Features

Regulated Converters

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

RECOM
DC/DC Converter

RSOK-Z

1 Watt SIP8 Single Output

3 YEAR warranty

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

Description

The RSOK-Z series is a cutting-edge DC/DC converter series with a wide 4:1 input voltage range of 9-36 VDC. This converter features ON/OFF control for added convenience and precision. The RSOK-Z boasts high accuracy and tight line and load regulation, ensuring reliable performance even under challenging conditions. The device also includes continuous short circuit protection and undervoltage lockout (UVLO) for added safety and security. This product is certified to meet the rigorous safety requirements of IEC/EN/UL 62368-1, making it suitable for use in a variety of industrial applications. With a maximum output power of 1W and the ability to operate at 0% minimum load, the RSOK-Z is both versatile and efficient. Finally, the RSOK-Z offers basic grade isolation of 3kVDC/1min and an operating range of -40°C to 90°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]
RSOK-2405SZ/H3	9-36	5	200	75	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

RSOK-24 05 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	8.1VDC		8.7VDC
	DC-DC OFF	6VDC		6.66VDC
Input Current			160mA	
Quiescent Current			3mA	10mA
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		800kHz
Output Ripple and Noise (3)	20MHz BW			80mVp-p

Notes:

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

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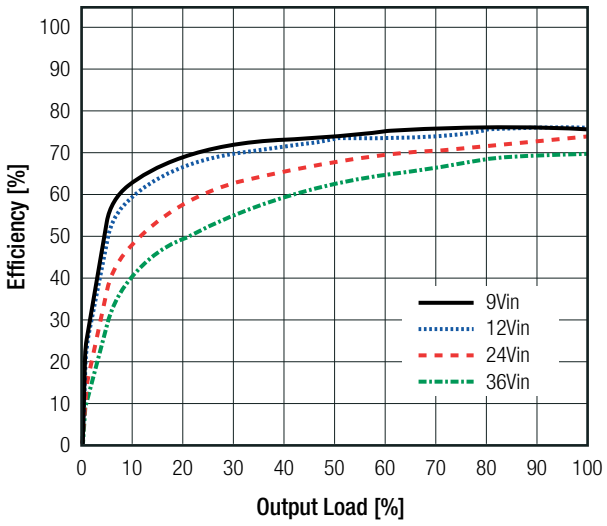
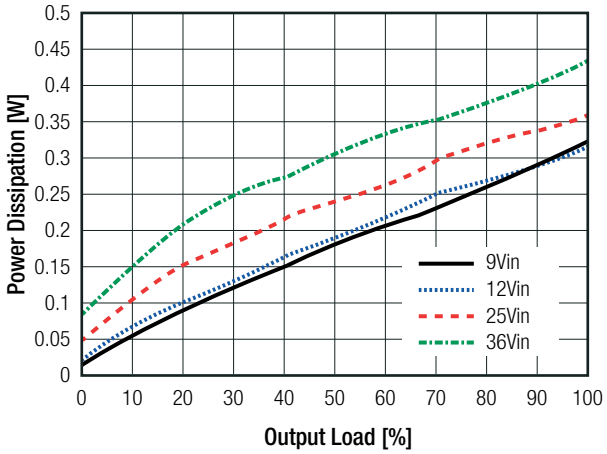
Specifications (measured @ t_{amb}= 25°C, nom. V_{IN}, full load and after warm-up unless otherwise stated)

Efficiency vs. Load



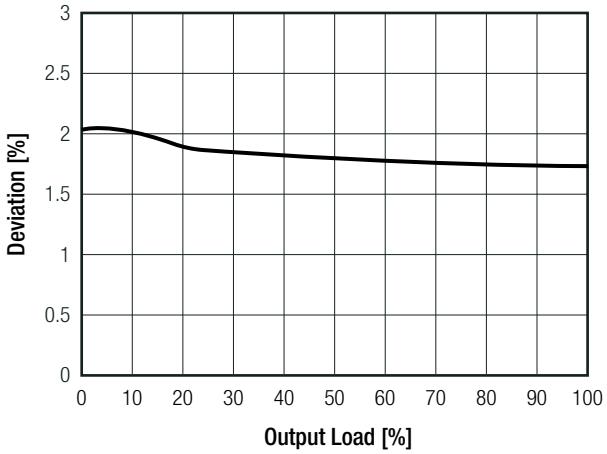
Power Dissipation vs. Load



REGULATIONS

Parameter	Condition	Value
Output Accuracy		±2.0% typ.
Line Regulation	low line to high line, full load	±0.5% max.
Load Regulation [4]	10% to 100% load	1.0% max.

