

# RS5/RD5-R10/RD10

- 8 Pin SIL/ 16Pin DIL Package
- Wide 2:1 Input Range
- 1000VDC Isolation
- Up to 3000VDC Isolation
- Continuous Short Circuit Protection
- Efficiency up to 77%
- Operating Temperature Range  
-40° ~ +85°C
- Non Conductive Black Plastic Case,  
Metal Case (optional)
- Remote on/off Control (optional)

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: 100°C                                       |
| Line regulation: $\pm 0.5\%$ max.                           | Storage Temperature: -40°C ~ +125°C                                   |
| LOAD REGULATION: from 25% to 100% Loading: $\pm 1\%$ max.   | Cooling: Nature Convection                                            |
| Cross Regulation (Dual Output): $\pm 5\%$                   | PHYSICAL SPECIFICATIONS:                                              |
| Short Circuit Protection: Indefinite (Automatic Recovery)   | Case Material: Non-conductive Black Plastic (UL94V-0 rated)           |
| Ripple noise (20Mhz bandwidth): 80mV pk-pk max.             | Nickel-coated Copper                                                  |
| Temperature coefficient: $\pm 0.02\%/^{\circ}\text{C}$      | PIN Material SIP Case: Alloy42 Solder-coated                          |
| Capacitor load: See table                                   | PIN Material DIP Case: Brass Solder-coated $\varnothing 0.5\text{mm}$ |
| INPUT SPECIFICATIONS                                        | Potting Material: Epoxy (UL94V-0 rated)                               |
| Voltage Range: See table                                    | Weight Case-Sip: 4.5g, (6.0g Metal Case)                              |
| Max. Input Current: See table                               | Weight Case-DIP: 6.5g, (8g Metal-Case)                                |
| No-Load/Full-Load Input Current: See table                  | Dimmension SIP: 0.86 x 0.36 x 0.44"                                   |
| Input Filter: Capacitors                                    | Dimmension DIP: 0.92 x 0.55 x 0.40"                                   |
| Input Reflected Ripple Current: 35mA pk-pk                  | ABSOLUTE MAXIMUM RATINGS (1)                                          |
| GENERAL SPECIFICATIONS                                      | Input Surge Voltage (100ms)/                                          |
| Efficiency: See table                                       | 5 V Models: 12VDC max.                                                |
| I/O Isolation Voltage (60sec): 1000 ~ 3000VDC               | 12V Models: 24VDC max.                                                |
| I/O Isolation Voltage Metal Case: 1000VDC                   | 24V Models: 40VDC max.                                                |
| I/O Isolation Capacitance: 60pF typ. max.                   | 48V Models: 80VDC max.                                                |
| I/O Isolation Resistance: 1000M Ohm, min                    | Soldering Temperature: 260°C max.                                     |
| Switching Frequency: 100 - 650kHz                           | EMC SPECIFICATIONS (2)                                                |
| Humidity: 95% rel H                                         | Radiated-/Conducted Emissions: EN55022 Class A (see EMI Filter note)  |
| Reliability Calculated MTBF: > 1.66Mhrs<br>(MIL-HDBK-217 f) | ESD: IEC 61000-4-2 Perf.Criteria B                                    |
| Safety Standard: (designed to meet): IEC EN 60950-1         | RS: IEC 61000-4-3 Perf.Criteria A                                     |
| Remote ON/OFF Controll: see note                            | EFT: IEC 61000-4-4 Perf.Criteria B                                    |
|                                                             | SURGE: IEC 61000-4-5 Perf.Criteria B                                  |
|                                                             | 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.

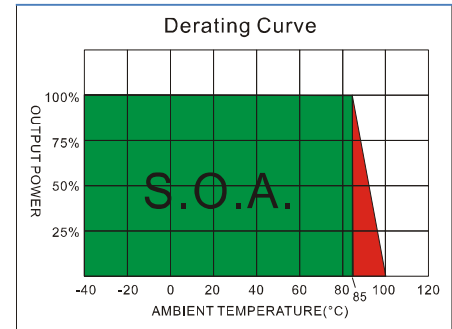
2) (1.5mm from case 10sec Max.)

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.

