Features

Regulated Converters

- 2:1 Wide Input Range
- 2kVDC/1 Second Isolation
- -40°C To +75°C Operating Temperature @ Full Load
- Industry Standard Pinout (SIP8)
- EN/UL62368, UL60950, CB Report (pending)
- Low Cost

RECOM

DC/DC Converter

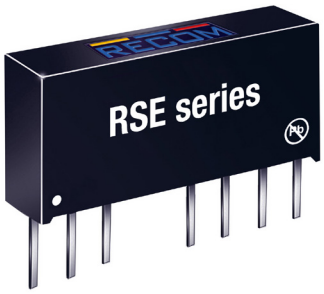
RSE

2 Watt SIP8 Single Output

3 YEAR warranty

Description

The RSE is a low cost isolated, regulated and short-circuit protected DC/DC converter designed for industrial applications. A compact SIP8 case size, 2:1 input, 2kVDC isolation and a wide operating temperature range of -40°C to +75°C without derating makes the RSE series ideal for industrial, transport and general-purpose on-board 5V power supplies. Industrial Class A EMC levels can be met with a simple Pi-filter and the converters come with a three year warranty.



Selection Guide

Part Number	nom. Input Voltage [VDC]	Input Current @ full load [mA]	Output Voltage [VDC]	Output Current [mA]	Efficiency typ. (1) [%]	max. Capacitive Load (2) [µF]
RSE-0505S/H2	4.5 - 9	526	5	400	76	6800
RSE-2405S/H2	18 - 36	103	5	400	80	6800

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

UL62368-1 certified
C22.2 No. 62368-1-14 certfied
UL60950 (pending)
C22.2 No. 60950-1-07 (pending)
IEC/EN62368-1 (pending)
EN55022/55024 compliant
CB Report

Specifications (measured @ ta= 25°C, nominal Vin, full load unless otherwise specified)

BASIC CHARACTERISTICS					
Parameter	**Condition**		**Min.**	**Typ.**	**Max.**
Internal Input Filter					capacitor
Input Voltage Range	nom. Vin=	5VDC 24VDC	4.5VDC 18VDC	5VDC 24VDC	9VDC 36VDC
Maximum Reverse Voltage					0VDC
Input Surge Voltage	100ms max nom. Vin=	5VDC 24VDC		15VDC 50VDC	
Quiescent Current	nom. Vin=	5VDC 24VDC		40mA 3mA	
Start-up time				500µs	
Rise time				450µs	
Hold-up time				10µs	
Internal Operating Frequency			130kHz		
Minimum Load			0%		
Output Ripple and Noise (3)	20MHz BW, 0-100% load				75mVp-p
ON/OFF CTRL (4)	DC-DC ON DC-DC OFF		Open or 0V<Vr<0.8VDC 2V<Vr<6VDC		
Input Current of CTRL Pin	5V V_{CTRL} 3.3V V_{CTRL}			15mA 10mA	
Standby Current				0.75mA	1.5mA

Notes:

