

## Features

### Regulated Converters

- 10W DIP24 Package
- 2KVDC and 3kVDC Isolation Options
- 2:1 and 4:1 Versions
- Continuous Short Circuit Protection (power limiting)
- Synchronous Rectification on 3.3, 5V outputs
- Full SMD internal design
- Through Hole or SMD Pinning Options
- Remote Control Pin
- Efficiency to 87%

#### Description

The REC10-xxxxSRW/DRW-series offer single and dual regulated outputs in a DIP24 package with 2kV or 3kV isolation options and are suitable for higher power industrial or medical applications. Remote on/off control is standard and SMD pinning is offered with the /SMD option. The converters can deliver 150% rated power for short periods of time to cope with applications with large capacitive loads or high start up currents.

#### Selection Guide

| Part Number            | Input Voltage (VDC) | Output Voltage (VDC) | Output Current (mA) | Efficiency (%) | Max. Cap. Load |
|------------------------|---------------------|----------------------|---------------------|----------------|----------------|
| REC10-xx3.3SRW/H*/A/M  | 9-18, 18-36, 36-75  | 3.3                  | 2000                | 84-85          | 2200µF         |
| REC10-xx05SRW/H*/A/M   | 9-18, 18-36, 36-75  | 5                    | 2000                | 86-87          | 2200µF         |
| REC10-xx12SRW/H*/A/M   | 9-18, 18-36, 36-75  | 12                   | 833                 | 85-86          | 470µF          |
| REC10-xx15SRW/H*/A/M   | 9-18, 18-36, 36-75  | 15                   | 667                 | 85-86          | 220µF          |
| REC10-xx05DRW/H*/A/M   | 9-18, 18-36, 36-75  | ±5                   | ±1000               | 84             | ±1000µF        |
| REC10-xx12DRW/H*/A/M   | 9-18, 18-36, 36-75  | ±12                  | ±416                | 86             | ±220µF         |
| REC10-xx15DRW/H*/A/M   | 9-18, 18-36, 36-75  | ±15                  | ±333                | 86             | ±100µF         |
| REC10-xx3.3SRWZ/H*/A/M | 9-36, 18-75         | 3.3                  | 2000                | 84             | 2200µF         |
| REC10-xx05SRWZ/H*/A/M  | 9-36, 18-75         | 5                    | 2000                | 86             | 2200µF         |
| REC10-xx12SRWZ/H*/A/M  | 9-36, 18-75         | 12                   | 833                 | 85             | 470µF          |
| REC10-xx15SRWZ/H*/A/M  | 9-36, 18-75         | 15                   | 667                 | 85             | 220µF          |
| REC10-xx05DRWZ/H*/A/M  | 9-36, 18-75         | ±5                   | ±1000               | 83             | ±1000µF        |
| REC10-xx12DRWZ/H*/A/M  | 9-36, 18-75         | ±12                  | ±416                | 85             | ±220µF         |
| REC10-xx15DRWZ/H*/A/M  | 9-36, 18-75         | ±15                  | ±333                | 85             | ±100µF         |

\* Standard is /H2 for 2kVDC isolation, use /H3 for 3kVDC Isolation (not SMD)  
\* add suffix "/X2" for pinning options, see next page.  
\* add suffix "/SMD" for SMD package, e.g.  
REC10-2405SRW/H2/A/M/SMD

|  |                     |                    |
|--|---------------------|--------------------|
|  | <b>2:1</b>          | <b>4:1</b>         |
|  | xx = 9-18Vin = 12,  | xx = 9-36Vin = 24, |
|  | xx = 18-36Vin = 24, | xx = 18-75Vin = 48 |
|  | xx = 36-75Vin = 48  |                    |

#### Specifications (measured at $T_A = 25^\circ\text{C}$ , nominal input voltage, full load and after warm-up)

|                                                                   |                                      |
|-------------------------------------------------------------------|--------------------------------------|
| Input Voltage Range                                               | 2:1 & 4:1                            |
| Input Filter                                                      | PI Network                           |
| Output Voltage Accuracy                                           | ±1.5% max.                           |
| Line Voltage Regulation ( $V_L$ to $V_H$ at full load)            | ±0.5% max.                           |
| Load Voltage Regulation (25% to 100% full load)                   | Single ±0.5% max.<br>Dual ±1.2% max. |
| Cross Regulation (100%: 25% to 100% full load)                    | ±5% max.                             |
| Output Ripple and Noise (with 100n output capacitor and 20MHz BW) | 100mVp-p max.                        |
| Start-up time                                                     | 300ms typ.                           |
| Operating Frequency (Full Load)                                   | 400kHz typ.                          |
| Efficiency at Full Load                                           | see Selection Guide                  |
| Minimum Load                                                      | 0%                                   |

continued on next page

## ECONOLINE

### DC/DC-Converter

with 3 year Warranty

# RECOM

## 10 Watt DIP24 & SMD Single & Dual Output



**E224736**

**EN-60950-1 Certified**  
**EN-60601-1 Certified**  
**UL-60950-1 Certified**

# REC10

\*\*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.

