

## Features

### Regulated Converters

- DIP24 Low Profile Miniature Package
- 1kVDC Isolation
- Feedback Regulated Output
- 2:1 Wide Range Voltage Input
- Continuous Short Circuit Protection
- Less than 7mm Height
- SMD Pinning Option
- Efficiency to 87 %

#### Description

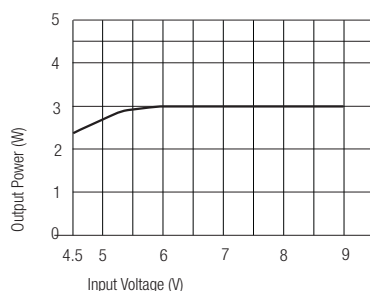
The RW-S series with 2:1 input voltage ranges and max. height of 7,0 mm has been designed for the industrial automation markets. They are aimed at applications where pcb-space is at a premium so SMD pinning is also available. The converters supply the full 3 watts without additional heat-sinks over the temperature range -40°C to +80°C.

#### Selection Guide

| Part Number<br>DIP24 Miniature | Input Voltage (VDC) | Output Voltage (VDC) | Output Current (mA) | Efficiency (%) | Max Capacitive Load <sup>(1)</sup> |
|--------------------------------|---------------------|----------------------|---------------------|----------------|------------------------------------|
| RW-053.3S                      | 4.5 – 9             | 3.3                  | 650                 | 68             | 4700µF                             |
| RW-0505S                       | 4.5 – 9             | 5                    | 600                 | 69             | 4700µF                             |
| RW-0509S                       | 4.5 – 9             | 9                    | 333                 | 70             | 3300µF                             |
| RW-0512S                       | 4.5 – 9             | 12                   | 250                 | 72             | 2200µF                             |
| RW-0515S                       | 4.5 – 9             | 15                   | 200                 | 73             | 2200µF                             |
| RW-123.3S                      | 9 – 18              | 3.3                  | 650                 | 70             | 4700µF                             |
| RW-1205S                       | 9 – 18              | 5                    | 600                 | 73             | 4700µF                             |
| RW-1209S                       | 9 – 18              | 9                    | 333                 | 78             | 3300µF                             |
| RW-1212S                       | 9 – 18              | 12                   | 250                 | 79             | 2200µF                             |
| RW-1215S                       | 9 – 18              | 15                   | 200                 | 79             | 2200µF                             |
| RW-243.3S                      | 18 – 36             | 3.3                  | 650                 | 75             | 4700µF                             |
| RW-2405S                       | 18 – 36             | 5                    | 600                 | 78             | 4700µF                             |
| RW-2409S                       | 18 – 36             | 9                    | 333                 | 82             | 3300µF                             |
| RW-2412S                       | 18 – 36             | 12                   | 250                 | 84             | 2200µF                             |
| RW-2415S                       | 18 – 36             | 15                   | 200                 | 85             | 2200µF                             |
| RW-483.3S                      | 36 – 72             | 3.3                  | 650                 | 73             | 4700µF                             |
| RW-4805S                       | 36 – 72             | 5                    | 600                 | 78             | 4700µF                             |
| RW-4809S                       | 36 – 72             | 9                    | 333                 | 82             | 3300µF                             |
| RW-4812S                       | 36 – 72             | 12                   | 250                 | 84             | 2200µF                             |
| RW-4815S                       | 36 – 72             | 15                   | 200                 | 85             | 2200µF                             |

\* add suffix "/SMD" for SMD package, e.g. RW-2405S/SMD

## RW-05xx types



## ECONOLINE

DC/DC-Converter

with 3 year Warranty

RECOM

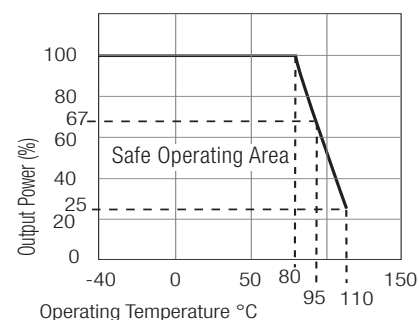
## 3 Watt DIP24/SMD Low Profile Package Single Output



