

DC/DC Converter

IB_S-W75R3 Series

MORNSUN®

0.75W isolated DC-DC converter

Fixed input voltage, regulated single output



Continuous Short
Circuit Protection



Report



Report

RoHS

Patent Protection

EN 62368-1 BS EN 62368-1

IB_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.

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 74%
- I/O isolation test voltage 1.5k VDC

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	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
EN/BS EN	IB1203S-W75R3	12 (11.4-12.6)	3.3	200/20	64/68	2400
	IB1205S-W75R3		5	150/15	68/72	2400
	IB1212S-W75R3		12	62/7	69/73	560
	IB1215S-W75R3		15	50/5	70/74	560
	IB2403S-W75R3	24 (22.8-25.2)	3.3	200/20	62/68	2400
	IB2405S-W75R3		5	150/15	66/72	2400
	IB2412S-W75R3		12	62/7	67/73	560
	IB2415S-W75R3		15	50/5	68/74	560

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Current (full load / no-load)	5V input	3.3VDC/5VDC output	--	209/8	221/--	mA
		9VDC/12VDC output	--	208/12	221/--	
		15VDC output	--	202/18	215/--	
	12V input	3.3VDC output	--	92/8	98/--	
		5VDC output	--	87/8	92/--	
		12VDC output	--	86/8	91/--	
		15VDC output	--	85/8	90/--	
	24V input	3.3VDC output	--	46/8	51/--	
		5VDC output	--	44/8	48/--	
		12VDC output	--	43/8	47/--	
		15VDC output	--	43/8	46/--	
Reflected Ripple Current*			--	15	--	mA
Input Filter			Capacitance filter			
Hot Plug			Unavailable			

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

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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 output		--	--	±2	
Ripple & Noise*	20MHz bandwidth	5VDC input		--	30	75	mVp-p
		12/24VDC input	3.3/5/12VDC output	--	30	100	
			15VDC output	--	80	150	
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
	5VDC input, 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 ≥ 71℃ (see Fig. 1)		-40	--	85	℃
Storage Temperature			-55	--	125	
Case Temperature Rise	Ta=25℃	3.3VDC output	--	30	--	
		Other output	--	25	--	
Pin Soldering Resistance Temperature	Soldering spot is 1.5mm away from case for 10 seconds		--	--	300	
Storage Humidity	Non-condensing	5VDC input	--	--	95	%RH
		12/24VDC input	5	--	95	
Vibration	5VDC input		10-150Hz, 5G, 30Min. along X, Y and Z			
	12/24VDC input		10-150Hz, 5G, 0.75mm. along X, Y and Z			
Switching Frequency	100% load, nominal input voltage	5VDC input	--	270	--	kHz
		12/24VDC input	--	260	--	
MTBF	MIL-HDBK-217F@25℃		3500	--	--	k hours

Mechanical Specifications

Case Material	Black plastic; flame-retardant and heat-resistant (UL94V-0)
Dimensions	11.60 x 6.00 x 10.16 mm
Weight	1.3g(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

