

R6-3W 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.



PART NUMBER STRUCTURE

R6 - 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)		
R6-0505S3	4.5-9	20	845	5	150	600	71	2200
R6-057R2S3	4.5-9	23	800	7.2	104	417	75	1000
R6-0509S3	4.5-9	20	833	9	83	333	72	470
R6-0512S3	4.5-9	65	811	12	63	250	74	470
R6-0515S3	4.5-9	25	811	15	50	200	74	470
R6-0518S3	4.5-9	40	811	18	42	167	74	220
R6-0524S3	4.5-9	90	833	24	31	125	72	220
R6-0505D3	4.5-9	25	870	±5	±75	±300	69	±1000
R6-057R2D3	4.5-9	30	857	±7.2	±52	±208	70	±220
R6-0509D3	4.5-9	25	822	±9	±42	±167	73	±220
R6-0512D3	4.5-9	35	857	±12	±31	±125	70	±220
R6-0515D3	4.5-9	40	822	±15	±25	±100	73	±220
R6-0518D3	4.5-9	40	822	±18	±21	±83	73	±220
R6-0524D3	4.5-9	110	822	±24	±16	±63	73	±100
R6-1205S3	9-18	15	321	5	150	600	78	2200
R6-127R2S3	9-18	15	329	7.2	104	417	76	1000
R6-1209S3	9-18	12	321	9	83	333	78	470
R6-1212S3	9-18	15	313	12	63	250	80	470
R6-1215S3	9-18	15	313	15	50	200	80	470
R6-1218S3	9-18	20	313	18	42	167	80	220
R6-1224S3	9-18	18	309	24	31	125	81	220
R6-1205D3	9-18	15	325	±5	±75	±300	77	±1000
R6-127R2D3	9-18	20	325	±7.2	±52	±208	77	±220
R6-1209D3	9-18	15	309	±9	±42	±167	81	±220
R6-1212D3	9-18	15	316	±12	±31	±125	79	±220
R6-1215D3	9-18	15	313	±15	±25	±100	80	±220
R6-1218D3	9-18	20	321	±18	±21	±83	78	±220
R6-1224D3	9-18	25	321	±24	±16	±63	78	±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)		
R6-2405S3	18-36	8	160	5	150	600	78	2200
R6-247R2S3	18-36	15	160	7.2	104	417	78	1000
R6-2409S3	18-36	8	156	9	83	333	80	470
R6-2412S3	18-36	8	152	12	62	250	82	470
R6-2415S3	18-36	8	156	15	50	200	80	470
R6-2418S3	18-36	15	156	18	42	167	80	220
R6-2424S3	18-36	15	154	24	31	125	81	220
R6-2405D3	18-36	8	158	±5	±75	±300	79	±1000
R6-247R2D3	18-36	10	156	±7.2	±52	±208	80	±220
R6-2409D3	18-36	10	154	±9	±42	±167	81	±220
R6-2412D3	18-36	15	156	±12	±31	±125	80	±220
R6-2415D3	18-36	15	154	±15	±25	±100	81	±220
R6-2418D3	18-36	15	154	±18	±21	±83	81	±220
R6-2424D3	18-36	15	152	±24	±16	±63	82	±100
R6-4805S3	36-72	6	81	5	150	600	77	2200
R6-487R2S3	36-72	10	80	7.2	104	417	78	1000
R6-4809S3	36-72	8	80	9	83	333	78	470
R6-4812S3	36-72	10	81	12	63	250	77	470
R6-4815S3	36-72	15	80	15	50	200	78	470
R6-4818S3	36-72	10	80	18	42	167	78	220
R6-4824S3	36-72	15	80	24	31	125	78	220
R6-4805D3	36-72	8	79	±5	±75	±300	79	±1000
R6-487R2D3	36-72	10	80	±7.2	±52	±208	78	±220
R6-4809D3	36-72	8	75	±9	±42	±167	83	±220
R6-4812D3	36-72	12	79	±12	±31	±125	79	±220
R6-4815D3	36-72	12	79	±15	±25	±100	79	±220
R6-4818D3	36-72	10	80	±18	±21	±83	78	±220
R6-4824D3	36-72	12	75	±24	±15.8	±63	83	±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	For Isolation Voltage 1500 VDC	LC Type			
	For Isolation Voltage 3500 VDC	Pi Type			
Input With External Capacitor	For Isolation Voltage 1500 VDC			10	μF
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	2.0			A
	12V Input	0.8			
	24V Input	0.4			
	48V Input	0.2			
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)	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.					

