0.25W, Fixed input voltage, isolated & unregulated single output

Continuous Short Circuit Protection

c UL us CE Patent Protection RoHS 3 years Warranty

FEATURES

- Continuous short-circuit protection
- Operating temperature range: -40℃ to +105℃
- Compact SIP package
- Isolation voltage: 1.5K VDC
- No external component required
- International standard pin-out
- Meets UL60950, EN60950 standards（Pending）

B_S-W2R2 series are specially designed for applications where an isolated voltage is required in a distributed power supply system. They are suitable for

1.Where the voltage of the input power supply is stable (voltage variation: ±10%Vin);

2.Where isolation between input and output is necessary (isolation voltage ≤1500VDC);

3.Where do not has high requirement of line regulation and the ripple & noise of the output voltage;

4.Typical application: digit circuit condition; normal low-frequency artificial circuit condition; relay drive circuit and data switching circuit condition, 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)	B0303S-W2R2	3.3 (2.97-3.63)	3.3	76/7	68/74	220
	B0305S-W2R2		5	50/5	69/75	
	B0503S-W2R2	5 (4.5-5.5)	3.3	76/7	68/74	
	B0505S-W2R2		5	50/5	70/76	
	B0512S-W2R2		12	21/2	71/77	
	B1205S-W2R2	12 (10.8-13.2)	5	50/5	60/66	
	B1505S-W2R2	15 (13.5-16.5)	5	50/5	60/66	
	B2405S-W2R2	24 (21.6-26.4)	5	50/5	63/69	
	B2409S-W2R2		9	28/2	60/66	

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (full load / no-load)	3.3VDC input	--	103/20	--/40	mA
	5VDC input	--	66/15	--/30	
	12VDC input	--	27/10	--/20	
	15VDC input	--	22/5	--/15	
	24VDC input	--	15/4	--/10	
Reflected Ripple Current	3.3V/5V input	--	20	--	mA
	12V/15V/24V input	--	5	--	
Surge Voltage (1sec. max.)	3.3VDC input	-0.7	--	5	VDC
	5VDC input	-0.7	--	9	
	12VDC input	-0.7	--	18	
	15VDC input	-0.7	--	21	
	24VDC input	-0.7	--	30	
Input Filter		Filter capacitor			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy			See tolerance envelope graph (Fig. 1)			
Line Regulation	Input voltage change: ±1%	3.3VDC output	--	--	±1.5	--
		Other output	--	--	±1.2	
Load Regulation	10%-100% load	3.3VDC output	--	7	15	%
		5/9/12VDC output	--	5	10	
Ripple & Noise*	20MHz bandwidth		--	25	75	mVp-p
Temperature Coefficient	Full load		--	±0.03	--	%/℃
Short Circuit Protection			Continuous, self-recovery			

Note: * Ripple and noise are measured by "parallel cable" method, please see DC-DC Converter Application Notes for specific operation;

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Isolation Voltage	Input-output, with the test time of 1 minute and the leak current lower than 1mA	1500	--	--	VDC
Isolation Resistance	Input-output, isolation voltage 500VDC	1000	--	--	MΩ
Isolation Capacitance	Input-output, 100KHz/0.1V	--	20	--	pF
Operating Temperature	Derating when operating temperature up to 85℃, (see Fig. 2)	-40	--	105	℃
Storage Temperature		-55	--	125	
Casing Temperature Rise	Ta=25℃, nominal input, full load output	--	5	--	
Pin Welding Resistance Temperature	Welding spot is 1.5mm away from the casing, 10 seconds	--	--	300	
Storage Humidity	Non-condensing	--	--	95	%RH
Switching Frequency	Full load, nominal input voltage	50	--	500	KHz
MTBF	MIL-HDFK-217F@25℃	3500	--	--	K hours

Physical Specifications

Casing Material	Black flame-retardant and heat-resistant plastic (UL94 V-0)
Dimensions	11.60*6.00*10.16 mm
Weight	1.2g(Typ.)
Cooling Method	Free air convection

EMC Specifications

EMI	CE	CISPR22/EN55022	CLASS B (see Fig. 4 for recommended circuit)
	RE	CISPR22/EN55022	CLASS B (see Fig. 4 for recommended circuit)
EMS	ESD	IEC/EN61000-4-2	Contact ±8KV perf. Criteria B

