

# RP-3W Series



3W 4:1 Regulated Single & Dual output

## Features

- Wide 4:1 Input Range
- Full SMD Technology
- 1500 VDC Isolation, Up to 3500 VDC
- Continuous Short Circuit Protection
- Efficiency up to 79%
- -40 ~ 85°C Operating Temperature
- Plastic Case Standard, Optional Metal Case



The RP series is a family of cost effective 3W single & dual output DC-DC converters. These converters combine Plastic case in a 24-pin DIL package with high performance features such as 1500 VDC ~ 3500VDC input/output isolation voltage, continuous short circuit protection with automatic restart and high line / load regulation. Devices are encapsulated using flame retardant resin. Input voltages of 24 and 48 with output voltage of 5, 9, 12, 15, 24,  $\pm 5$ ,  $\pm 9$ ,  $\pm 12$ ,  $\pm 15$  and  $\pm 24$  Vdc. High performance features include high efficiency operation up to 79% and output voltage accuracy of  $\pm 1\%$  maximum.

All specifications typical at Ta=25°C, nominal input voltage and full load unless otherwise specified

| OUTPUT SPECIFICATIONS                |                               |
|--------------------------------------|-------------------------------|
| Voltage accuracy                     | $\pm 1\%$                     |
| Line regulation                      | $\pm 0.5\%$                   |
| Load regulation                      | $\pm 0.5\%$                   |
| Ripple & noise (20 MHz bandwidth)(1) | 60mV pk-pk                    |
| Short circuit protection             | Continuous                    |
| Temperature coefficient              | $\pm 0.02\%/^{\circ}\text{C}$ |
| Capacitor load(2)                    | See table                     |

| INPUT SPECIFICATIONS              |            |
|-----------------------------------|------------|
| Voltage Range                     | See table  |
| Max. Input Current                | See table  |
| No-Load Input Current             | See table  |
| Input Filter                      | PI Type    |
| Input Reflected Ripple Current(3) | 35mA pk-pk |

| GENERAL SPECIFICATIONS                      |                 |
|---|-----------------|
| Efficiency                                  | See table, typ. |
| I/O Isolation Voltage(60 sec)               |                 |
| Input/Output                                | 1500~3500Vdc    |
| Metal Case/Input & Output                   | 1000Vdc         |
| I/O Isolation Capacitance                   | 60 pF typ.      |
| I/O Isolation Resistance                    | 1000M Ohm       |
| Switching Frequency                         | 100~400kHz      |
| Humidity                                    | 95% rel H       |
| Reliability Calculated MTBF(MIL-HDBK-217 F) | >1Mhrs          |
| Safety Standard : (designed to meet)        | IEC 60950-1     |

| PHYSICAL SPECIFICATIONS |   |
|-------------------------|---|
| Case Material           | Non-conductive Black Plastic(UL94V-0 rated) |
|                         | Nickel-coated Copper                        |
| Base Material           | Non-conductive Black Plastic(UL94V-0 rated) |
| Pin Material            | $\Phi 0.5\text{mm}$ Brass Solder-coated     |
| Potting Material        | Epoxy (UL94V-0 rated)                       |
| Weight                  | 12.5g(Plastic Case)/15.0g(Metal Case)       |
| Dimensions              | 1.25"x0.8"x0.4"                             |

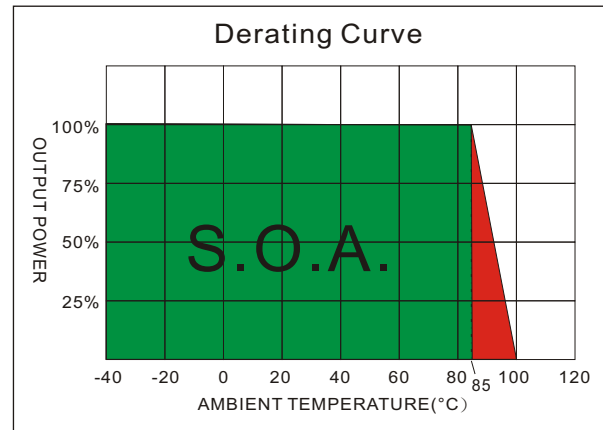
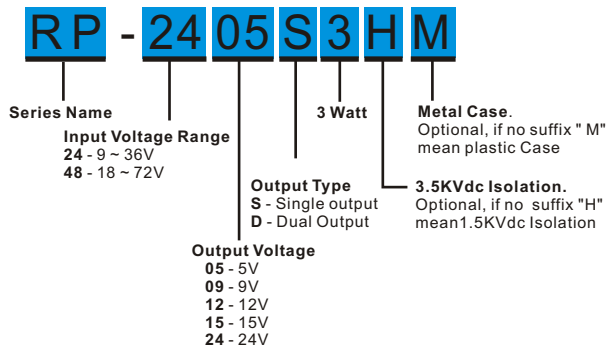
| ENVIRONMENT SPECIFICATIONS |                                |
|----------------------------|--------------------------------|
| Operating Temperature      | -40°C~85°C(See Derating Curve) |
| Maximum Case Temperature   | 100°C                          |
| Storage Temperature        | -40°C~125°C                    |
| Cooling                    | Nature Convection              |

| ABSOLUTE MAXIMUM RATINGS(4)  |             |
|--|-------------|
| These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability. |             |
| Input Surge Voltage(100mS)   |             |
| 24 Models  | 40 Vdc,max. |
| 48 Models  | 80 Vdc,max. |
| Soldering Temperature  | 260°C max.  |
| (1.5mm from case 10 sec. max.)   |             |

