

RR4-S08/D08

- 24 Pin DIL Package
- Wide 2:1 Input Range
- 1500VDC Isolation
- High Power Density
- Continuous Short Circuit Protection
- Low Ripple and Noise
- Efficiency up to 85%
- Operating Temperature Range -40° ~ +85°C
- Metal Case



| OUTPUT SPECIFICATION | ENVIRONMENTAL SPECIFICATION |
|--|--|
| Voltage accuracy: ±1% | Operating Temperature range: -40°C ~+85°C (see Derating Curve) |
| Line regulation: Single &Dual ±0.5% max. | Maximum Case Temperature: 100°C |
| LOAD REGULATION: from 0% to 100% Load: ±0.5 - 1% max. | Storage Temperature : -40°C ~+125°C |
| Output 3.3V Model: ±1.5% | Cooling : Nature Convection |
| Cross Regulation (Dual Output): ± 5% | PHYSICAL SPECIFICATIONS: |
| Over Current Protection: 150%of FI, typ.. | Case Material: Nickel-coated Copper |
| Short Circuit Protection : Indefinite (Automatic Recovery) | PIN Material: 0.5mm Brass Solder coated |
| Ripple noise (20Mhz bandwidth): 75mV pk-pk | Potting Material: Epoxy (UL94V-0 rated) |
| Temperature coefficient: ±0.02%/°C | Weight Case-DIP: 17.0g |
| Capacitor load: See table | Dimmension DIP: 1.25" x 0.8" x 0.4" |
| INPUT SPECIFICATIONS | ABSOLUTE MAXIMUM RATINGS (1) |
| Voltage Range: See table | Input Surge Voltage (100ms)/ |
| Max. Input Current: See table | 12V Models: 25VDC max. |
| No-Load/Full-Load Input Current: See table | 24V Models: 50VDC max. |
| Input Filter: PI Type | 48V Models: 100VDC max. |
| Input Reflected Ripple Current : 35mA pk-pk typ. | Soldering Temperature: 260°C max. |
| GENERAL SPECIFICATIONS | EMC SPECIFICATIONS (2) |
| Efficiency: See table typ. | Radiated-/Conducted Emissions: EN55022 Class A see EMI Filter |
| I/O Isolation Voltage (60sec): 1500VDC | ESD: IEC 61000-4-2 Perf.Criteria A |
| I/O Isolation Voltage Metal Case: 1000VDC | RS: IEC 61000-4-3 Perf.Criteria A |
| I/O Isolation Capacitance: 1000pF typ. | EFT: IEC 61000-4-4 Perf.Criteria A |
| I/O Isolation Resistance: 1000M Ohm | SURGE: IEC 61000-4-5 Perf.Criteria A |
| Switching Frequency: 330kHz, typ. | CS: IEC 61000-4-6 Perf.Criteria A |
| Humidity: 95% rel H | PFMF IEC 61000-4-8 Perf.Criteria A |
| Reliability Calculated MTBF : > 0.91Mhrs (MIL-HDBK-217 f) | |
| Safety Standard: (designed to meet): IEC 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.

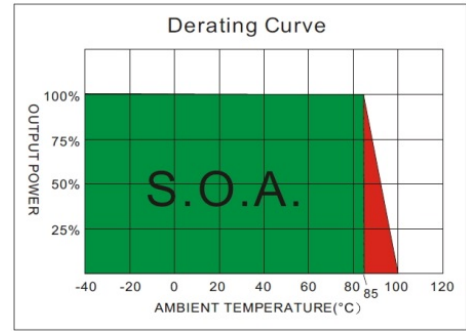
4) The information and specification contained in this data sheet are believed to be correct at time of publication.

However RSG accepts no responsibility for consequences arising from printing errors or inaccuracies. Specifications are subject to change without notice.

RR4-S08/D08

NUMBER STRUCTURE

| | | | | | | |
|---------------------------|---|--|--|----------------------|------------------|----------------------------|
| RR4 - | XX | XX | S/D | XX | A | X |
| Name/Package RR4=DIL24 | Input 12= 9-18V 24=18-36V 48=36-72 V | Output 03=3.3V 05=5.0V 12=12V 15=15V | Type S= Single-Outp. D= Dual-Outp. | Power (W) 08=8.00 | Code internal | Isolation (kVDC) 1= 1.5 |

