RS5/RD5-RS20/RD20

- 8 Pin SIL/16Pin DIL Package
- Wide 2:1 Input Range
- 1000VDC Isolation
- Up to 3000VDC Isolation
- Continuous Short Circuit Protection
- Efficiency up to 80%
- Operating Temperature Range -40° ~ +85°C
- Non Conductive Black Plastic Case, Metal Case (optional)
- Remote on/off Control (optional)

RoHS

OUTPUT SPECIFICATION

Voltage accuracy:	±2%
Maximum Output Current:	See table
Line regulation:	± 0.5% max.
LOAD REGULATION:	from 25% to 100% Loading: ±1% max.
Cross Regulation (Dual Output):	± 5%
Short Circuit Protection :	Indefinite (Automatic Recovery)
Ripple noise (20Mhz bandwidth):	80mV pk-pk max.
Temperature coefficient:	±0.02%°C
Capacitor load:	See table

INPUT SPECIFICATIONS

Voltage Range:	See table
Max. Input Current:	See table
No-Load/Full-Load Input Current:	See table
Input Filter:	Capacitors
Input Reflected Ripple Current :	35mA pk-pk

GENERAL SPECIFICATIONS

Efficiency:	See table
I/O Isolation Voltage (60sec):	1000 ~ 3000VDC
I/O Isolation Voltage Metal Case:	1000VDC
I/O Isolation Capacitance:	60pF max.
I/O Isolation Resistance:	1000M Ohm, min
Switching Frequency:	100 - 650kHz
Humidity:	95% rel H
Reliability Calculated MTBF : (MIL-HDBK-217 f)	> 1.61MHrs
Safety Standard: (designed to meet):	IEC EN 60950-1
Remote ON/OFF Controll:	see note

ENVIRONMENTAL SPECIFICATON

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)
	Nickel-coated Copper
PIN Material SIP Case:	Alloy42 Solder-coated
PIN Material DIP Case:	Brass Solder-coated Ø 0.5mm
Potting Material:	Epoxy (UL94V-0 rated)
Weight Case- Sip:	4.5g, (6.0g Metal Case)
Weight Case-DIP:	6.5g, (8g Metal-Case)
Dimmension SIP:	0.86 x 0.36 x 0.44“
Dimmension DIP:	0.92 x 0.55 x 0.40“

ABSOLUTE MAXIMUM RATINGS (1)

Input Surge Voltage (100ms)/max.	
5 V Models:	12VDC max.
12V Models:	24VDC max.
24V Models:	40VDC max.
48V Models:	80VDC max.
Soldering Temperature:	260°C max. (2)

EMC SPECIFICATIONS

Radiated-/Conducted Emissions:	EN55022 Class A (see EMI Filter note)
ESD:	IEC 61000-4-2 Perf.Criteria B
RS:	IEC 61000-4-3 Perf.Criteria A
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.

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RS5/RD5-RS20/RD20

NUMBER STRUCTURE

RS5 - XX XX XX XX A X * X

Name/Package
RS5=SIL8
RD5=DIL16

Input
05=4.5-9.0V
12=9.0-18V
24=18-36V
48=36-72V

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

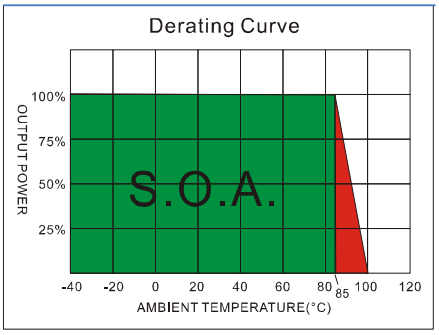
Type
RS=Regulated Single
RD=Regulated Dual

