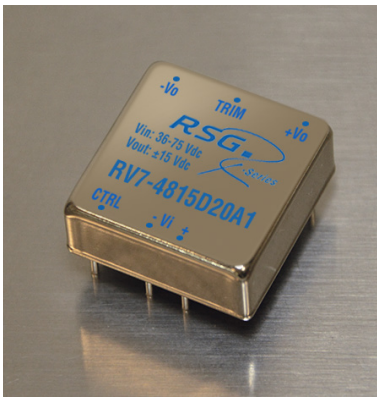
RV7-S20/D20

- 1“ x 1“ Package, Full SMD Technologie
- Wide 2:1 Input Range
- Soft Start
- No Minimum Load Required
- Adjustable Output Voltage
- Over Current Protection
- Over Voltage Protection
- 1600VDC Isolation
- Continuous Short Circuit Protection
- Efficiency up to 90%
- Operating Temperature Range -40° ~ +75°C
- Remote On/Off Control (CTRL)

RoHS



OUTPUT SPECIFICATION	
Voltage accuracy:	±1%
Output Voltage Adjustability (Trim):	Singel Output: ±10% max.
Line regulation:	Single &Dual ±0.5% max.
LOAD REGULATION:	Singel: ±0.5% max.
	Dual: ±1%,max.(balanced load)
Cross Regulation (Dual Output):	±5%
Over Voltage Protection *(Zener diode clamp)*:	See table
Over Current Protection:	140% of FI, typ.
Short Circuit Protection :	Indefinite (hiccup) (Automatic Recovery)
Ripple noise (20Mhz bandwidth):	75-100mV pk-pk max.
Temperature coefficient:	±0.02% °C
Capacitor load:	See table
Transient Recovery Time:	250us, typ.
Transient Response:	(Deviation) ±3% max.

INPUT SPECIFICATIONS	
Voltage Range:	See table
Start up Time:	30ms, typ.
No-Load/Full-Load Input Current:	See table
Input Filter:	PI Type
Input Reflected Ripple Current :	30mA pk-pk
Remote On/Off (positive logic):	On: 3.0~12VDC or open circuit,
	OFF: 0~1.2VDC or Short circuit pin 2 and 3
OFF idle current:	5mA typ.

GENERAL SPECIFICATIONS	
Efficiency:	See table typ.
I/O Isolation Voltage (60sec):	1600VDC
Input/Output:	1600VDC
Case/Input & Output:	1600VDC
I/O Isolation Capacitance:	1500pF typ.
I/O Isolation Resistance:	1000M Ohm
Switching Frequency:	330kHz, typ.
Humidity:	95% rel H
Reliability Calculated MTBF : (MIL-HDBK-217 f)	> 560khrs
Safety Standard: (designed to meet):	IEC 60950-1

ENVIRONMENTAL SPECIFICATION	
Operating Temperature range:	-40°C ~+75°C (see Derating Curve)
Maximum Case Temperature:	105°C
Storage Temperature :	-55°C ~+125°C
Cooling :	Nature Convection

PHYSICAL SPECIFICATIONS:	
Base Material:	Non-conductive Black Plastic (UL94V-0 rated)
Case Material:	Nickel-coated Copper
PIN Material:	1.0mm Brass Solder coated
Potting Material:	Epoxy (UL94V-0 rated)
Weight Case-DIP:	19.0g
Dimmension DIP:	1.00“ x 1.00“ x 0.40“

ABSOLUTE MAXIMUM RATINGS (1)	
Input Surge Voltage (100ms)/	
12V Models:	25VDC max.
24V Models:	50VDC max.
48V Models:	100VDC 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 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.

