

RD-5W Series



5W 2:1 Regulated Single & Dual output

Features

- Wide 2:1 Input Range
- 1500 VDC Isolation, Up to 3500 VDC
- Continuous Short Circuit Protection
- Efficiency up to 82%
- Operation Temperature Range -40 ~ 98°C max.
- Plastic Case Standard



PART NUMBER STRUCTURE

RD - **24** **05** **S** **5** **H**
(1) (2) (3) (4) (5) (6)

(1) Series

(2) Input Voltage Range

12 - 9-18 V
24 - 18-36 V

(4) Output Type

S - Single Output
D - Dual Output

(5) Watt

(3) Output Voltage

05 - 5.0 V
09 - 9.0 V
12 - 12 V
15 - 15 V
24 - 24 V

(6) Isolation Voltage (Optional)

Blank - 1500 VDC
H - 3500 VDC

ALL SPECIFICATIONS ARE TYPICAL AT 25°C, NOMINAL INPUT AND FULL LOAD UNLESS OTHERWISE NOTED

Model Number	Input Voltage Range (VDC)	Input Current		Output Voltage (VDC)	Output Current		Efficiency @FL (% , typ.)	Capacitive Load (μF, max.)
		No-Load (mA, max.)	Full Load (mA, typ.)		Min. load (mA)	Full load (mA)		
RD-1205S5	9-18	15	548	5	250	1000	76	2200
RD-1209S5	9-18	15	527	9	139	555	79	470
RD-1212S5	9-18	15	515	12	104	417	81	470
RD-1215S5	9-18	15	514	15	83	333	81	470
RD-1224S5	9-18	20	514	24	52	208	81	220
RD-1205D5	9-18	15	556	±5	±125	±500	75	±1000
RD-1209D5	9-18	25	528	±9	±70	±278	79	±220
RD-1212D5	9-18	25	527	±12	±52	±208	79	±220
RD-1215D5	9-18	25	515	±15	±42	±167	81	±220
RD-1224D5	9-18	30	507	±24	±26	±104	82	±100
RD-2405S5	18-36	8	271	5	250	1000	77	2200
RD-2409S5	18-36	10	257	9	139	555	81	470
RD-2412S5	18-36	8	254	12	104	417	82	470
RD-2415S5	18-36	10	254	15	83	333	82	470
RD-2424S5	18-36	10	248	24	52	208	84	220
RD-2405D5	18-36	10	271	±5	±125	±500	77	±1000
RD-2409D5	18-36	10	251	±9	±70	±278	83	±220
RD-2412D5	18-36	10	263	±12	±52	±208	79	±220
RD-2415D5	18-36	12	252	±15	±42	±167	83	±220
RD-2424D5	18-36	30	257	±24	±26	±104	81	±100

INPUT SPECIFICATIONS					
Parameter	Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	12V Input	9	12	18	VDC
	24V Input	18	24	36	
Input Filter		Pi Type			
Input Reflected Ripple Current (1)			35		mApk-pk
Start up Time	Nominal Vin and constant resistive load		20		ms
Recommended input fuse (slow blow)	12V Input	0.8			A
	24V Input	0.4			
Note :					
1. Measured with a simulated source inductance of 12μH and a source capacitor Cin (47μF, ESR<1.0Ω at 100kHz).					

OUTPUT SPECIFICATIONS					
Parameter	Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy		-1.0		+1.0	%
Line Regulation		-0.5		+0.5	%
Load Regulation	From 25% to 100% Load	-0.5		+0.5	%
Cross Regulation	Asymmetrical Load 25% / 100% for Dual Output	-5		+5	%
Ripple & Noise (1)	20MHz bandwidth			60	mVpk-pk
Short Circuit Protection		Continuous			
Temperature Coefficient		-0.02		+0.02	%/°C
Maximum Capacitive Load	Minimum Vin and constant resistive load	See Table			
Note :					
1. Typical value at nominal input voltage and full load.					

