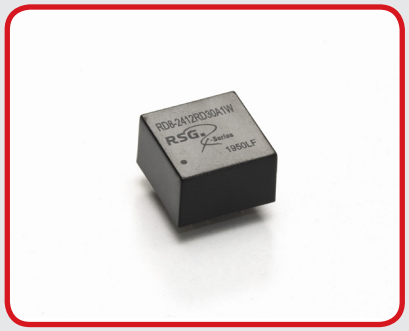
RD8-RS/RD30W

3.0W Regulated Single & Dual Output DC/DC Converter



Picture similar

CE

RoHS

- **8 Pin DIL Package**
- **Wide 4:1 Input Range**
- **1600VDC Isolation**
- **Full SMD Technology**
- **Efficiency up to 84%**
- **Operating Temperature Range -40°C ~ +80°C**
- **Continuous Short Circuit Protection**
- **Low Ripple and Noise**
- **Non Conductive Black Plastic Case**
- **Remote On/Off Control**

Output Specifications	
Voltage Accuracy	±1%, max.
Output Voltage Adjustability (Trim)	–
Maximum Output Current	See table
Line Regulation	±0.2% max.
Load Regulation	from 0% to 100% Load: ±1% max. –
Cross Regulation (Dual Output)	±5%
Over Voltage Protection	–
Over Current Protection	–
Short Circuit Protection	Indefinite (Automatic Recovery)
Ripple & Noise (20 MHz bandwidth)	150mV Single, 100mV Dual pk-pk max.
Temperature Coefficient	±0.02%/°C
Transient Recovery Time	500µs typ.
Transient Response Deviation	±3% ~ ±5% 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	20mA pk-pk typ.
Remote ON	Open circuit or high impedance
Remote OFF	2 ~ 4mA input current (via 1kOhm)
OFF Idle Current	2.5mA typ
Surge Voltage (100 ms) †)	
12V Models 24V Models 48V Models	25VDC max. 50VDC max. 100VDC max.

General Specifications	
I/O Isolation Voltage (60 sec)	1600VDC
Isolation Voltage Case/Input&Output	–
I/O Isolation Capacitance	2000pF typ.
I/O Isolation Resistance	1000M Ohm, min.
Switching Frequency	100kHz min.
Humidity	95% rel H
Reliability Calculated MTBF	>956KHrs (MIL-HDBK-217 f)
Safety Standard(s)	IEC/EN62368-1 (designed to meet)

Environmental Specifications	
Operating Temperature Range	-40°C ~ +80°C (see Derating Curve)
Maximum Case Temperature	100°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	Non-conductive Black Plastic (UL94V-0 rated) –
Pin Material	C5191T-H Solder-coated
Potting Material	Epoxy (UL94V-0 rated)
Weight	3.60g
Case Dimensions	0.55" x 0.55" x 0.32"

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	–

†) 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, Acal BFi accepts no responsibility for consequences arising from printing errors or inaccuracies. Specifications are subject to change without notice.

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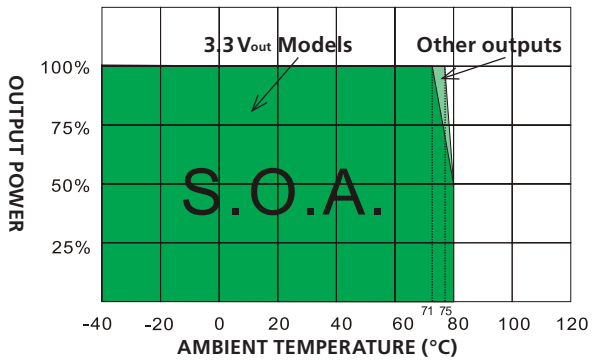
Number structure RD8

RD8	–	24	05	RS	30	1	(W)
Name / package		**V-input nom.**	**V-output**	**Output type**	**Power**	**Isolation**	**Wide-Input**
RD8 = DIL8		12 = 4.5 ~ 18 V 24 = 9 ~ 36 V 48 = 18 ~ 75 V	03 = 3.3 V 05 = 5 V … 15 = 15 V	RS = Reg.Single RD = Reg. Dual	30 = 3.0 W	1 = 1.6 kV DC	W = 4:1

