

Features

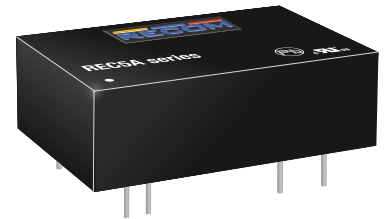
Regulated Converters

- 2:1 input voltage range
- Efficiency up to 81%
- EMI Class A without external components
- Continuous short circuit protection
- No minimum load required

RECOM
DC/DC Converter

REC5A

5 Watt
DIP24
Package



UL60950 certified
UL62368 certified
IEC/EN62368-1 certified

Description

The REC5A series is cost efficient, general purpose isolated DC/DC converter containing a built in Class A EMC filter. The converter is designed to run from industry standard 24V or 5V unregulated supplies and is typically used to provide an isolated, regulated, short circuit protected output. Under Voltage Lockout is available as an option. These converters are designed for industrial applications, can drive high capacitive loads and operate over the full -40°C to +68°C temperature range without derating.

Selection Guide

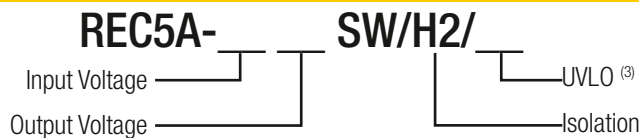
Part Number	Input Voltage Range [VDC]	Output Voltage [VDC]	Output Current [mA]	Efficiency typ. ⁽¹⁾ [%]	max. Capacitive Load ⁽²⁾ [μF]
REC5A-0505SW/H2 ⁽³⁾	4.5-9	5	1000	73.5	6800
REC5A-2405SW/H2 ⁽³⁾	18-36	5	1000	81	6800

Notes:

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

Note2: Max Cap Load is test by nominal input and full resistive load

Model Numbering



Ordering Examples:

REC5A-0505SW/H2: Single Output, 4.5-9Vin (2:1) and 5Vout, 2kVDC Isolation

REC5A-2405SW/H2/X1: Single Output, 18-36Vin (2:1) and 5Vout, 2kVDC Isolation, UVLO option

Notes:

Note3: without suffix is without Under Voltage Lockout Option
add suffix "/X1" for optional Under Voltage Lockout

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

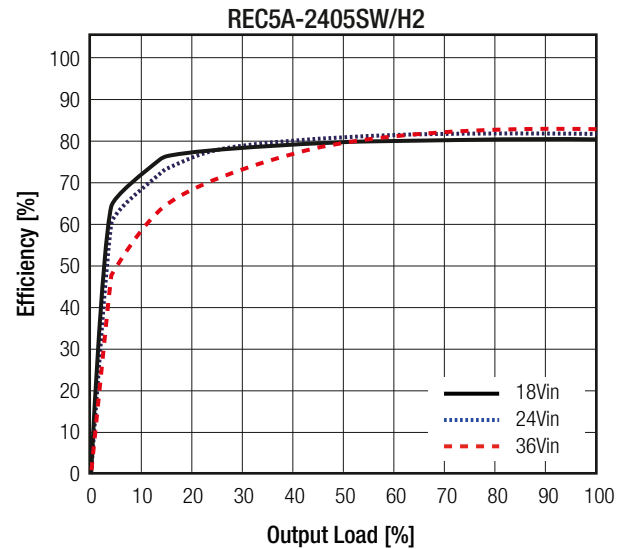
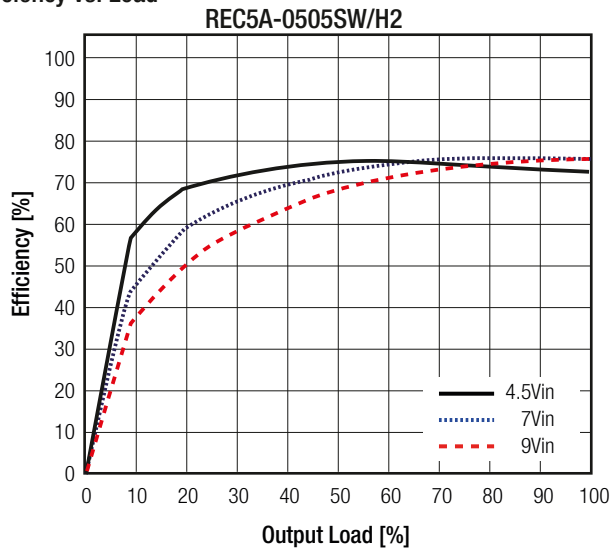
BASIC CHARACTERISTICS

