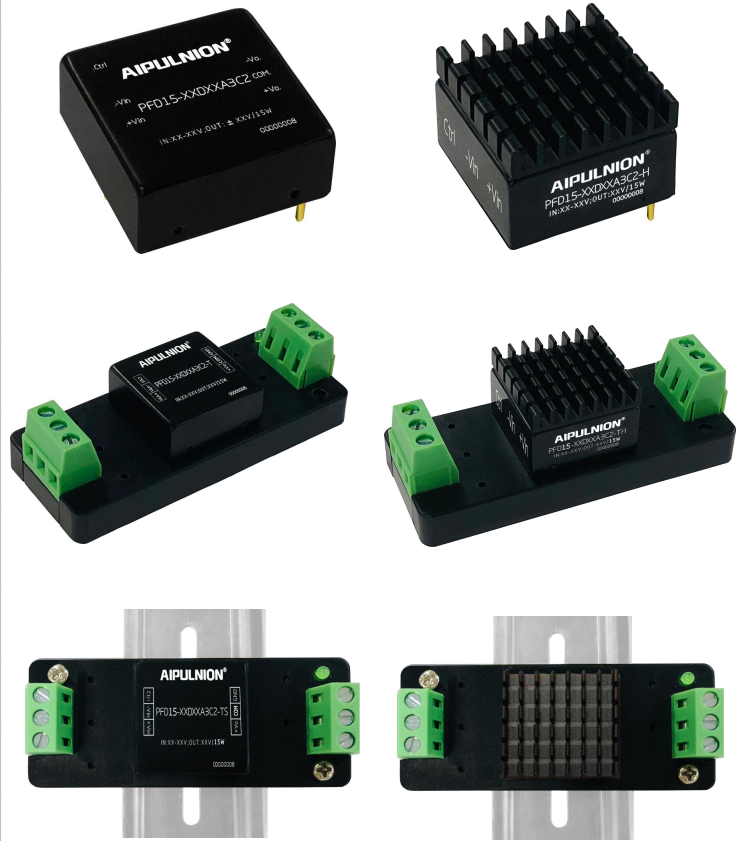




**Product Typical Features**

- ◆ Wide input voltage range ( 4:1), Output Power 15W
- ◆ Transfer Efficiency up to 90%
- ◆ Stand-by Power Consumption as low as 0.1W
- ◆ Output super-fast start up
- ◆ Continuous Short Circuit protection, Self-recovery
- ◆ Input under voltage, output over voltage, short circuit, over current protection
- ◆ Switching Frequency 280KHz
- ◆ Isolation Voltage 1500VDC
- ◆ Operating Temperature: -40°C~+85°C
- ◆ Good EMI performance
- ◆ International standard pin-out



**Application Field**

**PFD15-XXDXXA3(C)2** is a newly designed DIP 1X1 packed, 15W output power, ultra wide input range 4:1, low stand-by power consumption, isolated regulated 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 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.		
PFD15-18D05A3(C)2	24	9-36	±5	1500/0	718	33	5000	100	200	85	87
PFD15-18D12A3(C)2	24	9-36	±12	625/0	694	5	1000	100	200	88	90
PFD15-18D15A3(C)2	24	9-36	±15	500/0	694	5	800	100	200	88	90
PFD15-18D24A3(C)2	24	9-36	±24	313/0	710	5	500	100	200	86	88
PFD15-36D05A3(C)2	48	18-75	±5	1500/0	363	17	5000	100	200	84	86
PFD15-36D12A3(C)2	48	18-75	±12	625/0	351	5	1000	100	200	87	89



PFD15-36D15A3(C)2	48	18-75	±15	500/0	351	5	800	100	200	87	89
PFD15-36D24A3(C)2	48	18-75	±24	313/0	347	5	500	100	200	88	90

- "C" with control pin, "N" without control pin;
- "-H" is with heat sink, "-T(H)" for chassis mounting(with heat sink), "-TS(H)" for DIN-Rail mounting(with heat sink), DIN-Rail width is: 35mm;
- 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	0.1 W(TYP)		
Input Filter	π filter		
Input Under-Voltage Protection	5~9VDC@PFD15-18DXXA3C Input		
	11~18VDC@PFD15-36DXXA3C Input		
CTRL*	Module turn-on	CTRL suspended or TTL high level (2.5-12VDC)	
	Module turn-off	CTRL connect to -Vin or low level (0-1.2VDC)	
	Input current when switched off	2mA (TYP)	

Note: \*The voltage of CTRL pin is relative to -Vin pin.