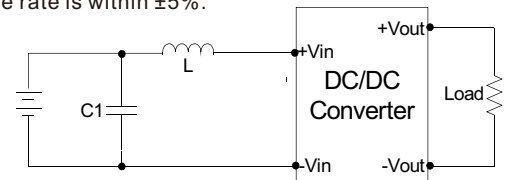


MODEL SELECTION GUIDE

| MODEL NUMBER | INPUT Voltage Range (Vdc) | INPUT Current | | OUTPUT Voltage (Vdc) | OUTPUT Current | | EFFICIENCY @FL(%) | Capacitor Load(µF) |
|---------------|---------------------------|---------------|----------------|----------------------|----------------|----------------|-------------------|--------------------|
| | | No-Load (mA) | Full Load (mA) | | Min. load (mA) | Full load (mA) | | |
| RR4-1203S08A1 | 9-18 | 20 | 687 | 3.3 | 0 | 2000 | 80 | 3300 |
| RR4-1205S08A1 | 9-18 | 20 | 762 | 5 | 0 | 1500 | 82 | 2200 |
| RR4-1212S08A1 | 9-18 | 20 | 784 | 12 | 0 | 665 | 85 | 470 |
| RR4-1215S08A1 | 9-18 | 20 | 803 | 15 | 0 | 535 | 83 | 220 |
| RR4-1205D08A1 | 9-18 | 20 | 813 | ±5 | 0 | ±800 | 82 | ±1000 |
| RR4-1212D08A1 | 9-18 | 20 | 794 | ±12 | 0 | ±335 | 84 | ±220 |
| RR4-1215D08A1 | 9-18 | 20 | 794 | ±15 | 0 | ±265 | 84 | ±100 |
| RR4-2403S08A1 | 18-36 | 15 | 344 | 3.3 | 0 | 2000 | 80 | 3300 |
| RR4-2405S08A1 | 18-36 | 15 | 381 | 5 | 0 | 1500 | 82 | 2200 |
| RR4-2412S08A1 | 18-36 | 15 | 392 | 12 | 0 | 665 | 85 | 470 |
| RR4-2415S08A1 | 18-36 | 15 | 397 | 15 | 0 | 535 | 84 | 220 |
| RR4-2405D08A1 | 18-36 | 15 | 407 | ±5 | 0 | ±800 | 82 | ±1000 |
| RR4-2412D08A1 | 18-36 | 15 | 402 | ±12 | 0 | ±335 | 83 | ±220 |
| RR4-2415D08A1 | 18-36 | 15 | 392 | ±15 | 0 | ±265 | 85 | ±100 |
| RR4-4803S08A1 | 36-72 | 15 | 172 | 3.3 | 0 | 2000 | 80 | 3300 |
| RR4-4805S08A1 | 36-72 | 15 | 191 | 5 | 0 | 1500 | 82 | 2200 |
| RR4-4812S08A1 | 36-72 | 15 | 198 | 12 | 0 | 665 | 84 | 470 |
| RR4-4815S08A1 | 36-72 | 15 | 198 | 15 | 0 | 535 | 84 | 220 |
| RR4-4805D08A1 | 36-72 | 15 | 203 | ±5 | 0 | ±800 | 82 | ±1000 |
| RR4-4812D08A1 | 36-72 | 15 | 196 | ±12 | 0 | ±335 | 85 | ±220 |
| RR4-4815D08A1 | 36-72 | 15 | 196 | ±15 | 0 | ±265 | 85 | ±100 |

NOTE

1. One load is 25% to 100% load, the other load is 100% load, the output voltage variable rate is within ±5%.
2. Ripple/Noise measured with a 1µF ceramic capacitor.
3. Test by nominal input voltage and constant resistor load.
4. Measured Input reflected ripple current with a simulated source inductance of 12µH.
5. Operation under no-load and 10% 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.
7. Input filter components (C1, 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.
8. An external filter capacitor is required if the module has to meet IEC61000-4-4 and IEC61000-4-5. The filter capacitor RSG suggest: Nippon - chemi - con KY series, 220µF/100V.
9. Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.



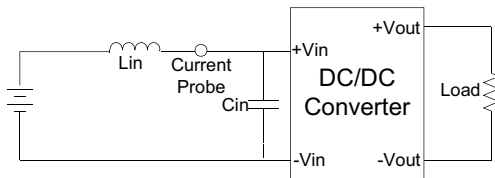
| | C1 | L |
|--------------|-------------|------|
| RR4-12XXXXXX | 100µF, 100V | 12µH |
| RR4-24XXXXXX | 100µF, 100V | 12µH |
| RR4-48XXXXXX | 100µF, 100V | 12µH |

