

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



CB Report RoHS

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

Patent Protection

FEATURES

- Continuous short-circuit protection
- No-load input current as low as 5mA
- Operating ambient temperature range: -40°C to +85°C
- High efficiency up to 73%
- I/O isolation test voltage 3k VDC
- Industry standard pin-out
- SIP package

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
	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
	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	Input voltage change: ±1%	--	--	±3	%
Linear Regulation		--	--	±0.25	
Load Regulation		--	--	±3	
3.3VDC output, 10%-100% load	--	--	±2		
Ripple & Noise*	20MHz bandwidth	Others	30	75	mVp-p
		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.

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	
Storage Temperature		-55	--	125	
Case Temperature Rise	T _a =25°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°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

Temperature Derating Curve

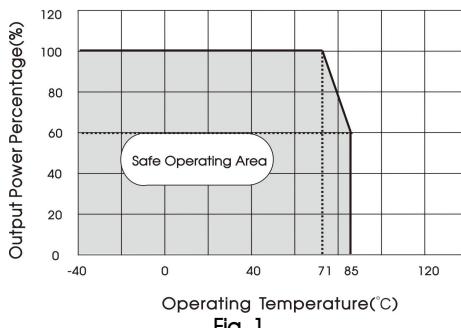
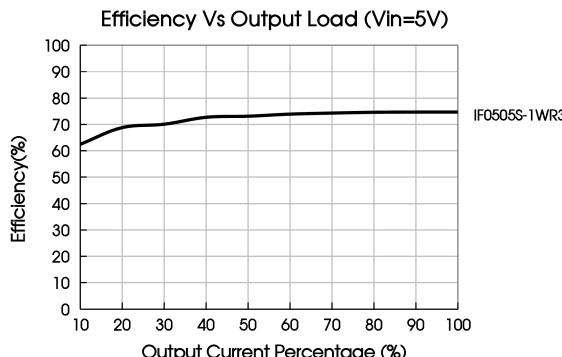
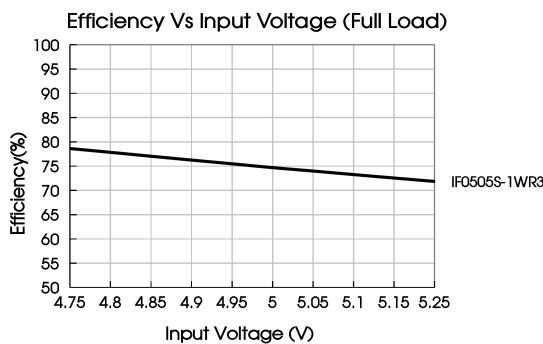


Fig. 1



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.

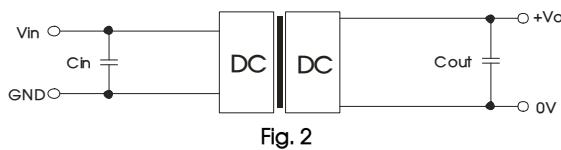


Table 1: Recommended input and output capacitor values

Vin	Cin	Vo	Cout
5VDC	4.7μF/16V	3.3/5VDC	10μF/16V
--	--	9/12VDC	2.2μF/25V
--	--	15VDC	1μF/50V

