

## Features

### Regulated Converters

- 5W DIP Package
- 1kVDC, 2kVDC & 3kVDC Isolation Options
- Regulated Output
- 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

# REC5-S\_DRW/H\* Series

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



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

**RECOM**

### Selection Guide

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

#### 2:1 Input

(REC5-S/DRW/H1)  
xx = 4.5-9Vin = 05  
xx = 9-18Vin = 12  
xx = 18-36Vin = 24  
xx = 36-72Vin = 48

#### 4:1 Input

(REC5-S/DRWZ/H1)  
xx = 9-36Vin = 24  
xx = 18-72Vin = 48

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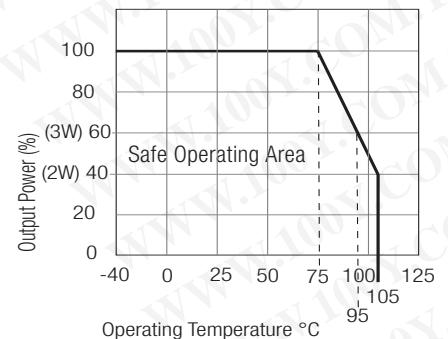
### Notes:

- For all REC5-05xxS\_DRW series, Load = 90% max. when Vin=4.5VDC
- \* add suffix /H1 for 1kVDC Isolation, /H2 for 2kVDC Isolation or /H3 for 3kVDC Isolation.
  - \* /H2 and /H3 versions are not available in B Pinning.
  - \* /H3 version is not available in /M/SMD combination.
  - \* 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. REC5-xxxxSRWZH1/AM = 1kVDC isol. / Pinout "A" / metal case
  - \*\* 24V 4:1 Wide Range Input Types (REC5-24xxS\_DRWZ/H1) should be derated  
Vin = 9 Vin : 3.3Vout / 1100mA max., 5Vout / 900mA max.

## 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<br>(at nominal input voltage)    | 2:1 input  | 120kHz typ.           |                             |
|   | 4:1 input  | 200kHz typ.           |                             |
| Input Filter  | Pi Network   |                       |                             |
| Efficiency at Full Load   | see above  |                       |                             |
| No Load Power Consumption   | 300mW max.   |                       |                             |
| Isolation Voltage H1/SMD Pinout and metal case                    | (tested for 1 second)  | 1000VDC min.          |                             |
| Isolation Voltage H2/SMD Pinout and metal case                    | (tested for 1 second)  | 2000VDC min.          |                             |
| Rated Working Voltage   | (long term isolation)  | see Application Notes |                             |
| Isolation Voltage   | H1 types   | (tested for 1 second) | 1000VDC min.                |
| Isolation Voltage   | H2 types   | (tested for 1 second) | 2000VDC min.                |
| Isolation Voltage   | H3 types   | (tested for 1 second) | 3000VDC min.                |
| Rated Working Voltage   | (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<br>Application Notes chapter "MTBF" | using MIL-HDBK 217F   | 850 x 10 <sup>3</sup> hours |
|   |  | using MIL-HDBK 217F   | 206 x 10 <sup>3</sup> hours |

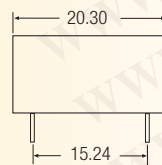
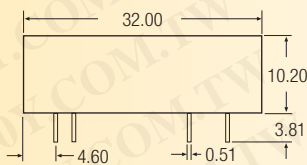
## Derating-Graph (Ambient Temperature)



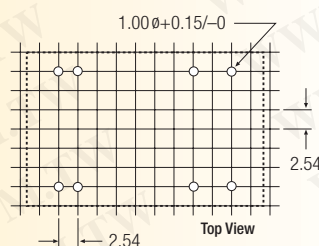
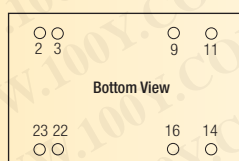
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## Package Style and Pinning (mm) DIP 24 , Wide Input 2:1 & 4:1

