

# P\_FT-1W

unregulated single output fixed input DCDC



## Series

| Series  | Working temp | Isolated | Package |
|---------|--------------|----------|---------|
| P_FT-1W | -40°C~+125°C | 3000VDC  | DFN14   |

## Features

- ◆ Efficiency 83%
- ◆ Isolation Vol: 3000VDC
- ◆ Housing material UL94 V-0
- ◆ Continuous SCP
- ◆ Input voltage can't be over  $\pm 10\%$  range



RoHS



## Application

- ◆ Isolated for communication BUS
- ◆ Digital and analog signal isolation
- ◆ IO signal isolation
- ◆ normal low frequency analog signal isolation
- ◆ DCS system, instruments
- ◆ .....

## Molde Nr.

| Part Nr.   | Rated input voltage<br>(range)<br>(VDC) | output                 |                      |                     | Full load effici,<br>(%,Min/Typ) | Max capative load<br>( $\mu$ F) |
|------------|-----------------------------------------|------------------------|----------------------|---------------------|----------------------------------|---------------------------------|
|            |                                         | rated voltage<br>(VDC) | Min. current<br>(mA) | Max.current<br>(mA) |                                  |                                 |
| P0505FT-1W | 5<br>(4.5-5.5)                          | 5                      | 20                   | 200                 | 81/83                            | 1800                            |

## Limit characteristics

| Parameters                                   | Conditions | Min.                                                | Typ. | Max | unit |
|----------------------------------------------|------------|-----------------------------------------------------|------|-----|------|
| Input surge voltage <sup>(1)</sup> (1s, max) | 5VDC input | -0.7                                                | --   | 8.5 | VDC  |
| Reflow temperature                           |            | peak temp. Tc $\leq$ 245°C, max. 60s for over 217°C |      |     |      |
| Hot Swap                                     |            | Negative                                            |      |     |      |

## Input characteristics

| Parameters                      | condition | Min.      | typ.   | max    | unit |
|---------------------------------|-----------|-----------|--------|--------|------|
| No load/full load input current |           | --        | 10/235 | 15/247 | mA   |
| input filter                    | --        | capacitor |        |        |      |

**Output characteristics**

| Parameters                    | conditions                    | Min.                             | typ.      | max        | unit                  |
|-------------------------------|-------------------------------|----------------------------------|-----------|------------|-----------------------|
| Line regulation               | input voltage $\pm 1\%$ range | --                               | $\pm 1.2$ | $\pm 1.5$  | --                    |
| load regulation               | load 10%—100% range           | --                               | 7         | 15         | %                     |
| Temperature drift coefficient | 100% full load                | --                               | --        | $\pm 0.03$ | %/ $^{\circ}\text{C}$ |
| Ripple & noise                | 20MHz band                    | --                               | 50        | 100        | mVp-p                 |
| output voltage accuracy       |                               | see output voltage & load curves |           |            |                       |
| SCP                           |                               | continuous ,self recover         |           |            |                       |

**General characteristics**

| Parameters           | Conditions                                | Min                                              | typ. | Max | unit       |
|----------------------|-------------------------------------------|--------------------------------------------------|------|-----|------------|
| Isolated voltage     | input - output, <60s, leakage <1mA        | 3000                                             | --   | --  | VDC        |
| insulation resistors | input - output, insulation voltage 500Vdc | 1                                                | --   | --  | G $\Omega$ |
| isolation capacitor  | input - output , 100kHz, 0.1V             | --                                               | 20   | 35  | pF         |
| switching frequency  | rated input voltage , 100% load           | 270                                              | 300  | 330 | kHz        |
| MTBF                 | MIL-HDBK-217F@25 $^{\circ}\text{C}$       | 3500                                             | --   | --  | k hours    |
| dimension            |                                           | 9.00x7.00x3.00mm                                 |      |     |            |
| Housing              |                                           | Black epoxy molding compound, UL94 V-0 compliant |      |     |            |

**Environmental**

| Parameters         | Conditions               | Min.        | typ. | max  | unit               |
|--------------------|--------------------------|-------------|------|------|--------------------|
| Working temp.      | see derating curve       | -40         | --   | +125 | $^{\circ}\text{C}$ |
| Storage temp.      |                          | -55         | --   | +125 |                    |
| Housing temp. rise | Ta=25 $^{\circ}\text{C}$ | --          | 20   | 30   |                    |
| Storage humidity   | No condensation          | --          | --   | 95   | %                  |
| cool method        |                          | Natural air |      |      |                    |
| MSL <sup>(1)</sup> |                          | 3           |      |      |                    |

(1) Notes: After the incoming material inspection, the product needs to be stored in a drying cabinet; the integrity of the packaging should be checked before the product is mounted on the machine; the length of time the product is used in the workshop must be controlled according to the MSL3 level. Within the service life of the workshop, if the product is not used up after unpacking, it must be re-placed with a new humidity indicator card and desiccant for vacuum packaging, and then stored in a drying cabinet. For products that have exceeded the service life of the workshop and have not been used up, they must be baked before use; the maximum temperature of the product reflow soldering must be  $\leq 245^{\circ}\text{C}$ .

