

2W, Fixed input voltage, 4200VAC or 6000VDC isolated & unregulated positive-negative dual/single output

FEATURES

- SIP package
- High efficiency up to 84%
- Reinforced insulation
- The patient leakage current: Max 2μA
- Isolation voltage: 4200VAC or 6000VDC
- Operating temperature range: -40℃ ~ +85℃
- Internal surface mounted design
- International standard pin-out
- Meets EN60601-1, ANSI/AAMI ES60601-1 standards (Pending)
(1xMOPP/2xMOOP)



G_S-2WR2 & H_S-2WR2 series meet reinforced insulation requirements. It is specially designed for applications where require compact size, high isolation, low isolation capacitor and low leakage current power. It is widely used in medical, electricity, IGBT driver and so on. It is suitable for:

1. Where the voltage of the input power supply is stable (voltage variation: $\pm 10\%V_{in}$);
2. Where isolation is necessary between input and output (isolation voltage $\leq 4200VAC$ 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.)		
UL/CE (Pending)	G0505S-2WR2	5 (4.5-5.5)	±5	±200/±20	74/78	470
	G0509S-2WR2		±9	±111/±12	74/78	470
	G0512S-2WR2		±12	±83/±9	74/78	220
	G0515S-2WR2		±15	±67/±7	76/80	220
	H0505S-2WR2		5	400/40	73/77	1000
	H0512S-2WR2		12	167/17	75/79	470
	H0515S-2WR2		15	133/14	75/79	470
	G1205S-2WR2	12 (10.8-13.2)	±5	±200/±20	74/78	470
	G1209S-2WR2		±9	±111/±12	78/82	470
	G1212S-2WR2		±12	±83/±9	78/82	220
	G1215S-2WR2		±15	±67/±7	76/80	220
	H1205S-2WR2		5	400/40	73/77	1000
	H1212S-2WR2		12	167/17	76/80	470
	H1215S-2WR2		15	133/14	78/82	470
	G2405S-2WR2	24 (21.6-26.4)	±5	±200/±20	75/79	470
	G2409S-2WR2		±9	±111/±12	77/81	470
	G2412S-2WR2		±12	±83/±9	78/82	220
	G2415S-2WR2		±15	±67/±7	77/81	220
	H2405S-2WR2		5	400/40	75/79	1000
	H2412S-2WR2		12	167/17	78/82	470
	H2415S-2WR2		15	133/14	80/84	470

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

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (no-load/full load)	5V input	--	35/520	80/--	mA
	12V input	--	15/217	40/--	
	24V input	--	10/106	25/--	
Surge Voltage (1sec. max.)	5V input	-0.7	--	9	VDC
	12V input	-0.7	--	18	
	24V input	-0.7	--	30	
Reflected Ripple Current		--	0.2	--	A
Input Filter	Capacitor filter				

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy		See tolerance envelope graph (Fig. 1)			
Line Regulation	Input voltage change: $\pm 1\%$	--	--	± 1.2	--
Load Regulation	10%-100% load	5VDC output	--	20	%
		9VDC output	--	15	
		12VDC output	--	15	
		15VDC output	--	15	
Ripple & Noise*	20MHz bandwidth	--	100	150	mVp-p
Temperature Drift Coefficient	100% full load	--	± 0.02	--	%/°C
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
Isolation Voltage	Input-output, with the test time of 1 minute	4200	--	--	VAC
		6000	--	--	VDC
Patient Leakage Current	250VAC, 50/60Hz	--	--	2	μA
Isolation Resistance	Input-output, isolation voltage 500VDC	1000	--	--	M Ω
Isolation Capacitance	Input-output, 100KHz/0.1V	--	5	--	pF
Operating Temperature		-40	--	85	°C
Storage Temperature		-55	--	125	
Casing Temperature Rise	Ta=25°C	--	25	--	
Pin Welding Resistance Temperature	Welding spot is 1.5mm away from the casing, 10 seconds	--	--	300	
Storage Humidity	Non-condensing	--	--	95	%
Switching Frequency	100% load, nominal input voltage	--	100	--	KHz
MTBF	MIL-HDFK-217F@25°C	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-2WR2 & H_S-2WR2 series is pending. G_S-2WR2 & H_S-2WR2 series meets 1xMOPP/2xMOOP when system input voltage is with 250VAC, 50/60Hz.

