

RR9-S12/D12

- 24 Pin DIL Package
- Wide 4:1 Input Range
- 1600VDC Isolation
- No Minimum Load Required
- Continuous Short Circuit Protection
- Over Voltage Protection
- Over Current Protection
- Efficiency up to 90%
- Operating Temperature Range -40° ~ +85°C
- Metal Case
- Soft Start
- Remote on/off Control



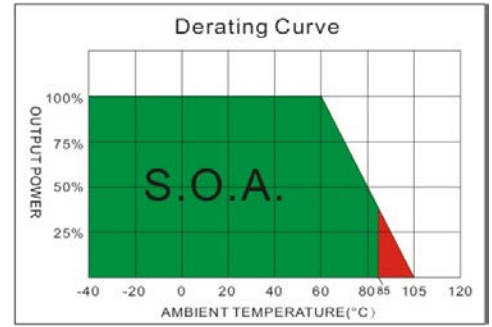
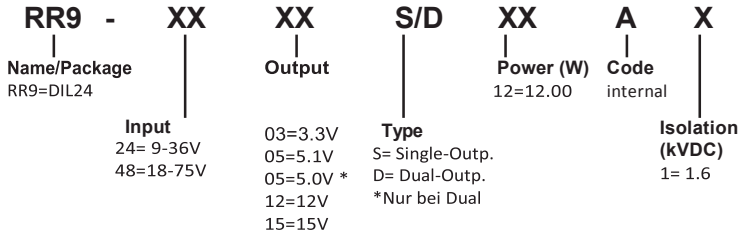
OUTPUT SPECIFICATION	
Voltage accuracy:	±1.2%
Line regulation:	Single & Dual ±0.2% max.
LOAD REGULATION:	from 0% to 100% Load: ±0.5 - 1% max.
Cross Regulation (Dual Output):	± 5%
Over Voltage Protection (<i>Zener diode clamp</i>):	Zener Diode Clamp
Over Current Protection:	170% of I _L , typ..
Short Circuit Protection :	Indefinite (Automatic Recovery)
Ripple noise (20Mhz bandwidth):	85mV pk-pk
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:	20ms, typ.
Max. Input Current:	See table
No-Load/Full-Load Input Current:	See table
Input Filter:	PI Type
Input Reflected Ripple Current :	20mA pk-pk typ.
Remote On/Off (positive logic):	On: 3.0~12VDC or open circuit, OFF: 0~1.2VDC or Short circuit pin 1 and 2/3
OFF idle current:	5mA typ.
GENERAL SPECIFICATIONS	
Efficiency:	See table typ.
I/O Isolation Voltage (60sec):	1600VDC, Input/Output, Case/Input & Output
I/O Isolation Capacitance:	1500pF typ.
I/O Isolation Resistance:	1000M Ohm
Switching Frequency:	270kHz, typ.
Humidity:	95% rel H
Reliability Calculated MTBF :	> 1.00Mhrs (MIL-HDBK-217 f)
Safety Standard: (designed to meet):	IEC 60950-1

ENVIRONMENTAL SPECIFICATION	
Operating Temperature range:	-40°C ~ +85°C (see Derating Curve)
Maximum Case Temperature:	100°C
Storage Temperature :	-40°C ~ +125°C
Cooling :	Nature Convection
PHYSICAL SPECIFICATIONS:	
Case Material:	Nickel-coated Copper
PIN Material:	0.5mm Brass Solder coated
Potting Material:	Epoxy (UL94V-0 rated)
Weight Case-DIP:	18.0g
Dimmension DIP:	1.25" x 0.8" x 0.4"
ABSOLUTE MAXIMUM RATINGS (1)	
Input Surge Voltage (100ms)/	
24V Models:	50VDC max.
48V Models:	100VDC max.
Soldering Temperature:	260°C max.
EMC SPECIFICATIONS (2)	
Radiated-/Conducted Emissions:	EN55022 Class A see EMI Filter
ESD:	IEC 61000-4-2 Perf.Criteria B
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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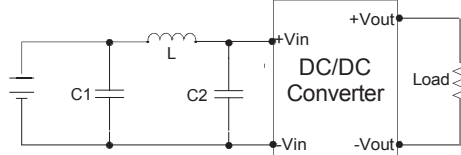
NUMBER STRUCTURE