### Output Specification

Main Circuit Output Voltage Accuracy	Full voltage full load	Vo	±2.0%
Auxiliary Circuit Output Voltage Accuracy	Full voltage full load	Vo	±3.0%
Cross Regulation	Main Circuit 50% load, Auxiliary Circuit 10~100% load	Vo	±5.0%
Voltage Regulation	Nominal load, full voltage	Vo	±0.5%
Load Regulation	10% ~ 100% nominal load	Vo	±1.0%
Ripple & Noise	Nominal load, Nominal voltage, Parallel line test Method, 20M Hz bandwidth	≤ 15% Load	5%Vo mVp-p typ
		≥ 15% Load	100mVp-p typ, 200mVp-p max
Output Over-voltage Protection	120%~200%Vo		
Output Over-load Protection	110%~220%Io		
Output Short circuit Protection	Continuous, Self-recovery		
Dynamic Response	25% nominal load step change ΔVo/Δt	5V Output	±3% typ , ±8% max /500us
		Other output	±3% typ , ±5% max /500us
Output Voltage Regulation	Refer to Typical Product List Note 1		
Turn-on delay time	Typical	10ms	
Output Turn-on Overshoot Voltage	≤10%Vo		



**Note:**

The test method for ripple & noise adopts the parallel line test method.

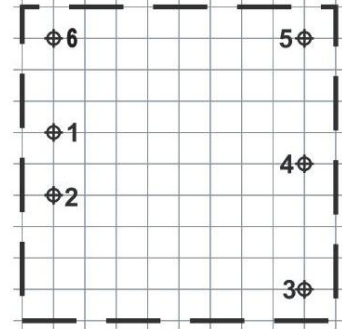
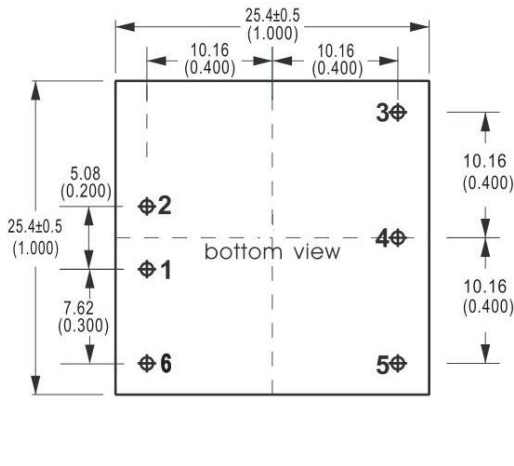
### General Specification

Switching Frequency	Typical	280KHz
Operating Temperature	Refer to Temperature Derating Curve	-40°C ~ +85°C
Storage Temperature	--	-55°C ~ +125°C
Max Case Temperature	Within Operating Curve	+105°C
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
	Input/Output-Case	1000Vdc ≤ 0.5mA / 1min
Insulation Resistance	Input-Output, insulation voltage 500Vdc	≥1000MΩ
Isolation Capacitor	Typical	1000 pF
Meantime Between Failure	MIL-HDBK-217F@25°C	2X10 <sup>5</sup> Hrs
Product Weight	Average	18g

