

# RS1/RD1-S10

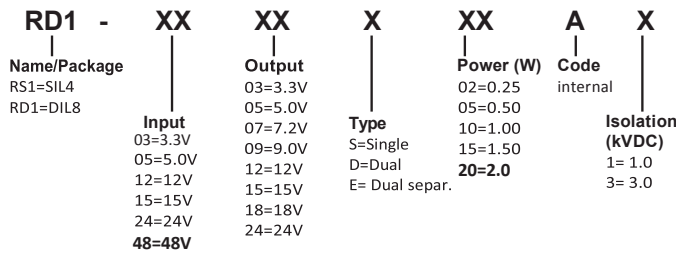
- 4 Pin SIL/ 8Pin DIL Package
- 1000VDC Isolation
- Up to 3000VDC Isolation
- Low Ripple and Noise
- Efficiency up to 83%
- Operating Temperature Range:  
-40° ~ +85°C
- Non Conductive Black Plastic Case
- EMI Complies with EN55022 Class B



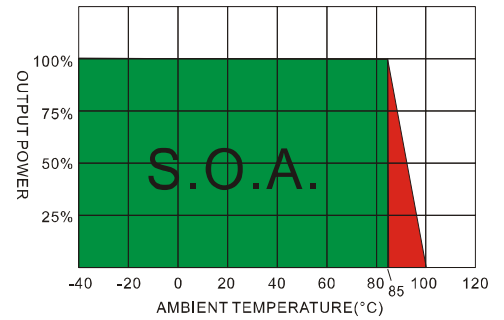
OUTPUT SPECIFICATION	ENVIRONMENTAL SPECIFICATION
Voltage accuracy: ±3%	Operating Temperature range: -40°C ~+85°C (see Derating Curve)
Line regulation: ±1.2% (per 1%Vin Change)	Maximum Case Temperature: 100°C
LOAD REGULATION: ±10% ( from 20 to 100%) Load	Storage Temperature : -40°C ~+125°C
Output 3.3V Model: ±20%	Cooling : Nature Convection
Ripple noise (20Mhz bandwidth): 100mV pk-pk	PHYSICAL SPECIFICATIONS:
Temperature coefficient: ±0.02% °C	Case Material: Non-conductive Black Plastic (UL94V-0 rated)
Capacitor load: see table	PIN Material SIP Case: Ø 0.5mm Alloy42 Solder-coated
INPUT SPECIFICATIONS	PIN Material DIP Case: Ø 0.5mm Brass Solder-coated
Voltage Range: ±10%	Potting Material: Epoxy (UL94V-0 rated)
Max. Input Current: see table	Weight Case- Sip: 1.5g
No-Load/Full-Load Input Current: see table	Weight Case-DIP: 1.8g
Input Filter: Capacitors	Dimmension SIP: 0.46 x 0.24 x 0.40"
Input Reflected Ripple Current : 20mA pk-pk	Dimmension DIP: 0.50 x 0.40 x 0.27"
GENERAL SPECIFICATIONS	ABSOLUTE MAXIMUM RATINGS (1)
Efficiency: See table	Input Surge Voltage (100ms)/
I/O Isolation Voltage (60sec): 1000 ~ 3000VDC	3.3V Models: 6VDC max
I/O Isolation Capacitance: 60pF typ.	5 V Models: 7VDC max
I/O Isolation Resistance: 1000M Ohm	12V Models: 15VDC max
Switching Frequency: Variable 80kHz	15V Models: 18VDC max
Humidity: 95% rel H	24V Models: 28VDC max
Reliability Calculated MTBF : >1.121Mhrs (MIL-HDBK-217 f)	48V Models: 54VDC max
Safety Standard: (designed to meet): IEC 60950-1	Soldering Temperature <sup>(2)</sup> : 260°C max.
EMC SPECIFICATIONS	
Radiated-/Conducted Emissions: EN55022 Class B	
ESD: IEC 61000-4-2 Perf.Criteria A	
RS: IEC 61000-4-3 Perf.Criteria A	
EFT: IEC 61000-4-4 Perf.Criteria A	
SURGE: IEC 61000-4-5 Perf.Criteria A	
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**