EN-60950-1 Certified

## RW-S

## Derating-Graph (Ambient Temperature)



Refer to Application Notes

**Specifications (Core Operating Area)**

|                                                   |                                                                |                              |
|---------------------------------------------------|----------------------------------------------------------------|------------------------------|
| Input Voltage Range                               |                                                                | 2:1                          |
| Output Voltage Accuracy                           |                                                                | ±2% max.                     |
| Line Voltage Regulation                           |                                                                | ±0.2% typ.                   |
| Load Voltage Regulation (10% to 100% full load)   |                                                                | ±0.5% max.                   |
| Minimum Load                                      |                                                                | 10% <sup>(2)</sup>           |
| Output Ripple and Noise (20MHz limited)           |                                                                | 70mVp-p max.                 |
| Operating Frequency                               |                                                                | 85kHz min. / 100kHz typ.     |
| Efficiency at Full Load                           |                                                                | See Selection Guide          |
| No Load Power Consumption                         |                                                                | 250mW max.                   |
| Isolation Voltage                                 | (tested for 1 second)<br>(rated for 1 minute**)                | 1000VDC<br>500VAC / 60Hz     |
| Isolation Capacitance                             |                                                                | 40pF min. / 60pF max.        |
| Isolation Resistance                              |                                                                | 1 GΩ min.                    |
| Short Circuit Protection                          |                                                                | Continuous                   |
| Operating Temperature Range (free air convection) |                                                                | -40°C to +80°C (see Graph)   |
| Storage Temperature Range                         |                                                                | -55°C to +125°C              |
| Relative Humidity                                 |                                                                | 95% RH                       |
| Package Weight                                    | DIP24                                                          | 7g                           |
|                                                   | SMD                                                            | 7.7g                         |
| Packing Quantity                                  |                                                                | 15 pcs per Tube              |
| MTBF (+25°C)                                      | } Detailed Information see<br>Application Notes chapter "MTBF" | using MIL-HDBK 217F          |
| (+80°C)                                           |                                                                | using MIL-HDBK 217F          |
|                                                   |                                                                | 1034 x 10 <sup>3</sup> hours |
|                                                   |                                                                | 186 x 10 <sup>3</sup> hours  |

**Certifications**

|                   |                                    |                                                                      |
|-------------------|------------------------------------|----------------------------------------------------------------------|
| EN General Safety | Report: SPCLVD1212007              | EN60950-1:2006 + A11:2009+A1:2010+A12:2011                           |
| EN Medical Safety | Report: MDD1205098-3 + RM1205098-3 | IEC/EN 60601-1 3rd Edition Medical Report + ISO14971 Risk Assessment |

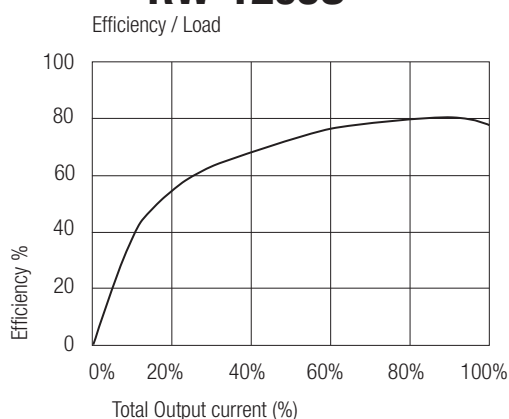
\*\*Any data referred to in this datasheet are of indicative nature and based on our practical experience only. For further details, please refer to our Application Notes.

