

Features

Regulated Converters

- UL-60950-1 / CSA C22.2 certified
- 3W DIP Package
- 4kVDC & 6kVDC Isolation
- 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%

Selection Guide

| Part Number | Input Voltage (VDC) | Output Voltage (VDC) | Max. Cap. Load (µF) | Output Current (mA) | Efficiency (%) |
|------------------------|-----------------------------------|----------------------|---------------------|---------------------|----------------|
| REC3-xx3.3SRW (H4/H6) | 4.5 - 9, 9 - 18, 18 - 36, 36 - 72 | 3.3 | 2200 | 900 | 66-76 |
| REC3-xx05SRW (H4/H6) | 4.5 - 9, 9 - 18, 18 - 36, 36 - 72 | 5 | 1000 | 600 | 71-79 |
| REC3-xx09SRW (H4/H6) | 4.5 - 9, 9 - 18, 18 - 36, 36 - 72 | 9 | 470 | 330 | 74-83 |
| REC3-xx12SRW (H4/H6) | 4.5 - 9, 9 - 18, 18 - 36, 36 - 72 | 12 | 220 | 250 | 75-85 |
| REC3-xx15SRW (H4/H6) | 4.5 - 9, 9 - 18, 18 - 36, 36 - 72 | 15 | 120 | 200 | 75-86 |
| REC3-xx05DRW (H4/H6) | 4.5 - 9, 9 - 18, 18 - 36, 36 - 72 | ±5 | ±470 | ±300 | 74-83 |
| REC3-xx09DRW (H4/H6) | 4.5 - 9, 9 - 18, 18 - 36, 36 - 72 | ±9 | ±220 | ±165 | 81-84 |
| REC3-xx12DRW (H4/H6) | 4.5 - 9, 9 - 18, 18 - 36, 36 - 72 | ±12 | ±100 | ±125 | 75-85 |
| REC3-xx15DRW (H4/H6) | 4.5 - 9, 9 - 18, 18 - 36, 36 - 72 | ±15 | ±68 | ±100 | 75-86 |
| REC3-xx3.3SRWZ (H4/H6) | 9 - 36, 18 - 72 | 3.3 | 2200 | 900 | 77-79 |
| REC3-xx05SRWZ (H4/H6) | 9 - 36, 18 - 72 | 5 | 1000 | 600 | 78-80 |
| REC3-xx09SRWZ (H4/H6) | 9 - 36, 18 - 72 | 9 | 470 | 330 | 80-83 |
| REC3-xx12SRWZ (H4/H6) | 9 - 36, 18 - 72 | 12 | 220 | 250 | 83-85 |
| REC3-xx15SRWZ (H4/H6) | 9 - 36, 18 - 72 | 15 | 120 | 200 | 83-85 |
| REC3-xx05DRWZ (H4/H6) | 9 - 36, 18 - 72 | ±5 | ±470 | ±300 | 77-80 |
| REC3-xx09DRWZ (H4/H6) | 9 - 36, 18 - 72 | ±9 | ±220 | ±165 | 81-84 |
| REC3-xx12DRWZ (H4/H6) | 9 - 36, 18 - 72 | ±12 | ±100 | ±125 | 83-85 |
| REC3-xx15DRWZ (H4/H6) | 9 - 36, 18 - 72 | ±15 | ±68 | ±100 | 83-85 |

2:1 Input
(REC3-S/DRWH4/H6)
xx = 4.5-9Vin = 05
xx = 9-18Vin = 12
xx = 18-36Vin = 24
xx = 36-72Vin = 48

4:1 Input
(REC3-S/DRWZ(H4/H6))
xx = 9-36Vin = 24
xx = 18-72Vin = 48

* add suffix **/H4** for 4kVDC isolation or **/H6** for 6kVDC isolation
* add suffix **/A** or **/C** for Pinning, see next page
"B" Pinning is NOT available for this series !
* add suffix **/M** for metal case
* add suffix **/SMD** for SMD package
e.g. REC3-2412SRW/H4/AM =
4kVDC isol. / Pinout **"A"** / metal case

Description

This series offers high isolation of 4kVDC (= option "H4") or 6kVDC (= option "H6") making it ideal for medical applications and other sophisticated industrial applications. Packaging can be either DIP-24 non-conductive plastic or 5-side-shielded DIP24 metal case (= option "M") as well as DIP24-SMD case (= option "SMD"). For all the above variants, 2 industry-standard pinouts (= option "A" or "C") are available.