### EMC Characteristics

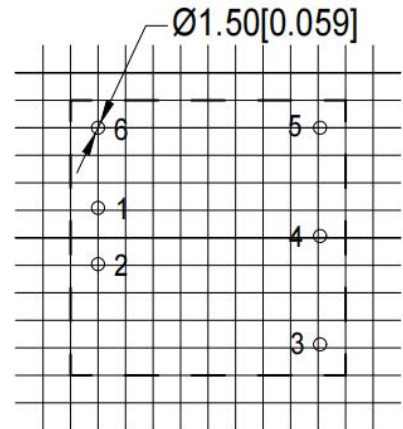
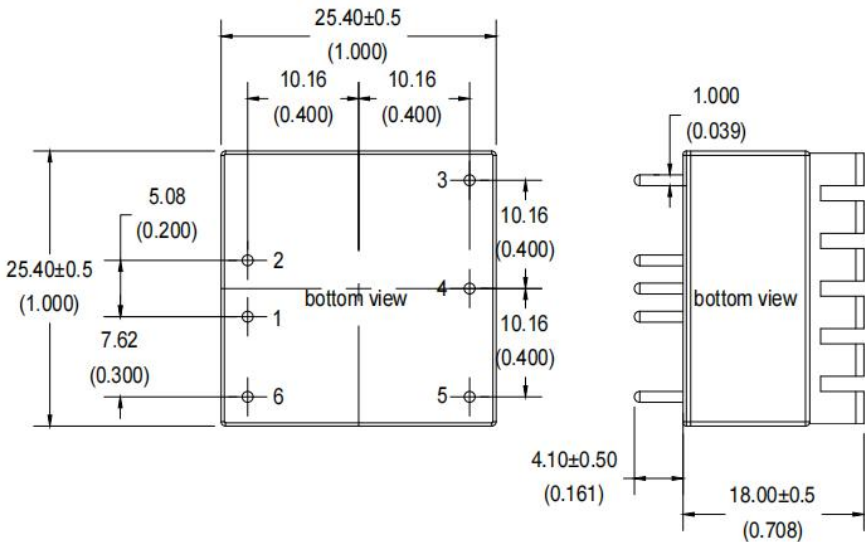
Total Items		Sub Items	Test Standard	Class
EMC	EMI	CE	CISPR22/EN55032	CLASS B (see recommended circuit photo ②)
		RE	CISPR22/EN55032	CLASS B (see recommended circuit photo ②)
	EMS	RS	IEC/EN61000-4-3	10V/m Perf.Criteria B (see recommended circuit photo 2)
		CS	IEC/EN61000-4-6	3Vr.m.s Perf.Criteria B(see recommended circuit photo 2)
		ESD	IEC/EN61000-4-2	Contact ±6KV/ Air± 8KV Perf.Criteria B
		Surge	IEC/EN61000-4-5	±2KV Perf.Criteria B (see recommended circuit photo 1)
		EFT	IEC/EN61000-4-4	±2KV Perf.Criteria B (see recommended circuit photo 1)
		Voltage dips and interruptions	IEC/EN61000-4-11	0%~70% Perf.Criteria B

### A3 Packing (Without Heat Sink)Dimension



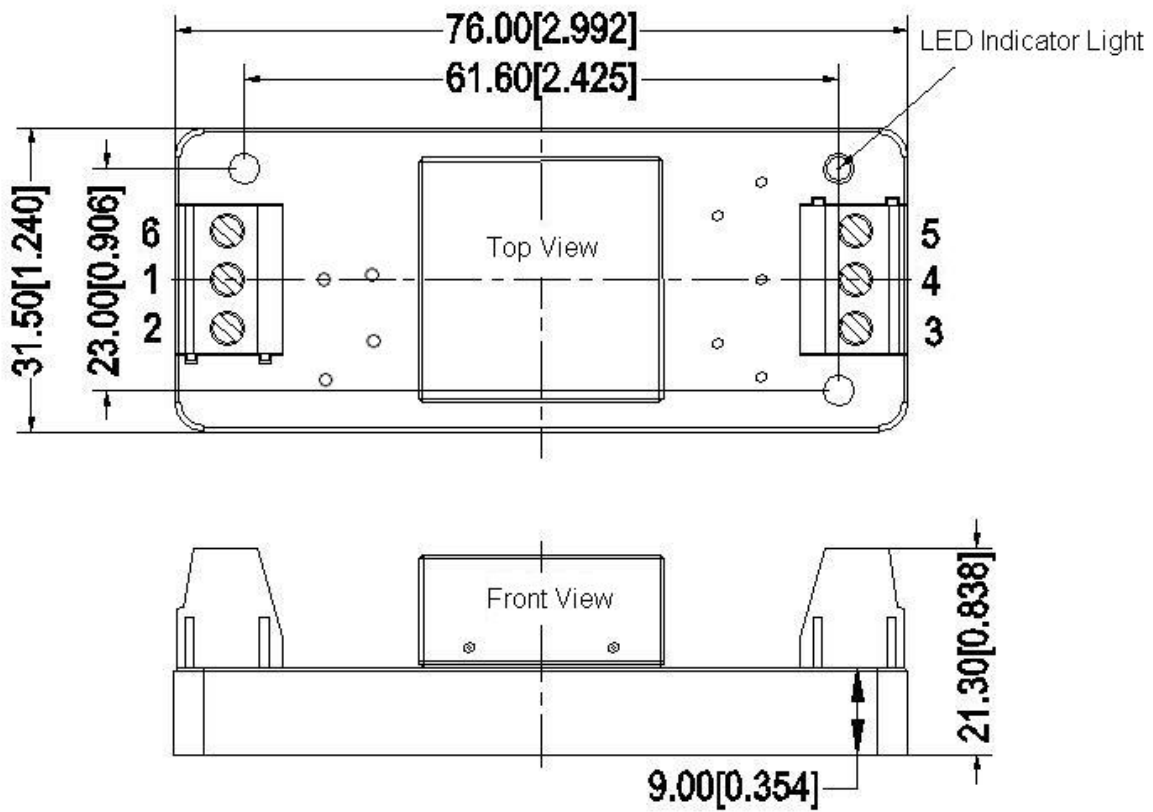
Unit:mm  
 Printed board vertical view  
 Grid:2.54(0.1inch)  
 General tolerance:±0.5mm  
 Pin tolerance:±0.10mm