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 $\pm 8\text{KV}$ perf. Criteria B

Product Characteristic Curve

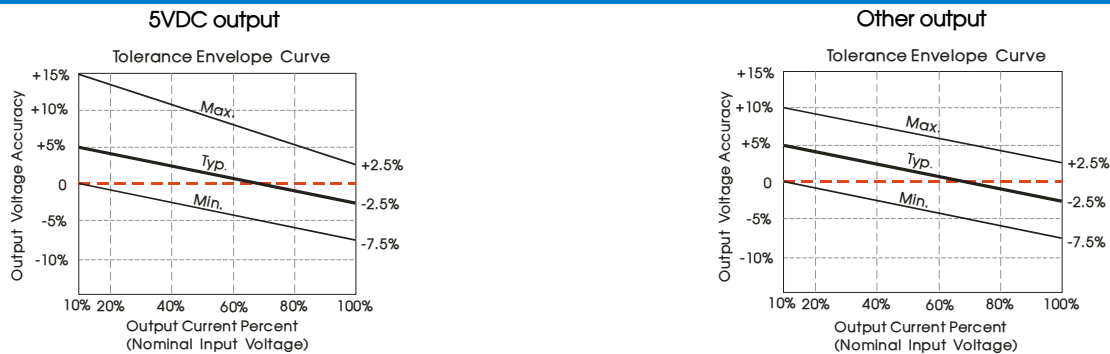


Fig. 1

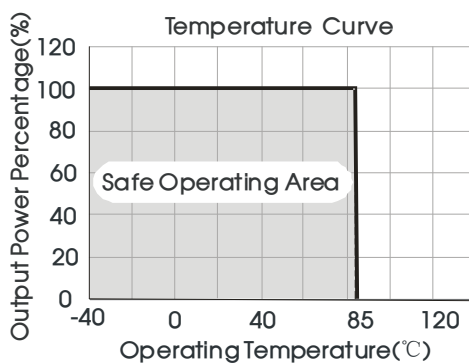
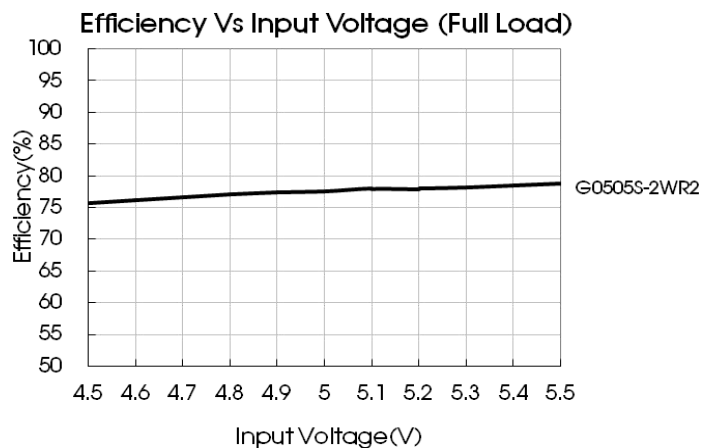
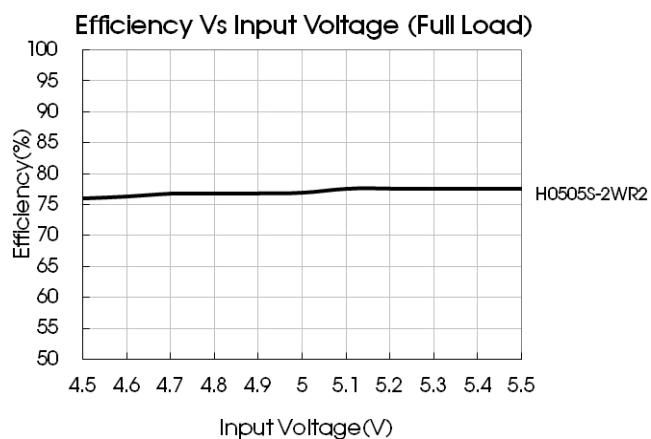
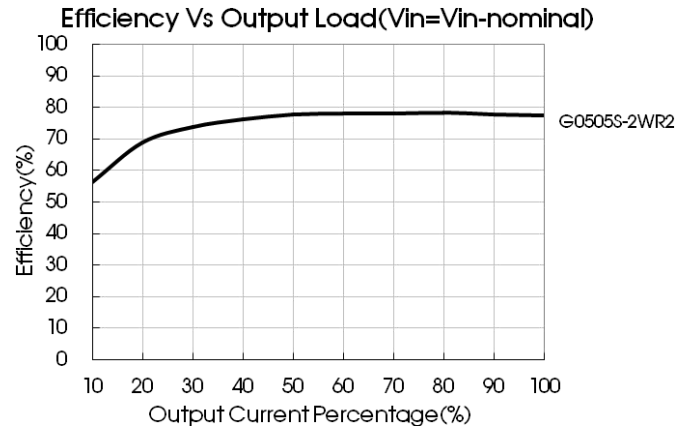
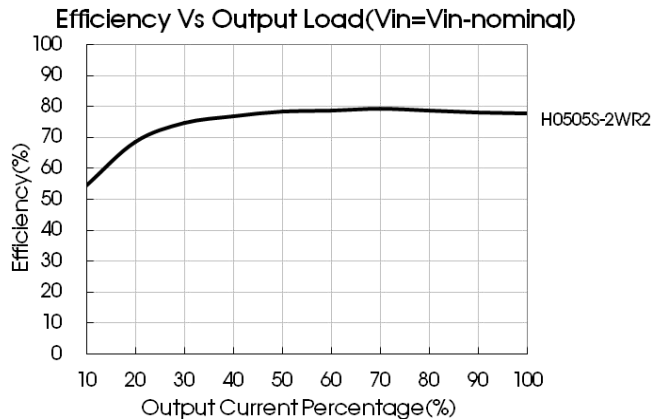


Fig. 2





