

RD-3W Series



3W 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 83%
- Operation Temperature Range -40 ~ 100°C max.
- Plastic Case Standard



PART NUMBER STRUCTURE

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

(1) Series

(2) Input Voltage Range

05 - 4.5-9 V
12 - 9-18 V
24 - 18-36 V
48 - 36-72 V

(4) Output Type

S - Single Output
D - Dual Output

(5) Watt

(3) Output Voltage

7R2 - 7.2 V
05 - 5.0 V
09 - 9.0 V
12 - 12 V
15 - 15 V
18 - 18 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-0505S3	4.5-9	25	833	5	150	600	72	2200
RD-057R2S3	4.5-9	25	801	7.2	104	417	75	1000
RD-0509S3	4.5-9	40	799	9	83	333	75	470
RD-0512S3	4.5-9	40	800	12	63	250	75	470
RD-0515S3	4.5-9	25	822	15	50	200	73	470
RD-0518S3	4.5-9	40	802	18	42	167	75	220
RD-0524S3	4.5-9	35	800	24	31	125	75	220
RD-0505D3	4.5-9	25	845	±5	±75	±300	71	±1000
RD-057R2D3	4.5-9	40	856	±7.2	±52	±208	70	±220
RD-0509D3	4.5-9	40	859	±9	±41.8	±167	70	±220
RD-0512D3	4.5-9	30	857	±12	±31.3	±125	70	±220
RD-0515D3	4.5-9	40	822	±15	±25	±100	73	±220
RD-0518D3	4.5-9	40	819	±18	±21	±83	73	±220
RD-0524D3	4.5-9	40	828	±24	±16	±63	73	±100
RD-1205S3	9-18	15	329	5	150	600	76	2200
RD-127R2S3	9-18	15	329	7.2	104	417	76	1000
RD-1209S3	9-18	20	329	9	83	333	76	470
RD-1212S3	9-18	15	313	12	63	250	80	470
RD-1215S3	9-18	15	313	15	50	200	80	470
RD-1218S3	9-18	20	317	18	42	167	79	220
RD-1224S3	9-18	20	316	24	31	125	79	220
RD-1205D3	9-18	15	333	±5	±75	±300	75	±1000
RD-127R2D3	9-18	15	320	±7.2	±52	±208	78	±220
RD-1209D3	9-18	20	325	±9	±41.8	±167	77	±220
RD-1212D3	9-18	20	325	±12	±31.3	±125	77	±220
RD-1215D3	9-18	20	313	±15	±25	±100	80	±220
RD-1218D3	9-18	20	305	±18	±21	±83	82	±220
RD-1224D3	9-18	20	305	±24	±16	±63	82	±100

The information and specifications contained in this data sheet are believed to be correct at time of publication. However, **MOTIEN Technology** accepts no responsibility for consequences arising from printing errors or inaccuracies. Specifications are subject to change without notice. No rights under any patent accompany the sale of any such product(s) or information contained herein.

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-2405S3	18-36	8	160	5	150	600	78	2200
RD-247R2S3	18-36	8	162	7.2	104	417	77	1000
RD-2409S3	18-36	8	160	9	83	333	78	470
RD-2412S3	18-36	8	151	12	62	250	83	470
RD-2415S3	18-36	10	156	15	50	200	80	470
RD-2418S3	18-36	10	157	18	42	167	80	220
RD-2424S3	18-36	15	156	24	31	125	80	220
RD-2405D3	18-36	8	160	±5	±75	±300	78	±1000
RD-247R2D3	18-36	8	160	±7.2	±52	±208	78	±220
RD-2409D3	18-36	8	159	±9	±42	±167	79	±220
RD-2412D3	18-36	15	154	±12	±31	±125	81	±220
RD-2415D3	18-36	15	151	±15	±25	±100	83	±220
RD-2418D3	18-36	15	156	±18	±21	±83	80	±220
RD-2424D3	18-36	15	158	±24	±16	±63	80	±100
RD-4805S3	36-72	6	80	5	150	600	78	2200
RD-487R2S3	36-72	8	80	7.2	104	417	78	1000
RD-4809S3	36-72	8	82	9	83	333	76	470
RD-4812S3	36-72	8	79	12	63	250	79	470
RD-4815S3	36-72	8	79	15	50	200	79	470
RD-4818S3	36-72	8	79	18	42	167	79	220
RD-4824S3	36-72	8	75	24	31	125	83	220
RD-4805D3	36-72	8	80	±5	±75	±300	78	±1000
RD-487R2D3	36-72	8	80	±7.2	±52	±208	78	±220
RD-4809D3	36-72	8	77	±9	±42	±167	81	±220
RD-4812D3	36-72	8	76	±12	±31	±125	82	±220
RD-4815D3	36-72	8	76	±15	±25	±100	82	±220
RD-4818D3	36-72	8	75	±18	±21	±83	83	±220
RD-4824D3	36-72	12	79	±24	±16	±63	80	±100