**A3-H Packing (With Heat Sink)Dimension**

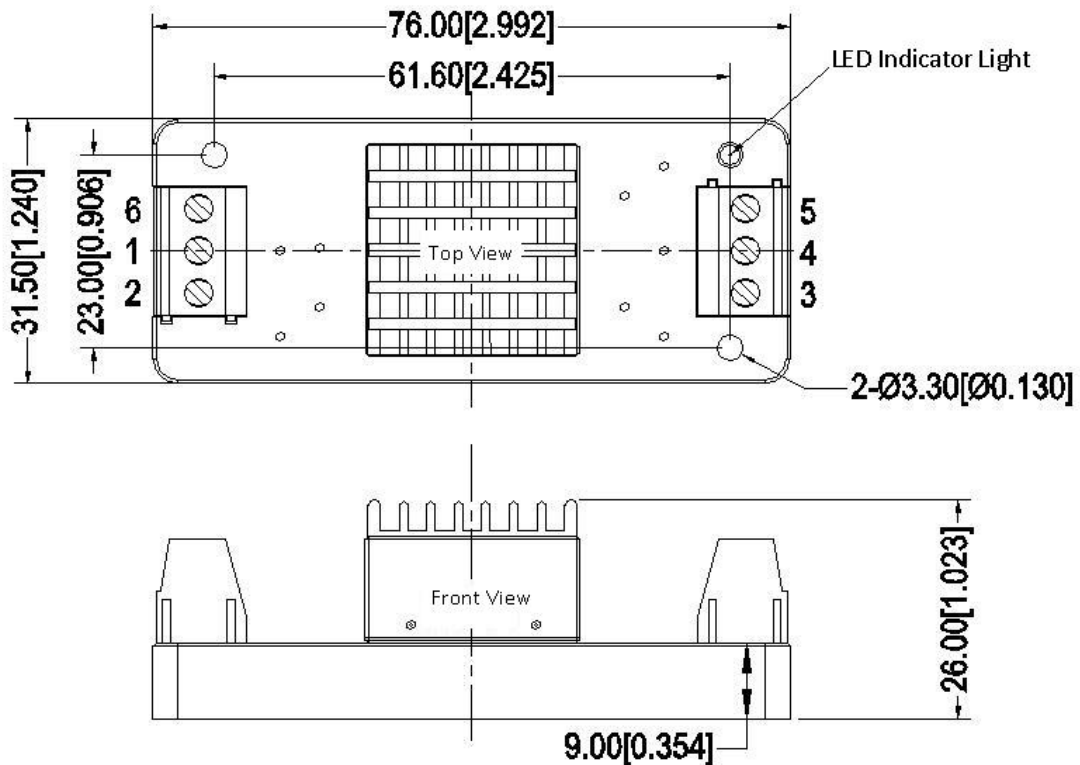


Unit:mm  
 Printed board vertical view  
 Grid:2.54(0.1inch)  
 General tolerance: ±0.5mm  
 Pin tolerance: ±0.10mm