Product Characteristic Curve

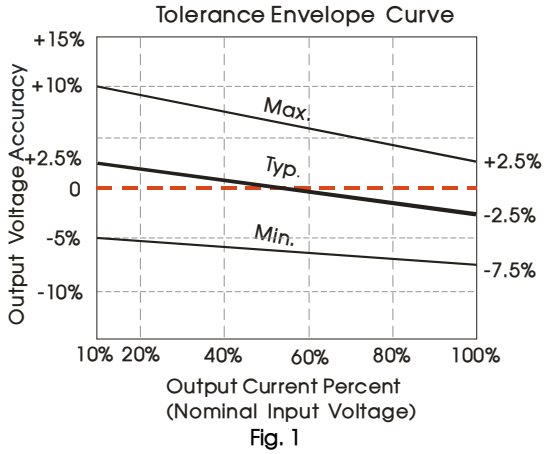


Fig. 1

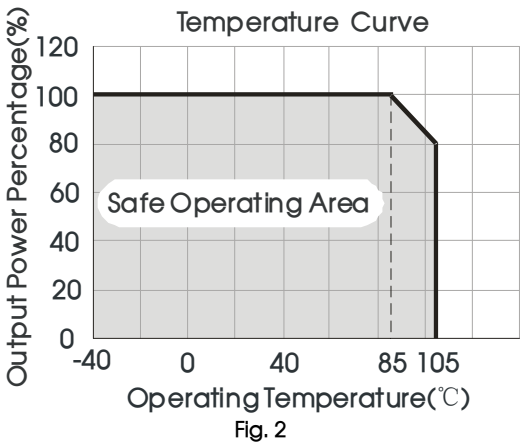
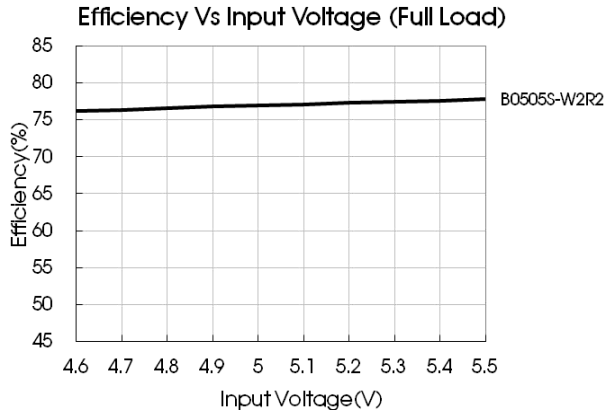
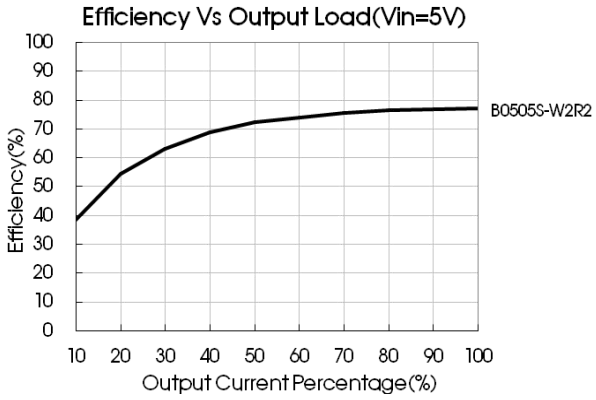
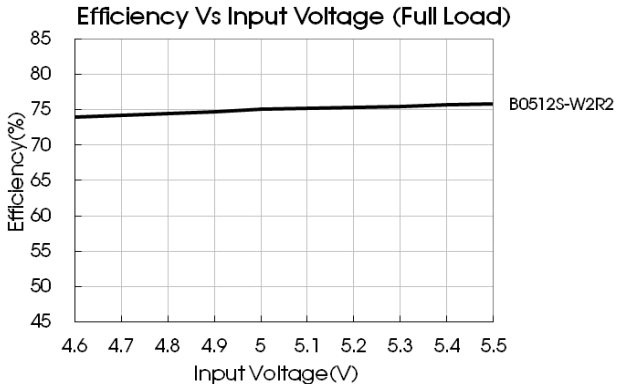
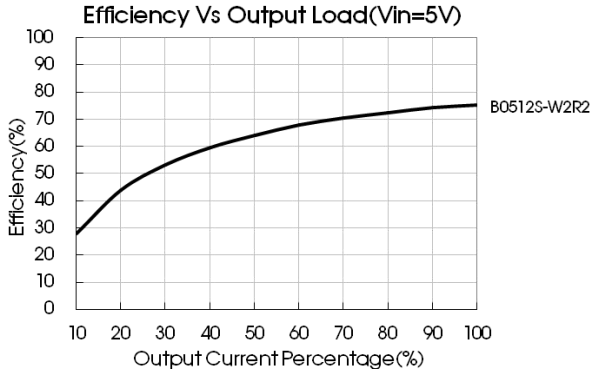


