Product Manual

P_FT-1W

Data Sheet

Constant voltage input,isolated no-regulated single output



RoHS

UL 62368-1 EN 62368-1 IEC 62368-1 BS EN 62368-1

Product Series

Product Series	Temperature Range	Isolated Voltage	Package
P_FT-1W	-40℃～+125℃	3000VDC	DFN14

Features

- Efficiency up to 83%
- Isolated voltage 3000VDC
- Sustainable short circuit
- No additional radiator
- The shell meet the UL94 V-0 standard
- Unsuitable for the occasion where the fluctuation range of input voltage is greater than ±10%

Applications

- Communication bus isolation
- Digital and analog signal isolation
- IO signal power supply isolation
- General low frequency analog circuit
- DCS systems,instruments and meters
- ……

Product Model

Part Number	Certification	Input Nominal Voltage (Voltage Range) (VDC)	Output			Full Load Efficiency (%,Min/Typ)	Maximum Capacitive Load (μF)
			Nominal Voltage (VDC)	Min Current (mA)	Max Current (mA)		
P0505FT-1W	UL/EN/IEC/BS EN	5 (4.5-5.5)	5	20	200	81/83	1800

Limit Characteristics

Parameter	Conditions	Min	Typ	Max	Unit
Input Surge Voltage (1s，max)	5VDC input	-0.7	--	9	VDC
Reflow Soldering Temperature		The peak temperature Tc≤245℃, and the maximum time above 217℃ is 60s			
Hot Plug		Unavailable			

Input Characteristics

Parameter	Conditions	Min	Typ	Max	Unit
No Load/Full Load Input Current		--	10/240	15/247	mA
Input Filter	--	Capacitor filter			

Output Characteristics

Parameter	Conditions	Min	Typ	Max	Unit
Line Regulation	Input voltage changes within ±1%	--	±1.2	±1.5	--
Load Regulation	Load is from 10% to 100%	--	7	15	%
Temperature Drift Coefficient	100% load	--	--	±0.03	%/℃
Output Ripple& Noise	20MHz bandwidth	--	50	100	mVp-p
Output Voltage Accuracy		See output voltage and load curve			
Output Short-Circuit Protection		Sustainable short circuit, self-recovery			

General Characteristics

Parameter	Conditions	Min	Typ	Max	Unit
Isolation Voltage	Input-output, time 1 minute, leakage current less than 1mA	3000	--	--	VDC
Isolation Resistance	Input-output,isolation voltage 500VDC	1	--	--	GΩ
Isolation Capacitance	Input-output,100kHz,0.1V	--	20	35	pF
Switching Frequency	Nominal input voltage, 100% load	270	300	330	kHz
MTBF	MIL-HDBK-217F@25℃	3500	--	--	k hours
Package Size	--	9.00x7.00x3.00mm			
Package Material	--	Black epoxy molding compound, comply with UL94V-0 standard			

Environmental Characteristics

Parameter	Conditions	Min	Typ	Max	Unit
Operating Temperature	See the ambient temperature derating curve for details	-40	--	+125	℃
Storage Temperature		-55	--	+125	
Casing Temperature Rise	Ta=25℃	--	20	30	
Cooling Method		Natural air cooling			
Vibration		5-200Hz, 5G, 0.75mm. along X, Y and Z			
Moisture Sensitivity Rating (MSL)(1)		3			

Notes:(1)Precautions in production: After incoming inspection, the products shall be put into a drying cabinet for storage; Check the integrity of the package before the product is mounted on the machine; The exposure of products in the workshop for a long time should be controlled according to MSL3 grade. During the service life of the workshop, if the products are not used up after unpacking, new humidity indicator cards and desiccant shall be put in again for vacuum packaging, and then put in a drying cabinet for storage. For products that are not used up beyond the service life of the workshop, they shall be baked before use. The highest temperature of product reflow soldering needs to be ≤245℃. For details of the above production precautions and reflow curve, please refer to the SiP Product Instruction.

