

RR1-S03/D03

- 24 Pin DIL Package
- 1000VDC Isolation
- High Isolation up to 6000VDC (optional)
- Continuous Short Circuit Protection
- Efficiency up to 83%
- Operating Temperature Range -40° ~ +85°C
- Plastic Case Standard , Optional Metal Case



RoHS

| OUTPUT SPECIFICATION | ENVIRONMENTAL SPECIFICATION |
|--|--|
| Voltage accuracy: ±2% | Operating Temperature range: -40°C ~+85°C (see Derating Curve) |
| Line regulation: Single &Dual ±0.5% max. | Maximum Case Temperature: 100°C |
| Load regulation: Single (0% to 100%) : ±1%,max. | Storage Temperature : -40°C ~+125°C |
| Short Circuit Protection : Indefinite (Automatic Recovery) | Cooling : Nature Convection |
| Ripple noise (20Mhz bandwidth): 75mV pk-pk max. | PHYSICAL SPECIFICATIONS: |
| Temperature coefficient: ±0.02% °C | Case Material: Non-conductive Black Plastic (UL94V-0 rated) |
| Capacitor load: See table | Nickel-coated Copper |
| Transient Recovery Time: ±3% max. | PIN Material: Ø 0.5mm Alloy42 Solder-coated, |
| Transient Response: 3.3V Output ±5% max. | Brass Solder coated |
| INPUT SPECIFICATIONS | Potting Material: Epoxy (UL94V-0 rated) |
| Voltage Range: ±10% | Weight Case- Sip: 12.5 (plastic), 15.0g (Metal) |
| Max. Input Current: See table | Dimmension DIP: 1.25" x 0.8" x 0.4" |
| No-Load/Full-Load Input Current: See table | ABSOLUTE MAXIMUM RATINGS (1) |
| Input Filter: PI Type | Input Surge Voltage (100ms)/ |
| Input Reflected Ripple Current : 35mA pk-pk | 5 V Models: 7VDC max |
| GENERAL SPECIFICATIONS | 12V Models: 15VDC max |
| Efficiency: See table | 24V Models: 28VDC max |
| I/O Isolation Voltage Metal Case (3 sec.): 1000VDC | Soldering Temperature: 260°C max. |
| I/O Isolation Voltage (3 sec.): 1000 ~ 6000VDC | EMC SPECIFICATIONS (2) |
| I/O Isolation Capacitance: 60pF typ. | Radiated-/Conducted Emissions: EN55022 Class A (see EMI Filter note) |
| I/O Isolation Resistance: 1000M Ohm | ESD: IEC 61000-4-2 Perf.Criteria A |
| Switching Frequency: Single 40kHz typ., Dual 250KHz typ. | RS: IEC 61000-4-3 Perf.Criteria A |
| Humidity: 95% rel H | EFT: IEC 61000-4-4 Perf.Criteria A |
| Reliability Calculated MTBF : > 1.00Mhrs (MIL-HDBK-217 f) | SURGE: IEC 61000-4-5 Perf.Criteria A |
| Safety Standard: (designed to meet): IEC 60950-1 | CS: IEC 61000-4-6 Perf.Criteria A |
| | PFMF IEC 61000-4-8 Perf.Criteria A |

1) These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.

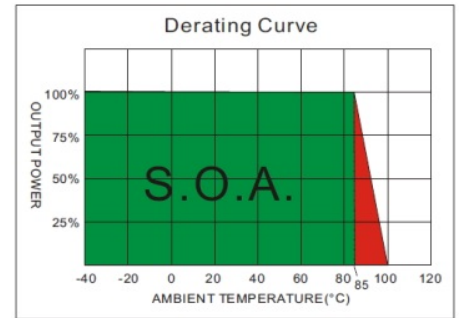
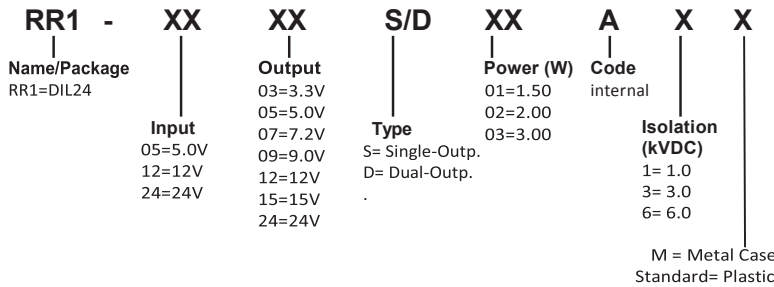
2) (1.5mm from case 10sec Max.)

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.

