CFD6-XXDXXA3C(-T)(-TS) Series

DC/DC Converter

Product Typical Features

- Wide input voltage range(4:1), Output Power 6W
- Transfer Efficiency up to 86%
- 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

Application Field

CFD6-XXDXXA3C *is a newly designed DIP 1X1 packed,6W output power, ultra wide input range 4:1, low stand-by power consumption, isolated regulated dual common ground output DC-DC converter, could be widely used for industrial control, instrument, communication, power electricity, internet of things field. For harsh EMC environment, the application circuit in the datasheet is strongly recommended.*

Typical Product List

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, input nominal voltage	
	Nominal	Range	Voltage (VDC)	Current(mA) MAX./Min.	Full load typ.	No Load typ.	uF	mVp-p		Min.	Typ.
								Typ.	Max		
CFD6-18D3V3A3(C)	18	9-36	±3.3	±600/0	270	3	1000	100	200	76	78
CFD6-18D05A3(C)			±5	±600/0	297	15	1000	100	200	82	84
CFD6-18D09A3(C)			±9	±333/0	290	15	470	100	200	84	86
CFD6-18D12A3(C)			±12	±250/0	290	15	330	100	200	84	86
CFD6-18D15A3(C)			±15	±200/0	297	15	220	100	200	82	84
CFD6-18D24A3(C)			±24	±125/0	290	15	100	100	200	84	86
CFD6-36D3V3A3(C)	36	18-75	±3.3	±600/0	101	10	1000	100	200	80	82
CFD6-36D05A3(C)			±5	±600/0	149	10	1000	100	200	82	84
CFD6-36D09A3(C)			±9	±333/0	145	10	470	100	200	84	86
CFD6-36D12A3(C)			±12	±250/0	145	10	330	100	200	84	86
CFD6-36D15A3(C)			±15	±200/0	145	10	220	100	200	84	86
CFD6-36D24A3(C)			±24	±125/0	145	10	100	100	200	84	86

1. 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;
2. ”-T” suffix for chassis mounting，”-TS” suffix for DIN-Rail mounting, DIN-Rail width is: 35mm; With C is with control pin.

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

Output Voltage Accuracy	Full voltage full load	Vo 1	±2.0%(max)
		Vo 2	±3.0%(max)
Line 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	100mVp-p Typ, 200mVp-p
Output Over-voltage protection	120%~200%Vo		
Output Over-load Protection	120%~220%		
Output Short circuit Protection	Continuous, Self-recovery		
Dynamic Response	25% nominal load step change	△Vo/△t	≤6%/500μ s
Turn-on delay time	Typical	250ms	
Output Turn-on Overshoot Voltage	-	≤10%Vo	

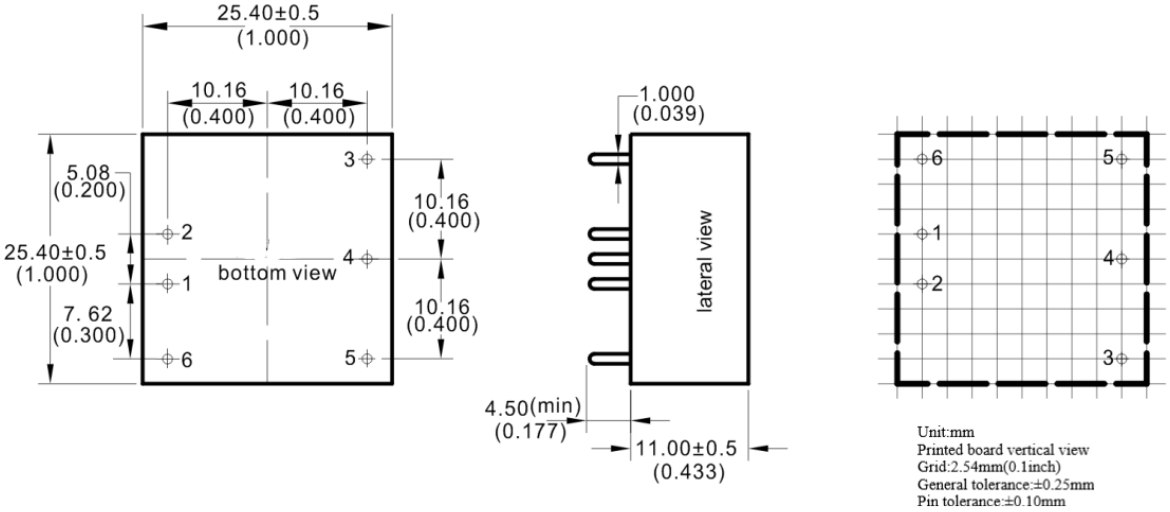
General Specification

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
MTBF	MIL-HDBK-217F@25℃	$2X10^5$Hrs
Product Weight	Average	14g

