

# Features

## Regulated Converters

- 2:1 Wide Range Voltage Input
- 1kVDC, 2kVDC and 3kVDC Isolation
- Approved for Medical Applications
- Continuous Short Circuit Protection
- Low Ripple and Noise
- DIP16, mini DIP16 and SMD Cases Styles
- Efficiency to 83 %

### Description

High power-density, 2:1 input voltage range and a wide temperature range of -40°C to +85°C are just some of the characteristics of this versatile DIP16 converter, ideal for highly sophisticated industrial and medical designs where a regulated converter is required but space is at a premium. Three different case styles and isolation options are available.

### Selection Guide

| Part Number                   | Input Voltage Range (VDC) | Rated Output Voltage (VDC) | Output Current Full Load (mA) | Efficiency typ./nom Vin (%) | Max Capacitive Load <sup>(1)</sup> |
|-------------------------------|---------------------------|----------------------------|-------------------------------|-----------------------------|------------------------------------|
| <b>DIP16 (Mini &amp; SMD)</b> |                           |                            |                               |                             |                                    |
| RW2-053.3S (H2/H3)            | 4.5 - 9                   | 3.3                        | 500                           | 68                          | 4700µF                             |
| RW2-0505S (H2/H3)             | 4.5 - 9                   | 5                          | 400                           | 73                          | 1000µF                             |
| RW2-0512S (H2/H3)             | 4.5 - 9                   | 12                         | 166                           | 75                          | 1000µF                             |
| RW2-0515S (H2/H3)             | 4.5 - 9                   | 15                         | 134                           | 75                          | 1000µF                             |
| RW2-123.3S (H2/H3)            | 9 - 18                    | 3.3                        | 500                           | 69                          | 4700µF                             |
| RW2-1205S (H2/H3)             | 9 - 18                    | 5                          | 400                           | 75                          | 1000µF                             |
| RW2-1212S (H2/H3)             | 9 - 18                    | 12                         | 166                           | 80                          | 1000µF                             |
| RW2-1215S (H2/H3)             | 9 - 18                    | 15                         | 134                           | 80                          | 1000µF                             |
| RW2-243.3S (H2/H3)            | 18 - 36                   | 3.3                        | 500                           | 70                          | 4700µF                             |
| RW2-2405S (H2/H3)             | 18 - 36                   | 5                          | 400                           | 78                          | 1000µF                             |
| RW2-2412S (H2/H3)             | 18 - 36                   | 12                         | 166                           | 83                          | 1000µF                             |
| RW2-2415S (H2/H3)             | 18 - 36                   | 15                         | 134                           | 83                          | 1000µF                             |
| RW2-483.3S (H2/H3)            | 36 - 72                   | 3.3                        | 500                           | 73                          | 4700µF                             |
| RW2-4805S (H2/H3)             | 36 - 72                   | 5                          | 400                           | 76                          | 1000µF                             |
| RW2-4812S (H2/H3)             | 36 - 72                   | 12                         | 166                           | 81                          | 1000µF                             |
| RW2-4815S (H2/H3)             | 36 - 72                   | 15                         | 134                           | 81                          | 1000µF                             |
| RW2-0505D (H2/H3)             | 4.5 - 9                   | ±5                         | ±200                          | 73                          | ±680µF                             |
| RW2-0509D (H2/H3)             | 4.5 - 9                   | ±9                         | ±111                          | 74                          | ±680µF                             |
| RW2-0512D (H2/H3)             | 4.5 - 9                   | ±12                        | ±83                           | 75                          | ±680µF                             |
| RW2-0515D (H2/H3)             | 4.5 - 9                   | ±15                        | ±67                           | 75                          | ±680µF                             |
| RW2-1205D (H2/H3)             | 9 - 18                    | ±5                         | ±200                          | 75                          | ±680µF                             |
| RW2-1209D (H2/H3)             | 9 - 18                    | ±9                         | ±111                          | 78                          | ±680µF                             |
| RW2-1212D (H2/H3)             | 9 - 18                    | ±12                        | ±83                           | 80                          | ±680µF                             |
| RW2-1215D (H2/H3)             | 9 - 18                    | ±15                        | ±67                           | 80                          | ±680µF                             |
| RW2-2405D (H2/H3)             | 18 - 36                   | ±5                         | ±200                          | 78                          | ±680µF                             |
| RW2-2409D (H2/H3)             | 18 - 36                   | ±9                         | ±111                          | 81                          | ±680µF                             |
| RW2-2412D (H2/H3)             | 18 - 36                   | ±12                        | ±83                           | 83                          | ±680µF                             |
| RW2-2415D (H2/H3)             | 18 - 36                   | ±15                        | ±67                           | 83                          | ±680µF                             |
| RW2-4805D (H2/H3)             | 36 - 72                   | ±5                         | ±200                          | 78                          | ±680µF                             |
| RW2-4809D (H2/H3)             | 36 - 72                   | ±9                         | ±111                          | 81                          | ±680µF                             |
| RW2-4812D (H2/H3)             | 36 - 72                   | ±12                        | ±83                           | 83                          | ±680µF                             |
| RW2-4815D (H2/H3)             | 36 - 72                   | ±15                        | ±67                           | 83                          | ±680µF                             |