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TEST CONFIGURATIONS

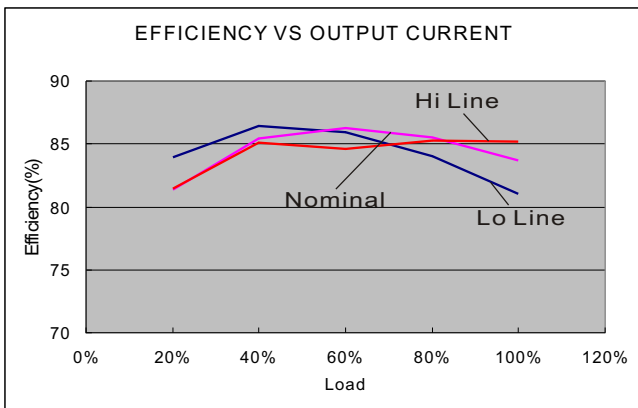
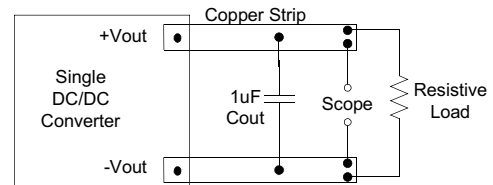
Input Reflected Ripple Current Test Step

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

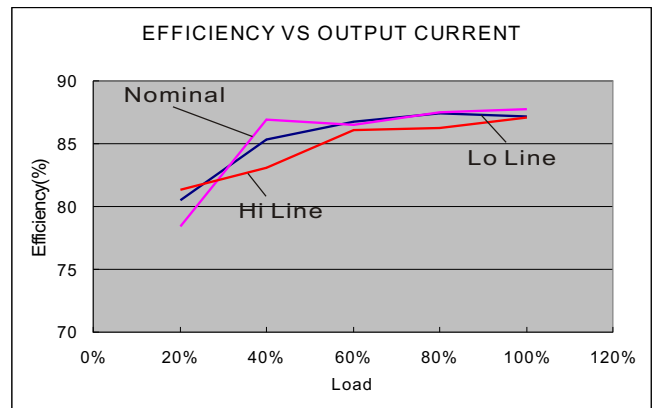


Output Ripple & Noise Measurement Test

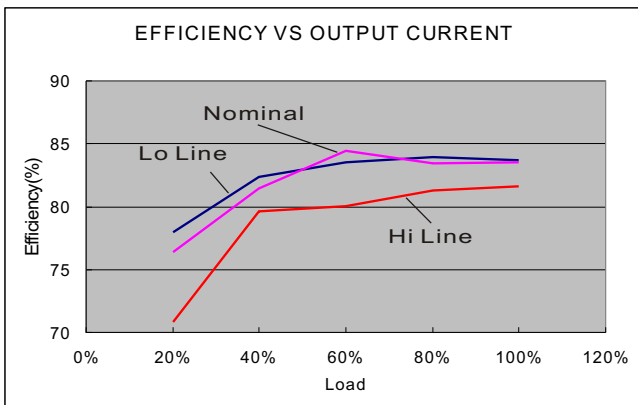
Use a capacitor C_{out} (1.0uF) measurement. The Scope measurement bandwidth is 0-20MHz.



12 Models

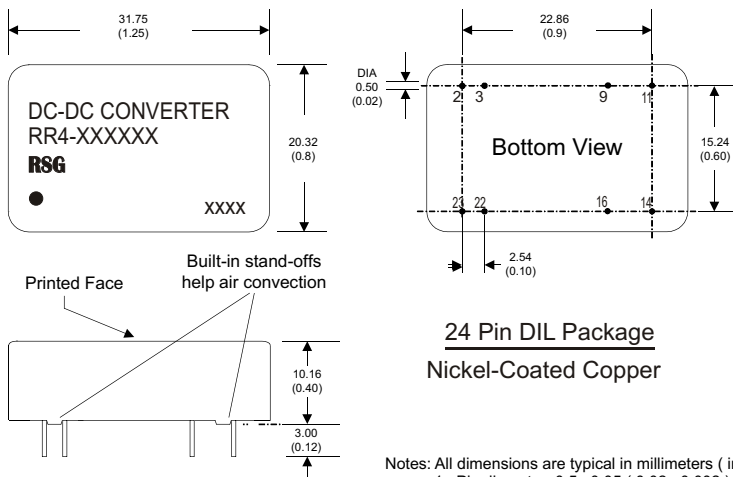


24 Models



48 Models

MECHANICAL SPECIFICATIONS



24 Pin DIL Package
Nickel-Coated Copper

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

| PIN CONNECTIONS | | |
|-----------------|-----------|-----------|
| PIN NUMBER | SINGLE | DUAL |
| 2 | -V Input | -V Input |
| 3 | -V Input | -V Input |
| 9 | N.P. | Common |
| 11 | N.C. | -V Output |
| 14 | +V Output | +V Output |
| 16 | -V Output | Common |
| 22 | +V Input | +V Input |
| 23 | +V Input | +V Input |

The models listed here are just standard type. If you need a product with special specification or you have questions regarding packing standards (Tube oder Tape/Reel) as well as application support, please contact our specialists: sales@rsg-electronic.de or +49 69-984047-41/-28