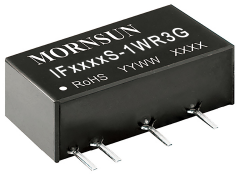
DC/DC Converter

IF05_S-1WR3G Series

MORNSUN®

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



Continuous Short Circuit Protection

3 years Warranty

RoHS Patent Protection

FEATURES

- Continuous short-circuit protection
- No-load input current as low as 12mA
- Operating ambient temperature range: -40℃ to +85℃
- High efficiency up to 72%
- I/O isolation test voltage 3k VDC
- Industry standard pin-out
- SIP package

IF05_S-1WR3G 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.		
--	IF0512S-1WR3G	5 (4.75-5.25)	12	84/9	68/72	560
	IF0515S-1WR3G		15	67/7	60/64	560

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (full load / no-load)	12VDC output	--	282/12	299/--	mA
	15VDC output	--	314/20	335/--	
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	12VDC output	--	30	75	mVp-p
		15VDC 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.	3000	--	--	VDC
Insulation Resistance	Input-output resistance at 500VDC	1000	--	--	MΩ
Isolation Capacitance	Input-output capacitance at 100kHz/0.1V	--	20	--	pF

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Operating Temperature	12Vo derating when operating temperature≥ 71℃ (see Fig. 1) 15Vo derating when operating temperature≥ 60℃ (see Fig. 2)		-40	--	85	℃
Storage Temperature			-55	--	125	
Case Temperature Rise	Ta=25℃	12VDC output	--	25	--	
		15VDC output	--	40	--	
Pin Soldering Resistance Temperature	Soldering spot is 1.5mm away from case for 10 seconds		--	--	300	
	Wave soldering,10 seconds		255	260	265	
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℃		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	
	RE	CISPR32/EN55032	CLASS B	
Immunity	ESD	IEC/EN61000-4-2	Air ±8kV, Contact ±6kV	perf. Criteria B
Note: Refer to Fig. 3 for recommended circuit test.				

Typical Characteristic Curves

IF0512S-1WR3G
Temperature Derating Curve

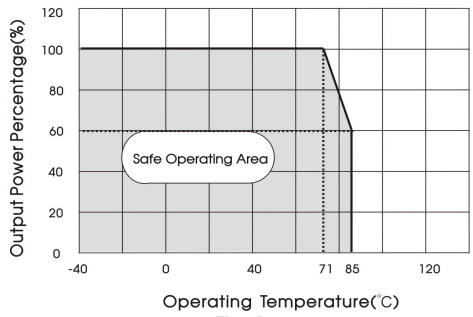

Fig. 1

IF0515S-1WR3G
Temperature Derating Curve

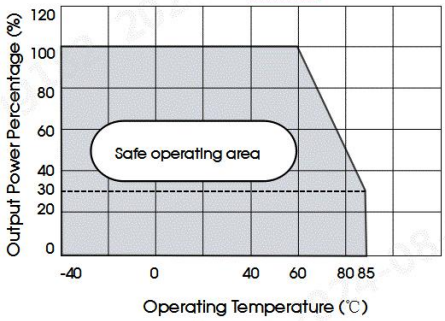

Fig. 2

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. 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.

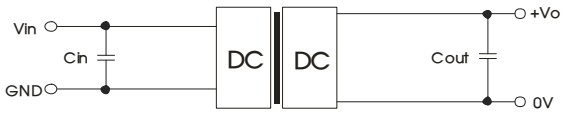

Fig. 2

Table 1: Recommended input and output capacitor values

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

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2. EMC compliance circuit

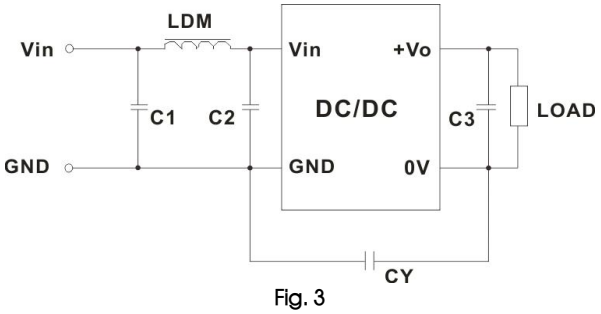


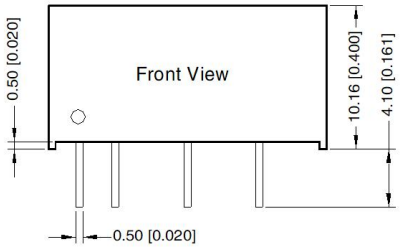
Fig. 3

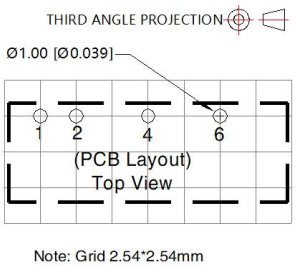
Table 2: Recommended EMC filter values

Input voltage 5VDC	Output voltage		12/15VDC
	Emissions	C1/C2	4.7μF /25V
		CY	1nF /4kVDC
		C3	Refer to the Cout in table 1
		LDM	6.8μH

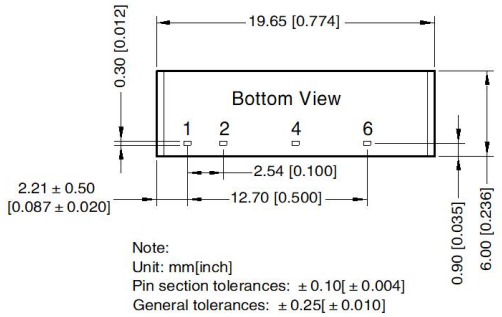
3. For additional information please refer to DC-DC converter application notes on www.mornsun-power.com

Dimensions and Recommended Layout





Note: Grid 2.54*2.54mm



Note:
Unit: mm[inch]
Pin section tolerances: ±0.10[±0.004]
General tolerances: ±0.25[±0.010]

Pin–Out	
Pin	Mark
1	Vin
2	GND
4	0V
6	+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.

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