Derating Curve



**MODEL SELECTION GUIDE**

MODEL NUMBER	INPUT	INPUT Current		OUTPUT	OUTPUT Current		EFFICIENCY @FL(%)	Capacitor Load(µF)
	Voltage Range (Vdc)	No-Load (mA)	Full Load (mA)	Voltage (Vdc)	Full load (mA)			
RS1-0303S10AX	3.3	25	421	3.3	303	72	220	
RS1-0305S10AX	3.3	25	394	5	200	77	220	
RS1-0307S10AX	3.3	25	384	7.2	139	79	220	
RS1-0309S10AX	3.3	30	404	9	111	75	220	
RS1-0312S10AX	3.3	45	473	12	100	77	220	
RS1-0315S10AX	3.3	35	384	15	67	79	220	
RS1-0318S10AX	3.3	35	399	18	56	76	220	
RS1-0324S10AX	3.3	53	461	24	50	79	220	
RS1-0503S10AX	5	20	257	3.3	303	78	220	
RS1-0505S10AX	5	25	247	5	200	81	220	
RS1-0507S10AX	5	16	241	7.2	139	83	220	
RS1-0509S10AX	5	26	250	9	111	80	220	
RS1-0512S10AX	5	25	300	12	100	80	220	
RS1-0515S10AX	5	35	244	15	67	82	220	
RS1-0518S10AX	5	25	247	18	56	81	220	
RS1-0524S10AX	5	35	289	24	50	83	220	
RS1-1203S10AX	12	15	107	3.3	303	78	220	
RS1-1205S10AX	12	16	105	5	200	79	220	
RS1-1207S10AX	12	16	100	7.2	139	83	220	
RS1-1209S10AX	12	15	107	9	111	78	220	
RS1-1212S10AX	12	15	125	12	100	80	220	
RS1-1215S10AX	12	15	105	15	67	79	220	
RS1-1218S10AX	12	20	104	18	56	80	220	
RS1-1224S10AX	12	25	123	24	50	81	220	
RS1-1503S10AX	15	15	89	3.3	303	75	220	
RS1-1505S10AX	15	9	82	5	200	81	220	
RS1-1507S10AX	15	12	88	7.2	139	76	220	
RS1-1509S10AX	15	10	90	9	111	74	220	
RS1-1512S10AX	15	13	100	12	100	80	220	
RS1-1515S10AX	15	15	84	15	67	79	220	
RS1-1518S10AX	15	12	85	18	56	78	220	
RS1-1524S10AX	15	10	99	24	50	81	220	
RS1-2403S10AX	24	8	54	3.3	303	77	220	
RS1-2405S10AX	24	8	52	5	200	80	220	
RS1-2407S10AX	24	10	54	7.2	139	77	220	
RS1-2409S10AX	24	7	54	9	111	77	220	
RS1-2412S10AX	24	8	62	12	100	80	220	
RS1-2415S10AX	24	8	51	15	67	81	220	
RS1-2418S10AX	24	8	52	18	56	80	220	
RS1-2424S10AX	24	9	60	24	50	83	220	
RS1-4803S10AX	48	6	29	3.3	303	73	220	
RS1-485S10AX	48	6	28	5	200	74	220	
RS1-4807S10AX	48	7	27	7.2	139	77	220	
RS1-4809S10AX	48	5	27	9	111	78	220	
RS1-4812S10AX	48	5	32	12	100	77	220	
RS1-4815S10AX	48	5	27	15	67	76	220	
RS1-4818S10AX	48	8	28	18	56	75	220	
RS1-4824S10AX	48	8	31	24	50	80	220	

Suffix "3" means 3kVdc isolation

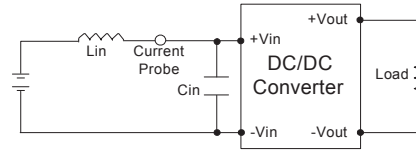
MODEL SELECTION GUIDE

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)			
RD1-0303S10AX	3.3	25	410	3.3	303	74	220	
RD1-0305S10AX	3.3	25	394	5	200	77	220	
RD1-0307S10AX	3.3	30	404	7.2	139	75	220	
RD1-0309S10AX	3.3	30	399	9	111	76	220	
RD1-0312S10AX	3.3	45	485	12	100	75	220	
RD1-0315S10AX	3.3	25	384	15	67	79	220	
RD1-0318S10AX	3.3	35	399	18	56	76	220	
RD1-0324S10AX	3.3	90	485	24	50	75	220	
RD1-0503S10AX	5	16	256	3.3	303	78	220	
RD1-0505S10AX	5	15	253	5	200	79	220	
RD1-0507S10AX	5	16	241	7.2	139	83	220	
RD1-0509S10AX	5	25	253	9	111	79	220	
RD1-0512S10AX	5	25	296	12	100	81	220	
RD1-0515S10AX	5	25	244	15	67	82	220	
RD1-0518S10AX	5	25	241	18	56	83	220	
RD1-0524S10AX	5	28	293	24	50	82	220	
RD1-1203S10AX	12	15	108	3.3	303	77	220	
RD1-1205S10AX	12	16	105	5	200	79	220	
RD1-1207S10AX	12	16	100	7.2	139	83	220	
RD1-1209S10AX	12	15	105	9	111	79	220	
RD1-1212S10AX	12	8	125	12	100	80	220	
RD1-1215S10AX	12	17	105	15	67	79	220	
RD1-1218S10AX	12	15	103	18	56	81	220	
RD1-1224S10AX	12	25	127	24	50	79	220	
RD1-1503S10AX	15	15	89	3.3	303	75	220	
RD1-1505S10AX	15	10	83	5	200	80	220	
RD1-1507S10AX	15	12	88	7.2	139	76	220	
RD1-1509S10AX	15	10	85	9	111	78	220	
RD1-1512S10AX	15	13	98	12	100	82	220	
RD1-1515S10AX	15	15	83	15	67	80	220	
RD1-1518S10AX	15	12	85	18	56	78	220	
RD1-1524S10AX	15	10	99	24	50	81	220	
RD1-2403S10AX	24	8	53	3.3	303	79	220	
RD1-2405S10AX	24	8	53	5	200	79	220	
RD1-2407S10AX	24	10	56	7.2	139	74	220	
RD1-2409S10AX	24	7	53	9	111	79	220	
RD1-2412S10AX	24	8	63	12	100	80	220	
RD1-2415S10AX	24	8	52	15	67	80	220	
RD1-2418S10AX	24	8	51	18	56	82	220	
RD1-2424S10AX	24	9	61	24	50	82	220	

