

EMC Filter



FEATURES

- Ultra wide input voltage range: 9 - 80VDC
- Compact size: 25*25*5mm³
- Operating ambient temperature range: -40°C to +105°C
- EMC standards compliance : IEC/EN61000-4、
- CISPR32/EN55032 、 EN50155 、 EN50121-3-2 、 GJB151
- Compliance with safety standards: IEC62368

This product is suitable for analog circuits and other noisy sensitive occasions, EMC auxiliary module installed in the input end of the DC/DC power module can significantly improve the EN55032 EN50155, GJB151 standards of EMC performance. The maximum input voltage of the mornsun power supply should not be greater than the maximum operating voltage of the filter, and the maximum input current should be less than the maximum operating current of the filter.

Selection Guide

| Certification | Model | Operating Voltage(VDC) | | Operating Current(A) | | | Surge Performance |
|---------------|------------|------------------------|------|----------------------|-----|-------------|------------------------------------|
| | | Typ. (Range) | Max* | Typ. | Max | Transient** | |
| - | FI-B10T-R2 | 24/48 (9-80) | 80 | - | 10 | 14 | Line - Line ±2kV Line - PE ±2kV |

Note: 1.* The input voltage must not exceed this value, otherwise permanent and unrecoverable damage may be caused;

2.** Transient current operating conditions: Temperature 55°C, wind speed 3m/s, duration 10s

3.Filter can not be used with air switch.

General Specifications

| Item | Test Conditions | Min. | Typ. | Max. | Unit | |
|-------------------------------|--------------------|--|------|------|---------|-----|
| Operating Temperature | | -40 | -- | +105 | °C | |
| Storage Temperature | | -55 | -- | +125 | | |
| Reflow Temperature | | -- | -- | +250 | | |
| Storage Humidity | Non-condensing | 5 | -- | 95 | %RH | |
| Isolation Voltage | +Vin-PE -Vin-PE | Electric strength test for 1min., leakage current <0.5mA | 1500 | -- | -- | VDC |
| surge voltage(1sec.max) | | | | | | |
| MTBF | MIL-HDBK-217F@25°C | 1000 | -- | -- | K hours | |
| Reflow Soldering Temperature* | | Peak temp.≤245°C, maximum duration time≤60s over 217°C | | | | |
| Shock and Vibration Test | | IEC 61373 Car 1 B Class | | | | |
| Altitude* | 50-106kPa | 5000m | | | | |

| | | | | | |
|----------------------------------|------------------------|---------|----|----|----|
| Moisture Sensitivity Level (MSL) | IPC/JEDEC J-STD-020D.1 | Level 3 | | | |
| Insertion loss (CM/DM) | 150kHz~1MHz | -- | 20 | - | dB |
| | 1MHz~10MHz | -- | 20 | -- | dB |
| | 10MHz~30MHz | -- | 15 | -- | dB |

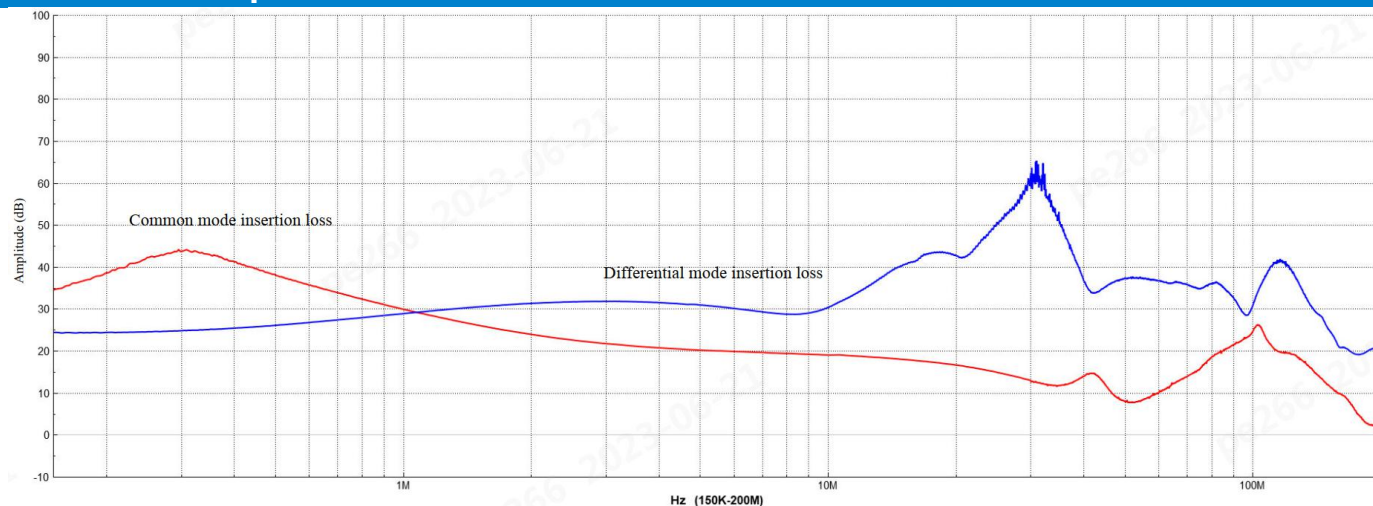
*Note: * The product is used above the altitude of 2000m, to ensure that the surface temperature of the product is below 95°C