**EMC**

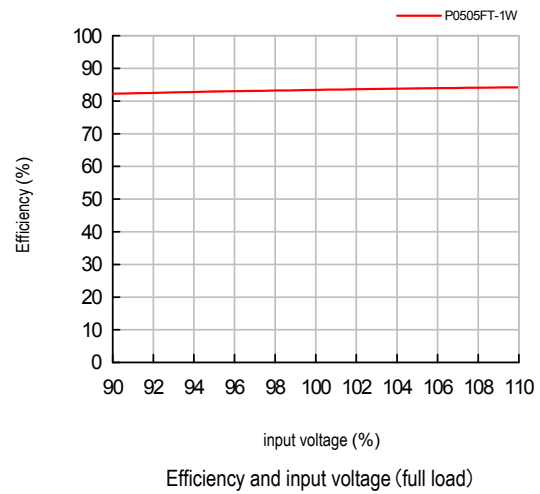
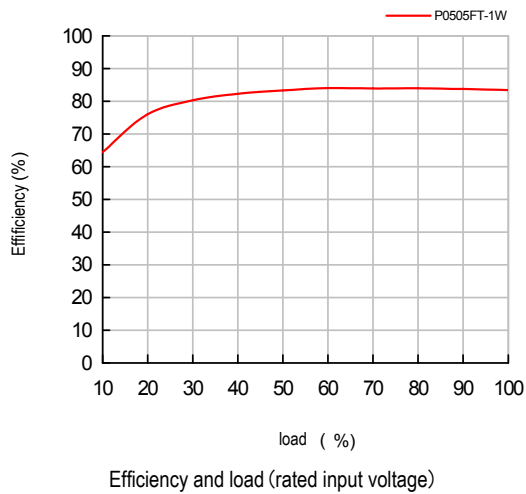
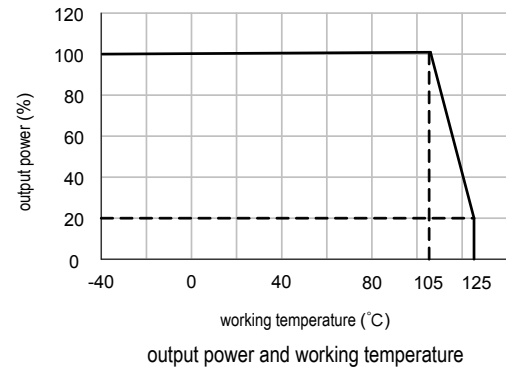
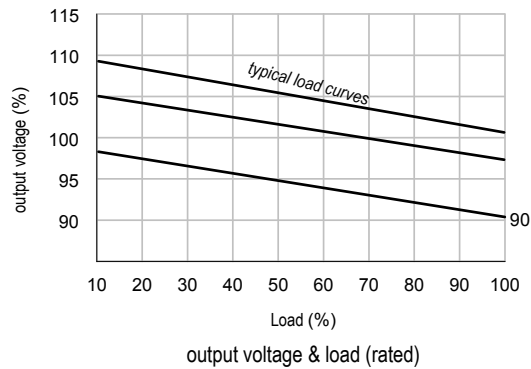
|     |     |                                               |                 |
|-----|-----|-----------------------------------------------|-----------------|
| EMI | CE  | CISPR32/EN55032 CLASS B (see fig 2)           |                 |
|     | RE  | CISPR32/EN55032 CLASS A / CLASS B (see fig 2) |                 |
| EMS | ESD | IEC/EN61000-4-2 Contact $\pm 6\text{kV}$      | Perf.Criteria B |

Notes: (1) The input voltage cannot exceed the specified range, otherwise it may cause permanent and irreversible damage.