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## RP - 3W 4:1 Regulated Single & Dual output

### PART NUMBER STRUCTURE



## MODEL SELECTION GUIDE

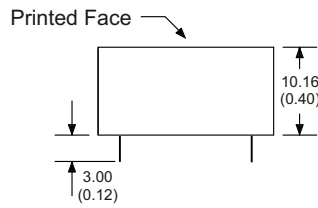
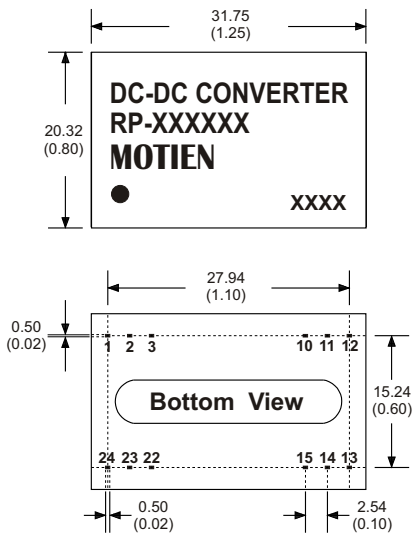
| MODEL NUMBER | INPUT Voltage Range (Vdc) | INPUT Current |                | OUTPUT Voltage (Vdc) | OUTPUT Current |                | EFFICIENCY @FL(%) | Capacitor Load(uF) |
|--------------|---------------------------|---------------|----------------|----------------------|----------------|----------------|-------------------|--------------------|
|              |                           | No-Load (mA)  | Full Load (mA) |                      | Min. load (mA) | Full load (mA) |                   |                    |
| RP-2405S3    | 9-36                      | 20            | 178            | 5                    | 200            | 600            | 70                | 2200               |
| RP-2409S3    | 9-36                      | 20            | 176            | 9                    | 111            | 333            | 71                | 470                |
| RP-2412S3    | 9-36                      | 20            | 171            | 12                   | 83             | 250            | 73                | 470                |
| RP-2415S3    | 9-36                      | 20            | 171            | 15                   | 67             | 200            | 73                | 470                |
| RP-2424S3    | 9-36                      | 30            | 176            | 24                   | 42             | 125            | 71                | 220                |
| RP-2405D3    | 9-36                      | 20            | 178            | ±5                   | ±100           | ±300           | 70                | ±1000              |
| RP-2409D3    | 9-36                      | 20            | 173            | ±9                   | ±56            | ±167           | 72                | ±220               |
| RP-2412D3    | 9-36                      | 20            | 168            | ±12                  | ±42            | ±125           | 74                | ±220               |
| RP-2415D3    | 9-36                      | 20            | 168            | ±15                  | ±33            | ±100           | 74                | ±220               |
| RP-2424D3    | 9-36                      | 30            | 176            | ±24                  | ±21            | ±63            | 73                | ±100               |
| RP-4805S3    | 18-72                     | 10            | 83             | 5                    | 200            | 600            | 75                | 2200               |
| RP-4809S3    | 18-72                     | 10            | 81             | 9                    | 111            | 333            | 77                | 470                |
| RP-4812S3    | 18-72                     | 10            | 79             | 12                   | 83             | 250            | 79                | 470                |
| RP-4815S3    | 18-72                     | 10            | 79             | 15                   | 67             | 200            | 79                | 470                |
| RP-4824S3    | 18-72                     | 10            | 82             | 24                   | 42             | 125            | 76                | 220                |
| RP-4805D3    | 18-72                     | 10            | 85             | ±5                   | ±100           | ±300           | 73                | ±1000              |
| RP-4809D3    | 18-72                     | 10            | 83             | ±9                   | ±56            | ±167           | 75                | ±220               |
| RP-4812D3    | 18-72                     | 10            | 80             | ±12                  | ±42            | ±125           | 78                | ±220               |
| RP-4815D3    | 18-72                     | 10            | 80             | ±15                  | ±33            | ±100           | 78                | ±220               |
| RP-4824D3    | 18-72                     | 10            | 82             | ±24                  | ±21            | ±63            | 76                | ±100               |

Suffix "H" means 3.5KVdc isolation  
 Suffix "M" means Metal Case instead of standard Plastic case

### NOTE

1. Typical value at nominal input voltage and full load.
2. Test by nominal input voltage and constant resistor load.
3. Measured Input reflected ripple current with a simulated source inductance of 12uH.
4. Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.
5. Operation under no-load conditions will not damage these devices, however they may not meet all listed specifications.
6. It's necessary to add minimum capacitor in output for some models, please check single model datasheet for detail value.

