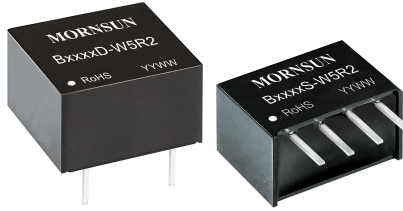


1W isolated DC-DC converter  
Fixed Input Voltage and Unregulated Single output



Patent Protection RoHS

FEATURES

- Continuous short-circuit protection
- Output voltage range(Typ): 4.85~5.15V
- Operating ambient temperature range: -40°C ~ +105°C
- I/O isolation test voltage 1500 VDC
- Compact SIP/DIP package
- Industry standard pin-out

B\_S-W5R2 & B\_D-W5R2 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:  $\pm 10\%V_{in}$ );
2. Where isolation between input and output is necessary (isolation voltage  $\leq 1500VDC$ );
3. Where the output voltage regulation and the ripple & noise of the output voltage is not strictly required;
4. Typical application: digit circuit condition; normal low-frequency artificial circuit condition; relay drive circuit and data switching circuit condition, etc.

Selection Guide

Part No.	Input Voltage (VDC)	Output		Full Load Efficiency (%) Min./Typ.	Capacitive Load( $\mu F$ ) Max.
	Nominal (Range)	Voltage (VDC)	Current(mA) Max./Min.		
B0505D-W5R2	5	5	100/10	70/75	220
B0505S-W5R2	(4.5-5.5)	5	100/10	70/75	

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (full load / no-load)		--	134/15	--/30	mA
Reflected Ripple Current		--	30	--	mA
Surge Voltage (1sec. max.)		-0.7	--	9	VDC
Input Filter		Capacitance filter			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Voltage Accuracy		See tolerance envelope graph (Fig. 1)			
Linear Regulation	Input voltage change: $\pm 1\%$	--	--	$\pm 1.2$	--
Load Regulation	10%-100% load	--	7	15	%
Ripple & Noise*	20MHz bandwidth	--	50	120	mVp-p
Temperature Coefficient	Full load	--	$\pm 0.03$	--	%/°C
Short-circuit Protection		Continuous, self-recovery			

Note:\* 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.	1500	--	--	VDC
Insulation Resistance	Input-output resistance at 500VDC	1000	--	--	M $\Omega$
Isolation Capacitance	Input-output capacitance at 100kHz/0.1V	--	20	50	pF
Operating Temperature	Derating when operating temperature $\geq 85^\circ C$ , (see Fig. 2)	-40	--	105	°C
Storage Temperature		-55	--	125	

Casing Temperature Rise	Ta=25°C, nominal input, full load output	--	10	--	°C
Pin Soldering Resistance Temperature	Soldering spot is 1.5mm away from case for 10 seconds	--	--	300	
Storage Humidity	Non-condensing	--	--	95	%RH
Switching Frequency	Full load, nominal input voltage	--	77	--	KHz
MTBF	MIL-HDFK-217F@25°C	3500	--	--	K hours

**Mechanical Specifications**

Case Material	Black plastic; flame-retardant and heat-resistant (UL94 V-0)				
Dimensions	B_S-W5R2 series	11.60 x 6.00 x 10.16 mm			
	B_D-W5R2 series	12.70 x 10.16 x 8.20 mm			
Weight	B_S-W5R2 series	1.3g(Typ.)			
	B_D-W5R2 series	1.8g(Typ.)			
Cooling Method	Free air convection				

**Electromagnetic Compatibility (EMC)**

Emissions	CE	CISPR32/EN55032	CLASS B (see Fig. 4 for recommended circuit)		
	RE	CISPR32/EN55032	CLASS B (see Fig. 4 for recommended circuit)		
Immunity	ESD	IEC/EN61000-4-2	Contact	±8KV	perf. Criteria B

