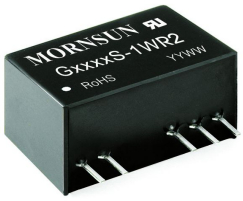
1W, Fixed input voltage , 4200VAC or 6000VDC isolated & unregulated positive-negative dual/single output





c UL us CE CB Patent Protection RoHS 3 years Warranty

FEATURES

- SIP package
- High efficiency up to 81%
- Reinforced insulation
- The patient leakage current: Max 2μA
- Isolation voltage: 4200VAC or 6000VDC
- Operating temperature range:-40℃ to +85℃
- Internal surface mounted design
- International standard pin-out
- EN60601-1, ANSI/AAMI ES60601-1approval （1xMOPP/2xMOOP）
- IEC60950 approval

G_S-1WR2 & H_S-1WR2 series meet reinforced insulation requirements. They are specially designed for applications where require compact size, high isolation, low isolation capacitor and low leakage current power. They are widely used in medical, electricity, IGBT driver and so on. They are suitable for:
1.Where the voltage of the input power supply is stable (voltage variation: ±10%Vin);
2.Where isolation is necessary between input and output (isolation voltage ≤4200VAC or 6000VDC);
3.Where do not has high requirement of line regulation and the ripple & noise of the output voltage;
Such as: Medical collection and isolation, High voltage collection circuit, IGBT-driven circuits, etc.

Selection Guide

Certification	Part No.	Input Voltage (VDC)	Output		Efficiency (%,Min./Typ.) @ Full Load	Max. Capacitive Load* (μF)
		Nominal (Range)	Output Voltage(VDC)	Output Current (mA)(Max./Min.)		
--	H0305S-1WR2	3.3 (2.97-3.63)	5	200/20	67/71	1000
UL/CE	G0505S-1WR2	5 (4.5-5.5)	±5	±100/±10	74/78	470
	G0509S-1WR2		±9	±56/±6	76/80	470
	G0512S-1WR2		±12	±42/±5	70/74	220
	G0515S-1WR2		±15	±34/±4	72/76	220
UL/CE/CB	H0503S-1WR2		3.3	303/31	69/73	1000
	H0505S-1WR2		5	200/20	74/78	1000
	H0512S-1WR2		12	84/9	72/76	470
	H0515S-1WR2		15	67/7	72/76	470
UL/CE	G1205S-1WR2	12 （10.8-13.2）	±5	±100/±10	73/77	470
	G1209S-1WR2		±9	±56/±6	76/80	470
	G1212S-1WR2		±12	±42/±5	69/73	220
	G1215S-1WR2		±15	±34/±4	71/75	220
UL/CE/CB	H1205S-1WR2		5	200/20	73/77	1000
	H1212S-1WR2		12	84/9	77/81	470
	H1215S-1WR2		15	67/7	77/81	470
--	G1515S-1WR2	15 （13.5-16.5）	±15	±34/±4	68/72	220
UL/CE	G2405S-1WR2	24 （21.6-26.4）	±5	±100/±10	71/75	470
	G2409S-1WR2		±9	±56/±6	75/79	470
	G2412S-1WR2		±12	±42/±5	72/76	220
	G2415S-1WR2		±15	±34/±4	72/76	220
UL/CE/CB	H2405S-1WR2		5	200/20	72/76	1000
	H2412S-1WR2		12	84/9	74/78	470
	H2415S-1WR2		15	67/7	74/78	470

Note:* The capacitive loads of positive and negative outputs are identical.

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Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (no-load/full load)	3.3V input	--	45/426	70/--	mA
	5V input	--	35/274	60/--	
	12V input	--	15/114	40/--	
	15V input	--	18/93	40/--	
	24V input	--	10/56	25/--	
Surge Voltage (1sec. max.)	3.3V input	-0.7	--	7	VDC
	5V input	-0.7	--	9	
	12V input	-0.7	--	18	
	15V input	-0.7	--	21	
	24V input	-0.7	--	30	
Reflected Ripple Current*		--	0.2	--	A
Input Filter		Capacitor filter			
Hot Plug		Unavailable			

Note: *Reflected ripple current testing method please see DC-DC Converter Application Notes for specific operation.

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy			See tolerance envelope curve (Fig. 1)			
Line Regulation	Input voltage change: ±1%	3.3V output	--	--	±1.5	--
		Others	--	--	±1.2	
Load Regulation	10%-100% load	3.3V/5V output	--	--	20	%
		Others	--	--	15	
Ripple & Noise*	20MHz bandwidth	3.3V output	--	80	150	mVp-p
		Others	--	70	120	
Temperature Drift Coefficient	100% full load		--	±0.02	--	%/℃
Output Short Circuit Protection**			--	--	3	s

Note: *Ripple and noise tested with "parallel cable" method, please see DC-DC Converter Application Notes for specific operation methods.
**Supply voltage must be discontinued at the end of short circuit duration which less than 3s.