EMC Characteristics

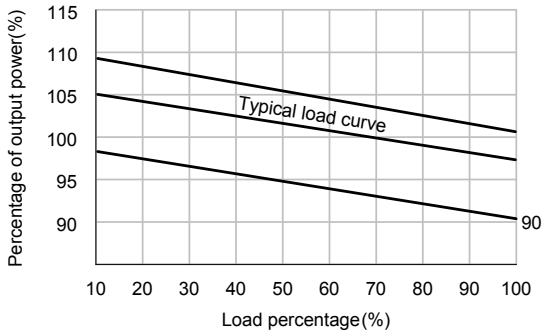
EMI	CE	CISPR32/EN55032 CLASS B (See Figure 2)	
	RE	CISPR32/EN55032 CLASS B (See Figure 2)	
EMS	ESD	IEC/EN61000-4-2 Contact±6kV	Perf.Criteria B

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

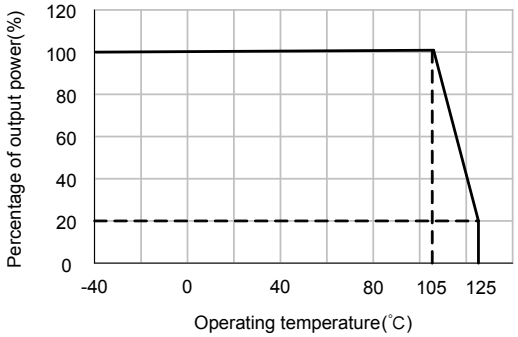
(2)Unless specified specially, parameters in this manual are measured under the conditions of 25℃, 40%~75% humidity, input nominal voltage and rated output load.

(3)Output ripple & noise tested by direct-probe method.

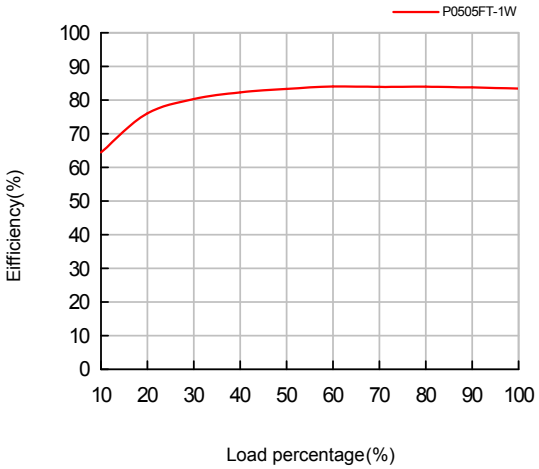
Product Characteristic Graph



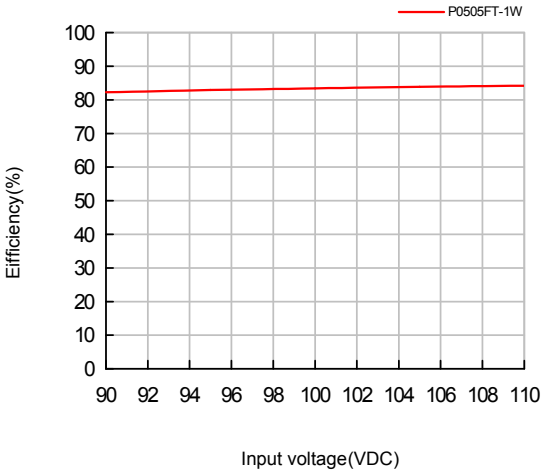
Out voltage VS load graph
(nominal input voltage)



