

R6-2W Series

2W 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 80%
- -40 ~ 85°C Operating Temperature
- Plastic Case Standard, Optional Metal Case



The R6 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 1500VDC ~ 3500VDC input/output isolation voltage, continuous short circuit protection with automatic restart and high line / load regulation. Devices are encapsulated using flame retardant resin. Input voltages of 5, 12, 24 and 48 with output voltage of 5, 7.2, 9, 12, 15, 18, 24, ± 5 , ± 7.2 , ± 9 , ± 12 , $\pm 15 \pm 18$, 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	
Voltage accuracy	$\pm 1\%$, max.
Line regulation	$\pm 0.5\%$, max.
Load regulation	$\pm 0.5\%$, max.
Ripple & noise (20 MHz bandwidth)(1)	60mV pk-pk, max.
Short circuit protection	Continuous
Temperature coefficient	$\pm 0.02\%/^{\circ}\text{C}$
Capacitor load(2)	See table, max.

INPUT SPECIFICATIONS	
Voltage Range	See table
Input Current (No Load)	See table, max.
Input Current (Full Load)	See table, typ.
Input Filter	PI Type
Input Reflected Ripple Current(3)	35mA pk-pk, typ.

GENERAL SPECIFICATIONS	
Efficiency	See table, typ.
I/O Isolation Voltage(60sec)	
Input/Output	1500~3500Vdc
Metal Case/Input & Output	1000Vdc
I/O Isolation Capacitance	60 pF typ.
I/O Isolation Resistance	1000M Ohm, min.
Switching Frequency	100~400kHz
Humidity	95% rel H
Reliability Calculated MTBF(MIL-HDBK-217 F)	>1Mhrs
Safety Standard : (desinged to meet)	IEC 60950-1

ENVIRONMENT SPECIFICATIONS	
Operating Temperature	-40°C~85°C
Maximum Case Temperature	100°C
Storage Temperature	-40°C~125°C
Cooling	Nature Convection

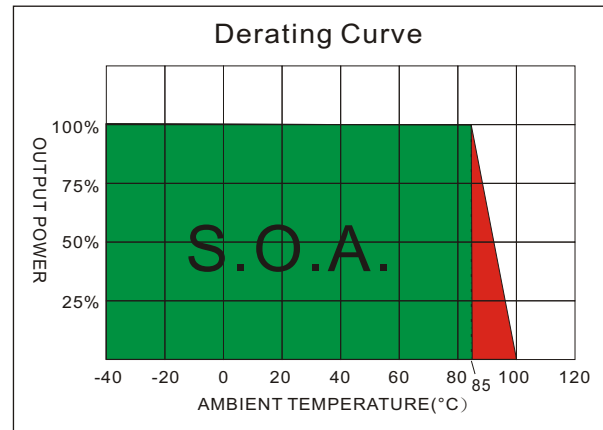
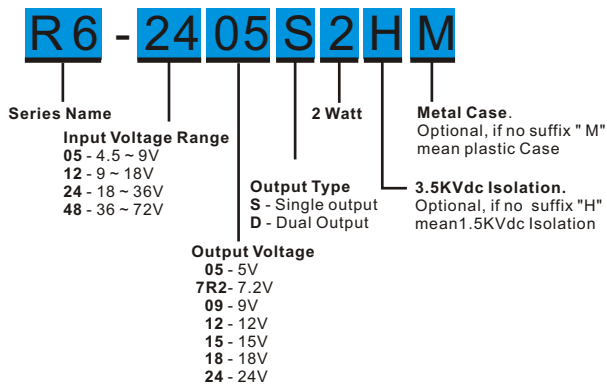
PHYSICAL SPECIFICATIONS	
Case Material	Non-conductive Black Plastic(UL94V-0 rated)
	Nickel-coated Copper
Base Material	Non-conductive Black Plastic(UL94V-0 rated)
Pin Material	$\Phi 0.5\text{mm}$ Brass Solder-coated
Potting Material	Epoxy (UL94V-0 rated)
Weight	12.5g(Plastic Case)/17.0g(Metal Case)
Dimensions	1.25"x0.8"x0.4"

ABSOLUTE MAXIMUM RATINGS(4)	
These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.	
Input Surge Voltage(100mS)	
5 Models	15 Vdc, max.
12 Models	24 Vdc, max.
24 Models	40 Vdc, max.
48 Models	80 Vdc, max.
Soldering Temperature (1.5mm from case 10sec max.)	260°C, max.

