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

RECOM
DC/DC Converter

RS3K-Z

3 Watt SIP8 Single Output

3 YEAR warranty

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°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}= 24VDC	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}>1.5VDC		
	DC-DC OFF	Short to -V_{IN} or <1.5VDC		
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)

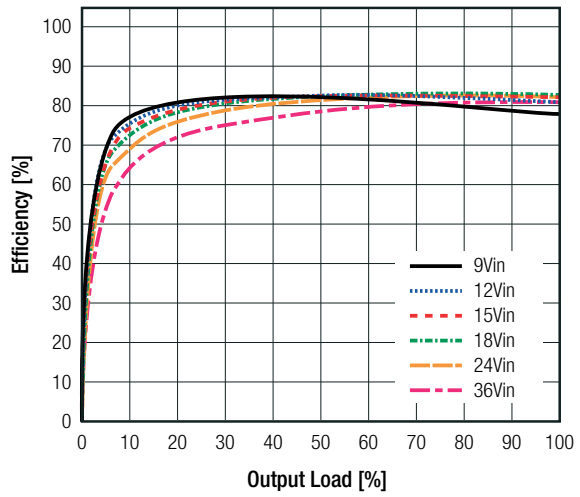
continued on next page

c UL us E224736

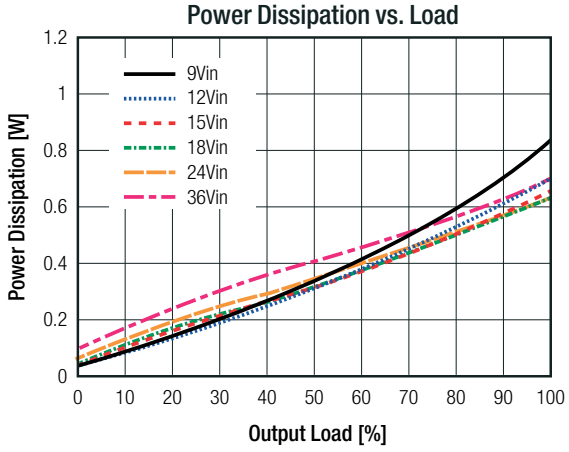
UL62368-1 certified
C22.2 No. 62368-1-19 certified
IEC/EN62368-1 certified
CB Report

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

Efficiency vs. Load



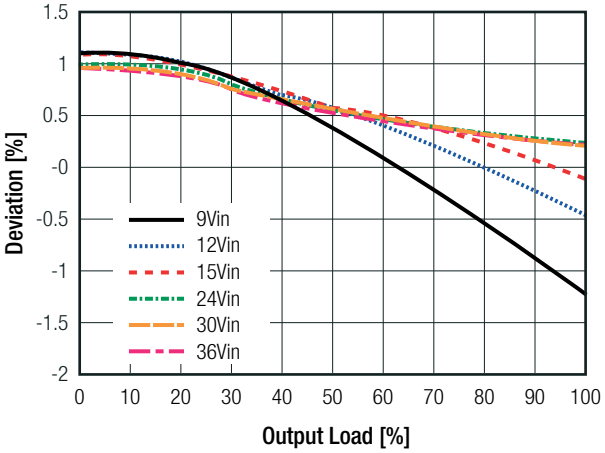
Power Dissipation vs. Load



REGULATIONS

Parameter	Condition		Value
Output Accuracy	RS3K-2405SZ/H3		±3.0% typ.
	RS3K-2424SZ/H3		±2.0% typ.
Line Regulation	low line to high line	RS3K-2405SZ/H3	±2.0% max.
		RS3K-2424SZ/H3	±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

