Features

Regulated Converters

- 2:1 wide input range
- 3kVDC/1 minute isolation
- -40°C to +70°C (full load) operating range
- IEC/EN62368-1 2nd & 3rd Ed. certified
- UL/CSA/CAN 62368-1 certified
- Industry standard pinout (SIP8)
- Low cost

RECOM
DC/DC Converter

RS3E

3 Watt SIP8 Single Output

Description

The RS3E series offers very high power density, wide input voltage range, high 3kVDC isolation, and an industrial operating temperature range of -40°C to +70°C without derating. High efficiency, tight regulation, and remote on/off control are just some of the characteristics of this advanced, low cost, SIP8, 3W converter which is ideal for highly sophisticated high density power supply designs in demanding industrial applications.

Selection Guide

Part Number	Input Voltage Range [VDC]	Input Current @ no load [mA]	Output Voltage [VDC]	Output Current [mA]	Efficiency typ. (1) [%]	max. Capacitive Load (2) [µF]
RS3E-053.3S/H3	4.5-9	50	3.3	600	74	2200
RS3E-0505S/H3	4.5-9	50	5	600	75	2200
RS3E-0509S/H3	4.5-9	50	9	333	77	1000
RS3E-0512S/H3	4.5-9	70	12	250	78	1000
RS3E-0515S/H3	4.5-9	70	15	200	78	1000
RS3E-0524S/H3	4.5-9	70	24	125	80	1000
RS3E-123.3S/H3	9-18	20	3.3	600	74	2200
RS3E-1205S/H3	9-18	20	5	600	77	2200
RS3E-1209S/H3	9-18	20	9	333	79	1000
RS3E-1212S/H3	9-18	30	12	250	80	1000
RS3E-1215S/H3	9-18	30	15	200	80	1000
RS3E-1224S/H3	9-18	30	24	125	80	1000
RS3E-243.3S/H3	18-36	12	3.3	600	75	2200
RS3E-2405S/H3	18-36	12	5	600	79	2200
RS3E-2409S/H3	18-36	12	9	333	80	1000
RS3E-2412S/H3	18-36	12	12	250	81	1000
RS3E-2415S/H3	18-36	12	15	200	81	1000
RS3E-2424S/H3	18-36	12	24	125	81	1000
RS3E-483.3S/H3	36-72	10	3.3	600	75	2200
RS3E-4805S/H3	36-72	10	5	600	80	2200
RS3E-4809S/H3	36-72	10	9	333	80	1000
RS3E-4812S/H3	36-72	10	12	250	81	1000
RS3E-4815S/H3	36-72	10	15	200	81	1000
RS3E-4824S/H3	36-72	10	24	125	81	1000

Notes:

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

Note2: Max Cap Load is tested at minimum input and constant resistive load

c UL us
E224736

UL62368-1 certified
CSA/CAN-C22.2 No. 62368-1 certified
IEC/EN62368-1 3rd Ed. certified
IEC/EN62368-1 2nd Ed. certified
EN55032 compliant
EN55035 compliant
CB Report

Model Numbering

RS3E- ___ ___ S/H3

- nom. Output Power
- Input Voltage
- Output Voltage
- Isolation
- **S**ingle

Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

BASIC CHARACTERISTICS

Parameter	Condition		Min.	Typ.	Max.
Internal Input Filter					capacitor
Input Voltage Range	nom. Vin=	5VDC	4.5VDC	5VDC	9VDC
		12VDC	9VDC	12VDC	18VDC
		24VDC	18VDC	24VDC	36VDC
		48VDC	36VDC	48VDC	72VDC
Input Surge Voltage	100ms nom. Vin=	5VDC			15VDC
		12VDC			25VDC
		24VDC			50VDC
		48VDC			100VDC
Minimum Load			0%		
ON/OFF CTRL	DC-DC ON				open or high impedance
	DC-DC OFF				short to $-V_{IN}$ or 5VDC < V_{CTRL} < 6VDC
Start-up Time	power up & CTRL ON			10ms	
Internal Operating Frequency				130kHz	
Output Ripple and Noise [3]	20MHz BW				75mVp-p

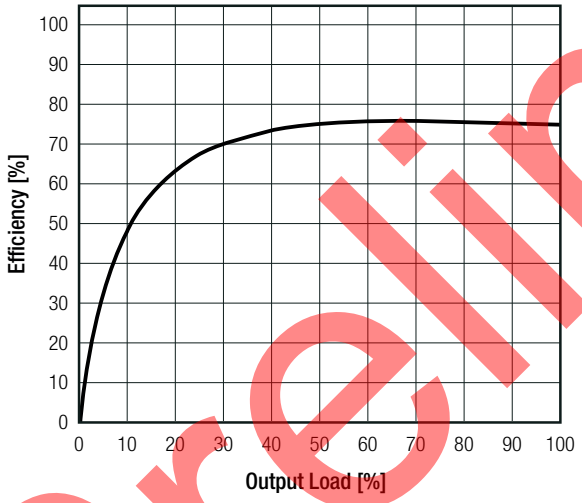
Notes:

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

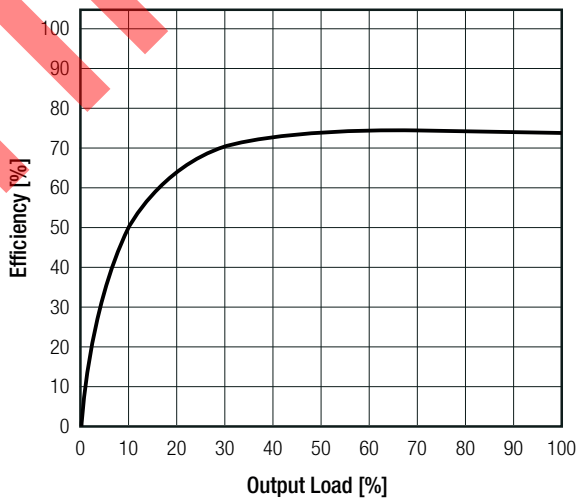
Efficiency vs. Load

(@ nominal VIN)

RS3E-0505S



RS3E-123.3S



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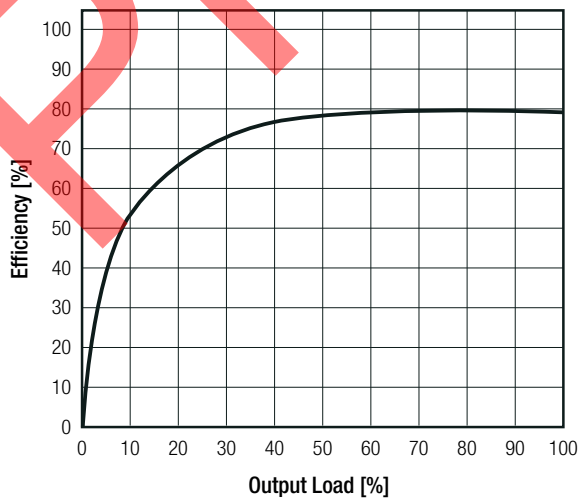

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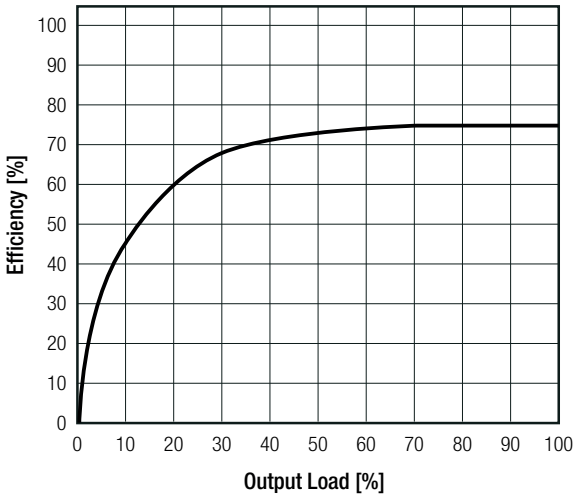
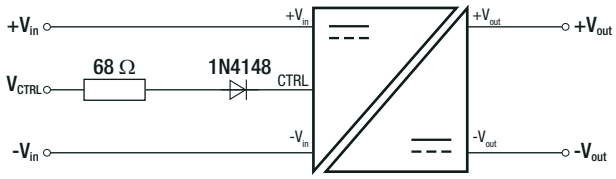


Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

ON/OFF CTRL



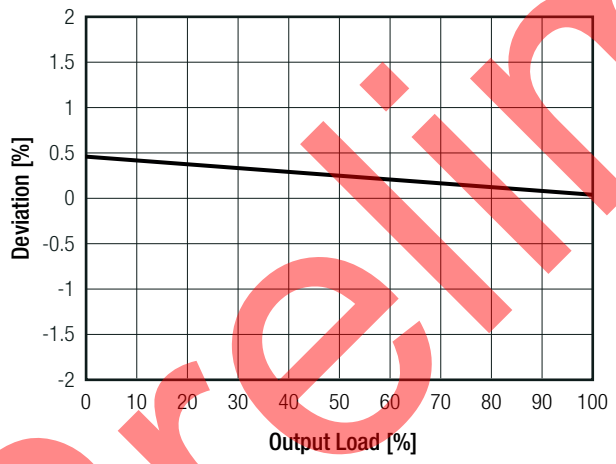
DC-DC ON	Open
DC-DC OFF	Short to $-V_{IN}$ or 5VDC < V_{CTRL} < 6VDC

