



## Product typical characteristics

- ◆ Fixed input voltage, Isolated & unregulated output, Output power 2W
- ◆ High Efficiency up to 85%
- ◆ Small compact SIP packing
- ◆ The no-load input current is less than 8mA
- ◆ Sustainable short circuit protection
- ◆ Isolation Voltage 1500VDC
- ◆ Operating Temperature: -40°C ~ +85°C
- ◆ Plastic Case, meet UL94 V-0 standard



Test conditions: Unless otherwise specified, all parameter tests are measured at nominal input voltage, purely resistive rated load and 25°C room temperature

## Application area

Widely used in instruments, communications, pure digital circuits, general low-frequency analog circuits, relay drive circuits, data exchange circuits and other fields

## Typical product list

Part number	Input Voltage Range (VDC)		Output Voltage/Current (Vo/Io)		Input Current(mA) Nominal Voltage		Max. Capacitive Load uF	Ripple & Noise (Max.) mVp-p	Efficiency (%)full load, input nominal voltage	
	Nominal	Range	Voltage (VDC)	Current(mA) MAX./Min.	Full load Typ.	No Load Typ.			Min.	Typ.
FN2-24D08CNE	24	21.6-26.4	±8	±125/±12	95	7	470	150	81	85
FN2-24D09CNE			±9	±111/±11	98	7	470	150	81	85

1. In order to ensure that the module can work efficiently and reliably, the minimum output load cannot be less than 10% of the rated load when in use. If the power you need is really small, please connect a resistor in parallel at the output end, and the suggested resistance value is equivalent to 10% of the rated power.

## Input Specifications

Item	Working Conditions	Min.	Typ.	Max.	Unit
Input Overshoot Voltage(1sec. max.)	24Vdc input	-0.7	--	30	Vdc
Input Filter	Capacitor Filter				

## Output Specifications

Item	Working Conditions	Min.	Typ.	Max.	unit
Output Power		0.2	--	2	W
Output Voltage Accuracy	Nominal input, Full load	--	±2	±5	%
Load Regulation	10% ~ 100% nominal load	--	--	15	
Line Voltage Regulation	Input Voltage Change±1%	--	--	±1.2	



Ripple & Noise①	Nominal input,full load, 20MHZ bandwidth	--	85	150	mVp-p
Temperature Drift Coefficient	100% load	--	--	±0.03	%/°C
Output Short Circuit Protection	Continuous short-circuit protection, self-recovery				

NOTE:①Ripple & Noise tested by twisted-pair method;

### General Specifications

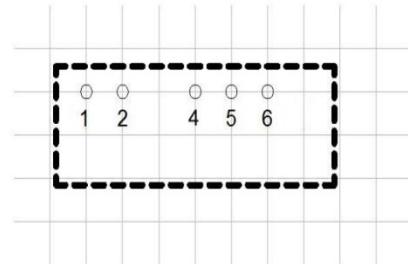
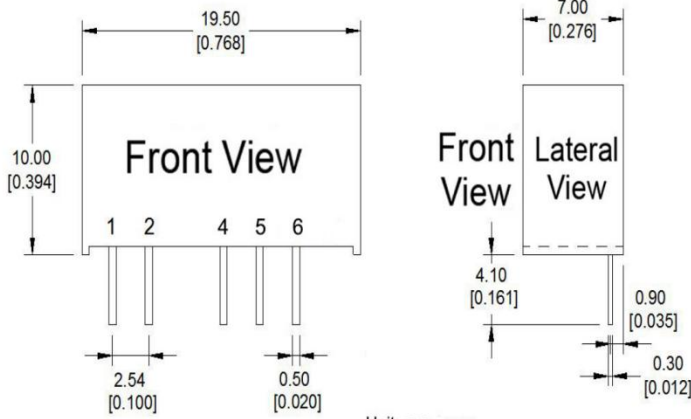
Switching Frequency	Typical	260KHz (Typ.)
Operating Temperature	Refer to Temperature Derating Curve	-40°C ~ +85°C
Storage Temperature		-55°C ~ +125°C
Shell temperature rise during work	Within Temperature Derating Curve	25°C(Typ.)
Relative Humidity	No condensing	5%~95%
Case Material		Black flame-retardant heat-resistant Plastic (UL94-V0)
Pin Withstand Soldering Temp	Welding spot distance to Case 1.5mm, 10S	300°C MAX
Isolation Voltage	Test 1 minute, leakage current<0.5mA	1500Vdc
Isolation Capacitor	Input/Output,100KHz/0.1V	25 pF (Typ.)
MTBF	MIL-HDBK-217F@25°C	35X10 <sup>5</sup> Hrs
Product Weight		2.5g (Typ.)
Packing	Tube(525*18*10mm)	25PCS
	Box(542*110*155mm)	2000PCS(Total 80 tubes)

### EMC Characteristics

EMI	CE	CISPR32/EN55032	CLASS B
	RE	CISPR32/EN55032	CLASS B
EMS	ESD	IEC/EN61000-4-2	Air±8kV, Contact±6kV perf.Criteria B

Note: pls refer to recommend circuit in pic 2

### Packing Dimension



Print board vertical view  
Grid: 2.54mm(0.1inch)

Unit: mm  
General tolerance: 0.xx±0.1(0.xx±0.004)  
Pin section tolerances: ±0.25(0.xx±0.01)

