



Product Typical Features

- ◆ Wide input voltage range(4:1), Output Power 6W
- ◆ Transfer Efficiency up to 84%
- ◆ Short Circuit protection, Self-recovery
- ◆ Protection: input under-voltage, over-voltage, short circuit, over current
- ◆ Switching Frequency 250KHz
- ◆ Isolation Voltage: 1500VDC
- ◆ 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-XXDXXA3 is a newly designed DIP 1X1 packed, 6W output power, ultra wide input range 4:1, low stand-by power consumption, isolated regulated dual but common ground output DC-DC converter, could be widely used for industrial control, instrument, communication, power electricity, internet of things field.

Typical Product List

Part 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, input nominal voltage	
	Nominal	Range	Voltage (VDC)	Current (mA) MAX./Min.	Full load typ.	No Load typ.		mVp-p		Min	Typ.
								Typ.	Max		
*FD6-18D3V3A3	18	9-36	±3.3	±500/0	241	25	220	30	80	74	76
FD6-18D05A3			±5	±500/0	439	25	220	30	80	74	76
*FD6-18D09A3			±9	±333/0	422	25	100	30	80	77	79
FD6-18D12A3			±12	±208/0	422	25	100	30	80	77	79
FD6-18D15A3			±15	±167/0	417	25	47	30	80	78	80
FD6-18D24A3			±24	±104/0	412	25	22	30	80	79	81
*FD6-36D3V3A3	36	18-75	±3.3	±500/0	118	10	220	30	80	76	78
FD6-36D05A3			±5	±500/0	203	10	220	30	80	80	82
*FD6-36D09A3			±9	±333/0	203	10	100	30	80	80	82
FD6-36D12A3			±12	±208/0	198	10	100	30	80	82	84
FD6-36D15A3			±15	±167/0	198	13	47	30	80	82	84



FD6-36D24A3		±24	±104/0	198	13	22	30	80	82	84
1. “*” are models being developing; 2. “-T” suffix for chassis mounting, “-TS” suffix for DIN-Rail mounting, DIN-Rail width is: 35mm; 3. 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;										
Input Specification										
Stand-by Consumption	0.5W(TYP)									
Input Filter	π filter									
Input under-voltage protection	5~9VDC@18VDC Input									
	11~17VDC@36VDC Input									
Output Specification										
Main Circuit Output Voltage Accuracy	Full voltage full load	Vo 1	±2.0% (max)							
		Vo 2	±3.0% (max)							
Voltage Regulation	Nominal load, full voltage	Vo	≤±0.5%							
Load Regulation	10% ~ 100% nominal load	Vo	≤±1.0%							
Ripple & Noise	Nominal load, nominal voltage Twisted Pair Method, 20M Hz bandwidth;	≤15% load	5%Vo mVp-p Typ							
		≥15% load	50mVp-p Typ, 80mVp-p							
Output Over-voltage protection	120%~200%Vo									
Output Over-load Protection	120%~220%									
Output Short circuit Protection	Continuous Time, Self-recovery									
Dynamic Response	25% nominal load step change	ΔVo/Δt	≤6%/500μ s							
Turn-on delay time	Typical	250ms								
Output Turn-on Overshoot Voltage	≤10%Vo									
General Specification										
Switching Frequency	Typical	250KHz								
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	Aluminum Metal Case									
Cooling Method	Free air convection									
Isolation Voltage	Input to Output	1500Vdc ≤ 0.5mA / 1min								