## NUMBER STRUCTURE

| RS5 -                                                                  | XX                                                           | XX                                                                    | XX                                                 | XX                              | A                | X * X                                |
|------------------------------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------------------------|----------------------------------------------------|---------------------------------|------------------|--------------------------------------|
| Name/Package<br>RS5=SIL8<br>RD5=DIL16                                  | Input<br>05=4.5-9.0V<br>12=9.0-18V<br>24=18-36V<br>48=36-72V | Output<br>03=3.3V<br>05=5.0V<br>09=9.0V<br>12=12V<br>15=15V<br>24=24V | Type<br>R = Single regulated<br>RD= Dual regulated | Power (W)<br>10=1.00<br>20=2.00 | Code<br>internal | Isolation (kVDC)<br>1= 1.0<br>3= 3.0 |
| * Optional<br>M= metal case<br>C = Control Pin<br>Z = Traco TMR series |                                                              |                                                                       |                                                    |                                 |                  |                                      |



## MODEL SELECTION GUIDE

| MODEL NUMBER  | INPUT Voltage Range (Vdc) | INPUT Current |           | OUTPUT Voltage (Vdc) | OUTPUT Current |           | EFFICIENCY @FL (%) | Capacitor Load(uF) |
|---------------|---------------------------|---------------|-----------|----------------------|----------------|-----------|--------------------|--------------------|
|               |                           | No-Load       | Full Load |                      | Min. load      | Full load |                    |                    |
| RS5-0503R10AX | 4.5-9                     | 15            | 298       | 3.3                  | 76             | 303       | 67                 | 3300               |
| RS5-0505R10AX | 4.5-9                     | 15            | 298       | 5                    | 50             | 200       | 67                 | 3300               |
| RS5-0509R10AX | 4.5-9                     | 40            | 285       | 9                    | 28             | 111       | 70                 | 470                |
| RS5-0512R10AX | 4.5-9                     | 55            | 285       | 12                   | 21             | 83        | 70                 | 470                |
| RS5-0515R10AX | 4.5-9                     | 55            | 285       | 15                   | 17             | 67        | 70                 | 470                |
| RS5-0524R10AX | 4.5-9                     | 70            | 294       | 24                   | 10             | 42        | 68                 | 220                |
| RS5-1203R10AX | 9-18                      | 15            | 119       | 3.3                  | 76             | 303       | 70                 | 3300               |
| RS5-1205R10AX | 9-18                      | 15            | 115       | 5                    | 50             | 200       | 72                 | 3300               |
| RS5-1209R10AX | 9-18                      | 15            | 108       | 9                    | 28             | 111       | 77                 | 470                |
| RS5-1212R10AX | 9-18                      | 15            | 108       | 12                   | 21             | 83        | 77                 | 470                |
| RS5-1215R10AX | 9-18                      | 15            | 108       | 15                   | 17             | 67        | 77                 | 470                |
| RS5-1224R10AX | 9-18                      | 15            | 114       | 24                   | 10             | 42        | 73                 | 220                |
| RS5-2403R10AX | 18-36                     | 8             | 59        | 3.3                  | 76             | 303       | 70                 | 3300               |
| RS5-2405R10AX | 18-36                     | 8             | 57        | 5                    | 50             | 200       | 72                 | 3300               |
| RS5-2409R10AX | 18-36                     | 8             | 55        | 9                    | 28             | 111       | 75                 | 470                |
| RS5-2412R10AX | 18-36                     | 8             | 55        | 12                   | 21             | 83        | 75                 | 470                |
| RS5-2415R10AX | 18-36                     | 8             | 55        | 15                   | 17             | 67        | 75                 | 470                |
| RS5-2424R10AX | 18-36                     | 8             | 55        | 24                   | 10             | 42        | 75                 | 220                |
| RS5-4803R10AX | 36-72                     | 6             | 31        | 3.3                  | 76             | 303       | 66                 | 3300               |
| RS5-4805R10AX | 36-72                     | 6             | 30        | 5                    | 50             | 200       | 68                 | 3300               |
| RS5-4809R10AX | 36-72                     | 6             | 29        | 9                    | 28             | 111       | 70                 | 470                |
| RS5-4812R10AX | 36-72                     | 6             | 29        | 12                   | 21             | 83        | 70                 | 470                |
| RS5-4815R10AX | 36-72                     | 6             | 29        | 15                   | 17             | 67        | 70                 | 470                |
| RS5-4824R10AX | 36-72                     | 6             | 30        | 24                   | 10             | 42        | 68                 | 220                |
| RD5-0503R10AX | 4.5-9                     | 15            | 298       | 3.3                  | 76             | 303       | 67                 | 3300               |
| RD5-0505R10AX | 4.5-9                     | 15            | 298       | 5                    | 50             | 200       | 67                 | 3300               |
| RD5-0509R10AX | 4.5-9                     | 40            | 285       | 9                    | 28             | 111       | 70                 | 470                |
| RD5-0512R10AX | 4.5-9                     | 55            | 285       | 12                   | 21             | 83        | 70                 | 470                |
| RD5-0515R10AX | 4.5-9                     | 55            | 285       | 15                   | 17             | 67        | 70                 | 470                |
| RD5-0524R10AX | 4.5-9                     | 70            | 294       | 24                   | 10             | 42        | 68                 | 220                |
| RD5-1203R10AX | 9-18                      | 15            | 119       | 3.3                  | 76             | 303       | 70                 | 3300               |
| RD5-1205R10AX | 9-18                      | 15            | 115       | 5                    | 50             | 200       | 72                 | 3300               |
| RD5-1209R10AX | 9-18                      | 15            | 108       | 9                    | 28             | 111       | 77                 | 470                |
| RD5-1212R10AX | 9-18                      | 15            | 108       | 12                   | 21             | 83        | 77                 | 470                |
| RD5-1215R10AX | 9-18                      | 15            | 108       | 15                   | 17             | 67        | 77                 | 470                |
| RD5-1224R10AX | 9-18                      | 15            | 114       | 24                   | 10             | 42        | 73                 | 220                |

