

# Features

- 2:1 Input Range Voltage
- Efficiency up to 81%
- EMI Class A without external components
- Continuous Short Circuit Protection
- No Minimum Load Required

# Regulated Converters

## Description

The REC3A 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 +85°C temperature range without derating.

## Selection Guide

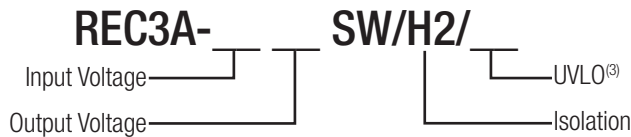
Part Number	Input Voltage Range [VDC]	Output Voltage [VDC]	Output Current [mA]	Efficiency typ. <sup>(1)</sup> [%]	max. Capacitive Load <sup>(2)</sup> [µF]
REC3A-0505SW/H2 <sup>(3)</sup>	4.5-9	5	600	76	6800
REC3A-2405SW/H2 <sup>(3)</sup>	18-36	5	600	81	6800

### 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:

REC3A-0505SW/H2, Single Output, 4.5-9Vin (2:1) and 5Vout, 2kVDC Isolation

REC3A-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

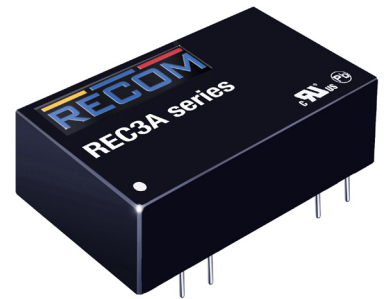
## Specifications measured at T<sub>a</sub>= 25°C, nominal input voltage, full load, otherwise noted

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		35mA 12mA		
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 <sup>(3)</sup>	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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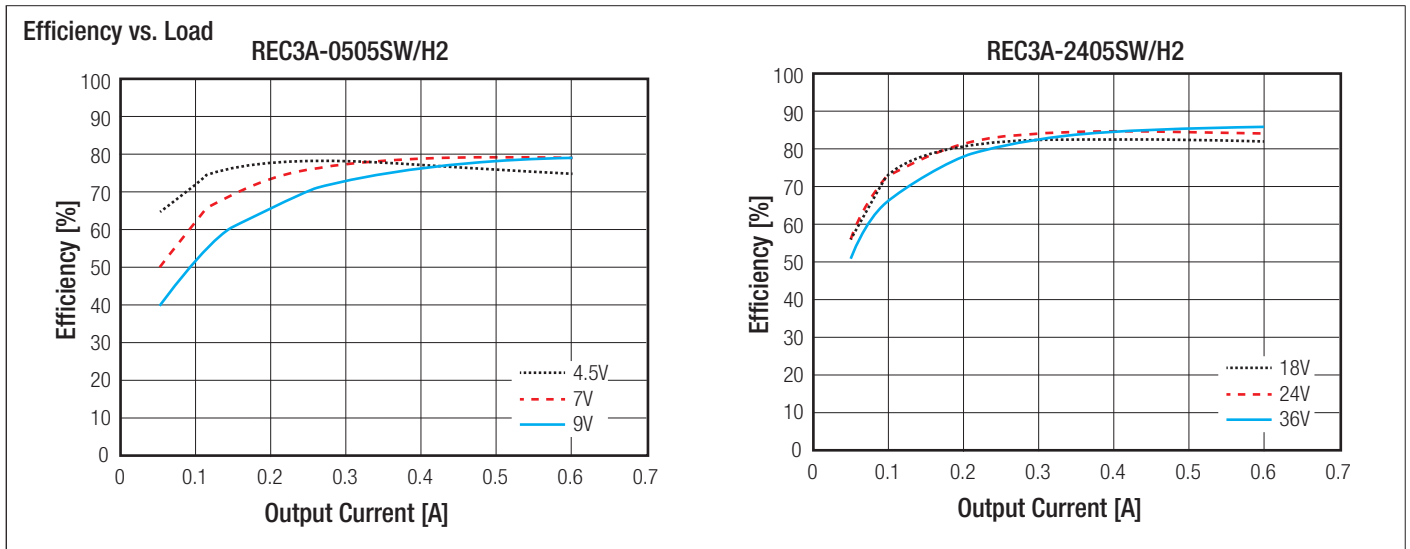
## REC3A

