

RS3/RD3-S20/D20

2.0 Watt unregulated
single & dual output



- 7 Pin SIP7 / 14 Pin DIP14 package
- 1000 VDC isolation up to 6000 VDC isolation
- Low ripple and noise
- Efficiency up to 82%
- -40°C~85°C operation temperature range
- Non-conductive black plastic case

OUTPUT SPECIFICATIONS

Voltage accuracy	± 3%
Line regulation (Per 1% Vin Charge)	± 1.2%
Load regulation (From 20% to 100% Load)	± 10%
(Output 3.3 V Model)	± 20%
Ripple & Noise (20 MHz bandwidth) (1)	75 mV pk-pk
Temperature coefficient	± 0.02%/°C
Capacitor load (2)	See table

INPUT SPECIFICATIONS

Voltage range	± 10%
Max. input current	See table
No-load input current	See table
Input filter	Capacitors
Input reflected ripple current (3)	20 mA pk-pk

GENERAL SPECIFICATIONS

Efficiency	See table
I/O isolation voltage (3 sec.)	
Input / output	1000 ~ 6000 VDC
I/O isolation capacitance	60 pF typ.
I/O isolation resistance	1000 M Ohm
Switching frequency	variable 80 kHz
Humidity	95% rel. H
Reliability calculated MTBF (MIL-HDBK-217F)	> 1.121 Mhrs.
Safety standard (designed to meet)	IEC 60950-1

PHYSICAL SPECIFICATIONS

Case material	Non-conductive black plastic (UL94V-0 rated)
Pin material	0.5 mm Alloy42 solder-coated
Potting material	Epoxy (UL94V-0 rated)
Weight	SIP > 2.3 g, DIP > 2.6 g
Dimensions	SIP > 0.76" x 0.24" x 0.39" DIP > 0.80" x 0.40" x 0.27"

ENVIRONMENT SPECIFICATIONS

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

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)

5 modes	0 ~ 7 VDC
12 modes	0 ~ 15 VDC
24 modes	0 ~ 28 VDC
48 modes (SIP)	0 ~ 54 VDC

Lead soldering temperature 260°C

(1.5 mm from case 10 sec.)

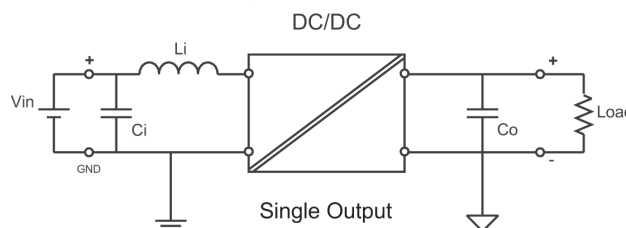
All specifications typical at $T_a = 25^\circ\text{C}$, nominal input voltage and full load unless otherwise specified.

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) Ripple / Noise measured with 20 MHz 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) To reduce converter's Ripple & Noise it is recommended to add a $4.7\mu\text{F} \sim 220\mu\text{F}$ ($\pm 4.7\mu\text{F} \sim \pm 100\mu\text{F}$ for dual output) capacitor in output end. For EMI performance improvement it is recommended to add a $12\mu\text{H}$ inductor and a $10\mu\text{F} \sim 100\mu\text{F}$ capacitor in input end.

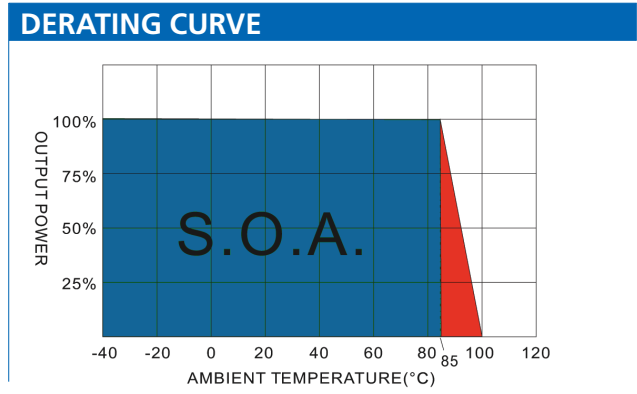
The models listed are just for standard type. If you need a special specification product, please contact our service. Phone: +49 69 984047-0, mail to: info@rsg-electronic.de or use the forms on www.rsg-electronic.de („Kontakt“).



