

# RS8-R10/RD10

- 6 Pin SIL Package
- Wide 2:1 Input Range
- 1500VDC Isolation
- Continuous Short Circuit Protection
- no minimum Load required
- Efficiency up to 81%
- Operating Temperature Range  
-40° ~ +85°C
- Non Conductive Black Plastic Case

RoHS

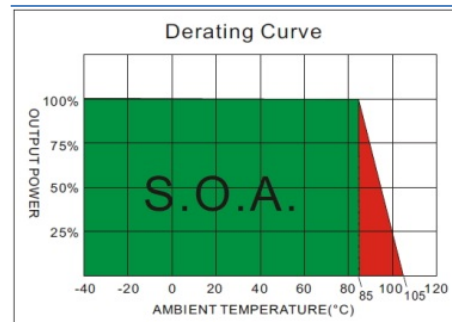


| OUTPUT SPECIFICATION                                                           | ENVIRONMENTAL SPECIFICATION                                     |
|--------------------------------------------------------------------------------|-----------------------------------------------------------------|
| Voltage accuracy: $\pm 2\%$                                                    | Operating Temperature range: -40°C ~ +85°C (see Derating Curve) |
| Maximum Output Current: See table                                              | Maximum Case Temperature: 105°C                                 |
| Line regulation: $\pm 0.2\%$ max.                                              | Storage Temperature: -55°C ~ +125°C                             |
| LOAD REGULATION: 0% - 100% (Single/Dual Outp.): $\pm 1\%$ max./ $\pm 2\%$ max. | Cooling: Nature Convection                                      |
| 5% - 100% (Dual Outp.): $\pm 1\%$ max.                                         | PHYSICAL SPECIFICATIONS:                                        |
| Cross Regulation (Dual Output): $\pm 5\%$                                      | Case Material: Non-conductive Black Plastic (UL94V-0 rated)     |
| Short Circuit Protection: Continuous (Automatic Recovery)                      | PIN Material SIP Case: C5191T-H Solder coated                   |
| Ripple noise (20Mhz bandwidth): 50mV pk-pk max.                                | Potting Material: Epoxy (UL94V-0 rated)                         |
| Temperature coefficient: $\pm 0.02\%$ °C                                       | Weight Case- Sip: 3.0g,                                         |
| Capacitor load: See table                                                      | Dimmension SIP: 0.67 x 0.30 x 0.43"                             |
| Transient Recovery Time: 500us, typ.                                           | ABSOLUTE MAXIMUM RATINGS (1)                                    |
| Transient Response: ( Deviation) $\pm 3\%$ max.                                | Input Surge Voltage (100ms)/                                    |
| INPUT SPECIFICATIONS                                                           | 5 V Models: 15VDC max.                                          |
| Voltage Range: See table                                                       | 12V Models: 25VDC max.                                          |
| Max. Input Current: See table                                                  | 24V Models: 50VDC max.                                          |
| No-Load/Full-Load Input Current: See table                                     | 48V Models: 100VDC max.                                         |
| Input Filter: Capacitors                                                       | Soldering Temperature: 260°C max. (2)                           |
| Input Reflected Ripple Current: 35mA pk-pk                                     | EMC SPECIFICATIONS                                              |
| GENERAL SPECIFICATIONS                                                         | Radiated-/Conducted Emissions: EN55022 Class A                  |
| Efficiency: See table                                                          | ESD: IEC 61000-4-2 Perf.Criteria A                              |
| I/O Isolation Voltage (60sec): 1500VDC                                         | RS: IEC 61000-4-3 Perf.Criteria A                               |
| I/O Isolation Capacitance: 70pF typ.                                           | EFT: IEC 61000-4-4 Perf.Criteria A                              |
| I/O Isolation Resistance: 1000M Ohm, min                                       | SURGE: IEC 61000-4-5 Perf.Criteria A                            |
| Switching Frequency: 150 - 550kHz                                              | CS: IEC 61000-4-6 Perf.Criteria A                               |
| Humidity: 95% rel H                                                            | PFMF IEC 61000-4-8 Perf.Criteria A                              |
| Reliability Calculated MTBF: > 2.8Mhrs<br>(MIL-HDBK-217 f)                     |                                                                 |
| Safety Standard: (designed to meet): IEC EN 60950-1                            |                                                                 |

- 1) These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.
- 2) (1.5mm from case 10sec Max.)
- 3) All specifications typical at TA= 25°C, nominal input voltage and full load unless otherwise specified.
- 4) The information and specification contained in this data sheet are believed to be correct at time of publication. However RSG accepts no responsibility for consequences arising from printing errors or inaccuracies. Specifications are subject to change without notice.