Power (W)
10=1.00
20=2.00

Code
internal

Isolation (kVDC)
1= 1.0
3= 3.0

* Optional
M= metal case
C = Control Pin
Z = Traco TMR series



MODEL SELECTION GUIDE

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current No-Load (mA)	INPUT Current Full Load (mA)	OUTPUT Voltage (Vdc)	OUTPUT Current Min. load (mA)	OUTPUT Current Full load (mA)	EFFICIENCY @FL(%)	Capacitor Load(uF)
RS5-0503RS20AX	4.5-9	15	492	3.3	125	500	67	3300
RS5-0505RS20AX	4.5-9	15	571	5	100	400	70	3300
RS5-0509RS20AX	4.5-9	30	555	9	56	222	72	470
RS5-0512RS20AX	4.5-9	30	555	12	42	167	72	470
RS5-0515RS20AX	4.5-9	30	547	15	33	133	73	470
RS5-0524RS20AX	4.5-9	60	533	24	21	83	75	220
RS5-1203RS20AX	9-18	15	205	3.3	125	500	67	3300
RS5-1205RS20AX	9-18	15	216	5	100	400	77	3300
RS5-1209RS20AX	9-18	15	213	9	56	222	78	470
RS5-1212RS20AX	9-18	15	208	12	42	167	80	470
RS5-1215RS20AX	9-18	15	213	15	33	133	78	470
RS5-1224RS20AX	9-18	15	208	24	21	83	80	220
RS5-2403RS20AX	18-36	8	98	3.3	125	500	70	3300
RS5-2405RS20AX	18-36	8	108	5	100	400	77	3300
RS5-2409RS20AX	18-36	8	104	9	56	222	80	470
RS5-2412RS20AX	18-36	8	104	12	42	167	80	470
RS5-2415RS20AX	18-36	8	104	15	33	133	80	470
RS5-2424RS20AX	18-36	8	104	24	21	83	80	220
RS5-4803RS20AX	36-72	6	48	3.3	125	500	71	3300
RS5-4805RS20AX	36-72	6	56	5	100	400	74	3300
RS5-4809RS20AX	36-72	6	53	9	56	222	78	470
RS5-4812RS20AX	36-72	6	53	12	42	167	78	470
RS5-4815RS20AX	36-72	6	53	15	33	133	78	470
RS5-4824RS20AX	36-72	6	52	24	21	83	80	220
RD5-0503RS20AX	4.5-9	15	492	3.3	125	500	67	3300
RD5-0505RS20AX	4.5-9	15	571	5	100	400	70	3300
RD5-0509RS20AX	4.5-9	30	555	9	56	222	72	470
RD5-0512RS20AX	4.5-9	30	555	12	42	167	72	470
RD5-0515RS20AX	4.5-9	30	547	15	33	133	73	470
RD5-0524RS20AX	4.5-9	60	533	24	21	83	75	220
RD5-1203RS20AX	9-18	15	205	3.3	125	500	67	3300
RD5-1205RS20AX	9-18	15	216	5	100	400	77	3300
RD5-1209RS20AX	9-18	15	213	9	56	222	78	470
RD5-1212RS20AX	9-18	15	208	12	42	167	80	470
RD5-1215RS20AX	9-18	15	213	15	33	133	78	470
RD5-1224RS20AX	9-18	15	208	24	21	83	80	220

X = 1 means 1kVDC, X = 3 means 3kVDC isolation Suffix “C” means with control pin Suffix “M” means with Metal Case