Physical Characteristics

| | |
|----------------|--|
| Case Material | Potting product: Black plastic; flame-retardant and heat-resistant (PM-9630) |
| Dimension | 25.00 mm x 25.00mm x 5.00mm |
| Weight | 6.4g(Typ.) |
| Cooling Method | Free air convection |

Note: * The product can only be reflow welded twice in actual use

Insertion Loss Specifications



EMC Characteristics

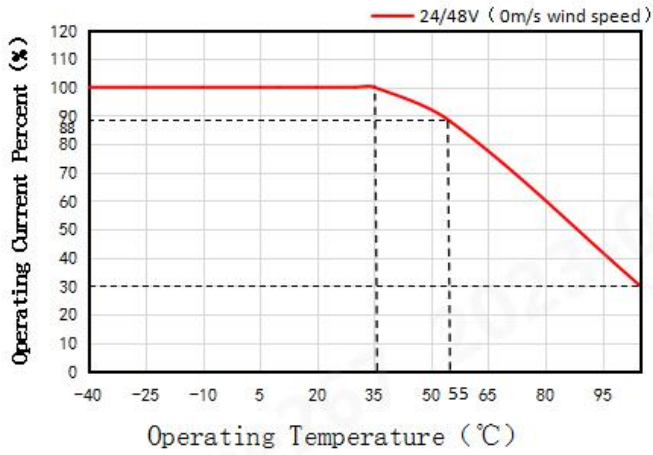
| | | | | |
|-----|-----------------|-------------------------|---|---|
| EMI | CE | GJB151 | CE102 | Matching JVRF24_DD-50WR4 (See figure 1-①) |
| | | CISPR32/EN55032 | Class B | Matching URB24_LD-60WR3 (See figure 2-①) |
| EMS | ESD | IEC/EN61000-4-2 | Contact ±6kV | perf. Criteria A |
| | EFT | IEC/EN61000-4-4 | ±2KV 100KHz | perf. Criteria B |
| | | | | Matching JVRF24_DD-50WR4 (See figure 1-②) |
| | Surge | IEC/EN61000-4-5 | Line - Line ±2kV Line - PE ±2kV | perf. Criteria A |
| | | | | Matching URB24_LD-60WR3 (See figure 2-②) |
| | | | | perf. Criteria B |
| CS | IEC/EN61000-4-6 | 0.15MHz-80MHz 10V r.m.s | Matching JVRF24_DD-50WR4 (See figure 1-②) | |
| | | | Matching URB24_LD-60WR3 (See figure 2-②) | |
| RS | IEC/EN61000-4-3 | 10V/m | perf. Criteria A | |
| | | | | Matching URB24_LD-60WR3 (See figure 2-②) |

Note: Matching FI-B10T-R2 to the front end of the URB24_LD-60WR3、JVRF24_DD-50WR4 DC/DC power supply can make the power module meet above