2. EMC compliance circuit

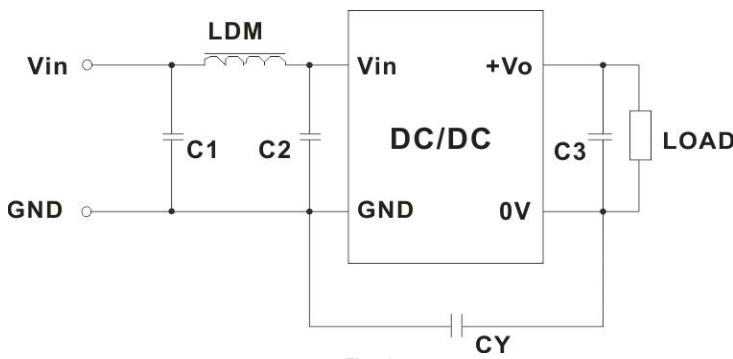
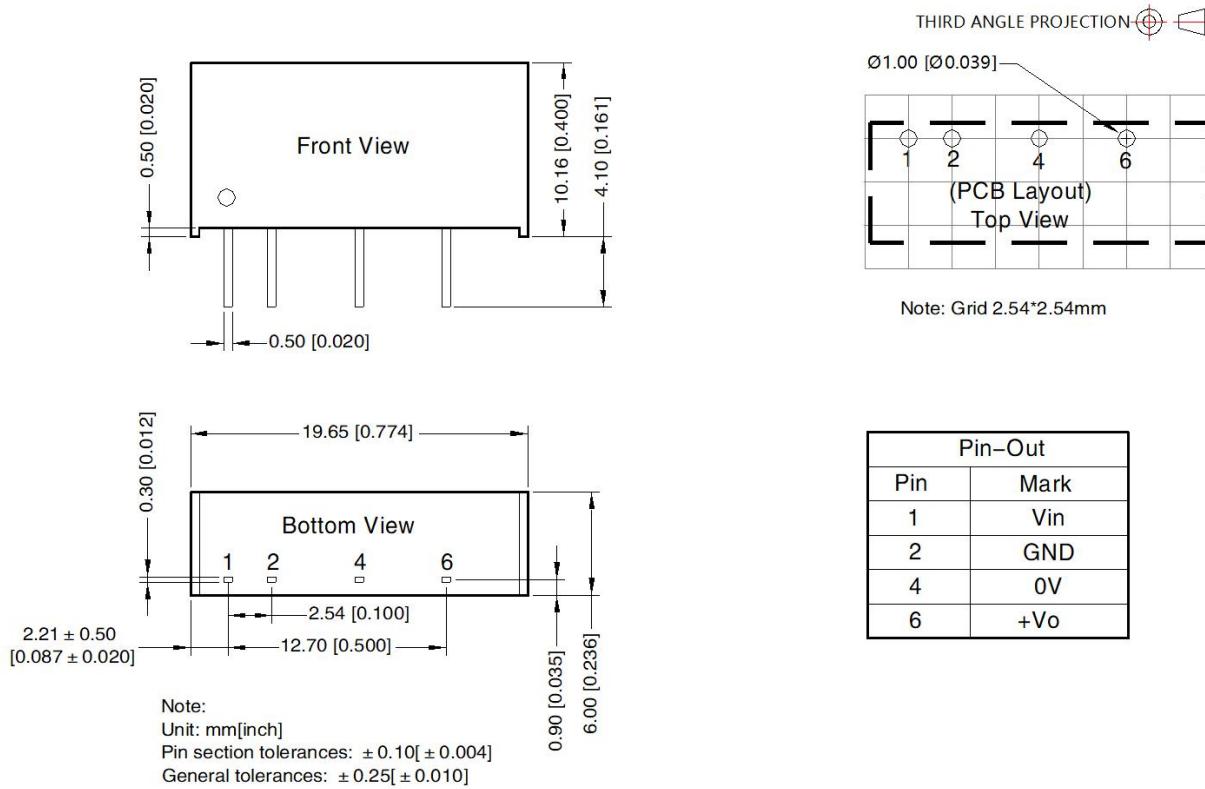


Table 2: Recommended EMC filter values

Input voltage 5VDC	Output voltage		3.3/5/9VDC	12/15/24VDC
	Emissions	C1/C2	4.7μF /25V	4.7μF /25V
		CY	--	1nF /4kVDC VISHAY HGZ102MBP TDK CD45-E2GA102M-GKA
		C3	Refer to the Cout in table 1	
	LDM	6.8μH	6.8μH	

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

Dimensions and Recommended Layout



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