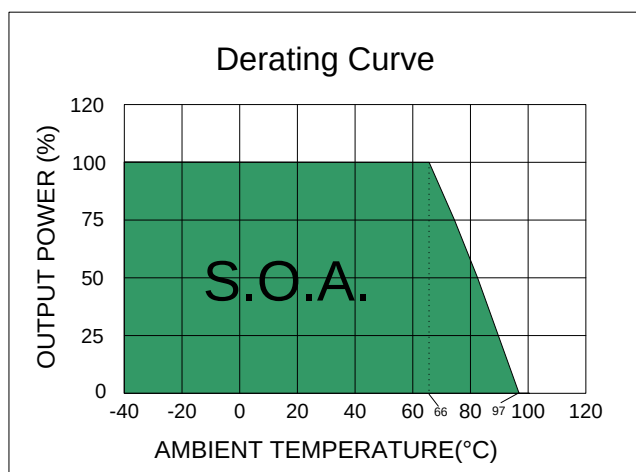
ABSOLUTE MAXIMUM RATINGS					
Parameter	Conditions	Min.	Typ.	Max.	Unit
Input Surge Voltage (100 ms)	12V Input			24	VDC
	24V Input			40	
Soldering Temperature	1.5mm from case 10sec max.			260	°C
Note : These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.					

GENERAL SPECIFICATIONS					
Parameter	Conditions	Min.	Typ.	Max.	Unit
Isolation Voltage	Input-output, and rated for 60sec	Standard Type	1500		VDC
		Suffix "H"	3500		
Isolation Resistance	Input-output	1000			MΩ
Isolation Capacitance	Input-output		60		pF
Switching Frequency		100		400	kHz
MTBF	MIL-HDBK-217 F @ 25°C	1			M hours
Safety Approval	IEC / EN / UL 62368-1	Design to meet			
Environmental compliance		RoHS			

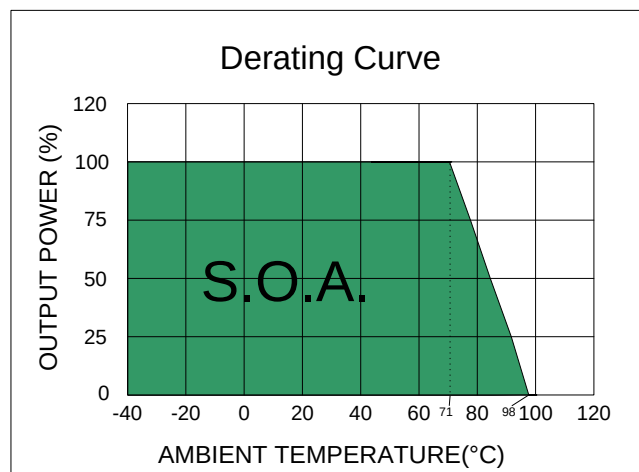
ENVIRONMENT SPECIFICATIONS					
Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating Ambient Temperature	See the Derating Curve	-40		98	°C
Maximum Case Temperature				100	°C
Thermal Impedance		21.46			°C/W
Storage Humidity				95	% rel. H
Storage Temperature		-55		125	°C
Cooling	Natural Convection	30-65 LFM			

PHYSICAL SPECIFICATIONS	
Parameter	Value
Case Material	Nonconductive Black Plastic (UL94V-0 rated)
Base Material	Nonconductive Black Plastic (UL94V-0 rated)
Pin Material	Ø0.5mm Brass Solder-coated
Potting Material	Epoxy (UL94V-0 rated)
Weight	12.5 g , typ.
Dimensions	1.25" x 0.8" x 0.4"

