

## Features

### Regulated Converters

- UL-60950-1 / CSA C22.2 certified
- 5W DIP Package
- 4kVDC & 6kVDC Isolation
- Regulated Output
- Continuous Short Circuit Protection
- Wide Input 2:1 & 4:1
- UL94V-0 Package Material
- 100% Burned In
- Efficiency to 86%

### Selection Guide

Part Number	Input Voltage (VDC)	Output Voltage (VDC)	Max. Cap. Load ( $\mu$ F)	Output Current (mA)	Efficiency (%)
DIP24 (SMD)	(VDC)	(VDC)	( $\mu$ F)	(mA)	(%)
REC5-xx3.3SRW (H4/H6)	9 - 18, 18 - 36, 36 - 72	3.3	2200	1200	75-77
REC5-xx05SRW (H4/H6) (See Notes)	9 - 18, 18 - 36, 36 - 72 4.5 - 9	5	1000	1000	79-81 72
REC5-xx09SRW (H4/H6) (See Notes)	9 - 18, 18 - 36, 36 - 72 4.5 - 9	9	470	556	82-83 73
REC5-xx12SRW (H4/H6) (See Notes)	9 - 18, 18 - 36, 36 - 72 4.5 - 9	12	220	420	84-85 74
REC5-xx15SRW (H4/H6) (See Notes)	9 - 18, 18 - 36, 36 - 72 4.5 - 9	15	120	340	85-86 75
REC5-xx05DRW (H4/H6) (See Notes)	9 - 18, 18 - 36, 36 - 72 4.5 - 9	$\pm$ 5	$\pm$ 470	$\pm$ 500	79-81 72
REC5-xx12DRW (H4/H6) (See Notes)	9 - 18, 18 - 36, 36 - 72 4.5 - 9	$\pm$ 12	$\pm$ 100	$\pm$ 210	84-85 74
REC5-xx15DRW (H4/H6) (See Notes)	9 - 18, 18 - 36, 36 - 72 4.5 - 9	$\pm$ 15	$\pm$ 68	$\pm$ 170	85-86 75
REC5-xx3.3SRWZ (H4/H6)	9 - 36**, 18 - 72	3.3	2200	1200	75-76
REC5-xx05SRWZ (H4/H6)	9 - 36**, 18 - 72	5	1000	1000	81-82
REC5-xx09SRWZ (H4/H6)	9 - 36, 18 - 72	9	470	556	82-83
REC5-xx12SRWZ (H4/H6)	9 - 36, 18 - 72	12	220	420	83-84
REC5-xx15SRWZ (H4/H6)	9 - 36, 18 - 72	15	120	340	84-85
REC5-xx05DRWZ (H4/H6)	9 - 36, 18 - 72	$\pm$ 5	$\pm$ 470	$\pm$ 500	81-82
REC5-xx12DRWZ (H4/H6)	9 - 36, 18 - 72	$\pm$ 12	$\pm$ 100	$\pm$ 210	82-83
REC5-xx15DRWZ (H4/H6)	9 - 36, 18 - 72	$\pm$ 15	$\pm$ 68	$\pm$ 170	84-85

**2:1 Input (REC5-S/DRWH4/H6)**      **4:1 Input (REC5-S/DRWZ(H4/H6))**

xx = 4.5-9Vin = 05                      xx = 9-36Vin = 24  
 xx = 9-18Vin = 12                      xx = 18-72Vin = 48  
 xx = 18-36Vin = 24  
 xx = 36-72Vin = 48

### Notes :

For the REC5-05xxS\_DRW/H4/H6 series, Load = 90%max. when Vin=4.5VDC.

\* add suffix "/H4" for 4kVDC isolation or "/H6" for 6kVDC isolation

\* add suffix "/A" or "/C" for Pinning, see next page

\* add suffix "/M" for metal case

\* add suffix "/SMD" for SMD package

e.g. REC5-xxxxSRWZ/H4/AM = 4kVDC isol. / Pinout "A" / metal case

\*\* 24V 4:1 Wide Range Input Types (REC5-24xxS\_DRWZ(H4/H6)) should be derated Vin = 9 Vin : 3.3Vout / 1100mA max., 5Vout / 900mA max..

