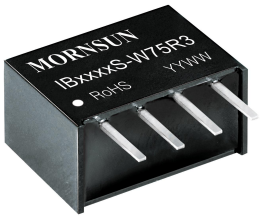
MORNSUN®

0.75W isolated DC-DC converter with Fixed Input Voltage and Regulated Single Output



Continuous Short Circuit Protection

Patent Protection RoHS

3 years Warranty

FEATURES

- Continuous short-circuit protection
- No-load input current as low as 5mA
- Operating ambient temperature range -40℃ to +85℃
- High efficiency up to 74%
- I/O isolation test voltage 3k VDC
- Industry standard pin-out
- Compact SIP package
- Designed to meet UL/EN62368 (Approval Pending)

IB05_S-W75R3 series are especially designed for distributed power supply systems where an isolated voltage is required. They are suitable for: 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.		
UL/CE (Approval Pending)	IB0503S-W75R3	5 (4.75-5.25)	3.3	200/20	64/68	2400
	IB0505S-W75R3		5	150/15	68/72	2400
	IB0509S-W75R3		9	83/9	68/72	1000
	IB0512S-W75R3		12	62/7	69/73	560
	IB0515S-W75R3		15	50/5	70/74	560

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (full load / no-load)	3.3VDC/5VDC output	--	209/5	221/10	mA
	9VDC/12VDC output	--	208/12	221/20	
	15VDC output	--	202/18	215/30	
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	10%-100% load	3.3VDC output	--	--	±3	%
		Other outputs	--	--	±2	
Ripple & Noise*	20MHz bandwidth		--	30	75	mVp-p
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
	Input-output Electric Strength Test for 1 second with a leakage current of 1mA max.		3000	--	--	
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 up to 71℃ (see Fig. 2)		-40	--	85	℃
Storage Temperature			-55	--	125	
Case Temperature Rise	Ta=25℃	3.3VDC output	--	30	--	
		Other outputs	--	25	--	
Pin Soldering Resistance Temperature	Soldering spot is 1.5mm away from case for 10 seconds		--	--	300	
Storage Humidity	Non-condensing		--	--	95	%RH
Vibration			10-55Hz, 2G, 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 (UL94 V-0)
Dimensions	11.60 x 6.00 x 10.16mm
Weight	1.3g(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 ±8kV, Contact ±4kV perf. Criteria B

Typical Characteristic Curves

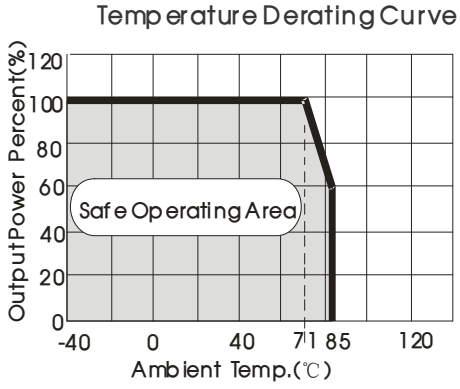
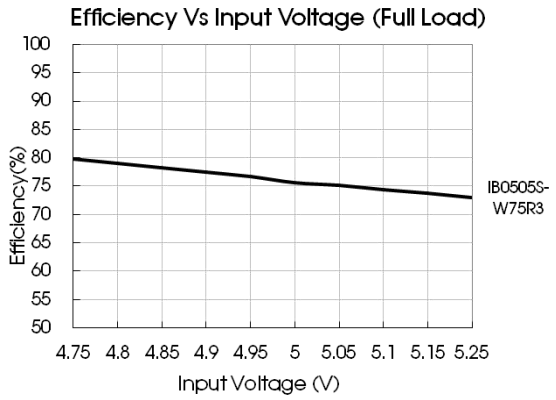
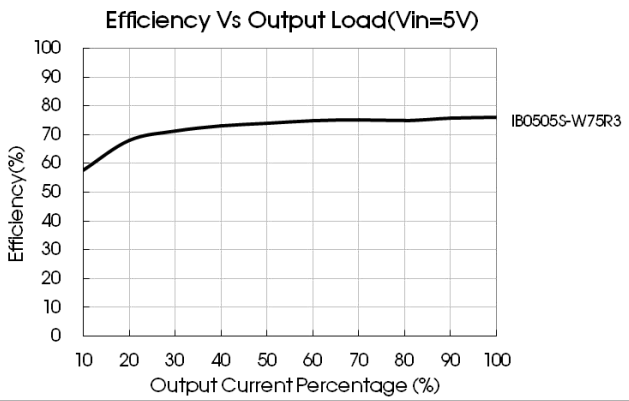