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NUMBER STRUCTURE					
RS3/RD3 - XX	XX	S/D	20	A	X
Name/Package RS3=SIL7 RD3=DIL14	Output 03=3.3V 05=5V 07=7.2V 09=9V 12=12V 15=15V 18=18V 24=24V	Type S=Single D=Dual	Power 20=2.0W	Code internal	Isolation 1=1.0 kVDC 2=2.0 kVDC 3=3.0 kVDC 4=4.0 kVDC 5=5.2 kVDC 6=6.0 kVDC
Input 05=5V 12=12V 24=24V 48=48V					



MODEL SELECTION GUIDE

Model Number	Input Range VDC	Input current (mA) No Load / Full Load	Output VDC	Output current Full Load (mA)	Efficiency @FL (%)	Capacitor Load (μF)
RS3-0503D20AX	5	30 / 406	±3.3	±200	65	±220
RS3-0505D20AX	5	30 / 555	±5	±200	72	±220
RS3-0507D20AX	5	30 / 555	±7.2	±138.8	72	±220
RS3-0509D20AX	5	30 / 519	±9	±111.1	77	±220
RS3-0512D20AX	5	30 / 512	±12	±83.3	78	±220
RS3-0515D20AX	5	30 / 500	±15	±66.67	80	±220
RS3-0518D20AX	5	30 / 500	±18	±55.55	80	±220
RS3-0524D20AX	5	30 / 500	±24	±41.67	80	±220
RS3-1203D20AX	12	20 / 164	±3.3	±200	67	±220
RS3-1205D20AX	12	20 / 222	±5	±200	75	±220
RS3-1207D20AX	12	20 / 219	±7.2	±138.8	76	±220
RS3-1209D20AX	12	20 / 216	±9	±111.1	77	±220
RS3-1212D20AX	12	20 / 203	±12	±83.3	82	±220
RS3-1215D20AX	12	20 / 203	±15	±66.67	82	±220
RS3-1218D20AX	12	20 / 203	±18	±55.55	82	±220
RS3-1224D20AX	12	20 / 203	±24	±41.67	82	±220
RS3-2403D20AX	24	10 / 80	±3.3	±200	68	±220
RS3-2405D20AX	24	10 / 111	±5	±200	75	±220
RS3-2407D20AX	24	10 / 111	±7.2	±138.8	75	±220
RS3-2409D20AX	24	10 / 104	±9	±111.1	80	±220
RS3-2412D20AX	24	10 / 101	±12	±83.3	82	±220
RS3-2415D20AX	24	10 / 101	±15	±66.67	82	±220
RS3-2418D20AX	24	10 / 101	±18	±55.55	82	±220
RS3-2424D20AX	24	10 / 101	±24	±41.67	82	±220
RS3-4803D20AX	48	6 / 45	±3.3	±200	60	±220
RS3-4805D20AX	48	6 / 57	±5	±200	73	±220
RS3-4807D20AX	48	6 / 54	±7.2	±138.8	77	±220
RS3-4809D20AX	48	6 / 54	±9	±111.1	77	±220
RS3-4812D20AX	48	6 / 52	±12	±83.3	80	±220
RS3-4815D20AX	48	6 / 52	±15	±66.67	80	±220
RS3-4818D20AX	48	6 / 52	±18	±55.55	80	±220
RS3-4824D20AX	48	6 / 52	±24	±41.67	80	±220