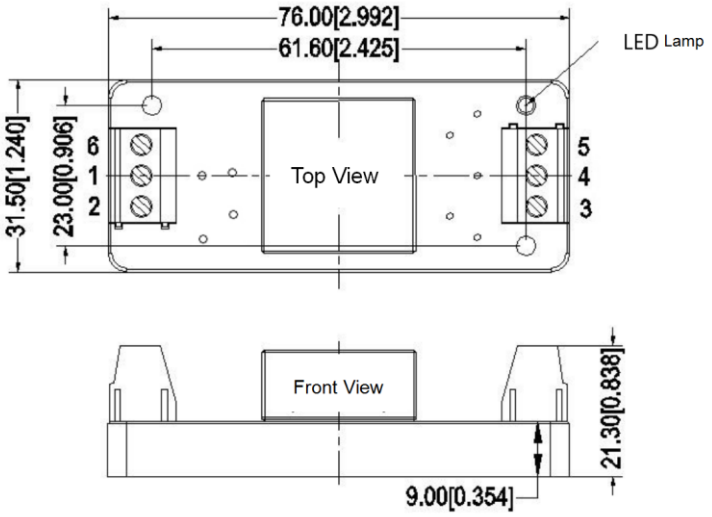
EMC Characteristics

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

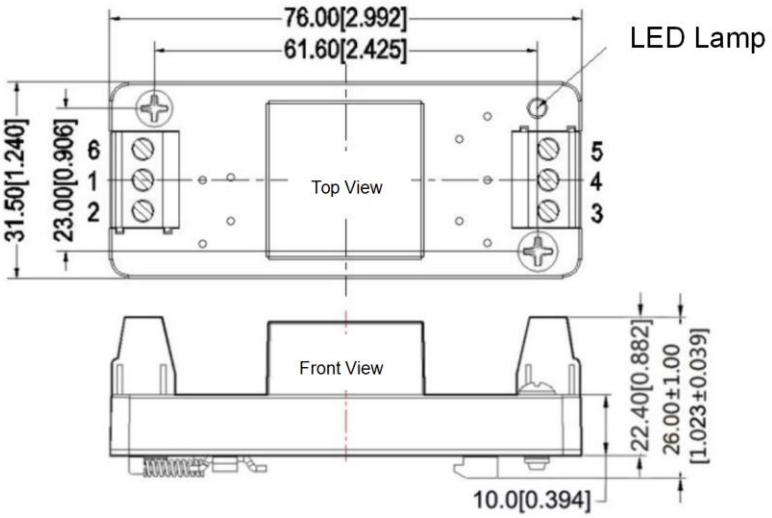
A3 Package Dimension



A3-T Package Dimension



A3-TS Package 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	CTRL

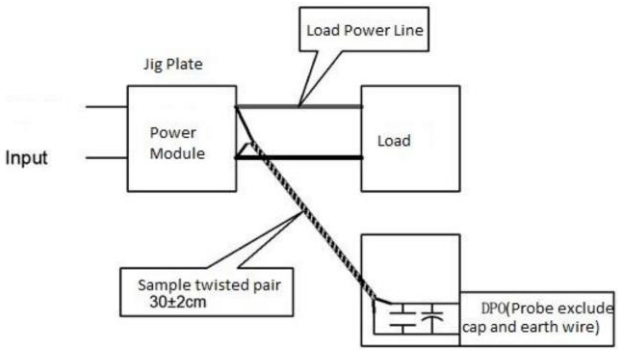
Note: If the definition of pin is not in accordance with the model selection manual, please refer to the label on actual item.