Suffix "3" means 3KVdc isolation

Suffix "C" means with control pin

Suffix "M" means with Metal Case

RS5/RD5-R10/RD10

| 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) |                   |                    |
| RD5-2403R10AX  | 18-36                     | 8             | 59             | 3.3                  | 76             | 303            | 70                | 3300               |
| RD5-2405R10AX  | 18-36                     | 8             | 57             | 5                    | 50             | 200            | 72                | 3300               |
| RD5-2409R10AX  | 18-36                     | 8             | 55             | 9                    | 28             | 111            | 75                | 470                |
| RD5-2412R10AX  | 18-36                     | 8             | 55             | 12                   | 21             | 83             | 75                | 470                |
| RD5-2415R10AX  | 18-36                     | 8             | 55             | 15                   | 17             | 67             | 75                | 470                |
| RD5-2424R10AX  | 18-36                     | 8             | 55             | 24                   | 10             | 42             | 75                | 220                |
| RD5-4803R10AX  | 36-72                     | 6             | 31             | 3.3                  | 76             | 303            | 66                | 3300               |
| RD5-4805R10AX  | 36-72                     | 6             | 30             | 5                    | 50             | 200            | 68                | 3300               |
| RD5-4809R10AX  | 36-72                     | 6             | 29             | 9                    | 28             | 111            | 70                | 470                |
| RD5-4812R10AX  | 36-72                     | 6             | 29             | 12                   | 21             | 83             | 70                | 470                |
| RD5-4815R10AX  | 36-72                     | 6             | 29             | 15                   | 17             | 67             | 70                | 470                |
| RD5-4824R10AX  | 36-72                     | 6             | 30             | 24                   | 10             | 42             | 68                | 220                |
| RS5-0503RD10AX | 4.5-9                     | 15            | 285            | ±3.3                 | ±38            | ±152           | 70                | ±1000              |
| RS5-0505RD10AX | 4.5-9                     | 15            | 270            | ±5                   | ±25            | ±100           | 74                | ±1000              |
| RS5-0509RD10AX | 4.5-9                     | 20            | 270            | ±9                   | ±14            | ±56            | 74                | ±220               |
| RS5-0512RD10AX | 4.5-9                     | 20            | 266            | ±12                  | ±10            | ±42            | 75                | ±220               |
| RS5-0515RD10AX | 4.5-9                     | 40            | 285            | ±15                  | ±8             | ±33            | 70                | ±220               |
| RS5-0524RD10AX | 4.5-9                     | 70            | 298            | ±24                  | ±5             | ±21            | 67                | ±100               |
| RS5-1203RD10AX | 9-18                      | 15            | 119            | ±3.3                 | ±38            | ±152           | 70                | ±1000              |
| RS5-1205RD10AX | 9-18                      | 15            | 115            | ±5                   | ±25            | ±100           | 72                | ±1000              |
| RS5-1209RD10AX | 9-18                      | 15            | 109            | ±9                   | ±14            | ±56            | 76                | ±220               |
| RS5-1212RD10AX | 9-18                      | 15            | 109            | ±12                  | ±10            | ±42            | 76                | ±220               |
| RS5-1215RD10AX | 9-18                      | 15            | 112            | ±15                  | ±8             | ±33            | 74                | ±220               |
| RS5-1224RD10AX | 9-18                      | 40            | 124            | ±24                  | ±5             | ±21            | 67                | ±100               |
