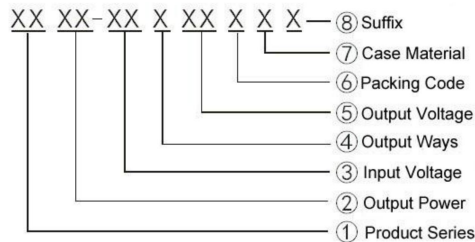




Typical Features
◆ Wide input voltage range ( 2:1), Output power 6W
◆ Transfer efficiency up to 89%
◆ Switching Frequency 300KHz
◆ Continuous short circuit protection, Self-recovery
◆ Isolation voltage 1500VDC
◆ Output over voltage protection
◆ Low standby power consumption



Test Condition: Unless otherwise specified, data in the datasheet should be tested under the conditions of inputting nominal voltage, pure resistance rated load and Ta=25°C.

**Product Named Method**

**Input Specifications**

Stand-by Power Consumption	0.6W (max)
Input Filter	$\pi$ Filter

**Output Specifications**

Output Voltage Accuracy		Vo	Main circuit $\leq\pm 2.0\%$ (max); Auxiliary circuit $\leq\pm 3.0\%$ (max)
Line Regulation	Nominal Load, full voltage range	Vo	$\leq\pm 0.5\%$
Load Regulation	10% ~ 100% nominal load	Vo	$\leq\pm 1\%$
Ripple & Noise	Nominal Load, Nominal Voltage		$\leq 100\text{mVp-p}$ (20MHz bandwidth)
Output Over Voltage Protection			110%~140%Vo
Output Short circuit Protection			Continuous, Self-recovery
Dynamic Response	25% nominal load step change	$\Delta Vo/\Delta t$	$\leq\pm 5.0\%/500\mu\text{s}$
Output Voltage Adjustment			Not available
Startup Delay Time	Typical		200ms

**General Specifications**

Switching Frequency	Typical	300KHz
Operating Temperature	Refer to temperature derating curve	-40°C ~ +85°C

Storage Temperature		-55°C ~ +125°C
Max Case Temperature	Within the scope of work curve	+105°C
Relative Humidity	non-condensing	5%~95%
Case Material		Black Aluminum case
Isolation Voltage	Input to Output	Input-output 1500Vdc ≤ 0.5mA / 1min
Meantime Between Failure	MIL-HDBK-217F@25°C	2X10 <sup>5</sup> Hrs
Weight	Average	15g

### Typical Product List

Part No.	Input Voltage Range (VDC)		Output Voltage/Current (Vo/Io)		Input Current (mA)		Max. Capacitive Load	Reflected Ripple Current	Efficiency (%)
	Nominal	Range	Voltage (V)	Current (mA)	Full load typ.	No load typ.	uF	mA	Typ.
VD6-12S3V3E3	12	9-18	3.3	1500	641	12	2000	20	76
VD6-12S05E3			5	1200	617		1000		81
VD6-12S12E3			12	500	588		470		85
VD6-12S15E3			15	400	588		220		85
*VD6-12S24E3			24	250	588		100		85
VD6-12D05E3			±5	±600	617		470		81
VD6-12D12E3			±12	±250	588		100		85
VD6-12D15E3			±15	±200	588		100		85
*VD6-24S3V3E3	24	18-36	3.3	1500	316	9	2200	20	79
VD6-24S05E3			5	1200	301		1000		83
VD6-24S12E3			12	500	287		470		87
VD6-24S15E3			15	400	280		220		89
VD6-24S24E3			24	250	287		100		87
VD6-24D05E3			±5	±600	301		470		83
VD6-24D12E3			±12	±250	287		100		87
VD6-24D15E3			±15	±200	287		100		87
*VD6-48S3V3E3	48	36-72	3.3	1500	158	3	2200	20	79
VD6-48S05E3			5	1200	150		1000		83
VD6-48S12E3			12	500	142		470		88
VD6-48S15E3			15	400	142		220		88
*VD6-48S24E3			24	250	142		100		88
VD6-48D05E3			±5	1200	150		470		83
VD6-48D12E3			±12	500	142		100		88
VD6-48D15E3			±15	400	142		100		88