# 3 Watt DIP24 Package

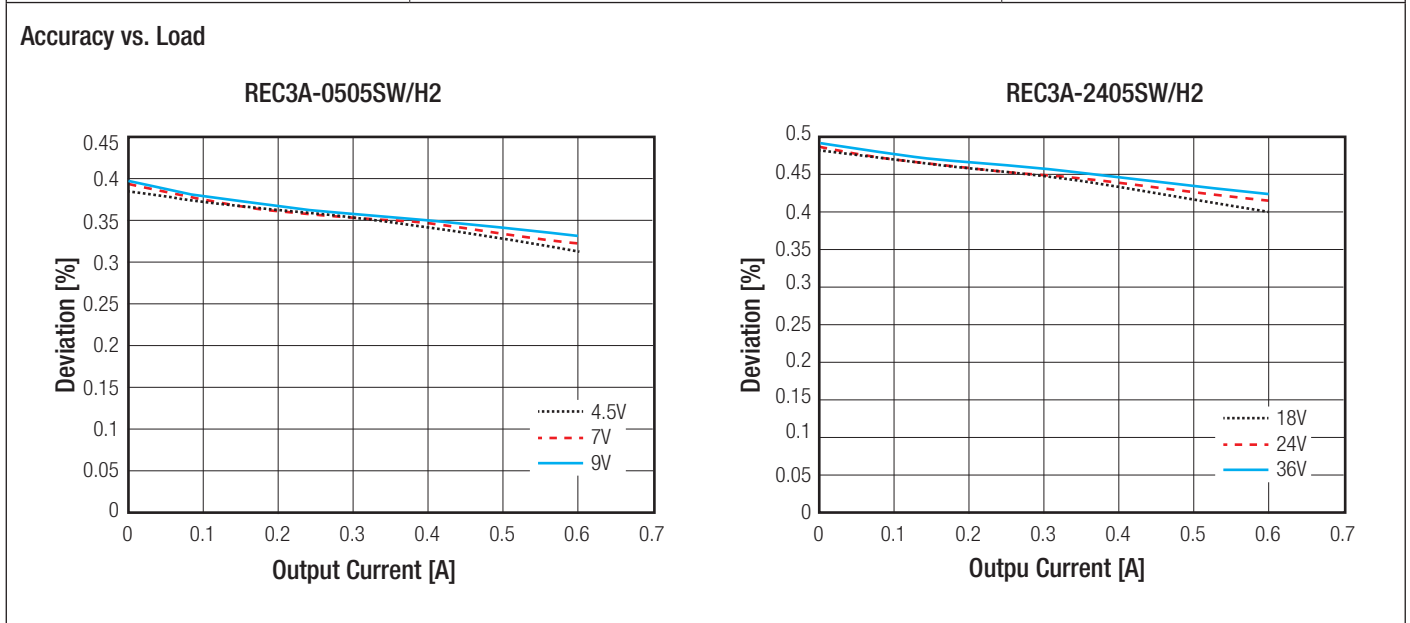


UL60950 Pending  
EN62368-1 Pending

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



REGULATION		
Parameter	Condition	Values
Output Accuracy		$\pm 2.0\%$ typ.
Line Regulation	low line to high line	$\pm 0.3\%$ max.
Load Regulation	10% to 100% load	$\pm 0.6\%$ max.



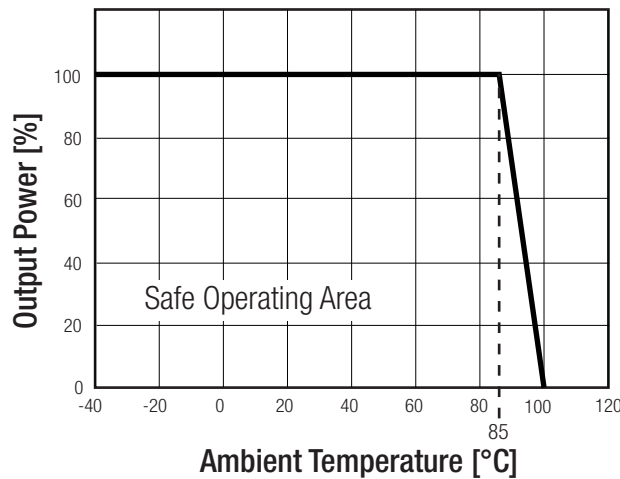
PROTECTION		
Parameter	Condition	Value
Short Circuit Protection (SCP)		continuous, automatic recovery
Over Load Protection (OLP)		140% min. to 155% typ.
Isolation Voltage		2kVDC / 1s
Isolation Capacitance		2200pF max.
Isolation Resistance		1G $\Omega$ min.
Insulation Grade		Functional