EMC SPECIFICATIONS		
Radiated Emissions	EN55032	CLASS A
Conducted Emissions (7)	EN55032	CLASS A
ESD	IEC 61000-4-2	Perf. Criteria A
RS	IEC 61000-4-3	Perf. Criteria A
EFT (8)	IEC 61000-4-4	Perf. Criteria A
Surge (8)	IEC 61000-4-5	Perf. Criteria A
CS	IEC 61000-4-6	Perf. Criteria A
PFMF	IEC 61000-4-8	Perf. Criteria A

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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 (% , typ.)	Capacitor Load @FL (μF, max.)
		No-Load (mA, max.)	Full Load (mA, typ.)		Min. load (mA)	Full load (mA)		
R6-0505S2	4.5-9	40	588	5	100	400	68	2200
R6-057R2S2	4.5-9	40	588	7.2	69	278	68	1000
R6-0509S2	4.5-9	40	571	9	56	222	70	470
R6-0512S2	4.5-9	40	571	12	43	167	70	470
R6-0515S2	4.5-9	40	571	15	33	133	70	470
R6-0518S2	4.5-9	40	571	18	28	111	70	220
R6-0524S2	4.5-9	40	579	24	21	83	69	220
R6-0505D2	4.5-9	40	588	±5	±50	±200	68	±1000
R6-057R2D2	4.5-9	40	588	±7.2	±35	±139	68	±220
R6-0509D2	4.5-9	40	571	±9	±28	±111	70	±220
R6-0512D2	4.5-9	40	571	±12	±21	±83	70	±220
R6-0515D2	4.5-9	40	571	±15	±17	±67	70	±220
R6-0518D2	4.5-9	40	579	±18	±14	±56	69	±220
R6-0524D2	4.5-9	40	579	±24	±11	±42	69	±100
R6-1205S2	9-18	20	231	5	100	400	72	2200
R6-127R2S2	9-18	20	231	7.2	69	278	72	1000
R6-1209S2	9-18	20	228	9	56	222	73	470
R6-1212S2	9-18	20	216	12	43	167	77	470
R6-1215S2	9-18	20	216	15	33	133	77	470
R6-1218S2	9-18	20	222	18	28	111	75	220
R6-1224S2	9-18	20	225	24	21	83	74	220
R6-1205D2	9-18	20	231	±5	±50	±200	72	±1000
R6-127R2D2	9-18	20	231	±7.2	±35	±139	72	±220
R6-1209D2	9-18	20	231	±9	±28	±111	72	±220
R6-1212D2	9-18	20	219	±12	±21	±83	76	±220
R6-1215D2	9-18	20	219	±15	±17	±67	76	±220
R6-1218D2	9-18	20	222	±18	±14	±56	75	±220
R6-1224D2	9-18	20	222	±24	±11	±42	75	±100
R6-2405S2	18-36	12	111	5	100	400	75	2200
R6-247R2S2	18-36	12	111	7.2	69	278	75	1000

