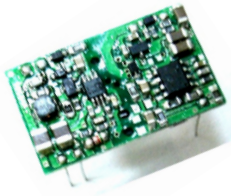
RR4-S10/D10

10 Watt 2:1 regulated single & dual output

RSG. ELECTRONIC COMPONENTS



- DIP24, wide 2:1 input range
- Full SMD technology
- 1500 VDC isolation
- Continuous short circuit protection
- Efficiency up to 90%
- -40°C~85°C operation temperature range
- High power density: 10W in DIL-24 package

OUTPUT SPECIFICATIONS

Output Voltage accuracy		± 1%
Maximum Output current		see table
Line regulation		± 0.5%
Load regulation (From 10% to 100% Load) (1)		± 0.5%
(Output 3.3 V Model) (1)		± 0.7%
Cross regulation (dual output) (2)		± 5.0%
Over current protection (of FL typ.)		150%
Ripple & Noise (3)		75 mV pk-pk
Over voltage protection (Zener diode clamp)	2.5V output	3.9V
	3.3V output	3.9V
	5V output	6.2V
	12V output	15V
	15V output	18V
	± 12V output	± 15V
	± 15V output	± 18V
Short circuit protection	Indefinite (hiccup) (Automatic recovery)	
Temperature coefficient		± 0.02%/°C
Capacitor load (4)		See table
Transient recovery time (5)		200us typ.
Transient response deviation (5)		± 3% max.

INPUT SPECIFICATIONS

Voltage range	See table
Start up time (Nom. Vin and constant resistive load)	20ms typ.
Input current No-Load (typ.)	See table
Input current Full-Load (max.)	See table
Input filter	PI Type
Input reflected ripple current, typ. (6)	20mA pk-pk

GENERAL SPECIFICATIONS

Efficiency	See table
I/O isolation voltage Input / output (3 sec.)	1500 VDC
Metal case / input & output	1000 VDC
I/O isolation capacitance	1000 pF typ.
I/O isolation resistance	1000 M Ohm
Switching frequency	typ. 330 kHz
Humidity	95% rel. H
Reliability calculated MTBF (MIL-HDBK-217F)	> 1 Mhrs.
Safety standard (designed to meet)	IEC 60950

EMC CHARACTERISTICS

Radiated Emissions	EN55022	Class A
Conducted Emissions (8)	EN55022	Class A
ESD	EN61000-4-2	Perf. crit. B
RS	EN61000-4-3	Perf. crit. A
EFT	EN61000-4-4	Perf. crit. B
Surge (9)	EN61000-4-5	Perf. crit. B
CS	EN61000-4-6	Perf. crit. A
PFMF	EN61000-4-8	Perf. crit. A

PHYSICAL SPECIFICATIONS

Case material	Nickel-coated copper
Pin material	Ø 0.5 mm brass solder-coated
Potting material	Epoxy (UL94V-0 rated)
Weight	17 g
Dimensions	1.25"x0.8"x0.4"

ENVIRONMENTAL SPECIFICATIONS

Operating temperature (See derating curve)	-40°C~ 85°C
Operating temperature (for 100% load)	-40°C~ 60°C
Maximum case temperature	100°C
Storage temperature	-40°C~125°C
Cooling	Nature convection

ABSOLUTE MAXIMUM RATINGS (7)

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

Input voltage (100 mS)	
12 modes	-0.7 ~ 25 VDC
24 modes	-0.7 ~ 50 VDC
48 modes	-0.7 ~ 100 VDC
Lead soldering temperature (1.5 mm from case 10 sec.)	260°C

All specifications typical at Ta = 25°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.

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").

