Load Regulation	10%-100% load	3.3VDC output	--	15	20	%
		5VDC output	--	10	15	
		9VDC output	--	8	10	
		12VDC output	--	7	10	
		15VDC output	--	6	10	
		24VDC output	--	5	10	
Ripple & Noise*	20MHz bandwidth	Others	--	30	75	mVp-p
		24VDC output	--	50	100	
Temperature Coefficient	100% load		--	±0.02	--	%/℃
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	--	--	MΩ
Isolation Capacitance	Input-output capacitance at 100kHz/0.1V		--	20	--	pF
Operating Temperature	Derating when operating temperature≥85℃, (see Fig. 2)		-40	--	105	℃
Storage Temperature			-55	--	125	
Case Temperature Rise	Ta=25℃	3.3VDC output	--	25	--	
		Others	--	15	--	
Pin Soldering Resistance Temperature	Soldering spot is 1.5mm away from case for 10 seconds		--	--	300	
Storage Humidity	Non-condensing		--	--	95	%RH
Switching Frequency	100% load, nominal input voltage		--	270	--	kHz
MTBF	MIL-HDBK-217F@25℃		3500	--	--	k hours

Mechanical Specifications

Case Material	Black plastic; flame-retardant and heat-resistant (UL94V-0)
Dimensions	19.65 x 6.00 x 10.16mm
Weight	2.1g(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 Air ±8kV, Contact ±4kV	perf. Criteria B

Typical Characteristic Curves

3.3VDC output

Others

Fig. 1

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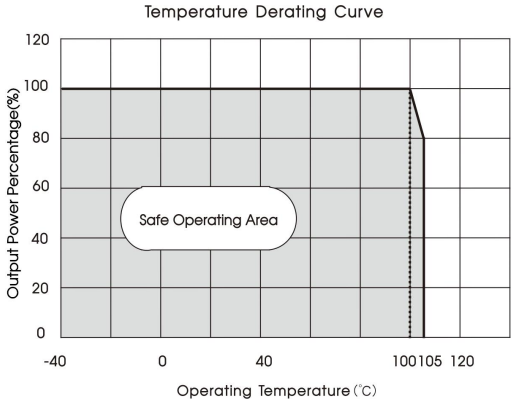
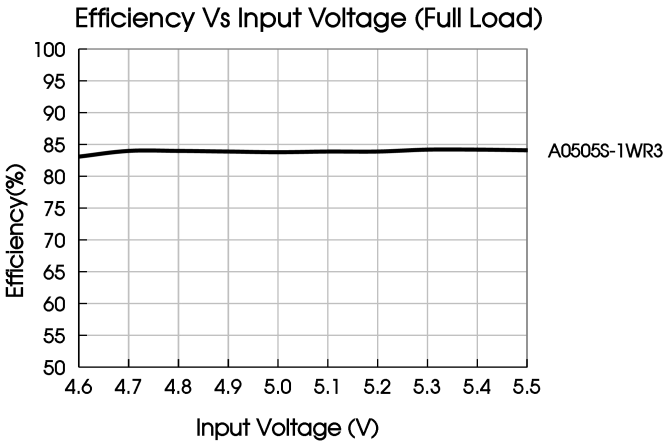
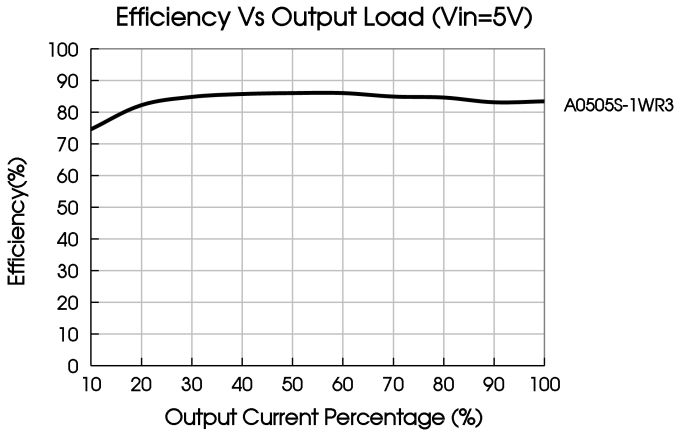
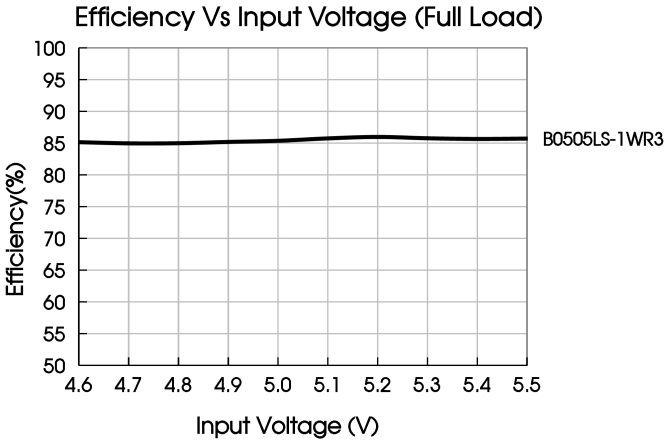
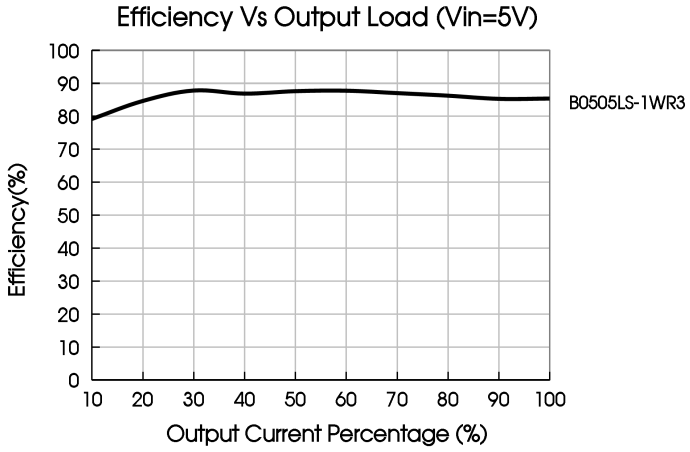