Curve of relationship between output
power and working temperature

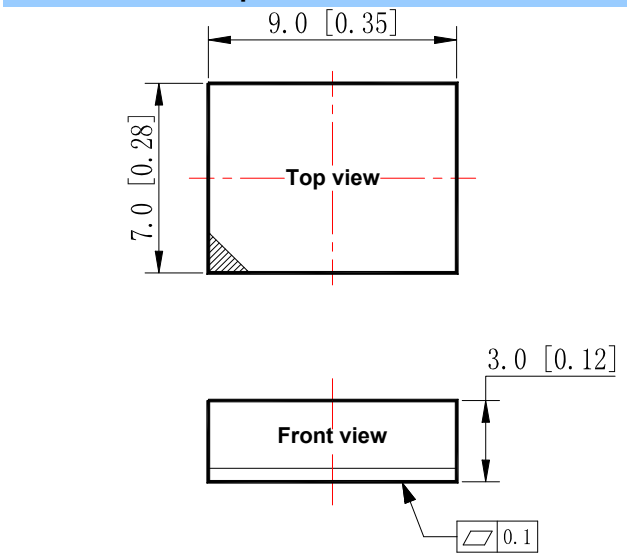


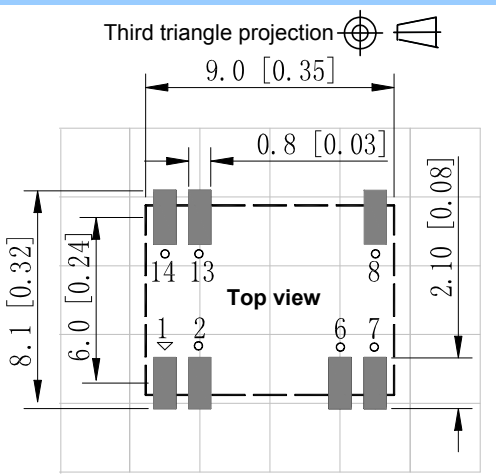
Efficiency VS load(Nominal input voltage)



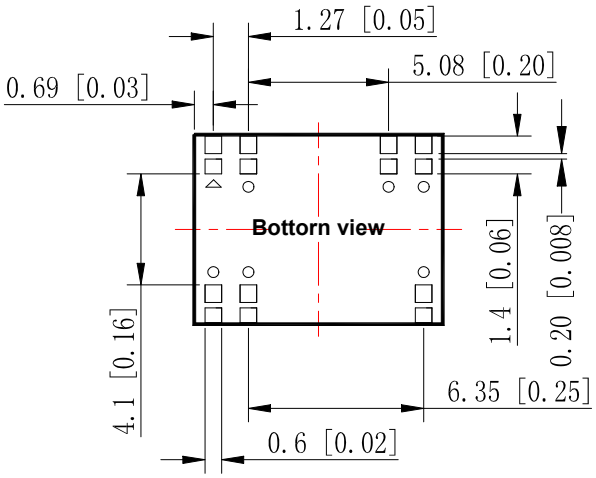
Eifficiency VS input voltage(Full load)