Parameter	Condition	Min.	Typ.	Max.
Internal Input Filter				Pi Type
Input Voltage Range	nom. Vin = 5V nom. Vin = 24V	4.5VDC 18VDC		9VDC 36VDC
Input Surge Voltage	Vin = 5V Vin = 24V			10VDC 50VDC
Quiescent Current	Vin = 5V Vin = 24V		85mA 16mA	
Start-up Time			10ms	
Internal Operating Frequency		120kHz		
Minimum Load		0%		
Output Ripple and Noise	measured with 20MHz bandwidth and a 0.47μF ceramic capacitor			50mVp-p
Under Voltage Lockout ⁽³⁾	Vin = 5V DC-DC ON DC-DC OFF		3.0VDC	3.2VDC
	Vin = 24V DC-DC ON DC-DC OFF		15.6VDC	16.5VDC

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

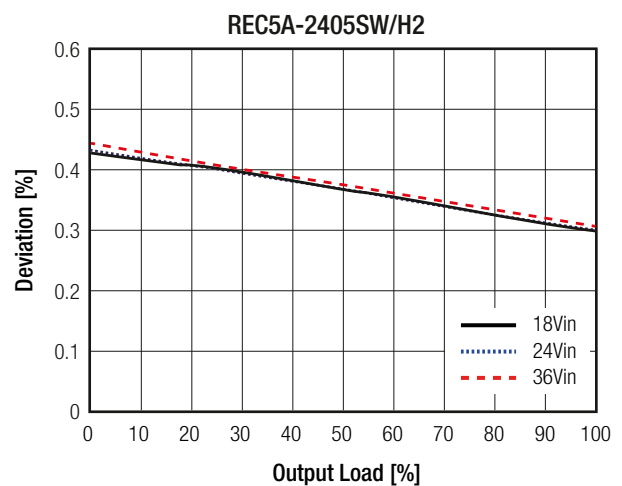
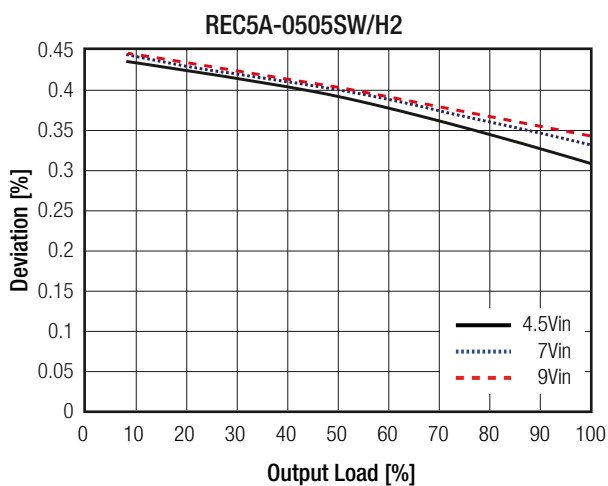
Efficiency vs. Load



REGULATIONS

Parameter	Condition	Values
Output Accuracy		±2.0% typ.
Line Regulation	low line to high line	±0.3% max.
Load Regulation	0% to 100% load	0.6% max.

Deviation vs. Load



PROTECTIONS

Parameter	Condition	Value
Short Circuit Protection (SCP)	below 100mΩ	continuous, automatic recovery
Over Load Protection (OLP)		120% min., 140% typ.
Isolation Voltage ⁽⁴⁾	tested for 1s	2kVDC
Isolation Resistance		1GΩ min.
Isolation Capacitance		2200pF max.
Insulation Grade		functional

Notes:

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

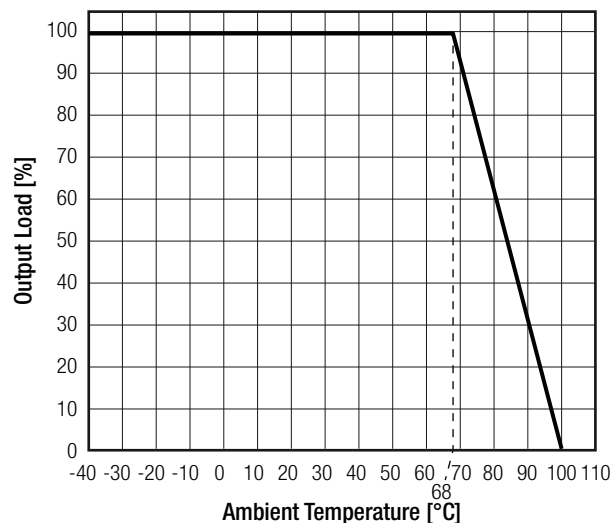
Specifications (measured @ Ta= 25°C, nom. Vin and full load unless otherwise stated)

ENVIRONMENTAL

Parameter	Condition	Value
Operating Temperature Range	without derating with derating	-40°C to +68°C -40°C to +100°C
Maximum Case Temperature		+105°C
Temperature Coefficient		±0.05%/°C
Thermal Impedance		20°C/W
Operating Altitude		5000m
Operating Humidity	non-condensing	5% to 95% RH
Pollution Degree		PD2
MTBF	according to MIL-HDBK-217F, G.B.	+25°C +68°C 1546 x 10 ³ h 555 x 10 ³ h