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

Note4: Please refer to „Application and Installation“

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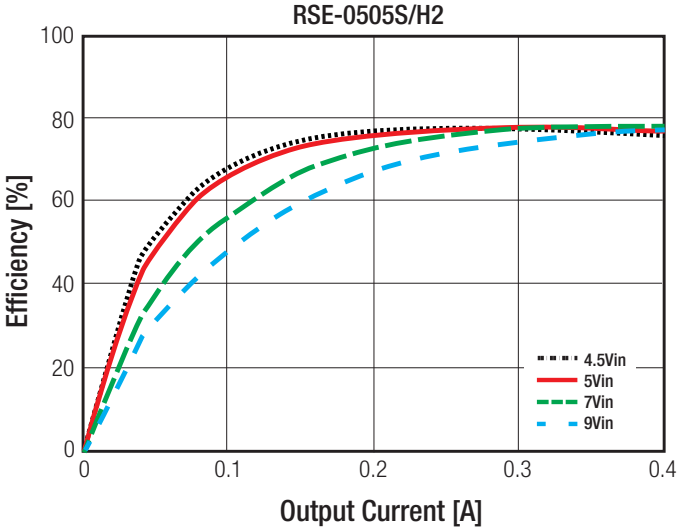
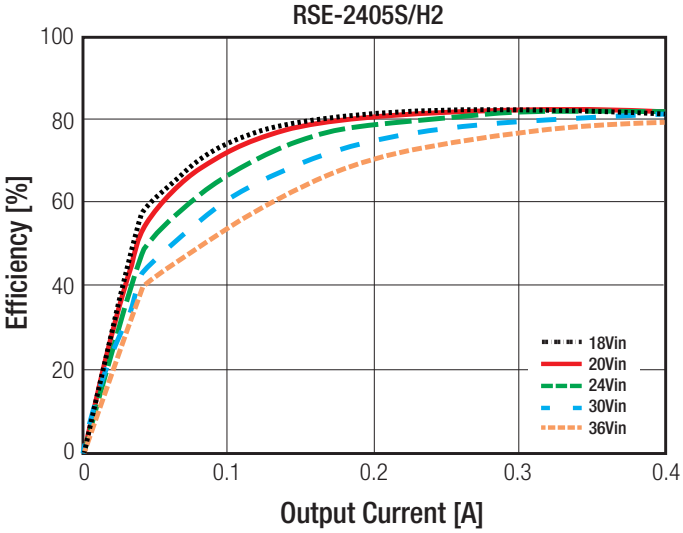
Specifications (measured @ ta= 25°C, nominal Vin, full load unless otherwise specified)

Efficiency vs. Load

RSE-0505S/H2



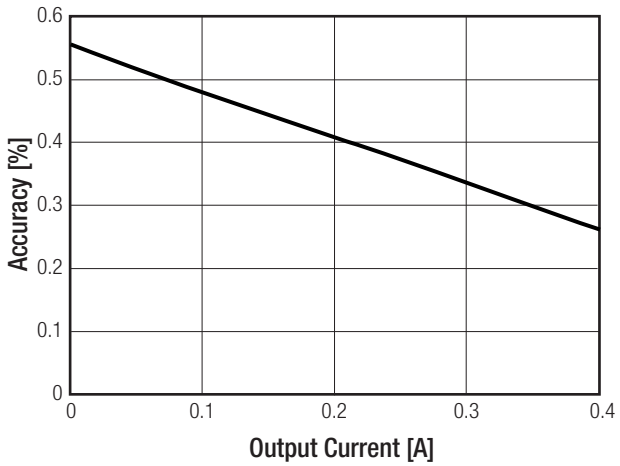
RSE-2405S/H2



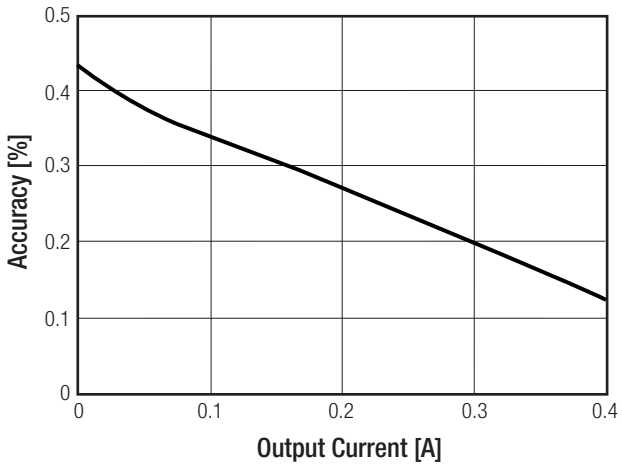
REGULATIONS		
Parameter	**Condition**	**Value**
Output Accuracy	0-100% load	±2.0% max.
Line Regulation	low line to high line, full load	±0.2% max.
Load Regulation	0% to 100% load	±0.5% max.

Accuracy vs. Load

RSE-0505S/H2



RSE-2405S/H2



PROTECTIONS			
Parameter	**Type**		**Value**
Short Circuit Protection (SCP)	below 100mΩ		continuous, auto recovery
Isolation Voltage	I/P to O/P	tested for 1 second	2kVDC
Isolation Resistance			1GΩ min.
Isolation Capacitance			100pF max.
Insulation Grade			functional

