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

Patent Protection RoHS

Continuous Short Circuit Protection

FEATURES

- Continuous short-circuit protection
- No-load input current as low as 8mA
- Operating ambient temperature range: -40℃ to +85℃
- High efficiency up to 73%
- I/O isolation test voltage 1.5k VDC
- Industry standard pin-out

IB_LD-1WR3 series is specially designed for distributed power supply systems where an isolated voltage is required. 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.		
--	IB0505LD-W75R3	5 (4.75-5.25)	5	150/15	66/70	2400
	IB0505LD-1WR3		5	200/20	69/73	2400
	IB1205LD-1WR3	12 (11.4-12.6)	5	200/20	69/73	2400
	IB1209LD-1WR3		9	111/11	69/73	1000
	IB1212LD-1WR3		12	84/9	69/73	560
	IB1215LD-1WR3		15	67/7	69/73	560
	IB2405LD-1WR3	24 (22.8-25.2)	5	200/20	64/70	2400
	IB2409LD-1WR3		9	111/11	64/70	1000
	IB2412LD-1WR3		12	84/9	64/70	560
	IB2415LD-1WR3		15	67/7	64/70	560

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (full load / no-load)	5V input	--	274/8	290/--	mA
	12V input	--	115/8	121/--	
	24V input	--	60/8	66/--	
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	--	+3	%
Linear Regulation	Input voltage change: ±1%	--	--	±0.25	
Load Regulation	10%-100% load	--	--	±2	
Ripple & Noise*	20MHz bandwidth	--	50	100	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
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℃		--	25	--	
Pin Soldering Resistance Temperature	Soldering spot is 1.5mm away from case for 10 seconds		--	--	300	
	Wave-soldering, max. 10 seconds		255	260	265	
Storage Humidity	Non-condensing		5	--	95	%RH
Vibration			10-150Hz, 5G, 0.75mm. along X, Y and Z			
Switching Frequency	100% load, nominal input voltage	5V input	--	300	--	kHz
		12/24V input	--	260	--	
MTBF	MIL-HDBK-217F@25℃		3500	--	--	k hours

Mechanical Specifications

Case Material	Black plastic; flame-retardant and heat-resistant (UL94V-0)
Dimensions	20.00 x 10.00 x 7.00mm
Weight	2.4g(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