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Insulation Voltage	Input-output, with the test time of 1 minute	4200	--	--	VAC
		6000	--	--	VDC
Patient Leakage Current	250VAC，50/60Hz	--	--	2	μA
Insulation Resistance	Input-output, isolation voltage 500VDC	1000	--	--	MΩ
Isolation Capacitance	Input-output, 100KHz/0.1V	--	5	--	pF
Operating Temperature		-40	--	85	℃
Storage Temperature		-55	--	125	
Casing Temperature Rise	Ta=25℃	--	25	--	
Pin Welding Resistance Temperature	Welding spot is 1.5mm away from the casing, 10 seconds	--	--	300	
Storage Humidity	Non-condensing	--	--	95	%RH
Switching Frequency	100% load, nominal input voltage	--	100	--	KHz
MTBF	MIL-HDBK-217F@25℃	3500	--	--	K hours
Transformer Creepage		5	--	--	mm
Transformer Clearance		5	--	--	
PCB Creepage & Clearance		5.5	--	--	

Note:1. Patient leakage current and reinforced insulation is based on a 250 VAC, 50/60 Hz system input voltage.
2. The UL certification (ANSI/AAMI ES60601-1, File No. E347375) of G_S-1WR2 & H_S-1WR2 series is approved, G_S-1WR2 & H_S-1WR2 series meets 1xMOPP/2xMOOP when system input voltage is with 250VAC , 50/60Hz.

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Physical Specifications

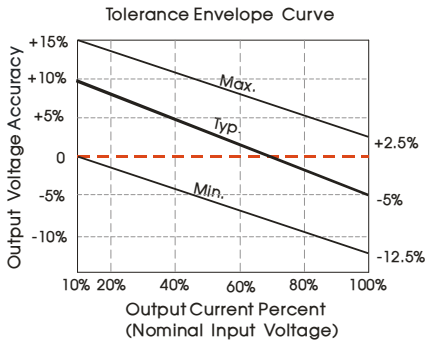
Casing Material	Black flame-retardant and heat-resistant plastic (UL94 V-0)
Package Dimensions	19.50*9.80*12.50 mm
Weight	4.2g(Typ.)
Cooling Method	Free air convection

EMC Specifications

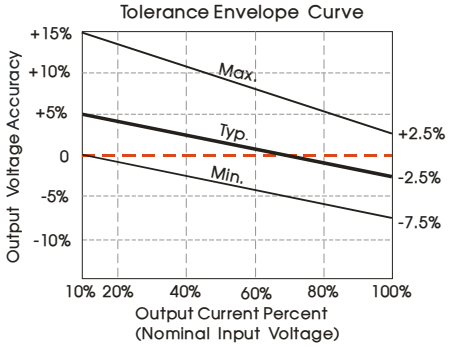
EMI	Conducted emission	CISPR22/EN55022 CLASS B (see Fig. 5 for recommended circuit)
	Radiated emission	CISPR22/EN55022 CLASS B (see Fig. 5 for recommended circuit)
EMS	Electrostatic discharge	IEC/EN61000-4-2 Contact ±8KV perf. Criteria B