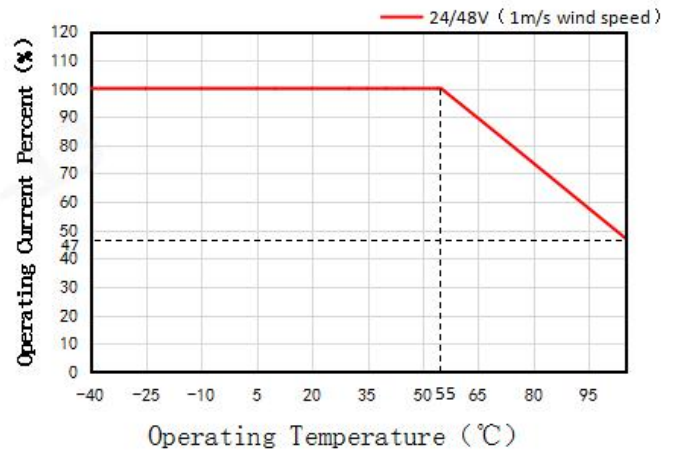
EMC characteristics.

Product Typical Curve

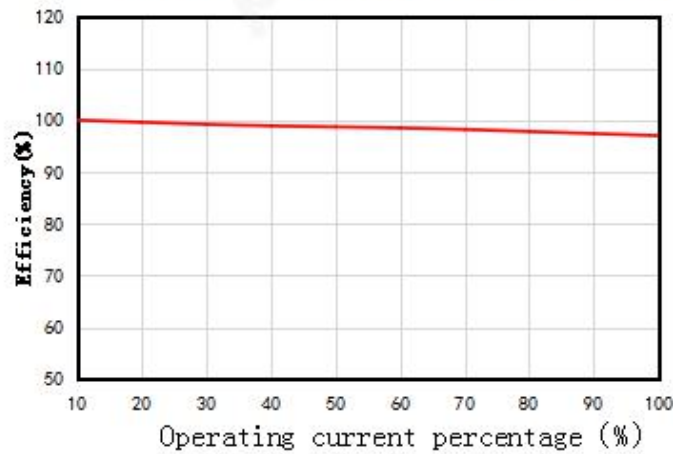
Temperature Derating Curve



Temperature Derating Curve



Efficiency VS Operating Current



Note: This product is suitable for applications using natural air cooling; for applications in closed environment please consult factory or one of our FAE.