Derating Curve



Model Selection Guide

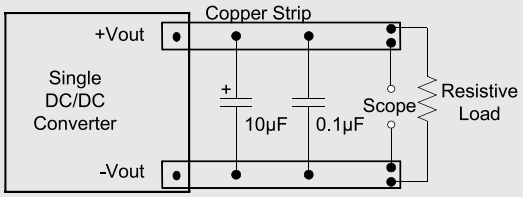
Model Number	Input	Input Current		Output	Output Current		Efficiency	Capacitor Load
	Voltage Range (VDC)	No-Load (mA, max.)	Full Load (mA, typ.)	Voltage (VDC)	Min. Load (mA)	Full Load (mA)	@Full Load (%, typ.)	@Full Load (µF, max.)
RD8-1203RS30A1W	12 (4.5 ~ 18)	30	257	3.3	0	700	75	3300
RD8-1205RS30A1W	12 (4.5 ~ 18)	45	309	5	0	600	81	1680
RD8-1212RS30A1W	12 (4.5 ~ 18)	55	301	12	0	250	83	470
RD8-1215RS30A1W	12 (4.5 ~ 18)	60	301	15	0	200	83	330
RD8-1205RD30A1W	12 (4.5 ~ 18)	30	313	±5	0	±300	80	±1000
RD8-1212RD30A1W	12 (4.5 ~ 18)	55	305	±12	0	±125	82	±220
RD8-1215RD30A1W	12 (4.5 ~ 18)	60	301	±15	0	±100	83	±220
RD8-2403RS30A1W	24 (9 ~ 36)	25	127	3.3	0	700	76	3300
RD8-2405RS30A1W	24 (9 ~ 36)	20	152	5	0	600	82	1680
RD8-2412RS30A1W	24 (9 ~ 36)	30	149	12	0	250	84	470
RD8-2415RS30A1W	24 (9 ~ 36)	35	149	15	0	200	84	330
RD8-2405RD30A1W	24 (9 ~ 36)	25	154	±5	0	±300	81	±1000
RD8-2412RD30A1W	24 (9 ~ 36)	30	151	±12	0	±125	83	±220
RD8-2415RD30A1W	24 (9 ~ 36)	35	149	±15	0	±100	84	±220
RD8-4803RS30A1W	48 (18 ~ 75)	10	65	3.3	0	700	74	3300
RD8-4805RS30A1W	48 (18 ~ 75)	10	77	5	0	600	81	1680
RD8-4812RS30A1W	48 (18 ~ 75)	15	77	12	0	250	81	470
RD8-4815RS30A1W	48 (18 ~ 75)	15	76	15	0	200	82	330
RD8-4805RD30A1W	48 (18 ~ 75)	20	79	±5	0	±300	79	±1000
RD8-4812RD30A1W	48 (18 ~ 75)	20	78	±12	0	±125	80	±220
RD8-4815RD30A1W	48 (18 ~ 75)	25	78	±15	0	±100	80	±220

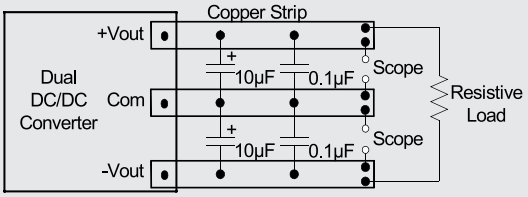
The models listed above are standard types. If you need special specifications or have questions regarding packing or need application support, please contact our specialists:
sales@rsg-electronic.de or +49 69-984047-0

Test Configurations

Output Ripple & Noise Measurement Test

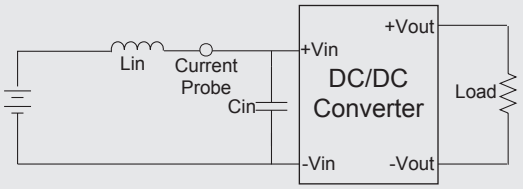
Use a 10 µF electrolytic capacitor and a 0.1 µF ceramic capacitor.
The Scope measurement bandwidth is 20 MHz.





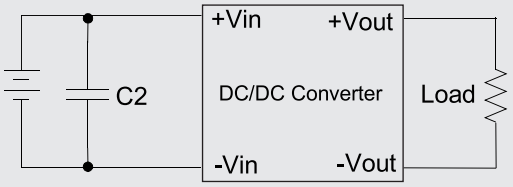
Input Reflected Ripple Current Test

Input reflected ripple current is measured with a source inductor L_{in} (27 µH) and a source capacitor C_{in} (47 µF, ESR < 1.0 Ω at 100 kHz) at nominal input and full load.



