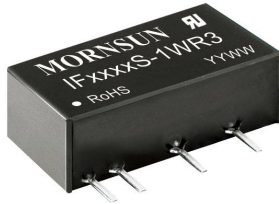


# DC/DC Converter

## IF05\_S-1WR3 Series

MORNSUN®

1W isolated DC-DC converter  
Fixed input voltage, regulated single output



CB Report

RoHS

Patent Protection

UL 62368-1 EN 62368-1 BS EN 62368-1 IEC 62368-1

IF05\_S-1WR3 series are specially designed for applications where an isolated voltage is required in a distributed power supply system. 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.		
EN/BS EN	IF0503S-1WR3	5 (4.75-5.25)	3.3	250/25	63/67	2400
UL/EN/BS EN/IEC	IF0505S-1WR3		5	200/20	66/70	2400
	IF0509S-1WR3		9	111/12	67/71	1000
	IF0512S-1WR3		12	84/9	68/72	560
	IF0515S-1WR3		15	67/7	69/73	560
EN/BS EN	IF0524S-1WR3		24	41/4	69/73	100

### Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (full load / no-load)	3.3VDC/5VDC output	--	286/5	303/10	mA
	9VDC/12VDC output	--	282/12	299/20	
	15VDC/24VDC output	--	274/18	290/30	
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	3.3VDC output, 10%-100% load	--	--	±3	
	Others, 10%-100% load			±2	
Ripple & Noise*	20MHz bandwidth	--	30	75	mVp-p
	Others 24VDC output	--	50	100	
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.

MORNSUN®

MORNSUN Guangzhou Science & Technology Co., Ltd.

2021.12.28-A/9

Page 1 of 4

MORNSUN Guangzhou Science & Technology Co., Ltd. reserves the copyright and right of final interpretation

## 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.	3000	--	--	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	$T_a=25^{\circ}\text{C}$	3.3VDC output	30	--	
		Others	25	--	
Pin Soldering Resistance Temperature	Soldering spot is 1.5mm away from case for 10 seconds	--	--	300	
Storage Humidity	Non-condensing	--	--	95	%RH
Vibration		10-150Hz, 5G, 30 Min. along X, Y and Z			
Switching Frequency	100% load, nominal input voltage	--	270	--	kHz
MTBF	MIL-HDBK-217F@25 $^{\circ}\text{C}$	3500	--	--	k hours

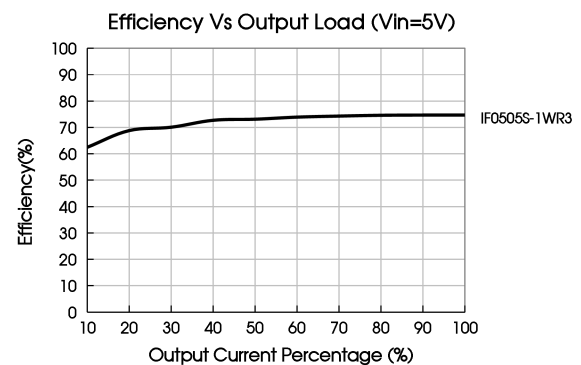
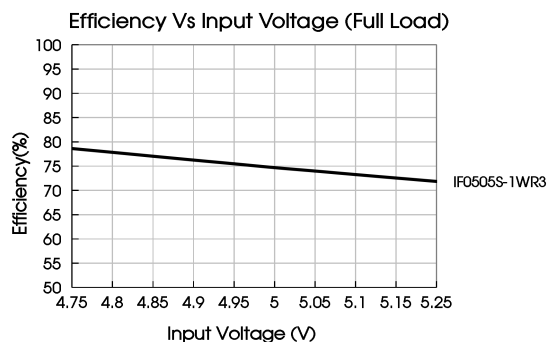
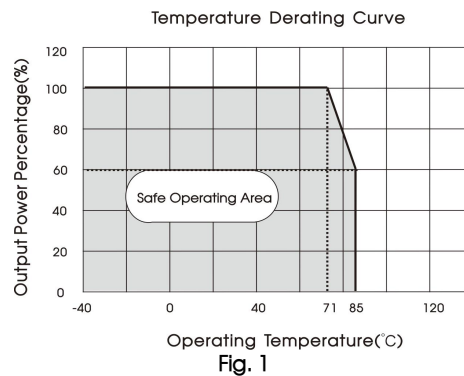
## Mechanical Specifications

Case Material	Black plastic; flame-retardant and heat-resistant (UL94V-0)
Dimensions	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. 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 $\pm 4\text{kV}$ perf. Criteria B

## Typical Characteristic Curves



## 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.



Fig. 2

Table 1: Recommended input and output capacitor values

$V_{in}$	$C_{in}$	$V_o$	$C_{out}$
5VDC	4.7 $\mu$ F/16V	3.3/5VDC	10 $\mu$ F/16V
--	--	9/12VDC	2.2 $\mu$ F/25V
--	--	15VDC	1 $\mu$ F/50V