Design Reference

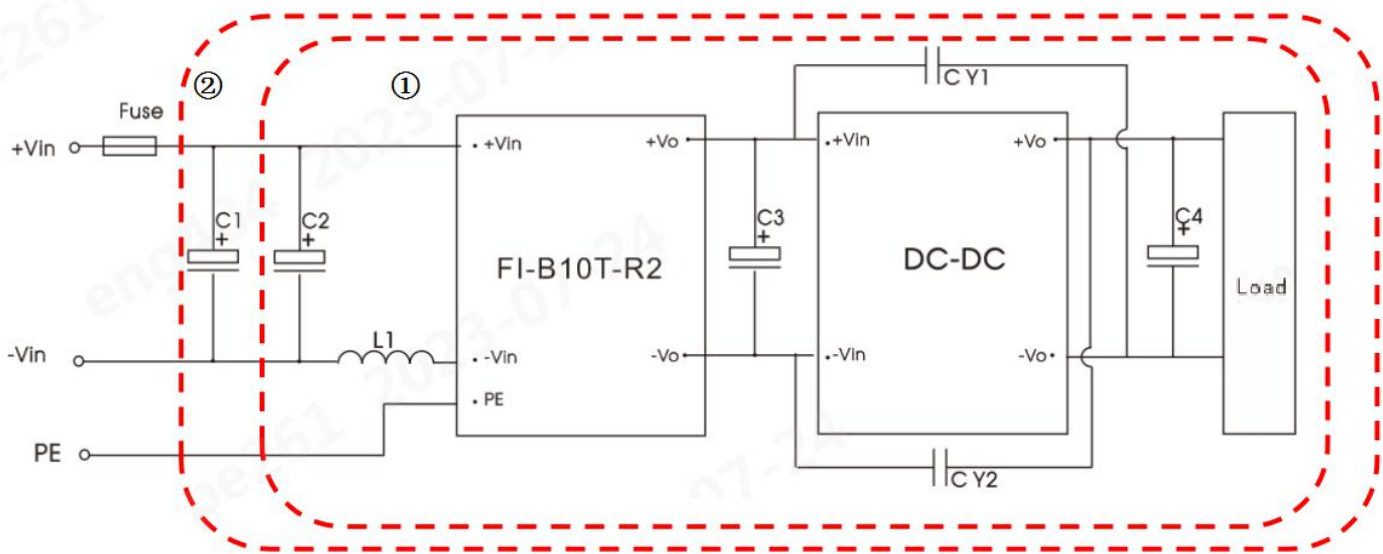


Fig.1

| Components | Value |
|------------|--|
| Fuse | Required.The Fuse must be selected in accordance with the specified input current of the corresponding power converter |
| DC-DC | Power supply module |
| C1、 C2 | 680uF/100V |
| L1 | 22uH (chip inductor) |
| C3 | 330uF/100V |
| C4 | 220uF/50V |
| CY1、 CY2 | Y2/222M |

Notes: 1.Matching Mornsun JVRF24_DD-50WR4 series.
 2.The PE lines connect or not connect.
 3.Figure 1-① is used for CE test , Figure 1-② is used for EMS test , choose according to demand.