Fig. 2









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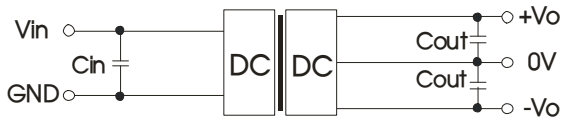
Design Reference

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.

Dual



Single

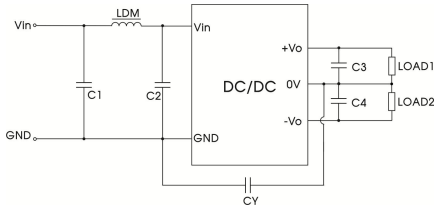
Fig. 3

Recommended capacitive load value table (Table 1)

Vin	Cin	Single Vout	Cout	Dual Vout	Cout
5VDC	4.7μF/16V	3.3/5VDC	10μF/16V	±5VDC	4.7μF/16V
--	--	9/12VDC	2.2μF/25V	±9/±12VDC	1μF/25V
--	--	15/24VDC	1μF/50V	±15/±24VDC	0.47μF/50V

2. EMC (CLASS B) compliance circuit

Dual



Single

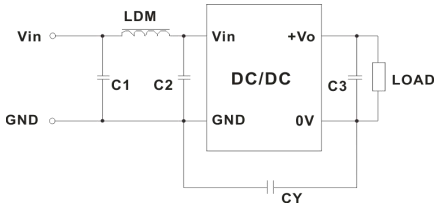


Fig. 4

EMC recommended circuit value table (Table 2)

Input voltage 5VDC	Output voltage		3.3/5/9 VDC	12/15/24 VDC
	Emissions	C1/C2	4.7μF /25V	4.7μF /25V
		CY	--	1nF /2kVDC VISHAY HGZ102MBP TDK CD45-E2GA102M-GKA
		C3/C4	Refer to the Cout in table 1	
		LDM	6.8μH	6.8μH

Note: In the case of actual use, the requirements for EMI are high, it is subject to CY .

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

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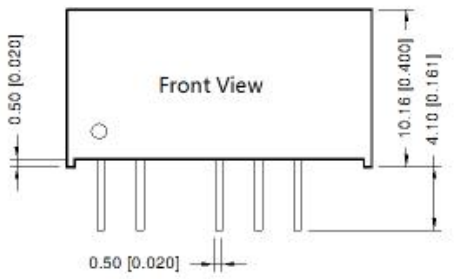
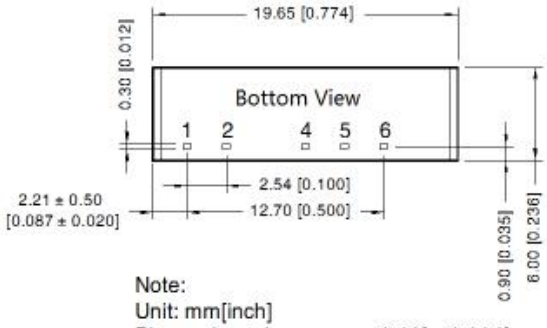
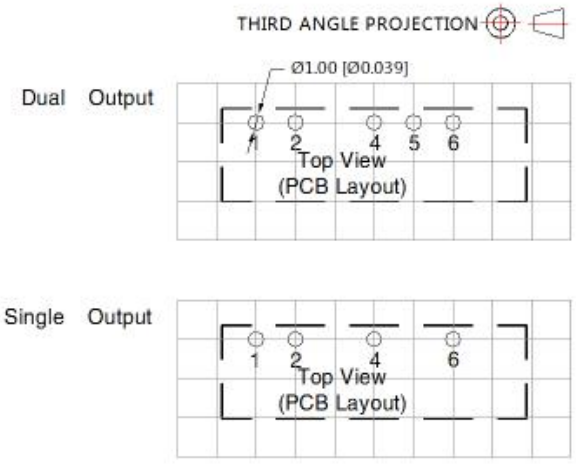
Dimensions and Recommended Layout





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
4	0V	-Vo
5	No Pin	0V
6	+Vo	+Vo

Notes:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58200001;
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 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.

Mornsun Guangzhou Science & Technology Co., Ltd.
Address: No. 5, Kehui St. 1, Kehui Development Center, Science Ave., Guangzhou Science City, Huangpu District, Guangzhou, P. R. China
Tel: 86-20-38601850 Fax: 86-20-38601272 E-mail: info@mornsun.cn www.mornsun-power.com

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