**MECHANICAL SPECIFICATIONS FOR HIGH ISOLATION MODEL**

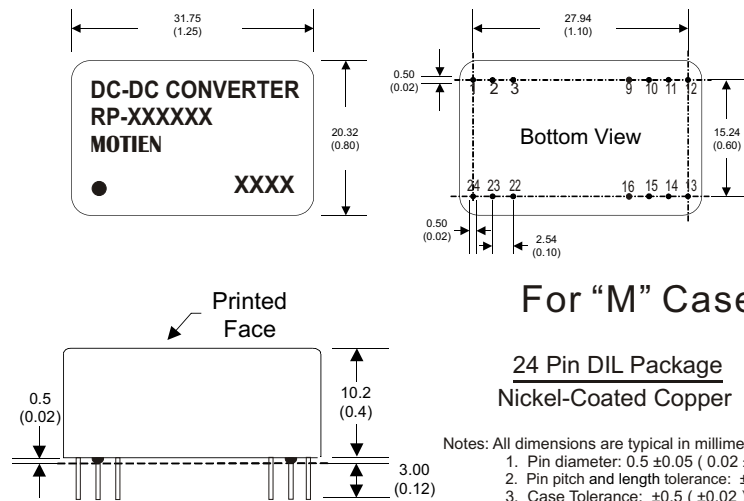


**24 Pin DIL Package  
Non-Conductive Plastic**

Notes : All dimensions are typical in millimeters ( inches ).  
 1. Pin diameter:  $0.5 \pm 0.05$  (  $0.02 \pm 0.002$  )  
 2. Pin pitch and length tolerance:  $\pm 0.35$  (  $\pm 0.014$  )  
 3. Case Tolerance:  $\pm 0.5$  (  $\pm 0.02$  )

| PIN CONNECTIONS |           |           |           |           |
|-----------------|-----------|-----------|-----------|-----------|
| PIN NUMBER      | SINGLE    | DUAL      | SINGLE-H  | DUAL-H    |
| 1               | +V Input  | +V Input  | N.P.      | N.P.      |
| 2               | N.C.      | -V Output | -V Input  | -V Input  |
| 3               | N.C.      | Common    | -V Input  | -V Input  |
| 9               | N.P.      | N.P.      | N.P.      | Common    |
| 10              | -V Output | Common    | N.P.      | N.P.      |
| 11              | +V Output | +V Output | N.C.      | -V Output |
| 12              | -V Input  | -V Input  | N.P.      | N.P.      |
| 13              | -V Input  | -V Input  | N.P.      | N.P.      |
| 14              | +V Output | +V Output | +V Output | +V Output |
| 15              | -V Output | Common    | N.P.      | N.P.      |
| 16              | N.P.      | N.P.      | -V Output | Common    |
| 22              | N.C.      | Common    | +V Input  | +V Input  |
| 23              | N.C.      | -V Output | +V Input  | +V Input  |
| 24              | +V Input  | +V Input  | N.P.      | N.P.      |

**MECHANICAL SPECIFICATIONS**



**For "M" Case**

**24 Pin DIL Package  
Nickel-Coated Copper**

Notes: All dimensions are typical in millimeters ( inches ).  
 1. Pin diameter:  $0.5 \pm 0.05$  (  $0.02 \pm 0.002$  )  
 2. Pin pitch and length tolerance:  $\pm 0.35$  (  $\pm 0.014$  )  
 3. Case Tolerance:  $\pm 0.5$  (  $\pm 0.02$  )  
 4. Stand-off tolerance:  $\pm 0.1$  (  $\pm 0.004$  )

| PIN CONNECTIONS |           |           |           |           |
|-----------------|-----------|-----------|-----------|-----------|
| PIN NUMBER      | SINGLE    | DUAL      | SINGLE-H  | DUAL-H    |
| 1               | +V Input  | +V Input  | N.P.      | N.P.      |
| 2               | N.C.      | -V Output | -V Input  | -V Input  |
| 3               | N.C.      | Common    | -V Input  | -V Input  |
| 9               | N.P.      | N.P.      | N.P.      | Common    |
| 10              | -V Output | Common    | N.P.      | N.P.      |
| 11              | +V Output | +V Output | N.C.      | -V Output |
| 12              | -V Input  | -V Input  | N.P.      | N.P.      |
| 13              | -V Input  | -V Input  | N.P.      | N.P.      |
| 14              | +V Output | +V Output | +V Output | +V Output |
| 15              | -V Output | Common    | N.P.      | N.P.      |
| 16              | N.P.      | N.P.      | -V Output | Common    |
| 22              | N.C.      | Common    | +V Input  | +V Input  |
| 23              | N.C.      | -V Output | +V Input  | +V Input  |
| 24              | +V Input  | +V Input  | N.P.      | N.P.      |