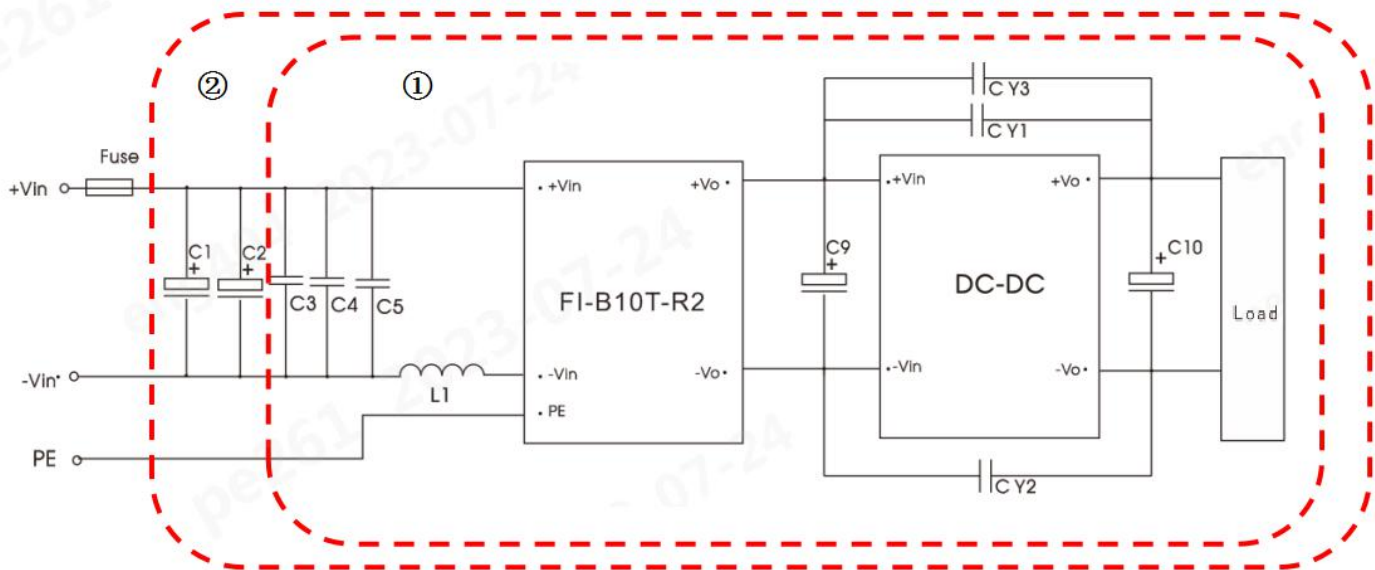
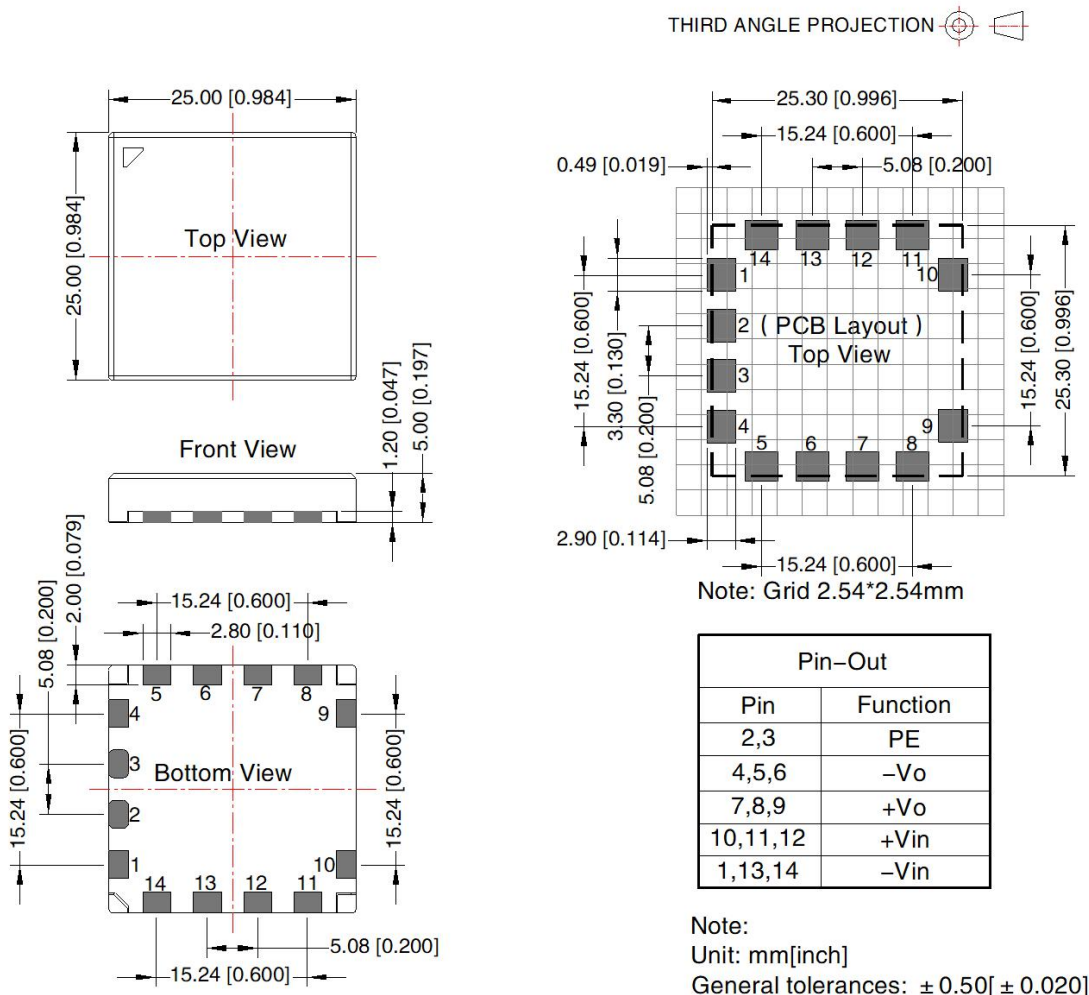