### 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  |

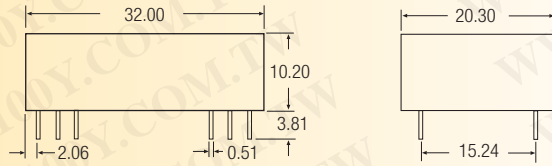
NC = No Connection  
 XX.X ± 0.5 mm  
 XX.XX ± 0.25 mm

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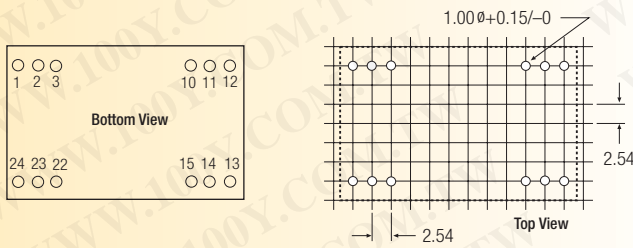
**Package Style and Pinning (mm) DIP 24 , Wide Input 2:1 & 4:1**

**Package B**

/H1 Only



**Recommended Footprint Details**

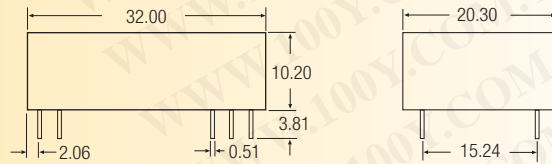


**Pin Connections**

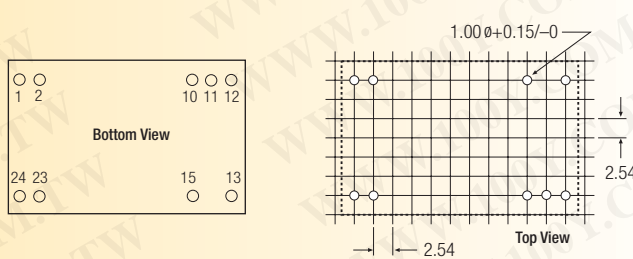
| Pin # | Single | Dual  |
|-------|--------|-------|
| 1     | +Vin   | +Vin  |
| 2     | No Pin | -Vout |
| 3     | No Pin | Com   |
| 10    | -Vout  | Com   |
| 11    | +Vout  | +Vout |
| 12    | -Vin   | -Vin  |
| 13    | -Vin   | -Vin  |
| 14    | +Vout  | +Vout |
| 15    | -Vout  | Com   |
| 22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

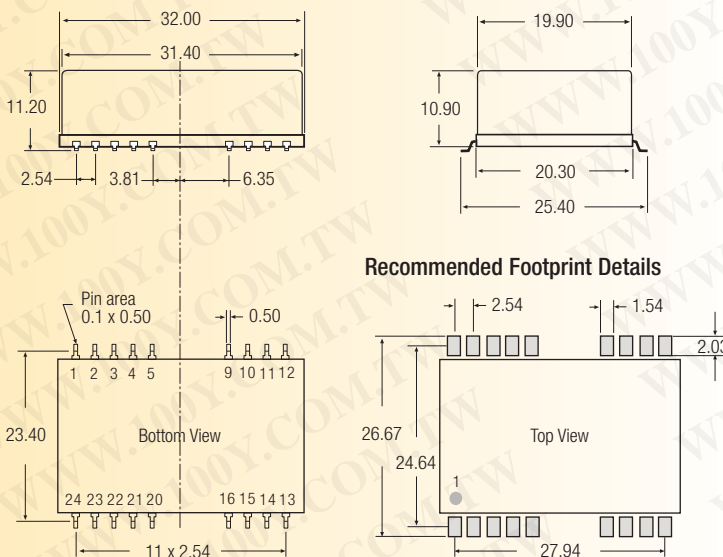


**Pin Connections**

| 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**



**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