

0.75W isolated DC-DC converter
Fixed input voltage, regulated single output



Patent Protection RoHS



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%
- Compact SMD package
- I/O isolation test voltage: 1.5k VDC
- Industry standard pin-out
- EN62368 approved

IB_XT-W75R3 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. | | |
| CE | IB1205XT-W75R3 | 12 (11.4-12.6) | 5 | 150/15 | 68/72 | 2400 |
| | IB1212XT-W75R3 | | 12 | 62/7 | 69/73 | 560 |
| | IB1215XT-W75R3 | | 15 | 50/5 | 70/74 | 560 |

Input Specifications

| Item | Operating Conditions | Min. | Typ. | Max. | Unit | |
|--|----------------------|--------------------|------|------|-------|----|
| Input Current (full load / no-load) | 12VDC input | 5VDC output | -- | 87/8 | 92/-- | mA |
| | | 12VDC output | -- | 86/8 | 91/-- | |
| | | 15VDC output | -- | 85/8 | 90/-- | |
| Reflected Ripple Current* | | -- | 15 | -- | | |
| 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 | | -- | -- | ±3 | % |
| Linear Regulation | Input voltage change: ±1% | -- | -- | ±0.25 | |
| Load Regulation | 10%-100% load | -- | -- | ±2 | |
| Ripple & Noise* | 20MHz bandwidth | -- | 30 | 75 | mVp-p |
| Temperature Coefficient | Full load | -- | ±0.02 | -- | %/°C |
| 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 $\geq 71^{\circ}\text{C}$, (see Fig. 1) | -40 | -- | 85 | °C |
| Storage Temperature | | -55 | -- | 125 | |
| Case Temperature Rise | Ta=25°C | -- | 25 | -- | |
| Reflow Soldering Temperature* | | Peak temp. $\leq 245^{\circ}\text{C}$, maximum duration time $\leq 60\text{s}$ over 217°C | | | |
| Vibration | | 10-150Hz, 5G, 0.75mm. along X, Y and Z | | | |
| Storage Humidity | Non-condensing | 5 | -- | 95 | %RH |
| Switching Frequency | Full load, nominal input voltage | -- | 260 | -- | kHz |
| MTBF | MIL-HDBK-217F@25°C | 3500 | -- | -- | k hours |
| Moisture Sensitivity Level (MSL) | IPC/JEDEC J-STD-020D.1 | Level 1 | | | |

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

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 |
| | RE | CISPR32/EN55032 | CLASS B |
| Immunity | ESD | IEC/EN61000-4-2 | Air $\pm 8\text{kV}$, Contact $\pm 6\text{kV}$ perf. Criteria B |

Note: Refer to Fig.3 for recommended circuit test.

Typical Performance Curves

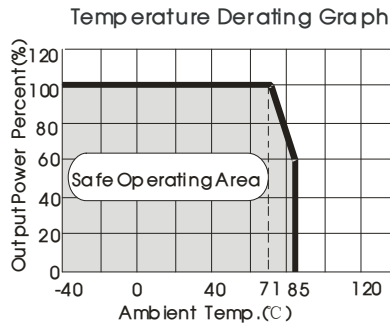
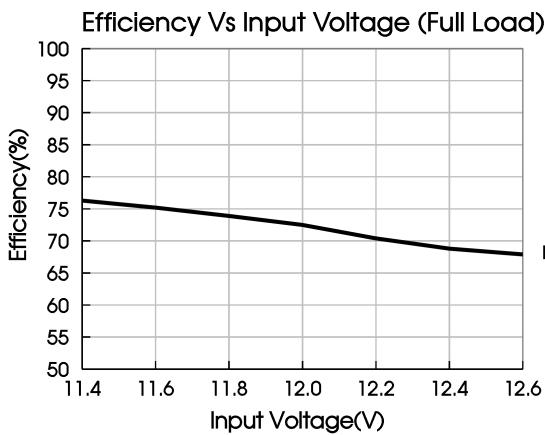
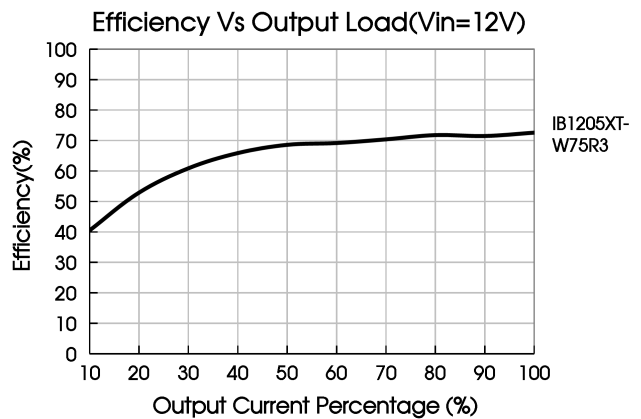


