

# RS5-R30/RD30

3.0 Watt 2:1 regulated  
single & dual output



ELECTRONIC COMPONENTS



- 8 Pin SIP8 package
- Wide 2:1 input range
- 1600 VDC isolation
- Continuous short circuit protection
- Efficiency up to 84%
- -40°C~71°C operation temperature range
- Metal case, Remote On/Off optional

## OUTPUT SPECIFICATIONS

Voltage accuracy	± 1%
Line regulation	± 0.5%
Load regulation (From 25% to 100% Load)	± 1%
Cross regulation (dual output)	± 5%
Ripple & Noise (20 MHz bandwidth) (1)	75 mV pk-pk
Short circuit protection	Indefinite (automatic recovery)
Temperature coefficient	± 0.02%/°C
Capacitor load (2)	See table

## INPUT SPECIFICATIONS

Voltage range	See table
Max. input current	See table
No-load input current	See table
Input filter	Capacitors
Input reflected ripple current (3)	35 mA pk-pk

## GENERAL SPECIFICATIONS

Efficiency	See table
I/O isolation voltage (3 sec.) Input / Output	1600 VDC
I/O isolation capacitance	680 pF max.
I/O isolation resistance (min.)	1000 M Ohm
Switching frequency (min.)	100 kHz
Humidity	95% rel. H
Reliability calculated MTBF	> 2.465 Mhrs. @25°C
Safety standard (designed to meet)	IEC 60950

## PHYSICAL SPECIFICATIONS

Case material	Non-conductive black plastic
Pin material	C5191R-H solder-coated
Potting material	Epoxy (UL94V-0 rated)
Weight	4.8 g, typ.
Dimensions	SIP > 0.86" x 0.36" x 0.44"

## ENVIRONMENT SPECIFICATIONS

Operating temperature	-40°C~ 71°C
Maximum case temperature	100°C
Storage temperature	-40°C~125°C
Cooling	Nature convection

## EMI CHARACTERISTICS

Conducted Emissions (10)	EN55022	CLASS A
Radiated Emissions	EN55022	CLASS A
ESD	IEC61000-4-2	Perf. Criteria B
RS	IEC61000-4-3	Perf. Criteria A
EFT (11)	IEC61000-4-4	Perf. Criteria B
Surge (11)	IEC61000-4-5	Perf. Criteria B
CS	IEC61000-4-6	Perf. Criteria A
PFMF	IEC61000-4-8	Perf. Criteria A

## ABSOLUTE MAXIMUM RATINGS (4)

These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.

Input voltage (100 mS)	
5 modes	-0.7 ~ 15 VDC
12 modes	-0.7 ~ 36 VDC
24 modes	-0.7 ~ 50 VDC
48 modes (SIP)	-0.7 ~ 100 VDC

Lead soldering temperature 260°C  
(1.5 mm from case 10 sec.)

All specifications typical at  $T_a = 25^\circ\text{C}$ , nominal input voltage and full load unless otherwise specified.  
The information and specifications contained in this data sheet are believed to be correct at time of publication. However, we accept no responsibility for consequences arising from printing errors or inaccuracies.  
Subject to change without notice.

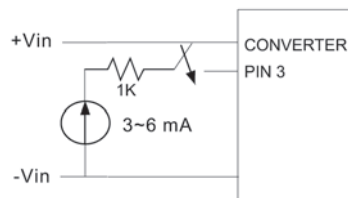
## NOTE

- 1) Ripple / Noise measured with 20 MHz bandwidth.
- 2) Tested by minimal  $V_{in}$  and constant resistive load.
- 3) Measured input reflected ripple current with a simulated source inductance of 12uH and source capacitor  $C_{in}$  (47uF, ESR < 1.0 Ohm @100 kHz).
- 4) Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.
- 5) Operation at no-load conditions will not damage these devices. However they may not meet all listed specifications.

Transient Recovery Time 300 us typ., Transient Response Deviation ± 3% max., Test by normal  $V_{in}$  and 100% - 25% load, 25% load step change.

### Remote ON / OFF control

ON: open or high impedance  
OFF: 3.0~6.0 mA input current (via 1K)



Input filter components are required to help meet Conducted Emission class A, which application refer to the EMI filter of design & feature configuration.

An external filter capacitor is required if the module has to meet EN61000-4-4 and EN61000-4-5.