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NUMBER STRUCTURE



MODEL SELECTION GUIDE

| MODEL NUMBER | INPUT | INPUT Current | | OUTPUT | OUTPUT Current | EFFICIENCY @FL(%) | Capacitor Load(uF) |
|---------------|---------------------|---------------|----------------|---------------|----------------|-------------------|--------------------|
| | Voltage Range (Vdc) | No-Load (mA) | Full Load (mA) | Voltage (Vdc) | Full load (mA) | | |
| RR1-0503S03AX | 5 | 62 | 683 | 3.3 | 600 | 58 | 470 |
| RR1-0505S03AX | 5 | 65 | 909 | 5 | 600 | 66 | 470 |
| RR1-0507S03AX | 5 | 65 | 923 | 7.2 | 417 | 65 | 470 |
| RR1-0509S03AX | 5 | 70 | 882 | 9 | 333 | 68 | 470 |
| RR1-0512S03AX | 5 | 60 | 845 | 12 | 250 | 71 | 470 |
| RR1-0515S03AX | 5 | 70 | 833 | 15 | 200 | 72 | 470 |
| RR1-0518S03AX | 5 | 70 | 857 | 18 | 167 | 70 | 470 |
| RR1-0524S03AX | 5 | 100 | 896 | 24 | 125 | 67 | 470 |
| RR1-1203S03AX | 12 | 30 | 232 | 3.3 | 600 | 71 | 470 |
| RR1-1205S03AX | 12 | 36 | 253 | 5 | 600 | 66 | 470 |
| RR1-1207S03AX | 12 | 32 | 235 | 7.2 | 417 | 71 | 470 |
| RR1-1209S03AX | 12 | 32 | 235 | 9 | 333 | 71 | 470 |
| RR1-1212S03AX | 12 | 37 | 231 | 12 | 250 | 72 | 470 |
| RR1-1215S03AX | 12 | 35 | 225 | 15 | 200 | 74 | 470 |
| RR1-1218S03AX | 12 | 35 | 222 | 18 | 167 | 75 | 470 |
| RR1-1224S03AX | 12 | 55 | 235 | 24 | 125 | 71 | 470 |
| RR1-2403S03AX | 24 | 10 | 158 | 3.3 | 700 | 61 | 470 |
| RR1-2405S03AX | 24 | 23 | 187 | 5 | 600 | 67 | 470 |
| RR1-2407S03AX | 24 | 25 | 189 | 7.2 | 417 | 66 | 470 |
| RR1-2409S03AX | 24 | 27 | 184 | 9 | 333 | 68 | 470 |
| RR1-2412S03AX | 24 | 30 | 181 | 12 | 250 | 69 | 470 |
| RR1-2415S03AX | 24 | 28 | 179 | 15 | 200 | 70 | 470 |
| RR1-2418S03AX | 24 | 16 | 169 | 18 | 167 | 74 | 470 |
| RR1-2424S03AX | 24 | 20 | 167 | 24 | 125 | 75 | 470 |
| RR1-0503D03AX | 5 | 15 | 776 | ±3.3 | ±400 | 68 | ±1000 |
| RR1-0505D03AX | 5 | 20 | 845 | ±5 | ±300 | 71 | ±470 |
| RR1-0507D03AX | 5 | 20 | 811 | ±7.2 | ±417 | 74 | ±470 |
| RR1-0509D03AX | 5 | 25 | 789 | ±9 | ±167 | 76 | ±470 |
| RR1-0512D03AX | 5 | 40 | 822 | ±12 | ±125 | 73 | ±470 |
| RR1-0515D03AX | 5 | 30 | 811 | ±15 | ±100 | 74 | ±470 |
| RR1-0518D03AX | 5 | 45 | 822 | ±18 | ±167 | 73 | ±220 |

Suffix "3" means 3KVdc isolation Suffix "5" means 5.2KVdc isolation Suffix "6" means 6KVdc isolation
 Suffix "M" means Metal Case Up To 3KVdc isolation

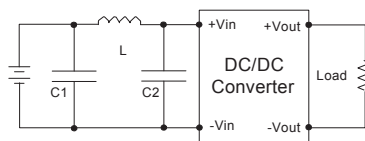
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| MODEL NUMBER | INPUT | INPUT Current | | OUTPUT | OUTPUT Current | EFFICIENCY @FL(%) | Capacitor Load(uF) |
|---------------|------------------------|-----------------|-------------------|------------------|-------------------|----------------------|-----------------------|
| | Voltage Range (Vdc) | No-Load (mA) | Full Load (mA) | Voltage (Vdc) | Full load (mA) | | |
| RR1-0524D03AX | 5 | 45 | 800 | ±24 | ±62.5 | 75 | ±220 |
| RR1-1203D03AX | 12 | 7 | 306 | ±3.3 | ±400 | 72 | ±1000 |
| RR1-1205D03AX | 12 | 8 | 321 | ±5 | ±300 | 78 | ±1000 |
| RR1-1207D03AX | 12 | 8 | 313 | ±7.2 | ±417 | 80 | ±470 |
| RR1-1209D03AX | 12 | 10 | 313 | ±9 | ±167 | 80 | ±470 |
| RR1-1212D03AX | 12 | 10 | 321 | ±12 | ±125 | 78 | ±470 |
| RR1-1215D03AX | 12 | 15 | 309 | ±15 | ±100 | 81 | ±470 |
| RR1-1218D03AX | 12 | 15 | 309 | ±18 | ±167 | 81 | ±220 |
| RR1-1224D03AX | 12 | 20 | 316 | ±24 | ±62.5 | 79 | ±220 |
| RR1-2403D03AX | 24 | 5 | 174 | ±3.3 | ±455 | 72 | ±1000 |
| RR1-2405D03AX | 24 | 6 | 158 | ±5 | ±300 | 79 | ±470 |
| RR1-2407D03AX | 24 | 5 | 158 | ±7.2 | ±417 | 79 | ±470 |
| RR1-2409D03AX | 24 | 7 | 152 | ±9 | ±167 | 82 | ±470 |
| RR1-2412D03AX | 24 | 8 | 151 | ±12 | ±125 | 83 | ±470 |
| RR1-2415D03AX | 24 | 10 | 154 | ±15 | ±100 | 81 | ±470 |
| RR1-2418D03AX | 24 | 15 | 156 | ±18 | ±167 | 80 | ±220 |
| RR1-2424D03AX | 24 | 15 | 154 | ±24 | ±62.5 | 81 | ±220 |