Specifications (Core Operating Area)

| | |
|-------------------------|------------|
| Input Voltage Range | 2:1 & 4:1 |
| Output Voltage Accuracy | ±2% max. |
| Line Regulation (HL-LL) | ±0.4% max. |

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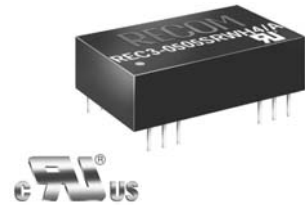
ECONOLINE

DC/DC-Converter

REC3-S DRW(Z) /H4,H6 Series

3 Watt

DIP24 & SMD
Single & Dual
Output



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

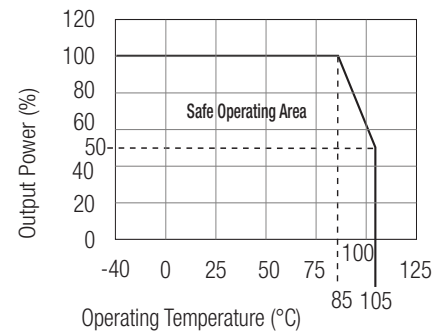
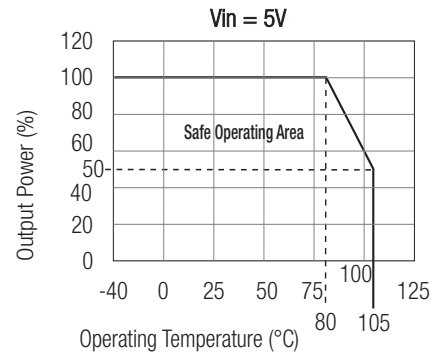
Notes :

1. 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 pins and the metal case, so 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 4kVDC for **"H4"** option and 6kVDC for **"H6"**.

Specifications (Core Operating Area)

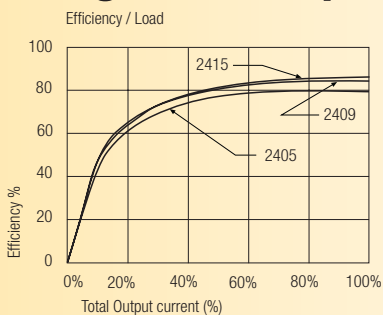
| | | | |
|---|---|----------------------------|------------------------------|
| Load Regulation (for output load current change from 20% to 100%) | | | ±0.6% max. |
| Output Ripple and Noise (0,1µF capacitor on output, 20MHz BW) | | | 50mVp-p max. |
| Switching Frequency at Full Load and nominal Input 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 | | | see above |
| No Load Power Consumption | | | 300mW max. |
| Isolation Voltage | H4 types | (tested for 1 second) | 4000VDC min. |
| Rated Working Voltage | (see note) | (long term isolation) | see Application Notes |
| Isolation Voltage | H6 types | (tested for 1 second) | 6000VDC min. |
| Rated Working Voltage | (see note) | (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, Auto Restart |
| Operating Temperature Range (free air convection) | 5V input types | -40°C to +80°C (see Graph) | |
| | others | -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 | | | 13g |
| MTBF (+25°C) | } Detailed Information see Application Notes chapter "MTBF" | using MIL-HDBK 217F | 1043 x 10 ³ hours |
| | | using MIL-HDBK 217F | 186 x 10 ³ hours |

Derating-Graph (Ambient Temperature)

