

RR5-S03/D03

3.0 Watt 4:1 regulated
single & dual output



RR-series, DIL 24 package, metal version, pic. similar

OUTPUT SPECIFICATIONS

| | |
|---------------------------------------|-------------|
| Voltage accuracy | ± 1% |
| Line regulation | ± 0.5% |
| Load regulation | ± 0.5% |
| Ripple & Noise (20 MHz bandwidth) (1) | 60 mV pk-pk |
| Short circuit protection | Continuous |
| Temperature coefficient | ± 0.02%/°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) | 35 mA pk-pk |

GENERAL SPECIFICATIONS

| | |
|---|------------------|
| Efficiency | See table |
| I/O isolation voltage (3 sec.) Input/Output | 1500~3500 VDC |
| Metal case / input & output | 1000 VDC |
| I/O isolation capacitance | 60 pF typ. |
| I/O isolation resistance | 1000 M Ohm |
| Switching frequency | 100~400 kHz |
| Humidity | 95% rel. H |
| Reliability calculated MTBF (MIL-HDBK-217F) | > 2.199 Mhrs. |
| Safety standard (designed to meet) | IEC 60950-1:2001 |

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 | Ø 0.5 mm brass solder-coated |
| Potting material | Epoxy (UL94V-0 rated) |
| Weight | Metal 15 g, Plastic 12.5 g |
| Dimensions | 1.25" x 0.8" x 0.4" |

ENVIRONMENT SPECIFICATIONS

| | |
|--|-------------------|
| Operating temperature (See derating curve) | -25/-40°C ~ 85°C |
| Maximum case temperature | 100°C |
| Storage temperature | -40°C ~ 125°C |
| Cooling | Nature convection |

- DIP24 package, wide 4:1 input range
- Full SMD technology
- 1500 VDC isolation up to 3500 VDC isolation
- Continuous short circuit protection
- Efficiency up to 80%
- -25/-40°C ~ 85°C operation temperature range
- Optional metal case

ABSOLUTE MAXIMUM RATINGS (4)

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

| | |
|----------------------------|----------------------------|
| Input voltage (100 mS) | |
| 24 modes | -0.7 ~ 40 VDC |
| 48 modes | -0.7 ~ 80 VDC |
| Lead soldering temperature | 260°C |
| | (1.5 mm from case 10 sec.) |

All specifications typical at $T_a = 25^\circ\text{C}$, nominal input voltage and full load unless otherwise specified.

The information and specifications contained in this data sheet are believed to be correct at time of publication. However, we accept no responsibility for consequences arising from printing errors or inaccuracies. Subject to change without notice.

NOTE

- 1) Typical value at nominal input voltage and full load.
- 2) Tested by nominal V_{in} and constant resistor load.
- 3) Measured input reflected ripple current with a simulated source inductance of 12µH.
- 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 single models. Please ask for detail value.

The models listed are just for standard type. If you need a special specification product, please contact our service. Phone: +49 69 984047-0, mail to: info@rsg-electronic.de or use the forms on www.rsg-electronic.de („Kontakt“).

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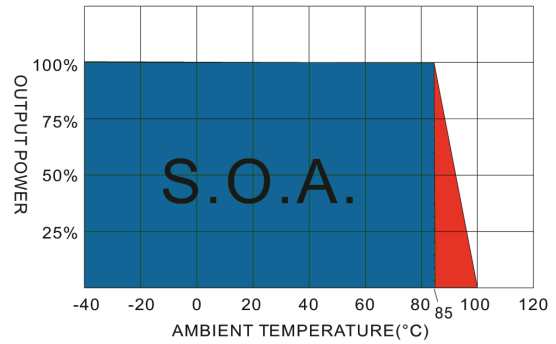
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NUMBER STRUCTURE

| | | | | | |
|---------------------------------------|---|-----------------------------------|-----------------------------------|-------------------------|--|
| RR5 - XX | XX | S | 03 | A | 1 (M-J/P/K)* |
| Name/Package RR5=DIL24 | Output 05=5V 09=9V 12=12V 15=15V 24=24V | Type S=Single D=Dual | Power 03=3W internal | Code internal | Isolation 1=1.5 kVDC 3=3.5 kVDC |
| Input 24=9~36V 48=18~72V | | | | | |

* Standard version in plastic case. Add suffix „M“ for metal case!
Please see Pinout-versions page 3 and add suffix „J“, „P“ or „K“!