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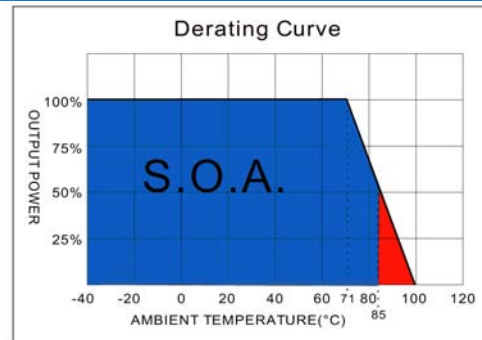
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## NUMBER STRUCTURE

<b>RS5</b>	-	<b>XX</b>	<b>XX</b>	<b>R/RD 30</b>	<b>A</b>	<b>X**</b>
<b>Name/Package</b> RS5=SIL8		<b>Input</b> 05=4.5-9V 12=9-18V 24=18-36V 48=36-72V	<b>Output</b> 03=3.3V 05=5V 12=12V 15=15V	<b>Power</b> 30=3.0W	<b>Code</b> internal	<b>Isolation</b> 1=1.6 kVDC
			<b>Type</b> R=Single regulated RD=Dual regulated			

Options:  
Please add suffix „M“ for Metal case.  
Please add suffix „C“ for Remote Control function.

## DERATING CURVE



## MODEL SELECTION GUIDE

Model Number	Input Range VDC	Input current (mA) No Load / Full Load	Output VDC	Output current Full Load (mA)	Efficiency @FL (%)	Capacitor Load (μF)
RS5-0503R30A1	4.5-9	65 / 640	3.3	700	74	2200
RS5-0505R30A1	4.5-9	70 / 800	5	600	76	1000
RS5-0512R30A1	4.5-9	75 / 750	12	250	82	470
RS5-0515R30A1	4.5-9	75 / 750	15	200	82	220
RS5-1203R30A1	9-18	25 / 260	3.3	700	76	2200
RS5-1205R30A1	9-18	15 / 320	5	600	81	1000
RS5-1212R30A1	9-18	35 / 305	12	250	84	470
RS5-1215R30A1	9-18	35 / 305	15	200	84	220
RS5-2403R30A1	18-36	15 / 133	3.3	700	74	2200
RS5-2405R30A1	18-36	15 / 160	5	600	79	1000
RS5-2412R30A1	18-36	20 / 156	12	250	82	470
RS5-2415R30A1	18-36	20 / 152	15	200	84	220
RS5-4803R30A1	36-72	10 / 66	3.3	700	75	2200
RS5-4805R30A1	36-72	10 / 82	5	600	78	1000
RS5-4812R30A1	36-72	15 / 78	12	250	81	470
RS5-4815R30A1	36-72	15 / 78	15	200	81	220
RS5-0505RD30A1	4.5-9	90 / 800	±5	±300	77	±470
RS5-0512RD30A1	4.5-9	90 / 760	±12	±125	81	±220
RS5-0515RD30A1	4.5-9	90 / 750	±15	±100	82	±100
RS5-1205RD30A1	9-18	45 / 320	±5	±300	80	±470
RS5-1212RD30A1	9-18	45 / 308	±12	±125	83	±220
RS5-1215RD30A1	9-18	45 / 312	±15	±100	82	±100
RS5-2405RD30A1	18-36	20 / 160	±5	±300	80	±470
RS5-2412RD30A1	18-36	20 / 154	±12	±125	83	±220
RS5-2415RD30A1	18-36	20 / 154	±15	±100	83	±100
RS5-4805RD30A1	36-72	15 / 82	±5	±300	78	±470
RS5-4812RD30A1	36-72	20 / 80	±12	±125	80	±220
RS5-4815RD30A1	36-72	15 / 78	±15	±100	81	±100

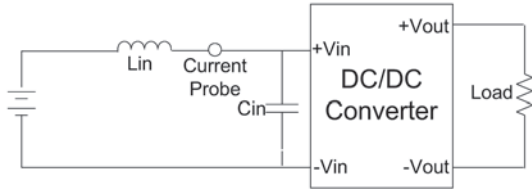
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## TEST CONFIGURATIONS

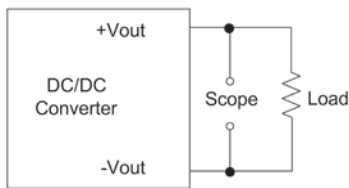
### INPUT REFLECTED RIPPLE CURRENT TEST STEP

Input Reflected Ripple Current is measured through a source inductor  $L_{in}$  (12  $\mu$ H) and a source capacitor  $C_{in}$  (47  $\mu$ F, ESR < 1.0  $\Omega$  at 100 kHz) at nominal input and full load.



