

## Features

### Regulated Converters

- UL-60950-1 / CSA C22.2 certified
- 3W DIP Package
- 4kVDC & 6kVDC Isolation
- Regulated Output
- Continuous Short Circuit Protection Auto-Restarting
- Wide Input 2:1 & 4:1
- UL94V-O Package Material
- Cost Effective
- 100% Burned In
- Efficiency to 86%

### Selection Guide

Part Number	Input Voltage (VDC)	Output Voltage (VDC)	Max. Cap. Load (µF)	Output Current (mA)	Efficiency (%)
REC3-xx3.3SRW (H4/H6)	4.5 - 9, 9 - 18, 18 - 36, 36 - 72	3.3	2200	900	66-76
REC3-xx05SRW (H4/H6)	4.5 - 9, 9 - 18, 18 - 36, 36 - 72	5	1000	600	71-79
REC3-xx09SRW (H4/H6)	4.5 - 9, 9 - 18, 18 - 36, 36 - 72	9	470	330	74-83
REC3-xx12SRW (H4/H6)	4.5 - 9, 9 - 18, 18 - 36, 36 - 72	12	220	250	75-85
REC3-xx15SRW (H4/H6)	4.5 - 9, 9 - 18, 18 - 36, 36 - 72	15	120	200	75-86
REC3-xx05DRW (H4/H6)	4.5 - 9, 9 - 18, 18 - 36, 36 - 72	±5	±470	±300	74-83
REC3-xx09DRW (H4/H6)	4.5 - 9, 9 - 18, 18 - 36, 36 - 72	±9	±220	±165	81-84
REC3-xx12DRW (H4/H6)	4.5 - 9, 9 - 18, 18 - 36, 36 - 72	±12	±100	±125	75-85
REC3-xx15DRW (H4/H6)	4.5 - 9, 9 - 18, 18 - 36, 36 - 72	±15	±68	±100	75-86
REC3-xx3.3SRWZ (H4/H6)	9 - 36, 18 - 72	3.3	2200	900	77-79
REC3-xx05SRWZ (H4/H6)	9 - 36, 18 - 72	5	1000	600	78-80
REC3-xx09SRWZ (H4/H6)	9 - 36, 18 - 72	9	470	330	80-83
REC3-xx12SRWZ (H4/H6)	9 - 36, 18 - 72	12	220	250	83-85
REC3-xx15SRWZ (H4/H6)	9 - 36, 18 - 72	15	120	200	83-85
REC3-xx05DRWZ (H4/H6)	9 - 36, 18 - 72	±5	±470	±300	77-80
REC3-xx09DRWZ (H4/H6)	9 - 36, 18 - 72	±9	±220	±165	81-84
REC3-xx12DRWZ (H4/H6)	9 - 36, 18 - 72	±12	±100	±125	83-85
REC3-xx15DRWZ (H4/H6)	9 - 36, 18 - 72	±15	±68	±100	83-85

**2:1 Input**  
(REC3-S/DRWH4/H6)  
xx = 4.5-9Vin = 05  
xx = 9-18Vin = 12  
xx = 18-36Vin = 24  
xx = 36-72Vin = 48

**4:1 Input**  
(REC3-S/DRWZ(H4/H6))  
xx = 9-36Vin = 24  
xx = 18-72Vin = 48

\* add suffix **/H4** for 4kVDC isolation or **/H6** for 6kVDC isolation  
\* add suffix **/A** or **/C** for Pinning, see next page  
**"B"** Pinning is NOT available for this series !  
\* add suffix **/M** for metal case  
\* add suffix **/SMD** for SMD package  
e.g. REC3-2412SRW/H4/AM =  
4kVDC isol. / Pinout **"A"** / metal case