REGULATIONS

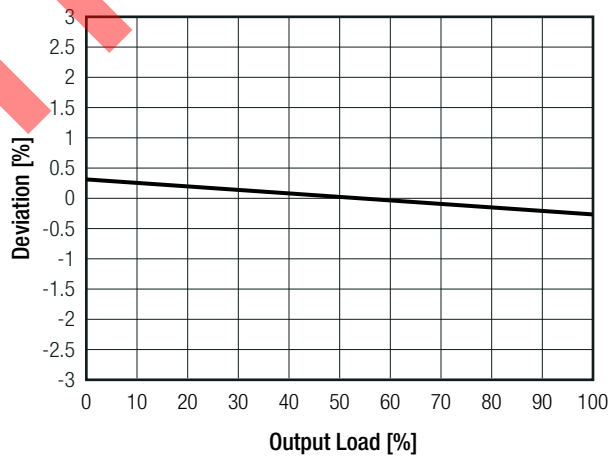
Parameter	Condition		Value
Output Accuracy	3.3Vout		±3.0% max.
	others		±2.0% max.
Line Regulation	low line to high line, full load	24Vout	±1.0% max.
		others	±0.4% max.
Load Regulation	0% to 100% load	24Vout	0.8% typ.
		others	0.6% typ.

Deviation vs Load
(@ nominal VIN)

RS3E-0505S



RS3E-123.3S



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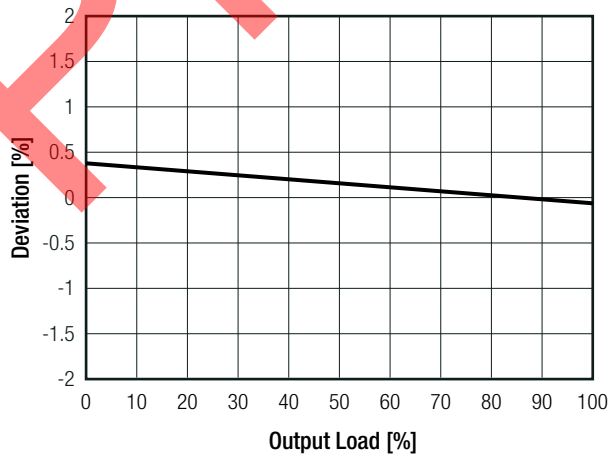

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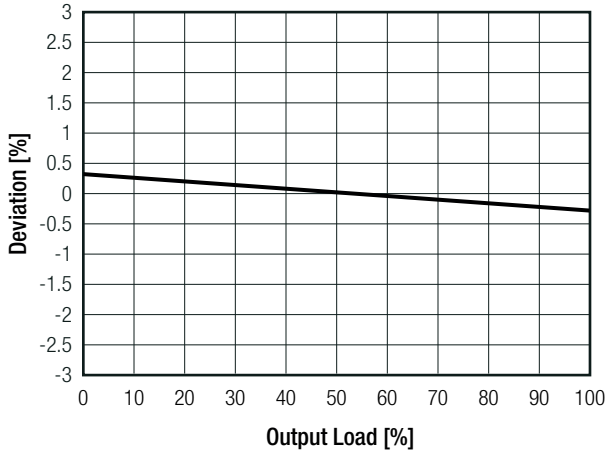


Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

PROTECTIONS

Parameter	Type		Value
Short Circuit Protection (SCP)			continuous, auto recovery
Isolation Voltage (4)	I/P to O/P	tested for 1 minute	3kVDC
Isolation Resistance			1GΩ min.
Isolation Capacitance			250pF max.
Insulation Grade			functional

Notes:

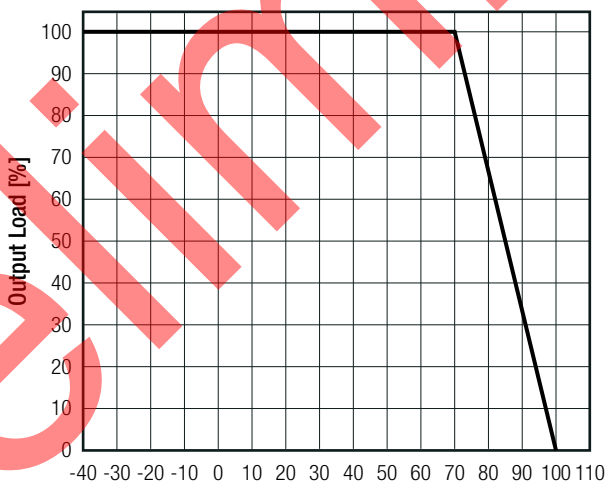
Note4: For repeat Hi-Pot testing, reduce the time and/or the test voltage