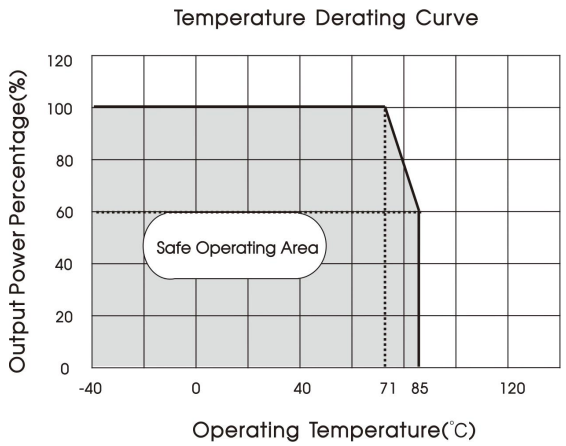
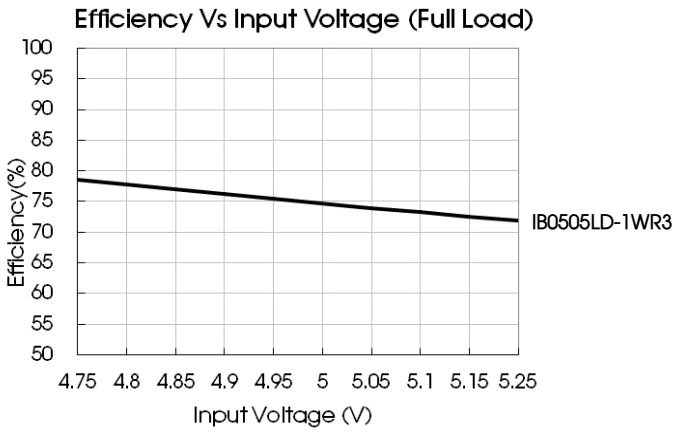
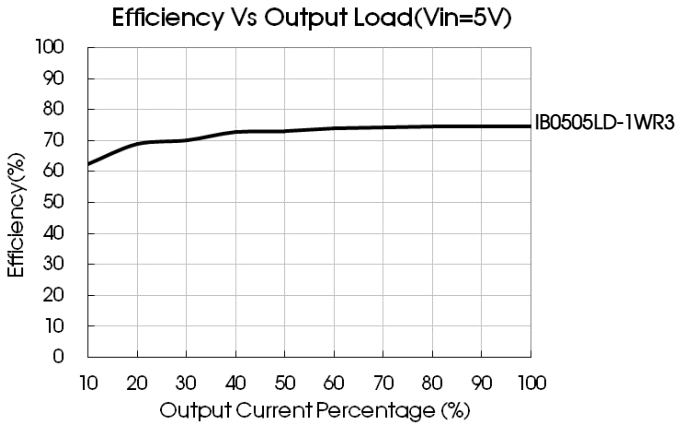
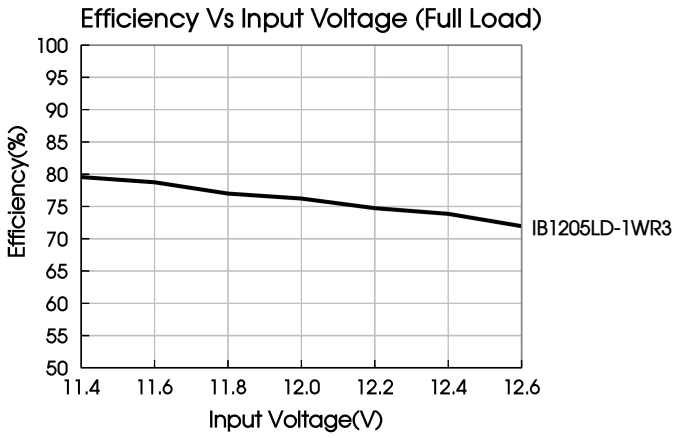
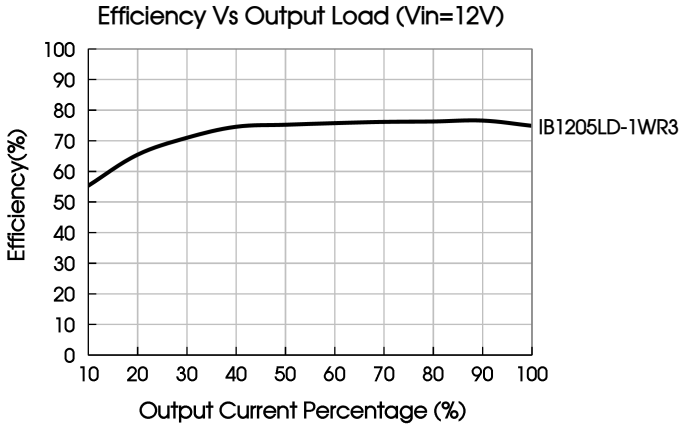


Fig. 1









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.

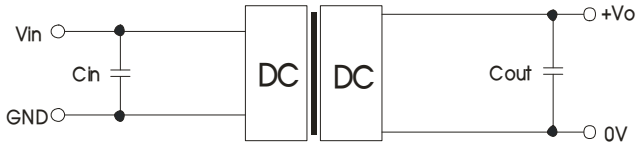


Fig. 2

Table 1: Recommended input and output capacitor values

Vin	Cin	Vo	Cout
5VDC	2.2μF/25V	5VDC	4.7μF/16V
12VDC	2.2μF/25V	9VDC	1μF/16V
24VDC	1μF/50V	12VDC	1μF/25V
--	--	15VDC	1μF/25V