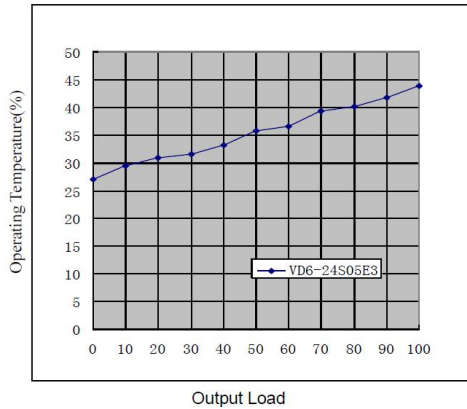
“\*” is model being developing

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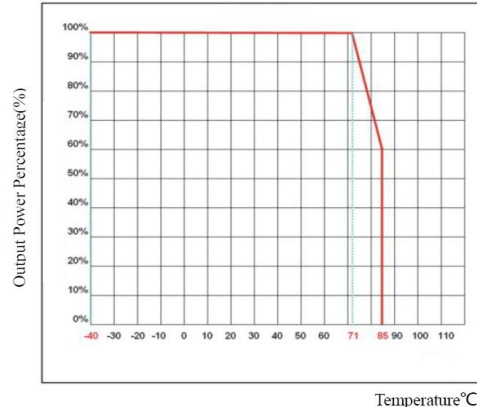
Add: Building B, No.4 Courtyard, Qixing Gang, Shiliu Gang, Haizhu Dis, GZ,CN  
 Email: market@aipu-elec.com Tel: 86-20-84206763 Fax: 86-20-84206762 HOTLINE: 400-811-8032 Website: http://en.aipulnion.com/  
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## Temperature Characteristic Curve

Operating Temperature and Output Load Curve(25°C)

