

FEATURES

3W,Ultra wide input,isolated & regulated dual/single output,DC-DC converter

- ◆ Wide range of input voltage (4:1)
- ◆ Efficiency up to 88%
- ◆ No-load power consumption as low as 0.12W
- ◆ Isolation voltage:1500V_{DC}
- ◆ Operating temperature range:-40℃to +70℃
- ◆ Input under-voltage protection, output over-voltage,over-current,short circuit protection
- ◆ Meet CISPR22/EN55022 CLASS A
- ◆ International standard pin-out
- ◆ Warranty period of three years



Selection Guide

Certification	Part No.	Input Voltage (V _{DC})		Output		Efficiency ^② (%,Min./Typ.) @Full Load	Max.Capacitive ^③ Load(μF)
		Nominal (Range)	Max. ^①	Output Voltage (V _{DC})	Output Current(mA) (Max./Min.)		
	CFDR3-24D05B	24 (9-36)	40	±5	±300/±15	81/83	680
	CFDR3-24D12B			±12	±125/±6	85/87	330
	CFDR3-24D15B			±15	±100/±5	86/88	220
	CFDR3-24D24B			±24	±62/±6	85/87	100
	CFDR3-24S03B			3.3	600/30	77/79	1800
	CFDR3-24S05B			5	600/30	81/83	1000
	CFDR3-24S09B			9	333/16	82/84	1000
	CFDR3-24S12B			12	250/12	85/87	470
	CFDR3-24S15B			15	200/10	86/88	220
	CFDR3-24S24B			24	125/6	85/87	100
	CFDR3-48D05B	48 (18-75)	80	±5	±300/±15	81/83	680
	CFDR3-48D12B			±12	±125/±6	85/87	330
	CFDR3-48D15B			±15	±100/±5	86/88	220
	CFDR3-48S03B			3.3	600/30	78/80	1800
	CFDR3-48S05B			5	600/30	82/84	1000
	CFDR3-48S12B			12	250/12	85/87	470
	CFDR3-48S15B			15	200/10	86/88	220
	CFDR3-48S24B			24	125/6	85/87	100

Note:The input voltage shall not exceed the maximum value marked in the input,otherwise it may cause permanent and irrecoverable damage;
Both positive and negative output capacitive loads are the same.

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (full load/no-load)	24Vinput	--	301/5	309/12	mA
	48Vinput	--	148/4	154/8	
reflected ripple current		--	20	--	
Input Surge Voltage (1sec.max.)	24Vinput	-0.7	--	50	V _{DC}
	48Vinput	-0.7	--	100	

Start-up Voltage	24V _{DC} input	--	--	9	V _{DC}
	48V _{DC} input	--	--	18	
Undervoltage turn off	24V _{DC} input	5.5	6.5	--	V _{DC}
	48V _{DC} input	14	15.5	--	
Input Filter		Pi filter			
Hot Plug		Unavailable			

Output Specifications

Output Specifications						
Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Positive output		--	±1	±3	%
	Negative output					
Balance of Output Voltage	Full load, input voltage from low to high		--	±0.5	±1.5	
Linear regulation rate	Full load, input voltage from low to high	Positive output	--	±0.2	±0.5	
		Negative output	--	±0.5	±1	
Load Regulation	5%-100% load	Positive output	--	±0.5	±1	
		Negative output	--	±0.5	±1.5	
Cross Regulation	Dual output, main circuit with 50% load,auxiliary circuit with 10%-100% load		--	--	±5	
Transient Recovery Time	25% load step change		--	300	500	μs
Transient Response Deviation		3.3V, 5V, ±5V/output	--	±5	±8	%
		Others	--	±3	±5	
Temperature Drift Coefficient	Full load		--	--	±0.03	%/℃
Ripple/Noise	20MHz bandwidth,5%-100% load		--	--	85	mVp-p
Over-voltage Protection	Input voltage range		110	--	160	%Vo
Over-current Protection			110	140	190	%Io
Short circuit Protection			Continuous,self-recovery			
Note:This series of products using reduced frequency technology,the switching frequency is test value of full load,When the load is reduced to below 50%,the switching frequency decreases with decreasing load.						

