Typical Features

- Wide input voltage range (4:1), Output Power 10W
- Transfer Efficiency up to 88%
- Stand-by Power Consumption as low as 0.05W
- Output super-fast start up
- Continuous Short Circuit protection, Self-recovery
- Protections: Input under voltage, output short circuit, over current
- Switching Frequency 450KHz
- Isolation Voltage 2250 VDC
- Operating Temperature: -40°C~+85°C
- Good EMI performance
- International standard pin-out

Application Field

FK10-XXSXXE2C3 *The newly developed DC-DC module power supply for our company, SIP package, 10W output power, ultra-wide voltage input range, ultra-low standby power consumption, isolated and regulated single output, can be widely used in industrial control, instrumentation, communication, Electricity, Internet of Things, BMS and other fields.*

Typical Product List

Certificate	Part no.	Input Voltage Range (VDC)		Output Voltage/Current (Vo/Io)		Input Current (mA) (Nominal Voltage)		Max. Capacitive Load	Ripple & Noise		Efficiency (%)output full load, I/P nominal voltage	
									mVp-p			
		Nominal	Range	Voltage (VDC)	Current (mA) MAX.	Full load typ.	No Load typ.	uF	Typ.	Max	Min.	Typ.
CE RoHS	FK10-18S3V3E2C3	24	9-36	3.3	2400	478	33	2200	100	150	82	84
	FK10-18S05E2C3	24	9-36	5	2000	467	40	2200	100	150	85	87
	FK10-18S09E2C3	24	9-36	9	1111	473	10	680	100	150	85	87
	FK10-18S12E2C3	24	9-36	12	834	474	10	470	100	150	86	88
	FK10-18S15E2C3	24	9-36	15	667	479	10	330	100	150	86	88
	FK10-18S24E2C3	24	9-36	24	416	468	10	220	100	200	86	88

1. The maximum capacitive load refers to the capacity of the capacitor that is allowed to be connected when the power supply is fully loaded. If the capacity is exceeded, the power supply may not be able to start;
2. In order to reduce the no-load power consumption and improve the light-load efficiency, the IC works in the state of frequency jitter at no-load and light-load, and the output cannot be no-load. At least an electrolytic capacitor with a 10% load or a high-frequency resistance above 470uF is required, otherwise Will cause the output voltage ripple to increase;
3. With "C", it has control pin function;

Input Specification

Stand-by Consumption	0.05 W(TYP)	
Input Filter	capacitor filter	
Input Under-Voltage Protection	5~9VDC@ FK10-18SXXE2 input	
CTRL*	Module turn-on	CTRL suspended or TTL high level (3.5-12VDC)
	Module turn-off	CTRL connect to GND or low level (0-1.2VDC)
	Input current when switched off	5mA (TYP)

Note: *The voltage of CTRL pin is relative to GND pin.

Output Specification

Output Voltage Accuracy	Full voltage full load	Vo	±2.0%
Line Regulation	Nominal load, full voltage range	Vo	±0.5%
Load regulation	10% ~ 100% nominal load	Vo	±1.0%
Ripple & Noise	Nominal load, nominal voltage, Twisted Pair Test Method, 20M Hz Bandwidth	100mVp-p (TYP)	150mVp-p (MAX)
Output Over-load Protection	110%~230%		
Output Short circuit Protection	self-recovery after release of short circuit		
Dynamic Response	25% nominal load step △Vo/△t	3.3V/5V Output	±5% typ., ±8% max /500us
		Other voltage output	±3% typ., ±5% max /500us
Output Voltage Adjustment	No adjustment		
Turn-on delay time	Typical	100ms	
Output Turn-on Overshoot Voltage		≤10%Vo	

