

RD-1.5W Series

1.5W 2:1 Regulated Single & Dual output



Features

- Wide 2:1 Input Range
- Full SMD Technology
- 1500 VDC Isolation, Up to 3500 VDC
- Continuous Short Circuit Protection
- Efficiency up to 78%
- -40 ~ 85°C Operating Temperature
- Plastic Case Standard, Optional Metal Case

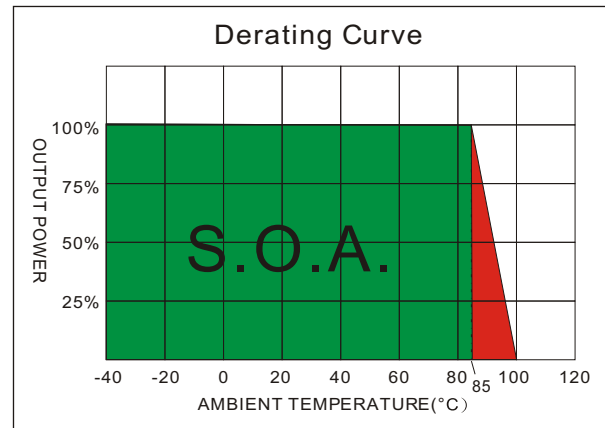
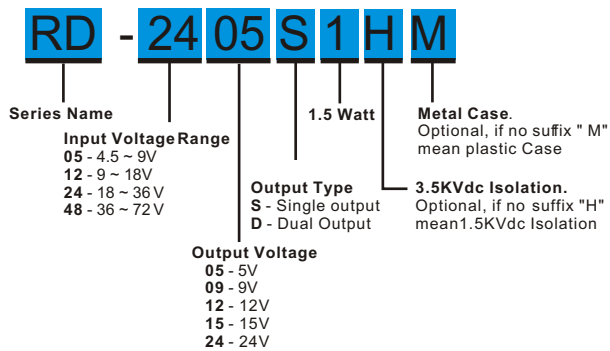


The RD series is a family of cost effective 1.5W single & dual output DC-DC converters. These converters combine Plastic case in a 24-pin DIL package with high performance features such as 1500 VDC ~ 3500VDC input/output isolation voltage, continuous short circuit protection with automatic restart and tight line / load regulation. Devices are encapsulated using flame retardant resin. Input voltages of 5, 12, 24 and 48 with output voltage of 5, 9, 12, 15, 24, ± 5 , ± 9 , ± 12 , ± 15 and ± 24 Vdc. High performance features include high efficiency operation up to 78% and output voltage accuracy of $\pm 1\%$ maximum.

All specifications typical at Ta=25°C, nominal input voltage and full load unless otherwise specified

OUTPUT SPECIFICATIONS		PHYSICAL SPECIFICATIONS	
Voltage accuracy	$\pm 1\%$	Case Material	Non-conductive Black Plastic(UL94V-0 rated)
Line regulation	$\pm 0.5\%$		Nickel-coated Copper
Load regulation	$\pm 0.5\%$	Base Material	Non-conductive Black Plastic(UL94V-0 rated)
Ripple & noise(20 MHz bandwidth)(1)	60mV pk-pk	Pin Material	$\varnothing 0.5\text{mm}$ Brass Solder-coated
Short circuit protection	Continuous	Potting Material	Epoxy (UL94V-0 rated)
Temperature coefficient	$\pm 0.02\%/^{\circ}\text{C}$	Weight	12.5g(Plastic Case)/15.0g(Metal Case)
Capacitor load(2)	See table	Dimensions	1.25"x0.8"x0.4"
INPUT SPECIFICATIONS		ENVIRONMENT SPECIFICATIONS	
Voltage Range	See table	Operating Temperature	-40°C~85°C(See Derating Curve)
Max. Input Current	See table	Maximum Case Temperature	100°C
No-Load Input Current	See table	Storage Temperature	-40°C~125°C
Input Filter	PI Type	Cooling	Nature Convection
Input Reflected Ripple Current(3)	35mA pk-pk		
GENERAL SPECIFICATIONS		ABSOLUTE MAXIMUM RATINGS(4)	
Efficiency	See table, typ	These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.	
I/O Isolation Voltage(3 sec)		Input Voltage(100ms)	
Input/Output	1500~3500Vdc	5 Modes	-0.7~15 Vdc
Metal Case/Input & Output	1000Vdc	12 Modes	-0.7~24 Vdc
I/O Isolation Capacitance	60 pF Typ.	24 Modes	-0.7~40 Vdc
I/O Isolation Resistance	1000M Ohm	48 Modes	-0.7~80 Vdc
Switching Frequency	100~400kHz	Soldering Temperature	260°C
Humidity	95% rel H	(1.5mm from case 10sec.)	
Reliability Calculated MTBF(MIL-HDBK-217 F)	>2.199 Mhrs		
Safety Standard : (designed to meet)	IEC 60950-1		