Standard Isolation is 1kVDC. Add suffix **"H2"** for 2kVDC Isolation, **"H3"** for 3kVDC Isolation. Add no suffix for standard case style, **"SMD"** for SMD package or **"B"** for smaller case size e.g. RW2-0505S/H3, RW2-0505D/H2/SMD or RW2-0505S/B

#### Notes

- Note 1: Maximum capacitive load is defined as the capacitive load that will allow start up in under 1second without damage to the converter
- Note 2: The RW2 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.

## ECONOLINE

### DC/DC-Converter

with 3 year Warranty

RECOM

2 Watt

DIP16, Mini

DIP16 & SMD

Single & Dual

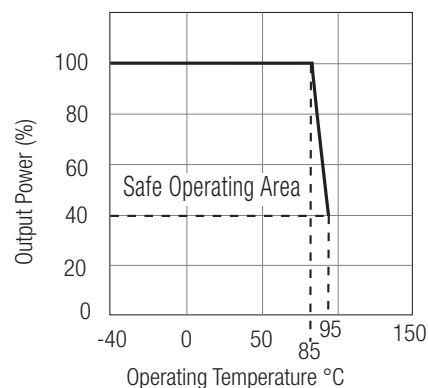
Output



**EN-60950-1 Certified  
(All Suffixes)  
EN-60601-1 Certified\*  
(\* /H suffix)**

**RW2**

## Derating-Graph (Ambient Temperature)



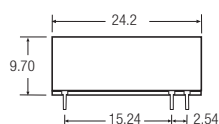
Refer to Application Notes

### Electrical Specifications (measured at $T_A = 25^\circ\text{C}$ , at nominal input voltage and rated output current unless otherwise specified)