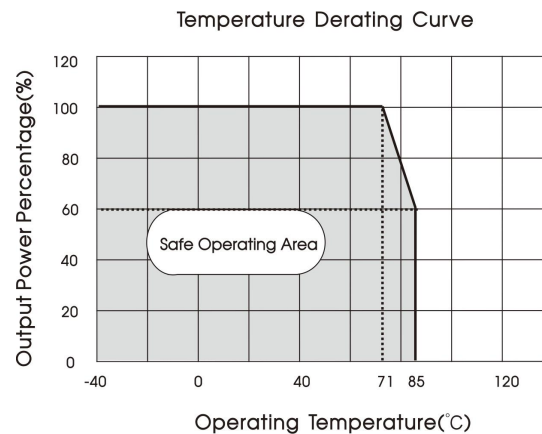
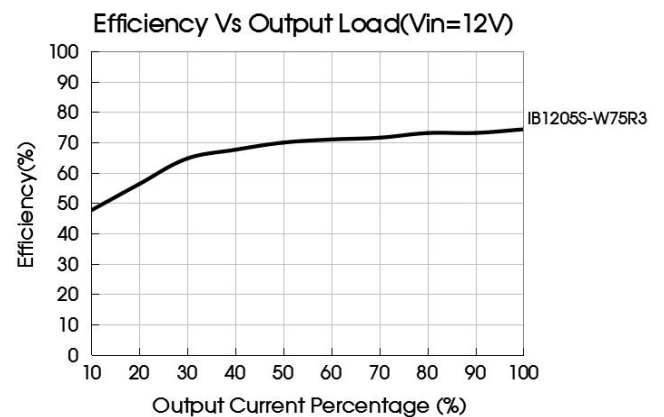
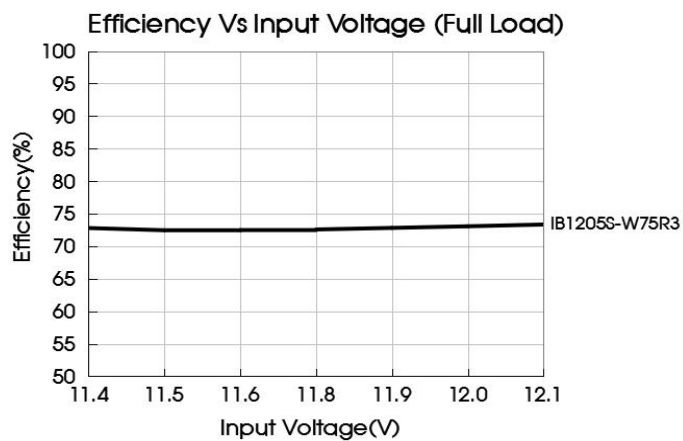
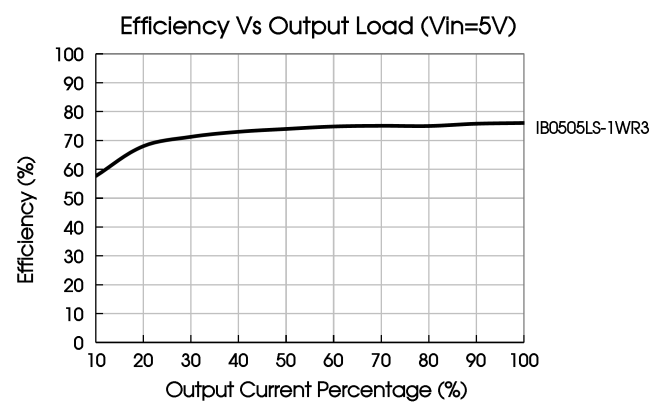
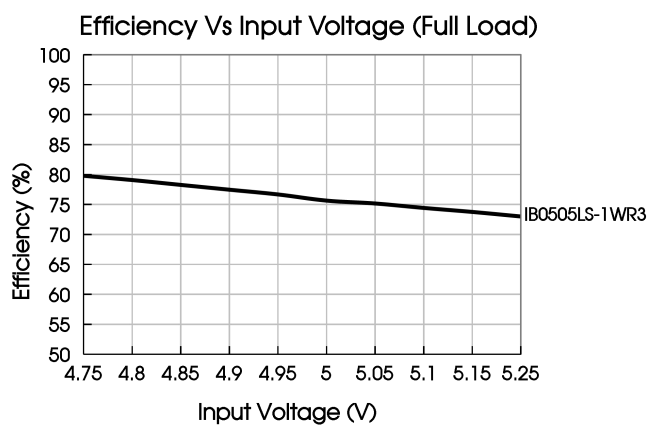


Fig. 1



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.