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 (% , typ.)	Capacitor Load @FL (μF, max.)
		No-Load (mA, max.)	Full Load (mA, typ.)		Min. load (mA)	Full load (mA)		
R6-2409S2	18-36	12	110	9	56	222	76	470
R6-2412S2	18-36	12	110	12	43	167	76	470
R6-2415S2	18-36	12	107	15	33	133	78	470
R6-2418S2	18-36	12	108	18	28	111	77	220
R6-2424S2	18-36	12	108	24	21	83	77	220
R6-2405D2	18-36	12	111	±5	±50	±200	75	±1000
R6-247R2D2	18-36	12	111	±7.2	±35	±139	75	±220
R6-2409D2	18-36	12	110	±9	±28	±111	76	±220
R6-2412D2	18-36	12	107	±12	±21	±83	78	±220
R6-2415D2	18-36	12	107	±15	±17	±67	78	±220
R6-2418D2	18-36	12	108	±18	±14	±56	77	±220
R6-2424D2	18-36	12	110	±24	±11	±42	76	±100
R6-4805S2	36-72	8	57	5	100	400	73	2200
R6-487R2S2	36-72	8	57	7.2	69	278	73	1000
R6-4809S2	36-72	8	56	9	56	222	74	470
R6-4812S2	36-72	8	56	12	43	167	75	470
R6-4815S2	36-72	8	56	15	33	133	75	470
R6-4818S2	36-72	8	57	18	28	111	73	220
R6-4824S2	36-72	8	57	24	21	83	73	220
R6-4805D2	36-72	8	56	±5	±50	±200	74	±1000
R6-487R2D2	36-72	8	56	±7.2	±35	±139	74	±220
R6-4809D2	36-72	8	56	±9	±28	±111	75	±220
R6-4812D2	36-72	8	53	±12	±21	±83	78	±220
R6-4815D2	36-72	8	53	±15	±17	±67	78	±220
R6-4818D2	36-72	8	55	±18	±14	±56	76	±220
R6-4824D2	36-72	8	55	±24	±11	±42	76	±100

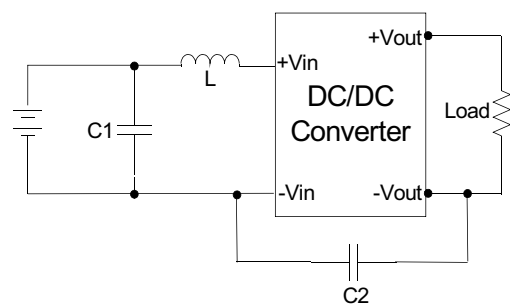
Suffix "H" means 3.5KVdc isolation

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

TEST CONFIGURATIONS

EMI Filter

Input filter components (C1, C2, L) are used to help meet conducted emissions requirement for the module. These components should be mounted as close as possible to the module; and all leads should be minimized to decrease radiated noise.

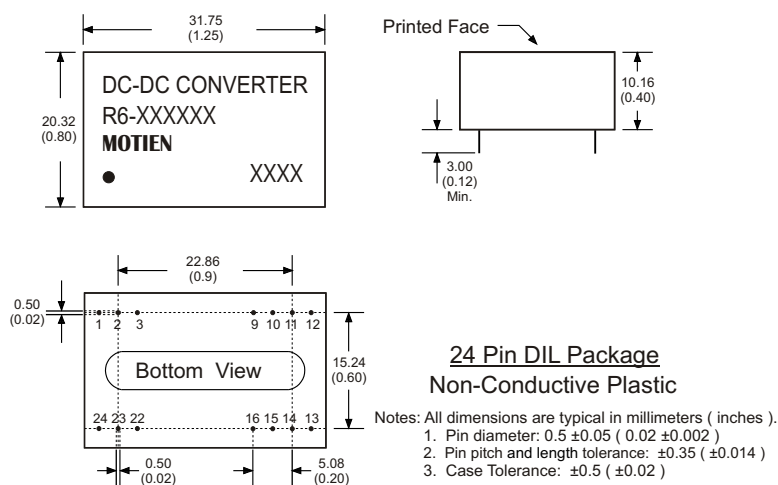


	C1	L	C2
R6-05XXXXX	220uF/100V	12uH	
R6-12XXXXX	220uF/100V	12uH	
R6-24XXXXX	220uF/100V	12uH	MLCC 470PF
R6-48XXXXX	220uF/100V	12uH	MLCC 470PF

