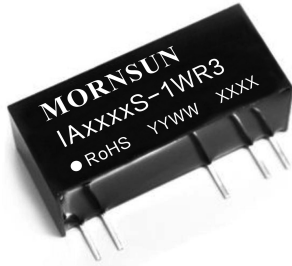


1W Isolated DC-DC converter  
Fixed input voltage, regulated dual output



### FEATURES

- Continuous short-circuit protection
- No-load input current as low as 8mA
- Operating ambient temperature range: -40°C to +85°C
- High efficiency up to 73%
- I/O isolation test voltage 1.5k VDC
- Industry standard pin-out



Patent Protection RoHS

IA\_S-1WR3 series is specially designed for distributed power supply systems where two isolated voltage is required. They are suitable for occasions of: pre-interference isolation, ground interference elimination, pure digital circuit, voltage isolation conversion, general low frequency analog circuit, relay drive circuit, etc.

### Selection Guide

Certification	Part No.	Input Voltage (VDC)	Output		Full Load Efficiency (%) Min./Typ.	Capacitive Load (μF)* Max.
		Nominal (Range)	Voltage (VDC)	Current (mA) Max./Min.		
--	IA0505S-1WR3	5 (4.75-5.25)	±5	±100/±10	66/70	1200
	IA1205S-1WR3	12 (11.4-12.6)	±5	±100/±10	69/73	

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

### Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (full load / no-load)	5VDC Input	--	286/8	304/--	mA
	12VDC Input	--	115/8	121/--	
Reflected Ripple Current*		--	15	--	
Input Filter		Capacitance Filter			
Hot Plug		Unavailable			

Note: \* Refer to DC-DC Converter Application Notes for detailed description of reflected ripple current test method.

### Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Voltage Accuracy		--	--	±3	%
Linear Regulation	Input voltage change: ±1%	--	--	±0.25	
Load Regulation	10%-100% load	--	--	±2	
Ripple & Noise*	20MHz bandwidth	--	50	100	mVp-p
Temperature Coefficient	100% load	--	±0.02	--	%/°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	--	--	MΩ
Isolation Capacitance	Input-output capacitance at 100kHz/0.1V	--	20	--	pF

Operating Temperature	Derating when operating temperature $\geq 71^{\circ}\text{C}$ (see Fig.1)	-40	--	85	$^{\circ}\text{C}$
Storage Temperature		-55	--	125	
Case Temperature Rise	$T_a=25^{\circ}\text{C}$	--	25	--	
Pin Soldering Resistance Temperature	Soldering spot is 1.5mm away from case for 10 seconds	--	--	300	$^{\circ}\text{C}$
Storage Humidity	Non-condensing	5	--	95	%RH
Vibration		10-150Hz, 5G, 0.75mm. along X, Y and Z			
Switching Frequency	100% load, nominal input voltage	IA0505S-1WR3	--	300	kHz
		IA1205S-1WR3	--	260	
MTBF	MIL-HDBK-217F@25 $^{\circ}\text{C}$	3500	--	--	k hours

## Mechanical Specifications

Case Material	Black plastic; flame-retardant and heat-resistant (UL94V-0)
Dimensions	27.50 x 9.50 x 12.00mm
Weight	5.2g(Typ.)
Cooling Method	Free air convection

## Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032	CLASS B (see Fig. 3 for recommended circuit)
	RE	CISPR32/EN55032	CLASS B (see Fig. 3 for recommended circuit)
Immunity	ESD	IEC/EN61000-4-2	Air $\pm 8\text{kV}$ , Contact $\pm 6\text{kV}$ perf. Criteria B

## Typical Characteristic Curves

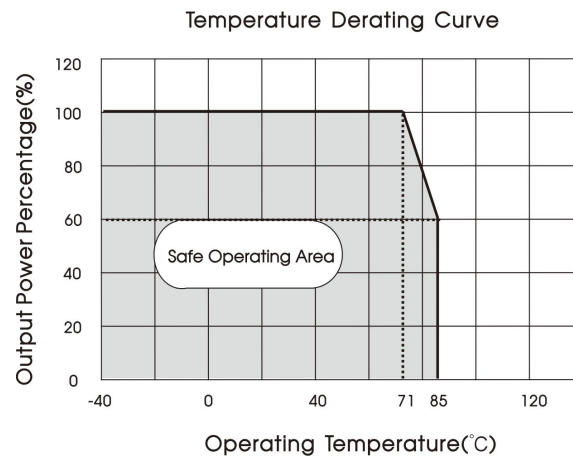
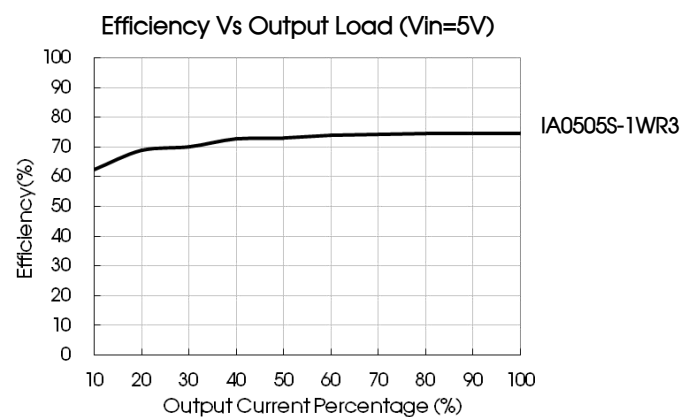
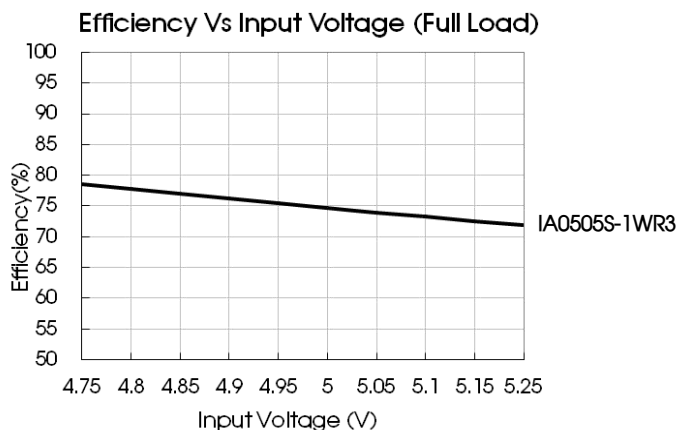