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:

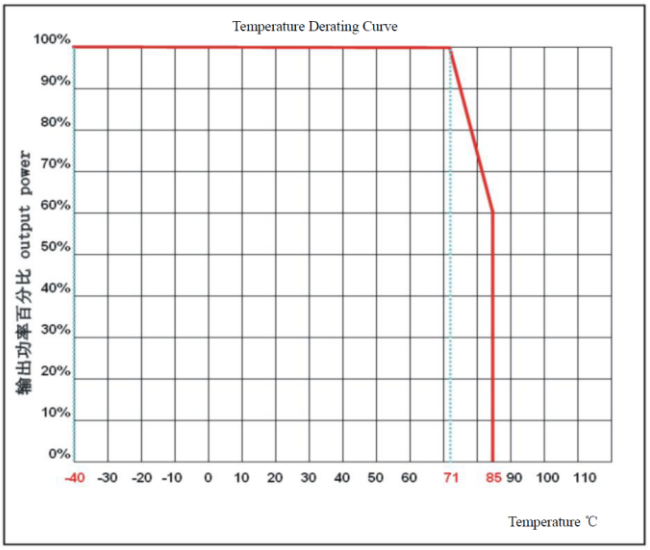
1.The recommended minimum load is 20% or above 470uF high frequency low resistance electrolytic capacitor, or output ripple will rise;

2.Recommend the unbalance loads of dual output to be ≤±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.

Product Characteristic Curve

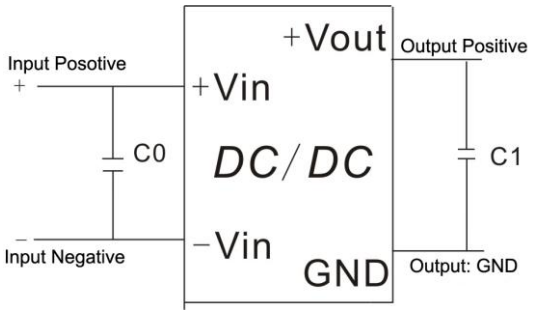


Design Application

Recommended circuit

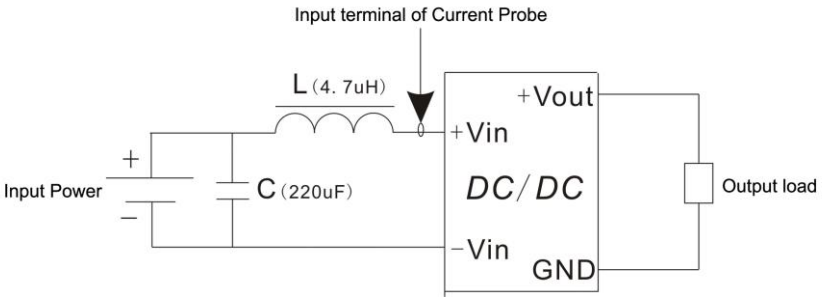
1. DC/DC test circuit:

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

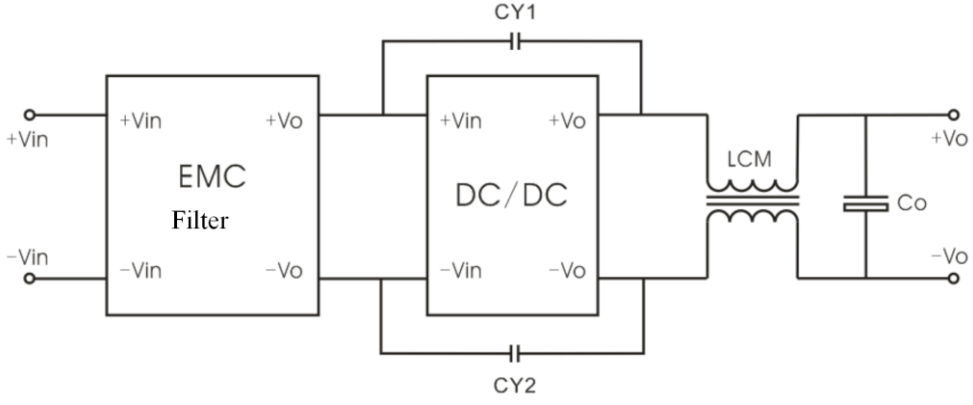


2. Input reflecting ripple current test circuit:

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	Choose 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℃, 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.