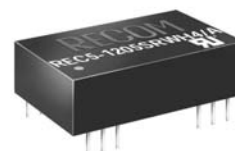
If the options "/M" for metal case and "/SMD" for SMD pinout are combined the maximum allowed isolation voltage is 2kVDC because of the shorter distances between the pins and the metal-case so the only available SMD-option in metal-case is "/H2". DIP-24 through-hole case and SMD-plastic case are not affected and offer the full isolation barriers of 4kVDC for "/H4" option and 6kVDC for "/H6".

## ECONOLINE

DC/DC-Converter

# REC5-S\_DRW/H4, H6 Series

**5 Watt  
DIP24 & SMD  
Single & Dual  
Output**



**EN-60950-1 Certified  
UL-60950-1 Certified  
EN-60601-1 Certified**



### Description

This series offers high isolation of 4kVDC (= option "/H4") or 6kVDC (= option "/H6") making it ideal for medical applications and other sophisticated industrial applications.

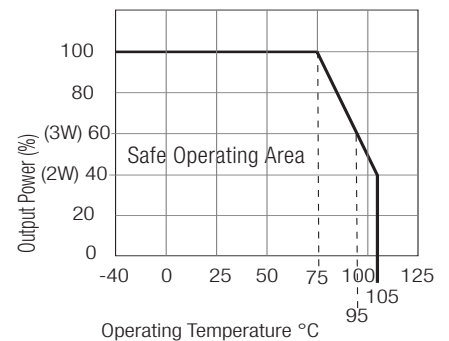
Packaging can be either DIP-24 non-conductive plastic or 5-side-shielded DIP24 metal case (= option "M") as well as DIP24-SMD case (= option "SMD").

For all the above variants, 2 industry-standard pinouts (= option "A" or "C") are available.

## Specifications (Core Operating Area)

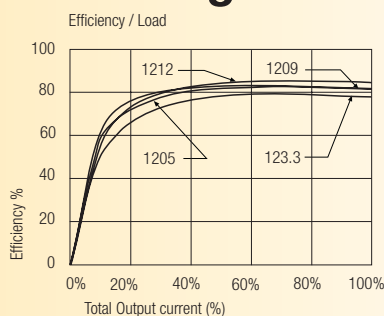
Input Voltage Range	2:1 & 4:1		
Output Voltage Accuracy	±2% max.		
Line Regulation (HL-LL)	±0.3% max.		
Load Regulation (for output load current change from 20% to 100%)	±0.6% max.		
Output Ripple and Noise (0,1µF capacitor on output, 20MHz BW)	50mVp-p max.		
Operating Frequency at Full Load	2:1 input	120kHz typ.	
(at nominal input voltage)	4:1 input	200kHz typ.	
Input Filter	Pi Network		
Efficiency at Full Load	see above		
No Load Power Consumption	300mW max.		
Isolation Voltage	H4 types	(tested for 1 second)	4000VDC min.
Rated Working Voltage	(see note)	(long term isolation)	see Application Notes
Isolation Voltage	H6 types	(tested for 1 second)	6000VDC min.
Rated Working Voltage	(see note)	(long term isolation)	see Application Notes
Isolation Capacitance	60pF typ.		
Isolation Resistance	1 GΩ min.		
Short Circuit Protection	Continuous, Auto Restart		
Operating Temperature (free air convection)	-40°C to +75°C (see Graph)		
Storage Temperature Range	-55°C to +125°C		
Relative Humidity	95% RH		
Case Material	Non-Conductive Plastic		
Thermal Impedance	Natural convection	20°C/W for metal case	
Package Weight	13g		
MTBF (+25°C)	} Detailed Information see Application Notes chapter "MTBF"	using MIL-HDBK 217F	850 x 10 <sup>3</sup> hours
(+75°C)		using MIL-HDBK 217F	206 x 10 <sup>3</sup> hours

