

Features

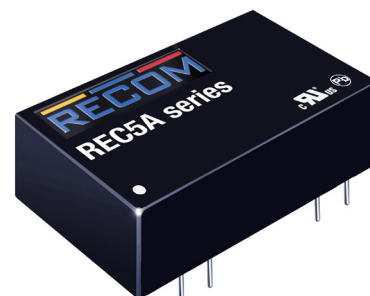
Regulated Converters

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

RECOM
DC/DC Converter

REC5A

5 Watt
DIP24
Package



UL US
E224736

UL60950 Pending
IEC/EN62368-1 Pending
EN60950-1 Pending

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

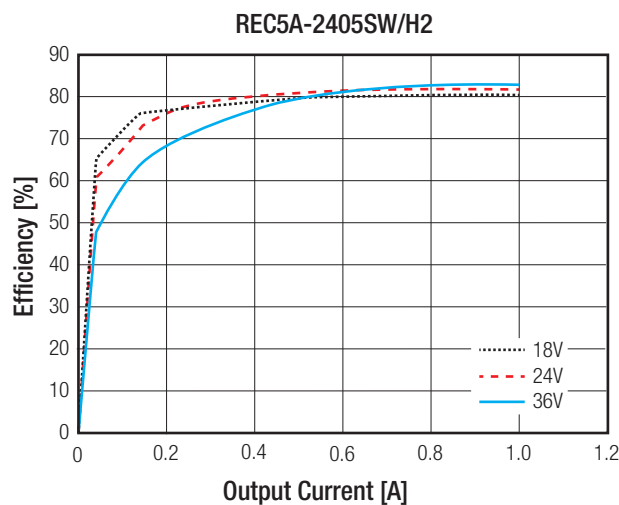
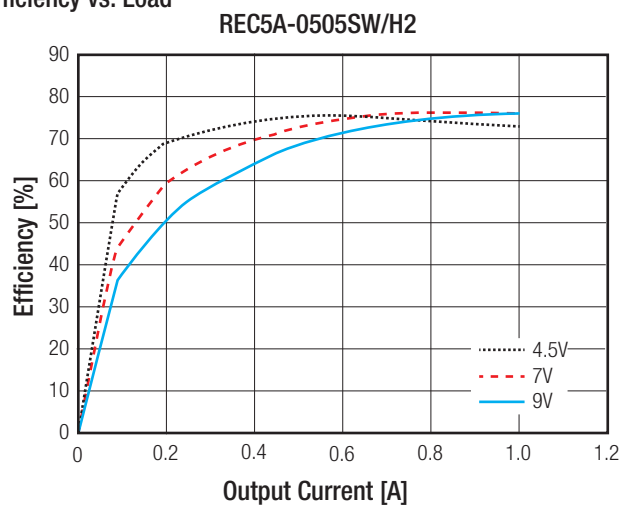
Specifications measured at T_a= 25°C, nominal input voltage, full load, otherwise noted

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		3.2VDC
	Vin = 24V	DC-DC ON DC-DC OFF		16.5VDC

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

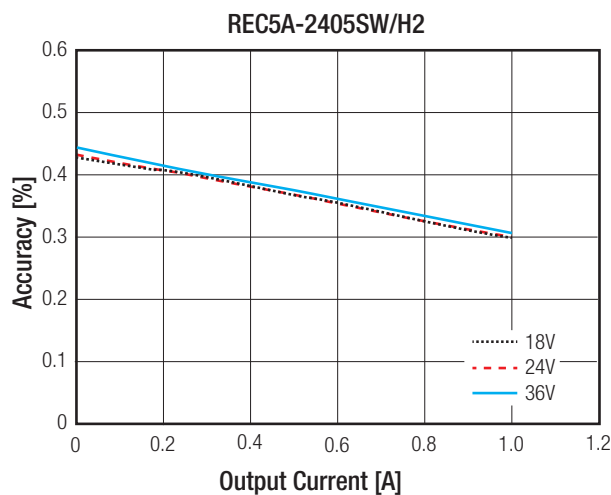
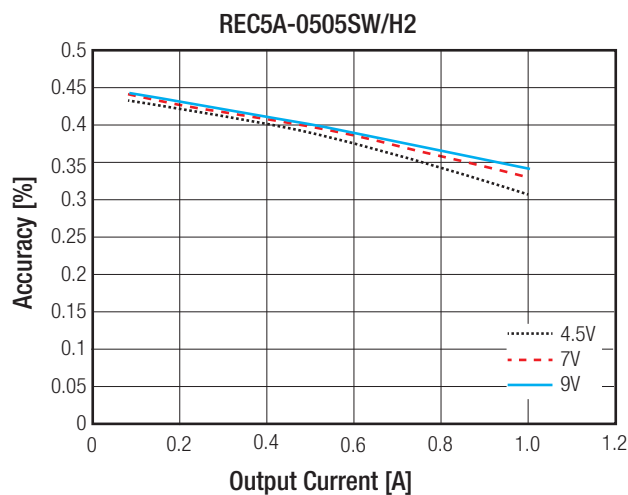
Efficiency vs. Load