General Specification

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Insulation Voltage	Input-output, with the test time of 1 minute and the leak current lower than 1mA	1500	--	--	V _{DC}
Insulation Resistance	Input-output, insulation voltage 500V _{DC}	1000	--	--	MΩ
Isolation Capacitance	Input-output, 100KHz/0.1V	--	1000	--	pF
Operating Temperature	temperature ≥ 71°C Derating use (Fig.1)	-40	--	+70	°C
Storage Temperature		-55	--	125	
Storage Humidity	Without condensation	5	--	95	%RH
Lead Temperature	Welding spot is 1.5mm away from the casing, 10 seconds	--	--	300	
Vibration		10-55Hz, 10G, 30 Min. along X, Y and Z			
Switching Frequency	PWM mode	--	300	--	KHz
MTBF	MIL-HDBK-217F@25°C	1000	--	--	K hours

Physical Specifications

Casing Material	Aluminum alloy
Dimension	32.0*20.0*11.2mm
Weight	14g(Typ.)
Cooling method	Free convection

EMC Specifications

EMI	Conducted disturbance	CISPR22/EN55022 CLASSA (Bare component)/CLASSB (Fig3- ②)		
	Radiation disturbance	CISPR22/EN55022 CLASSA(Bare component)/CLASSB(Fig3-②)		
EMS	electrostatic discharge	IEC/EN61000-4-2	Contact ±4KV	perf. Criteria B
	radiated immunity	IEC/EN61000-4-3	10V/m	perf. Criteria A
	Burst immunity	IEC/EN61000-4-4	±2KV(Fig3-①)	perf. Criteria B
	Surge immunity	IEC/EN61000-4-5	line to line ±2KV(Fig3-①)	perf. Criteria B
	Conducted disturbance immunity	IEC/EN61000-4-6	3 Vr.m.s	perf. Criteria A
	Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-2	0-70%	perf. Criteria B

Product Characteristic Curve

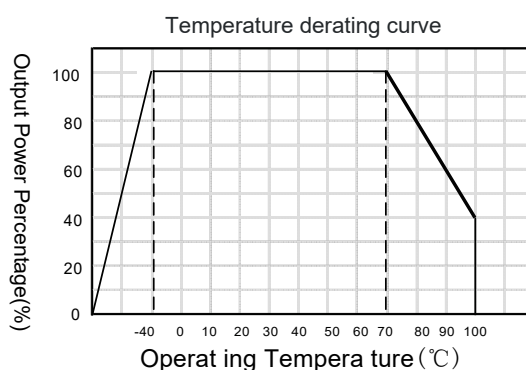
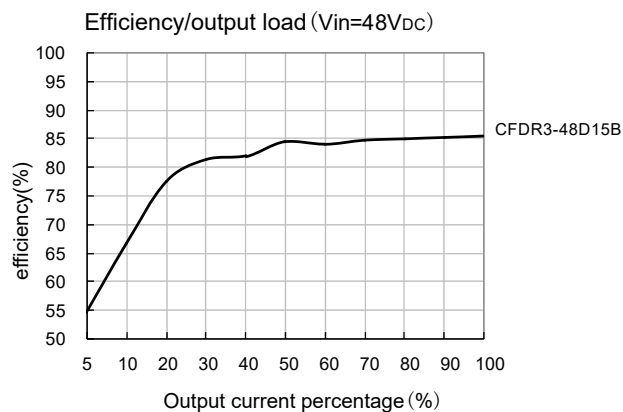
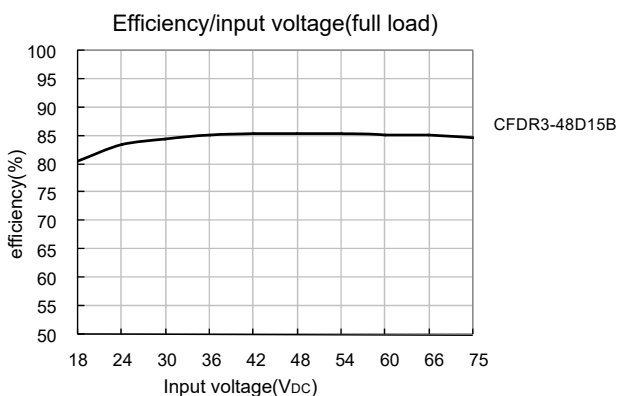
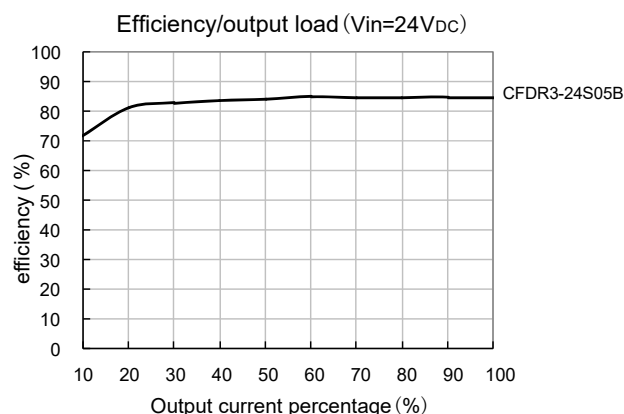
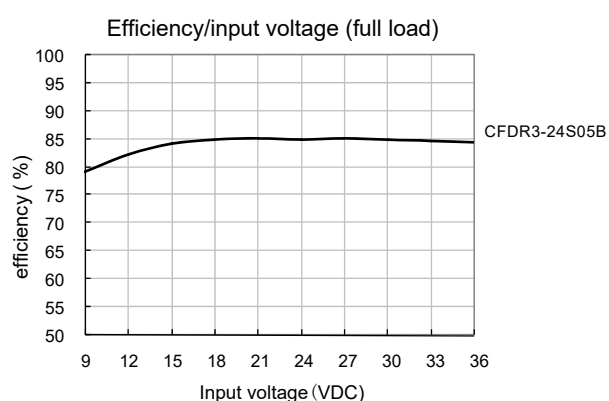