## NUMBER STRUCTURE

| RS8          | - | XX                                     | XX                                    | X                                         | XX        | A        | X         |
|--------------|---|----------------------------------------|---------------------------------------|-------------------------------------------|-----------|----------|-----------|
| Name/Package |   | Input                                  | Output                                | Type                                      | Power (W) | Code     | Isolation |
| RS8=SIL6     |   | 05=5.0V<br>12=12V<br>24=24V<br>48= 48V | 05=5.0V<br>12=12V<br>15=15V<br>24=24V | R= Single Regulated<br>RD= Dual Regulated | 10=1.00   | internal | 1= 1.5    |



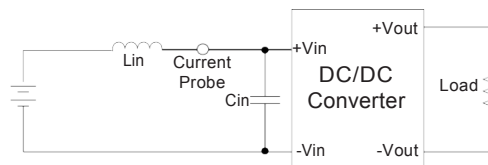
## MODEL SELECTION GUIDE

| MODEL NUMBER   | INPUT Voltage Range (Vdc) | INPUT Current |                | OUTPUT Voltage (Vdc) | OUTPUT Current |                | EFFICIENCY @FL (%) | Capacitive Load (uF) |
|----------------|---------------------------|---------------|----------------|----------------------|----------------|----------------|--------------------|----------------------|
|                |                           | No-Load (mA)  | Full Load (mA) |                      | Min. load (mA) | Full load (mA) |                    |                      |
| RS8-0505R10A1  | 4.5-9                     | 35            | 263            | 5                    | 0              | 200            | 76                 | 1680                 |
| RS8-0512R10A1  | 4.5-9                     | 35            | 253            | 12                   | 0              | 83             | 79                 | 820                  |
| RS8-0515R10A1  | 4.5-9                     | 35            | 250            | 15                   | 0              | 67             | 80                 | 680                  |
| RS8-0524R10A1  | 4.5-9                     | 35            | 250            | 24                   | 0              | 42             | 80                 | 470                  |
| RS8-1205R10A1  | 9-18                      | 20            | 107            | 5                    | 0              | 200            | 78                 | 1680                 |
| RS8-1212R10A1  | 9-18                      | 20            | 105            | 12                   | 0              | 83             | 80                 | 820                  |
| RS8-1215R10A1  | 9-18                      | 20            | 103            | 15                   | 0              | 67             | 81                 | 680                  |
| RS8-1224R10A1  | 9-18                      | 20            | 105            | 24                   | 0              | 42             | 80                 | 470                  |
| RS8-2405R10A1  | 18-36                     | 10            | 54             | 5                    | 0              | 200            | 78                 | 1680                 |
| RS8-2412R10A1  | 18-36                     | 10            | 52             | 12                   | 0              | 83             | 80                 | 820                  |
| RS8-2415R10A1  | 18-36                     | 10            | 52             | 15                   | 0              | 67             | 80                 | 680                  |
| RS8-2424R10A1  | 18-36                     | 10            | 52             | 24                   | 0              | 42             | 81                 | 470                  |
| RS8-4805R10A1  | 36-75                     | 7             | 28             | 5                    | 0              | 200            | 76                 | 1680                 |
| RS8-4812R10A1  | 36-75                     | 7             | 27             | 12                   | 0              | 83             | 78                 | 820                  |
| RS8-4815R10A1  | 36-75                     | 7             | 27             | 15                   | 0              | 67             | 78                 | 680                  |
| RS8-4824R10A1  | 36-75                     | 7             | 27             | 24                   | 0              | 42             | 77                 | 470                  |
| RS8-0512RD10A1 | 4.5-9                     | 35            | 259            | ±12                  | 0              | ±42            | 77                 | ±470                 |
| RS8-0515RD10A1 | 4.5-9                     | 35            | 254            | ±15                  | 0              | ±33            | 79                 | ±330                 |
| RS8-1212RD10A1 | 9-18                      | 20            | 106            | ±12                  | 0              | ±42            | 79                 | ±470                 |
| RS8-1215RD10A1 | 9-18                      | 20            | 105            | ±15                  | 0              | ±33            | 80                 | ±330                 |
| RS8-2412RD10A1 | 18-36                     | 10            | 52             | ±12                  | 0              | ±42            | 80                 | ±470                 |
| RS8-2415RD10A1 | 18-36                     | 10            | 53             | ±15                  | 0              | ±33            | 79                 | ±330                 |
| RS8-4812RD10A1 | 36-75                     | 7             | 27             | ±12                  | 0              | ±42            | 77                 | ±470                 |
| RS8-4815RD10A1 | 36-75                     | 7             | 27             | ±15                  | 0              | ±33            | 77                 | ±330                 |