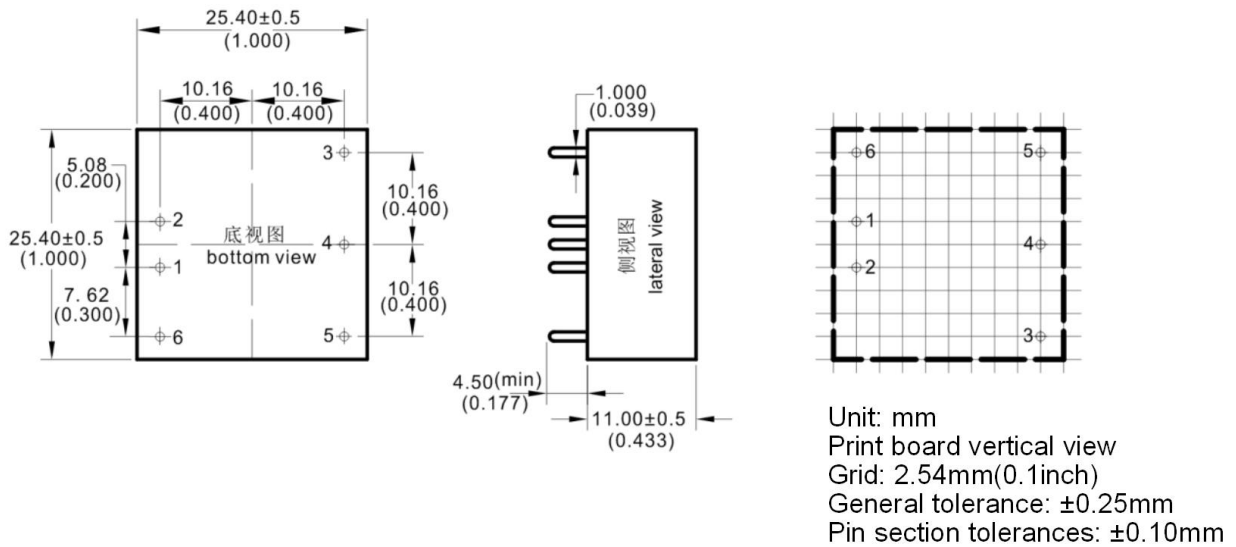
Meantime Between Failure	MIL-HDBK-217F@25°C	2X10 ⁵ Hrs
Product Weight	Average	14g

EMC Characteristics

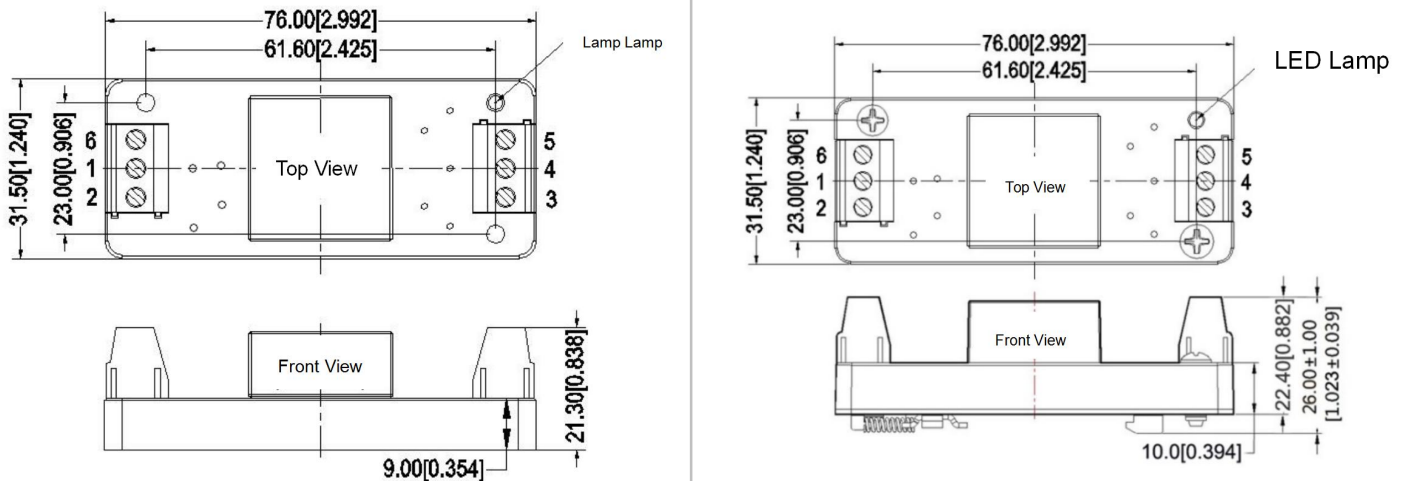
Total Items		Sub Items	Test Standard	Class
EMC	EMI	CE	CISPR22/EN55032	CLASS B (see EMC external recommended circuit at below)
		RE	CISPR22/EN55032	CLASS B (see EMC external recommended circuit at below)
	EMS	RS	IEC/EN61000-4-3	10V/m Perf.Criteria B (see EMC external recommended circuit at below)
		CS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

