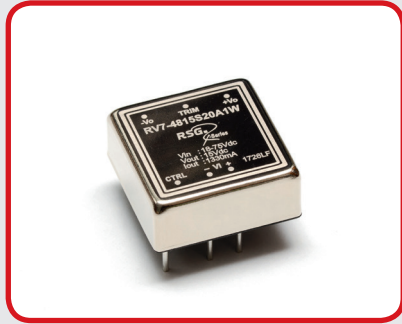


RV7-S/D20W

20W Regulated Single & Dual Output DC/DC Converter



Picture similar



- 1" x 1" Package
- Wide 4:1 Input Range
- 1600VDC Isolation
- No Minimum Load Required
- Efficiency up to 89%
- Operating Temperature Range -40°C ~ +75°C
- Adjustable Output Voltage
- Over Current Protection, Over and Under Voltage Protection
- EMI filter meets EN55032 class A without external components
- Soft Start
- Remote On/Off Control

Output Specifications	
Voltage Accuracy	±1%, max.
Output Voltage Adjustability (Trim)	Single Output: ±10% max.
Maximum Output Current	See table
Line Regulation	Single & Dual ±0.5% max.
Load Regulation	Single: ±0.5% max. Dual: ±1%, max. (balanced load)
Cross Regulation (Dual Output)	±5%
Over Voltage Protection	118 ~ 125% of Vout typ.
Over Current Protection	140% of FL typ.
Short Circuit Protection	Indefinite (hiccup) (Automatic Recovery)
Ripple & Noise (20 MHz bandwidth)	75 ~ 100mV pk-pk max.
Temperature Coefficient	±0.02%/°C
Transient Recovery Time	250µs 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	C/L (see filter details on following pages)
Input Reflected Ripple Current	30mA pk-pk typ.
Remote ON	3.0 ~ 12VDC or open circuit
Remote OFF	0 ~ 1.2VDC or short circuit pin 2 and 3
OFF Idle Current	5mA typ.
Surge Voltage (100 ms) ¹⁾	
24V Models	50VDC max.
48V Models	100VDC max.

General Specifications	
I/O Isolation Voltage (60 sec)	1600VDC
Isolation Voltage Metal Case/Input&Output	1600VDC
I/O Isolation Capacitance	1200pF typ.
I/O Isolation Resistance	1000M Ohm, min
Switching Frequency	330kHz typ.
Humidity	95% rel H
Reliability Calculated MTBF	>560khrs (MIL-HDBK-217 f)
Safety Standard(s)	UL60950-1 (approval), UL62368-1 (meet)

Environmental Specifications	
Operating Temperature Range	-40°C ~ +75°C (see Derating Curve)
Maximum Case Temperature	105°C
Storage Temperature	-55°C ~ +125°C
Cooling	Natural Convection
Soldering Profile and Peak Temperature	Wave Flow: 260°C (1.5 mm from case), 10s, max.

Physical Specifications	
Case Material	Nickel-coated Copper Base Material: Non-conductive Black Plastic (UL94V-0 rated)
Pin Material	1.0mm Brass Solder-coated
Potting Material	Epoxy (UL94V-0 rated)
Weight	19.0g
Case Dimensions	1.00" x 1.00" x 0.40"

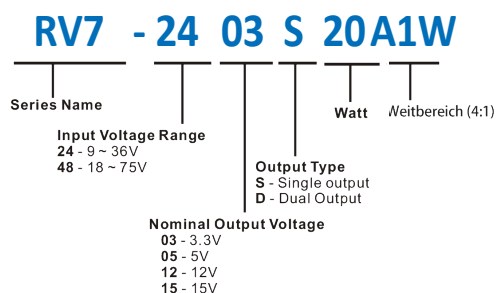
EMC Specifications	
Radiated / Conducted Emissions	EN55032 Class A see EMI Filter
ESD	IEC 61000-4-2 Perf.Criteria A
Rad. RF	IEC 61000-4-3 Perf.Criteria A
EFT	IEC 61000-4-4 Perf.Criteria A
Surge	IEC 61000-4-5 Perf.Criteria A
Cond. RF	IEC 61000-4-6 Perf.Criteria A
PFMF	IEC 61000-4-8 Perf.Criteria A
VD/SI/VV	–

¹⁾ These are stress ratings; exposure of devices to any of these conditions may adversely affect long-term reliability.

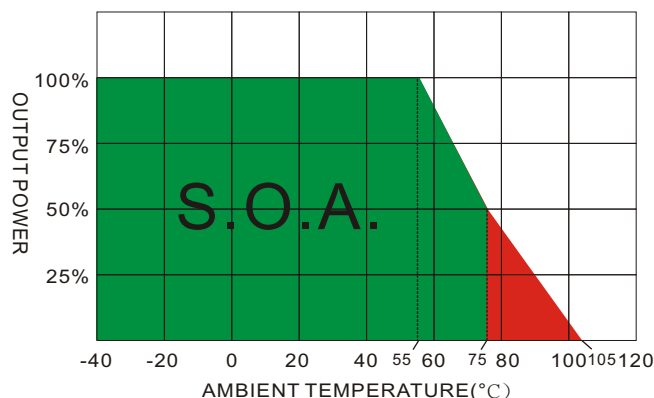
All specifications typical at T_A = 25 °C, nominal input voltage and full load, unless otherwise specified.

