RS3K-2405SZ/H3	t _{amb} = +25°C	2984 x 10 ³ hours
			t _{amb} = +85°C	886 x 10 ³ hours
		RS3K-2424SZ/H3	t _{amb} = +25°C	2725 x 10 ³ hours
			t _{amb} = +85°C	867 x 10 ³ hours

Derating Graph

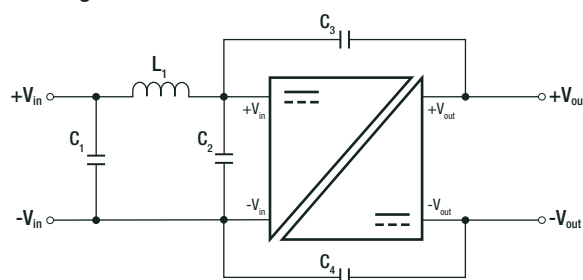
(@ Chamber and natural convection 0.1 m/s)



SAFETY AND CERTIFICATIONS

Certificate Type (Safety)	Report / File Number	Standard
Audio/Video, information and communication technology equipment - Part1: Safety requirements 3rd Edition	E491408-A6022-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)	085-220181001-000	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

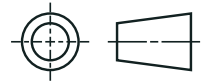
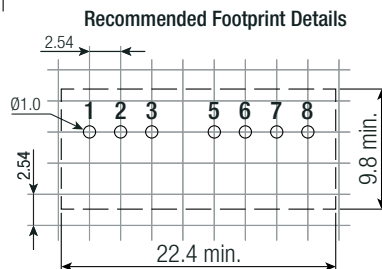
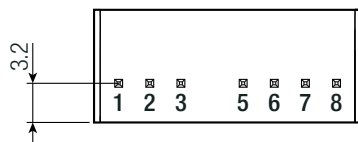
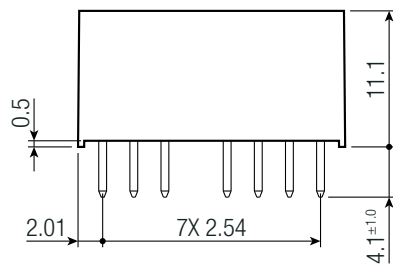
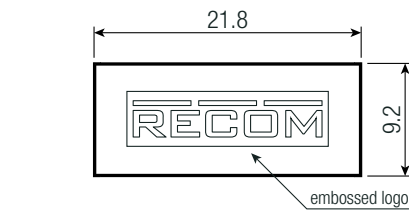
C1/C2	C3/C4	L1
10μF	470pF	5.6μH, RLS-567

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.

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.