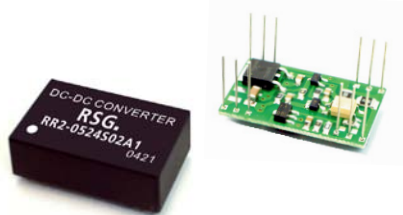


RR2-S02/D02

2 Watt 2:1 regulated
single & dual output



- DIP24, Wide 2:1 input range
- Full SMD technology
- 1500 VDC isolation up to 3500 VDC isolation
- Continuous short circuit protection
- Efficiency up to 80%
- -25°C~85°C operation temperature range
- Optional metal case

OUTPUT SPECIFICATIONS

Voltage accuracy	± 1%
Line regulation	± 0.5%
Load regulation	± 0.5%
Ripple & Noise (20 MHz bandwidth) (1)	60 mV pk-pk
Short circuit protection	Continuous
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	PI Type
Input reflected ripple current (3)	35 mA pk-pk

GENERAL SPECIFICATIONS

Efficiency (typ.)	See table
I/O isolation voltage (3 sec.)	
Input / Output	1500 ~ 3500 VDC
Metal case / input & output	1000 VDC
I/O isolation capacitance	60 pF typ.
I/O isolation resistance	1000 M Ohm
Switching frequency	100~400 kHz
Humidity	95% rel. H
Reliability calculated MTBF (MIL-HDBK-217F)	> 2.199 Mhrs.
Safety standard (designed to meet)	IEC 60950-1

PHYSICAL SPECIFICATIONS

Case material	Non-conductive black plastic (UL94V-0 rated) Nickel-coated copper
Base material	Non-conductive black plastic (UL94V-0 rated)
Pin material	Ø 0.5 mm brass solder-coated
Potting material	Epoxy (UL94V-0 rated)
Weight	Plastic 12.5 g, Metal 15 g
Dimensions	1.25" x 0.8" x 0.4"

ENVIRONMENT SPECIFICATIONS

Operating temperature (See derating curve)	-40°C~ 85°C
Maximum case temperature	100°C
Storage temperature	-40°C~125°C
Cooling	Nature convection

EMC SPECIFICATIONS

Radiated emissions	EN55022	Class A
Conducted emissions	EN55022	Class A
ESD	IEC61000-4-2 Perf.	Crit. B
RS	IEC61000-4-3 Perf.	Crit. A
EFT (8)	IEC61000-4-4 Perf.	Crit. B
Surge (8)	IEC61000-4-5 Perf.	Crit. B
CS	IEC61000-4-6 Perf.	Crit. A
PFMF	IEC61000-4-8 Perf.	Crit. 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 ~ 24 VDC
24 modes	-0.7 ~ 40 VDC
48 modes	-0.7 ~ 80 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) Typical value at nominal input voltage and full load.
- 2) Tested by nominal V_{in} and constant resistor load.
- 3) Measured input reflected ripple current with a simulated source inductance of 12uH.
- 4) Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.
- 5) Operation under no-load conditions will not damage these devices. However they may not meet all listed specifications.
- 6) It's necessary to add a minimum capacitor in output for some models. Please check single model datasheet for detail value.
- 7) Input filter components are required to help meet conducted emission class A, which application refer to the EMI filter of design & feature configuration.
- 8) An external filter capacitor is required if the module has to meet EN 61000-4-4 and EN61000-4-5. The filter capacitor we suggest: Nippon-chemi-con KY series, 220 uF / 100V.

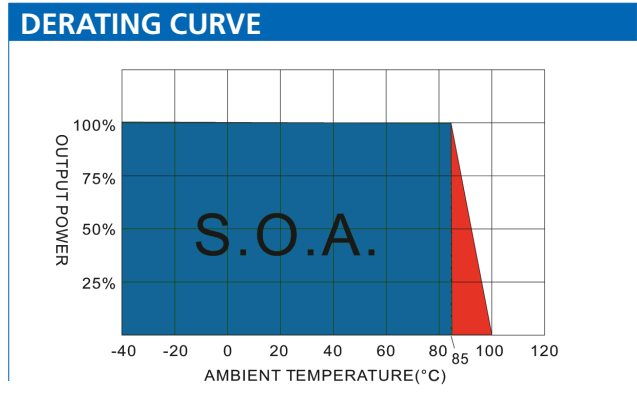
RR2-S02/D02

2 Watt 2:1 regulated
single & dual output

NUMBER STRUCTURE

RR2	-	XX	XX	S	02	A	1	(M)
Name/Package RR2=DIL24		Input 05=4.5~9V 12=9~18V 24=18~36V 48=36~72V	Output 05=5V 09=9V 12=12V 15=15V 24=24V	Type S=Single D=Dual	Power 02=2W	Code internal	Isolation 1=1.5 kVDC 3=3.5 kVDC	

Add suffix „M“ for Metal case! If no suffix mean Plastic case.