EFT & Surge Test

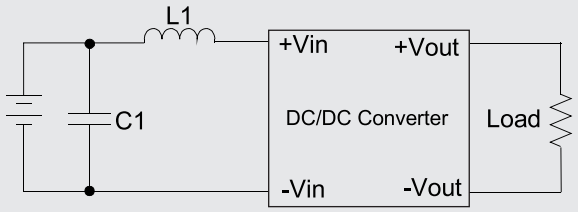
Input filter component (C2) is used to help meet IEC61000-4-4 and IEC61000-4-5.



	C2
RD8-xxxxxxxx	220 µF/100 V

EMI Filter (Conducted Emissions)

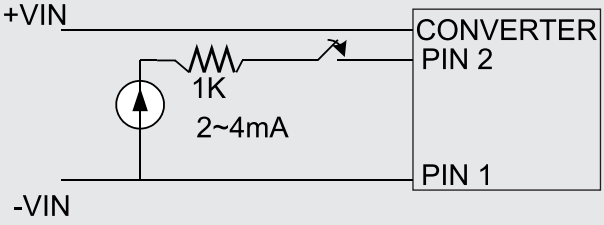
Input filter components (C1, L1) are used to meet EMI test criteria A.
These components should be mounted as close as possible to the module; and all leads should be minimized to decrease radiated noise.



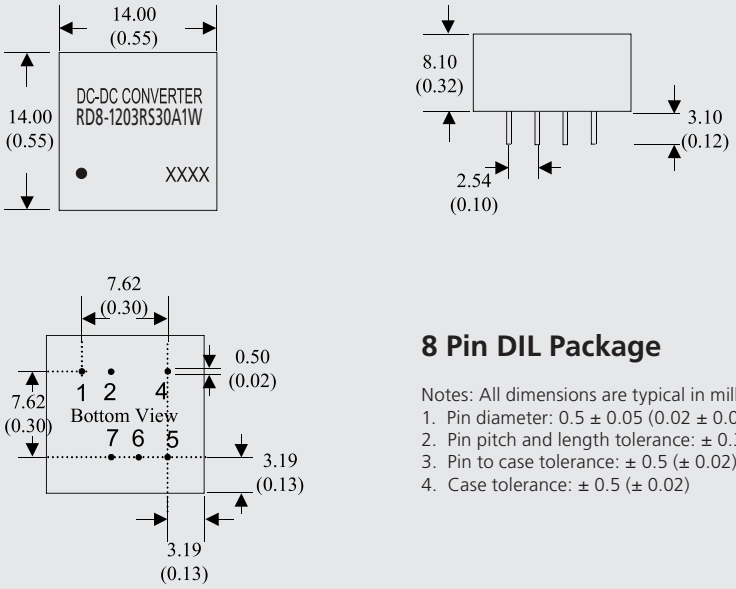
	C1	L1
12 V_{in} models	1210, 10 µF/35 V	
24 V_{in} models	1210, 2.2 µF/100 V	2.2 µH
48 V_{in} models	1210, 4.7 µF/100 V	

Remote ON / OFF Test Step

Input current (2 ~ 4 mA) via 1 kΩ to Pin2, converter OFF, open or high impedance, converter ON.



Mechanical Specifications



Pin Connections		
Pin Number	**Single**	**Dual**
1	–V Input	–V Input
2	Remote On/Off	Remote On/Off
4	+V Input	+V Input
5	+V Output	+V Output
6	N. P.	Common
7	–V Output	–V Output

8 Pin DIL Package

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. Pin to case tolerance: ± 0.5 (± 0.02)
4. Case tolerance: ± 0.5 (± 0.02)

Note:
1. Cross regulation: one load is 25 % to 100 % load, the other load is 100 % load, the output voltage variable rate is within ± 5%.
2. Ripple/Noise measured with a 0.1 µF ceramic and a 10 µF electrolytic capacitor.
3. Capacitive load is tested at minimal V_{in} and constant resistive load.
4. Transient recovery and response are tested at normal V_{in} and 100 % ~ 25 % load, 25 % load step change.
5. Measured Input reflected ripple current with a simulated source inductance of 27 µH and a source capacitor C_{in}(47 µF, ESR < 1.0 Ω at 100 kHz).
6. An external filter capacitor is required if the module has to meet IEC61000-4-4 and IEC61000-4-5.
   The suggested filter capacitor: Nippon - chemi - con KY series, 220 µF/100 V.
7. Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.
8. "Nature Convection" is usually about 30 ~ 65 LFM but is not equal to still air (0 LFM).
9. Input filter components are required to help meet conducted emission class A (see EMI Filter section).

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