### 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)	±0.4% max.

continued on next page

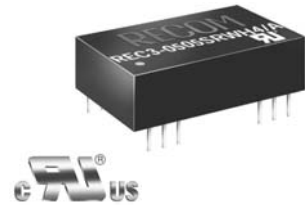
## ECONOLINE

DC/DC-Converter

# REC3-S DRW(Z) /H4,H6 Series

3 Watt

DIP24 & SMD  
Single & Dual  
Output



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

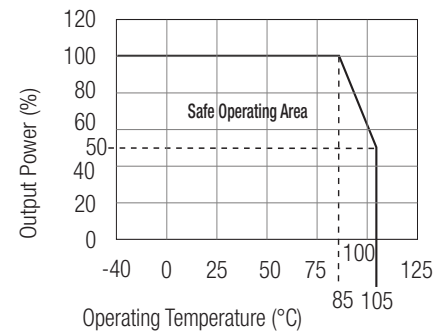
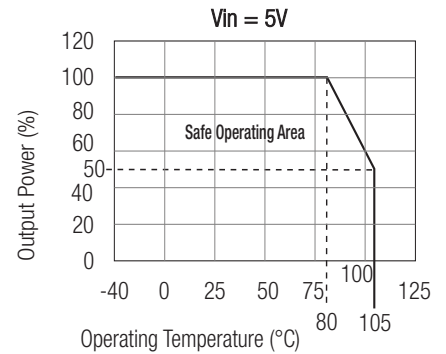
### Notes :

1. 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 pins and the metal case, so 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"**.

### Specifications (Core Operating Area)

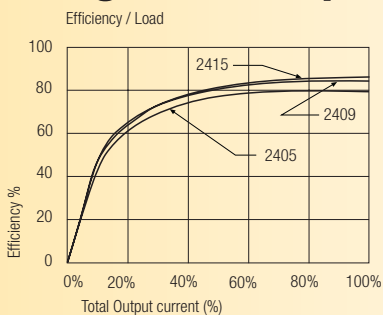
Load Regulation (for output load current change from 20% to 100%)			±0.6% max.
Output Ripple and Noise (0,1µF capacitor on output, 20MHz BW)			50mVp-p max.
Switching Frequency at Full Load and nominal Input Voltage	2:1 Input types	90kHz min. / 150kHz max.	
	4:1 Input types	120kHz min. / 180kHz max.	
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	2:1 Input types	20pF min. / 60pF max.	
	4:1 Input types	40pF min. / 80pF max.	
Isolation Resistance			1 GΩ min.
Short Circuit Protection			Continuous, Auto Restart
Operating Temperature Range (free air convection)	5V input types	-40°C to +80°C (see Graph)	
	others	-40°C to +85°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	1043 x 10 <sup>3</sup> hours
		using MIL-HDBK 217F	186 x 10 <sup>3</sup> hours