| RS5-2403RD10AX | 18-36                     | 8             | 59             | ±3.3                 | ±38            | ±152           | 70                | ±1000              |
| RS5-2405RD10AX | 18-36                     | 8             | 59             | ±5                   | ±25            | ±100           | 70                | ±1000              |
| RS5-2409RD10AX | 18-36                     | 8             | 54             | ±9                   | ±14            | ±56            | 76                | ±220               |
| RS5-2412RD10AX | 18-36                     | 8             | 54             | ±12                  | ±10            | ±42            | 77                | ±220               |
| RS5-2415RD10AX | 18-36                     | 8             | 55             | ±15                  | ±8             | ±33            | 75                | ±220               |
| RS5-2424RD10AX | 18-36                     | 20            | 59             | ±24                  | ±5             | ±21            | 70                | ±100               |
| RS5-4803RD10AX | 36-72                     | 6             | 30             | ±3.3                 | ±38            | ±152           | 70                | ±1000              |
| RS5-4805RD10AX | 36-72                     | 6             | 30             | ±5                   | ±25            | ±100           | 70                | ±1000              |
| RS5-4809RD10AX | 36-72                     | 6             | 28             | ±9                   | ±14            | ±56            | 74                | ±220               |
| RS5-4812RD10AX | 36-72                     | 6             | 27             | ±12                  | ±10            | ±42            | 76                | ±220               |
| RS5-4815RD10AX | 36-72                     | 6             | 29             | ±15                  | ±8             | ±33            | 72                | ±220               |
| RS5-4824RD10AX | 36-72                     | 12            | 30             | ±24                  | ±5             | ±21            | 70                | ±100               |
| RD5-0503RD10AX | 4.5-9                     | 15            | 285            | ±3.3                 | ±38            | ±152           | 70                | ±1000              |
| RD5-0505RD10AX | 4.5-9                     | 15            | 270            | ±5                   | ±25            | ±100           | 74                | ±1000              |
| RD5-0509RD10AX | 4.5-9                     | 20            | 270            | ±9                   | ±14            | ±56            | 74                | ±220               |
| RD5-0512RD10AX | 4.5-9                     | 20            | 266            | ±12                  | ±10            | ±42            | 75                | ±220               |
| RD5-0515RD10AX | 4.5-9                     | 40            | 285            | ±15                  | ±8             | ±33            | 70                | ±220               |
| RD5-0524RD10AX | 4.5-9                     | 70            | 298            | ±24                  | ±5             | ±21            | 67                | ±100               |
| RD5-1203RD10AX | 9-18                      | 15            | 119            | ±3.3                 | ±38            | ±152           | 70                | ±1000              |
| RD5-1205RD10AX | 9-18                      | 15            | 115            | ±5                   | ±25            | ±100           | 72                | ±1000              |
| RD5-1209RD10AX | 9-18                      | 15            | 109            | ±9                   | ±14            | ±56            | 76                | ±220               |
| RD5-1212RD10AX | 9-18                      | 15            | 109            | ±12                  | ±10            | ±42            | 76                | ±220               |
| RD5-1215RD10AX | 9-18                      | 15            | 112            | ±15                  | ±8             | ±33            | 74                | ±220               |
| RD5-1224RD10AX | 9-18                      | 40            | 124            | ±24                  | ±5             | ±21            | 67                | ±100               |
| RD5-2403RD10AX | 18-36                     | 8             | 59             | ±3.3                 | ±38            | ±152           | 70                | ±1000              |
| RD5-2405RD10AX | 18-36                     | 8             | 59             | ±5                   | ±25            | ±100           | 70                | ±1000              |