Product Characteristic Curve

3.3VDC output



5VDC output



Other output

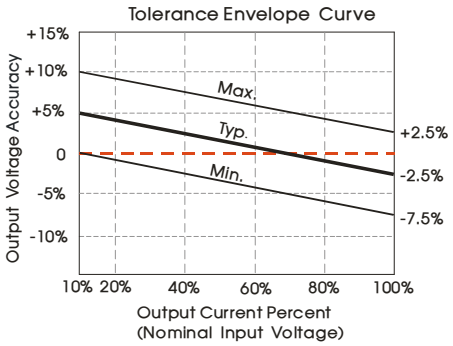


Fig. 1

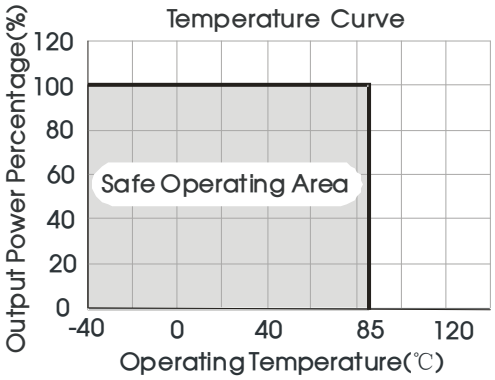
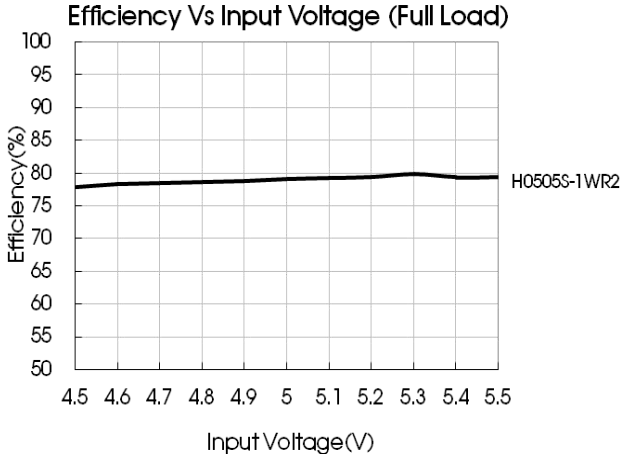
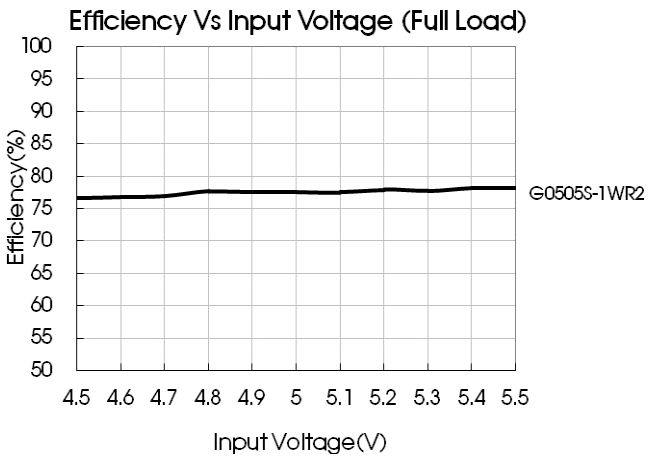
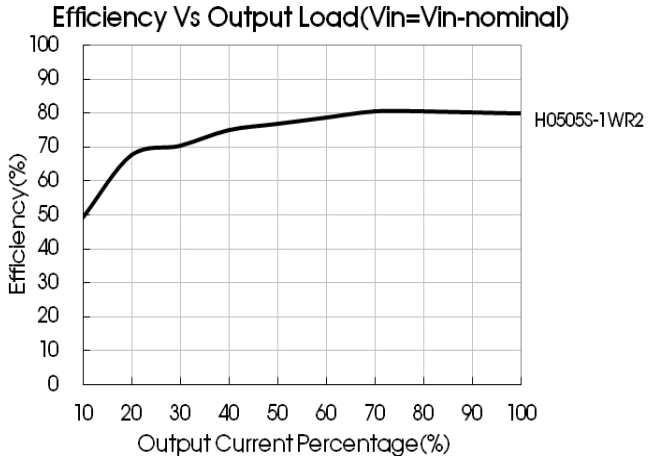


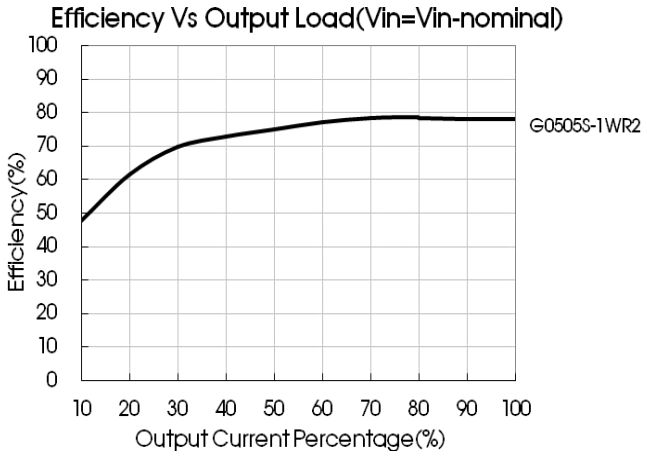
Fig. 2





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Design Reference

1. Typical application

If it is required to further reduce input and output ripple, a filter capacitor can be connected to the input and output terminals, see Fig.3. Moreover, choosing suitable filter capacitor is very important, start-up problems may be caused by too large capacitance. To ensured the modules running well, the recommended capacitive load values as shown in Table 1.
The simplest device for output voltage regulation, over-voltage and over-current protection is a linear voltage regulator with overheat protection that is connected to the input or output end in series (see Fig. 4).