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 ensure 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).

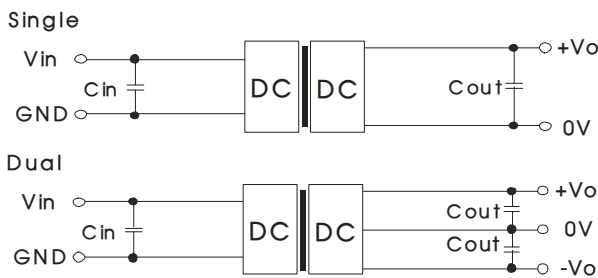


Fig. 3

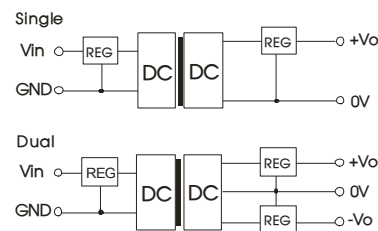


Fig. 4

Recommended capacitive load value table (Table 1)

V_{in} (VDC)	C_{in} (μF)	Single V_{out} (VDC)	C_{out} (μF)	Dual V_{out} (VDC)	C_{out} (μF)
5	10	5	10	± 5	4.7
12	4.7	12	2.2	± 9	2.2
24	2.2	15	1	$\pm 12/\pm 15$	1