2. EMC compliance circuit

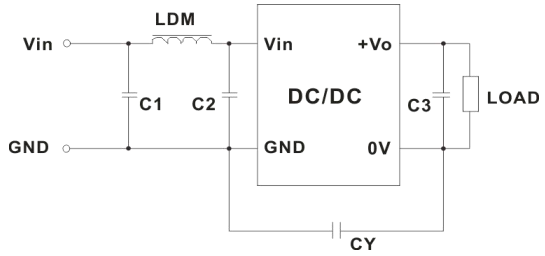


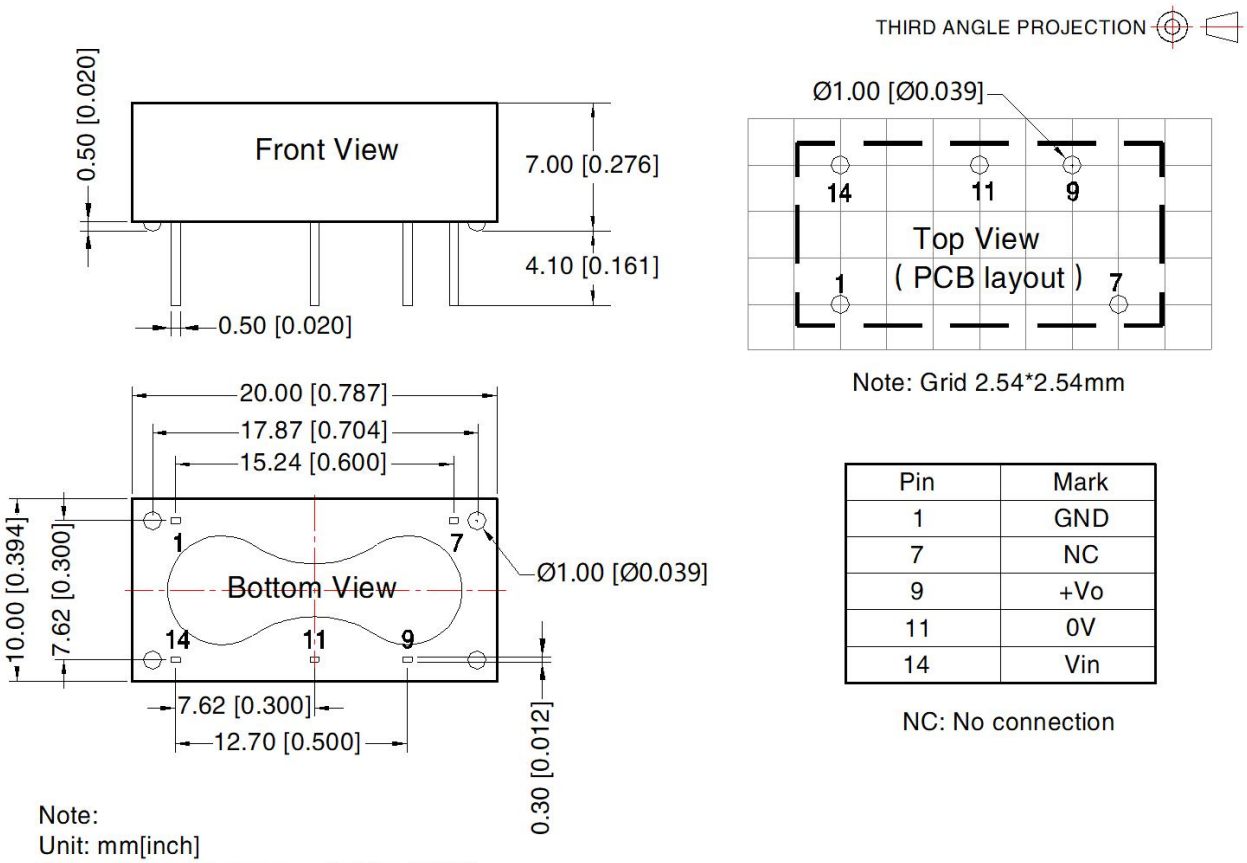
Fig. 3

Table 2: Recommended EMC filter values

Input Voltage		5V output	12/24V output
Emissions	C1/C2	4.7μF /50V	4.7μF /50V
	CY	100pF /2kVDC	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: Grid 2.54*2.54mm

Pin	Mark
1	GND
7	NC
9	+Vo
11	0V
14	Vin

NC: No connection

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: 58200009;
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.

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