### Derating-Graph (Ambient Temperature)

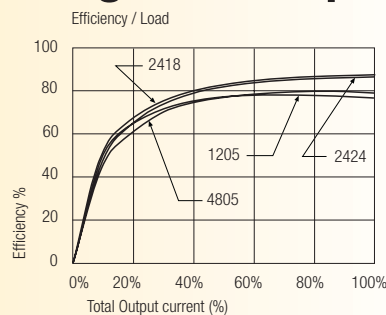


### Typical Characteristics

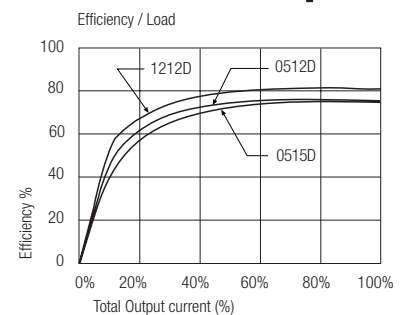
#### Single 2:1 Input



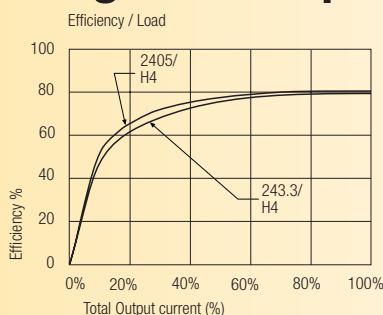
#### Single 2:1 Input



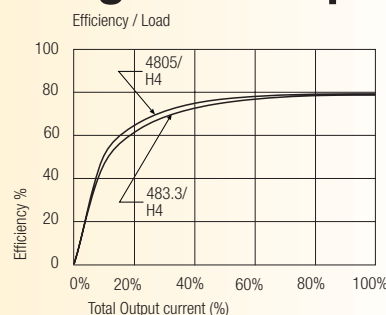
#### Dual 2:1 Input



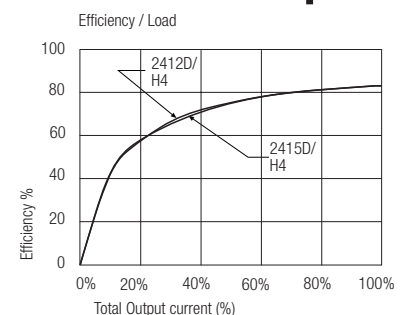
#### Single 4:1 Input



#### Single 4:1 Input

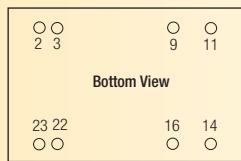
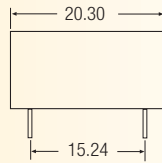
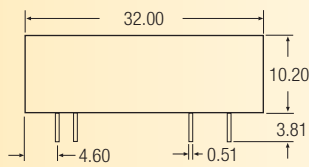


#### Dual 4:1 Input

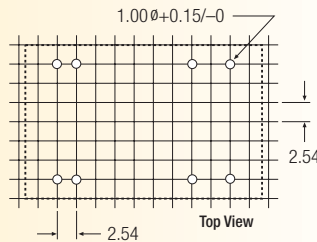


**Package Style and Pinning (mm) DIP 24 , Wide Input 2:1 & 4:1**

**Package A**



**Recommended Footprint Details**

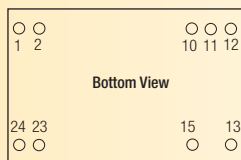
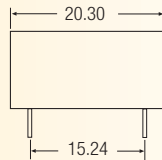
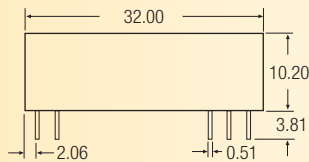


**Pin Connections**

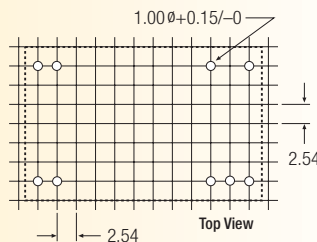
Pin #	Single	Dual
2	-Vin	-Vin
3	-Vin	-Vin
9	NC	Com
11	NC	-Vout
14	+Vout	+Vout
16	-Vout	Com
22	+Vin	+Vin
23	+Vin	+Vin

NC = No Connection  
XX.X ± 0.5 mm  
XX.XX ± 0.25 mm

**Package C**



**Recommended Footprint Details**

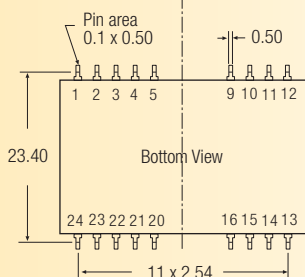
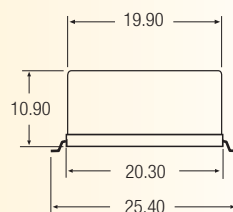
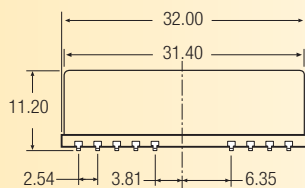


**Pin Connections**

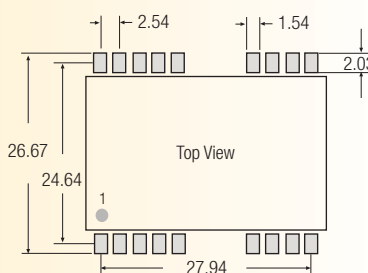
Pin #	Single	Dual
1	+Vin	+Vin
2	+Vin	+Vin
10	NC	Com
11	NC	Com
12	-Vout	NC
13	+Vout	-Vout
15	NC	+Vout
23	-Vin	-Vin
24	-Vin	-Vin

NC = No Connection  
XX.X ± 0.5 mm  
XX.XX ± 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.: ± 0.35 mm

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