Fig. 1



IB1205XT-W75R3



IB1205XT-W75R3

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 | Cin | Vo | Cout |
|-------|-----------|-------|-----------|
| 12VDC | 2.2µF/25V | 5VDC | 10µF/16V |
| | | 12VDC | 2.2µF/25V |
| | | 15VDC | 1µF/25V |

2. EMC (CLASS B) compliance circuit

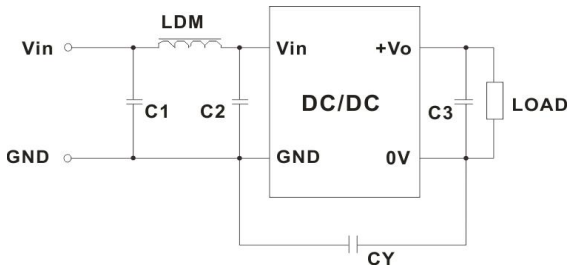


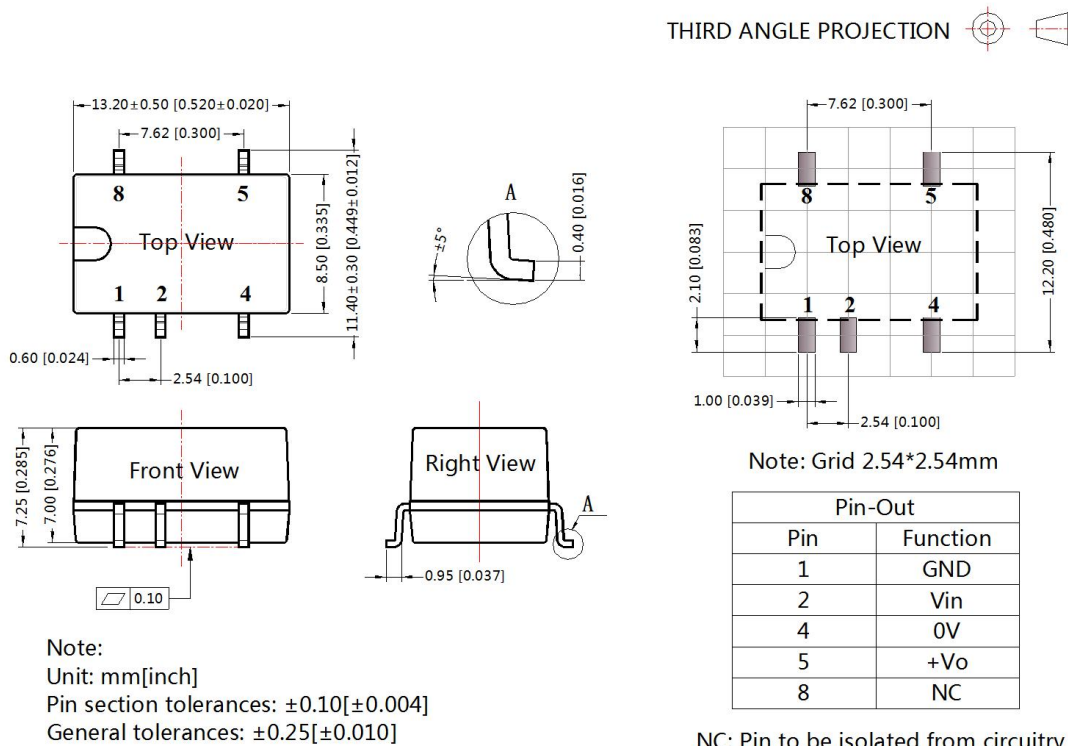
Fig.3

Table 2: EMC recommended circuit value table

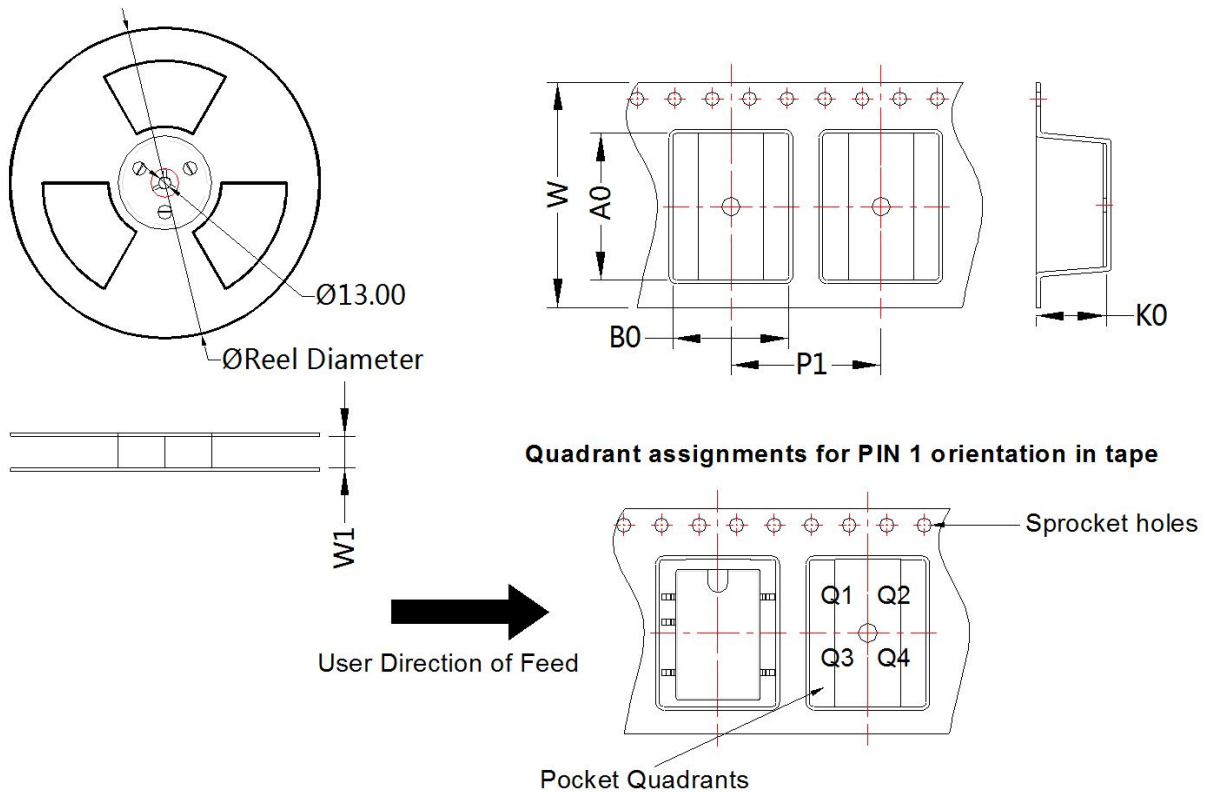
| | |
|-----|------------------------------|
| C1 | 4.7µF /25V |
| C2 | 4.7µF /25V |
| CY | 270pF/2kV |
| C3 | Refer to the Cout in table 1 |
| LDM | 6.8µH |

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

Dimensions and Recommended Layout



Tape and Reel Info



| Device | Package Type | Pin | SPQ | Reel Diameter (mm) | Reel Width W1 (mm) | A0 (mm) | B0 (mm) | K0 (mm) | P1 (mm) | W (mm) | Pin1 Quadrant |
|-------------|--------------|-----|-----|--------------------|--------------------|---------|---------|---------|---------|--------|---------------|
| IB_XT-W75R3 | SMD | 5 | 500 | 330.0 | 24.5 | 13.4 | 11.7 | 7.5 | 16.0 | 24.0 | Q1 |

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 $T_a=25^{\circ}\text{C}$, 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.

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