PART NUMBER STRUCTURE



MODEL SELECTION GUIDE

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current		OUTPUT Voltage (Vdc)	OUTPUT Current		EFFICIENCY @FL(%)	Capacitor Load(uF)
		No-Load (mA)	Full Load (mA)		Min. load (mA)	Full load (mA)		
RD-0505S1	4.5-9	40	461	5	75	300	65	2200
RD-0509S1	4.5-9	40	447	9	41.7	167	67	470
RD-0512S1	4.5-9	40	428	12	125	125	70	470
RD-0515S1	4.5-9	40	447	15	31	100	67	470
RD-0524S1	4.5-9	40	454	24	15.6	62.5	66	220
RD-0505D1	4.5-9	40	461	±5	±37.5	±150	65	±1000
RD-0509D1	4.5-9	40	447	±9	±20.8	±83.3	67	±220
RD-0512D1	4.5-9	40	428	±12	±15.6	±62.5	70	±220
RD-0515D1	4.5-9	40	447	±15	±12.5	±50	67	±220
RD-0524D1	4.5-9	40	454	±24	±7.7	±31	66	±100
RD-1205S1	9-18	20	169	5	75	300	74	2200
RD-1209S1	9-18	20	162	9	41.7	167	77	470
RD-1212S1	9-18	20	164	12	125	125	76	470
RD-1215S1	9-18	20	160	15	31	100	78	470
RD-1224S1	9-18	20	160	24	15.6	62.5	78	220
RD-1205D1	9-18	20	169	±5	±37.5	±150	74	±1000
RD-1209D1	9-18	20	164	±9	±20.8	±83.3	76	±220
RD-1212D1	9-18	20	166	±12	±15.6	±62.5	75	±220
RD-1215D1	9-18	20	160	±15	±12.5	±50	78	±220
RD-1224D1	9-18	20	160	±24	±7.7	±31	78	±100
RD-2405S1	18-36	12	84.5	5	75	300	74	2200
RD-2409S1	18-36	12	84.5	9	41.7	167	74	470
RD-2412S1	18-36	12	82	12	125	125	76	470
RD-2415S1	18-36	12	82	15	31	100	76	470
RD-2424S1	18-36	12	81	24	15.6	62.5	77	220
RD-2405D1	18-36	12	83	±5	±37.5	±150	75	±1000
RD-2409D1	18-36	12	82	±9	±20.8	±83.3	76	±220
RD-2412D1	18-36	12	81	±12	±15.6	±62.5	77	±220
RD-2415D1	18-36	12	80	±15	±12.5	±50	78	±220
RD-2424D1	18-36	12	80	±24	±7.7	±31	78	±100

Suffix "H" means 3.5KVdc isolation

Suffix "M" means Metal Case instead of standard Plastic case

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MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current		OUTPUT Voltage (Vdc)	OUTPUT Current		EFFICIENCY @FL(%)	Capacitor Load(uF)
		No-Load (mA)	Full Load (mA)		Min. load (mA)	Full load (mA)		
RD-4805S1	36-72	8	43	5	75	300	73	2200
RD-4809S1	36-72	8	42	9	41.7	167	75	470
RD-4812S1	36-72	8	40.5	12	125	125	77	470
RD-4815S1	36-72	8	40.5	15	31	100	77	470
RD-4824S1	36-72	8	40	24	15.6	62.5	78	220
RD-4805D1	36-72	8	42	±5	±37.5	±150	74	±1000
RD-4809D1	36-72	8	42	±9	±20.8	±83.3	75	±220
RD-4812D1	36-72	8	40.5	±12	±15.6	±62.5	77	±220
RD-4815D1	36-72	8	40	±15	±12.5	±50	78	±220
RD-4824D1	36-72	8	40	±24	±7.7	±31	78	±100