MODEL SELECTION GUIDE

Model Number	Input Range VDC	Input current (mA) No Load/Full Load	Output VDC	Output current Min. Load (mA)	Output current Full Load (mA)	Efficiency @FL (%)	Capacitor Load (µF)
RR2-0505S02AX	4.5-9	40 / 588	5	100	400	68	2200
RR2-0509S02AX	4.5-9	40 / 571	9	55.5	222	70	470
RR2-0512S02AX	4.5-9	40 / 571	12	42.8	167	70	470
RR2-0515S02AX	4.5-9	40 / 571	15	33.3	133	70	470
RR2-0524S02AX	4.5-9	40 / 579	24	20.8	83	69	220
RR2-0505D02AX	4.5-9	40 / 588	±5	±50	±200	68	±1000
RR2-0509D02AX	4.5-9	40 / 571	±9	±27.8	±111	70	±220
RR2-0512D02AX	4.5-9	40 / 571	±12	±20.8	±83	70	±220
RR2-0515D02AX	4.5-9	40 / 571	±15	±16.8	±67	70	±220
RR2-0524D02AX	4.5-9	40 / 579	±24	±10.5	±42	69	±100
RR2-1205S02AX	9-18	20 / 222	5	100	400	75	2200
RR2-1209S02AX	9-18	20 / 213	9	55.5	222	78	470
RR2-1212S02AX	9-18	20 / 213	12	42.8	167	78	470
RR2-1215S02AX	9-18	20 / 213	15	33.3	133	78	470
RR2-1224S02AX	9-18	20 / 210	24	20.8	83	79	220
RR2-1205D02AX	9-18	20 / 225	±5	±50	±200	74	±1000
RR2-1209D02AX	9-18	20 / 225	±9	±27.8	±111	74	±220
RR2-1212D02AX	9-18	20 / 219	±12	±20.8	±83	76	±220
RR2-1215D02AX	9-18	20 / 216	±15	±16.8	±67	77	±220
RR2-1224D02AX	9-18	20 / 219	±24	±10.5	±42	76	±100
RR2-2405S02AX	18-36	12 / 106	5	100	400	78	2200
RR2-2409S02AX	18-36	12 / 104	9	55.5	222	80	470
RR2-2412S02AX	18-36	12 / 105	12	42.8	167	79	470
RR2-2415S02AX	18-36	12 / 106	15	33.3	133	78	470
RR2-2424S02AX	18-36	12 / 104	24	20.8	83	80	220
RR2-2405D02AX	18-36	12 / 111	±5	±50	±200	75	±1000
RR2-2409D02AX	18-36	12 / 111	±9	±27.8	±111	75	±220
RR2-2412D02AX	18-36	12 / 105	±12	±20.8	±83	79	±220
RR2-2415D02AX	18-36	12 / 105	±15	±16.8	±67	79	±220
RR2-2424D02AX	18-36	12 / 106	±24	±10.5	±42	78	±100
RR2-4805S02AX	36-72	8 / 55.5	5	100	400	75	2200
RR2-4809S02AX	36-72	8 / 53	9	55.5	222	78	470
RR2-4812S02AX	36-72	8 / 52	12	42.8	167	79	470
RR2-4815S02AX	36-72	8 / 52	15	33.3	133	80	470
RR2-4824S02AX	36-72	8 / 52	24	20.8	83	80	220
RR2-4805D02AX	36-72	8 / 56	±5	±50	±200	74	±1000
RR2-4809D02AX	36-72	8 / 55.5	±9	±27.8	±111	75	±220
RR2-4812D02AX	36-72	8 / 53	±12	±20.8	±83	78	±220
RR2-4815D02AX	36-72	8 / 53	±15	±16.8	±67	78	±220
RR2-4824D02AX	36-72	8 / 53	±24	±10.5	±42	79	±100