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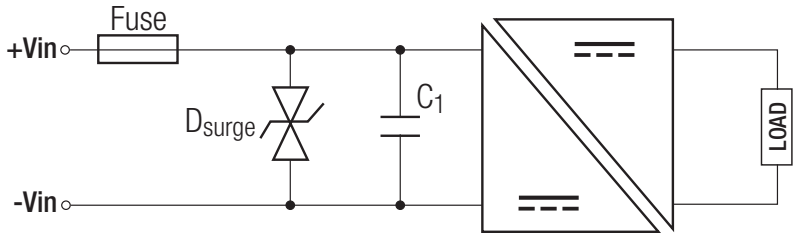
Specifications (measured @ ta= 25°C, nominal Vin, full load unless otherwise specified)

Surge Protection Circuit according to EN61000-4-5, Criteria A



nom. Vin	TVS	C1
5VDC	P4SMAJ11A	N/A
24VDC	P4SMAJ36A	220µF/100V

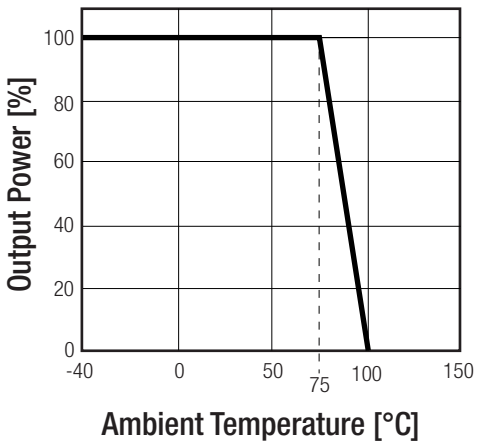
Notes:

Note5: An input fuse is required if the mains supply is not over-current protected. Recommended fuse: T2A slow blow type

ENVIRONMENTAL

Parameter	Condition		Value
Operating Temperature Range	without derating (see graph)		-40°C to +75°C
Maximum Case Temperature			+105°C
Temperature Coefficient			±0.05%/°C
Operating Altitude			5000m
Operating Humidity	non-condensing		5% - 95% RH max.
Pollution Degree			PD2
MTBF	according to MIL-HDBK-217F, G.B.	+25°C +75°C	2289 x 10^3 hours 781 x 10^3 hours
Vibration			MIL-STD 202G

Derating Graph
(@ Chamber and natural convection 0.1m/s)



SAFETY AND CERTIFICATIONS

Certificate Type (Safety)	Report / File Number	Standard
Information Technology Equipment, General Requirements for Safety	pending	UL60950-1, 2nd Edition, 2014 CSA C22.2 No. 60950-1-07, 2nd Ed. 2014
Audio/Video, information and communication technology equipment - Safety requirements	E224736-A48	UL62368-1, 2nd Edition, 2014 CSA C22.2 Nr. 62368-1-14, 2nd Ed. 2014
Audio/Video, information and communication technology equipment - Safety requirements (CB Scheme)	pending	IEC/EN62368-1, 2nd Edition, 2014
RoHS2		RoHS 2011/65/EU + AM2015/863

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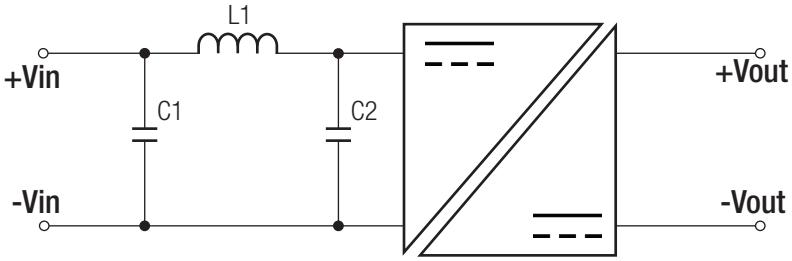
Specifications (measured @ ta= 25°C, nominal Vin, full load unless otherwise specified)