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Package Dimension



A3 Packing Dimension



Packing Code	L x W x H	
A3	25.4X 25.4X11 mm	1.0X1.0 X0.433inch
A3-T	76X31.5X21.3mm	2.99X1.24X0.838inch
A3-TS	76X31.5X26mm	2.99X1.24X1.023inch

Pin out Specifications

Dual Output(D)	1	2	3	4	5	6
	-Vin	+Vin	+Vout	0V	-Vout	NC

Note: If the definition of pin is not in accordance with the model selection manual, please refer to the label on actual item.

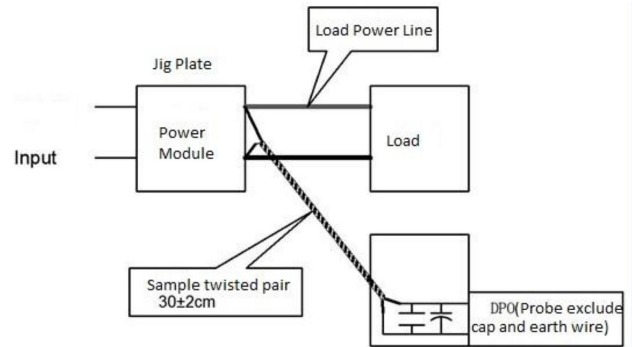


Ripple & Noise Test: (Twisted Pair Method 20MHz bandwidth)

Test Method:

a. 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.

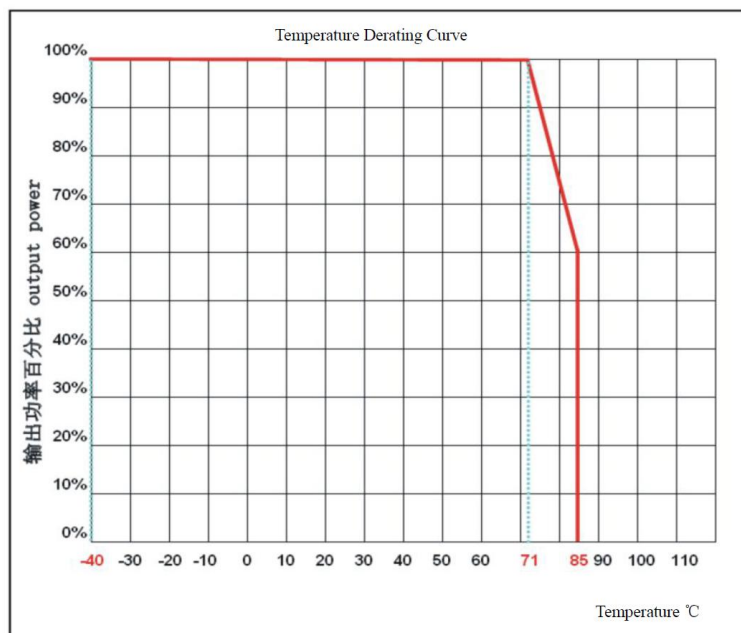
b. Input terminal connect to power supply, output terminal connect to electronic load through jig plate, Use 30cm±2 cm sampling line, Power line selected from corresponding diameter wire with insulation according to the flow of output current.



Application Reference:

1. The recommended minimum load is 10% or above 470uF high frequency low resistance electrolytic capacitor, or output ripple will rise;
2. Recommend the unbalance loads of dual output to be $\leq \pm 5\%$;
3. The maximum capacitive load is tested under pure resistance and full load condition;
4. Our company could provide whole power supply solution, or customized made items; Due to space limitation, please contact our team for more information.

