

**RS7-S20/D20**

- 7 Pin SIL Package
- 5200VDC High Isolation
- Low coupling capacity
- Long Term Short Circuit Protection
- Low Ripple and Noise
- Efficiency up to 85%
- Operating Temperature Range -40° ~ +95°C
- Non Conductive Black Plastic Case



OUTPUT SPECIFICATION	ENVIRONMENTAL SPECIFICATION
Voltage accuracy: ±5%	Operating Temperature range: -40°C ~+95°C (see Derating Curve)
Line regulation: 1.2%/ per 1% Vin Change max.	Maximum Case Temperature: 100°C
LOAD REGULATION: from 20% to 100% Load: ±10-12%	Storage Temperature : -55°C ~+125°C
Cross Regulation (Dual Output): ± 5%	Cooling : Nature Convection
Short Circuit Protection : Indefinite (Automatic Recovery)	PHYSICAL SPECIFICATIONS:
Ripple noise (20Mhz bandwidth): 150mV pk-pk	Case Material: Non-conductive Black Plastic (UL94V-0 rated),
Temperature coefficient: ±0.03%/°C	PIN Material SIP Case: C519R-H Solder -coated
Capacitor load: See table	Weight Case- Sip: 2.7g, typ.
INPUT SPECIFICATIONS	Potting Material: Epoxy (UL94V-0 rated)
Voltage Range: ±10% max.	Dimmension SIP: 0.76 x 0.28 x 0.39"
Start up Time: 20ms,typ.	ABSOLUTE MAXIMUM RATINGS (1)
Max. Input Current: See table	5V Models: 9VDC max
No-Load/Full-Load Input Current: See table	12V Models: 18VDC max
Input Filter: Capacitors	15V Models: 20VDC max
Input Reflected Ripple Current : 20-40mA pk-pk typ.	24V Models: 30VDC max
GENERAL SPECIFICATIONS	Soldering Temperature: 260°C max.
Efficiency: See table	EMC SPECIFICATIONS (2)
I/O Isolation Voltage (60sec): 5200VDC	Radiated-/Conducted Emissions: EN55022 Class B see EMI Filter
I/O Isolation Capacitance: 7pF typ.	ESD: IEC 61000-4-2 Perf.Criteria A
I/O Isolation Resistance: 1000M Ohm, min	RS: IEC 61000-4-3 Perf.Criteria A
Switching Frequency: 50kHz - 100kHz	EFT: IEC 61000-4-4 Perf.Criteria A
Humidity: 95% rel H	SURGE: IEC 61000-4-5 Perf.Criteria A
Reliability Calculated MTBF : >3.3Mhrs (MIL-HDBK-217 f)	CS: IEC 61000-4-6 Perf.Criteria A
Safety Standard: (designed to meet): IEC 60950-1	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.)

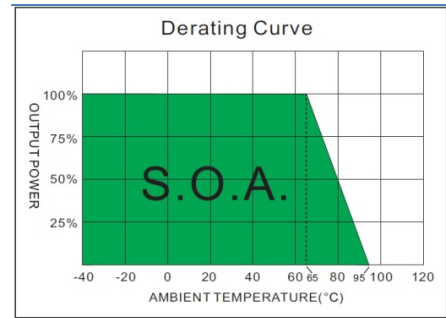
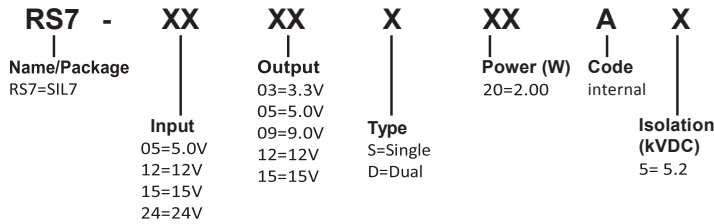
3) All specifications typical at TA= 25°C, nominal input voltage and full load unless otherwise specified.

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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**NUMBER STRUCTURE**