**Typical Characteristic Curves**

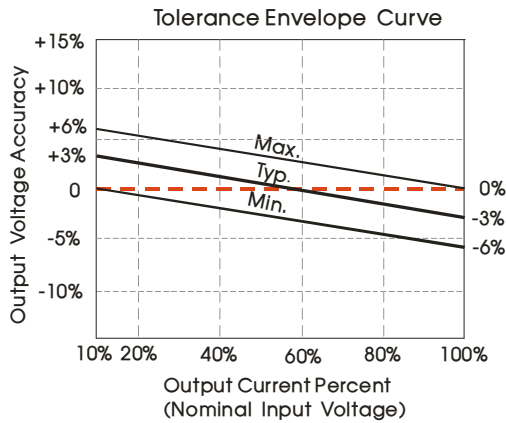


Fig. 1

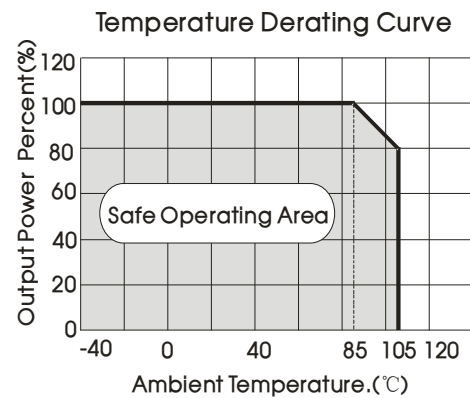
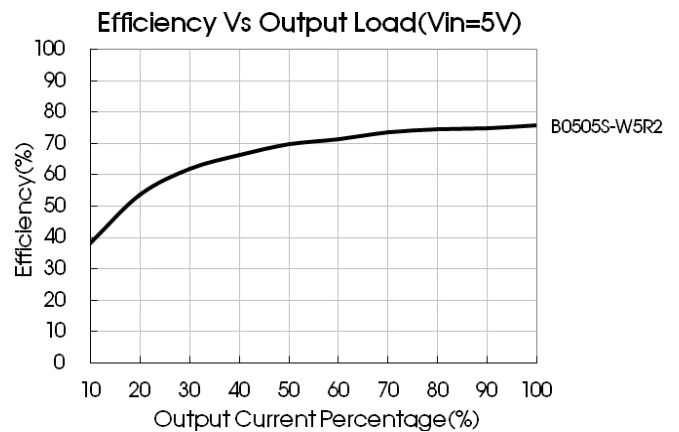
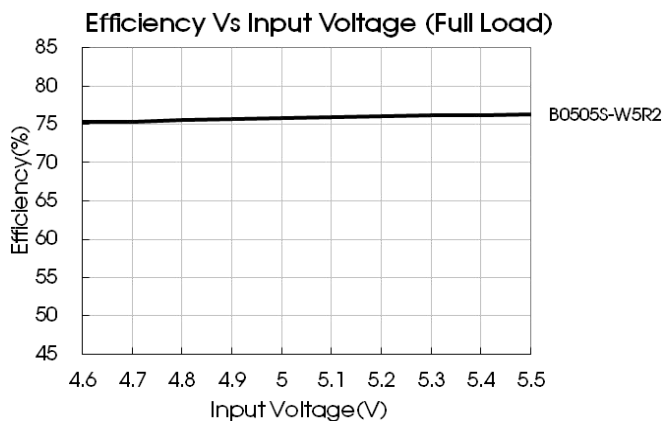
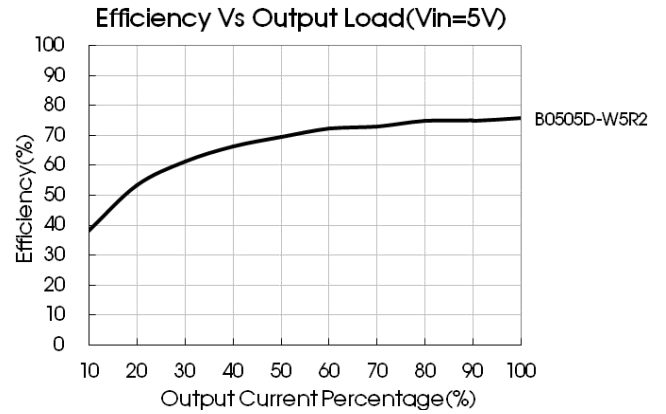
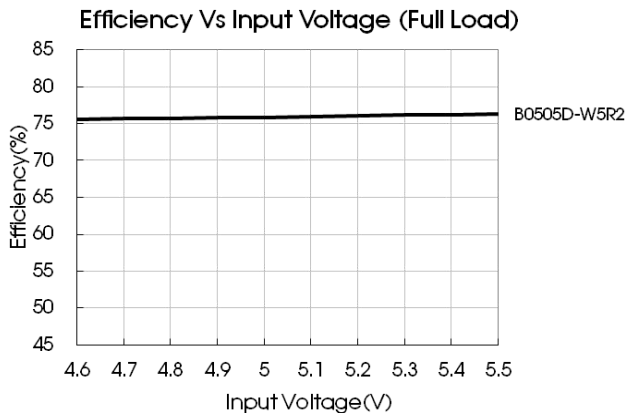


Fig. 2



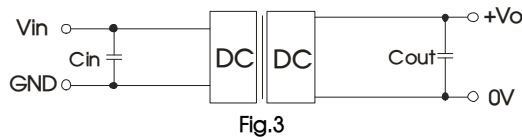


## Design Reference

### 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.3.

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.