Product Characteristic Curve



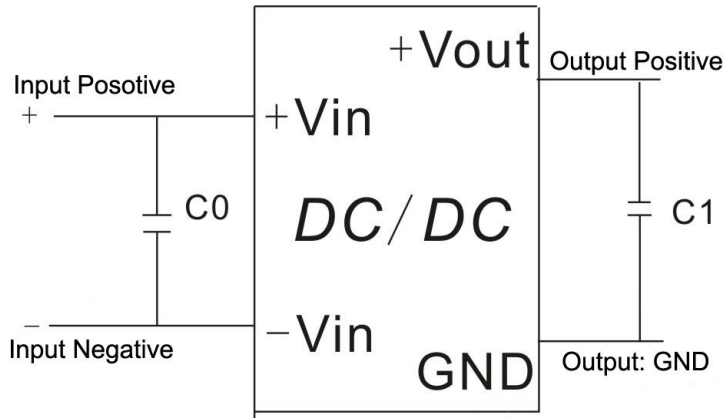


Design Application

Recommended circuit

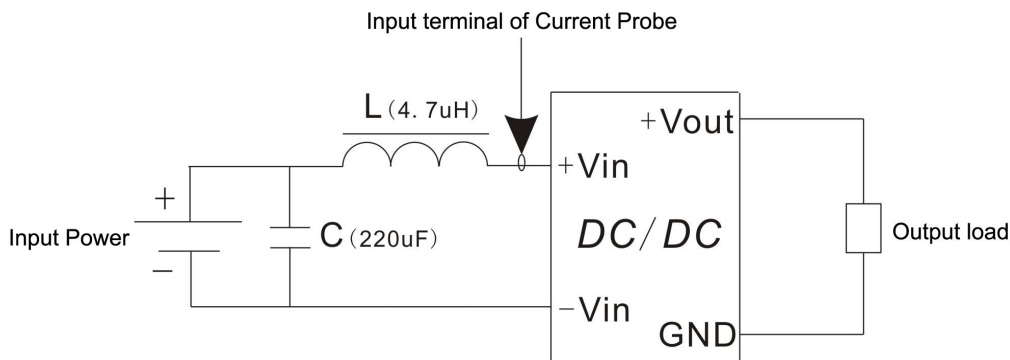
1. DC/DC test circuit:

Normal recommended capacitors: C0: 47-100uF; C1: 470uF.

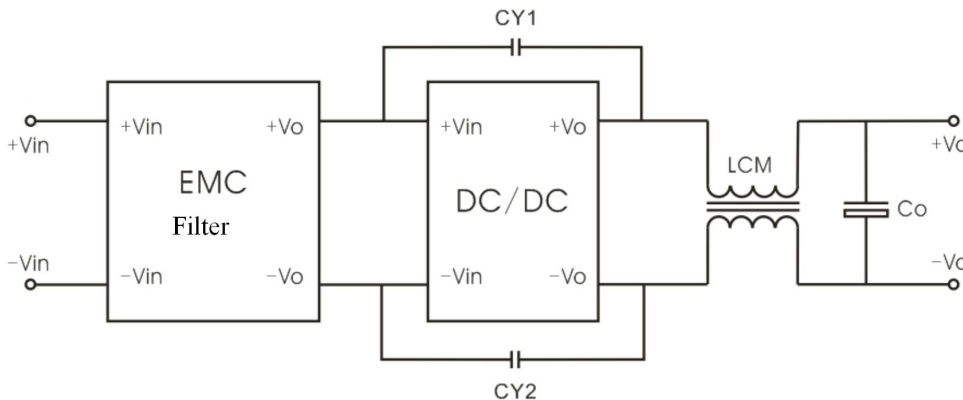


2. Input reflecting ripple current test circuit:

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



3. EMC external recommended circuit:





Recommended Spec:

Component	Specification
EMC filter	Chose our EMC filter: LC-DC01P2, it could satisfy the standard of EMI CLASS B
LCM	700uH/2A
Co	470uF/35V
CY1,CY2	102M/400V

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°C, 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.