Fig.2

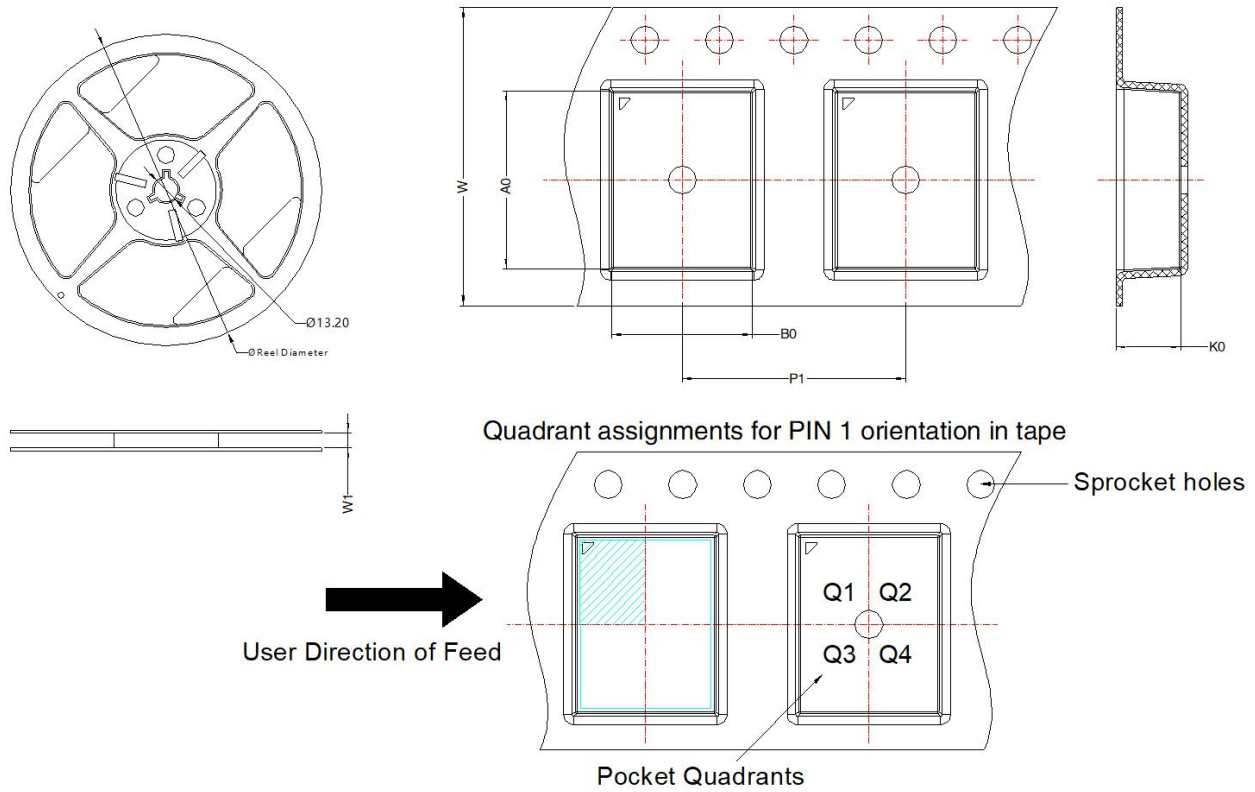
| Components | Value |
|-------------|--|
| Fuse | Required.The Fuse must be selected in accordance with the specified input current of the corresponding power converter |
| C1、C2 | 680uF/100V |
| C3、C4、C5 | 475k/100V |
| L1 | 2.2uH (chip inductor) |
| C9 | 330uF/100V |
| CY1、CY2、CY3 | Y1/102M |
| C10 | 100uF/50V |

Notes: 1.Matching Mornsun URB24_LD-60WR3 series.
 2.The PE lines connect or not connect.
 3.Figure 2-① is used for CE test , Figure 2-② is used for EMS test , choose according to demand.

Dimensions and Recommended Layout



PACKAGE DIAGRAM



| Device | Package Type | Pin | MPQ | Reel Diameter (mm) | Reel Width W1 (mm) | A0 (mm) | B0 (mm) | K0 (mm) | P1 (mm) | W (mm) | Pin1 Quadrant |
|------------|--------------|-----|-----|--------------------|--------------------|---------|---------|---------|---------|--------|---------------|
| FI-B10T-R2 | 25x25 | 14 | 270 | 180.0 | 44.4 | 26.08 | 26.08 | 6 | 36 | 44 | Q1 |

Note:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220631;
2. Unless otherwise specified, data in this datasheet should be tested under the conditions of $T_a=25^{\circ}\text{C}$, humidity < 75%RH with nominal input voltage and rated load;
3. All index testing methods in this datasheet are based on our company corporate standards;
4. We can provide product customization service, please contact our technicians directly for specific information;
5. Products are related to laws and regulations: see "Features" and "EMC";
6. 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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