General Specification

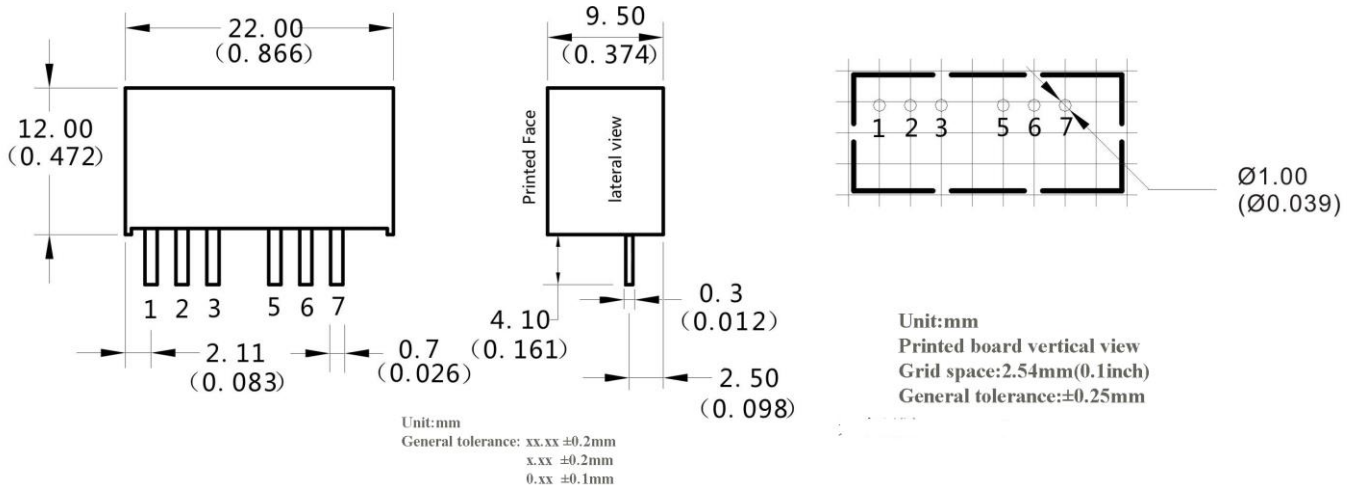
Switching Frequency	Typical	450KHz
Operating Temperature	Refer to Temperature Derating Curve	-40℃ ~ +85℃
Storage Temperature		-55℃ ~ +125℃
Max Case Temperature	Within Operating Curve	+105℃
Relative Humidity	No condensing	5%~95%
Case Material		Black flame-retardant and heat-resistant plastic
Cooling Method		Natural cooling

Isolation Voltage	Input to Output	2250Vdc ≤0.5mA / 1min
MTBF	MIL-HDBK-217F@25℃	$2X10^5$Hrs
Product Weight	Average	5g

EMC Characteristics

Total Items		Sub Items	Test Standard	Class
EMC	EMI	CE	CISPR22/EN55032	CLASS B (see recommended circuit photo②)
		RE	CISPR22/EN55032	CLASS B (see recommended circuit photo②)
	EMS	RS	IEC/EN61000-4-3	10V/m Perf.Criteria B (see recommended circuit photo2)
		CS	IEC/EN61000-4-6	3Vr.m.s Perf.Criteria B (see recommended circuit photo2)
		ESD	IEC/EN61000-4-2	Contact ±6KV Perf.Criteria B
		Surge	IEC/EN61000-4-5	±2KV Perf.Criteria B (see recommended circuit photo1)
		EFT	IEC/EN61000-4-4	±2KV Perf.Criteria B (see recommended circuit photo1)
		Voltage dips, short interruptions	IEC/EN61000-4-11	0%~70% Perf.Criteria B