Refer to Application Notes

**Specifications** (measured at  $T_A = 25^\circ\text{C}$ , nominal input voltage, full load and after warm-up)

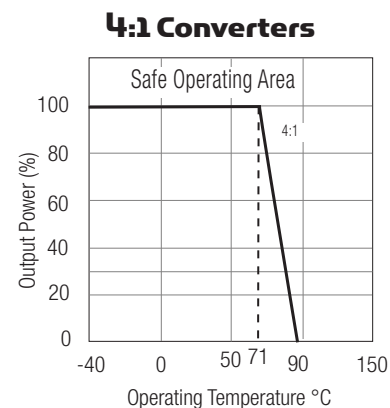
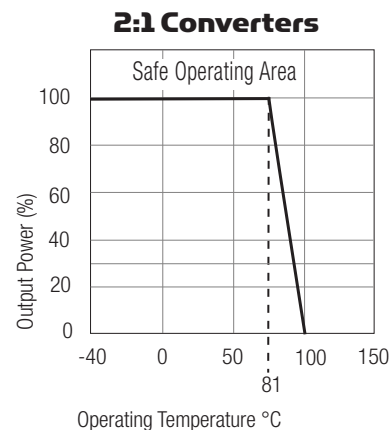
|                                                      |                   |                                   |                                              |
|------------------------------------------------------|-------------------|-----------------------------------|----------------------------------------------|
| Input Surge Voltage (100ms max.)                     |                   | 12V Input                         | 36VDC                                        |
|                                                      |                   | 24V Input                         | 50VDC                                        |
|                                                      |                   | 48V Input                         | 100VDC                                       |
| Isolation Voltage                                    | H2-Suffix and SMD | (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                                |                   |                                   | 1200pF typ.                                  |
| Isolation Resistance                                 |                   |                                   | 1 GΩ min.                                    |
| Overload Protection                                  |                   |                                   | 150% typ.                                    |
| Short Circuit Protection                             |                   |                                   | Continuous, Auto Restart                     |
| Operating Temperature Range<br>(free air convection) | 4:1               | -40°C to +71°C (see Graph)        |                                              |
|                                                      | 2:1               | -40°C to +81°C (see Graph)        |                                              |
| Remote On/Off                                        | DC/DC ON          | Open or 3.5V<Vr<12V               |                                              |
|                                                      | DC/DC OFF         | Short or 0V<Vr<1.2V               |                                              |
| Storage Temperature Range                            |                   |                                   | -55°C to +105°C                              |
| Temperature Coefficient                              |                   |                                   | ±0.05% max.                                  |
| Relative Humidity                                    |                   |                                   | 95% RH                                       |
| Case Material                                        |                   |                                   | Nickel Plated Metal with Non-Conductive Base |
| Thermal Impedance                                    |                   | Natural convection                | 15°C/W                                       |
| Maximum Case Temperature                             |                   |                                   | 100°C                                        |
| Vibration                                            |                   | 10-55Hz, 2G, 30mins along X,Y & Z |                                              |
| Package Weight                                       |                   |                                   | 18g                                          |
| Packing Quantity                                     |                   |                                   | 15 pcs per Tube                              |

|                         |                                                              |                     |                              |
|-------------------------|--------------------------------------------------------------|---------------------|------------------------------|
| MTBF (+25°C)<br>(+71°C) | Detailed Information see<br>Application Notes chapter "MTBF" | using MIL-HDBK 217F | 1000 x 10 <sup>3</sup> hours |
|                         |                                                              | using MIL-HDBK 217F | >250 x 10 <sup>3</sup> hours |