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Model Number	Input Range VDC	Input current (mA) No Load / Full Load	Output VDC	Output current Full Load (mA)	Efficiency @FL (%)	Capacitor Load (μ F)
RD3-0503D20AX	5	30 / 406	\pm 3.3	\pm 200	65	\pm 220
RD3-0505D20AX	5	30 / 555	\pm 5	\pm 200	72	\pm 220
RD3-0507D20AX	5	30 / 555	\pm 7.2	\pm 138.8	72	\pm 220
RD3-0509D20AX	5	30 / 519	\pm 9	\pm 111.1	77	\pm 220
RD3-0512D20AX	5	30 / 512	\pm 12	\pm 83.3	78	\pm 220
RD3-0515D20AX	5	30 / 500	\pm 15	\pm 66.67	80	\pm 220
RD3-0518D20AX	5	30 / 500	\pm 18	\pm 55.55	80	\pm 220
RD3-0524D20AX	5	30 / 500	\pm 24	\pm 41.67	80	\pm 220
RD3-1203D20AX	12	20 / 164	\pm 3.3	\pm 200	67	\pm 220
RD3-1205D20AX	12	20 / 222	\pm 5	\pm 200	75	\pm 220
RD3-1207D20AX	12	20 / 219	\pm 7.2	\pm 138.8	76	\pm 220
RD3-1209D20AX	12	20 / 216	\pm 9	\pm 111.1	77	\pm 220
RD3-1212D20AX	12	20 / 203	\pm 12	\pm 83.3	82	\pm 220
RD3-1215D20AX	12	20 / 203	\pm 15	\pm 66.67	82	\pm 220
RD3-1218D20AX	12	20 / 203	\pm 18	\pm 55.55	82	\pm 220
RD3-1224D20AX	12	20 / 203	\pm 24	\pm 41.67	82	\pm 220
RD3-2403D20AX	24	10 / 80	\pm 3.3	\pm 200	68	\pm 220
RD3-2405D20AX	24	10 / 111	\pm 5	\pm 200	75	\pm 220
RD3-2407D20AX	24	10 / 111	\pm 7.2	\pm 138.8	75	\pm 220
RD3-2409D20AX	24	10 / 104	\pm 9	\pm 111.1	80	\pm 220
RD3-2412D20AX	24	10 / 101	\pm 12	\pm 83.3	82	\pm 220
RD3-2415D20AX	24	10 / 101	\pm 15	\pm 66.67	82	\pm 220
RD3-2418D20AX	24	10 / 101	\pm 18	\pm 55.55	82	\pm 220
RD3-2424D20AX	24	10 / 101	\pm 24	\pm 41.67	82	\pm 220
RS3-0503S20AX	5	30 / 367	3.3	400	72	470
RS3-0505S20AX	5	30 / 512	5	400	78	470
RS3-0507S20AX	5	30 / 500	7.2	277.7	80	470
RS3-0509S20AX	5	30 / 500	9	222.2	80	470
RS3-0512S20AX	5	30 / 487	12	166.7	82	470
RS3-0515S20AX	5	30 / 487	15	133.3	82	470
RS3-0518S20AX	5	30 / 487	18	111.1	82	470
RS3-0524S20AX	5	30 / 487	24	83.3	82	470
RS3-1203S20AX	12	36 / 169	3.3	400	65	470
RS3-1205S20AX	12	20 / 216	5	400	77	470
RS3-1207S20AX	12	20 / 208	7.2	277.7	80	470
RS3-1209S20AX	12	20 / 208	9	222.2	80	470
RS3-1212S20AX	12	20 / 203	12	166.7	82	470
RS3-1215S20AX	12	20 / 203	15	133.3	82	470
RS3-1218S20AX	12	20 / 208	18	111.1	80	470
RS3-1224S20AX	12	20 / 208	24	83.3	80	470
RS3-2403S20AX	24	10 / 76	3.3	400	72	470
RS3-2405S20AX	24	10 / 105	5	400	79	470
RS3-2407S20AX	24	10 / 104	7.2	277.7	80	470
RS3-2409S20AX	24	10 / 104	9	222.2	80	470
RS3-2412S20AX	24	10 / 102	12	166.7	80	470
RS3-2415S20AX	24	10 / 101	15	133.3	82	470
RS3-2418S20AX	24	10 / 101	18	111.1	82	470
RS3-2424S20AX	24	10 / 104	24	83.3	80	470



