

## Features

### Regulated Converters

- Regulated Output
- 1kVDC, 2kVDC & 3kVDC Isolation Options
- Continuous Short Circuit Protection
- Auto-Restarting
- Wide Input 2:1 & 4:1
- UL94V-0 Package Material
- Cost Effective
- 100% Burned In
- Efficiency to 86%

## ECONOLINE

DC/DC-Converter

# REC3-S\_DRW(Z)/H\* Series

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

### Selection Guide

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

#### 2:1 Input

(REC3-S/DRW/H\*)

xx = 4.5-9Vin = 05

xx = 9-18Vin = 12

xx = 18-36Vin = 24

xx = 36-72Vin = 48

#### 4:1 Input

(REC3-S/DRWZ/H\*)

xx = 9-36Vin = 24

xx = 18-72Vin = 48

\* use suffix /H1 for 1kVDC Isolation, /H2 for 2kVDC Isolation or /H3 for 3kVDC Isolation.

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

\* add suffix "/M" for metal case

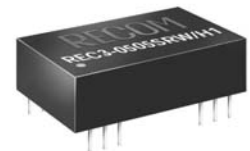
\* add suffix "/SMD" for SMD package

e.g. REC3-2412SRW/H1/A/M = 1kVDC isol.

/ Pinout "A" / metal case

### Notes:

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 2kVDC for "/H2" option and 3kVDC for "/H3". The /H2 and /H3 Version is not available in "/B" Pinning.

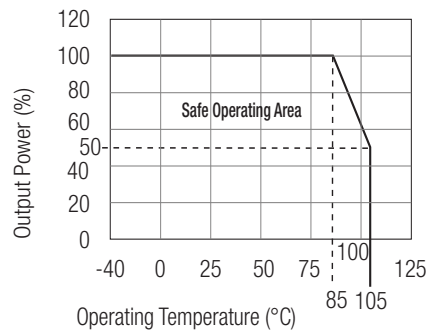
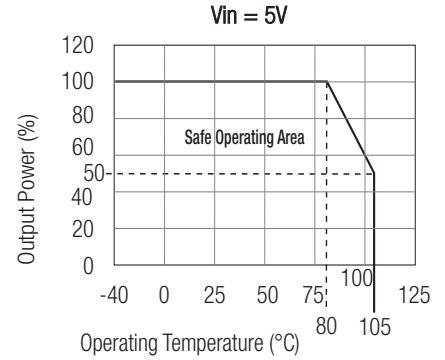


**EN-60950-1 Certified**  
**EN-60601-1 Certified**  
**(Suffix H3)**  
**UL-60950-1 Certified**

**Specifications (Core Operating Area)**

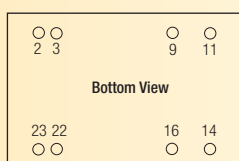
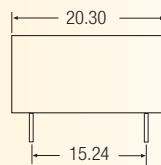
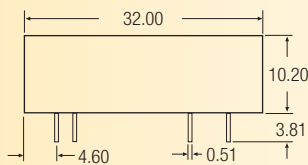
Input Voltage Range	2:1 & 4:1		
Output Voltage Accuracy	±2% max.		
Line Regulation (HL-LL)	2:1 Input types	±0.3% max.	
	4:1 Input types	±0.3% max.	
Load Regulation (for output load current change from 20% to 100%)	±0.6% max.		
Output Ripple and Noise (0,1µF capacitor on output, 20MHz BW)	50mVp-p max.		
Switching Frequency at Full Load	2:1 Input types	90kHz min. / 150kHz max.	
and nominal Input Voltage	4:1 Input types	120kHz min. / 180kHz max.	
Input Filter	Network		
Efficiency at Full Load	see above		
No Load Power Consumption	300mW max.		
Isolation Voltage	H1 types	tested for 1 second)	1000VDC min.
Rated Working Voltage	(long term isolation)		see Application Notes
Isolation Voltage	H2 types	(tested for 1 second)	2000VDC min.
Rated Working Voltage	(long term isolation)		see Application Notes
Isolation Voltage	H3 types	(tested for 1 second)	3000VDC min.
Rated Working Voltage	(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
(+85°C)		using MIL-HDBK 217F	186 x 10 <sup>3</sup> hours