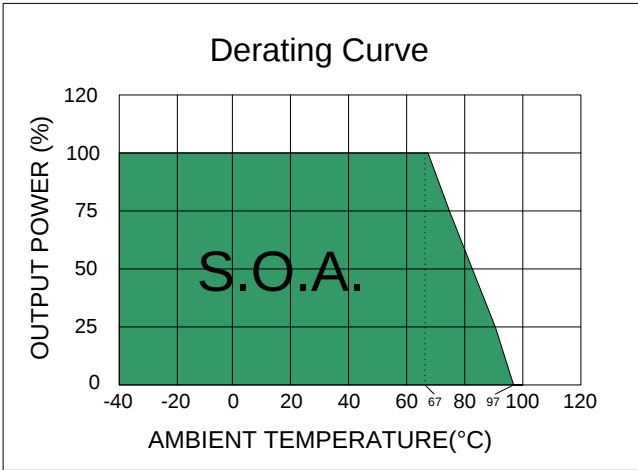
GENERAL SPECIFICATIONS						
Parameter	Conditions		Min.	Typ.	Max.	Unit
Isolation Voltage	Input-output, and rated for 60sec	Standard Type	1500			VDC
		Suffix “H”	3500			
Isolation Resistance	Input-output		1000			MΩ
Isolation Capacitance	Input-output			60		pF
Switching Frequency			100		400	kHz
MTBF	MIL-HDBK-217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

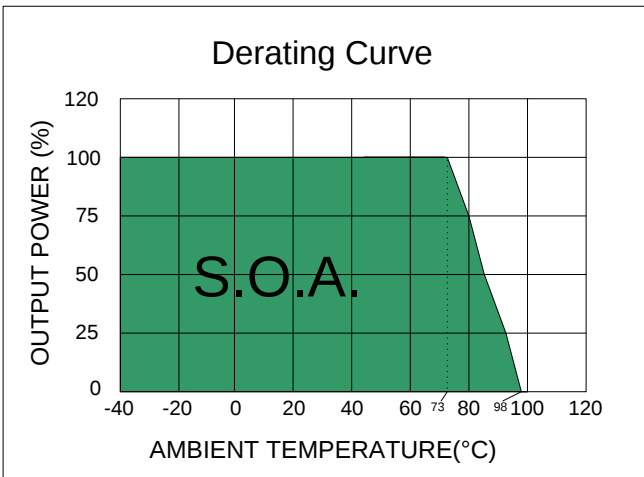
EMC SPECIFICATIONS			
Parameter	Standard	Condition	Criterion
Conducted Emissions	EN55032	with external components	A
Radiated Emissions	EN55032		A
ESD	IEC 61000-4-2	Air: ±8kV / Contact: ±6kV	A
RS	IEC 61000-4-3	10V/m	A
EFT	IEC 61000-4-4	±2kV with external components	A
Surge	IEC 61000-4-5	±1kV with external components	A
CS	IEC 61000-4-6	10Vrms	A
PFMF	IEC 61000-4-8	1A/m	A

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	Plastic Case : 12.5 g , typ.
Dimensions	1.25" x 0.8" x 0.4"