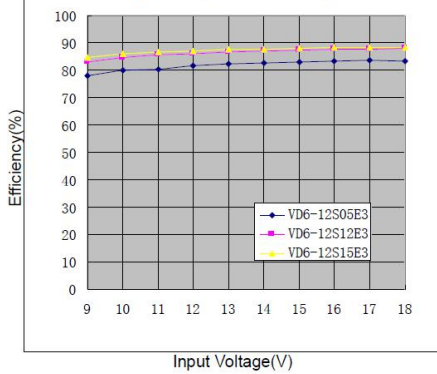


Temperature Derating Curve

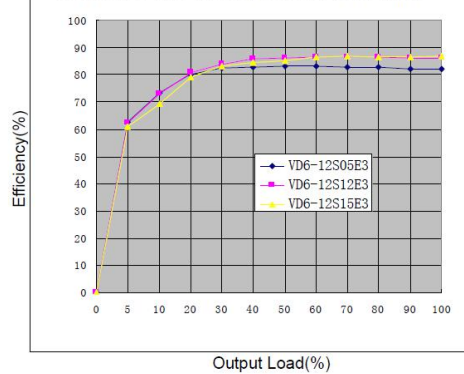


## Efficiency VS Standby Power Consumption Curve

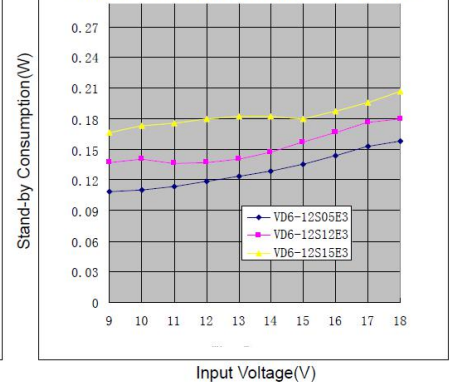
Input Voltage and Efficiency Curve



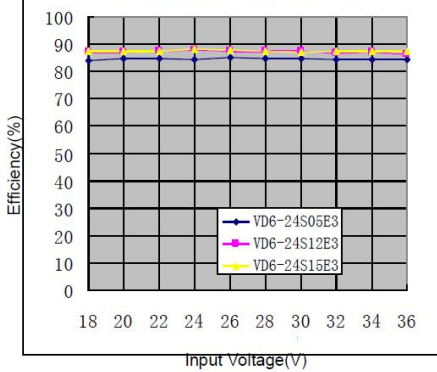
Output Load and Efficiency Curve(Nominal Input)



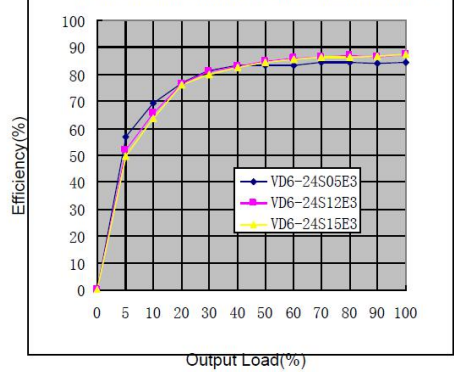
Stand-by Consumption and Input Voltage Curve



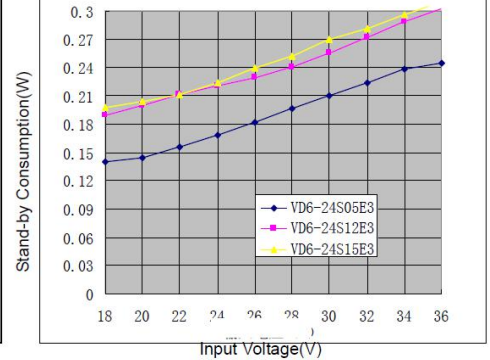
Input Voltage and Efficiency Curve



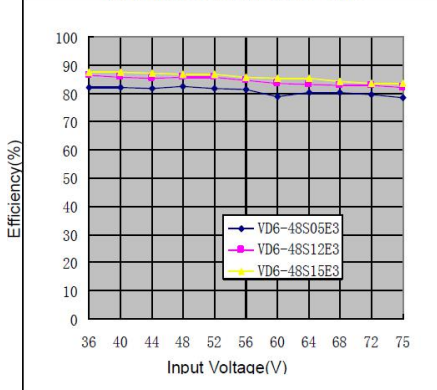
Output Load and Efficiency Curve(Nominal Input)



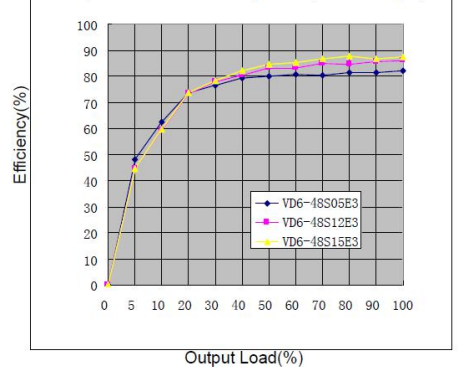
Stand-by Consumption and Input Voltage Curve



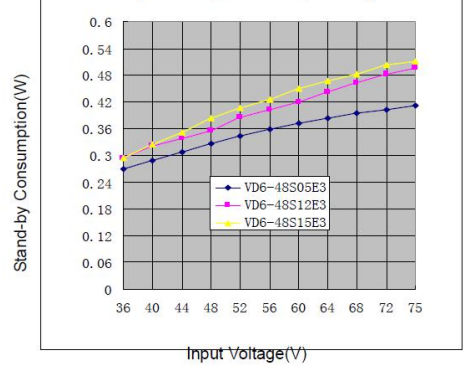
Input Voltage and Efficiency Curve



Output Load and Efficiency Curve(Nominal Input)