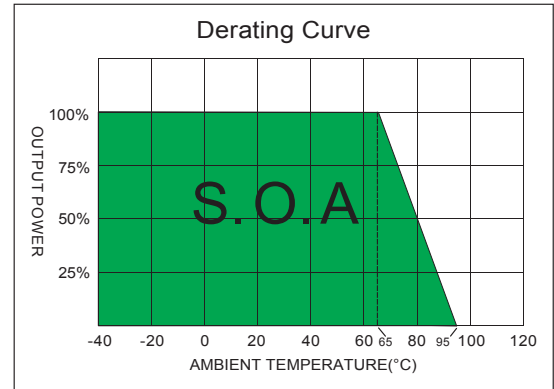
**MODEL SELECTION GUIDE**

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current		OUTPUT Voltage (Vdc)	OUTPUT Current Full load (mA)	EFFICIENCY @ FL (% , typ.)	Capacitor Load @ FL (µF, max.)
		No- Load (mA, max)	Full Load (mA, typ.)				
RS7-0503S20A5	5 ( 4. 5 ~ 5. 5 )	40	435	3. 3	5 00	76	10 00
RS7-0505S20A5	5 ( 4. 5 ~ 5. 5 )	40	507	5	4 00	79	47 0
RS7-0509S20A5	5 ( 4. 5 ~ 5. 5 )	40	482	9	2 22	83	47 0
RS7-0512S20A5	5 ( 4. 5 ~ 5. 5 )	40	477	1 2	1 67	84	22 0
RS7-0515S20A5	5 ( 4. 5 ~ 5. 5 )	40	471	1 5	1 33	85	22 0
RS7-1203S20A5	12 ( 10. 8 ~ 1 3. 2 )	30	186	3. 3	5 00	74	10 00
RS7-1205S20A5	12 ( 10. 8 ~ 1 3. 2 )	30	211	5	4 00	79	47 0
RS7-1209S20A5	12 ( 10. 8 ~ 1 3. 2 )	30	204	9	2 22	82	47 0
RS7-1212S20A5	12 ( 10. 8 ~ 1 3. 2 )	30	204	1 2	1 67	82	22 0
RS7-1215S20A5	12 ( 10. 8 ~ 1 3. 2 )	30	201	1 5	1 33	83	22 0
RS7-1503S20A5	15 ( 13. 5 ~ 1 6. 5 )	25	149	3. 3	5 00	74	10 00
RS7-1505S20A5	15 ( 13. 5 ~ 1 6. 5 )	25	171	5	4 00	78	47 0
RS7-1509S20A5	15 ( 13. 5 ~ 1 6. 5 )	25	165	9	2 22	81	47 0
RS7-1512S20A5	15 ( 13. 5 ~ 1 6. 5 )	25	163	1 2	1 67	82	22 0
RS7-1515S20A5	15 ( 13. 5 ~ 1 6. 5 )	25	161	1 5	1 33	83	22 0
RS7-2403S20A5	24 ( 21. 6 ~ 2 6. 4 )	20	95	3. 3	5 00	73	10 00
RS7-2405S20A5	24 ( 21. 6 ~ 2 6. 4 )	20	107	5	4 00	78	47 0
RS7-2409S20A5	24 ( 21. 6 ~ 2 6. 4 )	20	103	9	2 22	81	47 0
RS7-2412S20A5	24 ( 21. 6 ~ 2 6. 4 )	20	103	1 2	1 67	81	22 0
RS7-2415S20A5	24 ( 21. 6 ~ 2 6. 4 )	20	103	1 5	1 33	81	22 0
RS7-0505D20A5	5 ( 4. 5 ~ 5. 5 )	40	507	± 5	±2 00	79	±2 20
RS7-0509D20A5	5 ( 4. 5 ~ 5. 5 )	40	488	± 9	±1 11	82	±2 20
RS7-0512D20A5	5 ( 4. 5 ~ 5. 5 )	40	482	± 12	±8 3. 3	83	±1 00
RS7-0515D20A5	5 ( 4. 5 ~ 5. 5 )	40	477	± 15	±6 6. 7	84	±1 00
RS7-051509D20A5	5 ( 4. 5 ~ 5. 5 )	40	482	+1 5/- 9	+6 6. 7/- 11 1	83	+1 00 /-2 20
RS7-1205D20A5	12 ( 10. 8 ~ 1 3. 2 )	30	211	± 5	±2 00	79	±2 20
RS7-1209D20A5	12 ( 10. 8 ~ 1 3. 2 )	30	206	± 9	±1 11	81	±2 20
RS7-1212D20A5	12 ( 10. 8 ~ 1 3. 2 )	30	201	± 12	±8 3. 3	83	±1 00
RS7-1215D20A5	12 ( 10. 8 ~ 1 3. 2 )	30	201	± 15	±6 6. 7	83	±1 00
RS7-121509D20A5	12 ( 10. 8 ~ 1 3. 2 )	30	209	+1 5/- 9	+6 6. 7/- 11 1	80	+1 00 /-2 20
RS7-1505D20A5	15 ( 13. 5 ~ 1 6. 5 )	25	169	± 5	±2 00	79	±2 20
RS7-1509D20A5	15 ( 13. 5 ~ 1 6. 5 )	25	165	± 9	±1 11	81	±2 20
RS7-1512D20A5	15 ( 13. 5 ~ 1 6. 5 )	25	161	± 12	±8 3. 3	83	±1 00
RS7-1515D20A5	15 ( 13. 5 ~ 1 6. 5 )	25	163	± 15	±6 6. 7	82	±1 00
RS7-151509D20A5	15 ( 13. 5 ~ 1 6. 5 )	25	165	+1 5/- 9	+6 6. 7/- 11 1	81	+1 00 /-2 20
RS7-2405D20A5	24 ( 21. 6 ~ 2 6. 4 )	20	106	± 5	±2 00	79	±2 20
RS7-2409D20A5	24 ( 21. 6 ~ 2 6. 4 )	20	105	± 9	±1 11	80	±2 20
RS7-2412D20A5	24 ( 21. 6 ~ 2 6. 4 )	20	103	± 12	±8 3. 3	81	±1 00
RS -2415D20A5	24 ( 21. 6 ~ 2 6. 4 )	20	102	± 15	±6 6. 7	82	±1 00
RS7-241509D20A5	24 ( 21. 6 ~ 2 6. 4 )	20	105	+1 5/- 9	+6 6. 7/- 11 1	80	+1 00 /-2 20