2. EMC typical recommended circuit (CLASS B)

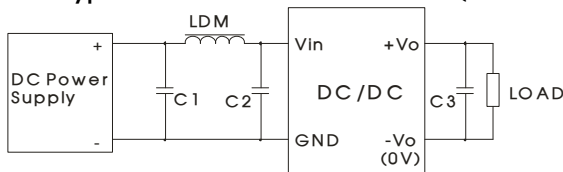


Fig. 5

Recommended typical circuit parameters:

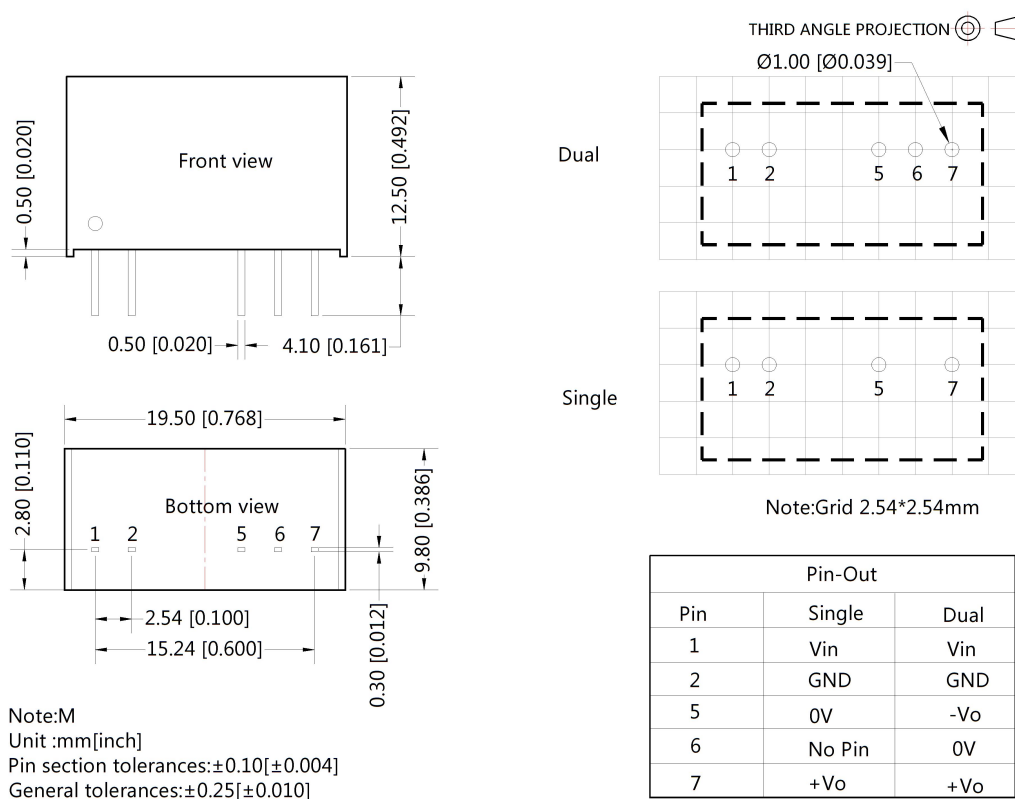
Input voltage (V)		5/12	24
EMI	C1,C2	4.7 μF /50V	
	C3	Refer to the C_{out} in Fig.3	
	LDM	6.8 μH	15 μH

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

Dimensions and Recommended Layout



Notes:

1. Packing Information please refer to 'Product Packing Information'. Packing bag number: 58200013;
2. If the product is operated under the min. required load, the product performance cannot be guaranteed to comply with all performance indexes in this datasheet;
3. The max. capacitive load should be tested within the input voltage range and under full load conditions;
4. Unless otherwise specified, data in this datasheet should be tested under the conditions of Ta=25°C, humidity<75% when inputting nominal voltage and outputting rated load;
5. All index testing methods in this datasheet are based on our Company's corporate standards;
6. We can provide product customization service, and please directly contact our technicians for specific information;
7. Specifications of this product are subject to changes without prior notice.

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