

Features

Regulated Converters

- 2:1 Input Range Voltage
- Efficiency Up To 81%
- EMI Class A Without External Components
- Continuous Short Circuit Protection
- No Minimum Load Required

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.

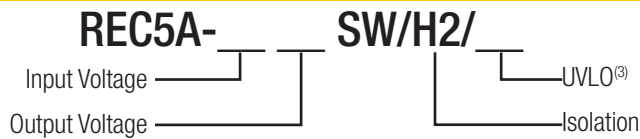
Selection Guide

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

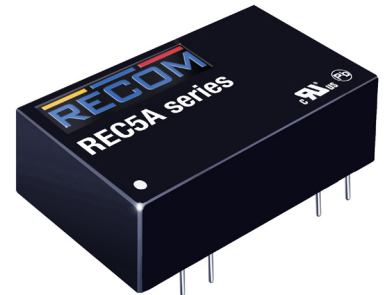
Specifications measured at T_a= 25°C, nominal input voltage, full load, otherwise noted

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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REC5A

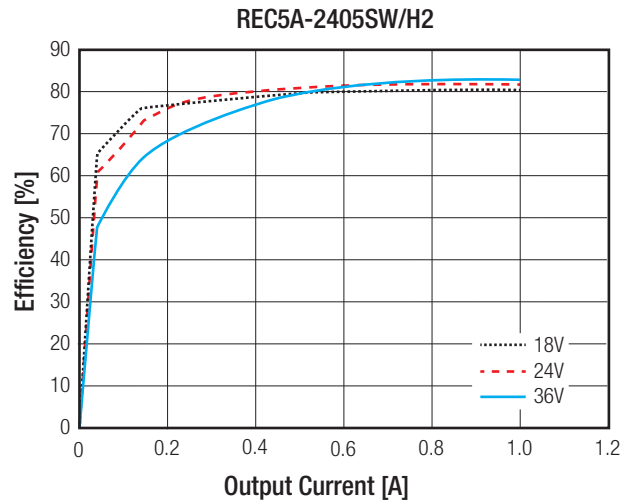
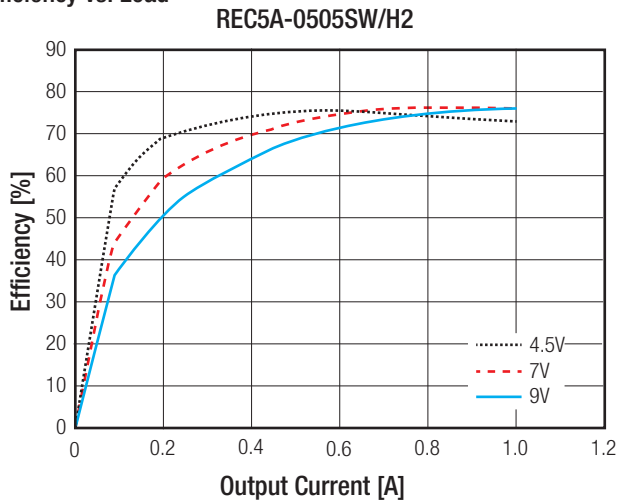
5 Watt DIP24 Package



UL60950 Certified
 UL62368 Certified
 IEC/EN62368-1 Certified

Specifications measured at $T_a = 25^\circ\text{C}$, nominal input voltage, full load, otherwise noted

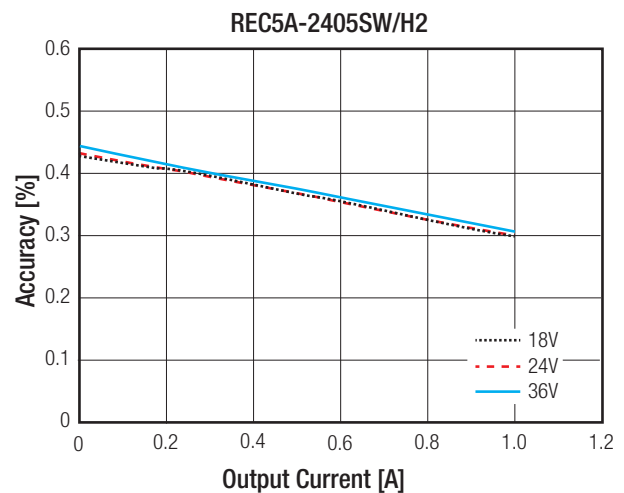
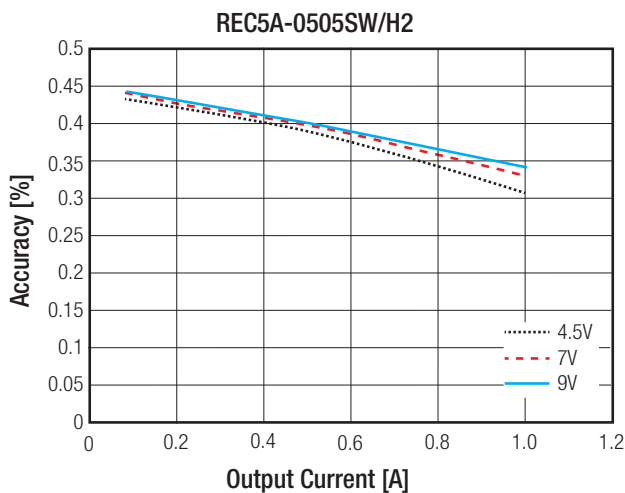
Efficiency vs. Load



REGULATIONS

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

Accuracy vs Load



PROTECTIONS

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

Notes:

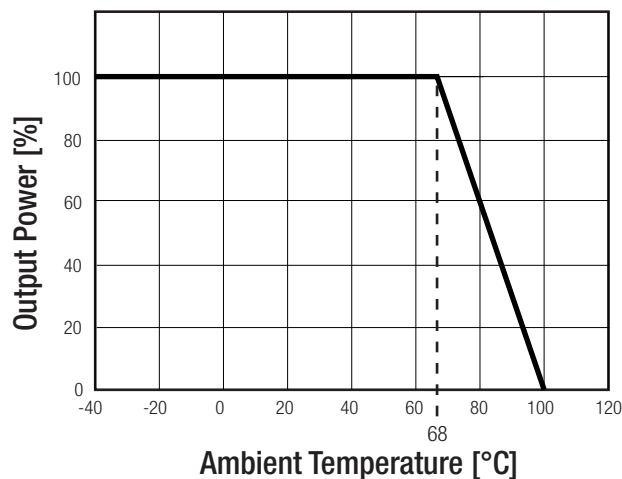
Note4: For repeat Hi-Pot testing, reduce the time and/or the test voltage.

Specifications measured at $T_a = 25^\circ\text{C}$, nominal input voltage, full load, otherwise noted

ENVIRONMENTAL			
Parameter	Condition	Value	
Operating Temperature Range	without derating	-40°C to +68°C	
	with derating	-40°C to +100°C	
Maximum Case Temperature		+105°C	
Temperatur Coefficient		$\pm 0.05\%/^\circ\text{C}$	
Thermal Impedance		20°C/W	
Operating Altitude		2000m	
Operating Humidity	non-condensing	5% to 95% RH	
Pollution Degree		PD3	
MTBF	according to MIL-HDBK-217F, G.B.	+25°C	1546 x 10 ³ h
		+68°C	555 x 10 ³ h

Derating Graph

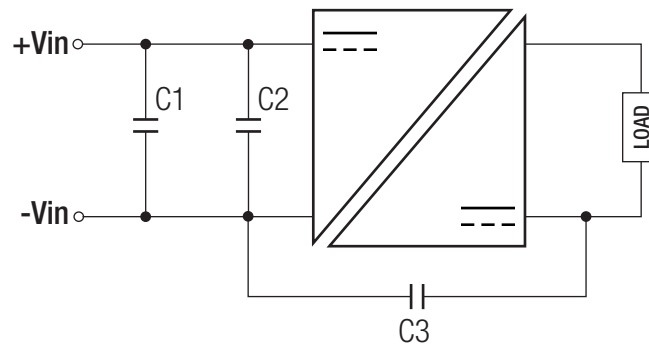
(@ Chamber and natural convection 0.1 m/s)



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
RoHs 2		RoHS 10/10, 2011/65/EU + AM-2015/863
EMC Compliance		
Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement ⁽⁹⁾	Condition	Standard / Criterion
	with external components	EN55022, Class B
ESD Electrostatic discharge immunity test	Air $\pm 8\text{kV}$ and Contact $\pm 4\text{kV}$	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	$\pm 0.5\text{kV}$	EN61000-4-4, Criteria A
Surge Immunity	$\pm 0.5\text{kV}$	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 at $T_a = 25^\circ\text{C}$, nominal input voltage, full load and after warm up unless otherwise specified)

EMI Filtering according to EN55022 Class B

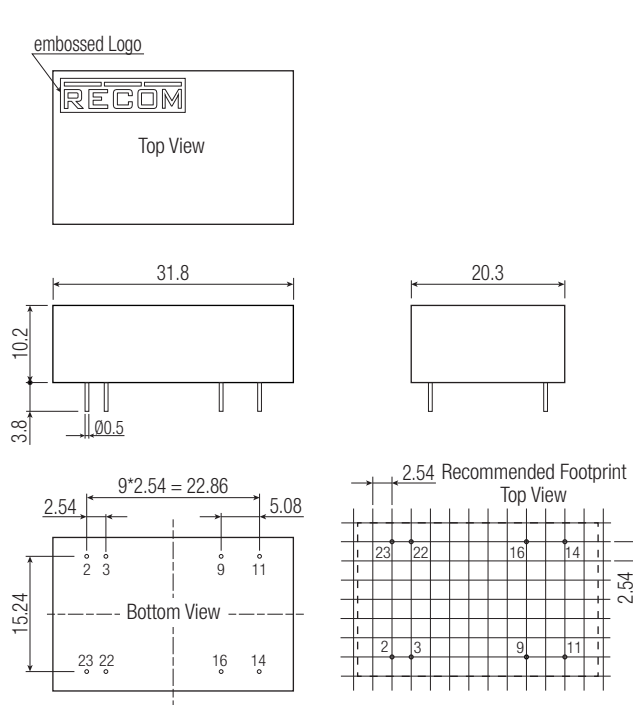


MODEL	C1	C2	C3
REC5A-0505SW/H2	47 μF /50V	47 μF /50V	N/A
REC5A-2405SW/H2	47 μF /100V	47 μF /100V	1000pF/3kV

DIMENSION and PHYSICAL CHARACTERISTICS

Parameter	Type	Value
Material	Case Base Potting	non-conductive black plastic (UL94V-0) non-conductive black plastic (UL94V-0) Epoxy (UL94V-0)
Package Dimension (LxWxH)		31.8 x 20.3 x 10.2mm
Package Weight		13g

Dimension Drawing (mm)



Pin Connections

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

Pin Pitch Tolerance ± 0.25 mm
 Pin Dimension Tolerance ± 0.1 mm
 Tolerance: X.X ± 0.5 mm
 X.XX ± 0.25 mm

PACKAGING INFORMATION

Packaging Dimension (LxWxH)	Tube	520 x 22.7 x 18.3mm
Packaging Quantity		15pcs
Storage Temperature Range		-55°C to $+125^\circ\text{C}$

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