**A3-T Packing (Without Heat Sink)Dimension**

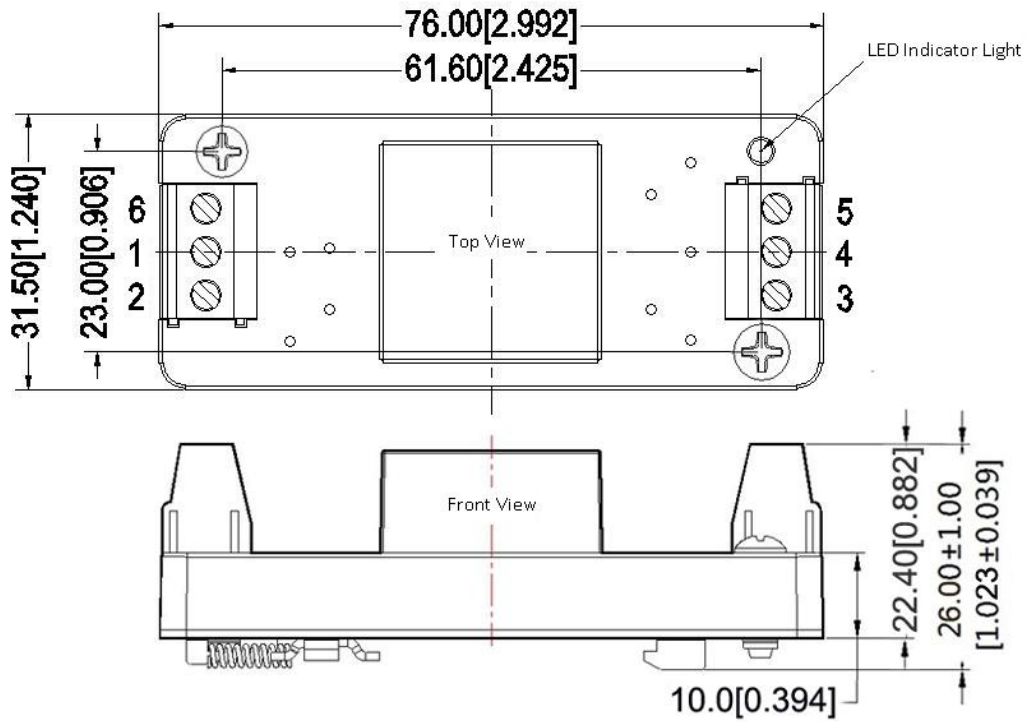


**A3-TH Packing (With Heat Sink) Dimension**

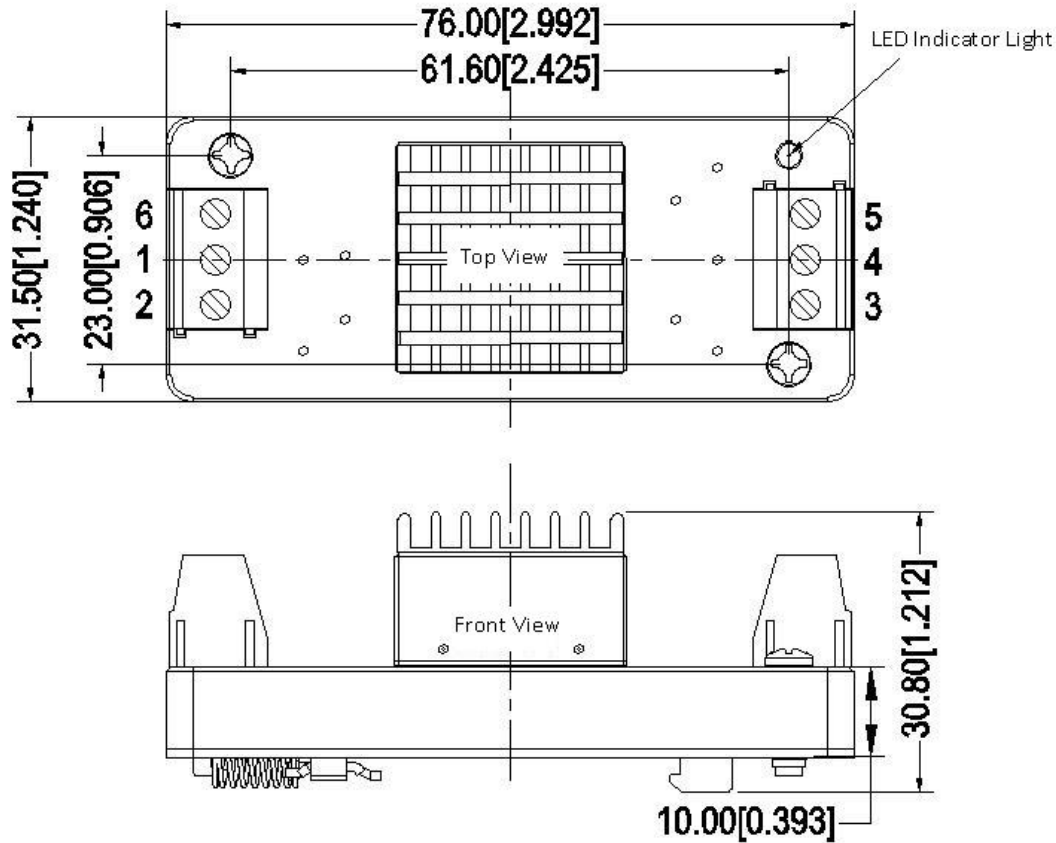




**A3-TS Packing (Without Heat Sink)Dimension**



**A3-TSH Packing (With Heat Sink)Dimension**



Packing Code	L x W x H
A3 (Without Heat Sink)	25.4X 25.4X12.5 mm
A3-H (With Heat Sink)	25.4X25.4X18.0mm