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)		
RR9-2403S12A1	9-36	15	573	3.3	0	3500	87	2000
RR9-2405S12A1	9-36	15	581	5.1	0	2400	89	2000
RR9-2412S12A1	9-36	15	574	12	0	1000	90	430
RR9-2415S12A1	9-36	15	574	15	0	800	90	300
RR9-2405D12A1	9-36	15	595	±5	0	±1200	87	±1250
RR9-2412D12A1	9-36	15	574	±12	0	±500	90	±200
RR9-2415D12A1	9-36	15	574	±15	0	±400	90	±120
RR9-4803S12A1	18-75	15	286	3.3	0	3500	87	2000
RR9-4805S12A1	18-75	15	290	5.1	0	2400	89	2000
RR9-4812S12A1	18-75	15	287	12	0	1000	90	430
RR9-4815S12A1	18-75	15	287	15	0	800	90	300
RR9-4805D12A1	18-75	15	297	±5	0	±1200	87	±1250
RR9-4812D12A1	18-75	15	287	±12	0	±500	90	±200
RR9-4815D12A1	18-75	15	287	±15	0	±400	90	±120

- One load is 25% to 100% load, the other load is 100% load, the output voltage variable rate is within ±5%.
- Measured with 20MHz bandwidth and 1.0uF ceramic capacitor.
- Tested by minimal Vin and constant resistive load.
- Tested by normal Vin and 25% load step change (75%-50%-25% of Io).
- Input filter components (C1, L, C2) 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.
- An external filter capacitor is required if the module has to meet IEC61000-4-4 and IEC61000-4-5 and IEC61000-4-6 . The filter capacitor RSG suggest: Nippon - chemi - con KY series, 330uF/100V.
- Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.



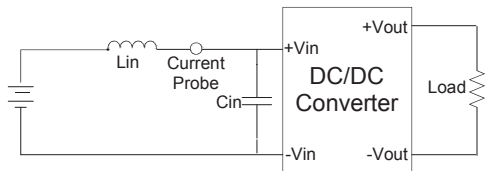
	C1	L	C2
RR9-XXXXS12	2.2uF, 100V	12uH	2.2uF, 100V
RR9-XXXXD12	2.2uF, 100V	12uH	2.2uF, 100V

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TEST CONFIGURATIONS

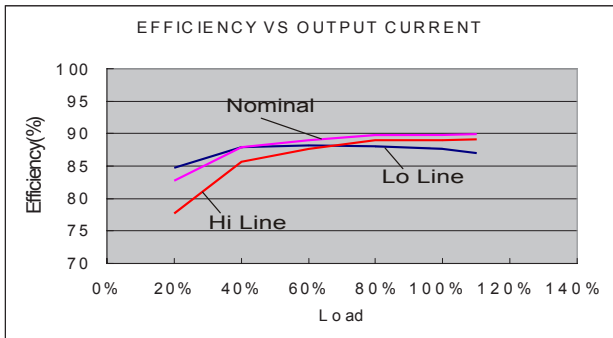
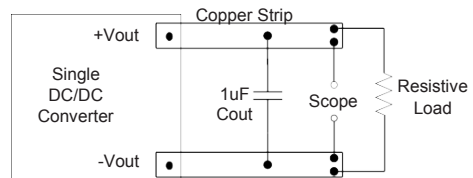
Input Reflected Ripple Current Test Step