Derating Graph

(@ Chamber and natural convection 0.1 m/s)



SAFETY AND CERTIFICATIONS

Certificate Type	Report / File Number	Standard
Information Technology Equipment, General Requirements for Safety	E224736	UL60950-1, 2nd Edition, 2014 CSA C22.2 No. 60950-1, 2nd Edition, 2014
Audio/Video, information and communication technology equipment	E224736	UL62368-1, 2nd Edition, 2014 CSA C22.2 No. 62368-1, 2014
Audio/Video, information and communication technology equipment. Safety requirements (CB Scheme)	L0339m35-CB-1-B1	IEC62368, 2nd Edition, 2014 EN62368, 1st Edition, 2014
EAC	RU-AT.49.09571	TP TC 004/2011
RoHS 2		RoHS 10/10, 2011/65/EU + AM-2015/863

EMC Compliance	Condition	Standard / Criterion
Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement ⁽⁵⁾	with external components	EN55032, Class B
ESD Electrostatic discharge immunity test	Air ±8kV and Contact ±4kV	EN61000-4-2, Criteria A
Radiated, radio-frequency, electromagnetic field immunity test	3 V/m	EN61000-4-3, Criteria A
Fast Transient and Burst Immunity	±0.5kV	EN61000-4-4, Criteria A
Surge Immunity	±0.5kV	EN61000-4-5, Criteria A
Immunity to conducted disturbances, induced by radio-frequency fields	3 Vr.m.s	EN61000-4-6, Criteria A
Power Magnetic Field Immunity	50Hz, 1A/m	EN61000-4-8, Criteria A

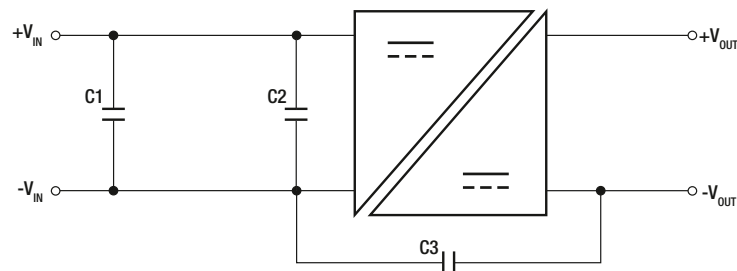
Notes:

Note5: Meets EMI Class A without external components and Class B with external components

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

EMC Filtering Suggestions according to EN55032



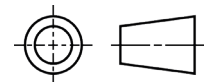
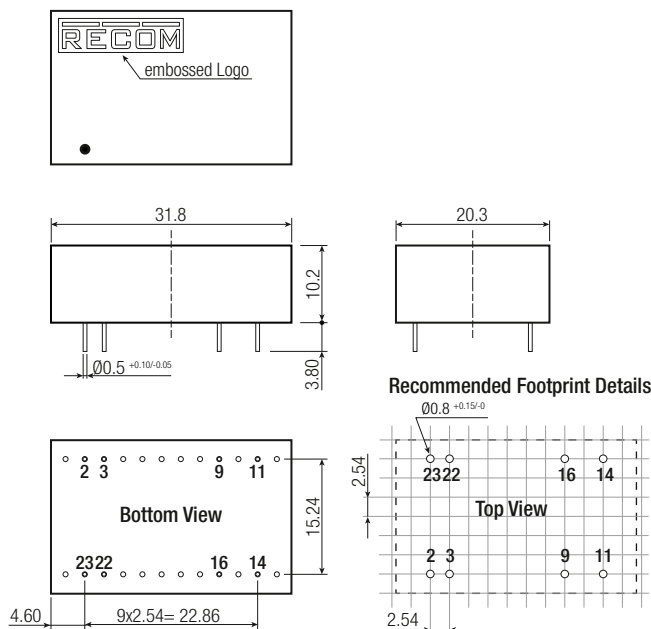
Component List Class B

MODEL	C1	C2	C3
REC5A-0505SW/H2	47µF/50V	47µF/50V	N/A
REC5A-2405SW/H2	47µF100V	47µF/100V	1000pF/3kV

DIMENSION and PHYSICAL CHARACTERISTICS

Parameter	Type	Value
Material	case	non-conductive black plastic (UL94V-0)
	base	non-conductive black plastic (UL94V-0)
	potting	epoxy (UL94V-0)
Dimension (LxWxH)		31.8 x 20.3 x 10.2mm
Weight		13.0g

Dimension Drawing (mm)



Pin Connections

Pin #	Function
2, 3	-Vin
9	NC
11	NC
14	+Vout
16	-Vout
22, 23	+Vin

Tolerance: X.X ±0.5mm
X.XX ±0.25mm

PACKAGING INFORMATION

Packaging Dimension (LxWxH)	Tube	520 x 22.7 x 18.3mm
Packaging Quantity		15pcs
Storage Temperature Range		-55°C to +125°C

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.