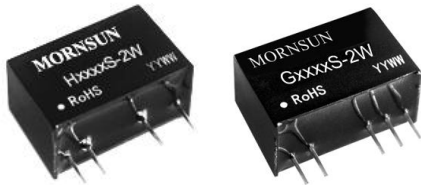


2W isolated DC-DC converter with 6000VDC
Fixed input voltage, unregulated positive-negative dual/single output



Patent Protection RoHS

FEATURES

- SIP package
- High efficiency up to 86%
- I/O isolation test voltage 6k VDC
- Operating ambient temperature range: -40°C ~ +105°C
- Continuous short-circuit protection
- Internal surface mounted design
- Industry standard pin-out

G_S-2W & H_S-2W series is specially designed for applications where an isolated voltage is required in a distributed power supply system. 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 $\leq 6000VDC$);
 3. Where do not has high requirement of line regulation and the ripple & noise of the output voltage;
- Such as: pure digital circuits, low frequency analog circuits, IGBT-driven circuits, etc.

Selection Guide

Part No.	Input Voltage (VDC)	Output		Full Load Efficiency (%) Min./Typ.	Capacitive Load*(μF) Max.
	Nominal(Range)	Voltage(VDC)	Current (mA) Max./Min.		
G0505S-2W	5 (4.5-5.5)	± 5	$\pm 200/\pm 20$	72/76	100
G0509S-2W		± 9	$\pm 111/\pm 12$	76/80	
G0512S-2W		± 12	$\pm 83/\pm 9$	73/77	
G0515S-2W		± 15	$\pm 67/\pm 7$	76/80	
G0524S-2W		± 24	$\pm 42/\pm 4$	76/80	
H0503S-2W		3.3	500/50	70/74	220
H0505S-2W		5	400/40	72/76	
H0509S-2W		9	222/23	75/79	
H0512S-2W		12	167/17	77/81	
H0515S-2W		15	133/14	78/82	
G1205S-2W	12 (10.8-13.2)	± 5	$\pm 200/\pm 20$	73/77	100
G1209S-2W		± 9	$\pm 111/\pm 12$	77/81	
G1212S-2W		± 12	$\pm 83/\pm 9$	75/79	
G1215S-2W		± 15	$\pm 67/\pm 7$	78/82	
H1205S-2W		5	400/40	76/80	220
H1209S-2W		9	222/23	77/81	
H1212S-2W		12	167/17	79/83	
H1215S-2W		15	133/14	80/84	
G2405S-2W	24 (21.6-26.4)	± 5	$\pm 200/\pm 20$	76/80	100
G2412S-2W		± 12	$\pm 83/\pm 9$	77/81	
G2415S-2W		± 15	$\pm 67/\pm 7$	78/82	
H2405S-2W		5	400/40	76/80	220
H2409S-2W		9	222/23	77/81	
H2412S-2W		12	167/17	80/84	
H2415S-2W		15	133/14	81/85	
H2424S-2W		24	83/9	76/80	

Note:* The specified maximum capacitive load for positive and negative output is identical.

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (no-load/full load)	5V input	--	40/500	--	mA
	12V input	--	16/200	--	
	24V input	--	9/100	--	
Surge Voltage (1sec. max.)	5V input	-0.7	--	9	VDC
	12V input	-0.7	--	18	
	24V input	-0.7	--	30	
Input Filter		Capacitance filter			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Voltage Accuracy	See output regulation curve(Fig.1)				
Linear Regulation	Input voltage change: $\pm 1\%$	--	--	± 1.2	--
Balance of Output Voltage*	Dual output, balanced load	--	± 0.5	± 1	%
Load Regulation	10%-100% load	3.3VDC output	--	20	
		5VDC output	--	15	
		9VDC output	--	15	
		12VDC output	--	15	
		15VDC output	--	15	
		24VDC output	--	15	
Ripple & Noise*	20MHz bandwidth	--	150	250	mVp-p
Temperature Coefficient	100% full load	--	--	± 0.03	%/ $^{\circ}\text{C}$
Short-circuit Protection	Continuous, self-recovery				

Notes: 1.*Unbalanced load of positive-negative dual output module: $\pm 5\%$.

2.*The "parallel cable" method is used for Ripple and Noise test, please refer to DC-DC Converter Application Notes for specific information.