NOTE

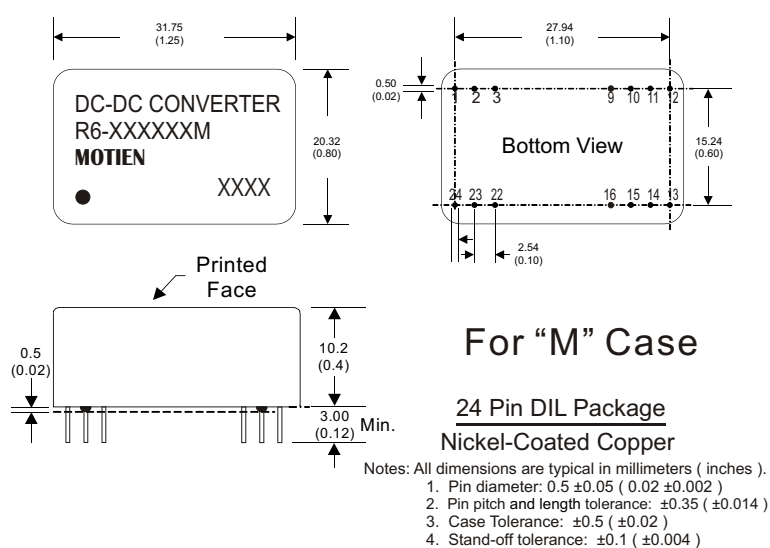
1. Typical value at nominal input voltage and full load.
2. Test by nominal input voltage and constant resistor load.
3. Measured Input reflected ripple current with a simulated source inductance of 12 μ H.
4. Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous 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.
7. Input filter components are be required to help meet conducted emission class A, which application refer to the EMI Filter of design & feature configuration.
8. An external filter capacitor is required if the module has to meet IEC61000-4-4 and IEC61000-4-5.
The filter capacitor Motien suggest: Nippon - chemi - con KY series, 220 μ F/100V.

MECHANICAL SPECIFICATIONS FOR HIGH ISOLATION MODEL



PIN CONNECTIONS				
PIN NUMBER	SINGLE	DUAL	SINGLE-H	DUAL-H
1	+V Input	+V Input	N.P.	N.P.
2	N.C.	-V Output	-V Input	-V Input
3	N.C.	Common	-V Input	-V Input
9	N.P.	N.P.	N.P.	Common
10	-V Output	Common	N.P.	N.P.
11	+V Output	+V Output	N.C.	-V Output
12	-V Input	-V Input	N.P.	N.P.
13	-V Input	-V Input	N.P.	N.P.
14	+V Output	+V Output	+V Output	+V Output
15	-V Output	Common	N.P.	N.P.
16	N.P.	N.P.	-V Output	Common
22	N.C.	Common	+V Input	+V Input
23	N.C.	-V Output	+V Input	+V Input
24	+V Input	+V Input	N.P.	N.P.

MECHANICAL SPECIFICATIONS



PIN CONNECTIONS				
PIN NUMBER	SINGLE	DUAL	SINGLE-H	DUAL-H
1	+V Input	+V Input	N.P.	N.P.
2	N.C.	-V Output	-V Input	-V Input
3	N.C.	Common	-V Input	-V Input
9	N.P.	N.P.	N.P.	Common
10	-V Output	Common	N.P.	N.P.
11	+V Output	+V Output	N.C.	-V Output
12	-V Input	-V Input	N.P.	N.P.
13	-V Input	-V Input	N.P.	N.P.
14	+V Output	+V Output	+V Output	+V Output
15	-V Output	Common	N.P.	N.P.
16	N.P.	N.P.	-V Output	Common
22	N.C.	Common	+V Input	+V Input
23	N.C.	-V Output	+V Input	+V Input
24	+V Input	+V Input	N.P.	N.P.