

## Features

### Regulated Converters

- 2.2W DIP Package
- 1kVDC, 2kVDC & 3kVDC Isolation Options
- Regulated Output
- Wide Input Range 2 : 1 and 4 : 1
- UL94V-0 Package Material
- Continuous Short Circuit Protection
- Cost Effective
- 100% Burned In
- Efficiency to 84%

### Selection Guide

Part Number	Input Voltage (VDC)	Output Voltage (VDC)	Max Cap. Load (µF)	Output Current (mA)
DIP24 (SMD)	(VDC)	(VDC)	(µF)	(mA)
REC2.2-xx3.3SRW/H*	4.5 - 9, 9 - 18, 18 - 36, 36 - 72	3.3	1000	600
REC2.2-xx05SRW/H*	4.5 - 9, 9 - 18, 18 - 36, 36 - 72	5	470	440
REC2.2-xx09SRW/H*	4.5 - 9, 9 - 18, 18 - 36, 36 - 72	9	220	244
REC2.2-xx12SRW/H*	4.5 - 9, 9 - 18, 18 - 36, 36 - 72	12	120	183
REC2.2-xx15SRW/H*	4.5 - 9, 9 - 18, 18 - 36, 36 - 72	15	100	146
REC2.2-xx3.3DRW/H*	4.5 - 9, 9 - 18, 18 - 36, 36 - 72	±3.3	±470	±300
REC2.2-xx05DRW/H*	4.5 - 9, 9 - 18, 18 - 36, 36 - 72	±5	±220	±220
REC2.2-xx09DRW/H*	4.5 - 9, 9 - 18, 18 - 36, 36 - 72	±9	±100	±122
REC2.2-xx12DRW/H*	4.5 - 9, 9 - 18, 18 - 36, 36 - 72	±12	±68	±91
REC2.2-xx15DRW/H*	4.5 - 9, 9 - 18, 18 - 36, 36 - 72	±15	±47	±73
REC2.2-xx3.3SRWZ/H*	9 - 36, 18 - 72	3.3	1000	600
REC2.2-xx05SRWZ/H*	9 - 36, 18 - 72	5	470	440
REC2.2-xx09SRWZ/H*	9 - 36, 18 - 72	9	220	244
REC2.2-xx12SRWZ/H*	9 - 36, 18 - 72	12	120	183
REC2.2-xx15SRWZ/H*	9 - 36, 18 - 72	15	100	146
REC2.2-xx3.3DRWZ/H*	9 - 36, 18 - 72	±3.3	±470	±300
REC2.2-xx05DRWZ/H*	9 - 36, 18 - 72	±5	±220	±220
REC2.2-xx09DRWZ/H*	9 - 36, 18 - 72	±9	±100	±122
REC2.2-xx12DRWZ/H*	9 - 36, 18 - 72	±12	±68	±91
REC2.2-xx15DRWZ/H*	9 - 36, 18 - 72	±15	±47	±73

#### 2:1 Input

(REC2.2-S/DRW/H\*)  
 xx = 4.5-9Vin = 05  
 xx = 9-18Vin = 12  
 xx = 18-36Vin = 24  
 xx = 36-72Vin = 48

#### 4:1 Input

(REC2.2-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. REC2.2-2412SRW/H1/AM = / Pinout "A" with 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.

## ECONOLINE

DC/DC-Converter

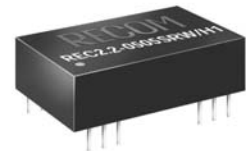
# REC2.2-S\_DRW(Z)/H\* Series

2.2 Watt

DIP24 & SMD

Single & Dual

Output



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

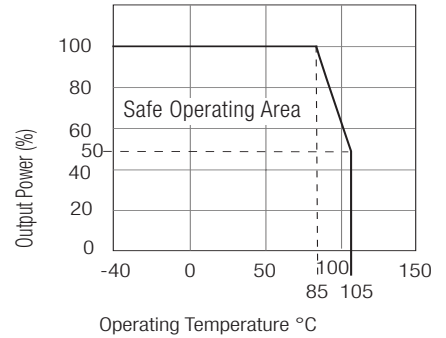
**UL-60950-1 Certified**



**Specifications (Core Operating Area)**

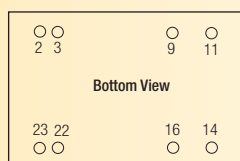
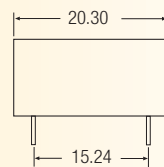
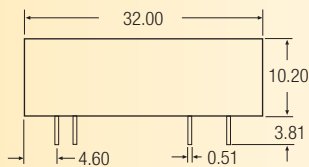
Input Voltage Range	2:1 & 4:1		
Output Voltage Accuracy	±1% max.		
Line Regulation (HL-LL)	2:1 Input types	±0.2% max.	
	4:1 Input types	±0.2% max.	
Load Regulation (for output load current change from 20% to 100%)	±0.5% max.		
Output Ripple and Noise (0,1µF capacitor on output, 20MHz BW)	50mVp-p max.		
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	84% max.		
No Load Power Consumption	200mW typ.		
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		
Operating Temperature Range (free air convection)	-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	12g		
MTBF (+25°C)	} Detailed Information see Application Notes chapter "MTBF"	using MIL-HDBK 217F	1102 x 10 <sup>3</sup> hours
		using MIL-HDBK 217F	186 x 10 <sup>3</sup> hours