### 2. EMC compliance circuit

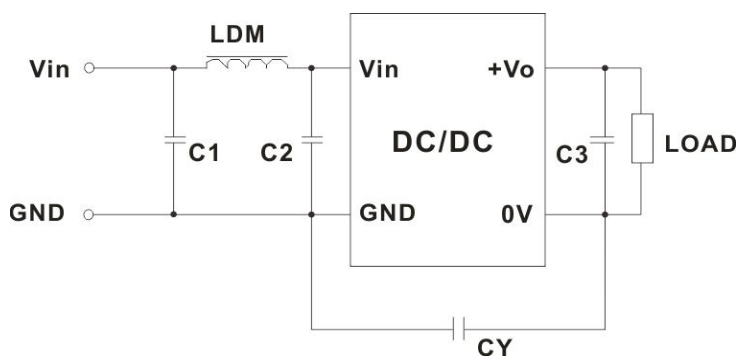


Fig. 3

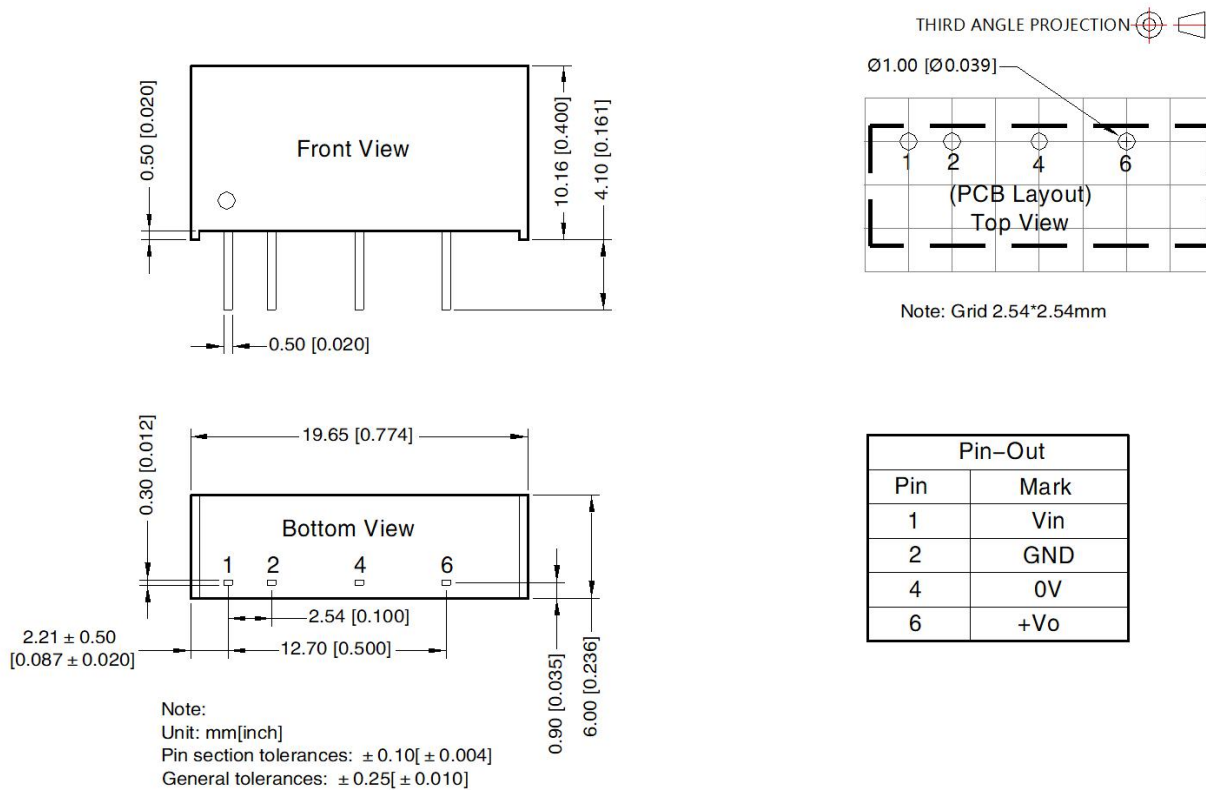
Table 2: Recommended EMC filter values

Input voltage 5VDC	Output voltage		3.3/5/9VDC	12/15/24VDC
	Emissions	C1/C2	4.7 $\mu$ F /25V	4.7 $\mu$ F /25V
		CY	--	1nF /4kVDC VISHAY HGZ102MBP TDK CD45-E2GA102M-GKA
		C3	Refer to the $C_{out}$ in table 1	
		LDM	6.8 $\mu$ H	6.8 $\mu$ H

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: 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  $T_a=25^{\circ}\text{C}$ , 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.

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](mailto:info@mornsun.cn) [www.mornsun-power.com](http://www.mornsun-power.com)