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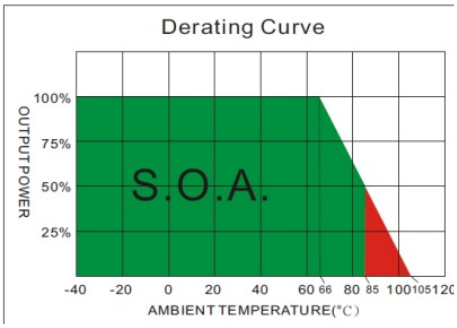
NUMBER STRUCTURE

RV7 - XX XX S/D XX A X

- **RV7** – Name/Package: RV7 = 1"x 1"
- **XX** – Input: 12= 9-18V; 24= 18-36V; 48= 36-72 V
- **XX** – Output: 03=3.3V; 05=5.0V; 12=12V; 15=15V
- **S/D** – Type: S= Single-Outp.; D= Dual-Outp.
- **XX** – Power (W): 15=15W; 20=20W
- **A** – Code: internal
- **X** – Isolation (kVDC): 1= 1.6



MODEL SELECTION GUIDE

NODEL NUNBER	INPUT Voltage Range (Vdc)	INPUT Current No-Load (mA)	INPUT Current Full Load (mA)	OUTPUT Voltage (Vdc)	OUTPUT Current Nin. load (mA)	OUTPUT Current Full load (mA)	EFFICIENCY @FL(%)	Capacitor Load(uF)
RV7-1203S20A1	9-18	60	1439	3.3	0	4500	86	7000
RV7-1205S20A1	9-18	60	1852	5	0	4000	90	5000
RV7-1212S20A1	9-18	30	1873	12	0	1670	89	850
RV7-1215S20A1	9-18	30	1873	15	0	1330	89	700
RV7-2403S20A1	18-36	34	720	3.3	0	4500	86	7000
RV7-2405S20A1	18-36	35	936	5	0	4000	89	5000
RV7-2412S20A1	18-36	25	936	12	0	1670	89	850
RV7-2415S20A1	18-36	25	936	15	0	1330	89	700
RV7-4803S20A1	36-75	25	360	3.3	0	4500	86	7000
RV7-4805S20A1	36-75	25	468	5	0	4000	89	5000
RV7-4812S20A1	36-75	15	468	12	0	1670	89	850
RV7-4815S20A1	36-75	15	463	15	0	1330	9	700
RV7-1212D20A1	9-18	30	1873	±12	0	±833	89	±470
RV7-1215D20A1	9-18	30	1873	±15	0	±667	89	±330
RV7-2412D20A1	18-36	30	936	±12	0	±833	89	±470
RV7-2415D20A1	18-36	30	936	±15	0	±667	89	±330
RV7-4812D20A1	36-75	20	468	±12	0	±833	89	±470
RV7-4815D20A1	36-75	20	468	±15	0	±667	89	±330

1. One load is 25% to 100% load, the other load is 100% load, the output voltage variable rate is within ±5%.
2. Measured with a 1.0uF ceramic capacitor and 10uF tantalum capacitor.
3. Tested by minimal Vin and constant resistive load.
4. Tested by normal Vin and 25% load step change (75%-50%-25% of Io).
5. Measured Input reflected ripple current with a simulated source inductance of 12uHand a source capacitor Cin(47uF, ESR<1.0© at 100KHz).
6. The remote on/off control pin is referenced to -Vin(pin2).
7. "Nature Convection" is usually about 30-65 LFM but is not equal to still air (0 LFM).
8. Exceeding the absolute ratings of the unit could cause damage.
   It is not allowed for continuous operating.
9. Input filter meets EN 55022 Class A without external components.
10. An external filter capacitor is required if the module has to meet IEC61000-4-4 and IEC61000-4-5.

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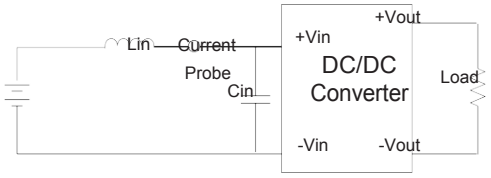
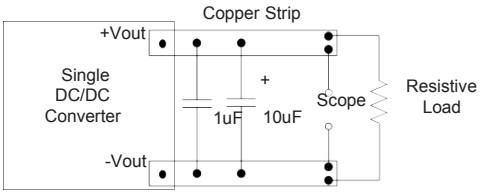
Input Reflected Ripple Current Test Step

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.