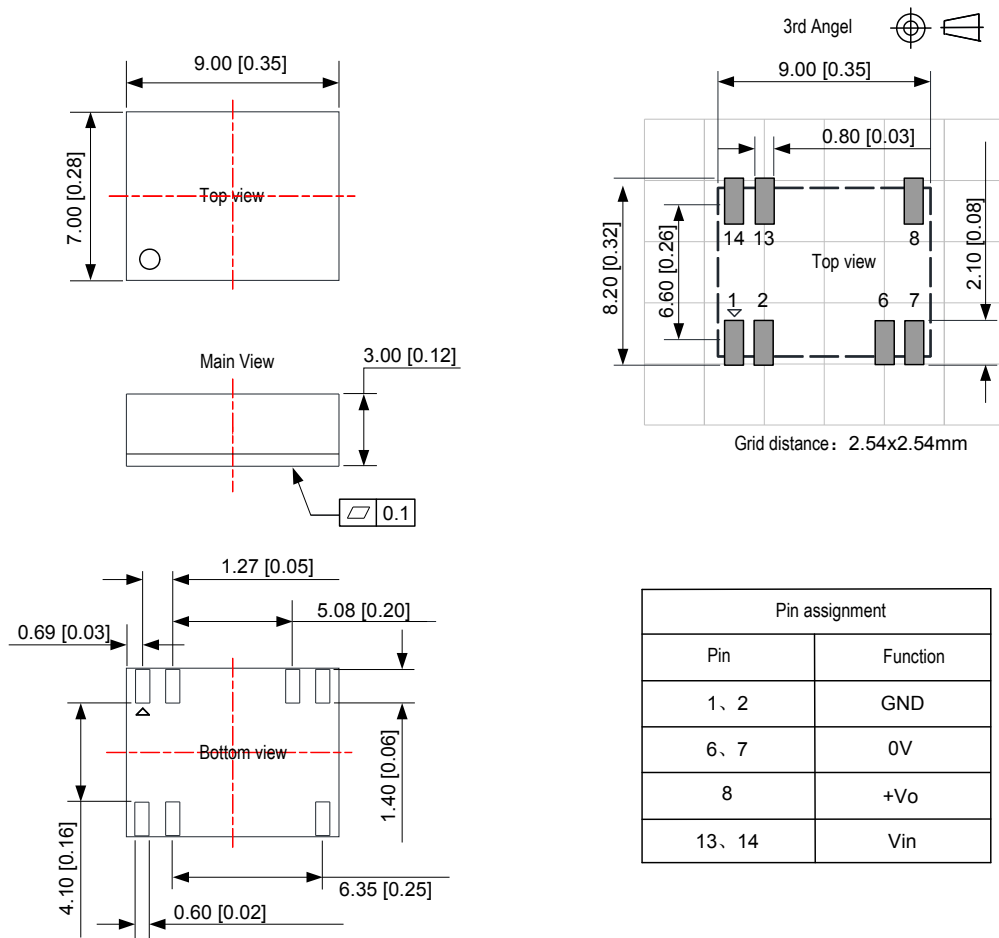
(2) Unless otherwise specified, the parameters in this manual are measured at 25 $^{\circ}\text{C}$ , humidity 40%~75%, input nominal voltage and output pure resistance mode.

(3) Ripple and noise measured by docking test method.

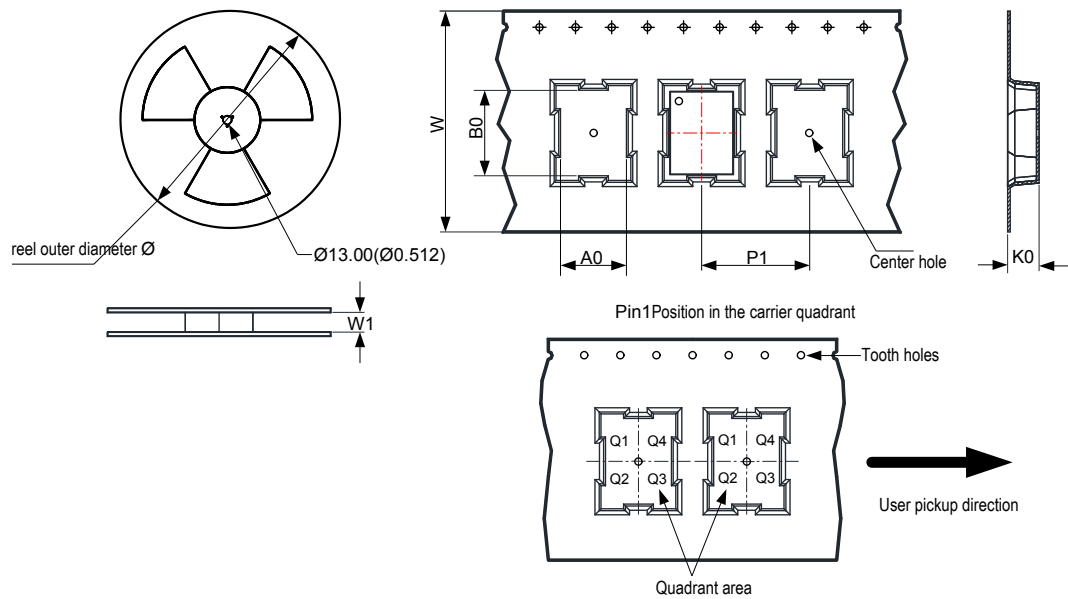
## Characteristics curves



## Appearance and Dimension



note:  
unit: mm(inch)  
tolerance:  $\pm 0.15\text{mm}$ [0.006inch].



