

FEATURES

- ◆ Wide 2:1 input voltage range
- ◆ High efficiency up to 84%
- ◆ I/O isolation test voltage 1.5KV_{DC}
- ◆ Operating ambient temperature range:-40℃ to +70℃
- ◆ Meets CISPR32/EN55032 CLASSA, without extra components (except for 5V_{DC} input)
- ◆ Input under-voltage protection,output short- circuit, over-current, over-voltage protection
- ◆ Industry standard pin-out
- ◆ Three year warranty period

6W isolated DC-DC converter in DIP package
Wide input and regulated dual/single output



Selection Guide

Certification	Part No.	Input Voltage(V _{DC})		Output		Full Load Efficiency ^② (%)Min./Typ.	Capacitive Load ^③ (μF)Max.
		Nominal (Range)	Max. ^①	Voltage(V _{DC})	Current(mA) Max./Min.		
	CFD6-6D05(B)	6 (4.5-9)	12	±5	±600/0	76/78	1000
	CFD6-6D12(B)			±12	±250/0	82/84	470
	CFD6-6D15(B)			±15	±200/0	82/84	220
	CFD6-6D24(B)			±24	±125/0	82/84	100
	CFD6-6S05(B)			5	1200/0	76/78	1000
	CFD6-6S12(B)			12	500/0	82/84	470
	CFD6-6S15(B)			15	400/0	82/84	220
	CFD6-6S24(B)			24	250/0	82/84	100

Input Specifications

Operating Conditions						
Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Current (fullload/no-load)	5V _{DC} input	5V/±5V output	--	1539/10	1579/30	mA
		Others	--	1429/10	1464/30	
Reflected Ripple Current	5V _{DC} input			50		V _{DC}
Surge Voltage(1sec.max.)	5V _{DC} input		-0.7	--	16	
Start-up Voltage	5V _{DC} input		--	--	4.5	
Input Under-voltage Protection	5V _{DC} input		3	3.5	--	
Input Filter			Pi filter			
Hot Plug			Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Voltage Accuracy	5V _{DC} input,0%-100% load ①	Vo1	--	±1	±2	%
		Vo2	--	±1	±3	
	Others	Vo1	--	±1	±3	
		Vo2				
Linear Regulation	Input voltage variation from low to high at full load	Vo1	--	±0.2	±0.5	
		Vo2	--	±0.5	±1	
Load Regulation	5V _{DC} input,0%-100% load	Vo1	--	--	±1	
		Vo2	--	--	±1.5	
	other input,5%-100% load ②	Vo1	--	±0.5	±1	
		Vo2	--	±0.5	±1.5	
Cross Regulation	Dual output, Vo1 load at 50%, Vo2 load at range of 10%-100%		--	--	±5	

Transient Recovery Time	25% load step change, Nominal input voltage		--	300	500	μs
Transient Response Deviation		3.3V/5V/±5V output	--	±5	±8	%
		Others	--	±3	±5	
Temperature Coefficient	Full load		--	--	±0.03	%/℃
Ripple/Noise [®]	20MHz bandwidth,5%-100% load		--	--	100	mVp-p
Over-voltage Protection	Input voltage range		110	--	160	%Vo
Over-current Protection			110	140	190	%Io
Short-circuitProtection			Continuous,self-recovery			
Note:①At 0%~5% load,the Max. output voltage accuracy of ±5Vdc output converter is ±5%;						
②load regulation for 0%-100% load is ±5%;						
③Under 0% -5% load conditions,ripple/noise does not exceed 5%Vo.The "parallel cable" method is used for ripple and noise test;						

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Isolation	Input-output Electric Strength Test for 1 minute with a leakage current of 1mA max.	1500	--	--	Vdc
	Input/output-case Electric Strength Test for 1 minute with a leakage current of 1mA max.	1500	--	--	
Insulation Resistance	Input-output resistance at 500Vdc	1000	--	--	MΩ
Isolation Capacitance	Input-output capacitance at 100kHz/0.1V	--	1000	--	pF
Operating Temperature	See Fig.1	-40	--	+70	℃
Storage Temperature		-55	--	+125	
Storage Humidity	Non-condensing	5	--	95	%RH
Pin Soldering Resistance Temperature	Soldering spot is 1.5mm away from case for 10 seconds	--	--	300	℃
Vibration		10-150Hz, 5G, 30Min. along X, Y and Z			
Switching Frequency *	PWM mode	--	300	--	kHz
MTBF	MIL-HDBK-217F@25℃	1000	--	--	k hours
Note: *Switching frequency is measured at full load. The module reduces the switching frequency for light load (below 50%) efficiency improvement.					