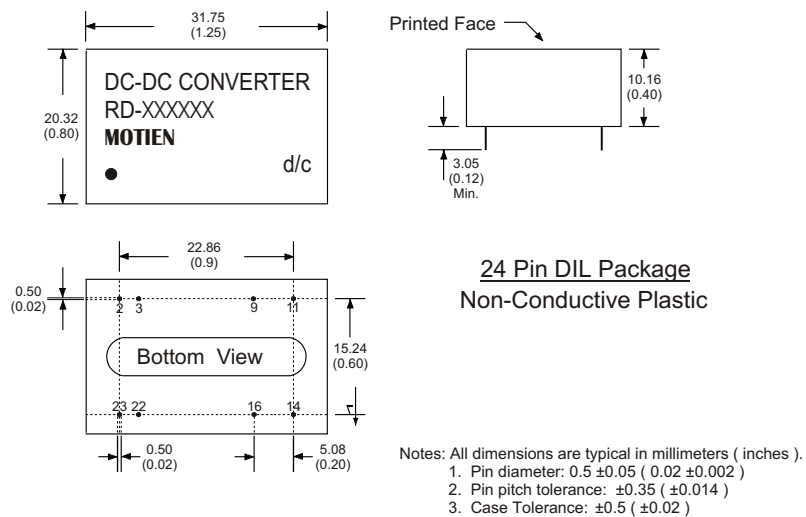
Suffix "H" means 3.5KVdc isolation

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NOTE

1. Typical value at nominal input voltage and full load.
2. Test by nominal input voltage 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 minimum capacitor in output for some models, please check single model datasheet for detail value.

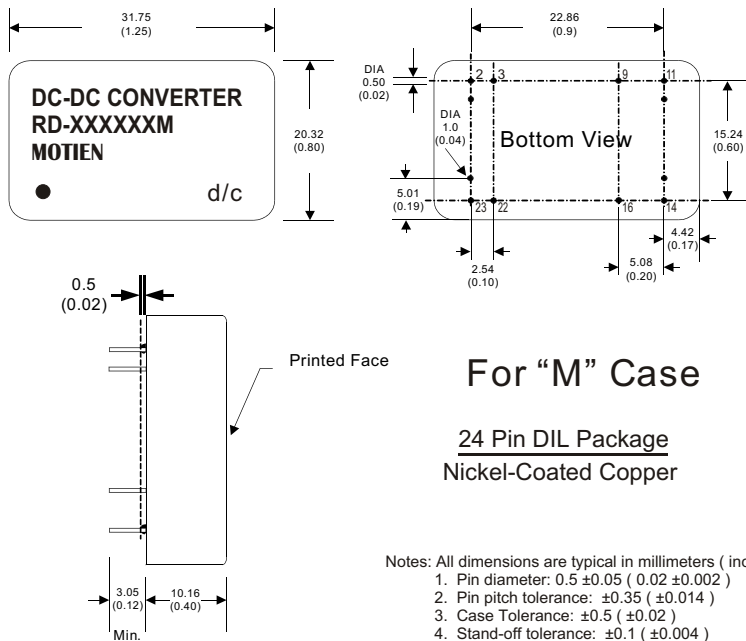
MECHANICAL SPECIFICATIONS FOR HIGH ISOLATION MODEL



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

(The Pin Connection of high isolation one is the same with normal one.)

MECHANICAL SPECIFICATIONS



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

(The Pin Connection of high isolation one is the same with normal one.)

Notes: 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)
4. Stand-off tolerance: ± 0.1 (± 0.004)