DERATING CURVE (J/K-Models)



MODEL SELECTION GUIDE

| Model Number | Input Range VDC | Input current No Load / Full Load (mA) | Output VDC | Output current Min. Load / Full Load (mA) | Efficiency @FL (%) | Capacitor Load (μF) |
|---------------|-----------------|--|------------|---|--------------------|---------------------|
| RR5-2405S03AX | 9-36 | 20 / 173 | 5 | 200 / 600 | 72 | 2200 |
| RR5-2409S03AX | 9-36 | 20 / 168 | 9 | 111 / 333 | 74 | 470 |
| RR5-2412S03AX | 9-36 | 20 / 164 | 12 | 83.3 / 250 | 76 | 470 |
| RR5-2415S03AX | 9-36 | 20 / 164 | 15 | 66.7 / 200 | 76 | 470 |
| RR5-2424S03AX | 9-36 | 20 / 166 | 24 | 41.7 / 125 | 75 | 220 |
| RR5-2405D03AX | 9-36 | 20 / 178 | ±5 | ±100 / ±300 | 70 | ±1000 |
| RR5-2409D03AX | 9-36 | 20 / 173 | ±9 | ±55.7 / ±167 | 72 | ±220 |
| RR5-2412D03AX | 9-36 | 20 / 168 | ±12 | ±41.7 / ±125 | 74 | ±220 |
| RR5-2415D03AX | 9-36 | 20 / 168 | ±15 | ±33.3 / ±100 | 74 | ±220 |
| RR5-2424D03AX | 9-36 | 30 / 171 | ±24 | ±21 / ±63 | 73 | ±100 |
| RR5-4805S03AX | 18-72 | 10 / 83 | 5 | 200 / 600 | 75 | 2200 |
| RR5-4809S03AX | 18-72 | 10 / 81 | 9 | 111 / 333 | 77 | 470 |
| RR5-4812S03AX | 18-72 | 10 / 78 | 12 | 83.3 / 250 | 80 | 470 |
| RR5-4815S03AX | 18-72 | 10 / 78 | 15 | 66.7 / 200 | 80 | 470 |
| RR5-4824S03AX | 18-72 | 10 / 80 | 24 | 41.7 / 125 | 78 | 220 |
| RR5-4805D03AX | 18-72 | 10 / 85 | ±5 | ±100 / ±300 | 73 | ±1000 |
| RR5-4809D03AX | 18-72 | 10 / 83 | ±9 | ±55.7 / ±167 | 75 | ±220 |
| RR5-4812D03AX | 18-72 | 10 / 80 | ±12 | ±41.7 / ±125 | 78 | ±220 |
| RR5-4815D03AX | 18-72 | 10 / 80 | ±15 | ±33.3 / ±100 | 78 | ±220 |
| RR5-4824D03AX | 18-72 | 10 / 82 | ±24 | ±21 / ±63 | 76 | ±100 |

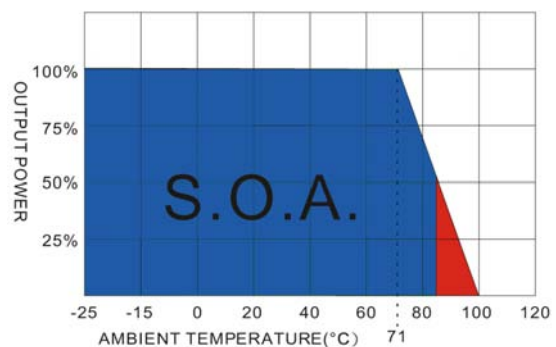
Please attend:

Operation temperature range **-J series** and **-K series**:
-40°C~ 85°C.