Stand-by Consumption and Input Voltage Curve



## Product Characteristic Curve (Below picture is the test waveform of model VD6-24S05E3)

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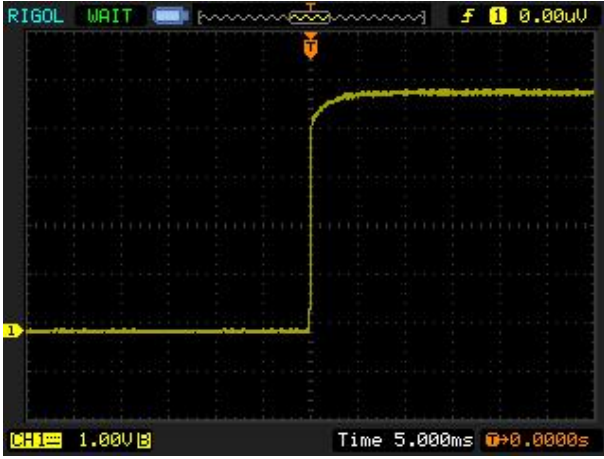
Website: <http://en.aipulnion.com/>

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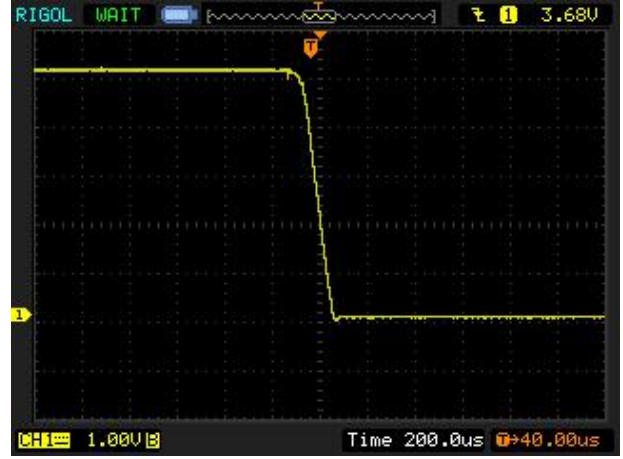
Version: A/1

Date: 2018-12-12

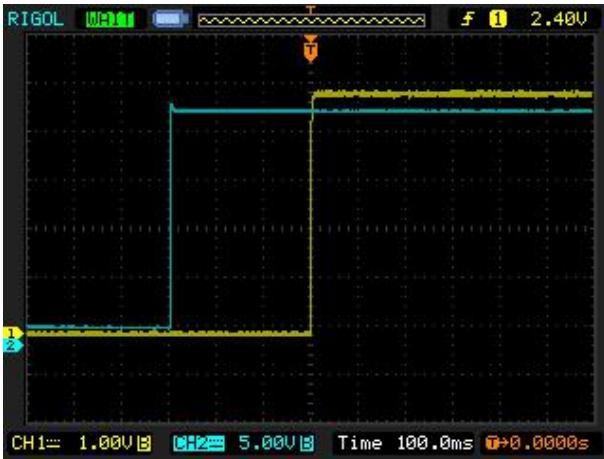
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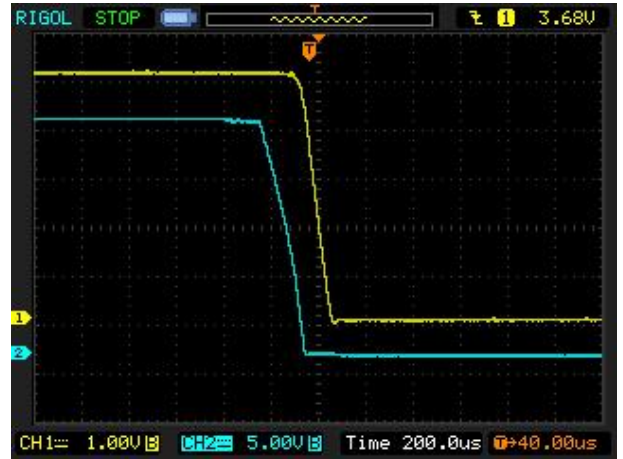
Output Rise time waveform(Nominal input full Load)