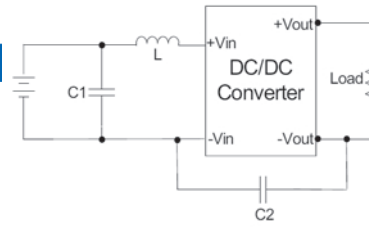
RR2-S02/D02

2 Watt 2:1 regulated
single & dual output

TEST CONFIGURATIONS

EMI Filter

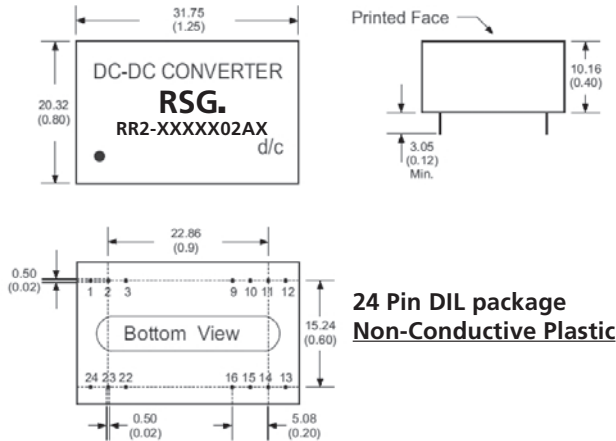
Input filter components (C1, L) are used to help meet conducted emissions requirement for the module. These components should be mounted as close as possible to the module; and all leads should be minimized to decrease radiated noise.



RR2-05XXXXX
RR2-12XXXXX
RR2-24XXXXX
RR2-48XXXXX

C1	L	C2
220uF/100V	12uH	
220uF/100V	12uH	
220uF/100V	12uH	MLCC 471K
220uF/100V	12uH	MLCC 471K

MECHANICAL SPECIFICATIONS STANDARD



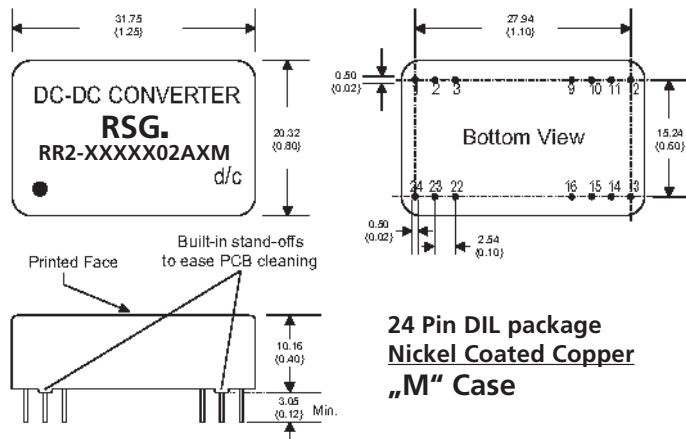
24 Pin DIL package
Non-Conductive Plastic

- All dimensions are typical in millimeters (inches).
- 1) Pin diameter: 0.5 ± 0.05 (0.02 ± 0.002)
 - 2) Pin pitch tolerance: ± 0.35 (± 0.014)
 - 3) Case tolerance: ± 0.5 (± 0.02)

PIN CONNECTIONS

Pin #	SINGLE	DUAL	SINGLE-3	DUAL-3
1	+V Input	+V Input	N.P.	N.P.
2	N.C.	-V Output	-V Input	-V Input
3	N.C.	Common	-V Input	-V Input
9	N.P.	N.P.	N.P.	Common
10	-V Output	Common	N.P.	N.P.
11	+V Output	+V Output	N.C.	-V Output
12	-V Input	-V Input	N.P.	N.P.
13	-V Input	-V Input	N.P.	N.P.
14	+V Output	+V Output	+V Output	+V Output
15	-V Output	Common	N.P.	N.P.
16	N.P.	N.P.	-V Output	Common
22	N.C.	Common	+V Input	+V Input
23	N.C.	-V Output	+V Input	+V Input
24	+V Input	+V Input	N.P.	N.P.

MECHANICAL SPECIFICATIONS METAL CASE



24 Pin DIL package
Nickel Coated Copper
„M“ Case

- All dimensions are typical in millimeters (inches).
- 1) Pin diameter: 0.5 ± 0.05 (0.02 ± 0.002)
 - 2) Pin pitch tolerance: ± 0.35 (± 0.014)
 - 3) Case tolerance: ± 0.5 (± 0.02)