Suffix "3" means 3KVdc isolation

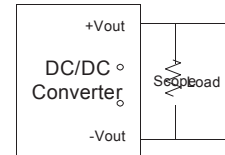
### Input Reflected Ripple Current Test Step

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

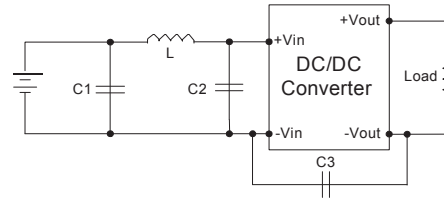
The Scope measurement bandwidth is 20MHz .



### EMI Filter

Input filter components ( $C1$  ,  $L$  ,  $C2$  ,  $C3$ ) are used to help meet conducted emissions requirement for the module.

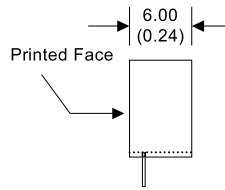
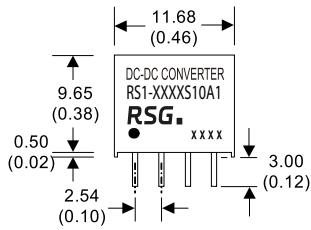
These components should be mounted as close as possible to the module; and all leads should be minimized to decrease radiated noise.



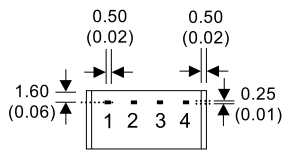
	C1	L	C2	C3
RS1/RD1-03XXS10AX	1210, 2.2uF/100V	18uH		
RS1/RD1-05XXS10AX	1210, 2.2uF/100V	18uH		
RS1/RD1-12XXS10AX	1210, 2.2uF/100V	18uH		
RS1/RD1-15XXS10AX	1210, 2.2uF/100V	18uH		
RS1/RD1-24XXS10AX	1210, 2.2uF/100V	18uH	1210, 2.2uF/100V	1206, 470pF/2KV
RS1/RD1-48XXS10AX	Electrolytic capacitor, 10uF/100V	18uH	1210, 2.2uF/100V	1206, 470pF/2KV

1. Ripple/Noise measured with 20MHz bandwidth.
2. Tested by minimal  $V_{in}$  and constant resistive load.
3. Measured Input reflected ripple current with a simulated source inductance of 12uH.
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. Input filter components are be required to help meet conducted emission class B, which application refer to the EMI Filter of design & feature configuration.
7. 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, 470uF/100V.

**RS1/RD1-S10**

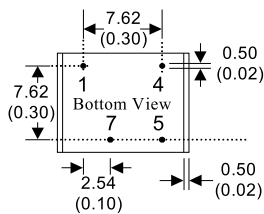
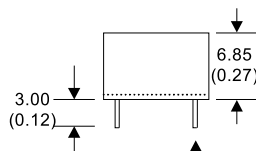
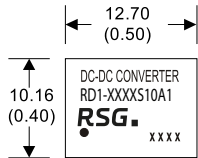


\* The thickness of 48V input voltage model is 7.50(0.29)



**4 Pin SIL Package**

- 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 )



DIA 0.50 (0.02)

**8 Pin DIL Package**

- 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 PIN SIL**

PIN CONNECTIONS	
PIN NUMBER	SINGLE
1	-V Input
2	+V Input
3	-V Output
4	+V Output

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

**8 PIN DIL**

PIN CONNECTIONS	
PIN NUMBER	SINGLE
1	-V Input
4	+V Input
5	+V Output
7	-V Output

(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 or +49 69-984047-41/-28