Fig. 2









Design Reference

1. Typical application circuit

If it is required to further reduce input and output ripple, a filter capacitor may be connected to the input and output terminals, see Fig.3. Moreover, choosing a suitable filter capacitor is very important, start-up problems may be caused if the capacitance is too large. Under the condition of safe and reliable operation, the recommended capacitive load values are shown in Table 1.

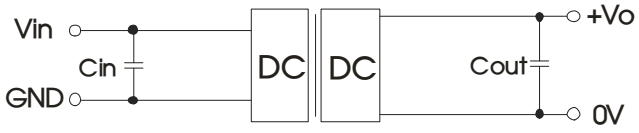


Fig.3

Recommended capacitive load value table (Table 1)

Vin(VDC)	Cin(μF)	Vo (VDC)	Cout(μF)
3.3/5	4.7	3.3/5	10
12/15	2.2	9	4.7
24	1	12	2.2

2. EMC typical recommended circuit (CLASS B)

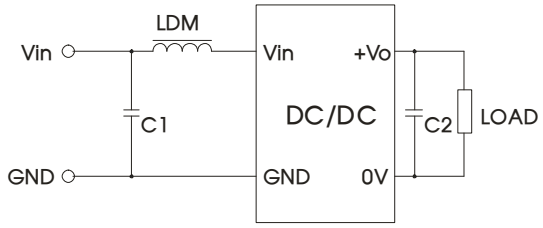


Fig. 4

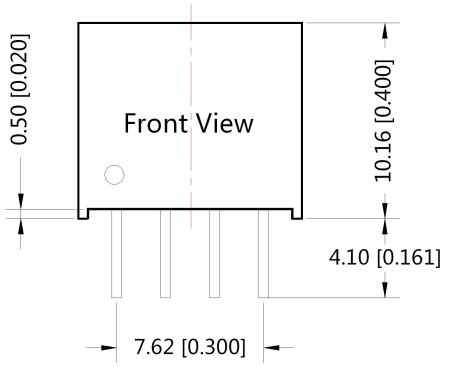
Input voltage (VDC)		3.3/5/12/15/24
EMI	C1	4.7μF /50V
	C2	Refer to the Cout in Fig.3
	LDM	6.8μH

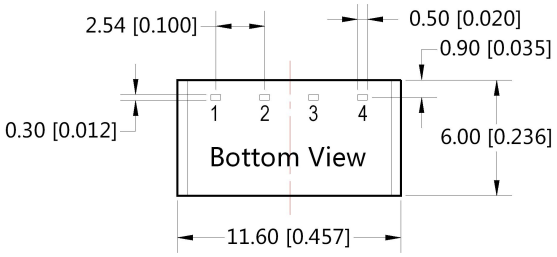
3. Output load requirements

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 t the output side (The sum of the efficient power and resistor consumption power is not less than 10%).

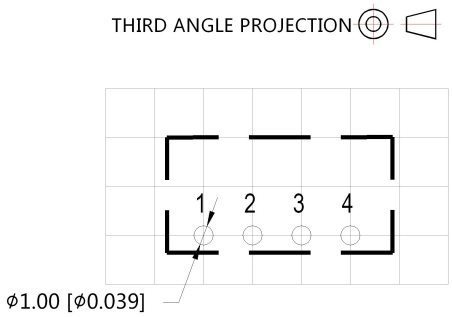
4. For more information please find DC-DC converter application notes on www.mornsun-power.com

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	Function
1	GND
2	Vin
3	0V
4	+Vo

Notes:

1. Packing information please refer to Product Packing Information which can be downloaded from www.mornsun-power.com. Packing bag number: 58200003;
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% 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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