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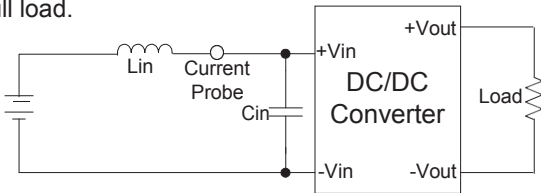
1. One load is 25% to 100% load, the other load is 100% load, the output voltage variable rate is within  $\pm 5\%$ .
2. Ripple/Noise measured with a  $10\mu\text{F}$  electrolytic capacitor and  $0.1\mu\text{F}$  ceramic capacitor.
3. Tested by minimal  $V_{in}$  and constant resistive load.
4. Measured Input reflected ripple current with a simulated source inductance of  $12\mu\text{H}$  And a source capacitor  $C_{in}(47\mu\text{F}, \text{ESR}<1.0\text{@}$  at  $100\text{kHz}$ ).
5. "Nature Convection" is usually about 30-65 LFM but is not equal to still air (0 LFM).
6. Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.
7. The VL2 series standard module meets EMI ClassB with external components. For more detail information, please contact with Motien.
8. Input components (C1,D1) are used to help meet surge test requirement for the module. C1 and D1 recommended nichicon UHEseries and Littelfuse SMDJ series.
9. Operation under no-load conditions will not damage these devices, however they may not meet all listed specifications.



**TEST CONFIGURATIONS**

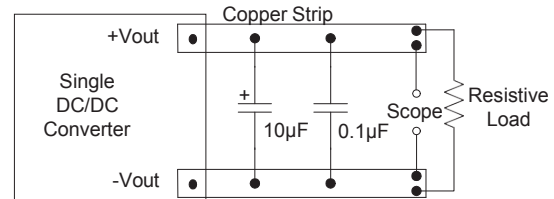
**Input Reflected Ripple Current Test Step**

Input reflected ripple current is measured through a source inductor  $L_{in}(12\mu\text{H})$  and a source capacitor  $C_{in}(47\mu\text{F}, \text{ESR}<1.0\text{@}$  at  $100\text{kHz}$ ) at nominal input and full load.



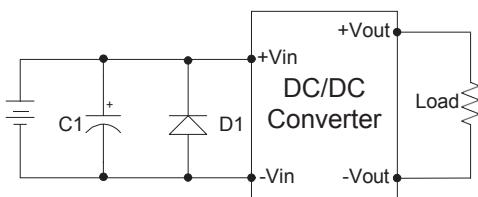
**Output Ripple & Noise Measurement Test**

Use a  $10\mu\text{F}$  electrolytic capacitor and  $0.1\mu\text{F}$  ceramic capacitor. The Scope measurement bandwidth is 0-20MHz.



**EFT & SURGE Filter**

Input components (C1,D1) are used to help meet surge test requirement for the module.

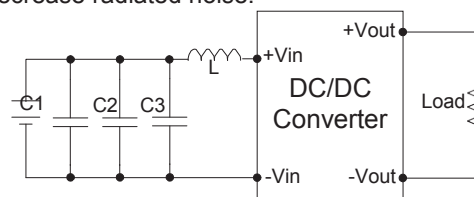


	C1	D1
RS7-05XXXX	330µF/50V	SMDJ9.0A
RS7-12XXXX	330µF/50V	SMDJ13A
RS7-15XXXX	330µF/50V	SMDJ18A
RS7-24XXXX	1000µF/35V	SMDJ24A

D1: Transient Voltage Suppression Diodes

**EMI Filter**

Input filter components (C1,C2,C3,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	C2	C3	L
RS7-05XXXX	1206,4.7µF/16V	X	X	6.8µH
RS7-12XXXX	1206,22µF/25V	X	X	6.8µH
RS7-15XXXX	1206,22µF/25V	X	X	6.8µH
RS7-24XXXX	1210,10µF/35V	1210,10µF/35V	1210,10µF/35V	10µH