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

ENVIRONMENTAL

Parameter	Condition		Value
Operating Temperature Range	@ natural convection 0.1m/s	full load refer to ***"Derating Graph"***	-40°C to +70°C
Temperature Coefficient			±0.05%/K
Operating Altitude	according to 62368-1		5000m
Operating Humidity	non-condensing		5% - 95% RH max.
Pollution Degree			PD3
Vibration			according to MIL-STD-202G
MTBF	according to MIL-HDBK-217F, G.B.	+25°C	1800 x 10^3 hours

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



SAFETY AND CERTIFICATIONS

Certificate Type (Safety)	Report Number	Standard
Audio/Video, information and communication technology equipment - Part 1: Safety requirements	E224736-A6018-UL	UL62368-1:2014 CAN/CSA-C22.2 No. 62368-1:2014
Audio/Video, information and communication technology equipment - Part 1: Safety requirements (CB Scheme)	2003048-4-CB	IEC62368-1:2018 3rd Edition
Audio/Video, information and communication technology equipment - Part 1: Safety requirements		EN IEC62368-1:2020 + A11:2020
Audio/Video, information and communication technology equipment - Part 1: Safety requirements (CB Scheme)	2003048-3-CB	IEC62368-1:2014 2nd Edition
Audio/Video, information and communication technology equipment - Part 1: Safety requirements		EN62368-1:2014 + A11:2017
RoHS2		RoHS 2011/65/EU + AM2015/863

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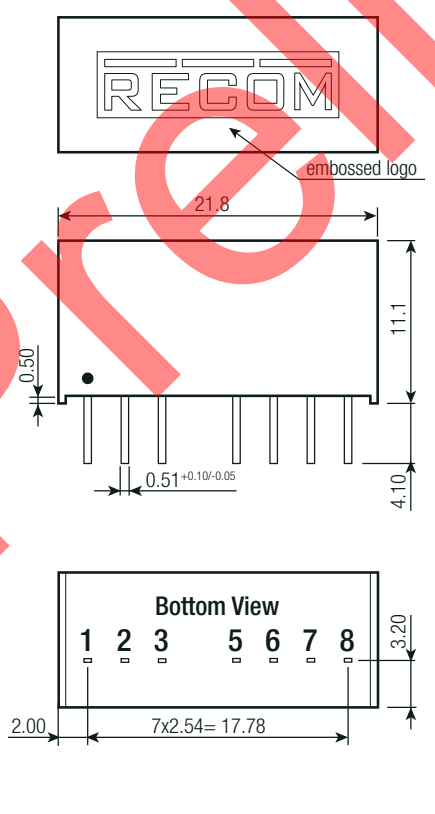
Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

EMC Compliance	Condition	Standard
Electromagnetic compatibility of multimedia equipment – Emission Requirements		EN55032:2015, Class B
Electromagnetic compatibility of multimedia equipment – Immunity requirements		EN55035:2017
ESD Electrostatic discharge immunity test	Air: ±2, 4, 8kV Contact: ±2, 4kV	IEC61000-4-2:2008, Criteria A EN61000-4-2:2009, Criteria A
Radiated, radio-frequency, electromagnetic field immunity test	3V/m, 10V/m (80-1000MHz, 800MHz, 900MHz, 1800MHz, 2600MHz, 3500MHz, 5000MHz)	IEC/EN61000-4-3:2006+A2:2010, Criteria A
Fast Transient and Burst Immunity	DC Power Port: ±0.5, 2kV	IEC/EN61000-4-4:2012, Criteria A
Surge Immunity	DC Power Port: ±0.5	IEC/EN61000-4-5:2014, Criteria A
Immunity to conducted disturbances, induced by radio-frequency fields	3Vrms (0.15-10MHz) 3-1Vrms (10-30MHz) 1Vrms (30-80MHz) 10Vrms (0.15-80MHz)	IEC/EN61000-4-6:2013, Criteria A
Power Magnetic Field Immunity	1A/m, 10A/m	IEC61000-4-8:2009 EN61000-4-8:2010
Limitations on the amount of electromagnetic interference allowed from digital and electronic devices		FCC 47 CFR Part 15 Subpart B, Class B

DIMENSION AND PHYSICAL CHARACTERISTICS

Parameter	Type	Value
Material	case potting	non-conductive black plastic, (UL94 V-0) epoxy, (UL91 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: ±0.25mm

Specifications (measured @ Ta= 25°C, nom. Vin, full load and after warm-up unless otherwise stated)

PACKAGING INFORMATION		
Parameter	**Type**	**Value**
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	non-condensing	95% RH max.