

Typical Features

- ◆ Wide input voltage range (4:1), Output Power 6W
- ◆ Transfer Efficiency up to 90%
- ◆ Stand-by Power Consumption as low as 0.05W
- ◆ Output super-fast start up
- ◆ Continuous Short Circuit protection, Self-recovery
- ◆ Input under voltage, output over voltage, short circuit, over current protection
- ◆ Switching Frequency 300KHz
- ◆ Isolation Voltage: 5000VDC
- ◆ Operating Temperature:-40°C~+85°C
- ◆ Good EMI performance
- ◆ International standard pin-out



Test Condition: Unless otherwise specified, data in the datasheet should be tested under the conditions of inputting nominal voltage, pure resistance rated load and Ta=25°C

Application Field

FD6-XXSXXB2C5 The newly developed DIP standard 2X1 package for our company, 6W output power, ultra-wide voltage 4:1 input range, ultra-low standby power consumption, isolated regulated output, DC-DC module power supply, can be widely used in industrial control, instrumentation, Communications, power, Internet of Things and other fields. When the product is used in a harsh environment with electromagnetic compatibility, please refer to the application circuit given by our company.

Typical Product List

Certificate	Model no.	Input Voltage Range (VDC)		Output Voltage/Current (Vo/Io)		Input Current (mA) Nominal Voltage		Max. Capacitive Load uF	Ripple & Noise		Efficiency (%)@output full load,	
		Nominal	Range	Voltage (VDC)	Current (mA) MAX./Min	Full load typ	No load typ		mVp-p		Min	Typ
									Typ	Max		
-	*FD6-18S3V3B2C5	24	9-36	3.3	1200/0	189	30	8000	50	100	84	87
-	FD6-18S05B2C5	24	9-36	5	1200/0	285	25	5000	50	100	86	88
-	*FD6-18S09B2C5	24	9-36	9	667/0	278	30	2000	50	100	86	88
-	FD6-18S12B2C5	24	9-36	12	500/0	283	3	470	50	100	86	88
-	*FD6-18S15B2C5	24	9-36	15	400/0	278	2	470	50	100	86	88
-	FD6-18S24B2C5	24	9-36	24	250/0	278	2	470	50	100	85	87
-	*FD6-36S3V3B2C5	48	18-75	3.3	1200/0	95	30	8000	50	100	83	86
-	*FD6-36S05B2C5	48	18-75	5	1200/0	142	30	5000	50	100	85	88
-	*FD6-36S09B2C5	48	18-75	9	667/0	139	30	2000	50	100	87	90
-	*FD6-36S12B2C5	48	18-75	12	500/0	139	2	1000	50	100	87	90
-	*FD6-36S15B2C5	48	18-75	15	400/0	139	2	800	50	100	87	90
-	*FD6-36S24B2C5	48	18-75	24	250/0	139	2	500	50	100	87	90

1: "*" are models being developing;

- 2: Max capacitive load is, when the power supply is fully loaded, the max capacity could be connected to output, if exceed, the power supply cannot start-up;
- 3: 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 330uF is required, otherwise it will cause Increased output voltage ripple;
- 4: Due to limited space, the above is only a partial list of products. If you need products other than those listed, please contact the sales department of our company.

Input characteristics

Stand-by Consumption	0.05 W(TYP)	
Input Filter	π filter	
Input Under-Voltage Protection	5~9VDC	FD6-18SXXB2C5 input
	11~18VDC	FD6-36SXXB2C5 input
CTRL *	Module Turn-on	CTRL suspended or connect to TTL high level (2.5-12VDC)
	Module Turn-off	CTRL connect to GND or low level (0-1.2VDC)
	Input current when switched off	5mA (TYP)

Note: *CTRL control pin voltage is relative to the input pin GND.

Output Specification

Output Voltage Accuracy	Full voltage full load	Vo	±2.0%
Voltage 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 Method, 20M Hz bandwidth;	When ≤15% load,	5%Vo mVp-p typ
		When ≥15%load,	50mVp-p typ, 100mVp-p max
Output Over-voltage	110%~200%Vo		
Output Over-load Protection	Min:120%Io , Typ 250%Io		
Output Short circuit	Continuous, Self-recovery		
Dynamic Response	25% nominal load step change $\Delta Vo/\Delta t$	3.3V、5Voutput	±5% typ , ±8% max /500us
		Others output	±3% typ , ±5% max /500us
Output Voltage Adjustment	No adjustment		
Turn-on delay time	Typical	20ms	
Output Turn-on Overshoot Voltage	-	≤10%Vo	