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Isolation	Input-output Electric Strength Test for 1 minute with a leakage current of 1mA max.	6000	--	--	VDC
Insulation Resistance	Input-output resistance at 500VDC	1000	--	--	M Ω
Isolation Capacitance	Input-output capacitance at 100kHz/0.1V	--	5	--	pF
Operating Temperature	Derating when operating temperature up to 85 $^{\circ}\text{C}$ (see Fig. 2)	-40	--	105	$^{\circ}\text{C}$
Storage Temperature		-55	--	125	
Case Temperature Rise	Ta=25 $^{\circ}\text{C}$	--	25	--	
Pin Soldering Resistance Temperature	Soldering spot is 1.5mm away from case for 10 seconds	--	--	300	
Storage Humidity	Non-condensing	--	--	95	%
Switching Frequency	100% load, nominal input voltage	5V input	--	60	KHz
		12V/24V input	--	80	
MTBF	MIL-HDBK-217F@25 $^{\circ}\text{C}$	3500	--	--	K hours

Mechanical Specifications

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

Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032	CLASS B (see Fig. 5 for recommended circuit)
	RE	CISPR32/EN55032	CLASS B (see Fig. 5 for recommended circuit)
Immunity	ESD	IEC/EN61000-4-2	Contact $\pm 6\text{KV}$ perf. Criteria B