Suffix "3" means 3KVdc isolation

Suffix "C" means with control pin

Suffix "M" means with Metal Case

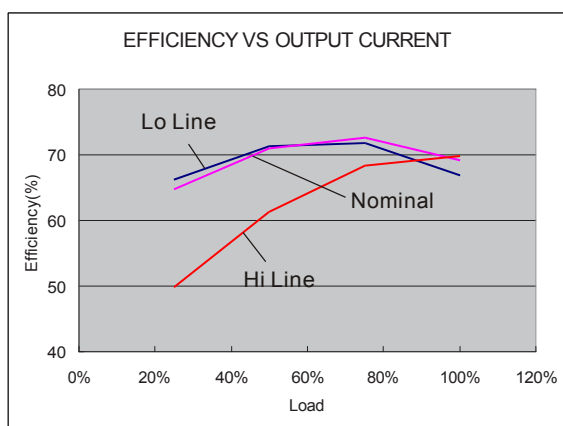
# RS5/RD5-R10/RD10

| MODEL NUMBER   | INPUT Voltage Range | INPUT Current |                | OUTPUT Voltage (Vdc) | OUTPUT Current |                | EFFICIENCY @FL(%) | Capacitor Load(uF) |
|----------------|---------------------|---------------|----------------|----------------------|----------------|----------------|-------------------|--------------------|
|                |                     | No-Load (mA)  | Full Load (mA) |                      | Min. load (mA) | Full load (mA) |                   |                    |
| RD5-2409RD10AX | 18-36               | 8             | 54             | ±9                   | ±14            | ±56            | 76                | ±220               |
| RD5-2412RD10AX | 18-36               | 8             | 54             | ±12                  | ±10            | ±42            | 77                | ±220               |
| RD5-2415RD10AX | 18-36               | 8             | 55             | ±15                  | ±8             | ±33            | 75                | ±220               |
| RD5-2424RD10AX | 18-36               | 20            | 59             | ±24                  | ±5             | ±21            | 70                | ±100               |
| RD5-4803RD10AX | 36-72               | 6             | 30             | ±3.3                 | ±38            | ±152           | 70                | ±1000              |
| RD5-4805RD10AX | 36-72               | 6             | 30             | ±5                   | ±25            | ±100           | 70                | ±1000              |
| RD5-4809RD10AX | 36-72               | 6             | 28             | ±9                   | ±14            | ±56            | 74                | ±220               |
| RD5-4812RD10AX | 36-72               | 6             | 27             | ±12                  | ±10            | ±42            | 76                | ±220               |
| RD5-4815RD10AX | 36-72               | 6             | 29             | ±15                  | ±8             | ±33            | 72                | ±220               |
| RD5-4824RD10AX | 36-72               | 12            | 30             | ±24                  | ±5             | ±21            | 70                | ±100               |