Deviation vs Load
(@nom Vin)



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 [5]	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:

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

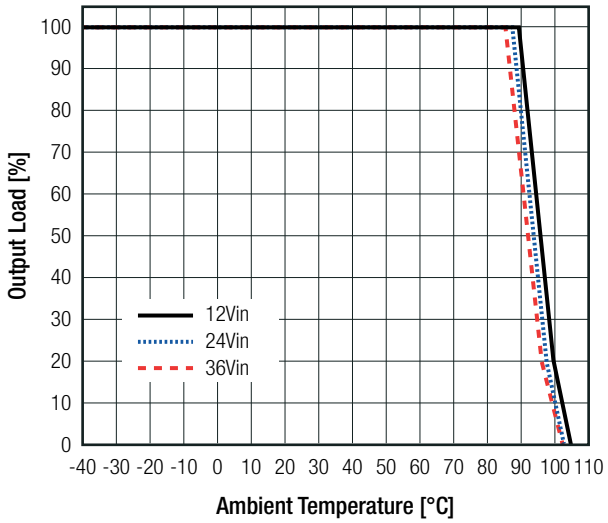
Note6: Refer to local safety regulations if input over-current protection is also required. Recommended fuse: slow blow type

Specifications (measured @ t_{amb}= 25°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		49.17K/W
Operating Altitude			5000m
Operating Humidity	non-condensing		95% RH max.
Pollution Degree			PD2
MTBF	according to MIL-HDBK-217F, G.B.	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)

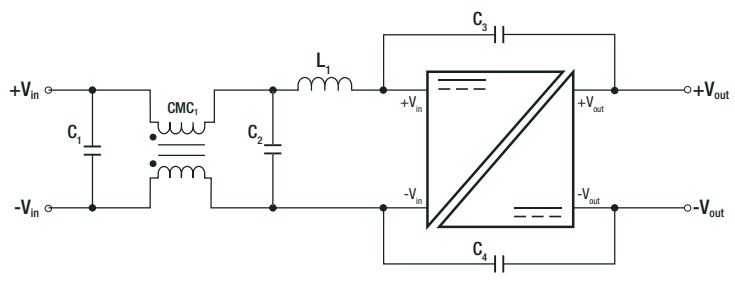


SAFETY AND CERTIFICATIONS

Certificate Type (Safety)	Report / File Number	Standard
Audio/Video, information and communication technology equipment - Part1: Safety requirements 3rd Edition	E491408-A6025-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)	085-220180801-000	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

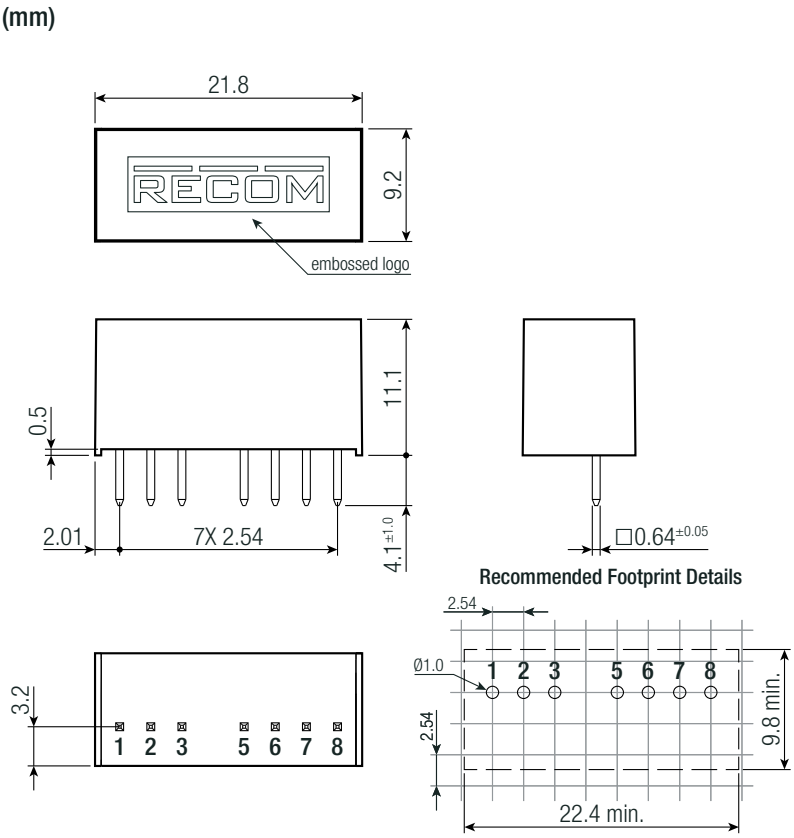
C1/C2	CMC1	C3/C4	L1
10µF	51µF	3kV	22µH, RLS-226

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.