Typical Characteristic Curves

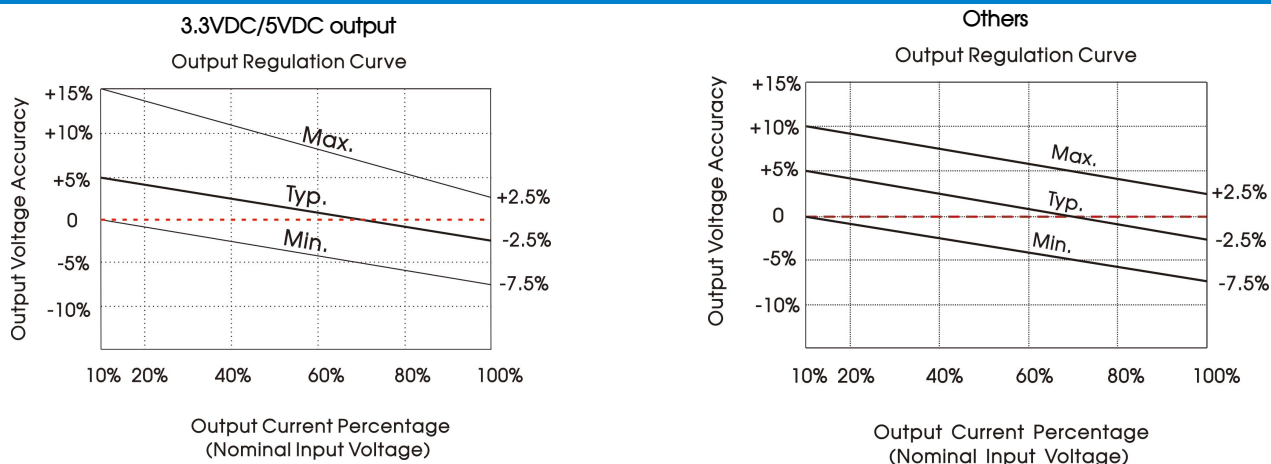


Fig. 1

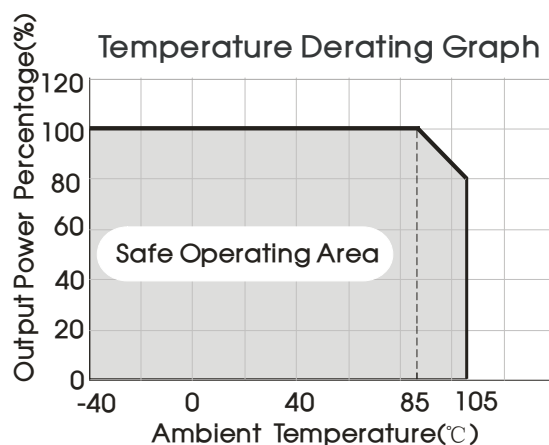
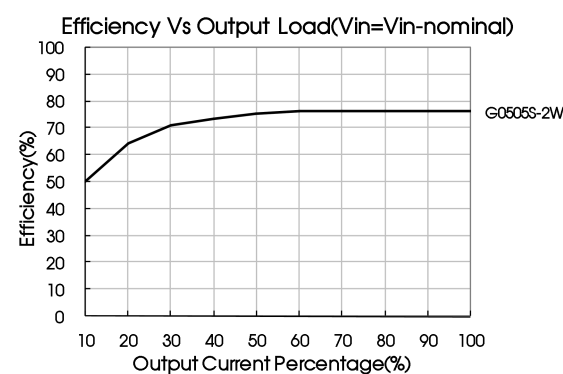
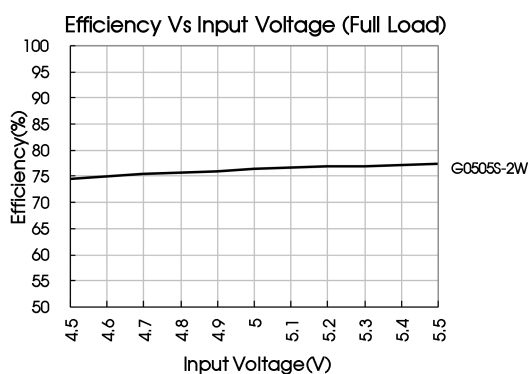
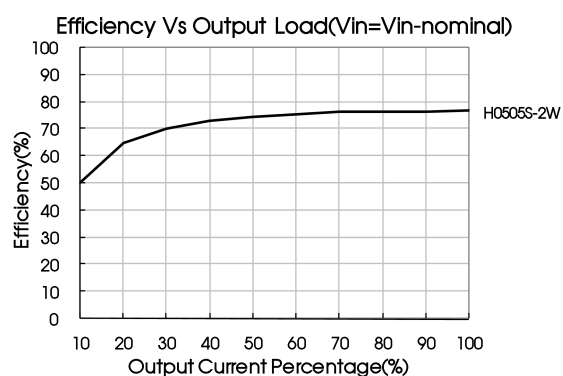
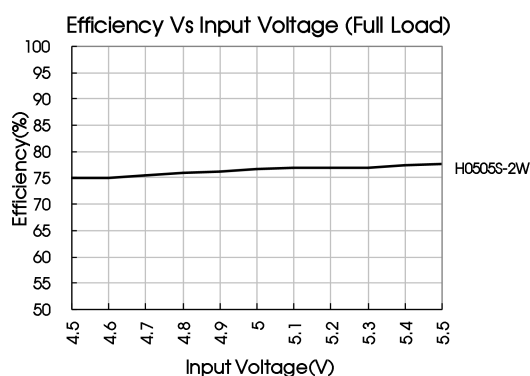


Fig. 2



Design Reference

1. Typical application

Input and/or output ripple can be further reduced, by connecting a filter capacitor from the input and/or output terminals to ground as shown in Fig.2.

Choosing suitable filter capacitor values is very important for a smooth operation of the modules, particularly to avoid start-up problems caused by capacitor values that are too high. For recommended input and output capacitor values refer to 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).

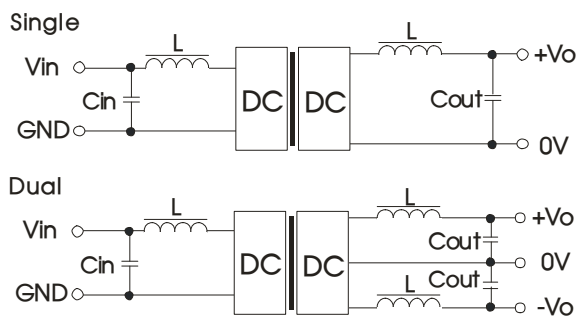


Fig. 3

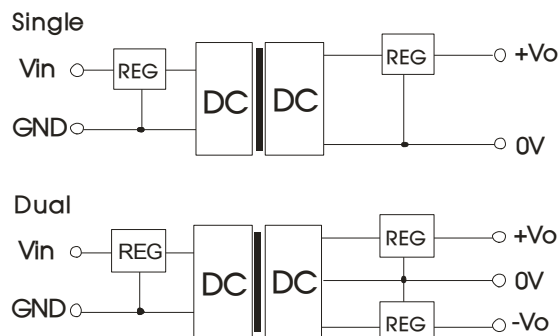


Fig. 4

Recommended capacitive load value table (Table 1)

Vin (VDC)	Cin (μF)	Single Vout (VDC)	Cout (μF)	Dual Vout (VDC)	Cout (μF)
5	10	3.3/5	10	±5	4.7
12	4.7	9	4.7	±9	2.2
24	2.2	12	2.2	±12	1
—	—	15	1	±15/±24	0.47

It is not recommended to connect any external capacitor when output power is less than 0.5W.