**Certifications**

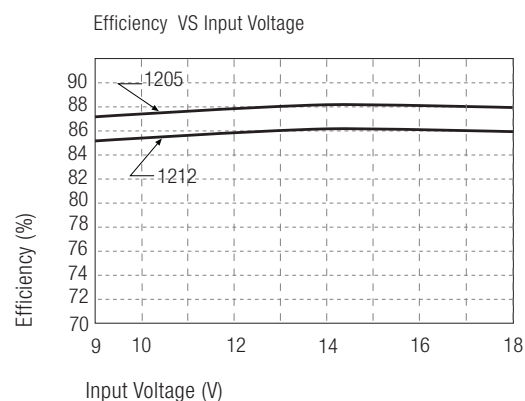
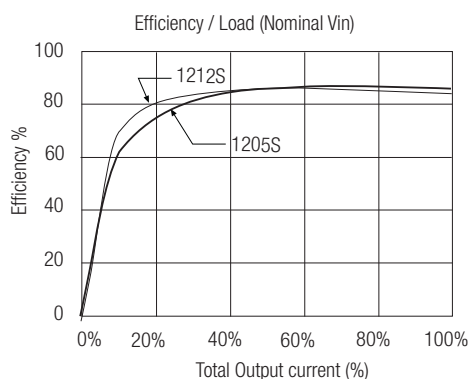
|                   |                                 |                                           |
|-------------------|---------------------------------|-------------------------------------------|
| EN General Safety | Report: SPCLVD1211033-2         | EN60950-1:2006 + A12:2011                 |
| UL General Safety | Report: E224736                 | UL 60950-1 1st Ed.                        |
|                   |                                 | C22.2 No. 60950-1-03                      |
| EN Medical Safety | Report: MDD12060585 + RM1206085 | IEC/EN 60601-1 3rd Edition                |
|                   |                                 | Medical Report + ISO14971 Risk Assessment |

## Derating-Graph (Ambient Temperature)



## Typical Characteristics

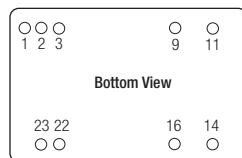
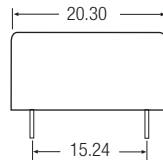
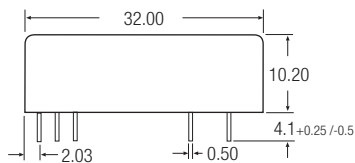
### REC10-1205SRW/H2/A/M (/SMD) REC10-1212SRW/H2/A/M (/SMD)



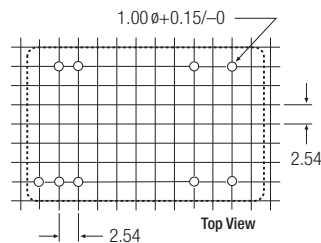
Note: Refer to Application Notes for EMC Class B Filter suggestion

## Package Style and Pinning (mm)

### 24 PIN DIP Package - Available with /H2 and /H3 Options



#### Recommended Footprint Details



#### Pin Connections DIP24

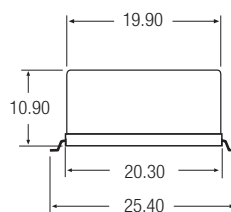
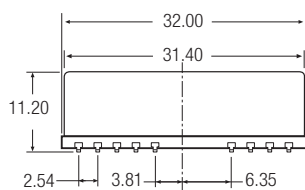
| Pin # | Single | Single/X2 | Dual  |
|-------|--------|-----------|-------|
| 1     | CTRL   | No Pin    | CTRL  |
| 2     | -Vin   | -Vin      | -Vin  |
| 3     | -Vin   | -Vin      | -Vin  |
| 9     | NC     | No Pin    | Com   |
| 11    | NC     | NC        | -Vout |
| 14    | +Vout  | +Vout     | +Vout |
| 16    | -Vout  | -Vout     | Com   |
| 22    | +Vin   | +Vin      | +Vin  |
| 23    | +Vin   | +Vin      | +Vin  |

NC = No Connection

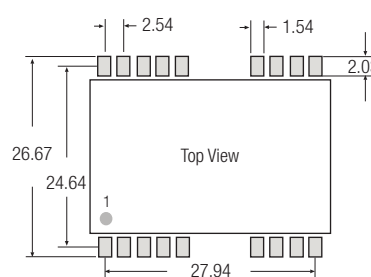
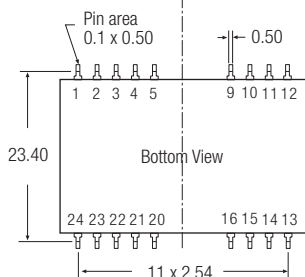
XX.X ± 0.5 mm

XX.XX ± 0.25 mm

### 24 PIN SMD Package- Only available with /H2 Option



#### Recommended Footprint Details



#### Pin Connections DIP24 SMD

| Pin #          | Single | Dual  |
|----------------|--------|-------|
| 1              | CTRL   | CTRL  |
| 2              | -Vin   | -Vin  |
| 3              | -Vin   | -Vin  |
| 9              | NC     | Com   |
| 11             | NC     | -Vout |
| 14             | +Vout  | +Vout |
| 16             | -Vout  | Com   |
| 22             | +Vin   | +Vin  |
| 23             | +Vin   | +Vin  |
| 4,5,10,12      | NC     |       |
| 13,15,20,21,24 | NC     |       |

NC = No Connection

XX.X ± 0.5 mm

XX.XX ± 0.25 mm