Packing Dimension



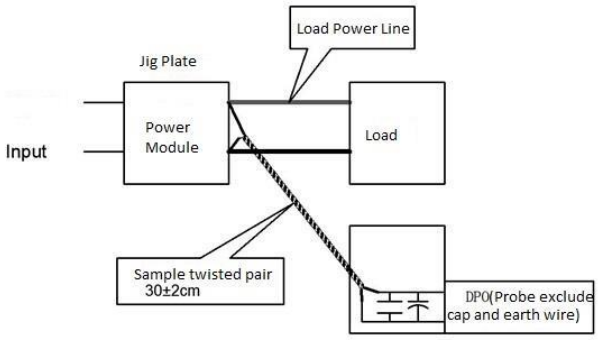
Packing Code	L x W x H
E	22X 9.5X12 mm

Pin out Specifications

Single output (S)	1	2	3	5	6	7
	-Vin	+Vin	CTRL	NC	+Vout	GND

Ripple& Noise Test:（Twisted Pair Test Method 20MHz bandwidth）

1.12# twisted pair to connect, Oscilloscope bandwidth set as 20MHz, 100M bandwidth probe, terminated with 0.1uF polypropylene capacitor and 10uF high frequency low resistance electrolytic capacitor in parallel, oscilloscope set as Sample pattern.



2. Output Ripple& Noise Test Method:

Input terminal connect to power supply, output terminal connect to electronic load through jig plate, Use 30cm±2 cm sampling line, Power line selected from corresponding diameter wire with insulation according to the flow of output current.

Application reference：

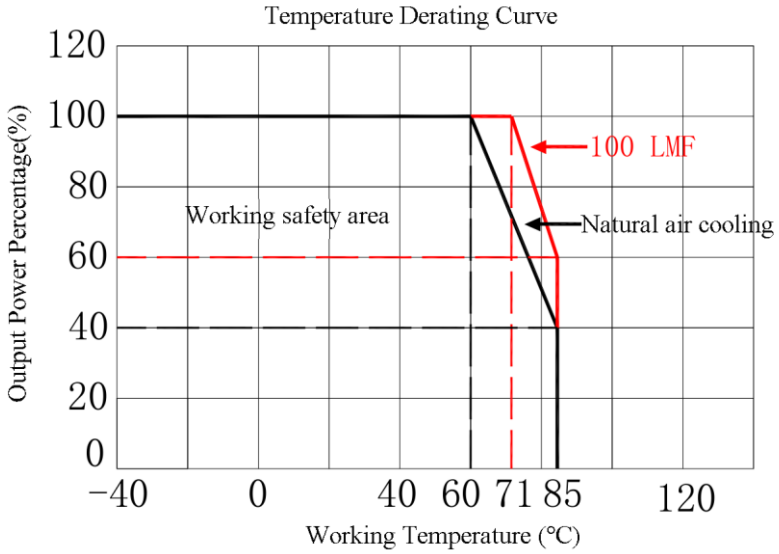
1、It is recommended to output a minimum of 10% load or connect an electrolytic capacitor with a high-frequency resistance above 470uF, otherwise it will increase the output voltage ripple;

2、It is recommended that the load imbalance of dual output products is less than ±5%;

3、The maximum capacitive load is the result of the pure resistance full load condition test;

4、Our company can provide overall power supply solutions, or product customization.