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RS5/RD5-RS20/RD20

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current No-Load (mA)	INPUT Current Full Load (mA)	OUTPUT Voltage (Vdc)	OUTPUT Current Min. load (mA)	OUTPUT Current Full load (mA)	EFFICIENCY @FL(%)	Capacitor Load(uF)
RD5-2403RS20AX	18-36	8	98	3.3	125	500	70	3300
RD5-2405RS20AX	18-36	8	108	5	100	400	77	3300
RD5-2409RS20AX	18-36	8	104	9	56	222	80	470
RD5-2412RS20AX	18-36	8	104	12	42	167	80	470
RD5-2415RS20AX	18-36	8	104	15	33	133	80	470
RD5-2424RS20AX	18-36	8	104	24	21	83	80	220
RD5-4803RS20AX	36-72	6	48	3.3	125	500	71	3300
RD5-4805RS20AX	36-72	6	56	5	100	400	74	3300
RD5-4809RS20AX	36-72	6	53	9	56	222	78	470
RD5-4812RS20AX	36-72	6	53	12	42	167	78	470
RD5-4815RS20AX	36-72	6	53	15	33	133	78	470
RD5-4824RS20AX	36-72	6	52	24	21	83	80	220
RS5-0503RD20AX	4.5-9	20	471	±3.3	±63	±250	70	±1000
RS5-0505RD20AX	4.5-9	20	571	±5	±50	±200	70	±1000
RS5-0509RD20AX	4.5-9	20	540	±9	±28	±111	74	±220
RS5-0512RD20AX	4.5-9	25	533	±12	±21	±83	75	±220
RS5-0515RD20AX	4.5-9	25	533	±15	±17	±67	75	±220
RS5-0524RD20AX	4.5-9	60	563	±24	±10	±42	71	±100
RS5-1203RD20AX	9-18	15	188	±3.3	±63	±250	73	±1000
RS5-1205RD20AX	9-18	15	222	±5	±50	±200	75	±1000
RS5-1209RD20AX	9-18	15	210	±9	±28	±111	79	±220
RS5-1212RD20AX	9-18	15	208	±12	±21	±83	80	±220
RS5-1215RD20AX	9-18	15	210	±15	±17	±67	79	±220
RS5-1224RD20AX	9-18	30	219	±24	±10	±42	76	±100
RS5-2403RD20AX	18-36	8	94	±3.3	±63	±250	73	±1000
RS5-2405RD20AX	18-36	8	106	±5	±50	±200	78	±1000
RS5-2409RD20AX	18-36	8	105	±9	±28	±111	79	±220
RS5-2412RD20AX	18-36	8	104	±12	±21	±83	80	±220
RS5-2415RD20AX	18-36	8	104	±15	±17	±67	80	±220
RS5-2424RD20AX	18-36	20	106	±24	±10	±42	78	±100
RS5-4803RD20AX	36-72	6	47	±3.3	±63	±250	73	±1000
RS5-4805RD20AX	36-72	6	56	±5	±50	±200	74	±1000
RS5-4809RD20AX	36-72	6	53	±9	±28	±111	79	±220
RS5-4812RD20AX	36-72	6	53	±12	±21	±83	79	±220
RS5-4815RD20AX	36-72	6	52	±15	±17	±67	80	±220
RS5-4824RD20AX	36-72	12	55	±24	±10	±42	75	±100
RD5-0503RD20AX	4.5-9	20	471	±3.3	±63	±250	70	±1000
RD5-0505RD20AX	4.5-9	20	571	±5	±50	±200	70	±1000
RD5-0509RD20AX	4.5-9	20	540	±9	±28	±111	74	±220
RD5-0512RD20AX	4.5-9	25	533	±12	±21	±83	75	±220
RD5-0515RD20AX	4.5-9	25	533	±15	±17	±67	75	±220
RD5-0524RD20AX	4.5-9	60	563	±24	±10	±42	71	±100
RD5-1203RD20AX	9-18	15	188	±3.3	±63	±250	73	±1000
RD5-1205RD20AX	9-18	15	222	±5	±50	±200	75	±1000
RD5-1209RD20AX	9-18	15	210	±9	±28	±111	79	±220
RD5-1212RD20AX	9-18	15	208	±12	±21	±83	80	±220
RD5-1215RD20AX	9-18	15	210	±15	±17	±67	79	±220
RD5-1224RD20AX	9-18	30	219	±24	±10	±42	76	±100
RD5-2403RD20AX	18-36	8	94	±3.3	±63	±250	73	±1000
RD5-2405RD20AX	18-36	8	106	±5	±50	±200	78	±1000

X = 1 means 1kVDC, X = 3 means 3kVDC isolation Suffix “C” means with control pin Suffix “M” means with Metal Case