Suffix "3" means 3KVdc isolation Suffix "5" means 5.2KVdc isolation Suffix "6" means 6KVdc isolation
 Suffix "M" means Metal Case Up To 3KVdc isolation

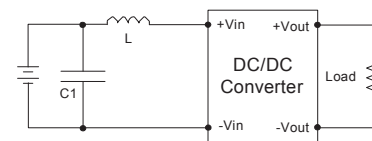
EMI Filter

Input filter components (C1, C2, 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 | L | C2 |
|--------------|------------|------|------------|
| RR1-05XS03AX | 220uF/100V | 12uH | 220uF/100V |
| RR1-12XS03AX | 220uF/100V | 12uH | 220uF/100V |
| RR1-24XS03AX | 220uF/100V | 12uH | 220uF/100V |

SINGEL OUTPUT



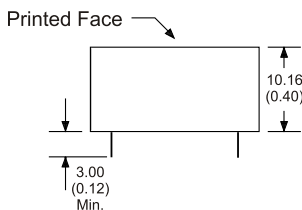
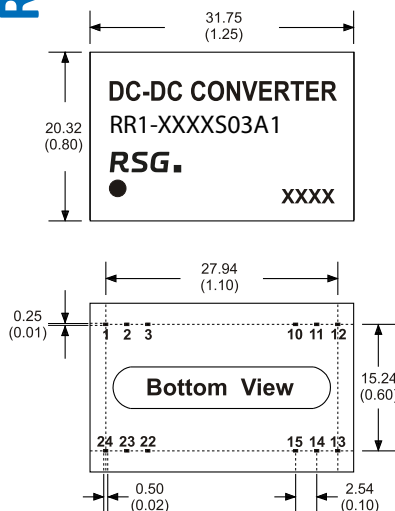
| | C1 | L |
|--------------|------------|------|
| RR1-05XD03AX | 220uF/100V | 12uH |
| RR1-12XD03AX | 220uF/100V | 12uH |
| RR1-24XD03AX | 220uF/100V | 12uH |

DUAL OUTPUT

1. Ripple/Noise measured with 20MHz bandwidth.
2. Tested by minimal Vin and constant resistive load.
3. Tested by normal Vin and 25% load step change (75%-50%-25% of Io)
4. Measured Input reflected ripple current with a simulated source inductance of 12uH.
5. Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.
6. Operation under no-load conditions will not damage these devices, however they may not meet all listed specifications.
7. Input filter components are be required to help meet conducted emission class A, which application refer to the EMI Filter of design & feature configuration.
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, 220uF/100V.

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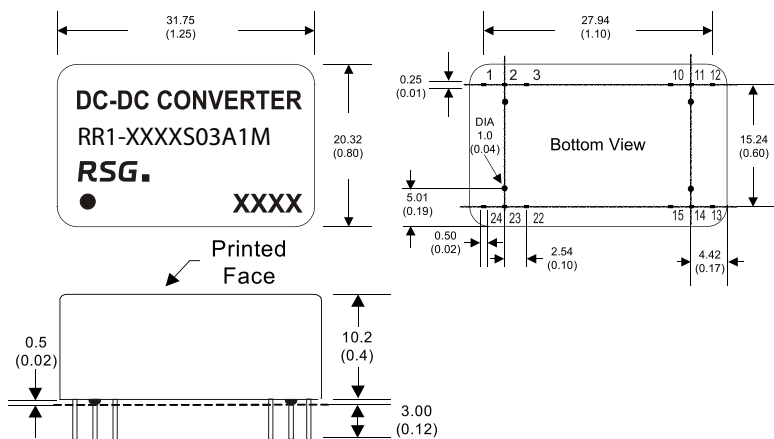
MECHANICAL SPECIFICATIONS



24 Pin DIL Package
Non-Conductive Plastic

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



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)
4. Stand-off tolerance: ±0.1 (±0.004)

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