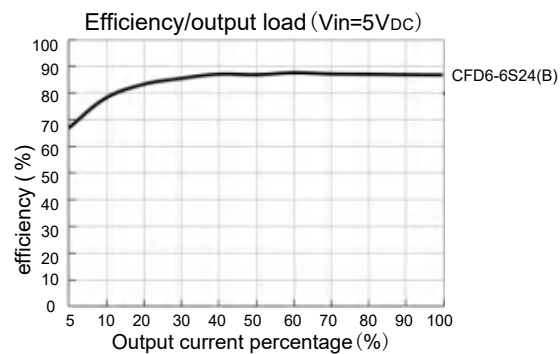
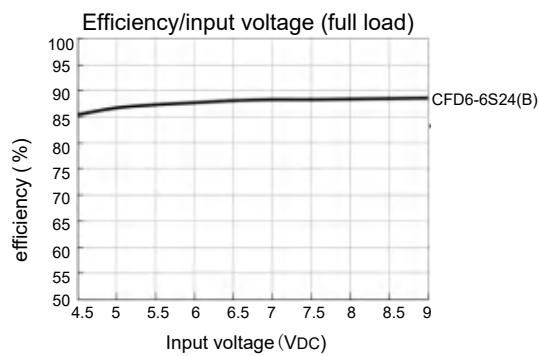
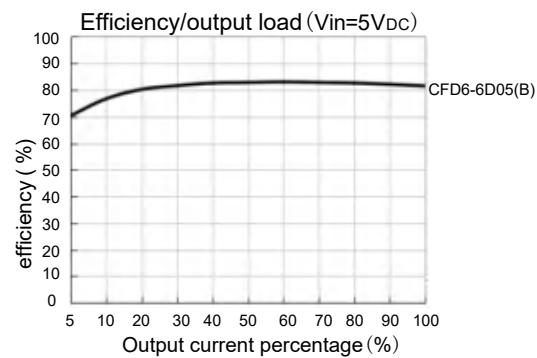
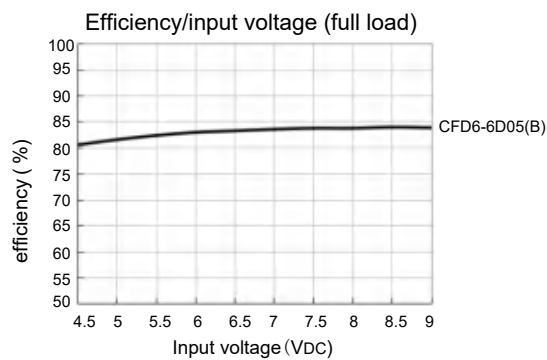
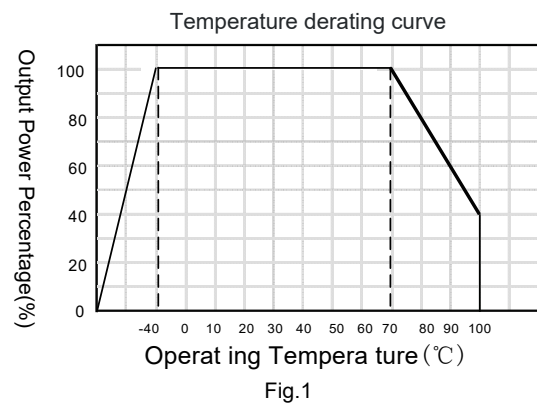
Mechanical Specifications

Case Material	Aluminum alloy
Dimensions	25.4×25.4×11.7mm/B:32.0×20.0×10.8mm
Weight	12.0g(Typ.)
Cooling Method	Free air convection

Electromagnetic Compatibility (EMC)