- One load is 25% to 100% load, the other load is 100% load, the output voltage variable rate is within ±5%.
- Ripple/Noise measured with a 1uF ceramic capacitor.
- Tested by minimal Vin and constant resistive load.
- Tested by normal Vin and 25% load step change ( 75%-50%-25% of Io ).
- Measured Input reflected ripple current with a simulated source inductance of 12uH.
- Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.
- Input filter components are be required to help meet conducted emission class A, which application refer to The EMI Filter of Design & feature configuration.
- An external filter capacitor is required if the module has to meet IEC61000-4-4 and IEC61000-4-5.  
The filter capacitor RSG suggest: 5Vin models : Nippon - chemi - con KY series, 330uF/100V.  
Other models : Nippon - chemi - con KY series, 220uF/100V.

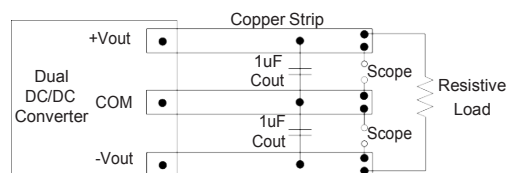
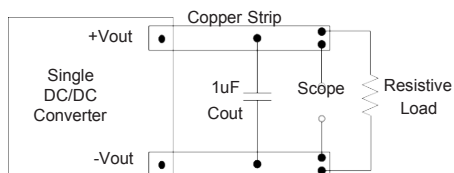
### Input Reflected Ripple Current Test Step

Input reflected ripple current is measured through a source inductor  $L_{in}$  (12uH) and a source capacitor  $C_{in}$  (47uF, ESR<1.0 $\Omega$  at 100KHz) at nominal input and full load.



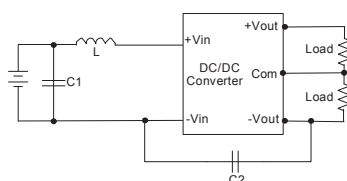
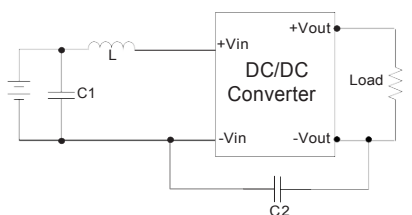
### Output Ripple & Noise Measurement Test

Use a capacitor  $C_{out}$  (1.0uF) measurement. The Scope measurement bandwidth is 20MHz.



### EMI Filter

Input filter components ( $C_1, C_2, L$ ) are used to help meet conducted emissions requirement for the module. These components should be mounted as close as possible to the module; and all leads should be minimized to decrease radiated noise.



|                  | C1                 | C2                | L     |
|------------------|--------------------|-------------------|-------|
| RS8-05XXR/RD10A1 | MLCC<br>4,7uF/50V  | MLCC<br>220uF/3KV | 4.7uH |
| RS8-12XXR/RD10A1 | MLCC<br>4,7uF/50V  | MLCC<br>220uF/3KV | 4.7uH |
| RS8-24XXR/RD10A1 | MLCC<br>4,7uF/50V  | MLCC<br>220uF/3KV | 18uH  |
| RS8-48XXR/RD10A1 | MLCC<br>4,7uF/100V | MLCC<br>220uF/3KV | 18uH  |