Outline and Footprint Dimensions



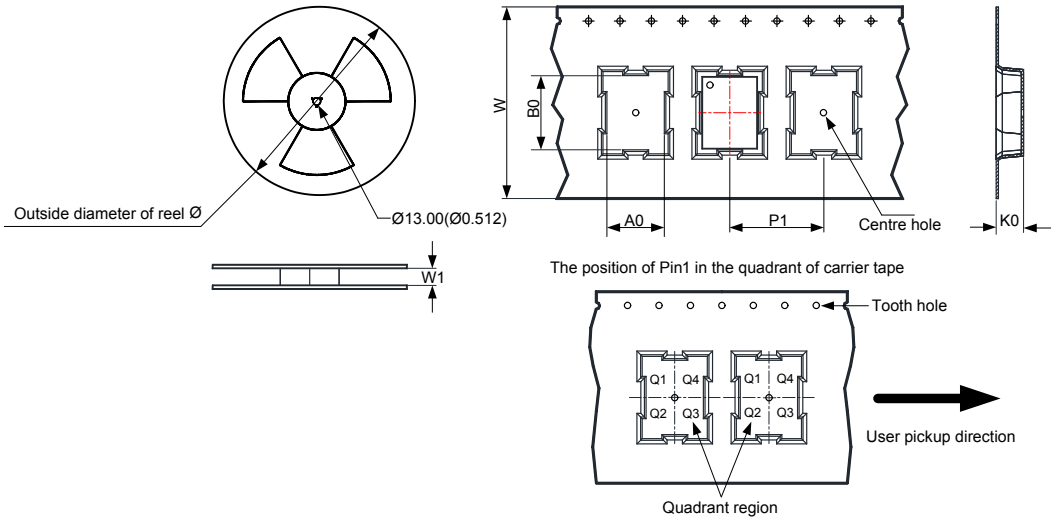


Grid distance：2.54×2.54mm



Pin mode	
Pin	Function
1、2	GND
6、7	0V
8	+Vo
13、14	Vin

Notes：
Unit：mm(inch)
Unlabeled tolerance：±0.15mm(0.006inch)



Model	Package	Pins	Qty per reel (pcs)	Qty per package (pcs)	Outside diameter of reel Ø (mm)	Scroll width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
P0505FT-1W	SMD	7	400	400	180.00	24.5	7.3	9.3	3.65	12.0	24.0	Q1

Circuit Design and Application

1. Recommended circuit

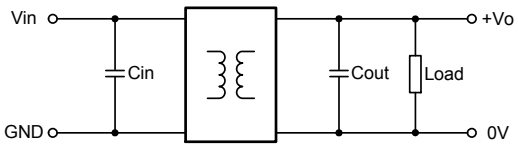


Figure 1 Recommended circuit

2. Filter capacitor

For the selection of filter capacitor, please refer to values in Table 1. If the ESR is less than 1Ω (when the frequency is 100KHz), the ceramic or electrolytic capacitor is recommended to use, and the tantalum capacitor is not recommended to use. The value of input and output filter capacitor can not be too large, The selected input capacitance must be less than the maximum capacitive load of the preceding power supply system, and the selected output capacitance must be less than the maximum capacitive load of this product.otherwise it may cause startup problem.

Table 1 The reference value of the external capacitor

Vin(VDC)	Cin(μF)	Vo(VDC)	Cout(μF)
5	4.7	5	4.7

3. EMC typical recommended circuit(CLASS B)

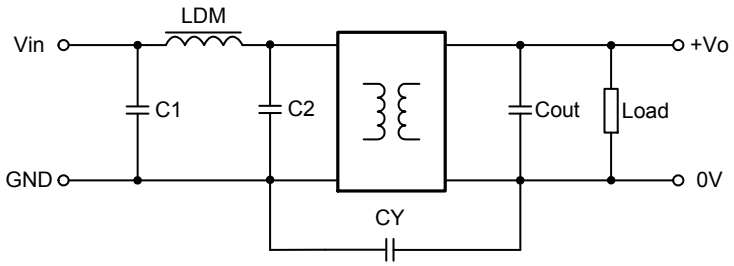


Figure 2 EMC recommended circuit diagram

Table 2 EMC recommended circuit external parameter values

EMC	Vin(VDC)	C1/C2(μF)	CY(μF)	LDM(μH)	Cout(μF)
EMI	5	4.7	1nF/4KVDC	6.8	Refer to table 1

Note：

1.The withstand voltage values of capacitors C1 and C2 are selected according to "input impulse voltage".

2.The maximum current of inductance LDM is selected according to the actual input current, and it is recommended to select 1.5 times the actual current.

3.It is recommended that the circuit wiring should not be long and be as close as possible to the module.

4. Load requirements

In order to ensure efficient and reliable operation of the module, it is recommended that the output load should be between 10% and 100% of the rated power. It is not recommended to run for a long time in the case of the load is less than 10%, otherwise part of the product performance can't conform to the performance index of this manual. If the output load is too light, place a dummy load resistance on output terminal in parallel. The sum of the fake load resistance power plus the actual load power is greater than 10% of the load.

5. Protection function

Under normal conditions, this series of power modules have no over-current protection function.An overcurrent protector can be added at the input terminal. The simplest way to protect the output from over voltage and over current is to connect a linear regulator with over current protection at the output.

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