Fig. 1



Design Reference

1. Typical application

All the DC/DC converters of this series are tested according to the recommended circuit (see Fig.2) before delivery. If it is required to further reduce input and output ripple, properly increase the input & output of additional capacitors Cin and Cout or select capacitors of low equivalent impedance provided that the capacitance is no larger than the max.capacitive load of the product.

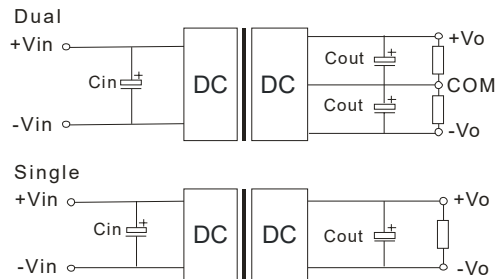


Fig. 2

Vin(VDC)	Cin	Cout
24	100μF	10μF
48	10μF ~47μF	10μF

2. EMC solution-recommended circuit

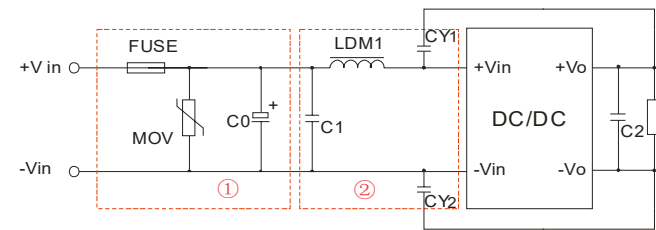


Fig. 3

Notes:Part ① in the Fig.3 is used for EMS test and part ② for EMI filtering; selected based on needs.

Parameter description

Model	Vin:24V	Vin:48V
FUSE	Choose according to actual input current	
MOV	14D560K	14D101K
C0	330μF/50V	330μF/100V
C1	1μF/50V	1μF/100V
C2	Refer to the Cout in Fig.2	
LDM1	4.7μH	
CY1	1nF/2KV	
CY2	1nF/2KV	

EMC RECOMMENDED CIRCUIT PCB LAYOUT

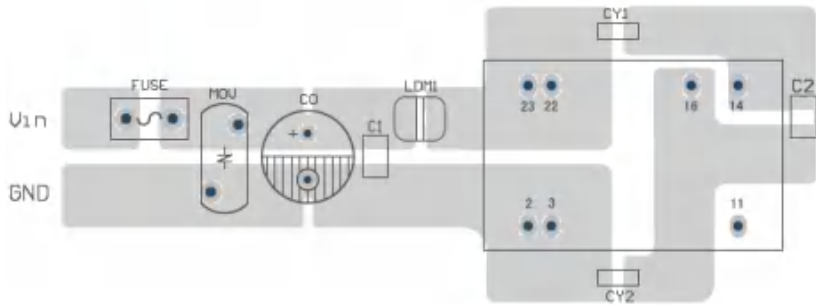


Fig. 4

Note:between input and output isolation capacitors (CY1/CY2) The minimum distance between pads shall be ensured≥2mm.

3.It is not allowed to connect modules output in parallel to enlarge the power

Dimensions