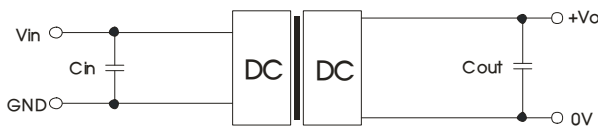


Fig. 2

2. EMC (CLASS B) compliance circuit

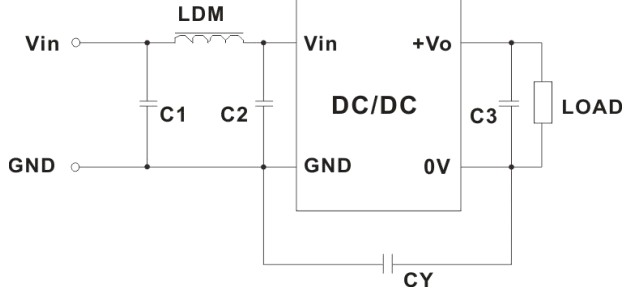


Fig. 3

Table 1: Recommended input and output capacitor values

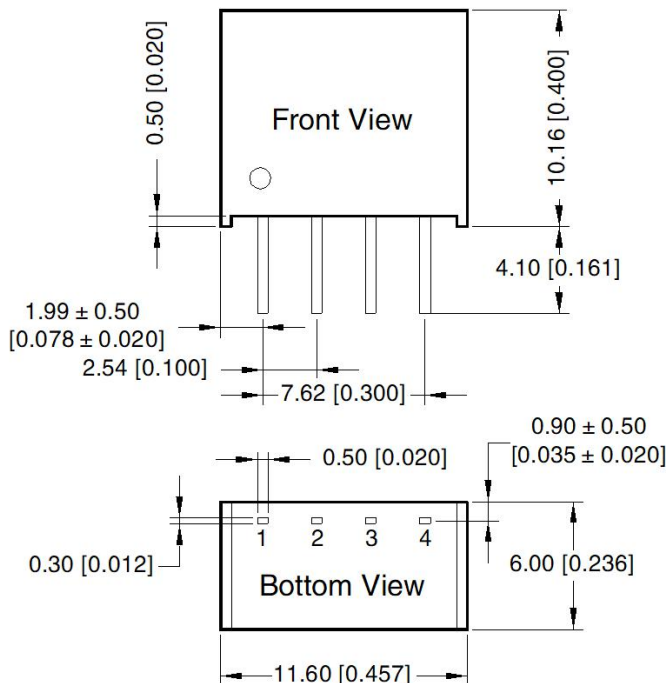
Vin	Cin	Output	Cout
5VDC	4.7μF/16V	3.3VDC/5VDC	10 μF/16V
12VDC	2.2 μF/25V	9/12VDC	2.2μF/25V
24VDC	1μF/50V	15VDC	1μF/25V

Table 2: Recommended EMC filter values

Input voltage		5VDC		12/24VDC
Output voltage		3.3/5/9VDC	12/15VDC	--
EMI	C1/C2	4.7μF/25V	4.7μF/25V	4.7μF /50V
	CY	--	1nF /4kVDC VISHAY HGZ102MBP TDK CD45-E2GA102M-GKA	270pF /2kV
	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



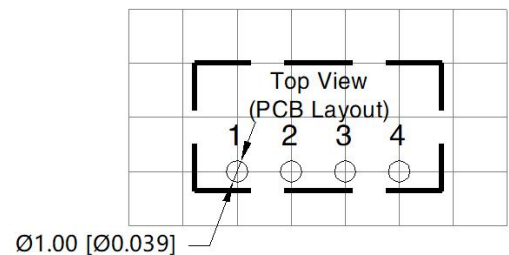
Note:

Unit: mm[inch]

Pin section tolerances: $\pm 0.10[\pm 0.004]$

General tolerances: $\pm 0.25[\pm 0.010]$

THIRD ANGLE PROJECTION



Note: Grid 2.54*2.54mm

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

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 $T_a=25^{\circ}\text{C}$, 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. 8 Nanyun 4th Road, Huangpu District, Guangzhou, China

Tel: 86-20-38601850

Fax: 86-20-38601272

E-mail: info@mornsun.cn

www.mornsun-power.com