1W isolated DC-DC converter
Fixed input voltage, unregulated 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 +105℃
- High efficiency up to 80%
- I/O isolation test voltage: 1.5k VDC
- Industry standard pin-out

B_LM-1WR3 series are specially designed for applications where an isolated voltage is required in a distributed power supply system. They are suitable for: pure digital circuits, low frequency analog circuits, relay-driven circuits and data switching circuits.

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.		
--	B1205LM-1WR3	12 (10.8-13.2)	5	200/20	76/80	2400

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (full load / no-load)	12VDC input	--	105/8	110/--	mA
Reflected Ripple Current*		--	15	--	
Surge Voltage(1sec. max.)		-0.7	--	18	VDC
Input Filter		Capacitance filter			
Hot Plug		Unavailable			
Note: * Reflected ripple current testing method please see DC-DC Converter Application Notes for specific operation.					

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Voltage Accuracy		See output regulation curves (Fig. 1)			
Linear Regulation	Input voltage change: ±1%	--	--	±1.2	--
Load Regulation	10%-100% load	--	7	15	%
Ripple & Noise*	20MHz bandwidth	--	50	100	mVp-p
Temperature Coefficient	Full load	--	±0.02	--	%/℃
Short Circuit Protection		Continuous, self-recovery			
Notes: * 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≥85℃ (see Fig. 2)	-40	--	105	℃
Storage Temperature		-55	--	125	℃
Case Temperature Rise	Ta=25℃	--	25	--	
Pin Soldering Resistance	Soldering spot is 1.5mm away from case for 10	--	--	300	

Temperature	seconds				
Storage Humidity	Non-condensing	5	--	95	%RH
Vibration		10-150Hz, 5G, 0.75mm. along X, Y and Z			
Switching Frequency	Full load, nominal input voltage	--	260	--	kHz
MTBF	MIL-HDBK-217F@25℃	3500	--	--	k hours

Mechanical Specifications

Case Material	Black plastic; flame-retardant and heat-resistant (UL94 V-0)
Dimensions	16.50 x 6.00 x 7.50 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 per. Criteria B
Note: Refer to Fig.4 for recommended circuit test.		