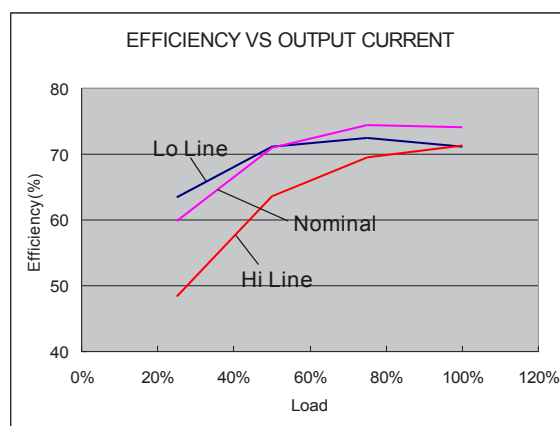
Suffix "3" means 3KVdc isolation

Suffix "C" means with control pin

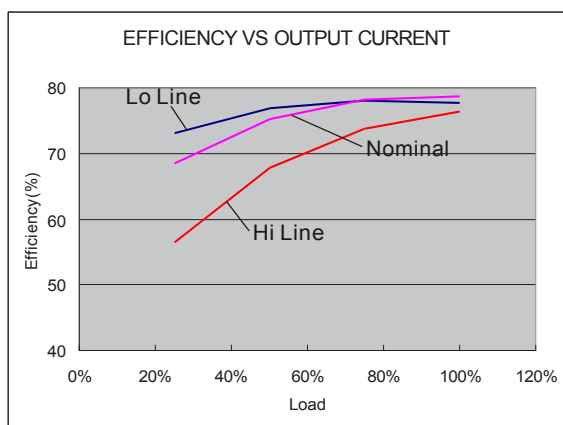
Suffix "M" means with Metal Case



05 Models



12 Models



24 Models

1. Maximum value at nominal input voltage and full load.
2. Typical value at nominal input voltage and full load.
3. 25% minimum loading is needed.
4. One load is 25% to 100% load, the other load is 100% load, the output voltage variable rate is within ±5%.
5. Ripple/Noise measured with 20MHz bandwidth.
6. Test by nominal input voltage and constant resistor load.
7. Measured Input reflected ripple current with a simulated source inductance of 12uH.
8. Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.
9. Operation under no-load conditions will not damage these devices, however they may not meet all listed specifications.
10. It's necessary to add minimum capacitor in output for some models, please check single model datasheet for detail value.

#### 11. MCU (Master Control Unit)

The MCU Pin Voltage is referenced to -Vin(Pin 1)

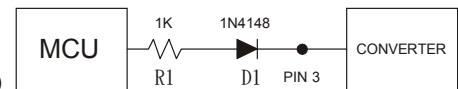
ON: 0 ~ 0.8VDC Max.

(Short circuit Pin 1 and Pin 3) or open circuit

OFF: 4.5 to 15VDC Max.(or 3.5mA to 15mA Max.)(via R1 、 D1)

OFF idle current: 5mA typ

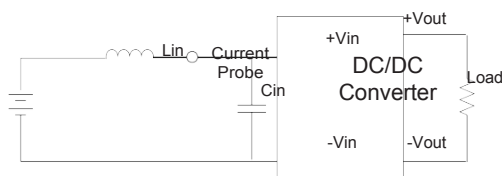
#### Connection example



12. Input filter components are required to help meet conducted emission class A, which application refer to the EMI Filter of design & test configuration.
13. 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.

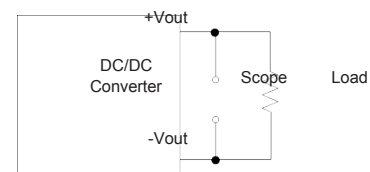
### Input Reflected Ripple Current Test Step

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



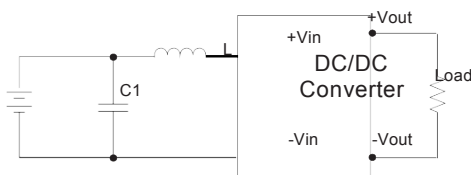
### Output Ripple & Noise Measurement Test

The Scope measurement bandwidth is 20MHz.



### EMI Filter

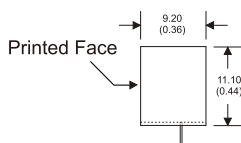
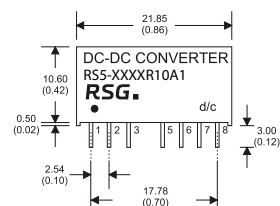
Input filter components (C1, L) are used to help meet conducted emissions requirement for the module. These components should be mounted as close as possible to the module; and all leads should be minimized to decrease radiated noise.