2. EMC (CLASS B) compliance circuit

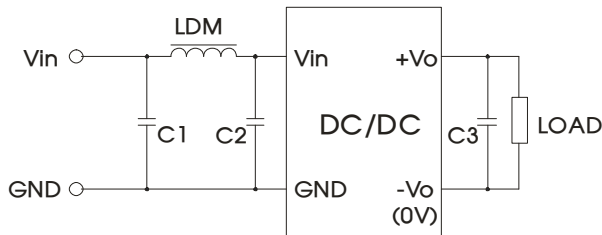


Fig. 5

Recommended typical circuit parameters:

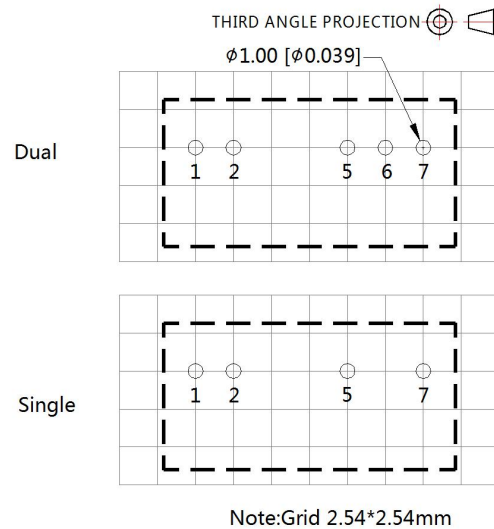
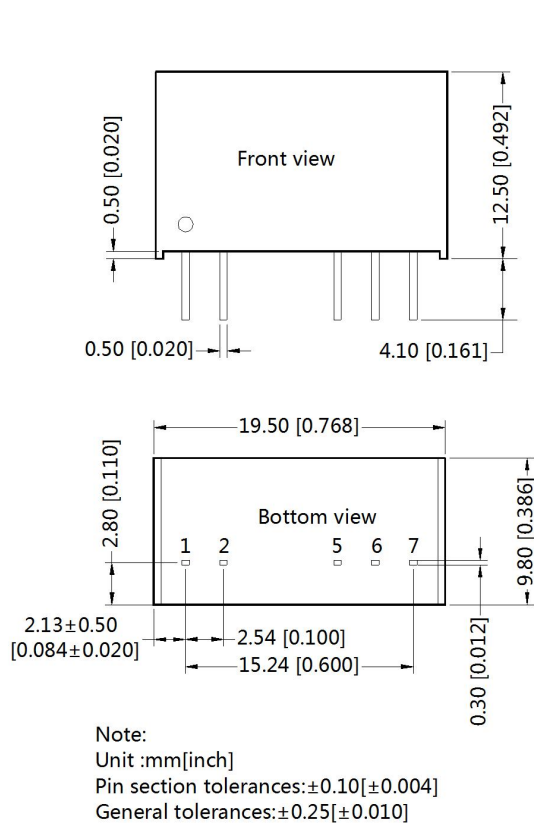
Input voltage (V)		5/12/24
EMI	C1,C2	4.7μF /50V
	C3	Refer to the Cout in Fig.3
	LDM	6.8μH

3. Output load requirements

For a reliable and efficient operation of the converter, the minimum load should never be less than 10% of the rated output load. If the total required output power is below 10%, a parallel bleeding resistor is required on the output, ensuring that the sum of the power consumption is always maintained at 10% minimum.

4. For additional information please refer to DC-DC converter application notes on www.mornsun-power.com.

Dimensions and Recommended Layout



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

Notes:

- For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58200013;
- 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;
- The max. capacitive load should be tested within the input voltage range and under full load conditions;
- Unless otherwise specified, parameters in this datasheet were measured under the conditions of $T_a=25^{\circ}\text{C}$, humidity<75%RH with nominal input voltage and rated output load;
- All index testing methods in this datasheet are based on our company corporate standards;
- The performance indexes of the product models listed in this manual are as above, but some indexes of non-standard model products will exceed the above-mentioned requirements, and please directly contact our technicians for specific information;
- We can provide product customization service, please contact our technicians directly for specific information;
- Products are related to laws and regulations: see "Features" and "EMC";
- Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

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