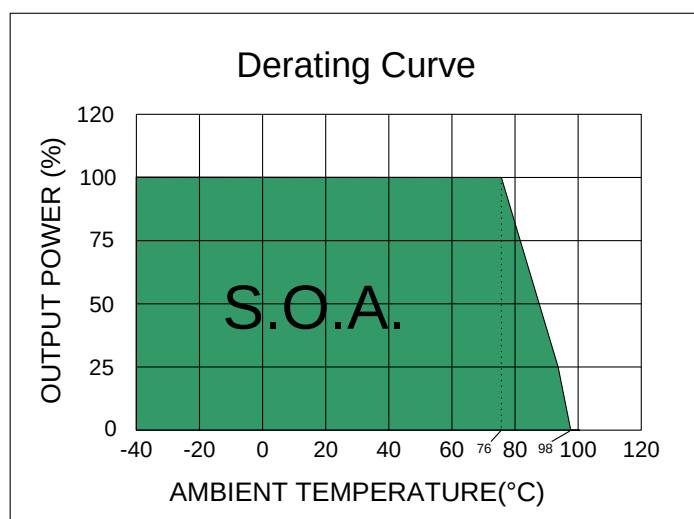
ELECTRICAL CHARACTERISTIC CURVES



Efficiency = 75% ~ 77%



Efficiency = 79% ~ 81%

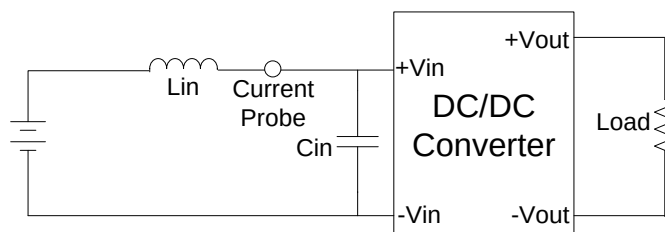


Efficiency = 82% ~ 84%

TEST CONFIGURATIONS

Input Reflected Ripple Current Test Step

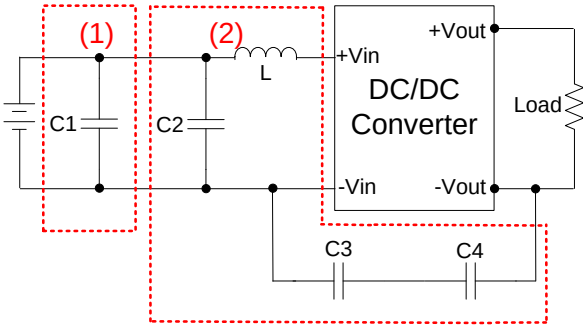
Input reflected ripple current is measured with a source inductor L_{in} (12 μ H) and a source capacitor C_{in} (47 μ F, ESR<1.0 Ω at 100kHz) at nominal input and full load.



DESIGN & FEATURE CONFIGURATIONS

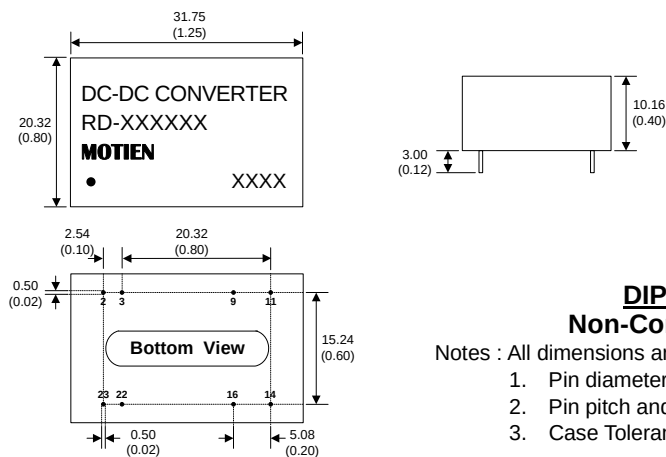
EMC Filter

The part (1) Circuit is used to meet Surge & EFT test, and the part (2) Circuit is used to meet EMI test.



	C1, C2	C3	C4	L
RD-05XXX5	NIPPON Chemi-con KY Series 220μF, 100V			12μH
RD-12XXX5				
RD-24XXX5		MLCC 1000pF,2KV	MLCC 1000pF,2KV	

MECHANICAL SPECIFICATIONS



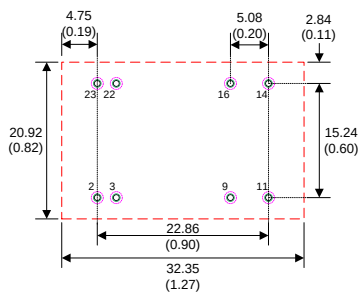
DIP24 Package
Non-Conductive Plastic

- Notes : 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)

PIN CONNECTIONS		
PIN NUMBER	SINGLE	DUAL
2	-Vin	-Vin
3	-Vin	-Vin
9	N.P.	COM
11	N.C.	-Vout
14	+Vout	+Vout
16	-Vout	COM
22	+Vin	+Vin
23	+Vin	+Vin

*N.P. : No PIN
*N.C. : No Connection

RECOMMENDED FOOTPRINT DETAILS



- Notes : 1. All dimensions are typical in millimeters (inches).
- Through hole (black) 2 ~ 23: Ø0.80 (0.031)
 - Top view pad (green) 2 ~ 23: Ø1.00 (0.039)
 - Bottom view pad (pink) 2 ~ 23: Ø1.60 (0.063)