## Derating-Graph (Ambient Temperature)

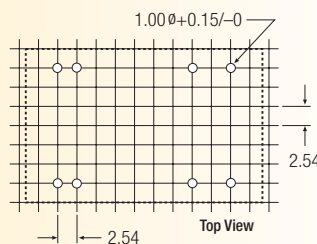


**Package Style and Pinning (mm) DIP 24 , Wide Input 2:1 & 4:1**

**Package A**



**Recommended Footprint Details**



**Pin Connections**

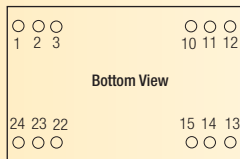
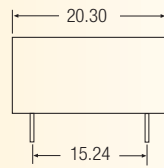
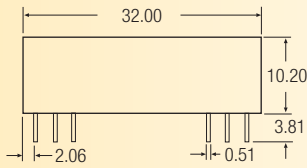
Pin #	Single	Dual
2	-Vin	-Vin
3	-Vin	-Vin
9	NC	Com
11	NC	-Vout
14	+Vout	+Vout
16	-Vout	Com
22	+Vin	+Vin
23	+Vin	+Vin

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

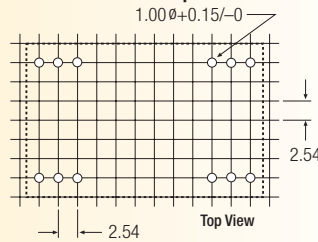
**Package Style and Pinning (mm) DIP 24 , Wide Input 2:1 & 4:1**

**Package B**

/H1 Only



**Recommended Footprint Details**

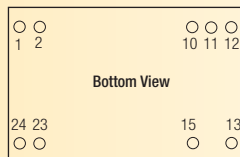
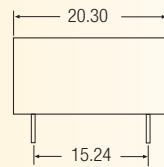
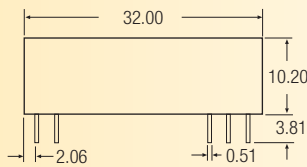


**Pin Connections**

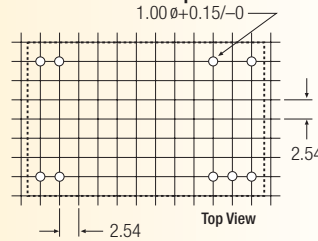
Pin #	Single	Dual
1	+Vin	+Vin
2	No Pin	-Vout
3	No Pin	Com
10	-Vout	Com
11	+Vout	+Vout
12	-Vin	-Vin
13	-Vin	-Vin
14	+Vout	+Vout
15	-Vout	Com
22	No Pin	Com
23	No Pin	-Vout
24	+Vin	+Vin

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

**Package C**



**Recommended Footprint Details**

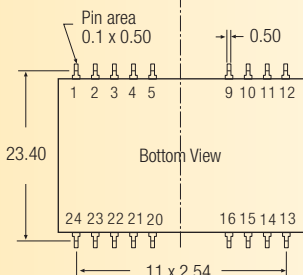
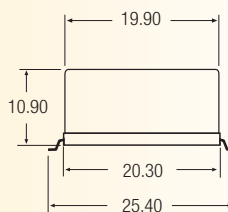
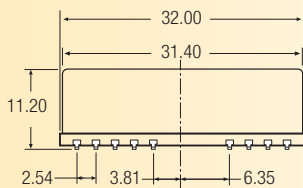


**Pin Connections**

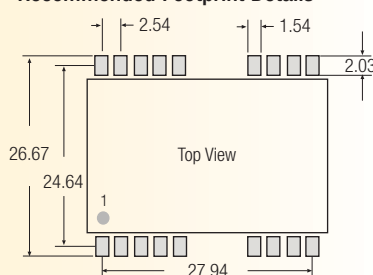
Pin #	Single	Dual
1	+Vin	+Vin
2	+Vin	+Vin
10	NC	Com
11	NC	Com
12	-Vout	NC
13	+Vout	-Vout
15	NC	+Vout
23	-Vin	-Vin
24	-Vin	-Vin

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