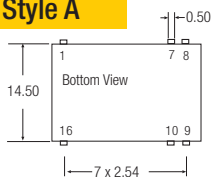
|                                         |                                                                    |                             |
|-----------------------------------------|--------------------------------------------------------------------|-----------------------------|
| Input Voltage Range                     |                                                                    | 2:1                         |
| Output Accuracy                         |                                                                    | $\pm 2\%$ typ.              |
| Line Voltage Regulation                 |                                                                    | $\pm 0.5\%$ max.            |
| Load Voltage Regulation                 | (20% to 100% full load)                                            | $\pm 0.5\%$ typ.            |
| Minimum Load                            |                                                                    | 10% <sup>(2)</sup>          |
| Output Ripple and Noise (20MHz limited) |                                                                    | 50mVp-p max.                |
| Switching Frequency (at full Load)      |                                                                    | 100kHz min. / 700kHz max.   |
| Efficiency at Full Load                 |                                                                    | 70% min. / 80% typ.         |
| Isolation Voltage                       | (tested for 1 second)                                              | 1000VDC                     |
|                                         | (rated for 1 minute*)                                              | 500VAC / 60Hz               |
| H2-Suffix                               | (tested for 1 second)                                              | 2000VDC                     |
|                                         | (rated for 1 minute*)                                              | 1000VAC / 60Hz              |
| H3-Suffix                               | (tested for 1 second)                                              | 3000VDC                     |
|                                         | (rated for 1 minute*)                                              | 1500VAC / 60Hz              |
| Isolation Capacitance                   |                                                                    | 30pF max.                   |
| Isolation Resistance                    |                                                                    | 1G $\Omega$ min.            |
| Short Circuit Protection                |                                                                    | Continuous                  |
| Operating Temperature Range             |                                                                    | -40°C to +85°C (see Graph)  |
| Storage Temperature Range               |                                                                    | -55°C to +125°C             |
| Case Temperature                        |                                                                    | 100°C max.                  |
| Relative Humidity                       |                                                                    | 95% RH                      |
| Package Weight                          |                                                                    | 6.4g                        |
| Packing Quantity                        | Case Style A, SMD                                                  | 20 pcs per tube             |
|                                         | Case Style B                                                       | 22 pcs per Tube             |
| MTBF (+25°C)                            | } For Detailed Information see<br>Application Notes chapter "MTBF" | using MIL-HDBK 217F         |
| (+85°C)                                 |                                                                    | using MIL-HDBK 217F         |
|                                         |                                                                    | 4366 x10 <sup>3</sup> hours |
|                                         |                                                                    | 658 x10 <sup>3</sup> hours  |

\*\*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.

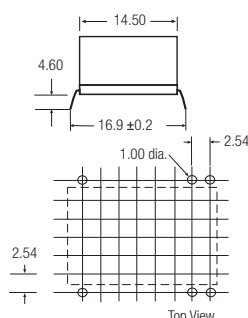
### Package Style and Pinning (mm)



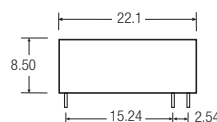
Case Style A



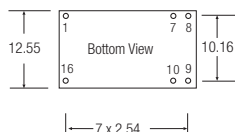
16 Pin DIP Package



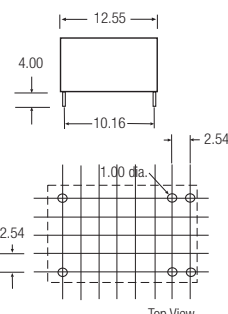
Recommended Footprint Details



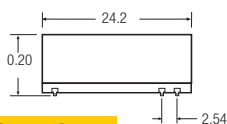
Case Style B



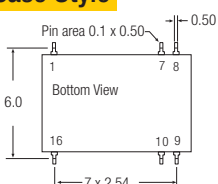
16 Pin Mini-DIP Package



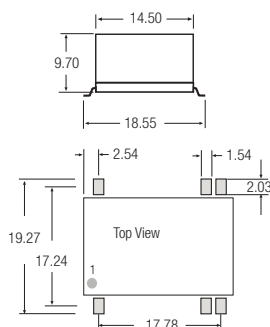
Recommended Footprint Details



SMD Case Style



16 Pin SMD Package



Recommended Pad Details

#### Pin Connections (All Case Styles)

| Pin # | Single | Dual  |
|-------|--------|-------|
| 1     | -Vin   | -Vin  |
| 7     | NC     | NC    |
| 8     | NC     | Com   |
| 9     | +Vout  | +Vout |
| 10    | -Vout  | -Vout |
| 16    | +Vin   | +Vin  |

XX.X  $\pm 0.5$  mm  
XX.XX  $\pm 0.35$  mm

#### Certifications

EN General Safety Report: SPCLVD1212007 EN60950-1:2006 + A12:2011

EN Medical Safety Report: MDD1205098-3 + RM1205098-3

IEC/EN 60601-1 3rd Edition Medical Report + ISO14971 Risk Assessment

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