RR4-S10/D10

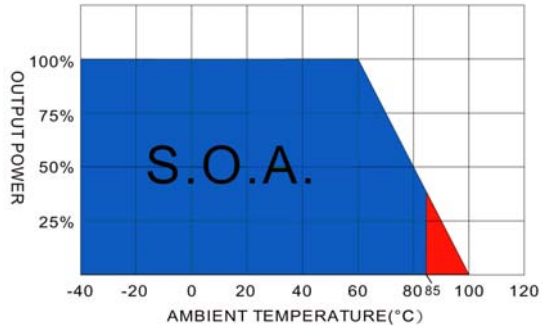
10 Watt 2:1 regulated single & dual output

NUMBER STRUCTURE

RR4 - XX XX S 10 A 1

- **Name/Package**: RR4=DIL24
- **Input**: 12=9~18V, 24=18~36V, 48=36~75V
- **Output**: 02=2.5V, 03=3.3V, 05=5V, 12=12V, 15=15V
- **Type**: **S**=Single, D=Dual
- **Power**: 10=10W
- **Code**: internal
- **Isolation**: 1=1.5 kVDC

DERATING CURVE

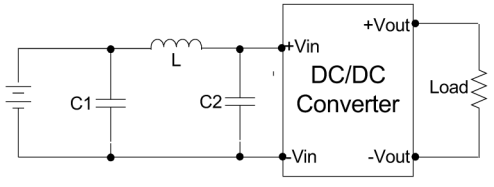


MODEL SELECTION GUIDE

Model Number	Input Range VDC	Input current (mA) No Load / Full Load	Output VDC	Output current Full Load (mA)	Efficiency @FL (%)	Capacitor Load (μF)
RR4-1202S10A1	9-18	10 / 791	2.5	3000	81	2200
RR4-1203S10A1	9-18	10 / 1006	3.3	3000	84	2200
RR4-1205S10A1	9-18	10 / 992	5	2000	86	2200
RR4-1212S10A1	9-18	10 / 980	12	833	87	820
RR4-1215S10A1	9-18	10 / 958	15	667	89	470
RR4-1212D10A1	9-18	10 / 980	±12	±416	87	±220
RR4-1215D10A1	9-18	10 / 969	±15	±333	88	±150
RR4-2402S10A1	18-36	10 / 381	2.5	3000	84	2200
RR4-2403S10A1	18-36	10 / 497	3.3	3000	85	2200
RR4-2405S10A1	18-36	10 / 479	5	2000	89	2200
RR4-2412S10A1	18-36	10 / 485	12	833	88	820
RR4-2415S10A1	18-36	10 / 485	15	667	88	470
RR4-2412D10A1	18-36	10 / 485	±12	±416	88	±220
RR4-2415D10A1	18-36	10 / 474	±15	±333	90	±150
RR4-4802S10A1	36-75	10 / 191	2.5	3000	84	2200
RR4-4803S10A1	36-75	10 / 249	3.3	3000	85	2200
RR4-4805S10A1	36-75	10 / 242	5	2000	88	2200
RR4-4812S10A1	36-75	10 / 245	12	833	87	820
RR4-4815S10A1	36-75	10 / 242	15	667	88	470
RR4-4812D10A1	36-75	10 / 245	±12	±416	87	±220
RR4-4815D10A1	36-75	10 / 245	±15	±333	87	±150

NOTE

1) Operation between no-load and 10% conditions will not damage these devices. However they may not meet all listed specifications.
2) One load is 25% to 100%, the other load is 100%. The output voltage variable rate is within ±5%.
3) Measured with 20MHz bandwith and 0.1uF ceramic capacitor.
4) Tested by nominal Vin and constant resistive load.
5) Tested by normal Vin and 25% load step change (75%-50%-25% of Io).
6) Measured input reflected ripple current with a simulated source inductance of 12uH.
7) Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.
8) Input filter components (C1, L) are used to help meeting the conducted emissions requirements for the module. These components should be mounted as close as possible to the module and all leads should b minimized to decrease radiated noise.
9) An external filter capacitor is required if the module has to meet EN61000-4-5.