Emissions	CE	5Vdc input	CISPR32/EN55032 CLASS B (see Fig.3-② for recommended circuit)			
		Others	CISPR32/EN55032 CLASS A (without external components)/ CLASS B (see Fig.4-② for recommended circuit)			
	RE	5Vdc input	CISPR32/EN55032 CLASS B (see Fig.3-② for recommended circuit)			
		Others	CISPR32/EN55032 CLASS A (without external components)/ CLASS B (see Fig.4-② for recommended circuit)			
Immunity	ESD		IEC/EN61000-4-2	Contact ±4kV	perf.Criteria B	
	RS		IEC/EN61000-4-3	10V/m	perf.Criteria A	
	EFT	5Vdc input	IEC/EN61000-4-4	±2kV (see Fig.3-① for recommended circuit)	perf.Criteria B	
		Others	IEC/EN61000-4-4	±2kV (see Fig.4-① for recommended circuit)	perf.Criteria B	
	Surge	5Vdc input	IEC/EN61000-4-5	line to line ±2kV (see Fig.3-① for recommended circuit)	perf.Criteria B	
		Others	IEC/EN61000-4-5	line to line ±2kV (see Fig.4-① for recommended circuit)	perf.Criteria B	
	CS		IEC/EN61000-4-6	3Vr.m.s	perf.Criteria A	

Typical Characteristic Curves

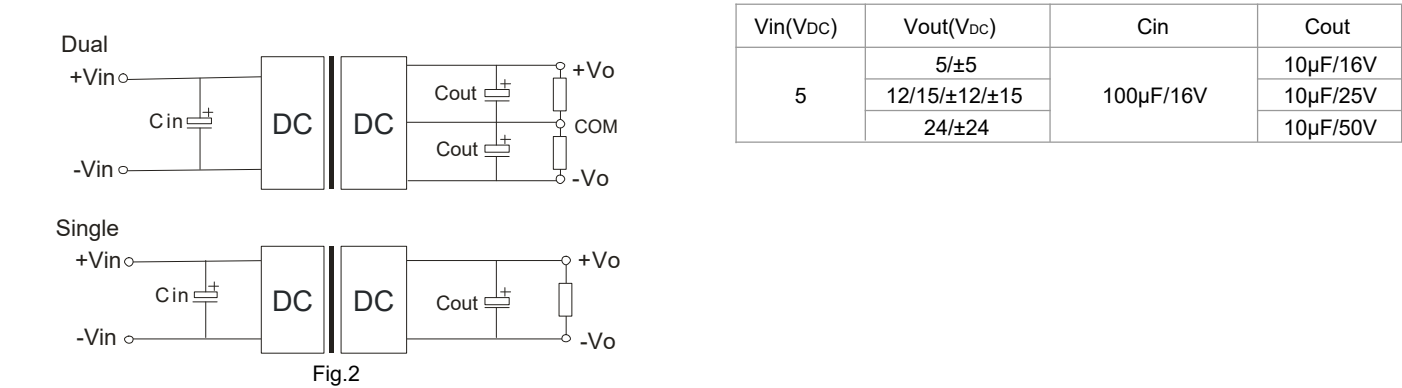


Design Reference

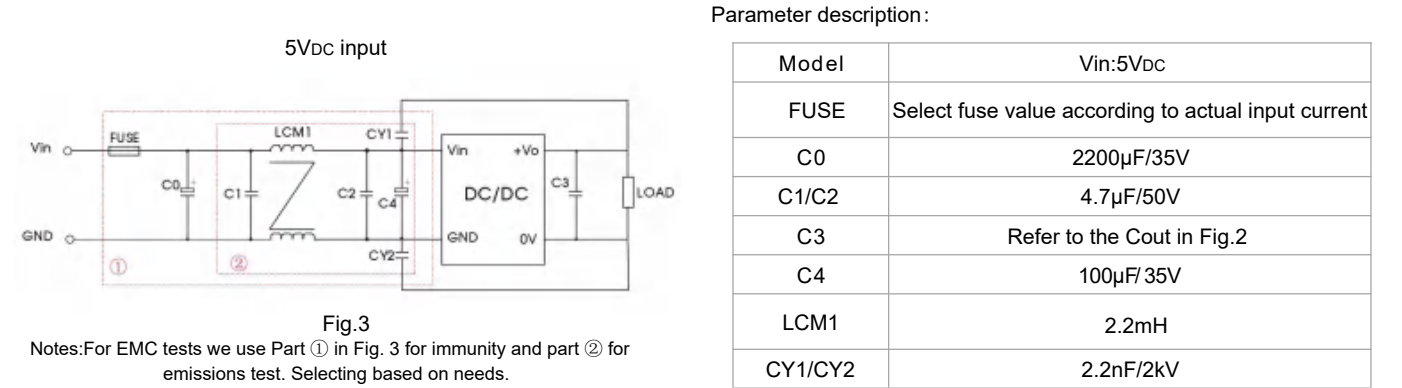
1. Typical application

All the DC/DC converters of this series are tested before delivery using the recommended circuit shown in Fig. 2.