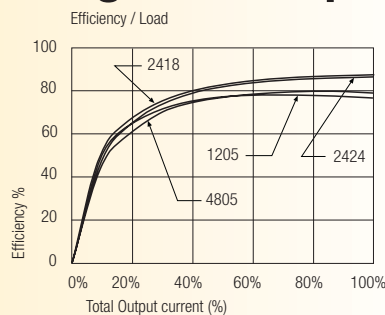


Typical Characteristics

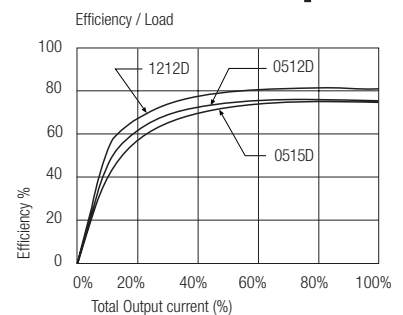
Single 2:1 Input



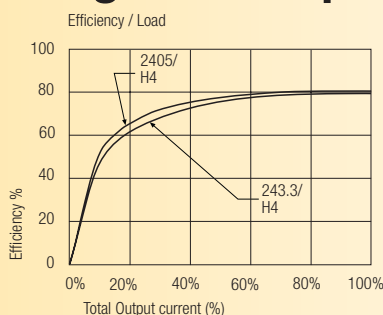
Single 2:1 Input



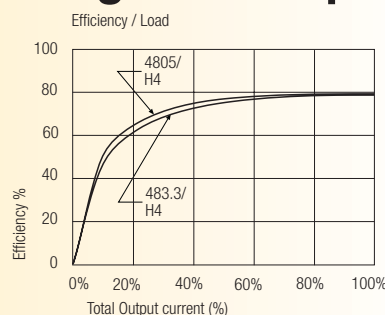
Dual 2:1 Input



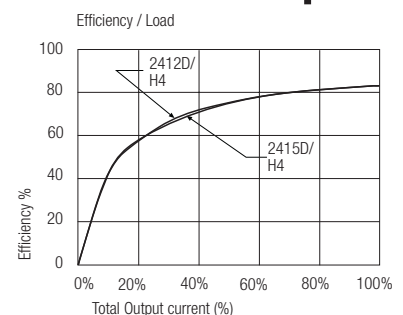
Single 4:1 Input



Single 4:1 Input

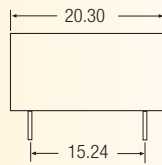
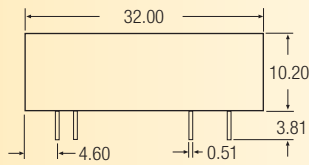


Dual 4:1 Input



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

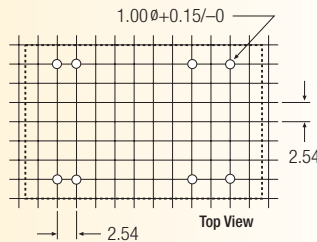
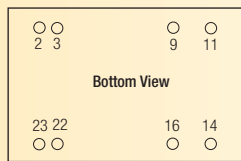
Package A



Pin Connections

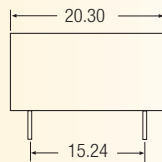
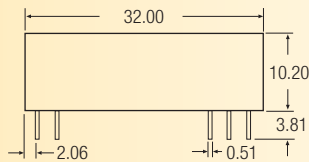
| Pin # | Single | Dual |
|-------|--------|-------|
| 2 | -Vin | -Vin |
| 3 | -Vin | -Vin |
| 9 | NC | Com |
| 11 | NC | -Vout |
| 14 | +Vout | +Vout |
| 16 | -Vout | Com |
| 22 | +Vin | +Vin |
| 23 | +Vin | +Vin |

Recommended Footprint Details



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

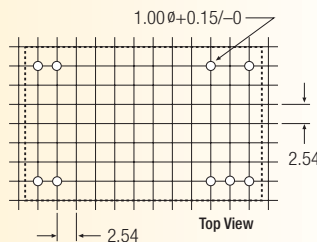
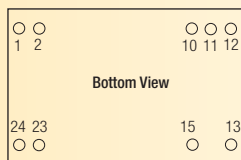
Package C



Pin Connections

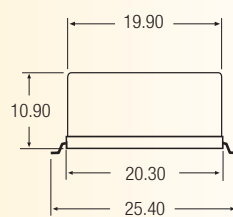
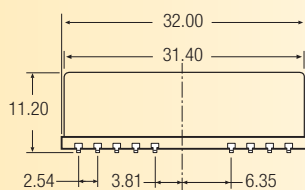
| Pin # | Single | Dual |
|-------|--------|-------|
| 1 | +Vin | +Vin |
| 2 | +Vin | +Vin |
| 10 | NC | Com |
| 11 | NC | Com |
| 12 | -Vout | NC |
| 13 | +Vout | -Vout |
| 15 | NC | +Vout |
| 23 | -Vin | -Vin |
| 24 | -Vin | -Vin |

Recommended Footprint Details



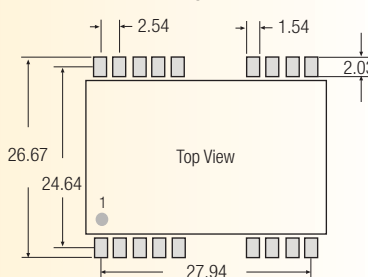
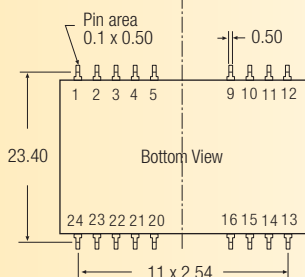
NC = No Connection
XX.X ± 0.5 mm
XX.XX ± 0.25 mm

Mechanical drawings of DIP24 SMD case



All unused pins are NC (No Connection). SMD pin connections follow standard package pinning.

Recommended Footprint Details



Tol.: ± 0.35 mm

for all packages incl.SMD case the length of plastic case is 31,8mm, length of metal case 32.0mm