## Derating-Graph (Ambient Temperature)

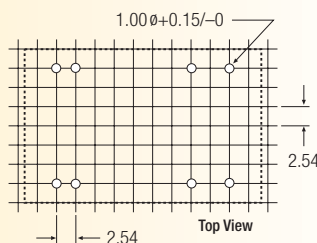


**Package Style and Pinning (mm) DIP 24 , Wide Input 2:1 & 4:1**

**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

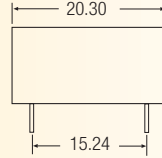
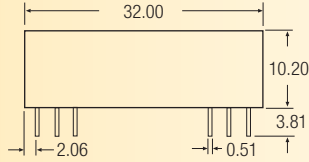
NC = No Connection  
XX.X ± 0.5 mm  
XX.XX ± 0.25 mm

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

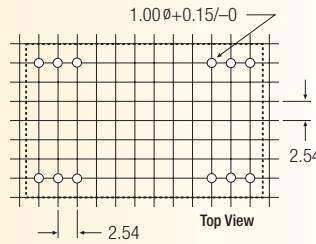
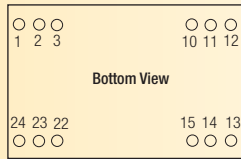


**Package B**

/H1 Only



**Recommended Footprint Details**

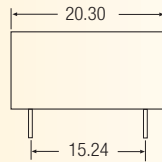
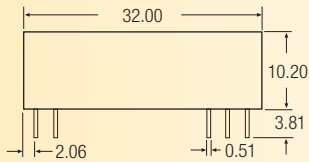


**Pin Connections**

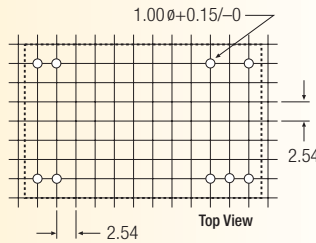
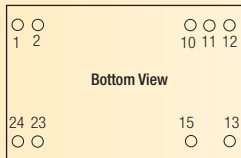
Pin #	Single	Dual
1	+Vin	+Vin
2	No Pin	-Vout
3	No Pin	Com
10	-Vout	Com
11	+Vout	+Vout
12	-Vin	-Vin
13	-Vin	-Vin
14	+Vout	+Vout
15	-Vout	Com
22	No Pin	Com
23	No Pin	-Vout
24	+Vin	+Vin

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

**Package C**



**Recommended Footprint Details**

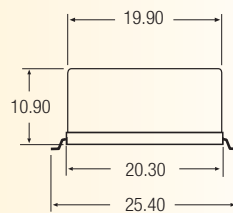
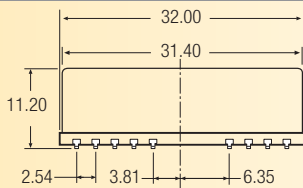


**Pin Connections**

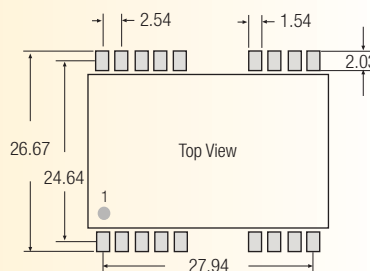
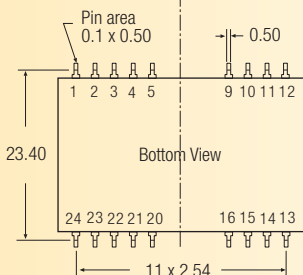
Pin #	Single	Dual
1	+Vin	+Vin
2	+Vin	+Vin
10	NC	Com
11	NC	Com
12	-Vout	NC
13	+Vout	-Vout
15	NC	+Vout
23	-Vin	-Vin
24	-Vin	-Vin

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. See Notes for restrictions on /H3 SMD versions.**

Tol.: ± 0.35 mm

length of plastic case is 31,8mm, length of metal case 32.0mm