

0.2W, Fixed input voltage, isolated & unregulated single output



Patent Protection RoHS



## FEATURES

- Continuous short-circuit protection
- No-load input current as low as 5mA
- High efficiency up to 75%
- Operating temperature range: -40℃ to +105℃
- Isolation voltage: 2k VAC
- Compact SMD package
- International standard pin-out
- Internal surface mounted design

F0505XT-W2R3 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           |                          | Full Load Efficiency (%)<br>Min./Typ. | Capacitive Load(μF)<br>Max. |
|---------------|--------------|---------------------|------------------|--------------------------|---------------------------------------|-----------------------------|
|               |              | Nominal<br>(Range)  | Voltage<br>(VDC) | Current(mA)<br>Max./Min. |                                       |                             |
| --            | F0505XT-W2R3 | 5<br>(4.5-5.5)      | 5                | 40/4                     | 71/75                                 | 220                         |

## Input Specifications

| Item                                   | Operating Conditions | Min.               | Typ. | Max.  | Unit |
|----------------------------------------|----------------------|--------------------|------|-------|------|
| Input Current<br>(full load / no-load) |                      | --                 | 54/5 | 57/10 | mA   |
| Surge Voltage (1sec. max.)             |                      | -0.7               | --   | 9     | VDC  |
| Reflected Ripple Current*              |                      | --                 | 30   | --    | 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  |                                 | See output regulation curve(Fig. 1) |            |           |       |
| Linear Regulation        | Input voltage change: $\pm 1\%$ | --                                  | --         | $\pm 1.2$ | --    |
| Load Regulation          | 10%-100% load                   | --                                  | 5          | 15        | %     |
| Ripple & Noise*          | 20MHz bandwidth                 | --                                  | 20         | 50        | mVp-p |
| Temperature Coefficient  | Full load                       | --                                  | $\pm 0.02$ | --        | %/℃   |
| Short-circuit Protection |                                 | Continuous, self-recovery           |            |           |       |

Note: \* Ripple and noise are measured by "parallel cable" method, please see DC-DC Converter Application Notes for specific operation.

## General Specifications

| Item                    | Operating Conditions                                                                | Min. | Typ. | Max. | Unit |
|-------------------------|-------------------------------------------------------------------------------------|------|------|------|------|
| Isolation Voltage       | Input-output Electric Strength Test for 1 minute with a leakage current of 1mA max. | 2000 | --   | --   | VAC  |
|                         |                                                                                     | 3000 | --   | --   | VDC  |
| Isolation Resistance    | Input-output, isolation voltage 500VDC                                              | 1000 | --   | --   | MΩ   |
| Isolation Capacitance   | Input-output, 100kHz/0.1V                                                           | --   | 20   | --   | pF   |
| Operating Temperature   | Derating when operating temperature up to 100℃, (see Fig. 2)                        | -40  | --   | 105  | ℃    |
| Storage Temperature     |                                                                                     | -55  | --   | 95   |      |
| Casing Temperature Rise | Ta=25℃, nominal input, full load output                                             | --   | 15   | --   |      |

|                                  |                                                       |                                                       |     |     |         |
|----------------------------------|-------------------------------------------------------|-------------------------------------------------------|-----|-----|---------|
| Pin Soldering Resistance         | Soldering spot is 1.5mm away from case for 10 seconds | --                                                    | --  | 300 | ℃       |
| Reflow Soldering Temperature*    |                                                       | Peak temp. ≤245℃, maximum duration time ≤60s at 217℃. |     |     |         |
| Storage Humidity                 | Non-condensing                                        | --                                                    | --  | 95  | %RH     |
| Switching Frequency              | Full 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 1                                               |     |     |         |

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

## Physical Specifications

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

## EMC Specifications

|          |     |                 |                                              |
|----------|-----|-----------------|----------------------------------------------|
| Emission | CE  | CISPR32/EN55032 | CLASS B (see Fig. 5 for recommended circuit) |
|          | RE  | CISPR32/EN55032 | CLASS B (see Fig. 5 for recommended circuit) |
| Immunity | ESD | IEC/EN61000-4-2 | Air ±8kV, Contact ±6kV perf. Criteria B      |