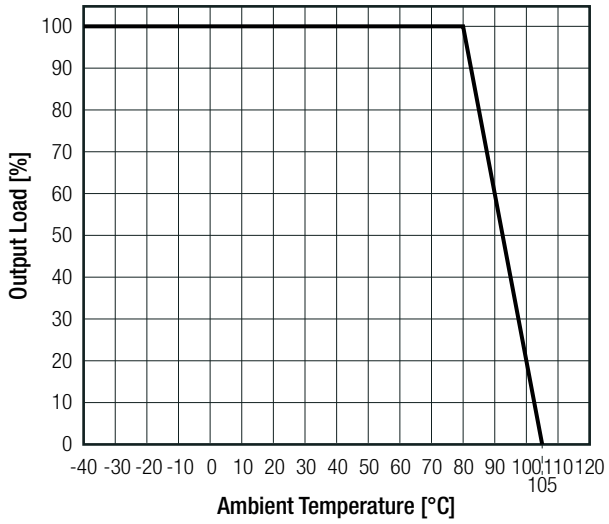
Note5: Refer to local safety regulations if input over-current protection is also required. Recommended fuse: slow blow type

Specifications (measured @ t_{amb}= 25°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 0.1m/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 0.1m/s)

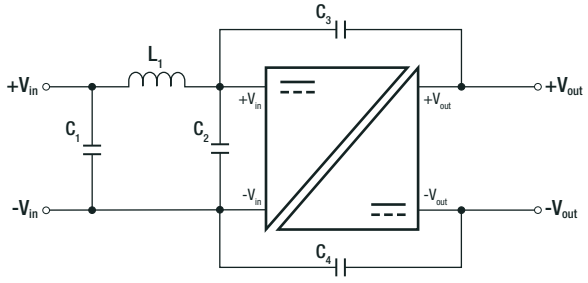


SAFETY AND CERTIFICATIONS

Certificate Type (Safety)	Report / File Number	Standard
Audio/Video, information and communication technology equipment - Part1: Safety requirements 3rd Edition	E491408-A6022-UL	UL62368-1, 3nd 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

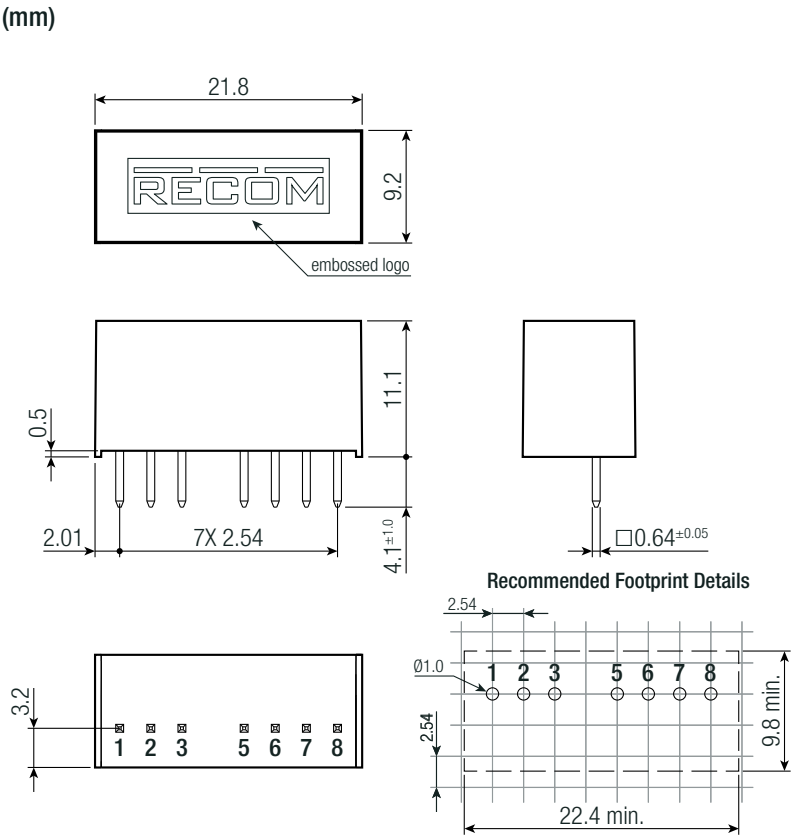
C1/C2	C3/C4	L1
10µF	470pF	5.6µH, RLS-567

Specifications (measured @ t_{amb}= 25°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)



Recommended Footprint Details

Pinning Information

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

NC= no connection

Tolerance:
xx.x = ±0.5mm
xx.xx = ±0.25mm

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.