RS1/RD1-S02

- 4 Pin SIL/ 8Pin DIL Package
- 1000VDC Isolation
- Up to 3000VDC Isolation
- Low Ripple and Noise
- Efficiency up to 77%
- Operating Temperature Range: -40° ~ +85°C
- Non Conductive Black Plastic Case
- EMI Complies with EN55022 Class B

RoHS



OUTPUT SPECIFICATION	
Voltage accuracy:	±3%
Line regulation:	±1.2% (per 1%Vin Change)
LOAD REGULATION:	±10% (from 20 to 100%) Load
	Output 3.3V Model: ±20%
Ripple noise (20Mhz bandwidth):	100mV pk-pk
Temperature coefficient:	±0.02% °C
Capacitor load:	see table

INPUT SPECIFICATIONS	
Voltage Range:	±10%
Max. Input Current:	see table
No-Load/Full-Load Input Current:	see table
Input Filter:	Capacitors
Input Reflected Ripple Current :	20mA pk-pk

GENERAL SPECIFICATIONS	
Efficiency:	See table
I/O Isolation Voltage (60sec):	1000 ~ 3000VDC (Input/Output)
I/O Isolation Capacitance:	60pF typ.
I/O Isolation Resistance:	1000M Ohm
Switching Frequency:	Variable 80kHz
Humidity:	95% rel H
Reliability Calculated MTBF : (MIL-HDBK-217 f)	>1.121MHrs
Safety Standard: (designed to meet):	IEC 60950-1

ENVIRONMENTAL SPECIFICATION	
Operating Temperature range:	-40°C ~+85°C (see Derating Curve)
Maximum Case Temperature:	100°C
Storage Temperature :	-40°C ~+125°C
Cooling :	Nature Convection

PHYSICAL SPECIFICATIONS:	
Case Material:	Non-conductive Black Plastic (UL94V-0 rated)
PIN Material SIP Case:	Ø 0.5mm Alloy42 Solder-coated
PIN Material DIP Case:	Ø 0.5mm Brass Solder-coated
Potting Material:	Epoxy (UL94V-0 rated)
Weight Case- Sip:	1.5g
Weight Case-DIP:	1.8g
Dimmension SIP:	0.46 x 0.24 x 0.40“
Dimmension DIP:	0.50 x 0.40 x 0.27“

ABSOLUTE MAXIMUM RATINGS (1)	
Input Surge Voltage (100ms)/	
3.3V Models:	5VDC max
5 V Models:	7VDC max
12V Models:	15VDC max
15V Models:	18VDC max
24V Models:	28VDC max
48V Models:	54VDC max
Soldering Temperature (2):	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.

STAND Juni 2016 Rev 01

RS1/RD1-S02

NUMBER STRUCTURE

RD1 - XX XX X XX A X

Name/Package
RS1=SIL4
RD1=DIL8

Input
03=3.3V
05=5.0V
12=12V
15=15V
24=24V
48=48V

Output
03=3.3V
05=5.0V
07=7.2V
09=9.0V
12=12V
15=15V
18=18V
24=24V

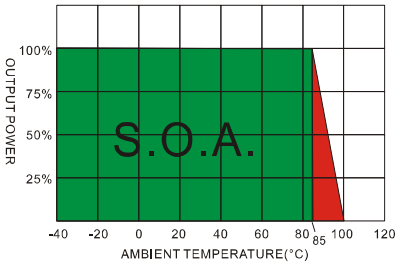
Type
S=Single
D=Dual
E= Dual separ.