Fig. 1





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.

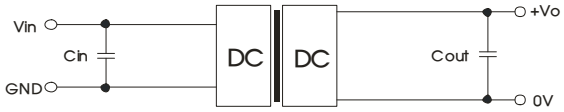


Fig. 2

Table 1：Recommended input and output capacitor values

Vin(VDC)	Cin(μF)	Vo (VDC)	Cout(μF)
5	4.7	3.3/5	10
--	--	9/12	2.2
--	--	15	1

2. EMC compliance circuit

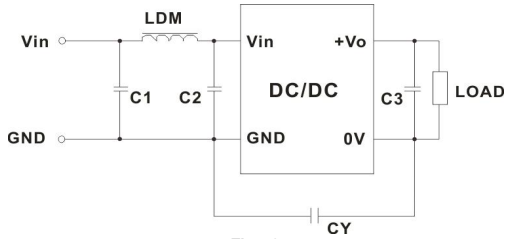


Fig. 3

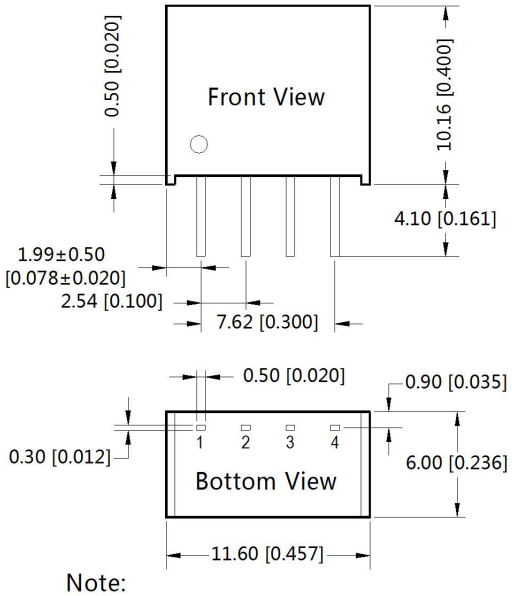
Table 2：Recommended EMC filter values

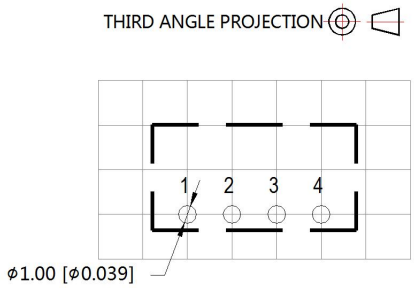
Input voltage 5VDC	Output voltage (VDC)		3.3/5/9	12/15
	EMI	C1/C2	4.7μF /25V	4.7μF /25V
		CY	--	1nF/4KVDC VISHAY HGZ102MBP TDK CD45-E2GA102M-GKA
		C3	Refer to the Cout in table 1	
		LDM	6.8μH	6.8μH

Note: We recommend the use of a Y-capacitor CY with a value of 1nF/4kV to help even further reduce EMI..

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

Pin-Out	
Pin	Function
1	GND
2	Vin
3	0V
4	+Vo

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

Notes:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58200003;
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's 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, Luogang District, Guangzhou, P. R. China
Tel: 86-20-38601850 Fax: 86-20-38601272 E-mail: sales@mornsun.cn www.mornsun-power.com