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

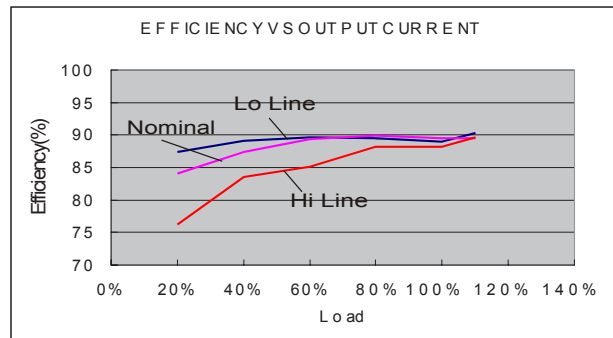


Output Ripple & Noise Measurement Test

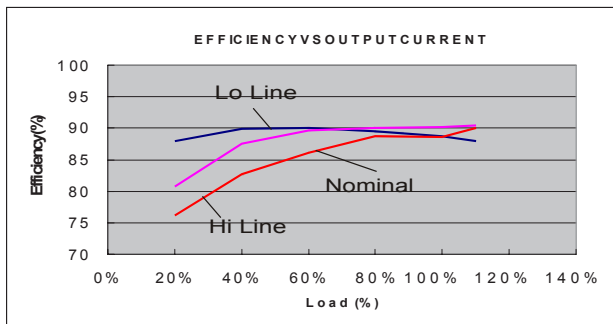
Use a capacitor C_{out} (1.0uF) measurement. The Scope measurement bandwidth is 0-20MHz.



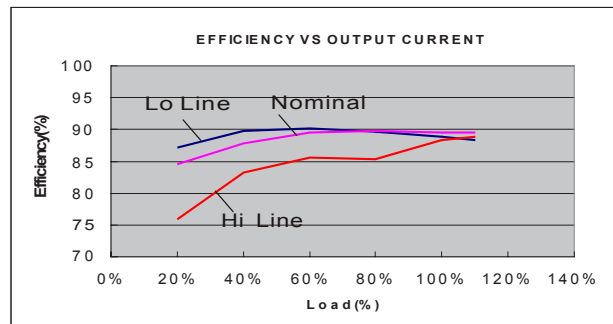
RR9-245R1S12



RR9-4812S12

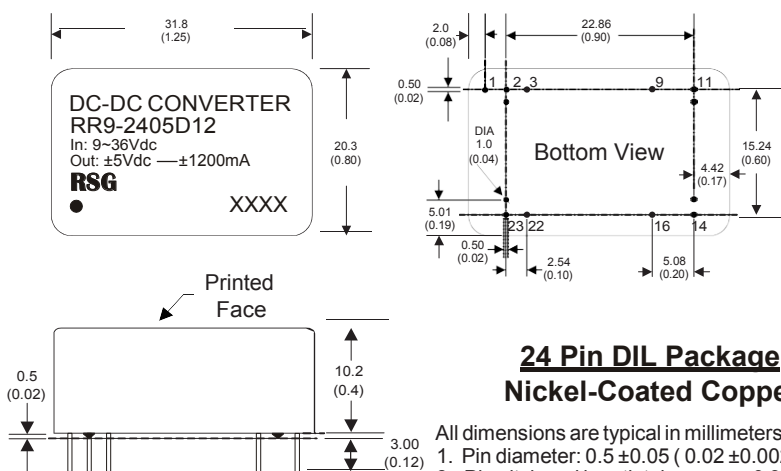


RR9-2412D12



RR9-4815D12

MECHANICAL SPECIFICATIONS



**24 Pin DIL Package
Nickel-Coated Copper**

- 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. Case Tolerance: ± 0.5 (± 0.02)
 4. Stand-off tolerance: ± 0.1 (± 0.004)

PIN CONNECTIONS		
PIN NUMBER	SINGLE	DUAL
1	Remote On/Off	Remote On/Off
2	-V Input	-V Input
3	-V Input	-V Input
9	N.P.	Common
11	N.C.	-V Output
14	+V Output	+V Output
16	-V Output	Common
22	+V Input	+V Input
23	+V Input	+V Input

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