Note: * The test method of ripple & noise adopts twisted pair test method

General Specification

Switching Frequency	Typical	350KHz
Operating Temperature	Refer to Temperature Derating Curve	-40℃ ~ +85℃
Storage Temperature	-	-55℃ ~ +125℃
Max housing Temperature	With Operating Curve	+105℃
Relative Humidity	No condensing	5%~95%
Housing material	-	Black flame-retardant and heat-resistant plastic shell
Cooling Method	-	Free air convection
Isolation Voltage	Input to output	5000Vdc ≤ 0.5mA / 1min
Meantime between Failure	MIL-HDBK-217F 25℃	2X10 ⁵ Hrs
Weight	average	35g

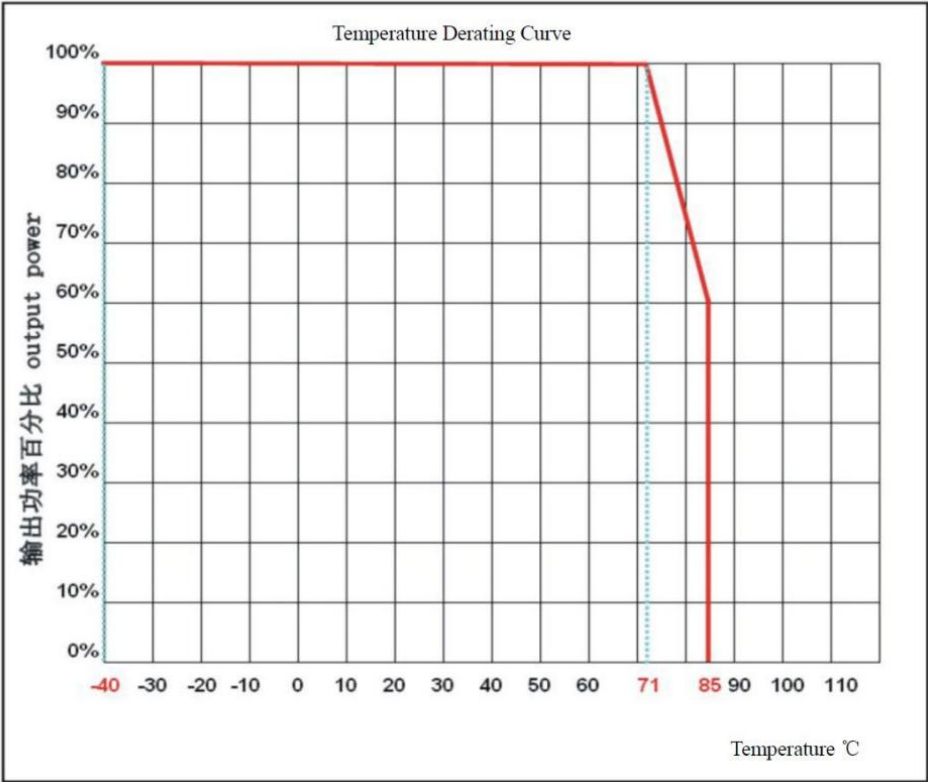
EMC Characteristics

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 photo 2)
		ESD	IEC/EN61000-4-2	Contact ±4KV 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 photo 1)
		Voltage dips, short interruptions and voltage variations	IEC/EN61000-4-11	0%~70% Perf.Criteria B