Product characteristic curve

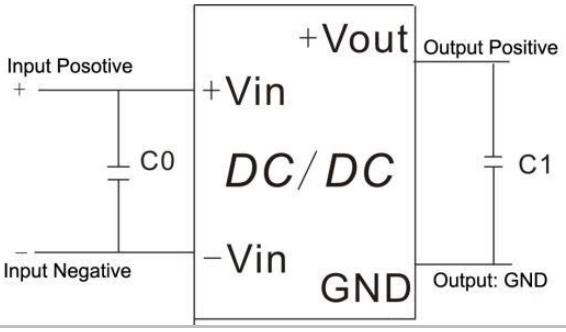


Design reference application

Recommended circuit

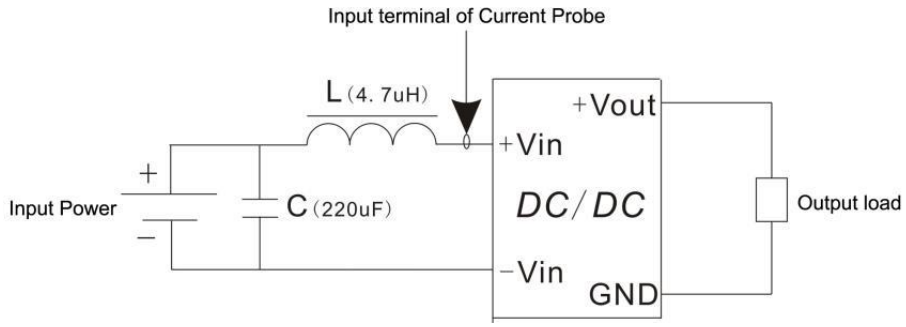
1.DC/DC test circuit：

Normal recommended capacitors:C0:100-220uF; C1:470uF.

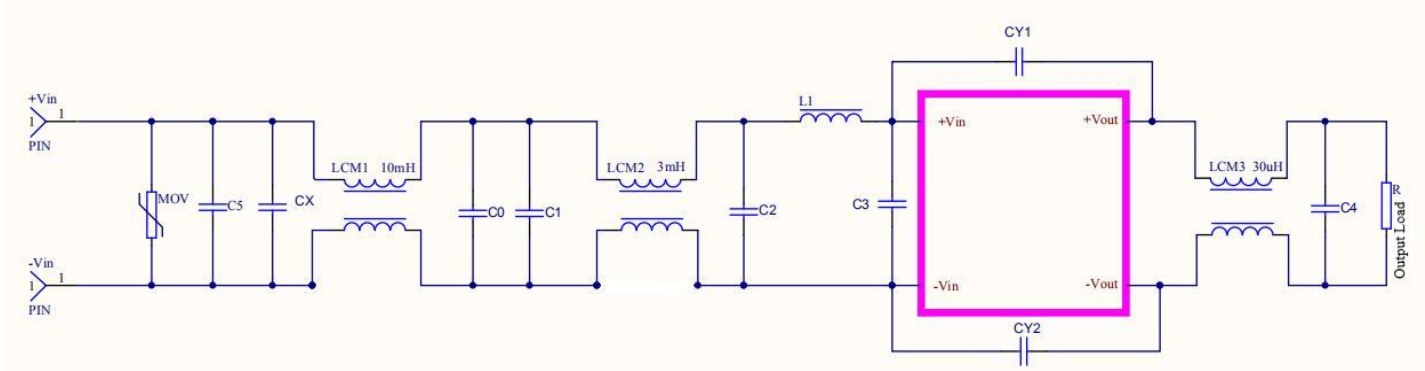


2. Input reflecting ripple current test circuit:

Capacitor C choose low ESR ones, withstand voltage value should be bigger than max input voltage;



3.EMC external recommended circuit:



Recommended Spec:

Component	FK10-18SXXE2 Input
FUSE	According to customer's request
MOV	14D560K
CX	0.47uF
LCM1	10mH
LCM2	3~5mH
C5	1000uF/50V
C0	1uF/100V
C1	220uF/50V
C2,C3	1uF/100V
L1	4.7uH
LCM2	30uH
C4	47uF/50V
CY1,CY2	2.2nF/2000V

Note:

1. The product should be used under the specification range, otherwise it will cause permanent damage to it.
2. If the product worked beyond the load range or below the minimum load, we cannot ensure that the performance of product is in accordance with all the indexes in this manual;
3. Unless otherwise specified, data in this datasheet should be tested under conditions of Ta=25℃, humidity<75% when inputting nominal voltage and outputting rated load(pure resistance load);
4. All index testing methods in this datasheet are based on our Company's corporate standards
5.The performance indexes of the product models listed in this manual are as above, but some indexes of non-standard model products will exceed the above-mentioned requirements, and please directly contact our technician for specific information;
6. We can provide customized product service;
7. The product specification may be changed at any time without prior notice. Please pay attention to the latest manual published on our official website.