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MODEL SELECTION GUIDE

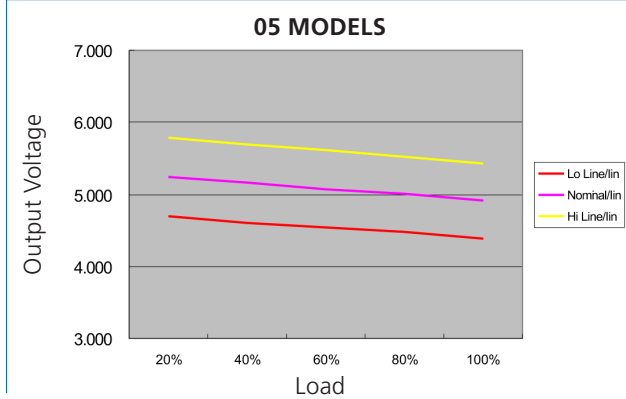
Model Number	Input Range VDC	Input current (mA) No Load / Full Load	Output VDC	Output current Full Load (mA)	Efficiency @FL (%)	Capacitor Load (μF)
RS3-4803S20AX	48	6 / 45	3.3	400	60	470
RS3-4805S20AX	48	6 / 54	5	400	77	470
RS3-4807S20AX	48	6 / 54	7.2	277.7	77	470
RS3-4809S20AX	48	6 / 54	9	222.2	77	470
RS3-4812S20AX	48	6 / 53	12	166.7	78	470
RS3-4815S20AX	48	6 / 53	15	133.3	78	470
RS3-4818S20AX	48	6 / 53	18	111.1	78	470
RS3-4824S20AX	48	6 / 55	24	83.3	75	470
RD3-0503S20AX	5	30 / 367	3.3	400	72	470
RD3-0505S20AX	5	30 / 512	5	400	78	470
RD3-0507S20AX	5	30 / 500	7.2	277.7	80	470
RD3-0509S20AX	5	30 / 500	9	222.2	80	470
RD3-0512S20AX	5	30 / 487	12	166.7	82	470
RD3-0515S20AX	5	30 / 487	15	133.3	82	470
RD3-0518S20AX	5	30 / 487	18	111.1	82	470
RD3-0524S20AX	5	30 / 487	24	83.3	82	470
RD3-1203S20AX	12	20 / 152	3.3	400	72	470
RD3-1205S20AX	12	20 / 216	5	400	77	470
RD3-1207S20AX	12	20 / 208	7.2	277.7	80	470
RD3-1209S20AX	12	20 / 208	9	222.2	80	470
RD3-1212S20AX	12	20 / 208	12	166.7	80	470
RD3-1215S20AX	12	20 / 208	15	133.3	80	470
RD3-1218S20AX	12	20 / 208	18	111.1	80	470
RD3-1224S20AX	12	20 / 208	24	83.3	80	470
RD3-2403S20AX	24	10 / 76	3.3	400	72	470
RD3-2405S20AX	24	10 / 105	5	400	79	470
RD3-2407S20AX	24	10 / 115	7.2	277.7	72	470
RD3-2409S20AX	24	10 / 104	9	222.2	80	470
RD3-2412S20AX	24	10 / 104	12	166.7	80	470
RD3-2415S20AX	24	10 / 104	15	133.3	80	470
RD3-2418S20AX	24	10 / 104	18	111.1	80	470
RD3-2424S20AX	24	10 / 104	24	83.3	80	470



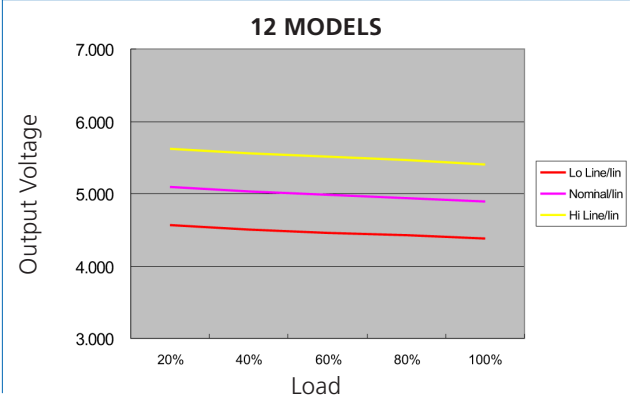
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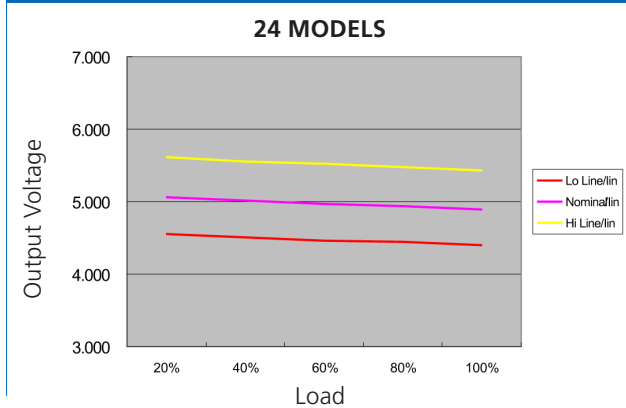
LOADING VS OUTPUT VOLTAGE 05