Output drop time waveform(Nominal input full Load)



Turn-on delay time waveform(Nominal input full load)

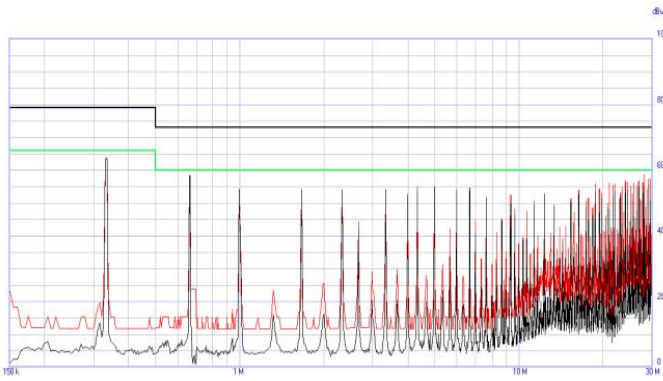


Turn-off delay time waveform(Nominal input full load)

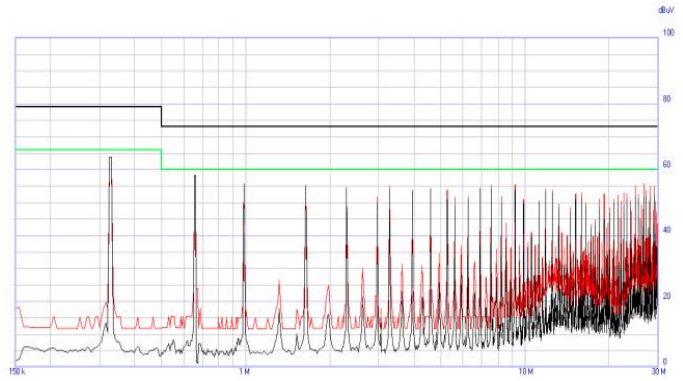
### EMC Characteristics

EMI	CE	CISPR22/EN55022	CLASSA(bare board)/CLASSB (external circuit needed)
	RE	CISPR22/EN55022	CLASSA(bare board)/CLASSB (external circuit needed)
EMS	ESD	IEC/EN61000-4-2	Contact $\pm 4\text{KV}$
	RS	IEC/EN61000-4-3	10V/m
	EFT	IEC/EN61000-4-4	$\pm 2\text{KV}$ (external circuit needed)
	Surge	IEC/EN61000-4-5	$\pm 2\text{KV}$ (external circuit needed)
	CS	IEC/EN61000-4-6	3Vr.m.s
	Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-29	0%-70%