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

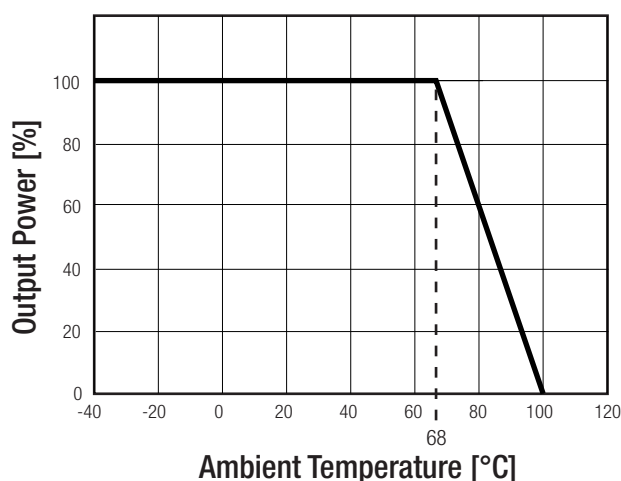
Parameter	Condition	Value
Short Circuit Protection (SCP)	below $100\text{m}\Omega$	continuous, automatic recovery
Over Load Protection (OLP)		120% min., 140% typ.
Isolation Voltage	tested for 1s	2kVDC
Isolation Resistance		$1\text{G}\Omega$ min.
Isolation Capacitance		2200pF max.
Insulation Grade		functional

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 $+68^\circ\text{C}$
	with derating	-40°C to $+100^\circ\text{C}$
Maximum Case Temperature		$+105^\circ\text{C}$
Temperature 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.	$+25^\circ\text{C}$ $+68^\circ\text{C}$ $1546 \times 10^3\text{h}$ $555 \times 10^3\text{h}$

Derating Graph

(@ Chamber and natural convection 0.1m/s)



SAFETY AND CERTIFICATIONS

Certificate Type	Report / File Number	Standard
Information Technology Equipment, General Requirements for Safety	E224736 - pending	UL60950-1, 2nd Edition, 2014 CSA C22.2 No. 60950-1, 2nd Edition, 2014
Information Technology Equipment, General Requirements for Safety	pending	EN60950-1, 1st Edition, 2006
Audio/video, information and communication technology equipment. Safety requirements (CB Scheme)	pending	IEC62368, 2nd Edition, 2014 EN62368, 1st Edition, 2014
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 ⁽⁴⁾	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 V _{r.m.s}	EN61000-4-6, Criteria A
Power Magnetic Field Immunity	50Hz, 1A/m	EN61000-4-8, Criteria A

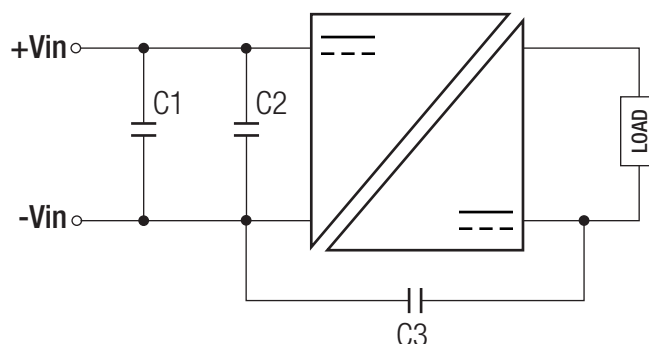
Notes:

Note4: 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

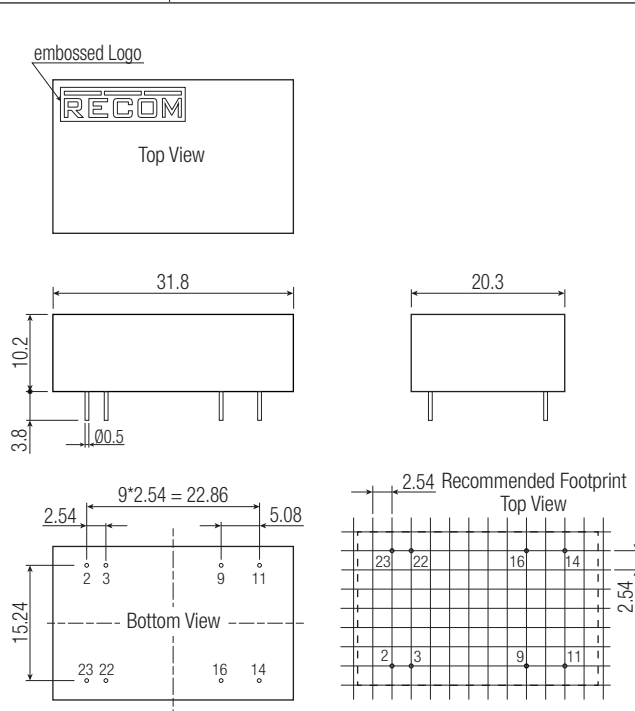


MODEL	C1	C2	C3
REC5A-0505SW/H2	47 μF /50V	47 μF /50V	N/A
REC5A-2405SW/H2	47 μF /100V	47 μF /100V	1000pF/3kV

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 $^\circ\text{C}$ to +125 $^\circ\text{C}$

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