| Part nr.   | package | Pins | quantity (pcs) | carton qty (pcs) | outer diameter $\varnothing$ (mm) | Scroll Width W1 (mm) | A0 (mm) | B0 (mm) | K0 (mm) | P1 (mm) | W (mm) | Pin1 Quadrant |
|------------|---------|------|----------------|------------------|-----------------------------------|----------------------|---------|---------|---------|---------|--------|---------------|
| P0505FT-1W | SMD     | 7    | 1500           | 3000             | 330.0                             | 24.5                 | 7.3     | 9.3     | 3.65    | 12.0    | 24     | Q1            |

## Typical application

### 1. Application circuit

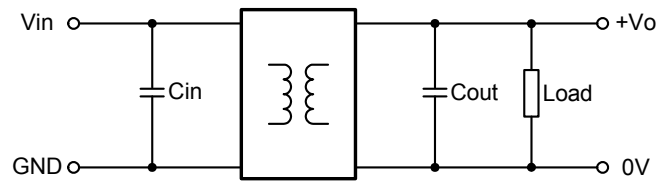


fig 1 application circuit

### 2. filter capacitor

Please refer to the values in Table 1 for the selection of external filter capacitors. The capacitor is selected based on ESR less than  $1\Omega$  (at a frequency of 100kHz). Ceramic or electrolytic capacitors are recommended, and tantalum capacitors are not recommended. The input and output filter capacitor values cannot be too large. The selected input capacitor value must be less than the maximum capacitive load of the front-end power supply system, and the selected output capacitor value must be less than the maximum capacitive load of this product, otherwise it is likely to cause startup problems.

Table 1 capacitor value

| Vin(VDC) | Cin( $\mu$ F) | Vo(VDC) | Cout( $\mu$ F) |
|----------|---------------|---------|----------------|
| 5        | 4.7           | 5       | 4.7            |

### 3. EMC circuit (CLASS B)

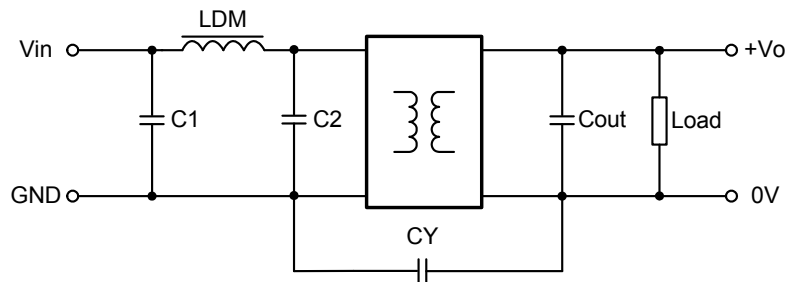


Fig 2 EMC recommendation circuit

Table 2 EMC recommendation value

| EMC | Vin(VDC) | C1/C2( $\mu$ F) | CY( $\mu$ F) | LDM( $\mu$ H) | Cout( $\mu$ F) |
|-----|----------|-----------------|--------------|---------------|----------------|
| EMI | 5        | 4.7             | 1nF/4KVDC    | 6.8           | Table 1        |

**Note:**

1. The withstand voltage of capacitors C1 and C2 is selected according to the "input impulse voltage".
2. The maximum current of inductor LDM is selected according to the actual input current. It is recommended to select 1.5 times the actual current.
3. It is recommended that the circuit wiring should not be too long and should be as close to the module as possible.

### 4. Load requirement

In order to ensure that the module can operate efficiently and reliably, it is recommended that the output load should be between 10% and 100% of the rated load. It is not recommended to operate at a load lower than 10% for a long time, otherwise the performance of some products may not meet the performance indicators in this manual. If the output load is too light, please connect a dummy load resistor in parallel at the output end. The sum of the dummy load resistor power plus the actual load power is  $\geq 10\%$  load.

### 5. Protecton

Under normal conditions, this series of power modules has no overcurrent protection, and an overcurrent protector can be added at the input end. For outputs that require voltage regulation, overvoltage and overcurrent protection, the simplest method is to connect a linear regulator with overcurrent protection at the output end.