## Derating-Graph (Ambient Temperature)

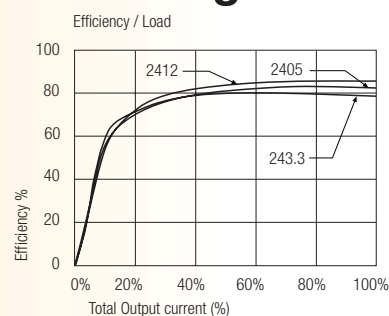


## Typical Characteristics

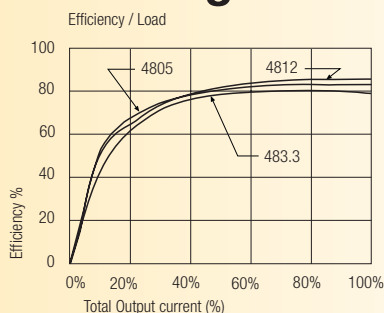
### Single



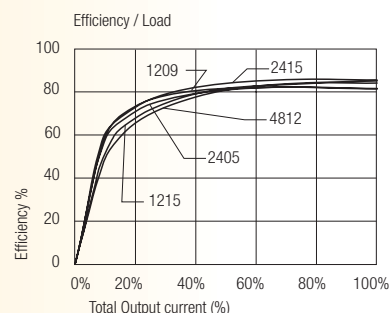
### Single



### Single

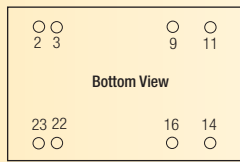
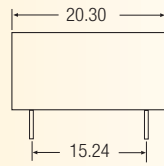
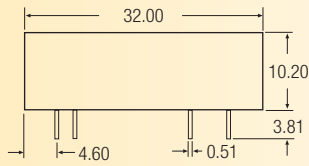


### Dual

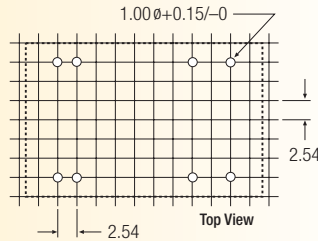


**Package Style and Pinning (mm) DIP 24 , Wide Input 2:1 & 4:1**

**Package A**



**Recommended Footprint Details**

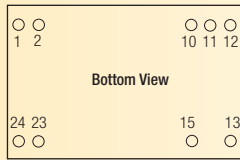
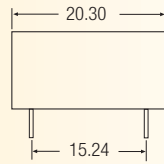
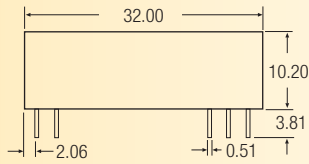


**Pin Connections**

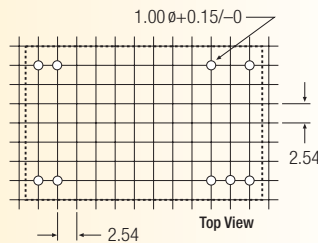
Pin #	Single	Dual
2	-Vin	-Vin
3	-Vin	-Vin
9	NC	Com
11	NC	-Vout
14	+Vout	+Vout
16	-Vout	Com
22	+Vin	+Vin
23	+Vin	+Vin

NC = No Connection  
XX.X  $\pm 0.5$  mm  
XX.XX  $\pm 0.25$  mm

**Package C**



**Recommended Footprint Details**

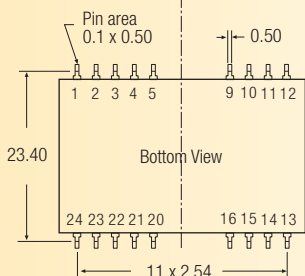
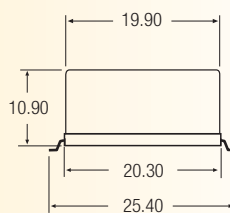
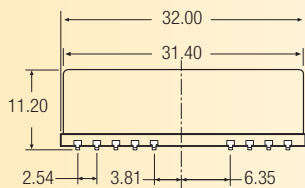


**Pin Connections**

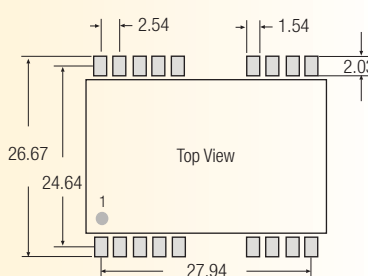
Pin #	Single	Dual
1	+Vin	+Vin
2	+Vin	+Vin
10	NC	Com
11	NC	Com
12	-Vout	NC
13	+Vout	-Vout
15	NC	+Vout
23	-Vin	-Vin
24	-Vin	-Vin

NC = No Connection  
XX.X  $\pm 0.5$  mm  
XX.XX  $\pm 0.25$  mm

**Mechanical drawings of DIP24 SMD case**



**Recommended Footprint Details**



**All unused pins are NC (No Connection). SMD pin connections follow standard package pinning.**

Tol.:  $\pm 0.35$  mm

for all packages incl.SMD case the length of plastic case is 31,8mm, length of metal case 32.0mm