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INPUT SPECIFICATIONS					
Parameter	Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	05V Input	4.5	5	9	VDC
	12V Input	9	12	18	
	24V Input	18	24	36	
	48V Input	36	48	72	
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)	05V Input	1.5			A
	12V Input	0.63			
	24V Input	0.315			
	48V Input	0.2			
Note :					
1. Measured with a simulated source inductance of 12μH and a source capacitor C _{in} (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.					

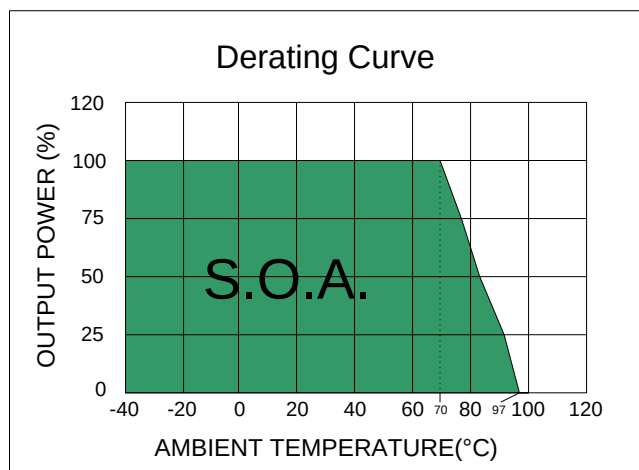
ABSOLUTE MAXIMUM RATINGS					
Parameter	Conditions	Min.	Typ.	Max.	Unit
Input Surge Voltage (100 ms)	05V Input			15	VDC
	12V Input			24	
	24V Input			40	
	48V Input			80	
Soldering Temperature	1.5mm from case 10sec max.			260	°C
Note : These are stress ratings. Exposure of devices to any of these conditions 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			

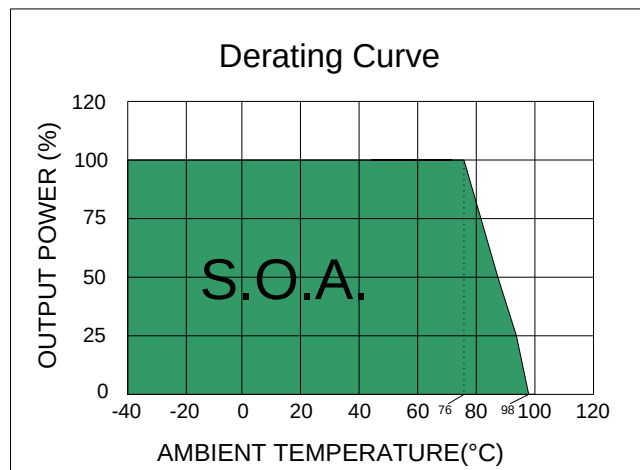
ENVIRONMENT SPECIFICATIONS						
Parameter	Conditions		Min.	Typ.	Max.	Unit
Operating Ambient Temperature	See the Derating Curve		-40		100	°C
Maximum Case Temperature					100	°C
Thermal Impedance			23.84			°C/W
Storage Humidity					95	% rel. H
Storage Temperature			-55		125	°C
Cooling	Natural Convection		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"

