RR9-S15/D15

- 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

CE

OUTPUT SPECIFICATION	
Voltage accuracy:	±1.0%
Line regulation:	Single &Dual ±0.2-0.5% max.
LOAD REGULATION:	from 0% to 100% Load: ±0.5 - 1% max.
Cross Regulation (Dual Output):	± 5%
Over Voltage Protection *(Zener diode clamp)*:	Zener Diode Clamp
Over Current Protection:	150%of Fl, typ..
Short Circuit Protection :	Indefinite (Automatic Recovery)
Ripple noise (20Mhz bandwidth):	60mV 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:	2000pF typ.
I/O Isolation Resistance:	1000M Ohm
Switching Frequency:	250kHz-330kHz, typ.
Humidity:	95% rel H
Reliability Calculated MTBF : (MIL-HDBK-217 f)	> 410KHrs
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:	20.0g
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 B
SURGE:	IEC 61000-4-5 Perf.Criteria B
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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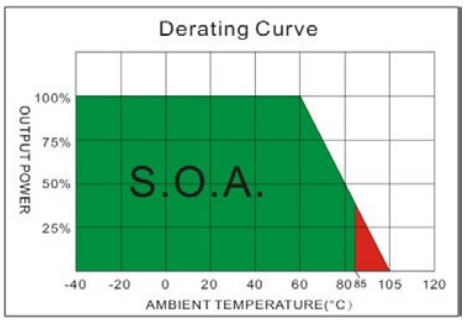
NUMBER STRUCTURE

RR9	-	XX	XX	S/D	XX	A	X
Name/Package		Input	Output	Type	Power (W)	Code	Isolation (kVDC)
RR9=DIL24		24= 9-36V 48=18-75V	03=3.3V 05=5.1V 05=5.0V * 12=12V 15=15V	S= Single-Outp. D= Dual-Outp. *Nur bei Dual	15=15.00	internal	1= 1.6



MODEL SELECTION GUIDE

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current No-Load (mA, max.)	INPUT Current Full Load (mA, typ.)	OUTPUT Voltage (Vdc)	OUTPUT Current Min. load (mA)	OUTPUT Current Full load (mA)	EFFICIENCY @FL (%, typ.)	Capacitor Load @FL (µF, max.)
RR9-2403S15A1	9-36	15	640	3.3	0	4000	88	4700
RR9-2405S15A1	9-36	15	724	5.1	0	3000	90	3300
RR9-2412S15A1	9-36	15	710	12	0	1250	90	600
RR9-2415S15A1	9-36	15	710	15	0	1000	90	400
RR9-2405D15A1	9-36	15	744	±5	0	±1500	86	±1500
RR9-2412D15A1	9-36	15	718	±12	0	±625	89	±288
RR9-2415D15A1	9-36	15	710	±15	0	±500	90	±200
RR9-4803S15A1	18-75	15	316	3.3	0	4000	89	4700
RR9-4805S15A1	18-75	15	366	5.1	0	3000	89	3300
RR9-4812S15A1	18-75	15	355	12	0	1250	90	600
RR9-4815S15A1	18-75	15	355	15	0	1000	90	400
RR9-4805D15A1	18-75	15	372	±5	0	±1500	86	±1500
RR9-4812D15A1	18-75	15	359	±12	0	±625	89	±288
RR9-4815D15A1	18-75	15	355	±15	0	±500	90	±200

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.
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 12uH and a source capacitor Cin(47uF, ESR<1.0© at 100KHz).
6. The remote on/off control pin is referenced to -Vin(pin2).
7. An external filter capacitor is required if the module has to meet IEC61000-4-4 and IEC61000-4-5.
   The filter capacitor suggest: Nippon chemi-con KY series, 2pcs 330uF/100V paraller connection or 680uF/100V.
8. Exceeding the absolute ratings of the unit could cause damage.
   It is not allowed for continuous operating.
9. Operation under no-load conditions will not damage these devices, however they may not meet all listed specifications.

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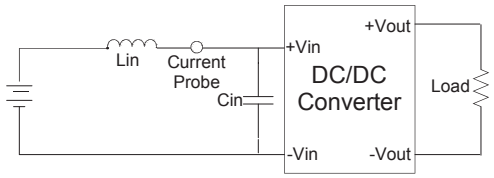
TEST CONFIGURATIONS

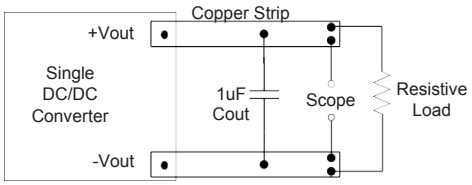
Input Reflected Ripple Current Test Step

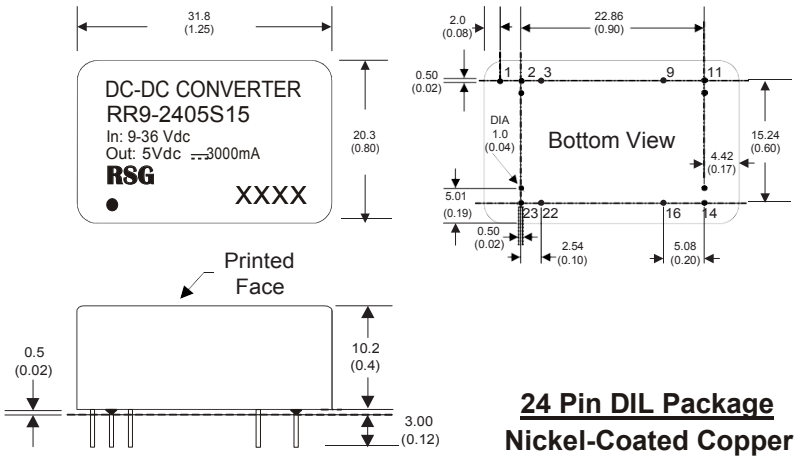
Input reflected ripple current is measured through a source inductor Lin(12uH) and a source capacitor Cin(47uF, ESR<1.0© at 100KHz) at nominal input and full load.



Output Ripple & Noise Measurement Test

Use a capacitor Cout(1.0uF) measurement.
The Scope measurement bandwidth is 0-20MHz.





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

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