Input and/or output ripple can be further reduced by appropriately increasing the input/output capacitor values C_{in} and C_{out} and/or by selecting capacitors with a low ESR (equivalent series resistance). Also make sure that the capacitance is not exceeding the specified max. capacitive load value of the product.

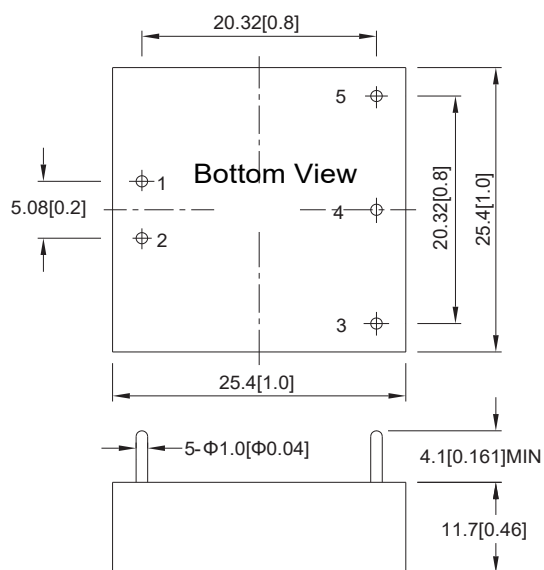
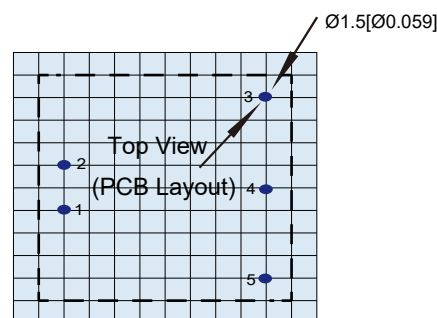


2. EMC compliance circuit



3.The products do not support parallel connection of their output

CFD6-6S05 Dimensions and Recommended Layout

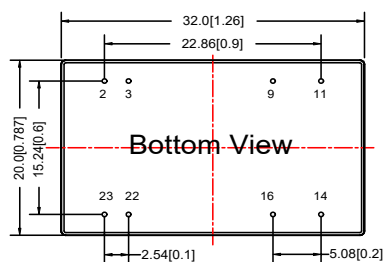
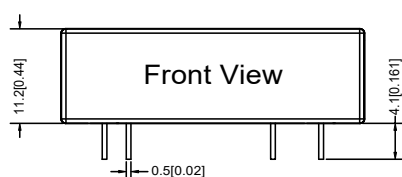
Third angle projection 

Note: Grid 2.54*2.54mm

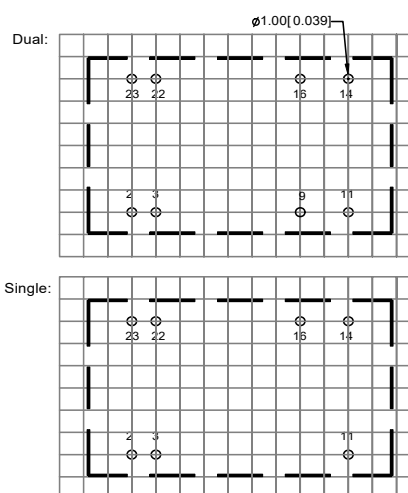
Note:
Unit:mm[inch]
Pin diameter tolerances: $\pm 0.1[\pm 0.004]$
General tolerances: $\pm 0.5[\pm 0.02]$

Pin	1	2	3	4	5
Single	+Vin	- Vin	- Vo	NP	+Vo
Dual	+Vin	- Vin	-Vo2	COM	+Vo1

CFD6-6S05B Dimensions and Recommended Layout

Third angle projection 

Note:
Unit:mm[inch]
Pin diameter tolerance: $\pm 0.1[\pm 0.004]$
General tolerances: $\pm 0.5[\pm 0.02]$



Note: Grid 2.54*2.54mm

Pin	Single	Dual
2,3	-Vin	-Vin
9	NP	COM
11	NC	-Vo2
14	+Vo	+Vo1
16	-Vo	COM
22,23	+Vin	+Vin

NC: pin to be isolated from circuit
NP: No such pin



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