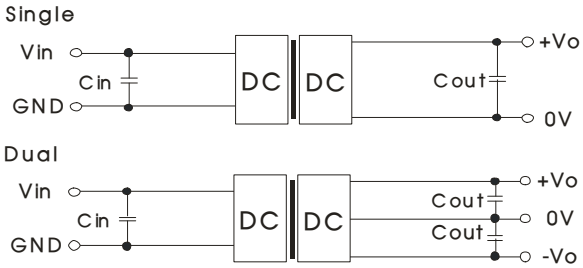


Fig. 3

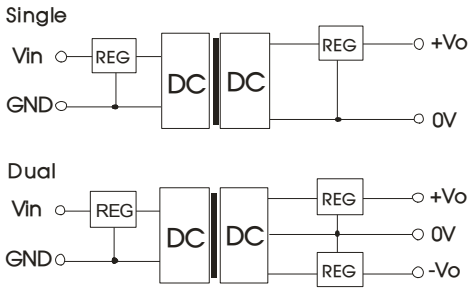


Fig. 4

Recommended capacitive load value table (Table 1)

Vin (VDC)	Cin (μF)	Single Vout (VDC)	Cout (μF)	Dual Vout (VDC)	Cout (μF)
3.3/5	10	3.3/5	10	±5	4.7
12/15	4.7	12	2.2	±9	2.2
24	2.2	15	1	±12/±15	1

2. EMC typical recommended circuit (CLASS B)

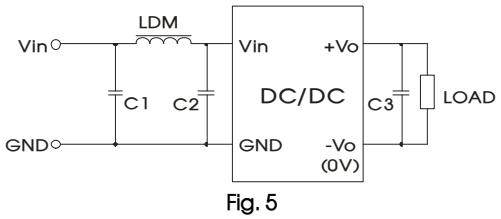


Fig. 5

Recommended typical circuit parameters:

Input voltage (V)		3.3/5/12/15/24
EMI	C1,C2	4.7μF /50V
	C3	Refer to the Cout in Fig.3
	LDM	6.8μH

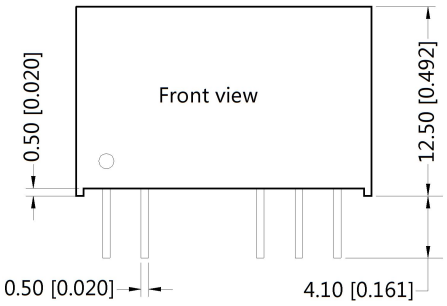
3. Output load requirements

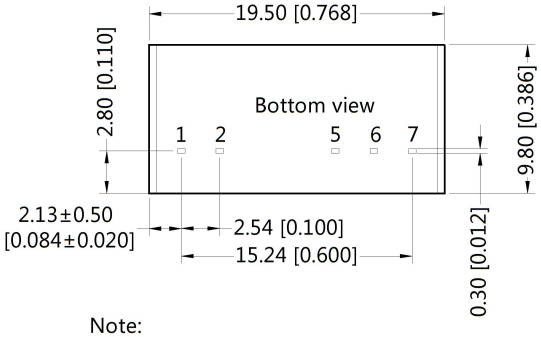
In order to ensure the converter can work reliably with high efficiency, the minimum load should not less than 10% rated load when it is used If the needed power is indeed small, please parallel a resistor on the output side (The sum of the efficient power and resistor consumption power is not less than 10%).

4. For more information please find the application notes on www.mornsun-power.com

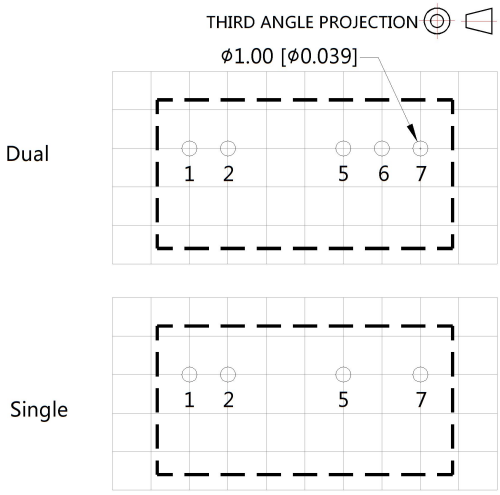
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Dimensions and Recommended Layout





Note:
Unit :mm[inch]
Pin section tolerances:±0.10[±0.004]
General tolerances:±0.25[±0.010]



Note:Grid 2.54*2.54mm

Pin-Out		
Pin	Single	Dual
1	Vin	Vin
2	GND	GND
5	0V	-Vo
6	No Pin	0V
7	+Vo	+Vo

Notes:
1. Packing information please refer to Product Packing Information which can be downloaded from www.mornsun-power.com. Packing bag number: 58200013;
2. If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
3. The maximum capacitive load offered were tested at input voltage range and full load;
4. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, humidity<75%RH with nominal input voltage and rated output load;
5. All index testing methods in this datasheet are based on our Company's corporate standards;
6. We can provide product customization service, please contact our technicians directly for specific information;
7. Specifications are subject to change without prior notice.

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