B2C5 Packing Dimension



Product Characteristic Curve

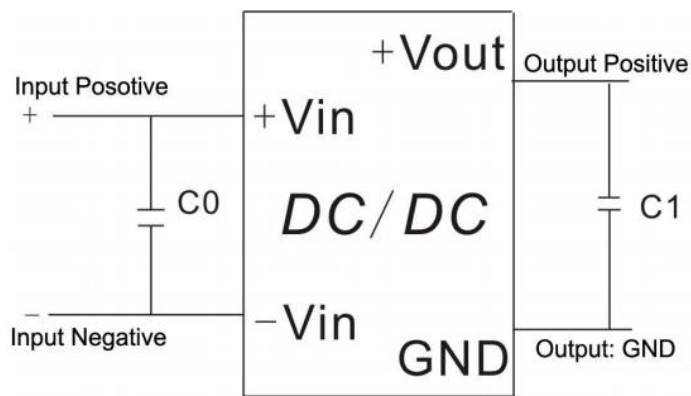


Reference circuit

Recommended circuit

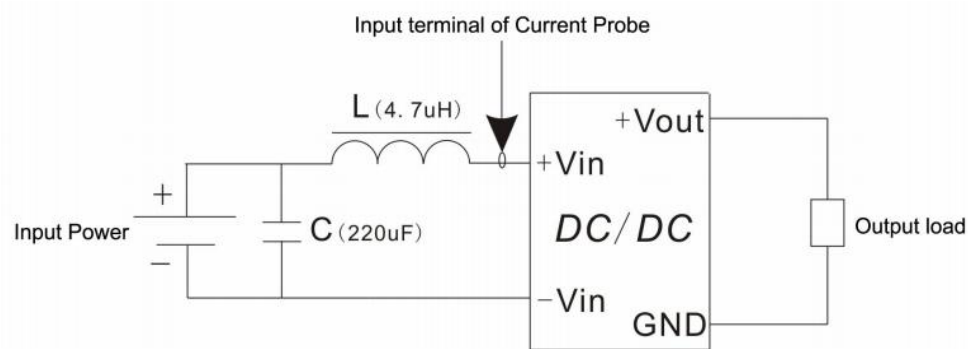
1、DC/DC test circuit:

Normal recommended capacitors: C0: 47-100uF; C1: 330uF.

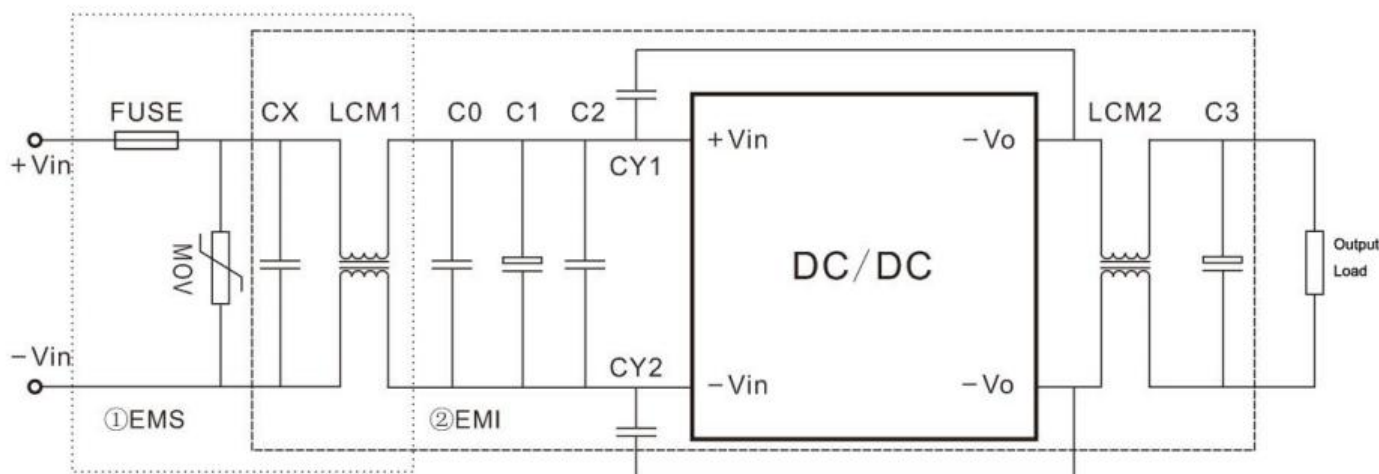


2、Input reflecting ripple current test circuit:

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



3、EMC external recommended circuit:



Parameter Recommendation :

Device no.	FD6-18SXXB2C5 input product	FD6-36SXXB2C5 input product
FUSE	Connect the corresponding fuse according to customer needs	
MOV	14D560K	14D101K
CX	0.47uF	0.47uF
LCM1	10mH	10mH
C0	1uF/100V	1uF/100V
C1	220uF/100V	220uF/100V
C2	1uF/100V	1uF/100V
LCM2	30uH	30uH
C3	47uF/50V	47uF/50V
CY1,CY2	1nF/2000V	

Note:

1. The product should be used within the specification range, otherwise it will cause permanent damage to the product;
2. If the product works below the minimum required load, it cannot be guaranteed that the product performance meets all the performance indicators in this manual;
3. If the product works beyond the product load range, it cannot be guaranteed that the product performance meets all the performance indicators in this manual;
4. Unless otherwise specified, the above data is measured when Ta=25℃, humidity <75%, input nominal voltage and output rated load (pure resistance load);
5. All the above index test methods are based on the company's standards;
6. The above are the performance indicators of the product models listed in this manual. Some indicators of non-standard products will exceed the above requirements. For specific information, please contact our technical staff directly;
7. Our company can provide product customization;
8. Product specifications are subject to change without notice. Please pay attention to the latest manual published on our official website.

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