Power (W)
02=0.25
05=0.50
10=1.00
15=1.50
20=2.0

Code
internal

Isolation (kVDC)
1= 1.0
3= 3.0

Derating Curve



MODEL SELECTION GUIDE

MODEL NUMBER	INPUT	INPUT Current		OUTPUT	OUTPUT Current		
	Voltage Range (Vdc)	No-Load (mA)	Full Load (mA)	Voltage (Vdc)	Full load (mA)	EFFICIENCY @FL(%)	Capacitor Load(uF)
RS1-0303S02AX	3.3	30	120	3.3	75.7	63	100
RS1-0305S02AX	3.3	25	115	5	50	66	100
RS1-0307S02AX	3.3	25	118	7.2	34.7	64	100
RS1-0309S02AX	3.3	25	118	9	27.7	64	100
RS1-0312S02AX	3.3	32	113	12	20.8	67	100
RS1-0315S02AX	3.3	25	118	15	16.6	64	100
RS1-0318S02AX	3.3	25	115	18	13.8	66	100
RS1-0324S02AX	3.3	20	115	24	10.4	66	100
RS1-0503S02AX	5	20	78	3.3	75.7	64	100
RS1-0505S02AX	5	17	70	5	50	71	100
RS1-0507S02AX	5	18	74	7.2	34.7	68	100
RS1-0509S02AX	5	15	68	9	27.7	73	100
RS1-0512S02AX	5	14	66	12	20.8	76	100
RS1-0515S02AX	5	20	70	15	16.6	71	100
RS1-0518S02AX	5	17	69	18	13.8	72	100
RS1-0524S02AX	5	18	65	24	10.4	77	100
RS1-1203S02AX	12	10	32	3.3	75.7	65	100
RS1-1205S02AX	12	12	31	5	50	67	100
RS1-1207S02AX	12	10	31	7.2	34.7	67	100
RS1-1209S02AX	12	12	33	9	27.7	64	100
RS1-1212S02AX	12	15	33	12	20.8	63	100
RS1-1215S02AX	12	13	31	15	16.6	67	100
RS1-1218S02AX	12	13	32	18	13.8	65	100
RS1-1224S02AX	12	18	38	24	10.4	55	100
RS1-1503S02AX	15	12	26	3.3	75.7	63	100
RS1-1505S02AX	15	8	27	5	50	62	100
RS1-1507S02AX	15	12	28	7.2	34.7	60	100
RS1-1509S02AX	15	12	28	9	27.7	60	100
RS1-1512S02AX	15	12	27	12	20.8	62	100
RS1-1515S02AX	15	10	27	15	16.6	61	100
RS1-1518S02AX	15	12	29	18	13.8	57	100
RS1-1524S02AX	15	12	29	24	10.4	57	100
RS1-2403S02AX	24	8	17	3.3	75.7	60	100
RS1-2405S02AX	24	7	17	5	50	61	100
RS1-2407S02AX	24	8	18	7.2	34.7	57	100
RS1-2409S02AX	24	8	17	9	27.7	62	100
RS1-2412S02AX	24	10	19	12	20.8	56	100
RS1-2415S02AX	24	7	19	15	16.6	55	100
RS1-2418S02AX	24	10	18	18	13.8	57	100
RS1-2424S02AX	24	10	18	24	10.4	59	100
RS1-4803S02AX	48	8	9	3.3	75.7	55	100
RS1-485S02AX	48	8	10	5	50	53	100
RS1-4807S02AX	48	8	10	7.2	34.7	54	100
RS1-4809S02AX	48	8	10	9	27.7	54	100
RS1-4812S02AX	48	8	9	12	20.8	55	100
RS1-4815S02AX	48	8	10	15	16.6	54	100
RS1-4818S02AX	48	8	11	18	13.8	49	100
RS1-4824S02AX	48	10	11	24	10.4	49	100

Suffix "3" means 3KVdc isolation

STAND Juni 2016 Rev 01

RS1/RD1-S02

MODEL SELECTION GUIDE

MODEL NUMBER	INPUT	INPUT Current		OUTPUT	OUTPUT Current		
	Voltage Range (Vdc)	No-Load (mA)	Full Load (mA)	Voltage (Vdc)	Full load (mA)	EFFICIENCY @FL(%)	Capacitor Load(uF)
RD1-0303S02AX	3.3	25	124	3.3	75.7	61	100
RD1-0305S02AX	3.3	25	118	5	50	64	100
RD1-0307S02AX	3.3	25	118	7.2	34.7	64	100
RD1-0309S02AX	3.3	25	118	9	27.7	64	100
RD1-0312S02AX	3.3	25	120	12	20.8	63	100
RD1-0315S02AX	3.3	25	118	15	16.6	64	100
RD1-0318S02AX	3.3	25	115	18	13.8	66	100
RD1-0324S02AX	3.3	20	115	24	10.4	66	100
RD1-0503S02AX	5	20	83	3.3	75.7	60	100
RD1-0505S02AX	5	15	72	5	50	69	100
RD1-0507S02AX	5	18	71	7.2	34.7	70	100
RD1-0509S02AX	5	18	71	9	27.7	70	100
RD1-0512S02AX	5	20	74	12	20.8	68	100
RD1-0515S02AX	5	20	74	15	16.6	68	100
RD1-0518S02AX	5	17	68	18	13.8	73	100
RD1-0524S02AX	5	23	72	24	10.4	69	100
RD1-1203S02AX	12	12	31	3.3	75.7	67	100
RD1-1205S02AX	12	10	32	5	50	65	100
RD1-1207S02AX	12	15	32	7.2	34.7	65	100
RD1-1209S02AX	12	12	35	9	27.7	60	100
RD1-1212S02AX	12	13	31	12	20.8	68	100
RD1-1215S02AX	12	16	37	15	16.6	57	100
RD1-1218S02AX	12	16	38	18	13.8	55	100
RD1-1224S02AX	12	18	41	24	10.4	51	100
RD1-1503S02AX	15	12	26	3.3	75.7	63	100
RD1-1505S02AX	15	10	26	5	50	63	100
RD1-1507S02AX	15	12	28	7.2	34.7	60	100
RD1-1509S02AX	15	12	28	9	27.7	60	100
RD1-1512S02AX	15	12	28	12	20.8	60	100
RD1-1515S02AX	15	13	28	15	16.6	59	100
RD1-1518S02AX	15	12	29	18	13.8	57	100
RD1-1524S02AX	15	12	29	24	10.4	57	100
RD1-2403S02AX	24	8	18	3.3	75.7	58	100
RD1-2405S02AX	24	7	17	5	50	60	100
RD1-2407S02AX	24	8	18	7.2	34.7	59	100
RD1-2409S02AX	24	8	18	9	27.7	58	100
RD1-2412S02AX	24	10	19	12	20.8	55	100
RD1-2415S02AX	24	7	18	15	16.6	59	100
RD1-2418S02AX	24	10	20	18	13.8	53	100
RD1-2424S02AX	24	10	19	24	10.4	55	100