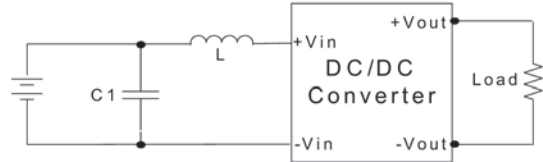
### OUTPUT RIPPLE & NOISE MEASUREMENT TEST

The Scope measurement bandwidth is 20 MHz.



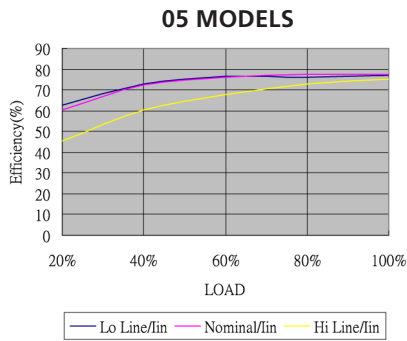
## EMI Filter

Input filter components ( $C_1$ ,  $L$ ) 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.

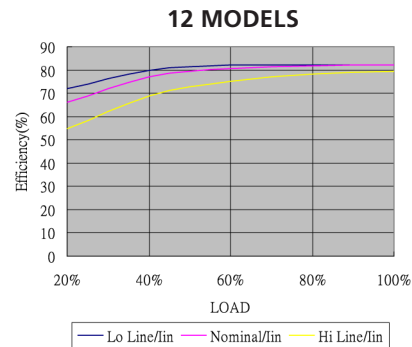


	C1	L
RS5-05XXXXX	220 $\mu$ F/25V	5.6 $\mu$ H
RS5-12XXXXX	Single 100 $\mu$ F/100V	18 $\mu$ H
	Dual 1210, 2.2 $\mu$ F/100V	
RS5-24XXXXX	1210, 10 $\mu$ F/35V	18 $\mu$ H
RS5-48XXXXX	100 $\mu$ F/100V	56 $\mu$ H

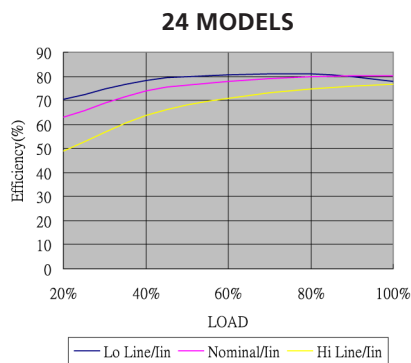
## EFFICIENCY VS OUTPUT CURRENT 05



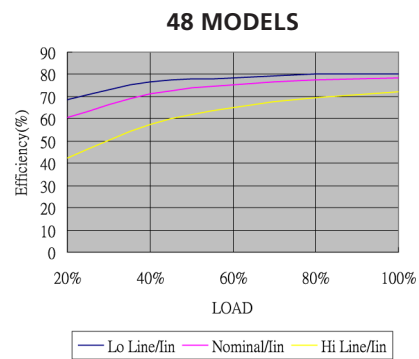
## EFFICIENCY VS OUTPUT CURRENT 12



## EFFICIENCY VS OUTPUT CURRENT 24



## EFFICIENCY VS OUTPUT CURRENT 48



The models listed are just for standard type. If you need a special specification product, please contact our service. Phone: +49 69 984047-0, mail to: info@rsg-electronic.de or use the forms on www.rsg-electronic.de („Kontakt“).

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### MECHANICAL SPECIFICATIONS

**8 Pin SIL package**  
**Non-conductive Plastic**

### PIN CONNECTIONS +C MODELS

PIN NUMBER	SINGLE +C	DUAL +C
1	-V Input	-V Input
2	+V Input	+V Input
3	Remote ON/OFF	Remote ON/OFF
5	N.C.	N.C.
6	+V Output	+V Output
7	-V Output	Common
8	N.C.	-V Output

### MECHANICAL SPECIFICATIONS

**8 Pin SIL package**  
**Nickel coated copper**

*All dimensions are typical in millimeters (inches).*

- 1) Pin diameter:  $1.0 \pm 0.05$  ( $0.04 \pm 0.002$ )
- 2) Pin pitch tolerance:  $\pm 0.35$  ( $\pm 0.014$ )
- 3) Case tolerance:  $\pm 0.5$  ( $\pm 0.02$ )

### PIN CONNECTIONS

PIN NUMBER	SINGLE	DUAL
1	-V Input	-V Input
2	+V Input	+V Input
3	N.P.	N.C.
5	N.P.	N.C.
6	+V Output	+V Output
7	-V Output	Common
8	N.C.	-V Output