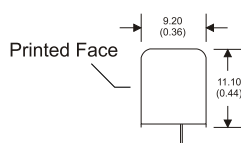
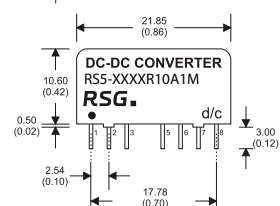
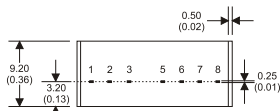
|             | C1         | L    |
|-------------|------------|------|
| RS5/RD5 -1W | 100uF/100V | 12uH |

The models listed above are just for standard type.  
If you need the special specification product, please contact us:  
[info@rsg-electronic.de](mailto:info@rsg-electronic.de)

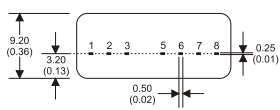
# RS5/RD5-R10/RD10



8 Pin SIL Package  
Non-Conductive Plastic



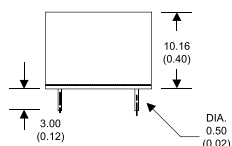
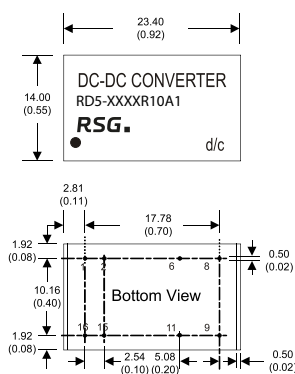
8 Pin SIL Package  
Nickel-Coated Copper



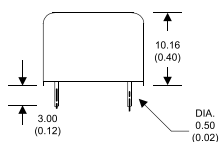
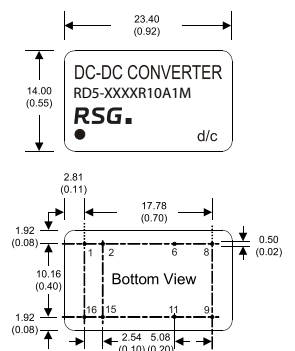
Notes: All dimensions are typical in millimeters ( inches ).  
1. Pin diameter: 0.5  $\pm$  0.05 ( 0.02  $\pm$  0.002 )  
2. Pin pitch and length tolerance:  $\pm$  0.35 (  $\pm$  0.014 )  
3. Case Tolerance:  $\pm$  0.5 (  $\pm$  0.02 )

| PIN CONNECTIONS |               |               |               |
|-----------------|---------------|---------------|---------------|
| PIN NUMBER      | SINGLE        | DUAL/(SD)     | DUAL/(SZ)     |
| 1               | -V Input      | -V Input      | -V Input      |
| 2               | +V Input      | +V Input      | +V Input      |
| 3               | N.P.          | N.C.          | N.C.          |
| 5               | N.P.          | N.C.          | N.C.          |
| 6               | +V Output     | +V Output     | +V Output     |
| 7               | -V Output     | -V Output     | Common        |
| 8               | N.C.          | Common        | -V Output     |
| PIN NUMBER      | SINGLE+C      | DUAL/(SD+C)   | DUAL/(SZ+C)   |
| 1               | -V Input      | -V Input      | -V Input      |
| 2               | +V Input      | +V Input      | +V Input      |
| 3               | Remote On/Off | Remote On/Off | Remote On/Off |
| 5               | N.C.          | N.C.          | N.C.          |
| 6               | +V Output     | +V Output     | +V Output     |
| 7               | -V Output     | -V Output     | Common        |
| 8               | N.C.          | Common        | -V Output     |

( The Pin Connection of high isolation one is the same with normal one. )



16 Pin DIL Package  
Non-Conductive Plastic



16 Pin DIL Package  
Nickel-Coated Copper

| PIN CONNECTIONS |           |           |
|-----------------|-----------|-----------|
| PIN NUMBER      | SINGLE    | DUAL      |
| 1               | -V Input  | -V Input  |
| 2               | -V Input  | -V Input  |
| 6               | N.C.      | Common    |
| 8               | N.C.      | -V Output |
| 9               | +V Output | +V Output |
| 11              | -V Output | Common    |
| 15              | +V Input  | +V Input  |
| 16              | +V Input  | +V Input  |

( The Pin Connection of high isolation one is the same with normal one. )

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](mailto:sales@rsg-electronic.de) or +49 69-984047-41/-28