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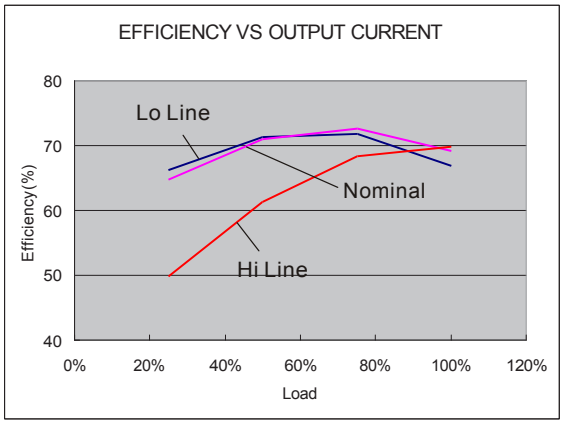
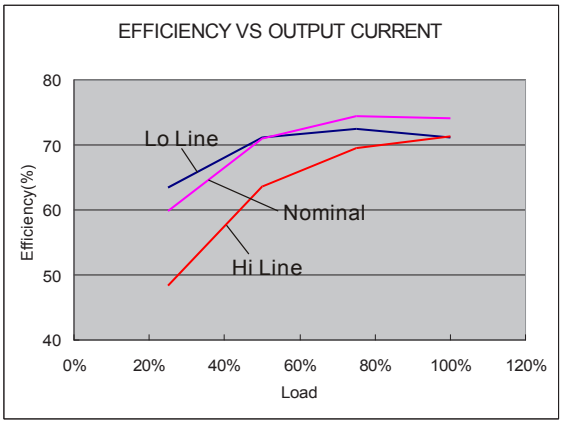
RS5/RD5-RS20/RD20

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current No-Load (mA)	INPUT Current Full Load (mA)	OUTPUT Voltage (Vdc)	OUTPUT Current Min. load (mA)	OUTPUT Current Full load (mA)	EFFICIENCY @FL(%)	Capacitor Load(uF)
RD5-2409RD20AX	18-36	8	105	±9	±28	±111	79	±220
RD5-2412RD20AX	18-36	8	104	±12	±21	±83	80	±220
RD5-2415RD20AX	18-36	8	104	±15	±17	±67	80	±220
RD5-2424RD20AX	18-36	20	106	±24	±10	±42	78	±100
RD5-4803RD20AX	36-72	6	47	±3.3	±63	±250	73	±1000
RD5-4805RD20AX	36-72	6	56	±5	±50	±200	74	±1000
RD5-4809RD20AX	36-72	6	53	±9	±28	±111	79	±220
RD5-4812RD20AX	36-72	6	53	±12	±21	±83	79	±220
RD5-4815RD20AX	36-72	6	52	±15	±17	±67	80	±220
RD5-4824RD20AX	36-72	12	55	±24	±10	±42	75	±100

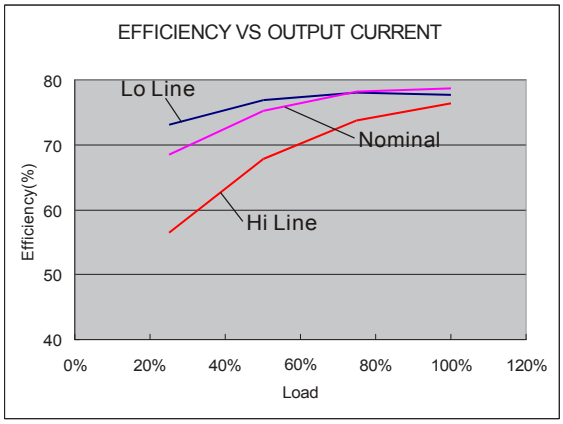
X = 1 means 1kVDC, X = 3 means 3kVDC isolation Suffix “C” means with control pin Suffix “M” means with Metal Case



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.

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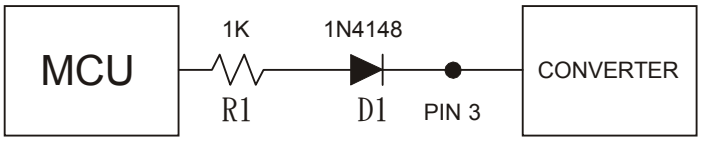
11. MCU (Master Control Unit)
The MCU Pin Voltage is referenced to -Vin(Pin 1)
ON:0 ~ 0.8VDC Max.
(Short circuit Pin 1 and Pin 3) or open circuit
OFF:4.5 to 15VDC Max.(or 3.5mA to 15mA Max.)(via R1 、D1)
OFF idle current:5mA typ.