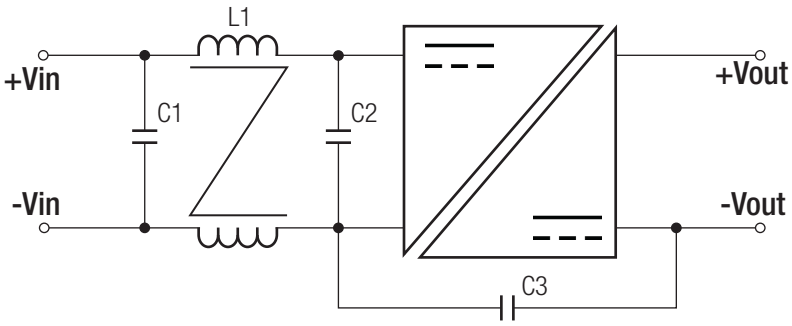
EMC Compliance	Conditions	Standard / Criterion
Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement	with external filter (see filter suggestion below)	EN55022, Class A EN55022, Class B
Information technology equipment - Immunity characteristics - Limits and methods of measurement		EN55024, 2015
ESD Electrostatic discharge immunity test	±8kV Air; ±4kV Contact	IEC6100-4-2, Criteria A
Radiated, radio-frequency, electromagnetic field immunity test	3V/m	IEC6100-4-3, Criteria A
Fast Transient and Burst Immunity	DC Power Port: ±0.5kV	IEC6100-4-4, Criteria A
Surge Immunity	DC Power Port: ±0.5kV	IEC6100-4-5, Criteria A
Immunity to conducted disturbances, induced by radio-frequency fields	DC Power Port: 3V	IEC6100-4-6, Criteria A
Power Magnetic Field	50Hz, 1A/m	IEC6100-4-8, Criteria A

EMC Filtering Suggestions for EN55022 Class A



nom. Vin	C1	C2	L1
5VDC	22µF/50V MLCC	22µF/50V MLCC	3µH Choke
24VDC			

EMC Filtering Suggestions for EN55022 Class B



nom. Vin	C1	C2	C3	L1
5VDC	22µF/50V MLCC	22µF/50V MLCC	1000pF/3kV	0.45mH CMC
24VDC				

DIMENSION and PHYSICAL CHARACTERISTICS

Parameter	Type	Value
Material	Case Potting PCB	non-conductive black plastic, (UL94-V0) epoxy, (UL94-V0) FR4, (UL94-V0)
Package Dimension (LxWxH)		21.8 x 9.2 x 11.1mm
Package Weight		4.7g typ.

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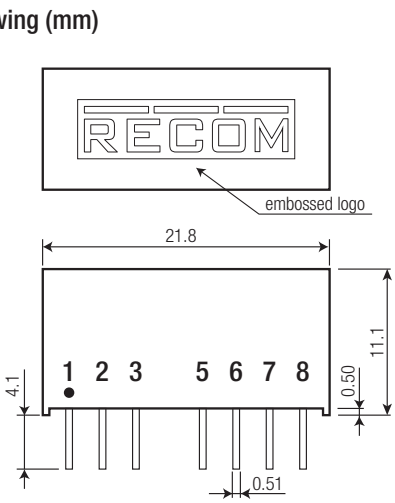
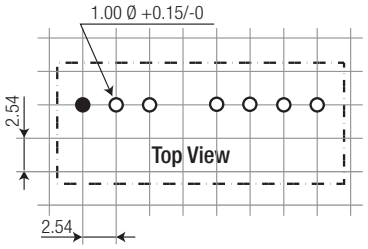
Specifications (measured @ ta= 25°C, nominal Vin, full load unless otherwise specified)

Dimension Drawing (mm)



Recommended Footprint Details



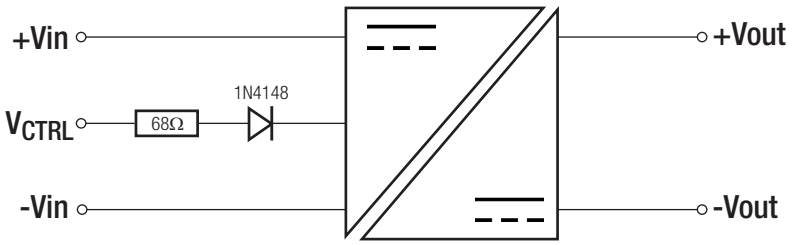
Pin Connection

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
Pin dimension: ±0.1mm

INSTALLATION and APPLICATION

ON/OFF CTRL Circuit



DC-DC ON: Open or 0V<Vr<0.8VDC
DC-DC OFF: 2V<Vr<6VDC

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PACKAGING INFORMATION

Packaging Dimension (LxWxH)	tube	520.0 x 11.2 x 18.2mm
Packaging Quantity		22pcs
Storage Temperature Range		-55°C to +125°C
Storage Humidity		5% - 95% RH max.

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