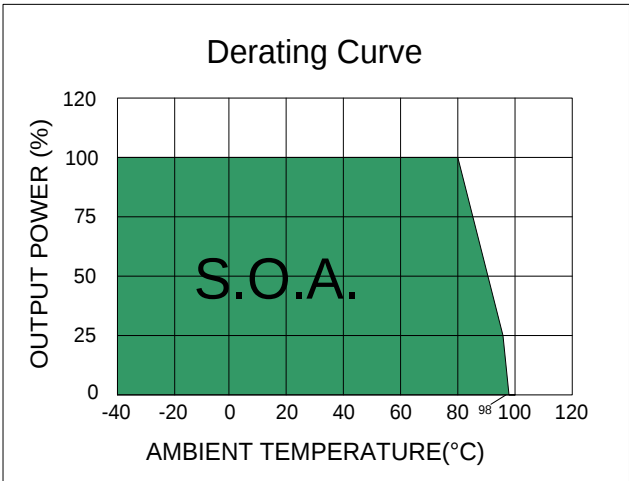
ELECTRICAL CHARACTERISTIC CURVES



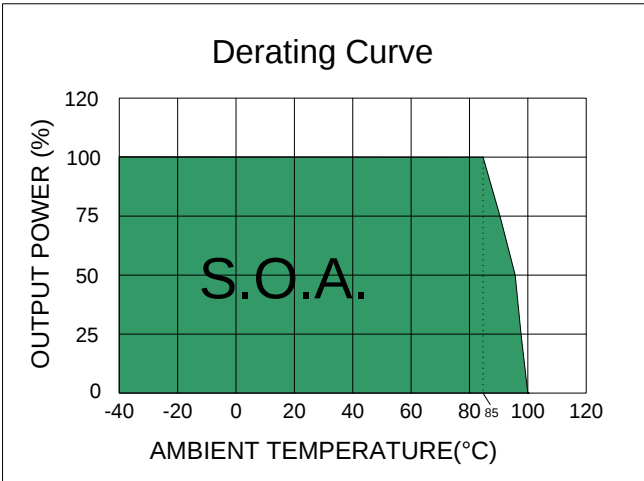
Efficiency = 69% ~ 72%



Efficiency = 73% ~ 78%



Efficiency = 79% ~ 81%

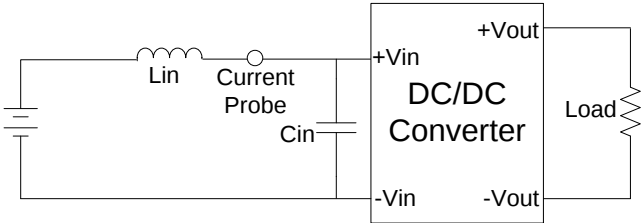


Efficiency = 82% ~ 83%

TEST CONFIGURATIONS

Input Reflected Ripple Current Test Step

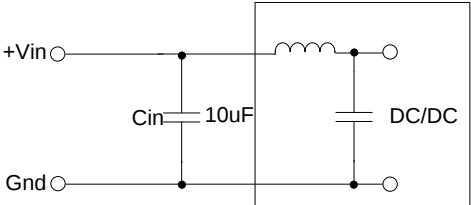
Input reflected ripple current is measured with a source inductor L_{in} ($12\mu H$) and a source capacitor C_{in} ($47\mu F$, $ESR < 1.0\Omega$ at $100kHz$) at nominal input and full load.



Application Note (For Isolation Voltage 1500 VDC)

All the series have been tested according to the following recommended testing circuit before leaving factory.

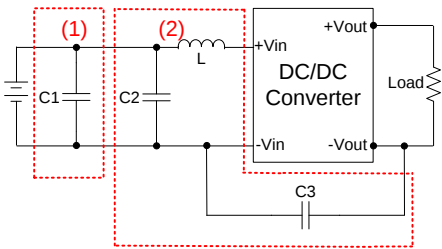
Input With External Capacitor



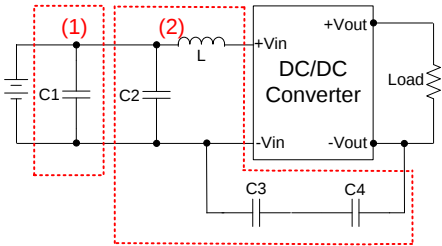
DESIGN & FEATURE CONFIGURATIONS

EMC Filter

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

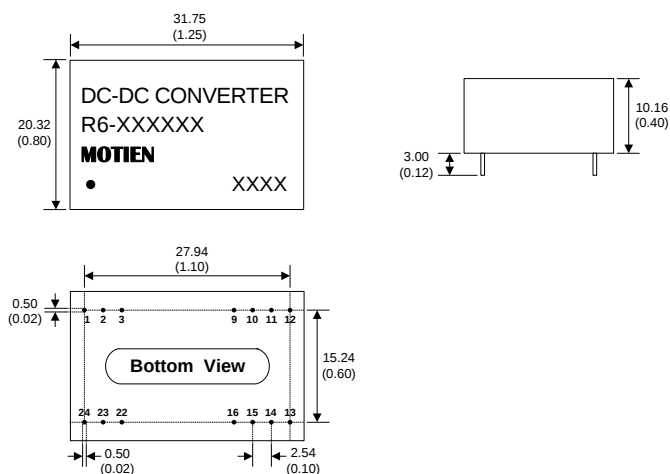


	C1, C2	C3	L
R6-05XXX3	NIPPON Chemi-con KY Series 220μF, 100V	MLCC 470pF, 2KV	12μH
R6-12XXX3			
R6-24XXX3			
R6-48XXX3			



	C1, C2	C3	C4	L
R6-05XXX3H	NIPPON Chemi-con KY Series 220μF, 100V	MLCC 1000pF, 2KV	MLCC 1000pF, 2KV	12μH
R6-12XXX3H				
R6-24XXX3H				
R6-48XXX3H				

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)

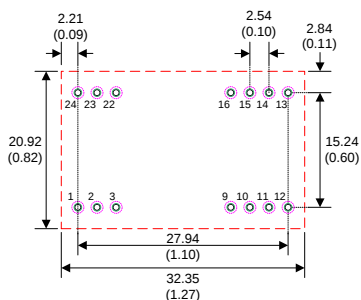
PIN CONNECTIONS

PIN NUMBER	SINGLE	DUAL	SINGLE-H	DUAL-H
1	+Vin	+Vin	N.P.	N.P.
2	N.C.	-Vout	-Vin	-Vin
3	N.C.	COM	-Vin	-Vin
9	N.P.	N.P.	N.P.	COM
10	-Vout	COM	N.P.	N.P.
11	+Vout	+Vout	N.C.	-Vout
12	-Vin	-Vin	N.P.	N.P.
13	-Vin	-Vin	N.P.	N.P.
14	+Vout	+Vout	+Vout	+Vout
15	-Vout	COM	N.P.	N.P.
16	N.P.	N.P.	-Vout	COM
22	N.C.	COM	+Vin	+Vin
23	N.C.	-Vout	+Vin	+Vin
24	+Vin	+Vin	N.P.	N.P.

*N.P. : No PIN

*N.C. : No Connection

RECOMMENDED FOOTPRINT DETAILS



- Notes : 1. All dimensions are typical in millimeters (inches).
- Through hole (black) 1 ~ 24: $\varnothing 0.80$ (0.031)
 - Top view pad (green) 1 ~ 24: $\varnothing 1.00$ (0.039)
 - Bottom view pad (pink) 1 ~ 24: $\varnothing 1.60$ (0.063)