

RK-1.5W Series



1.5W 4:1 Regulated Single & Dual output

Features

- Wide 4:1 Input Range
- Full SMD Technology
- 1500 VDC Isolation, Up to 3500 VDC
- Continuous Short Circuit Protection
- Efficiency up to 74%
- -40 ~ 85°C Operating Temperature
- Plastic Case Standard, Optional Metal Case



The RK 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 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 74% and output voltage accuracy of $\pm 1\%$ maximum.

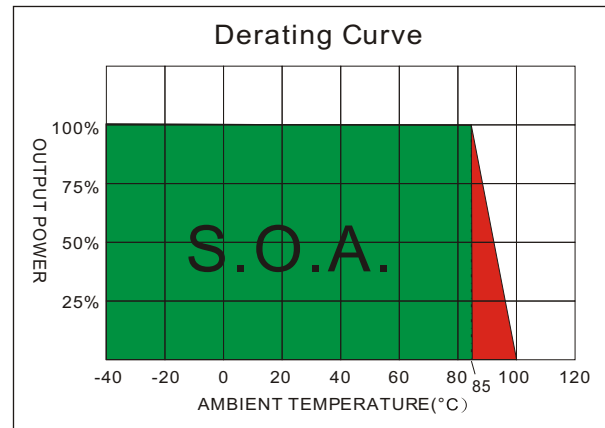
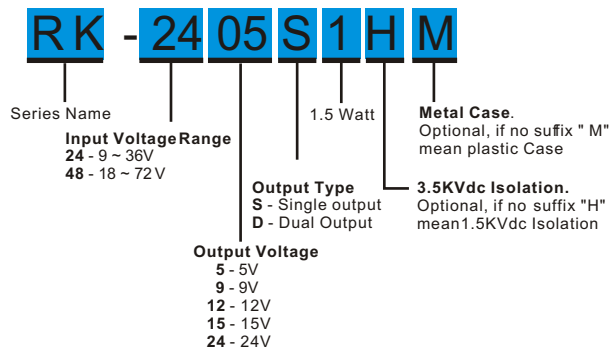
All specifications typical at $T_a=25^\circ\text{C}$, nominal input voltage and full load unless otherwise specified

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	$-40^\circ\text{C} \sim 85^\circ\text{C}$ (See Derating Curve)
Max. Input Current	See table	Maximum Case Temperature	100°C
No-Load Input Current	See table	Storage Temperature	$-40^\circ\text{C} \sim 125^\circ\text{C}$
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	24 Modes	-0.7~40 Vdc
Metal Case/Input & Output	1000Vdc	48 Modes	-0.7~80 Vdc
I/O Isolation Capacitance	60 pF Typ.	Soldering Temperature	260°C
I/O Isolation Resistance	1000M Ohm	(1.5mm from case 10sec.)	
Switching Frequency	100~400kHz		
Humidity	95% rel H		
Reliability Calculated MTBF(MIL-HDBK-217 F)	>2.199 Mhrs		
Safety Standard : (designed to meet)	IEC 60950-1		

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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)		
RK-2405S1	9-36	20	91	5	100	300	68	2200
RK-2409S1	9-36	20	89	9	55.7	167	70	470
RK-2412S1	9-36	20	86	12	41.7	125	72	470
RK-2415S1	9-36	20	86	15	33.3	100	72	470
RK-2424S1	9-36	30	88	24	20.8	62.5	71	220
RK-2405D1	9-36	20	94	±5	±50	±150	66	±1000
RK-2409D1	9-36	20	91	±9	±27.8	±83.3	68	±220
RK-2412D1	9-36	20	89	±12	±20.8	±62.5	70	±220
RK-2415D1	9-36	20	89	±15	±16.7	±50	70	±220
RK-2424D1	9-36	30	90	±24	±10.3	±31	69	±100
RK-4805S1	18-72	10	44	5	100	300	70	2200
RK-4809S1	18-72	10	43	9	55.7	167	72	470
RK-4812S1	18-72	10	42	12	41.7	125	74	470
RK-4815S1	18-72	10	42	15	33.3	100	74	470
RK-4824S1	18-72	10	43	24	20.8	62.5	72	220
RK-4805D1	18-72	10	45	±5	±50	±150	68	±1000
RK-4809D1	18-72	10	44	±9	±27.8	±83.3	70	±220
RK-4812D1	18-72	10	43	±12	±20.8	±62.5	72	±220
RK-4815D1	18-72	10	43	±15	±16.7	±50	72	±220
RK-4824D1	18-72	10	44	±24	±10.3	±31	71	±100

Suffix "H" means 3.5KVdc isolation

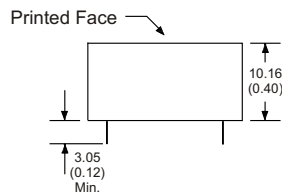
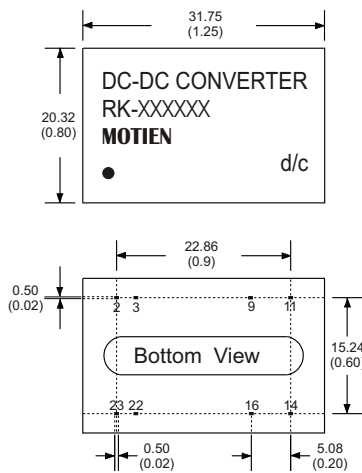
Suffix "M" means Metal Case instead of standard Plastic case

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.

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MECHANICAL SPECIFICATIONS



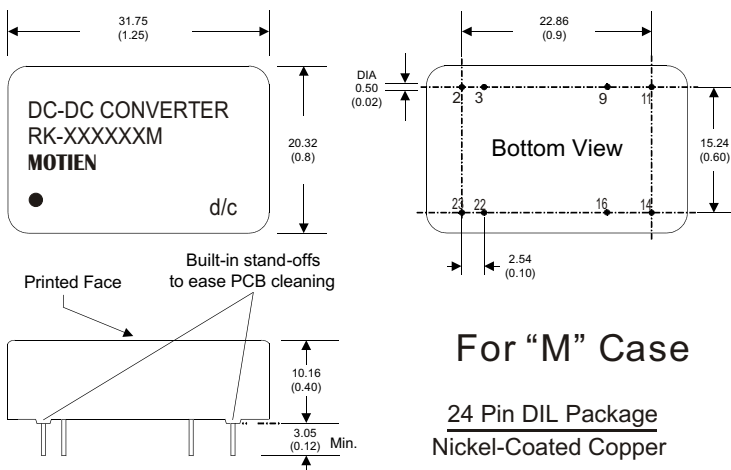
24 Pin DIL Package Non-Conductive Plastic

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

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



For "M" Case

24 Pin DIL Package Nickel-Coated Copper

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)

PIN CONNECTIONS		
PIN NUMBER	SINGLE	DUAL
2	-V Input	-V Input
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(The Pin Connection of high isolation one is the same with normal one.)