A3-T (Without Heat Sink)	76X31.5X21.3mm
A3-TH (With Heat Sink)	76X31.5X26.0mm
A3-TS (Without Heat Sink)	76X31.5X26mm
A3-TSH (With Heat Sink)	76X31.5X30.8mm

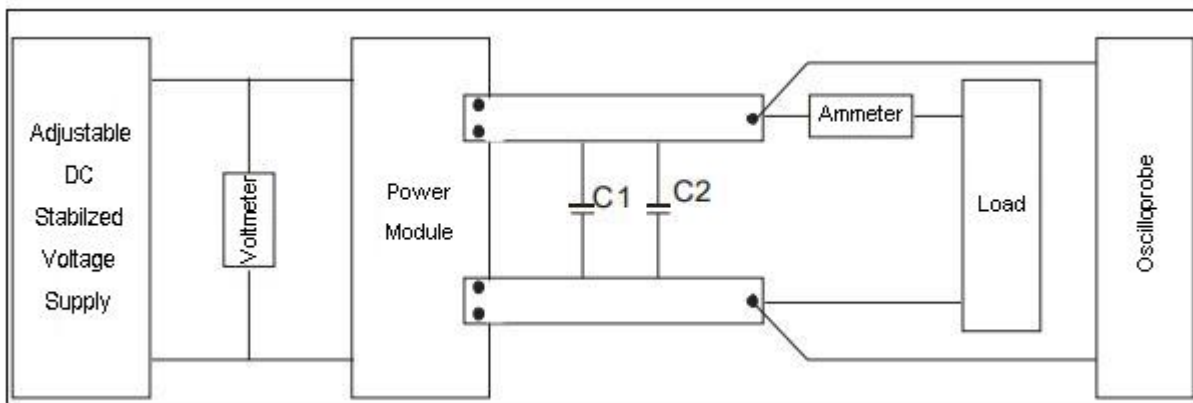
**Pin Definition**

Series	1	2	3	4	5	6
PFD15-XXDXXA3N2	-Vin	+Vin	+Vout	COM	-Vout	NP
PFD15-XXDXXA3C2	-Vin	+Vin	+Vout	COM	-Vout	CTRL

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



Test Method:

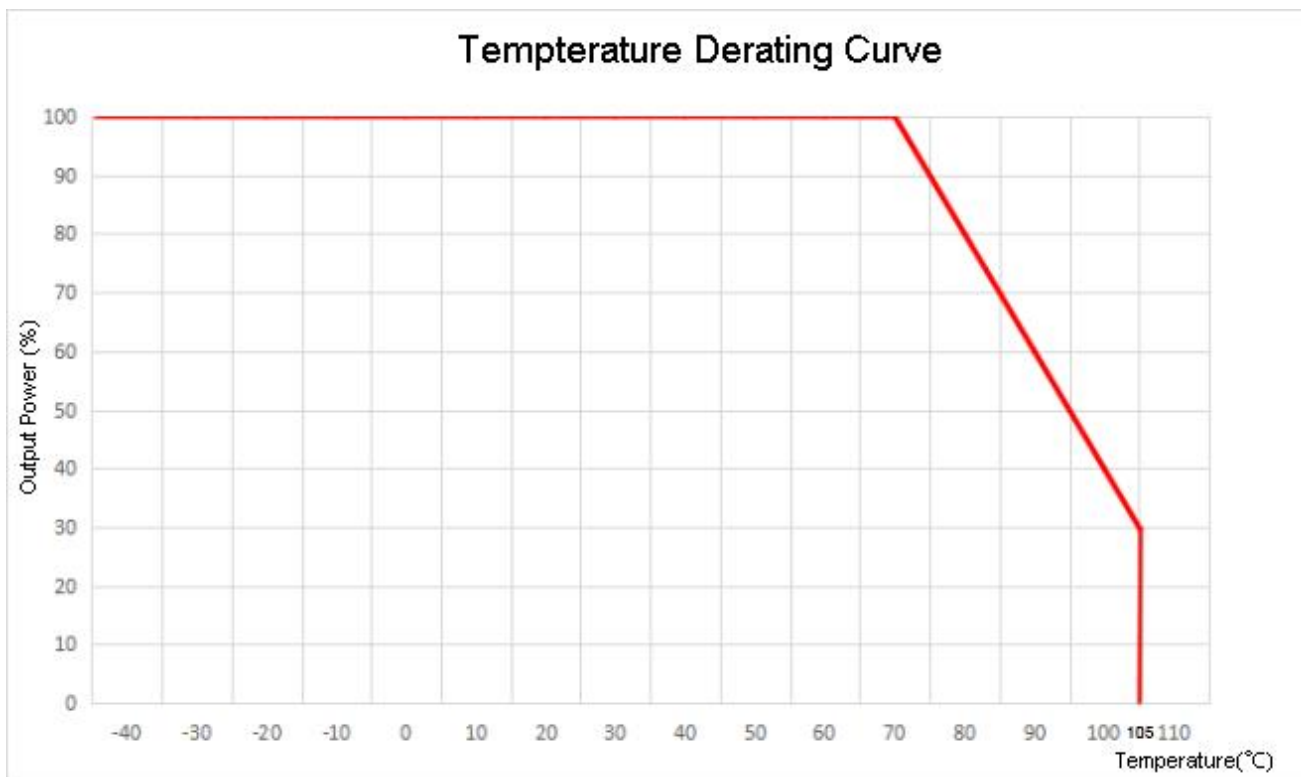


Note: C1=1uF;C2=10uF; The capacitor withstand voltage value should be higher than the module output voltage.

Application Reference:

1. Recommended minimum load is 5% or above 100uF high frequency low resistance electrolytic capacitor;
2. Recommend the unbalance loads of dual output to be  $\leq \pm 5\%$ ;