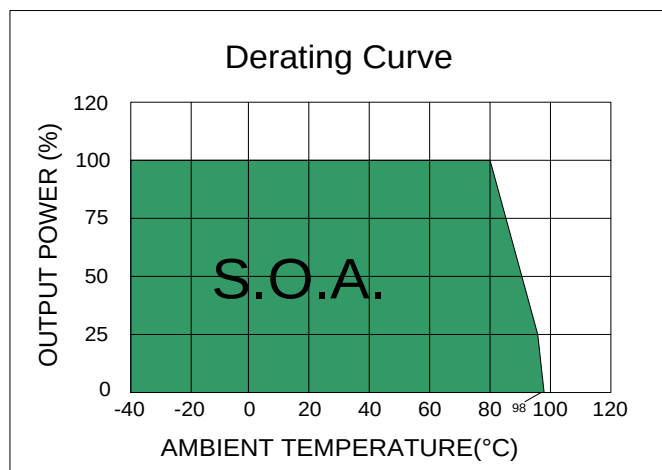
ELECTRICAL CHARACTERISTIC CURVES



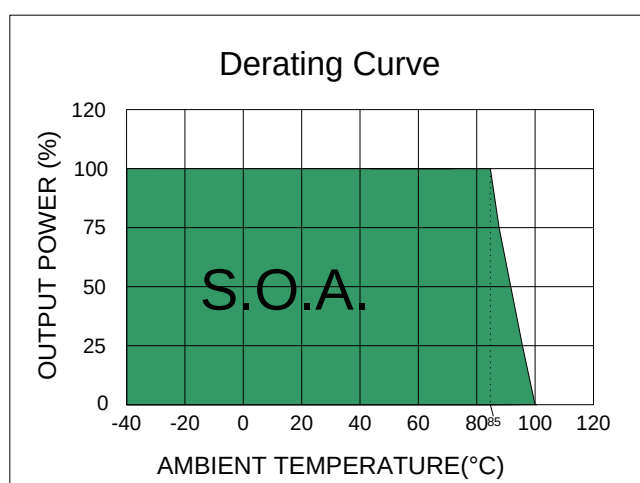
Efficiency = 70% ~ 73%



Efficiency = 75% ~ 78%



Efficiency = 79% ~ 81%

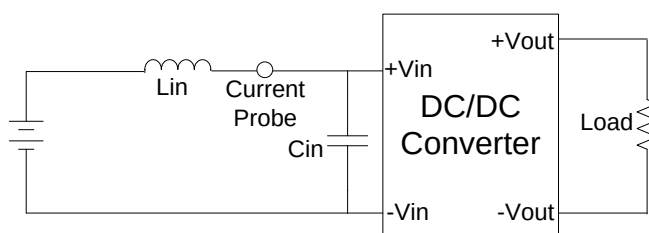


Efficiency = 82% ~ 83%

TEST CONFIGURATIONS

Input Reflected Ripple Current Test Step

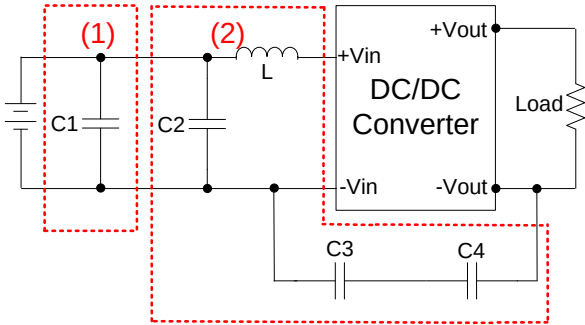
Input reflected ripple current is measured with a source inductor L_{in} (12 μ H) and a source capacitor C_{in} (47 μ F, ESR<1.0 Ω at 100kHz) at nominal input and full load.



DESIGN & FEATURE CONFIGURATIONS

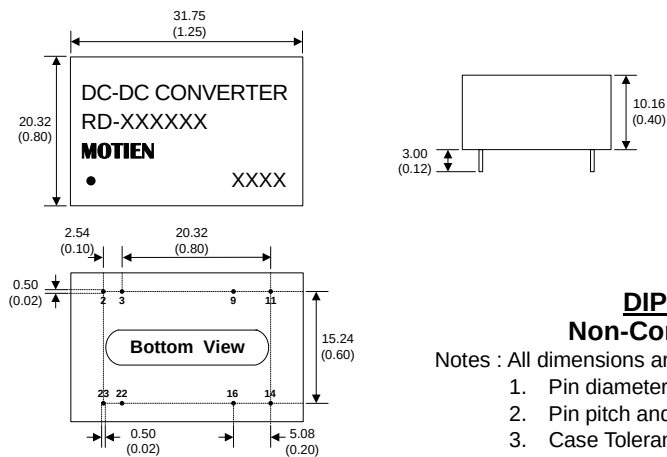
EMC Filter

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-05XXX3	NIPPON Chemi-con KY Series 220μF, 100V			12μH
RD-12XXX3				
RD-24XXX3		MLCC 1000pF,2KV	MLCC 1000pF,2KV	
RD-48XXX3				

MECHANICAL SPECIFICATIONS



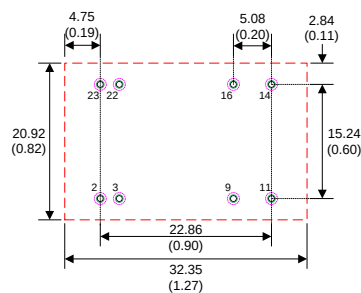
DIP24 Package
Non-Conductive Plastic

- 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)