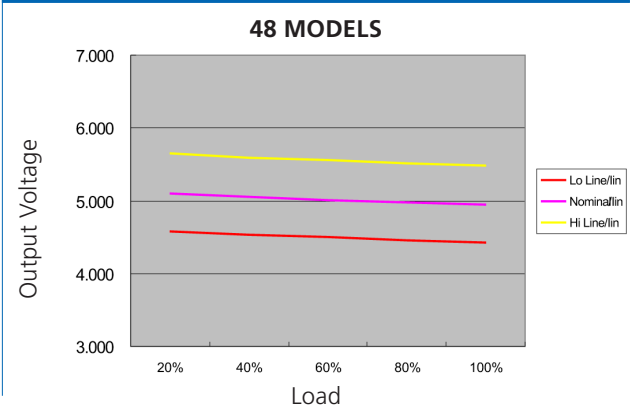
LOADING VS OUTPUT VOLTAGE 12



LOADING VS OUTPUT VOLTAGE 24

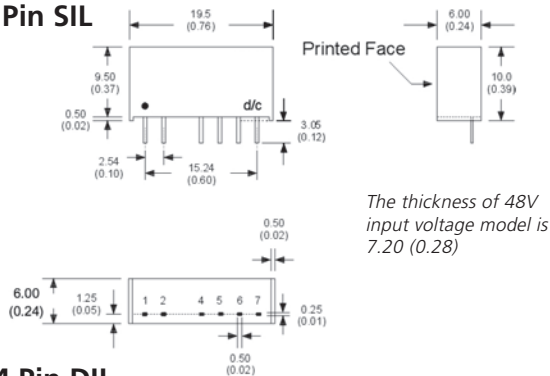


LOADING VS OUTPUT VOLTAGE 48

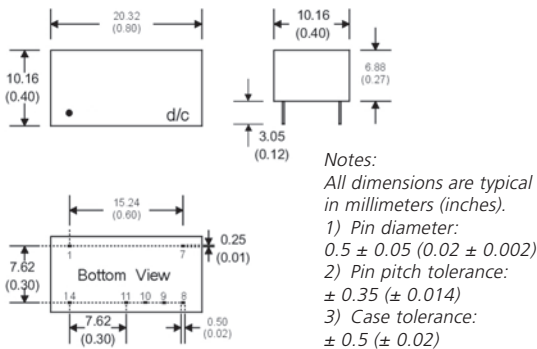


MECHANICAL SPECIFICATIONS

7 Pin SIL



14 Pin DIL



PIN CONNECTIONS

PIN	SINGLE	DUAL	SINGLE-H	DUAL-H
1	+V Input	+V Input	+V Input	+V Input
2	-V Input	-V Input	-V Input	-V Input
4	-V Output	-V Output	N.P.	N.P.
5	N.P.	Common	-V Output	-V Output
6	+V Output	+V Output	N.P.	Common
7	N.P.	N.P.	+V Output	+V Output
PIN	SINGLE	DUAL	SINGLE-H	DUAL-H
1	-V Input	-V Input	-V Input	-V Input
7	N.C.	N.C.	N.C.	N.C.
8	N.P.	Common	+V Output	+V Output
9	+V Output	+V Output	N.P.	Common
10	N.P.	N.P.	-V Output	-V Output
11	-V Output	-V Output	N.P.	N.P.
14	+V Input	+V Input	+V Input	+V Input