Operation temperature range **-P series**:
-25°C~ 85°C

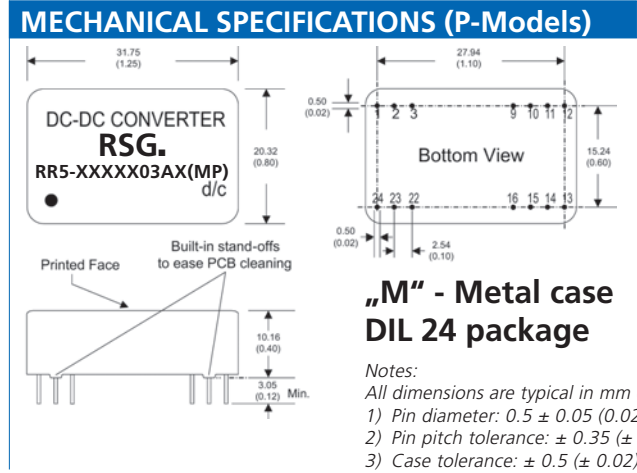
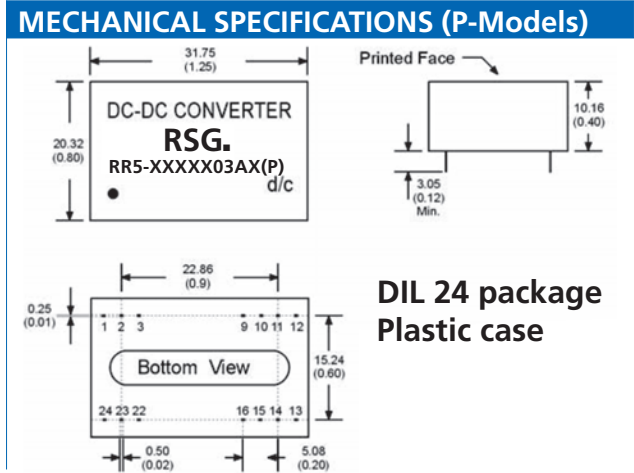
Also please attend the different deratings (here, page 2) and Pin-out versions (pages 3 and 4).

DERATING CURVE (P-Models)



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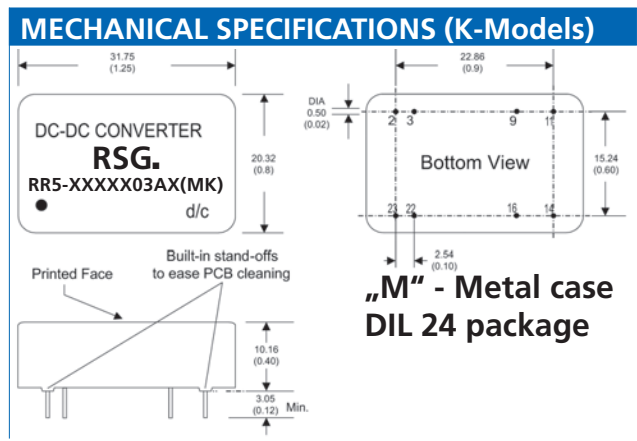
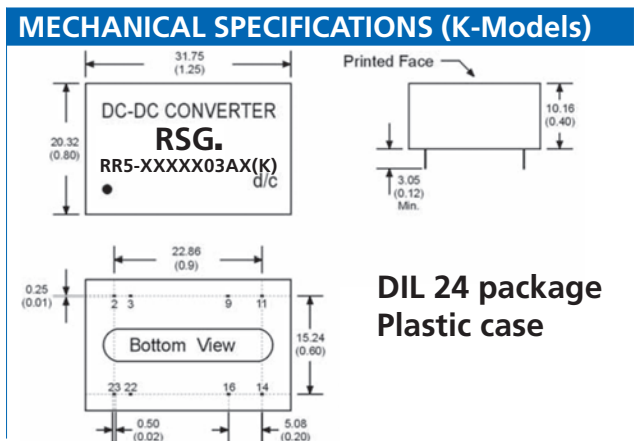


PIN CONNECTIONS (P-Models)

| Pin Number | Single | Dual |
|------------|-----------|-----------|
| 1 | +V Input | +V Input |
| 2 | N.C. | -V Output |
| 3 | N.C. | Common |
| 9 | N.P. | N.P. |
| 10 | -V Output | Common |
| 11 | +V Output | +V Output |
| 12 | -V Input | -V Input |
| 13 | -V Input | -V Input |
| 14 | +V Output | +V Output |
| 15 | -V Output | Common |
| 16 | N.P. | N.P. |
| 22 | N.C. | Common |
| 23 | N.C. | -V Output |
| 24 | +V Input | +V Input |