**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 +85°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	2429 x 10 <sup>3</sup> h
		+85°C	593 x 10 <sup>3</sup> h

**Derating Graph**

(@ Chamber and natural convection 0.1m/s)

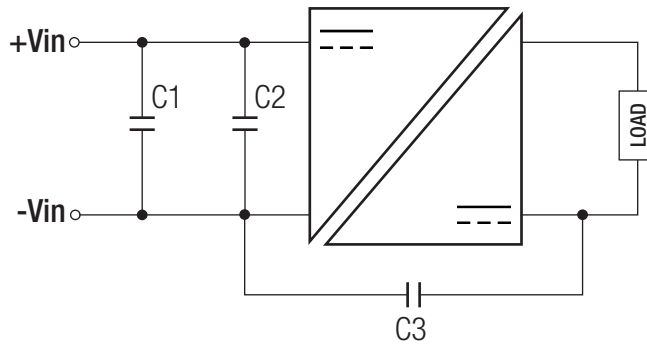


SAFETY AND CERTIFICATIONS		
Certificate Type	Report / File Number	Standard
Information Technology Equipment, General Requirements for Safety	E224736 pending	UL60950-1 CSA C22.2 No. 60950-1
Audio/video, information and communication technology equipment. Safety requirements	pending	EN62368-1
EMC Compliance	Condition	Standard / Criterion
Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement <sup>(4)</sup>	with external components	EN55022, Class B
ESD Electrostatic discharge immunity test	Air $\pm 8\text{kV}$ and Contact $\pm 6\text{kV}$	EN61000-4-2, Criteria A
Radiated, radio-frequency, electromagnetic field immunity test	10 V/m	EN61000-4-3
Fast Transient and Burst Immunity	$\pm 2\text{kV}$	EN61000-4-4, Criteria A
Surge Immunity	$\pm 1\text{kV}$	EN61000-4-5, Criteria A
Immunity to conducted disturbances, induced by radio-frequency fields	3 Vr.m.s	EN61000-4-6
<p><b>Notes:</b> Note4: Meets Class A without external components. For Class B, please see filter suggestion below.</p>		

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

### EMI Filtering according to EN55022 Class B

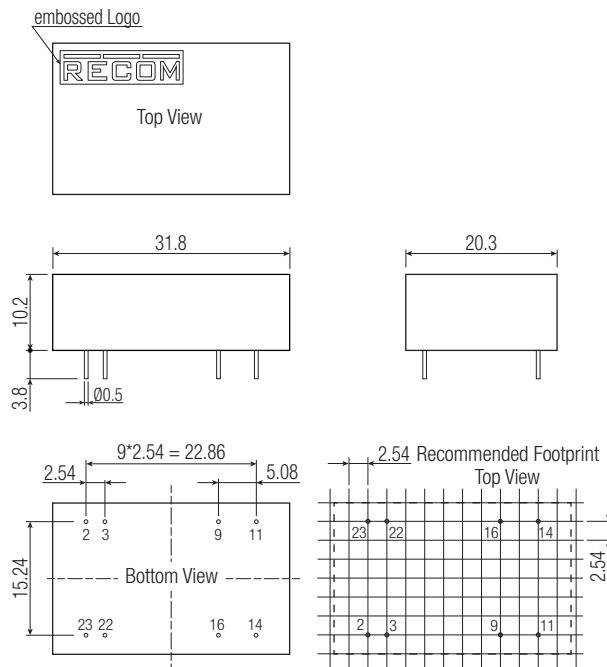


MODEL	C1	C2	C3
REC3A-0505SW/H2	22 $\mu$ F/50V	22 $\mu$ F/50V	N/A
REC3A-2405SW/H2	22 $\mu$ F/100V	22 $\mu$ F/100V	1000pF/3kV

### 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)
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  $\pm 0.25$  mm  
 Pin Dimension Tolerance  $\pm 0.1$  mm  
 Tolerance: X.X  $\pm 0.5$  mm  
 X.XX  $\pm 0.25$  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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