Typical Performance Curves

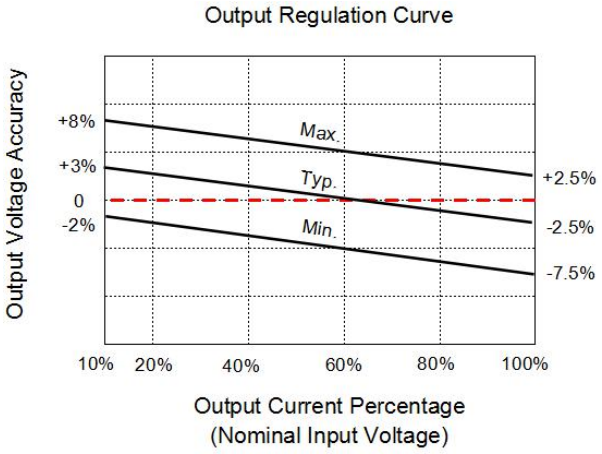


Fig. 1

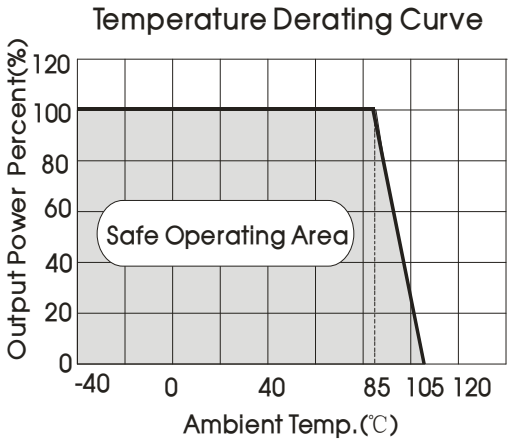
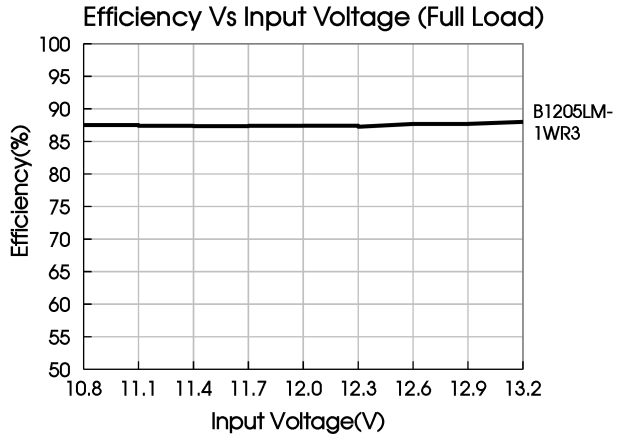
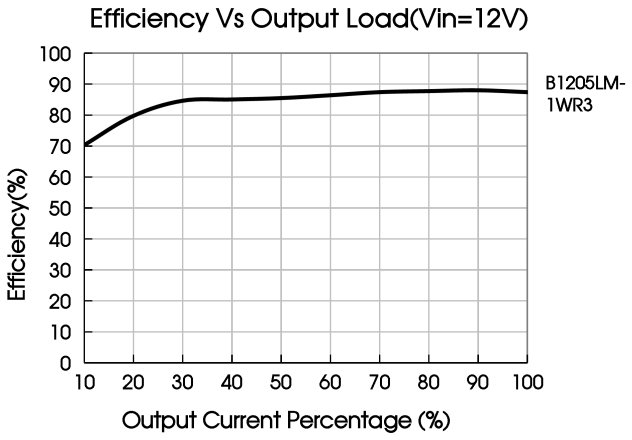


Fig. 2





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.3.

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.

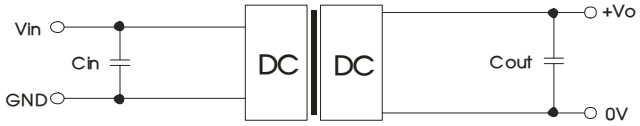


Fig.3

Table 1: Recommended input and output capacitor values

Vin	Cin	Vo	Cout
12VDC	4.7μF/25V	5VDC	10μF/16V

2. EMC compliance circuit

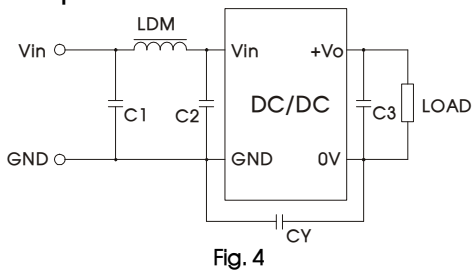


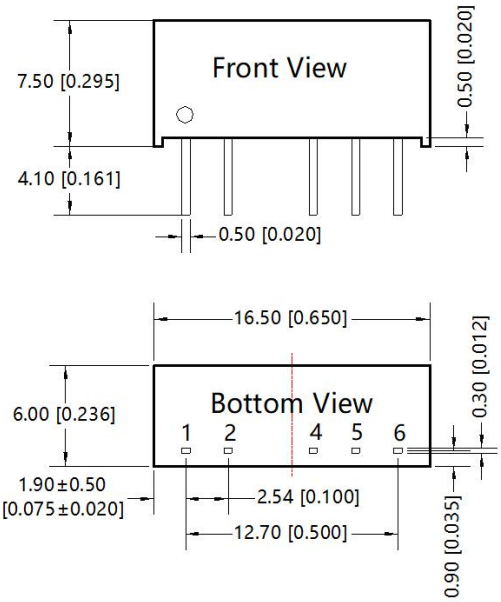
Fig. 4

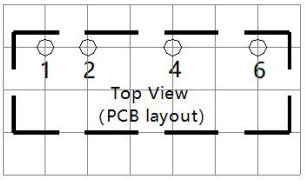
Emissions	C1/C2	4.7μF /50V
	CY	270pF/2kV
	C3	Refer to Cout in Fig.3
	LDM	6.8μH

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

Dimensions and Recommended Layout

THIRD ANGLE PROJECTION





Note: Grid 2.54*2.54mm

Pin	Mark
1	Vin
2	GND
4	0V
5	No Pin
6	+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: 58200005;
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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