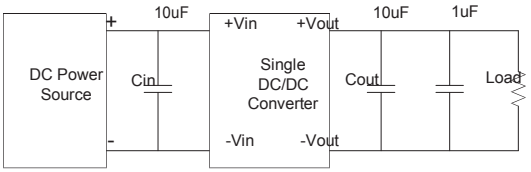
Output Ripple & Noise Measurement Test

Measured with a 1.0uF MLCC capacitor and a 10uF tantalum capacitor .
The Scope measurement bandwidth is 0-20MHz.



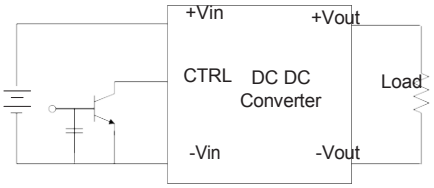
Output Ripple & Noise Reduction

To reduce ripple and noise, it is recommended to use a 1uF ceramic disk capacitor and a 10uF electrolytic capacitor to at the output.



CTRL Module ON / OFF

Positive logic turns on the module during high logic and off during low logic.
Ctrl module on/off can be controlled by an external switch between the ctrl terminal and -Vin terminal.
The switch can be an open collector or open drain
For positive logic if the ctrl feature is not used, please leave the ctrl pin floating.



Over Voltage Protection

The module includes an internal output over voltage protection circuit, which monitors the voltage on the output terminals. If this voltage exceeds the over voltage set point, the module will activate the control loop of internal circuit to clamp the output voltage.

Over Current Protection

The module includes an internal over current protection circuit, which will endure current limiting for an unlimited duration during output over load condition. If the output current exceeds the OCP set point, the module will shut down automatically (hiccup).
The module will try to restart after shut down. If the over load condition still exists, the module will shut down again.

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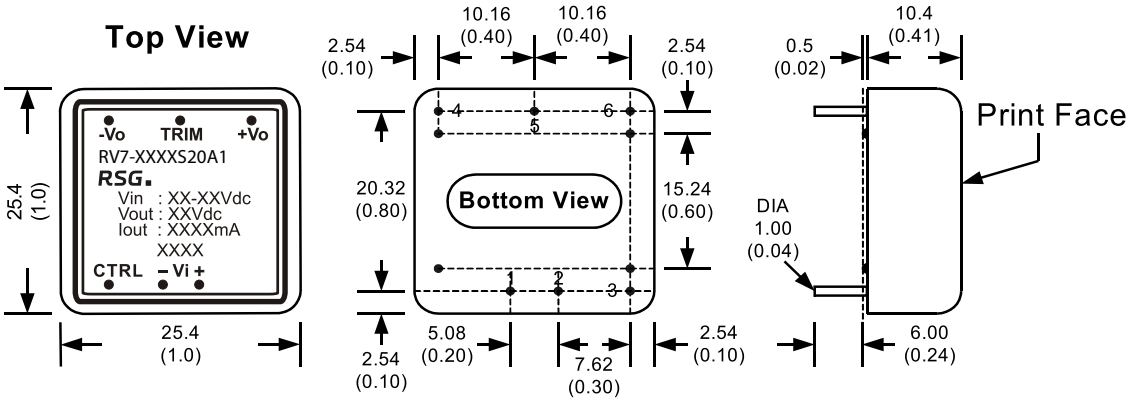


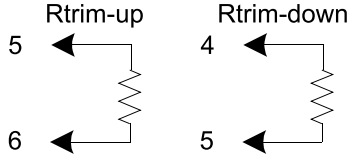
All dimensions are typical in millimeters (inches).

1. Pin diameter: 1.0 ±0.05 (0.04 ±0.002)
2. Pin pitch and length tolerance: ±0.35 (±0.014)
3. Case Tolerance: ±0.5 (±0.02)
4. Stand-off tolerance: ±0.1 (±0.004)

PIN CONNECTIONS		
PIN NUMBER	SINGLE	DUAL
1	+Vin	+Vin
2	-Vin	-Vin
3	CTRL	CTRL
4	+Vout	+Vout
5	Trim	Com
6	-Vout	-Vout

EXTERNAL OUTPUT TRIMMING

Output can be externally trimmed by using the method as below. (single output models only)



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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