MORNSUN®

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

Continuous Short Circuit Protection

Patent Protection RoHS

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%
- Compact SMD package
- I/O isolation test voltage 1.5k VDC
- Industry standard pin-out
- Designed to meet UL/EN62368 (Approval Pending)

IB05_XT-W75R3 series is especially designed for distributed power supply systems where an isolated voltage is required. They are particularly suitable for applications of : pure digital circuits, general 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.		
UL/CE (Pending)	IB0503XT-W75R3	5 (4.75-5.25)	3.3	200/20	64/68	2400
	IB0505XT-W75R3		5	150/15	68/72	2400
	IB0509XT-W75R3		9	83/9	68/72	1000
	IB0512XT-W75R3		12	62/7	69/73	560
	IB0515XT-W75R3		15	50/5	70/74	560

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Current (full load / no-load)	5VDC input	3.3VDC/5VDC output	--	221/5	234/10	mA
		9VDC/12VDC output	--	208/12	221/20	
		15VDC output	--	202/18	215/30	
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.						

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		--	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. 1)		-40	--	85	℃
Storage Temperature			-55	--	125	
Case Temperature Rise	Ta =25℃	3.3VDC output	--	30	--	
		Other output	--	25	--	
Reflow Soldering Temperature*			Peak temp.≤245℃, maximum duration time≤60s over 217℃			
Storage Humidity	Non-condensing		--	--	95	%RH
Switching Frequency	100% load, nominal input voltage		--	270	--	KHz
MTBF	MIL-HDBK-217F@25℃		3500	--	--	K hours
Moisture Sensitivity Level (MSL)	IPC/JEDEC J-STD-020D.1		Level 2			

Note: * Please also refer to IPC/JEDEC J-STD-020D.1 for additional information.

Mechanical Specifications

Case Material	Black plastic; flame-retardant and heat-resistant (UL94 V-0)
Dimensions	13.20 x 11.40 x 7.25mm
Weight	1.4g(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

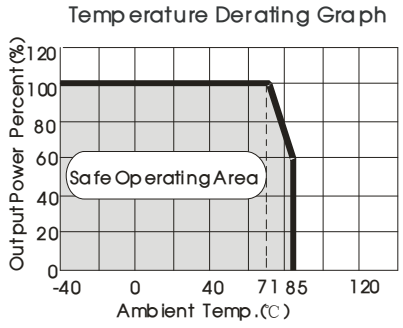
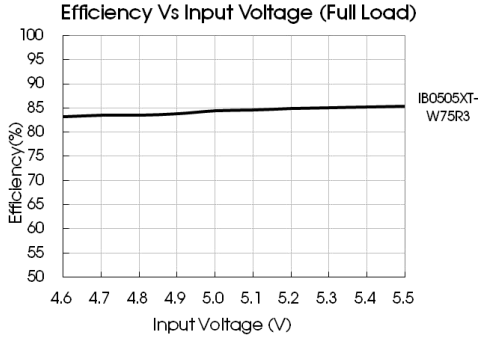
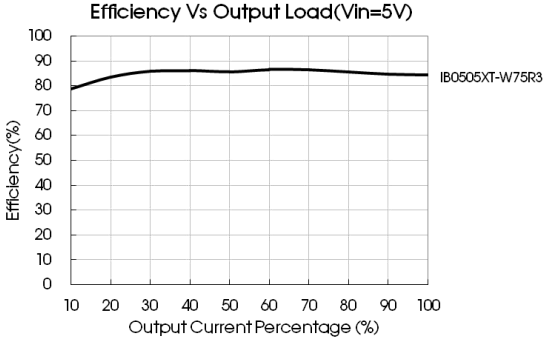


Fig. 1





Design Reference

1. Typical application

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.

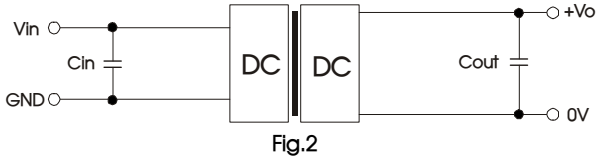


Fig.2

Table 1:Recommended input and output capacitor values

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

2. EMC compliance circuit

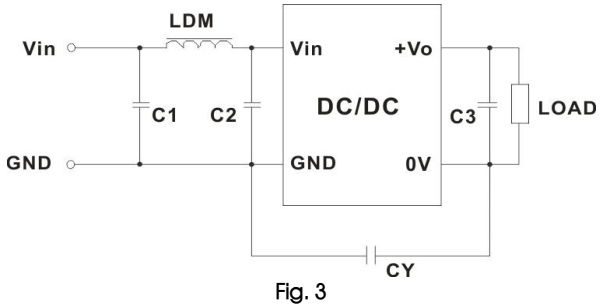


Fig. 3

Table 2: Recommended EMC filter values

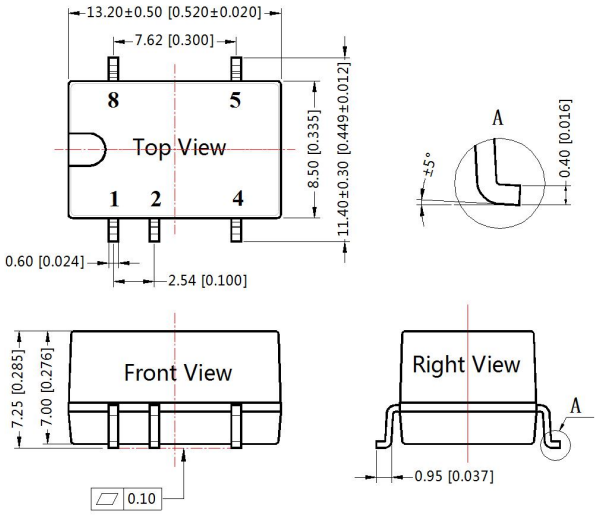
Input voltage 5VDC	Output voltage(VDC)		3.3/5/9	12/15
	EMI	C1/C2	4.7μF /25V	4.7μF /25V
		CY	--	1nF/2KVDC HEC C1206X102K202T JOHANSON 202R18W102KV4E
		C3	Refer to the Cout in table 1	
		LDM	6.8μH	6.8μH

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

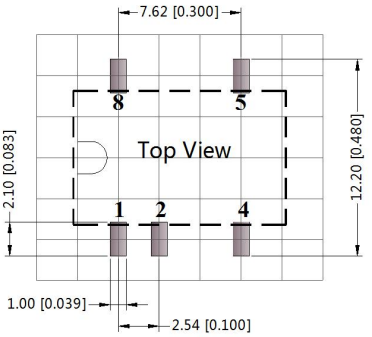
3. For additional information please refer to DC-DC converter application notes on www.mornsun-power.com

Dimensions and Recommended Layout

THIRD ANGLE PROJECTION



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



Note: Grid 2.54*2.54mm

Pin-Out	
Pin	Function
1	GND
2	Vin
4	0V
5	+Vo
8	NC

NC: Pin to be isolated from circuitry

Notes:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Tube Packaging bag number: 58210024, Roll Packaging bag number: 58200054;
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.

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