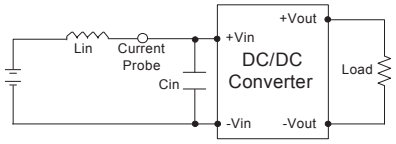
Suffix “3” means 3 KVdc isolation

STAND Juni 2016 Rev 01

RS1/RD1-S02

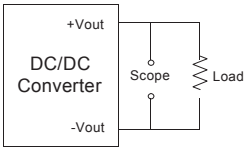
Input Reflected Ripple Current Test Step

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



Output Ripple & Noise Measurement Test

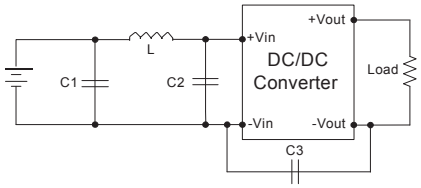
The Scope measurement bandwidth is 20MHz .



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.

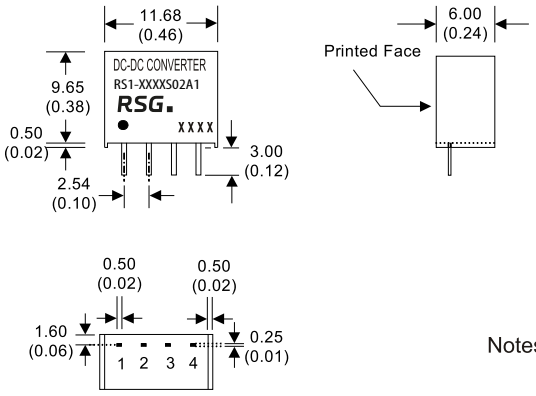


	C1	L	C2	C3
RS1/RD1-03XXS02AX	1210, 2.2uF/100V	18uH		
RS1/RD1-05XXS02AX	1210, 2.2uF/100V	18uH		
RS1/RD1-12XXS02AX	1210, 2.2uF/100V	18uH		
RS1/RD1-15XXS02AX	1210, 2.2uF/100V	18uH		
RS1/RD1-24XXS02AX	1210, 2.2uF/100V	18uH	1210, 2.2uF/100V	1206, 470pF/2KV
RS1/RD1-48XXS02AX	Electrolytic capacitor, 10uF/100V	18uH	1210, 2.2uF/100V	1206, 470pF/2KV

1. Ripple/Noise measured with 20MHz bandwidth.
2. Tested by minimal Vin 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.

STAND Juni 2016 Rev 01

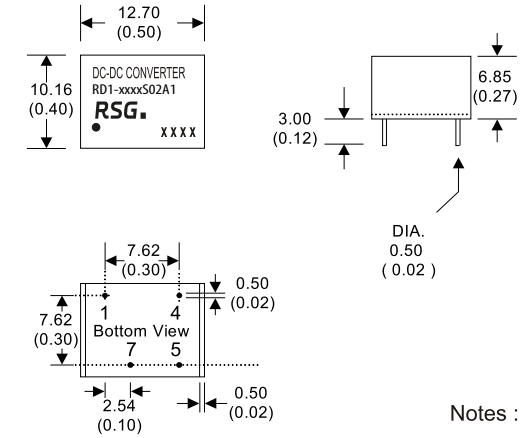
RS1/RD1-S02



* 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)



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)

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.)

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.)

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

STAND Juni 2016 Rev 01