**Notes**

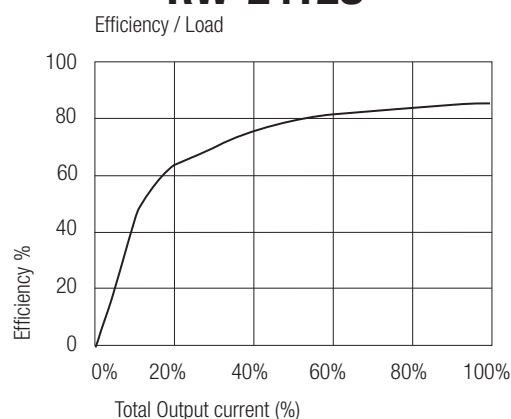
|         |                                                                                                                                                                                                                        |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Note 1: | Maximum capacitive load is defined as the capacitive load that will allow start up in under 1 second without damage to the converter                                                                                   |
| Note 2: | The RW-S series requires a minimum of 10% load on the output to maintain specified regulation. Operating under no-load conditions will not damage these devices; however, they may not meet all listed specifications. |

**Typical Performance**

**RW-1205S**

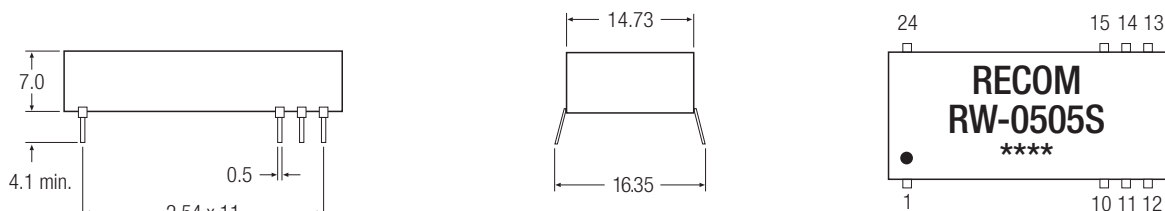


**RW-2412S**

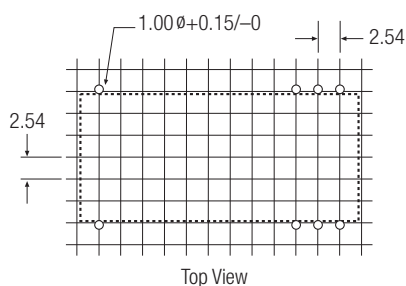
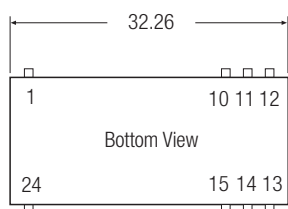


## Package Style and Pinning (mm)

### 24 PIN DIP Miniature Package Style



### Recommended Footprint Details

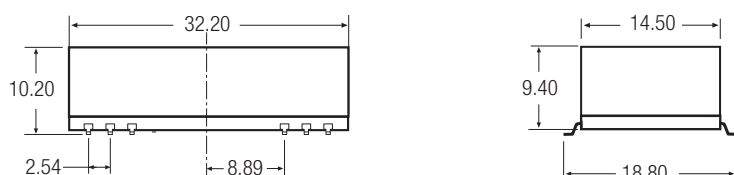


### Pin Connections

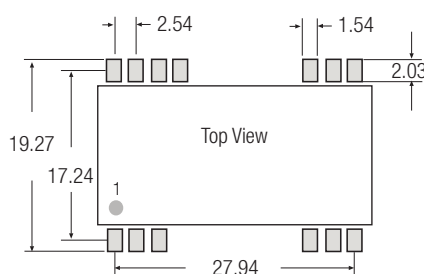
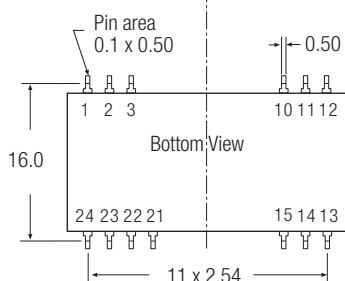
| Pin #   | Single |
|---------|--------|
| 1 & 24  | +Vin   |
| 10 & 15 | -Vout  |
| 11 & 14 | +Vout  |
| 12 & 13 | -Vin   |

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

### 24 PIN SMD Miniature Package Style



### Recommended Footprint Details



### Pin Connections

| Pin #   | Single |
|---------|--------|
| 1 & 24  | +Vin   |
| 10 & 15 | -Vout  |
| 11 & 14 | +Vout  |
| 12 & 13 | -Vin   |
| others  | NC     |

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