**Product Characteristic Curve**



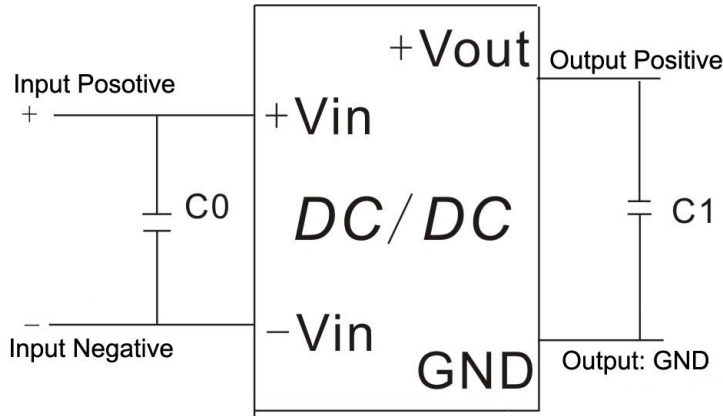
**Design Application**



**Recommended circuit**

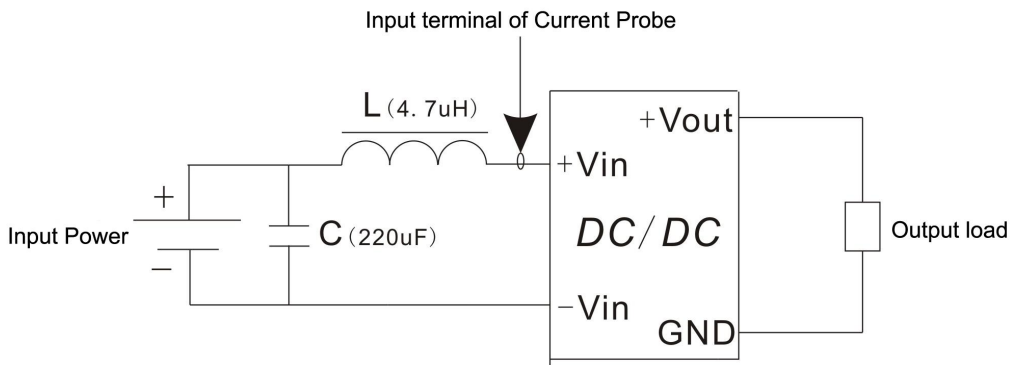
**1. DC/DC test circuit:**

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

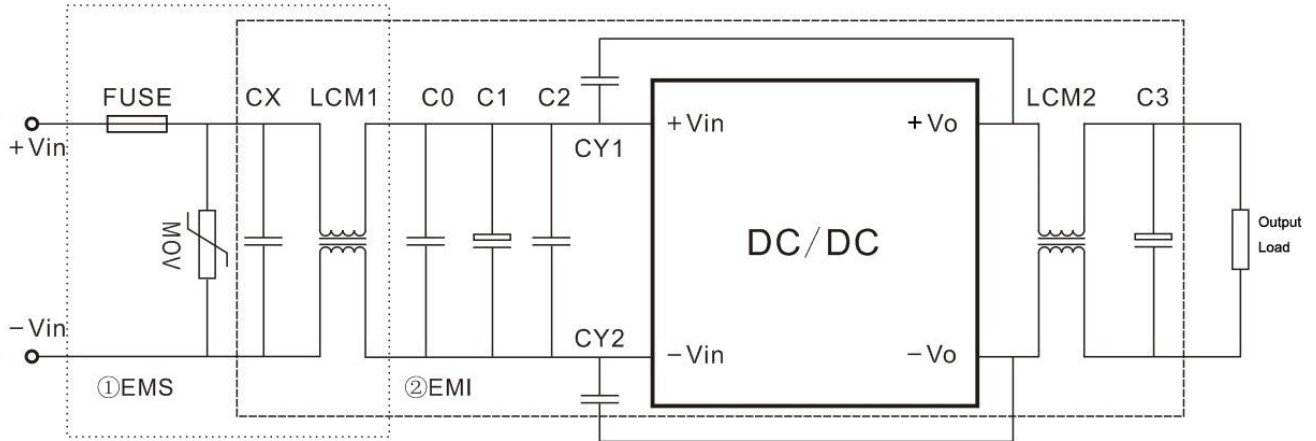


**2. Input reflecting ripple current test circuit:**

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



**3.EMC external recommended circuit:**



**Recommended Spec:**

Component	PFD15-18DXXA3(C)2 Input	PFD15-36DXXA3(C)2 Input
FUSE	According to customer's request	
MOV	14D560K	14D101K
CX	0.47uF	0.47uF
LCM1	10mH	10mH
C0	1uF/100V	1uF/100V
C1	220uF/100V	220uF/100V
C2	1uF/100V	1uF/100V
LCM2	30uH	30uH
C3	47uF/50V	47uF/50V
CY1,CY2	2.2nF/2000V	

- Note:**
1. The product should be used within the specification range, otherwise it will cause permanent damage to the product;
  2. If the product operates below the minimum required load, there is no guarantee that the product performance will meet all the performance indicators in this manual;
  3. The maximum capacitive load is measured under pure resistive full load conditions;
  4. If the product operates outside the product load range, there is no guarantee that the product performance will comply with all performance indicators in this manual;
  5. Unless otherwise specified, the above data are measured at Ta=25°C, humidity <75%, input nominal voltage and output rated load (pure resistive load);
  6. All the above index test methods are based on our company's standards;
  7. The above are the performance indicators of the product models listed in this manual. Some indicators of non-standard model products will exceed the above requirements. For specific circumstances, please contact our technical personnel directly;
  8. Our company can provide overall power supply solutions or product customization; due to limited space, if you have any other questions, please contact the relevant personnel of our company;
  9. The product specification may be changed at any time without prior notice. Please pay attention to the latest manual published on our official website.