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

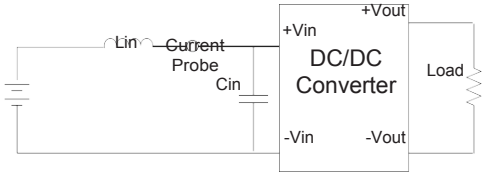
13. An external filter capacitor is required if the module has to meet IEC61000-4-4 and IEC61000-4-5. The filter capacitor RSG suggest: Nippon - chemi - con KY series, 220uF/100V.

Connection example



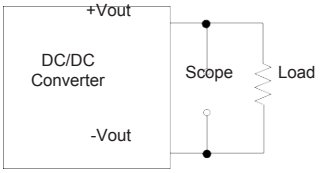
Input Reflected Ripple Current Test Step

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.



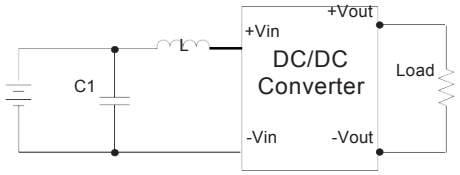
Output Ripple & Noise Measurement Test

The Scope measurement bandwidth is 20MHz.



EMI Filter

Input filter components (C1, L) 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-RS20/RD20	100uF/100V	12uH

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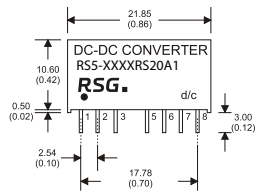
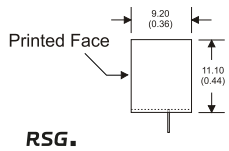
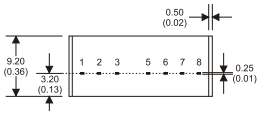
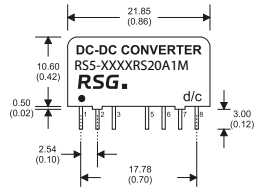
RS5/RD5-RS20/RD20

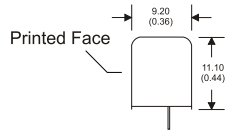


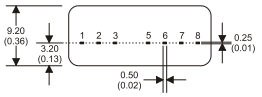




8 Pin SIL Package
Non-Conductive Plastic





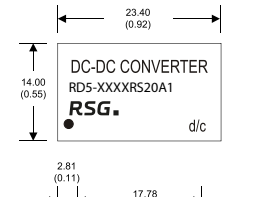


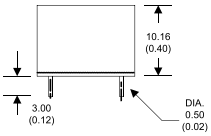
8 Pin SIL Package
Nickel-Coated Copper

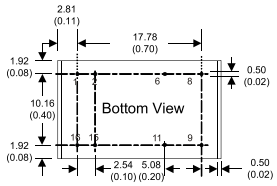
Notes: All dimensions are typical in millimeters (inches).
1. Pin diameter: 0.5 ±0.05 (0.02 ±0.002)
2. Pin pitch and length tolerance: ±0.35 (±0.014)
3. Case Tolerance: ±0.5 (±0.02)

PIN CONNECTIONS			
PIN NUMBER	SINGLE	DUAL/(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

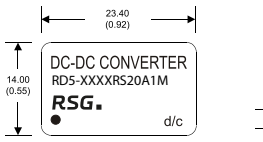
(The Pin Connection of high isolation one is the same with normal one.)

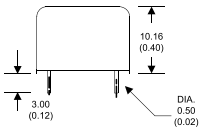


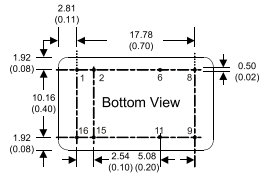




16 Pin DIL Package
Non-Conductive Plastic







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 above are standard types. If you need special specifications or have questions regarding packing (Tube or Tape&Reel) or need application support, please contact our specialists: sales@rsg-electronic.de or +49 69-984047-0

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