### EMI Test Result(Bare Board)

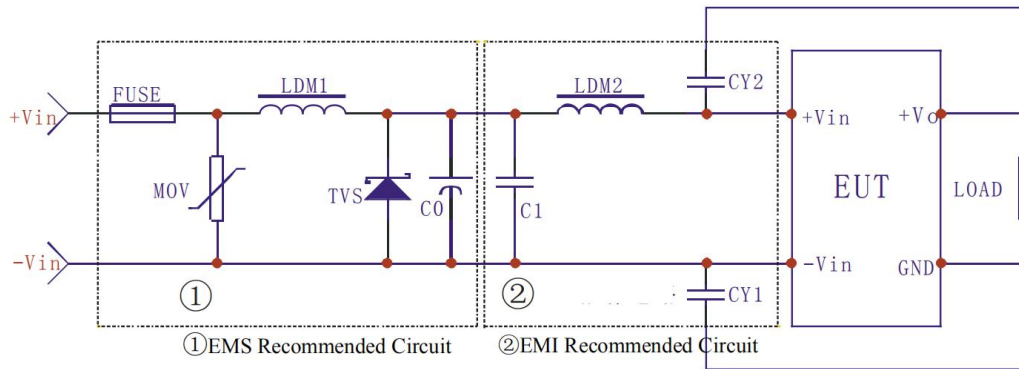


VD6-24S12E3 conducted emission positive of power supply test result



VD6-24S12E3 conducted emission negative of power supply test result

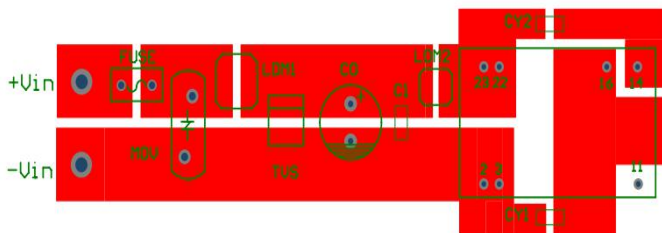
### EMC External Recommended Circuit



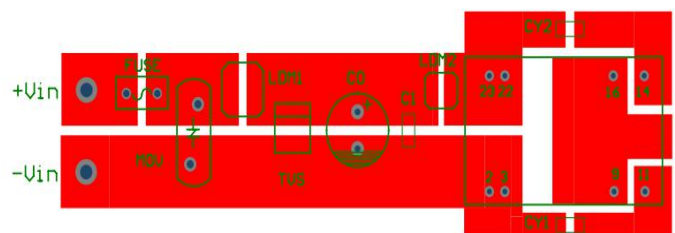
### Parameters Recommended:

Component Code	12V Input	24V Input	48V Input
FUSE	Choose according to customer's request		
MOV	--	14D560K	14D101K
LDM1	--	56uH	68uH
TVS	SMCJ28A	SMCJ48A	SMCJ90A
C0	680uF/25V	100uF/50V	100uF/100V
C1	1uF/25V	1uF/50V	1uF/100V
LDM2	4.7uH	5.6uH	6.8uH
CY1,CY2	1nF/2000V		

### EMC External Circuit Recommended PCB Layout



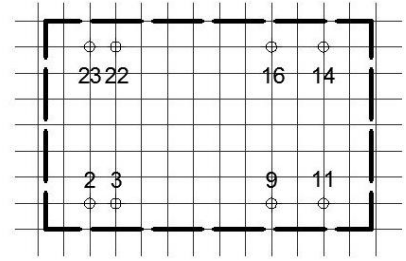
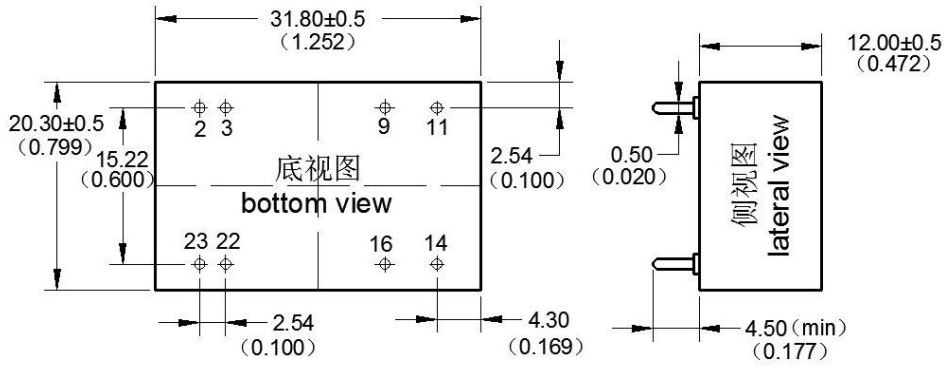
Recommended Circuit for Single Output Product



