

0.75W, Fixed input voltage, isolated & regulated single output



Continuous Short Circuit Protection



Patent Protection RoHS



FEATURES

- Continuous short-circuit protection
- No-load input current as low as 5mA
- Operating temperature range: -40°C to +85°C
- High efficiency up to 74%
- Compact SMD package
- Isolation voltage: 1.5K VDC
- International standard pin-out
- Meets UL62368, EN62368 standards (Pending)

IB05_XT-W75R3 series is specially designed for applications where an isolated voltage is required in a distributed power supply system. It is 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 | | Efficiency (%Min./Typ.) @ Full Load | Max. Capacitive Load (µF) |
|-----------------|----------------|---------------------|----------------------|---------------------------------|-------------------------------------|---------------------------|
| | | Nominal (Range) | Output Voltage (VDC) | Output 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: * Reflected ripple current testing method please see DC-DC Converter Application Notes for specific operation.

Output Specifications

| Item | Operating Conditions | Min. | Typ. | Max. | Unit |
|--------------------------|---------------------------|---------------------------|-------|-------|-------|
| Output Voltage Accuracy | | -- | -- | ±3 | % |
| Line 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 | -- | %/°C |
| Short Circuit Protection | | Continuous, self-recovery | | | |

Note: * Ripple and noise tested with "parallel cable" method, please see DC-DC Converter Application Notes for specific operation methods.

General Specifications

| Item | Operating Conditions | Min. | Typ. | Max. | Unit | |
|------------------------------------|--|--|------|------|------------|----|
| Insulation Voltage | Input-output, with the test time of 1 minute and the leak current lower than 1mA | 1500 | -- | -- | VDC | |
| | Input-output, with the test time of 1 second and the leak current lower than 1mA | 3000 | -- | -- | | |
| Insulation Resistance | Input-output, isolation Voltage 500VDC | 1000 | -- | -- | M Ω | |
| Isolation Capacitance | Input-output, 100KHz/0.1V | -- | 20 | -- | pF | |
| Operating Temperature | Derating when operating temperature up to 71°C, (see Fig. 1) | -40 | -- | 85 | °C | |
| Storage Temperature | | -55 | -- | 125 | | |
| Casing Temperature Rise | Ta =25°C | 3.3VDC output | -- | 30 | | -- |
| | | Other output | -- | 25 | | -- |
| Pin Welding Resistance Temperature | Welding spot is 1.5mm away from the casing, 10 seconds | -- | -- | 300 | | |
| Reflow Soldering Temperature* | | Peak temp. ≤245°C, maximum duration time ≤60s at 217°C | | | | |
| Storage Humidity | Non-condensing | -- | -- | 95 | %RH | |
| Switching Frequency | 100% load, nominal input voltage | -- | 270 | -- | KHz | |
| MTBF | MIL-HDBK-217F@25°C | 3500 | -- | -- | K hours | |
| Moisture Sensitivity Level (MSL) | IPC/JEDEC J-STD-020D.1 | Level 2 | | | | |

Note: * For actual application, please refer to IPC/JEDEC J-STD-020D.1.

Physical Specifications

| | |
|--------------------|--|
| Casing Material | Black flame-retardant and heat-resistant plastic(UL94 V-0) |
| Package Dimensions | 13.20*11.40*7.25mm |
| Weight | 1.4g(Typ.) |
| Cooling Method | Free air convection |

EMC Specifications

| | | |
|-----|-----|--|
| EMI | CE | CISPR32/EN55032 CLASS B (see Fig. 3 for recommended circuit) |
| | RE | CISPR32/EN55032 CLASS B (see Fig. 3 for recommended circuit) |
| EMS | ESD | IEC/EN61000-4-2 Air ±8kV, Contact ±4kV perf. Criteria B |