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.**

RV7-S/D20W



Derating Curve



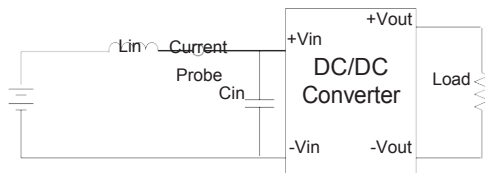
MODEL SELECTION GUIDE

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current		OUTPUT Voltage (Vdc)	OUTPUT Current		EFFICIENCY @FL(%)	Capacitor Load(uF)
		No-Load (mA)	Full Load (mA)		Min. load (mA)	Full load (mA)		
RV7-2403S20A1W	9-36	50	703	3.3	0	4500	88	10000
RV7-2405S20A1W	9-36	50	936	5	0	4000	89	5000
RV7-2412S20A1W	9-36	22	936	12	0	1670	89	850
RV7-2415S20A1W	9-36	22	936	15	0	1330	89	700
RV7-4803S20A1W	18-75	30	352	3.3	0	4500	88	10000
RV7-4805S20A1W	18-75	30	468	5	0	4000	89	5000
RV7-4812S20A1W	18-75	15	468	12	0	1670	89	850
RV7-4815S20A1W	18-75	15	468	15	0	1330	89	700
RV7-2412D20A1W	9-36	25	936	±12	0	±833	89	±470
RV7-2415D20A1W	9-36	25	936	±15	0	±667	89	±330
RV7-4812D20A1W	18-75	15	468	±12	0	±833	89	±470
RV7-4815D20A1W	18-75	15	468	±15	0	±667	89	±330

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

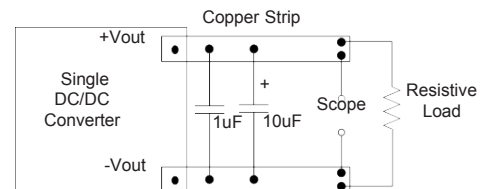
Input Reflected Ripple Current Test Step

Input reflected ripple current is measured through a source inductor L_{in} (12uH) and a source capacitor C_{in} (47uF, ESR<1.0 Ω at 100KHz) at nominal input and full load.



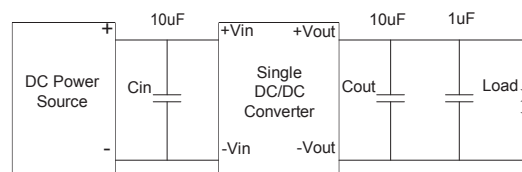
Output Ripple & Noise Measurement Test

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



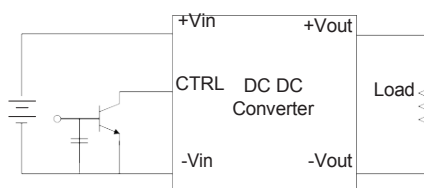
Output Ripple & Noise Reduction

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.

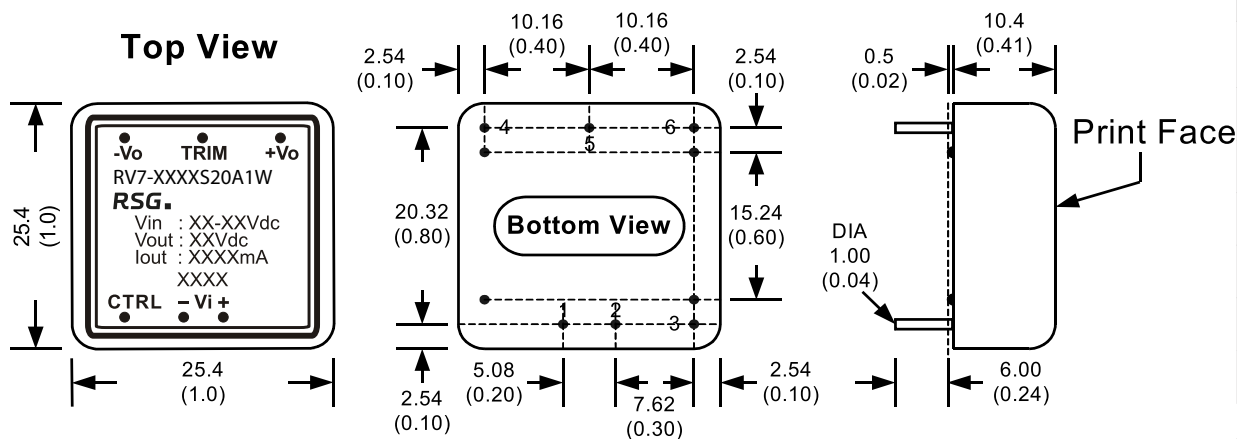
Over Current Protection

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.

MECHANICAL SPECIFICATIONS

RV7-S/D20W



All dimensions are typical in millimeters (inches).

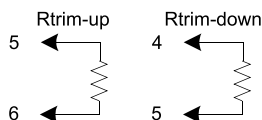
1. Pin diameter: 1.0 ± 0.05 (0.04 ± 0.002)
2. Pin pitch and length tolerance: ± 0.35 (± 0.014)
3. Case Tolerance: ± 0.5 (± 0.02)
4. Stand-off tolerance: ± 0.1 (± 0.004)

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)



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