PIN CONNECTIONS (P-Models High Isolation)

| Pin Number | Single | Dual |
|------------|-----------|-----------|
| 1 | N.P. | N.P. |
| 2 | -V Input | -V Input |
| 3 | -V Input | -V Input |
| 9 | N.C. | Common |
| 10 | N.P. | N.P. |
| 11 | N.C. | -V Output |
| 12 | N.P. | N.P. |
| 13 | N.P. | N.P. |
| 14 | +V Output | +V Output |
| 15 | N.P. | N.P. |
| 16 | -V Output | Common |
| 22 | +V Input | +V Input |
| 23 | +V Input | +V Input |
| 24 | N.P. | N.P. |



PIN CONNECTIONS (K-Models)

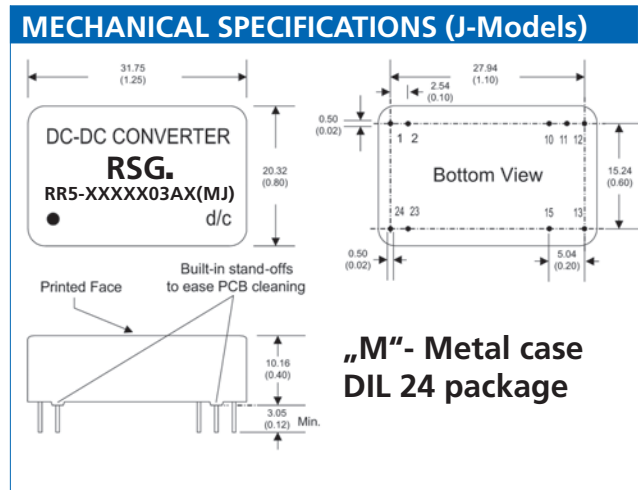
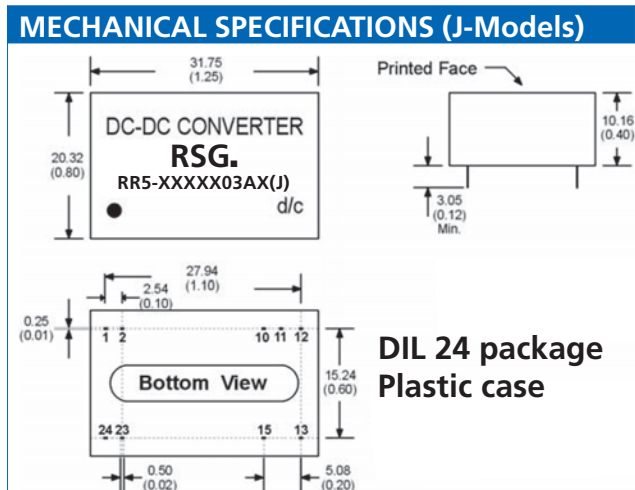
| Pin Number | Single | Dual |
|------------|-----------|-----------|
| 2 | -V Input | -V Input |
| 3 | -V Input | -V Input |
| 9 | N.P. | Common |
| 11 | N.C. | -V Output |
| 14 | +V Output | +V Output |
| 16 | -V Output | Common |
| 22 | +V Input | +V Input |
| 23 | +V Input | +V Input |

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

The Pin connections for High Isolation „K“-Models are the same as for normal ones!

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PIN CONNECTIONS (J-Models)

| Pin Number | Single | Dual |
|------------|-----------|-----------|
| 1 | +V Input | +V Input |
| 2 | +V Input | +V Input |
| 10 | N.C. | Common |
| 11 | N.C. | Common |
| 12 | -V Output | N.C. |
| 13 | +V Output | -V Output |
| 15 | N.C. | +V Output |
| 23 | -V Input | -V Input |
| 24 | -V Input | -V Input |

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

The Pin connections for High Isolation „J“-Models are the same as for normal ones!