Recommended Circuit for Dual Output Product

### Packing Dimension

单位 (Unit: ) : mm  
 印刷板俯视图 (Printed board vertical view)  
 栅格间距(Latic spacing): 2.54mm(0.1inch)  
 未标注尺寸公差±0.25mm  
 未注明针脚直径公差±0.10mm



Single Output(S)	2, 3	22, 23	14	16	9	11
	-Vin	+Vin	+Vo	GND	NP	NC
Positive Negative Dual Output (D)	2, 3	22, 23	14	16	9	11
	-Vin	+Vin	+Vo	0V	0V	-Vo

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

### Dimension

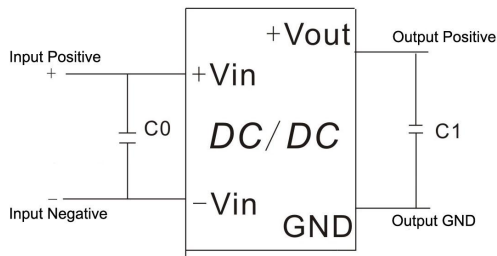
Packing Code	L x W x H	
E3	31.80 × 20.30 × 12mm	1.252 × 0.800 × 0.472inch

### Design and Application Reference

## Recommended circuit

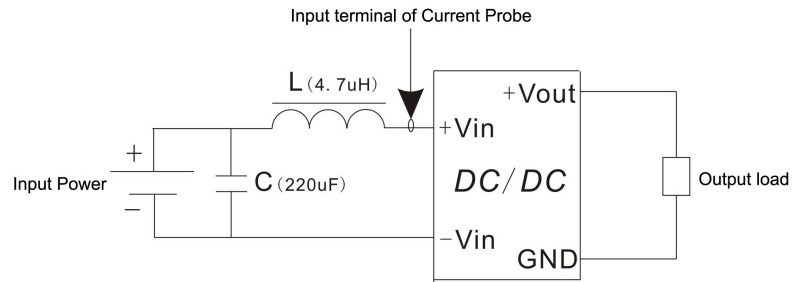
### ① DC/DC test circuit:

Normal recommended capacitor: C0: 47-100 $\mu$ F; C1: 10-22 $\mu$ F.



### ② Input Reflected ripple current test circuit:

Capacitor C should choose low ESR type, withstand voltage value should be bigger than maximum of input voltage;

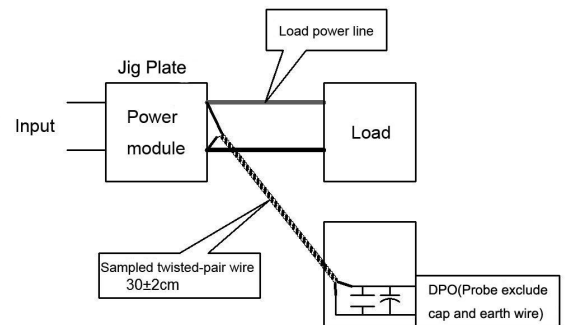


### ③ Ripple & Noise Test: (Twisted Pair Method 20MHZ bandwidth)

Test Method:

(1) 12# twisted pair to connect, Oscilloscope bandwidth set as 20MHz, 100M bandwidth probe, terminated with 0.1 $\mu$ F polypropylene capacitor and 47 $\mu$ F high frequency low resistance electrolytic capacitor in parallel, oscilloscope set as Sample pattern.

(2) Input terminal connect to power supply, output terminal connect to electronic load through jig plate, Use 30cm $\pm$ 2 cm sampling line, Power line selected from corresponding diameter wire with insulation according to the flow of output current.



## Application Recommendation:

1. The recommended minimum load is 5%-10%, output ripple might rise under no load, other performances are not affected basically;
2. The recommended unbalance degree of the dual output module load is  $\leq \pm 5\%$ ;
3. The Max capacitive load offered was tested under pure resistance and full load condition;
4. Our company can provide overall solution for power supply, or custom made product;
5. Due to space limitation, please contact our sales team for more information.