Fig. 1



## Design Reference

### 1. Typical application circuit

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.

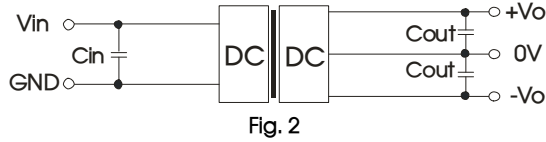


Fig. 2

Table 1: Recommended input and output capacitor values

Vin	Cin	Dual Vout	Cout
5VDC	4.7μF/16V	±5VDC	4.7μF/16V
12VDC	2.2μF/25V	±5VDC	4.7μF/16V

### 2. EMC compliance circuit

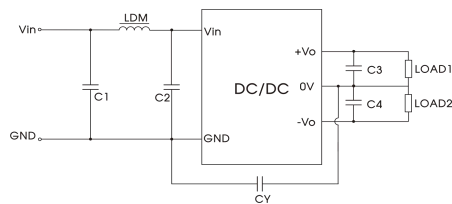


Fig. 3

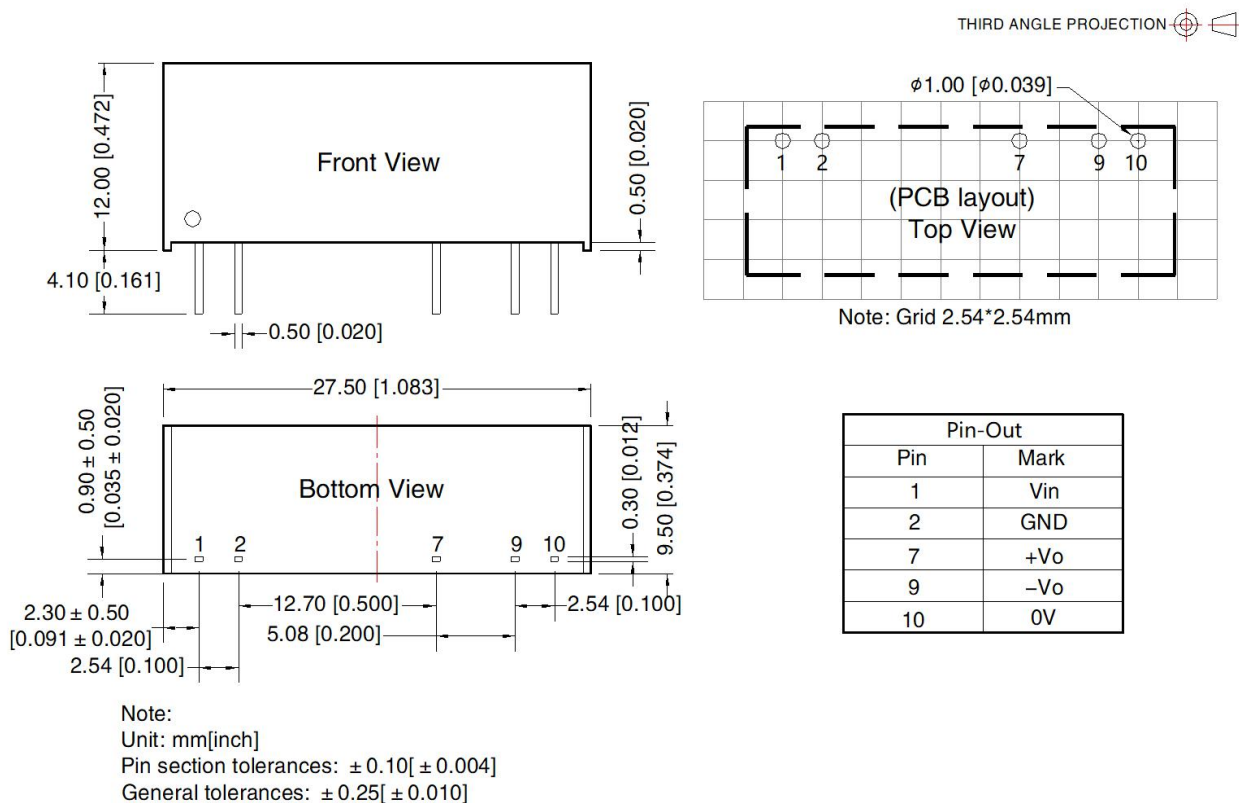
Table 2: Recommended EMC filter values

Emissions	C1/C2	4.7μF /50V	
	CY	5VDC Input	100pF /2kV
		12VDC Input	270pF /2kV
	C3/C4	Refer to the Cout in table 1	
	LDM	6.8μH	

3. 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



Notes:

1. For additional information on Product Packaging please refer to [www.mornsun-power.com](http://www.mornsun-power.com). Packaging bag number: 58200015;
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 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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