## Product Characteristic Curve

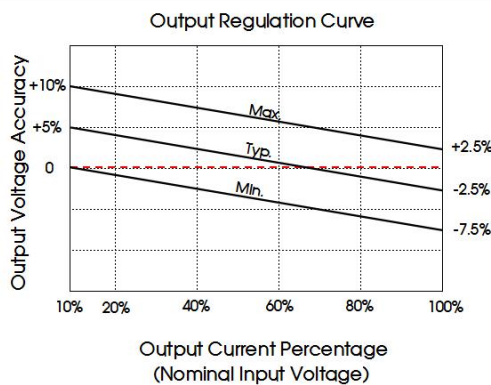


Fig. 1

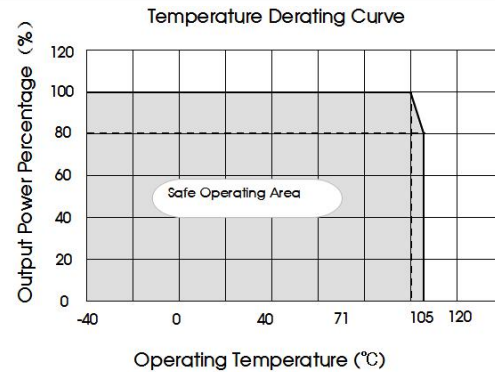


Fig. 2

## Design Reference

### 1. Typical application circuit

If it is required to further reduce input and output ripple, a filter capacitor may be connected to the input and output terminals, see Fig.3. Moreover, choosing a suitable filter capacitor is very important, start-up problems may be caused if the capacitance is too large. Under the condition of safe and reliable operation, the recommended capacitive load values are shown in Table 1.



Fig.3

Recommended capacitive load value table (Table 1)

| Vin  | Cin       | Vo   | Cout     |
|------|-----------|------|----------|
| 5VDC | 4.7μF/16V | 5VDC | 10μF/16V |

### 2. EMC solution-recommended circuit

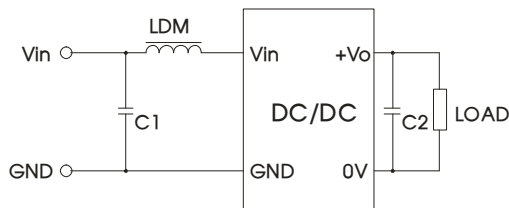


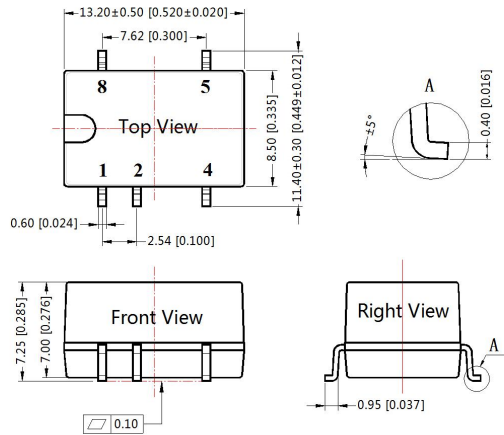
Fig. 4

| Input voltage |     | 5VDC                       |
|---------------|-----|----------------------------|
| Emission      | C1  | 4.7μF /50V                 |
|               | C2  | Refer to the Cout in Fig.3 |
|               | LDM | 6.8μH                      |

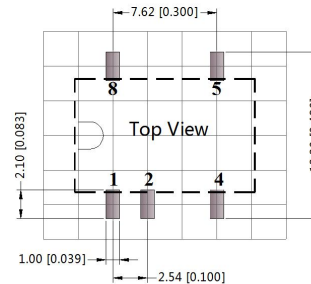
3. For additional information, please refer to DC-DC converter application notes on [www.mornsun-power.com](http://www.mornsun-power.com)

## Dimensions and Recommended Layout

THIRD ANGLE PROJECTION 



Note:  
Unit: mm[inch]  
Pin section tolerances:  $\pm 0.10[\pm 0.004]$   
General tolerances:  $\pm 0.25[\pm 0.010]$



Note: Grid 2.54\*2.54mm

| Pin-Out |      |
|---------|------|
| Pin     | Mark |
| 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](http://www.mornsun-power.com). Packaging 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  $T_a=25^{\circ}\text{C}$ , humidity<75%RH with nominal input voltage and rated output load;
5. All index testing methods in this datasheet are based on our Company'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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