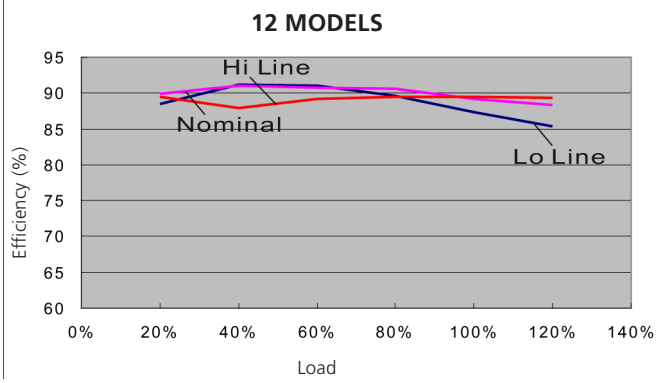


	C1	L	C2
RR4-12XXX10A1	100uF, 100V	12uH	N/A
RR4-24XXX10A1	100uF, 100V	12uH	N/A
RR4-48XXX10A1	100uF, 100V	12uH	N/A

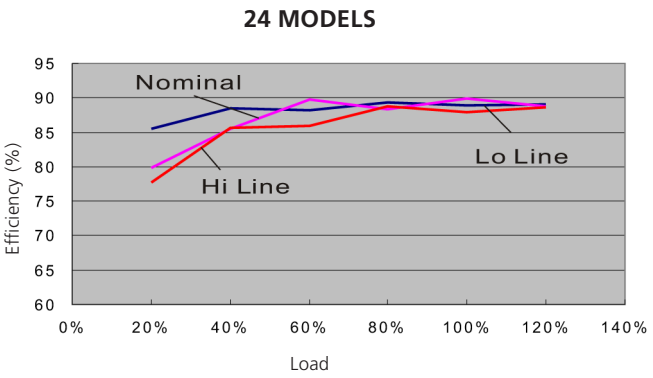
RR4-S10/D10

10 Watt 2:1 unregulated
single & dual output

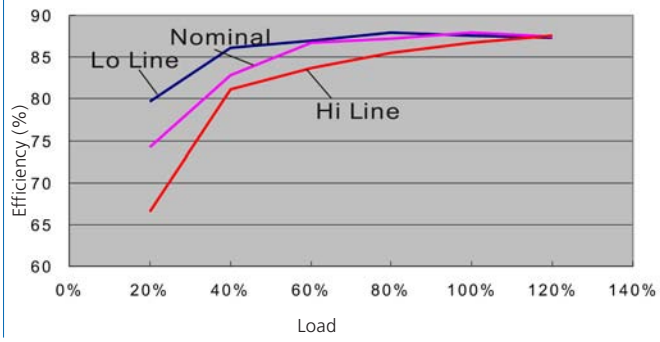
EFFICIENCY VS OUTPUT CURRENT 12



EFFICIENCY VS OUTPUT CURRENT 24



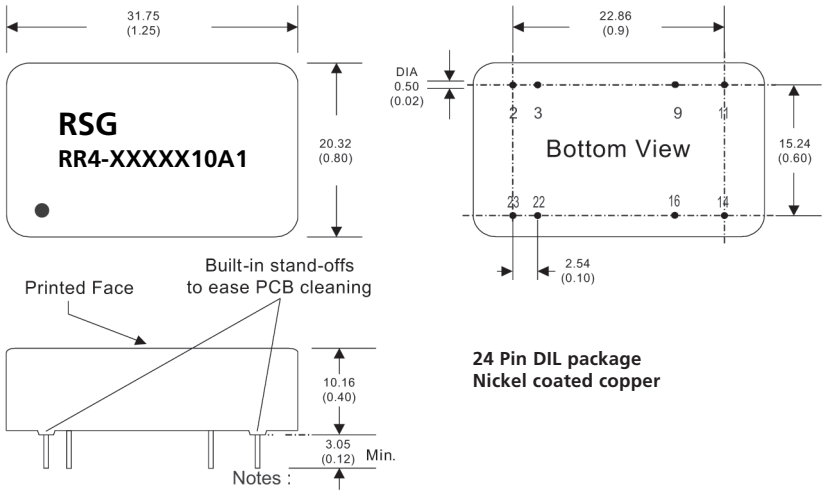
EFFICIENCY VS OUTPUT CURRENT 48



PIN CONNECTIONS

Pin Number	Single	Dual
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

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 tolerance: ± 0.35 (± 0.014)
3) Case tolerance: ± 0.5 (± 0.02)

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