Packing Code	L x W x H	
C	19.50×7.00 × 10.00mm	0.768 × 0.276 × 0.394inch

### Pin Function

Pin Function	1	2	3	4	5	6
Dual (D)	+Vin	GND	--	-Vo	COM	+Vo

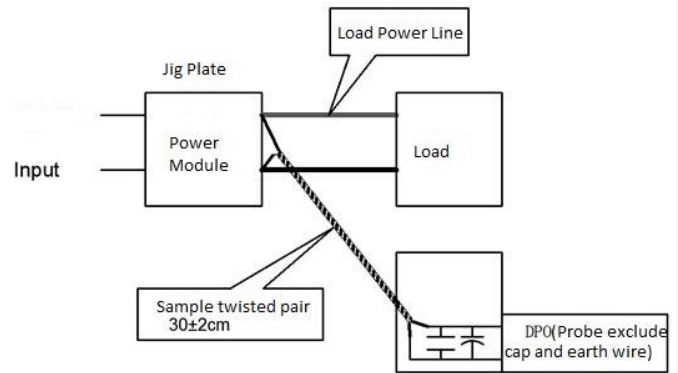
Note: if the definition of pin is not in accordance with the product list , please refer to the label on product.

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

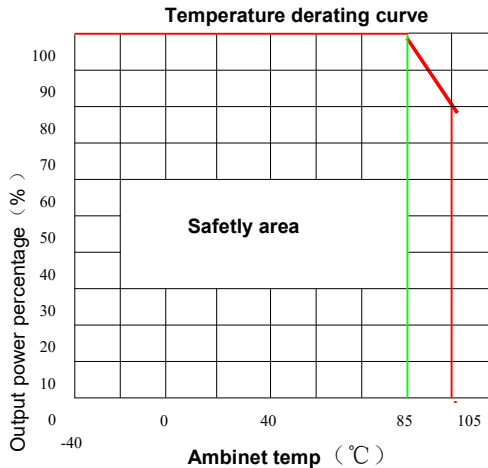
Test Method:

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.



### Temperature Curve



**Design reference applications**

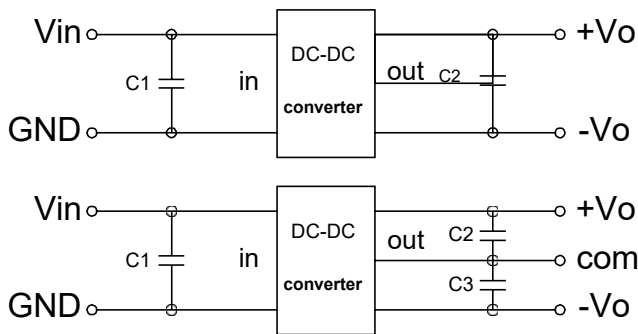
○ **Outout load requirement**

- a. In order to ensure that the power module can work efficiently and reliably, it is recommended that its minimum load should not be lower than 10% of the rated resistive load; if the power you need is really small, please connect a parallel circuit equivalent to 10% of the rated load at the output end. resistance.
- b. The maximum capacitive load of the product is obtained from the nominal full load test, and it cannot exceed the maximum capacitive load of the output terminal during use, otherwise it may cause difficulty in starting and damage the product.

**Recommend circuit**

In order to effectively reduce the input and output ripple and noise, a capacitor filter network can be connected to the input and output ends. The application circuit is shown in Figure 1 below; however, a suitable filter capacitor should be selected. If the capacitor is too large, it may affect the start-up of the product. One output works under safe and reliable conditions, and the recommended capacitive load value is shown in Table 1 below.

(But for application circuits with actual output power less than 0.5W, it is recommended not to connect external capacitors)

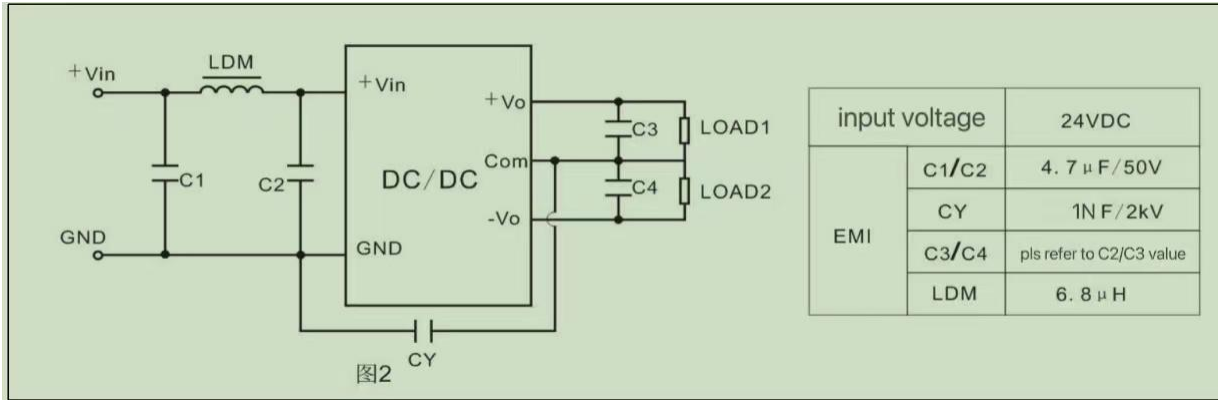


picture 1

Recommended Capacitive Load Value Table (Table 1)

Vin (Vdc)	C1 (μF)	Vout (Vdc)	C2 (μF)	Vout (Vdc)	C2,C3 (μF)
3.3/5	4.7	3.3/5	10	±3.3/±5	4.7
12	2.2	9	4.7	±9	2.2
15	1	12	2.2	±12	1
24	1	15	1	±15	0.47
--	--	24	0.47	±24	0.22

③ **EMC typical recommend circuit**



- Note: 1. This product cannot be used in parallel and does not support hot swapping;
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. All index testing methods in this article are based on the company's corporate standards;
4. Product specifications are subject to change without notice.