Recommended capacitive load value table (Table 1)

Vin(VDC)	Cin(μF)	Vo (VDC)	Cout(μF)
5	4.7	5	10

### 2. EMC (CLASS B) compliance circuit

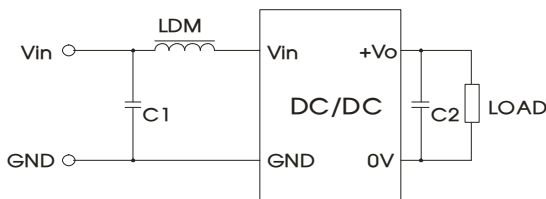


Fig. 4

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

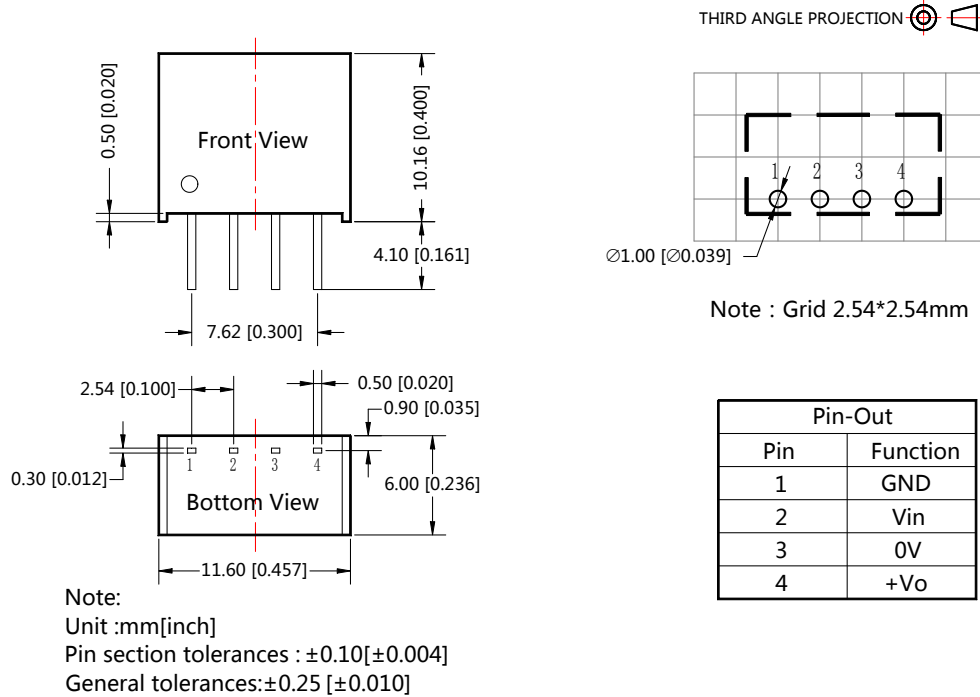
### 3. Output load requirements

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

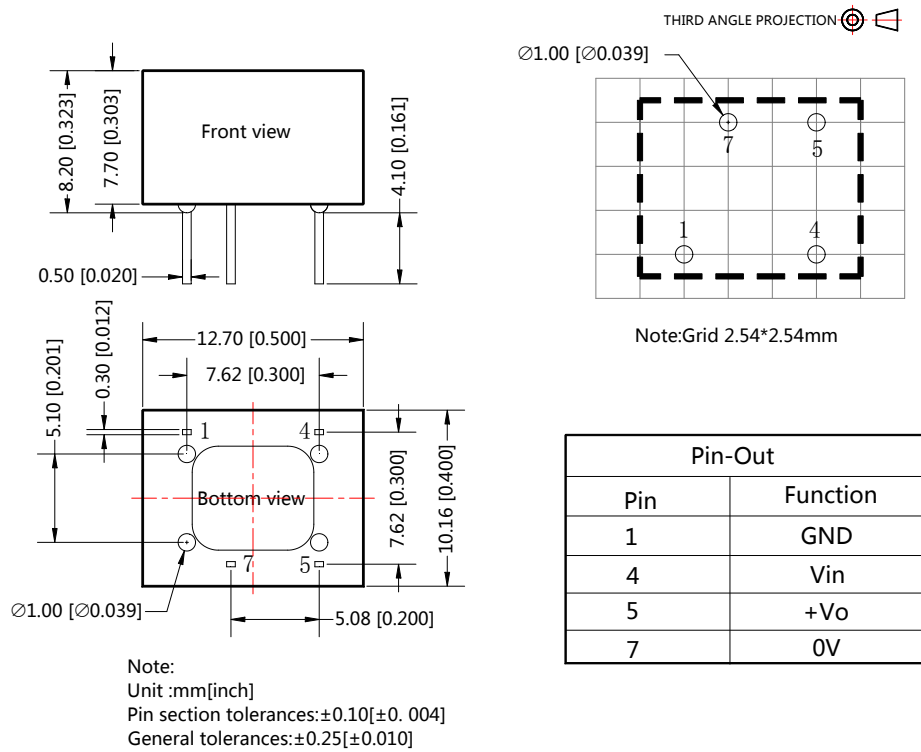
### 4. For additional information please refer to DC-DC converter application notes on

[www.mornsun-power.com](http://www.mornsun-power.com)

Dimensions and Recommended Layout B\_S-W52



Dimensions and Recommended Layout B\_D-W52



Notes:

1. For additional information on Product Packaging please refer to [www.mornsun-power.com](http://www.mornsun-power.com).Packaging bag number: 58200003(B\_S-1WR2), 58200011(B\_D-1WR2);
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  $T_a=25^{\circ}\text{C}$ , 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. Products are related to laws and regulations: see "Features" and "EMC";
8. 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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