Product Characteristic Curve

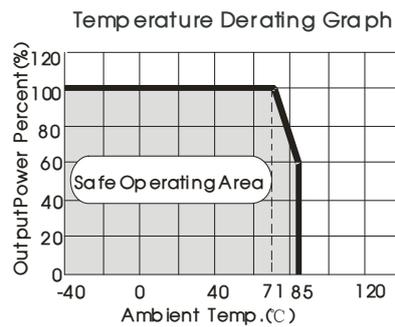
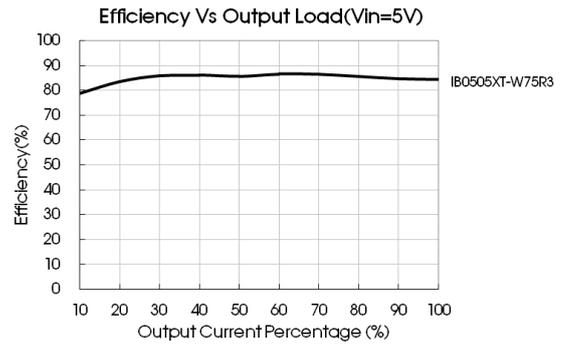
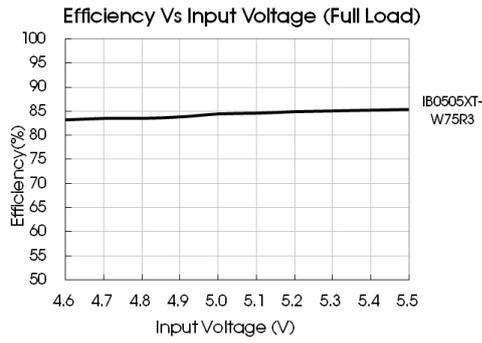


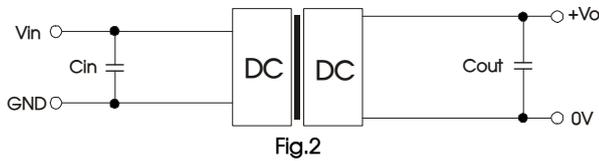
Fig. 1



Design Reference

1. Typical application

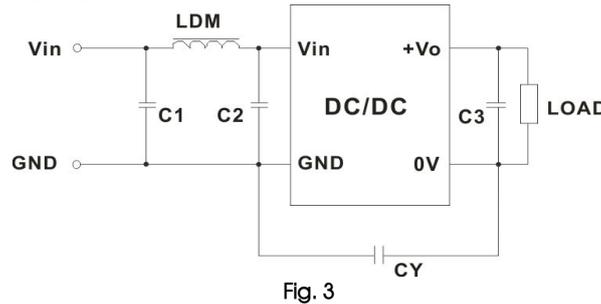
If it is required to further reduce input and output ripple, a filter capacitor can be connected to the input and output terminals, see Fig.2. Moreover, choosing suitable filter capacitor is very important, start-up problems may be caused by too large capacitance. To ensure the modules running well, the recommended capacitive load values as shown in Table 1.



Recommended capacitive load value table (Table 1)

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

2. EMC typical recommended circuit



EMC recommended circuit value table (Table 2)

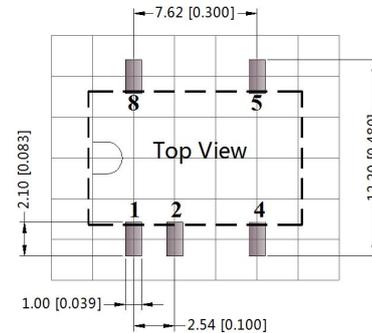
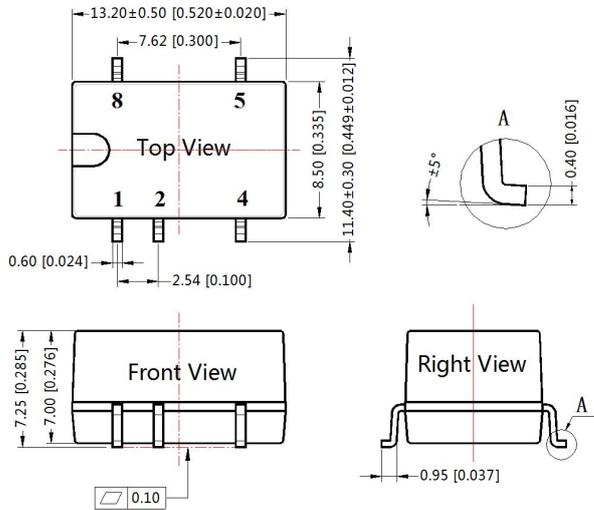
| Input voltage 5VDC | EMI | Output voltage(VDC) | 3.3/5/9 | 12/15 |
|-----------------------|-----|------------------------------|--|------------|
| | | C1/C2 | 4.7μF /25V | 4.7μF /25V |
| | CY | -- | 1nF/2KVDC HEC C1206X102K202T JOHANSON 202R18W102KV4E | |
| | C3 | Refer to the Cout in table 1 | |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

Note: In the case of actual use, the requirements for EMI are high, it is subject to CY.

3. For more information please find DC-DC converter application notes on www.mornsun-power.com

Dimensions and Recommended Layout

THIRD ANGLE PROJECTION 



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

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

Notes:

1. Packing information please refer to Product Packing Information which can be downloaded from www.mornsun-power.com. Tube Packing bag number: 58210024, Roll Packing 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°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'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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