
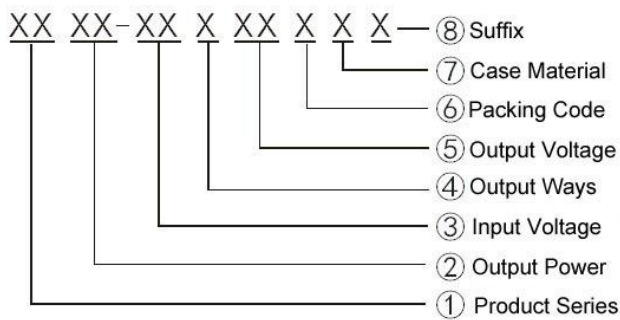


Typical Features	
◆ Wide input voltage range ( 2:1), Output power 6W	
◆ Transfer efficiency up to 88%	
◆ Low standby power consumption	
◆ Continuous short circuit protection, Self-recovery	
◆ Output over voltage protection	
◆ Switching Frequency 300KHz	
◆ Isolation Voltage 1500VDC	

**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	0.3 W(Max)
Input Filter	π filter

### Output Specifications

Output Voltage Accuracy	Full voltage full load	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	$\leq\pm 1.0\%$
Ripple & Noise	Nominal Load, Nominal Voltage		$\leq 75\text{mVp-p}$ (20MHz bandwidth)
Output Over Voltage Protection	110%~140%Vo		
Output Short circuit Protection	Continuous, Self-recovery		
Dynamic Response	25% nominal load step change	$\Delta V_o/\Delta t$	$\leq\pm 5.0\%/500\mu\text{s}$
Output Voltage Adjustment	Not available		
Turn-on 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		Aluminum metal case
Isolation Voltage	Input to Output	1500Vdc $\leq 0.5\text{mA} / 1\text{min}$
Meantime Between Failure	MIL-HDBK-217F @25°C	2X10 <sup>5</sup> Hrs
Weight	Average	15g

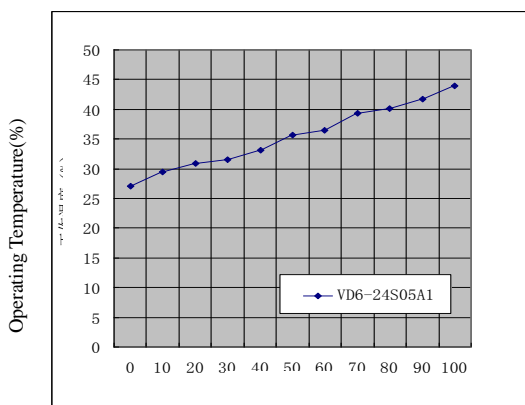
## Typical Product List

Part No.	Input Voltage Range (VDC)		Output Voltage/Current (Vo/Io)		Input Current(mA) nominal voltage		Max. Capacitive Load	Reflected Ripple Current	Efficiency (%)
	Nominal	Range	Voltage (V)	Current (mA)	Full load typ.	No load typ.	uF	mA	Typ.
*VD6-12S3V3A	12	9-18	3.3	1500	529	12	3300		78
VD6-12S05A1			5	1200	617		3300		81
VD6-12S12A1			12	500	588		680		85
VD6-12S15A1			15	400	588		330		85
*VD6-12S24A1			24	250	581		100		86
VD6-12D05A1			±5	±600	617		1000		81
VD6-12D12A1			±12	±250	588		220		85
VD6-12D15A1			±15	±200	588		100		85
*VD6-24S3V3A	24	18-36	3.3	1500	261	7	4700	20	79
VD6-24S05A1			5	1200	301		4700		83
VD6-24S12A1			12	500	287		1000		87
VD6-24S15A1			15	400	287		470		87
*VD6-24S24A1			24	250	287		100		87
VD6-24D05A1			±5	±600	301		1000		83
VD6-24D12A1			±12	±250	287		220		87
VD6-24D15A1			±15	±200	287		100		87
*VD6-48S3V3A	48	36-75	3.3	1500	130	3	4700		79
VD6-48S05A1			5	1200	151		4700		83
VD6-48S12A1			12	500	143		1800		87
VD6-48S15A1			15	400	142		680		88
*VD6-48S24A1			24	250	142		100		88
VD6-48D05A1			±5	±600	151		1000		83
VD6-48D12A1			±12	±250	143		220		87
VD6-48D15A1			±15	±200	142		100		88

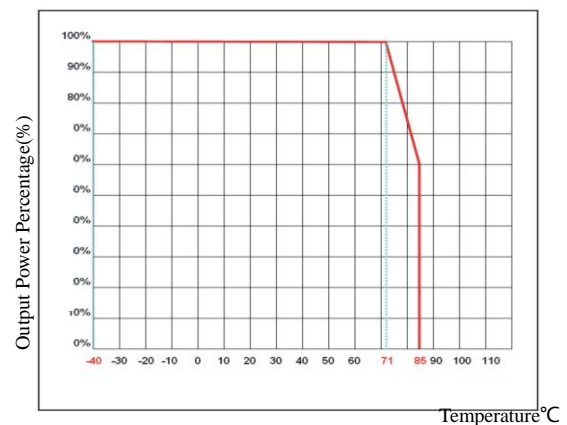
“\*” is model being developing

## Temperature Characteristic Curve

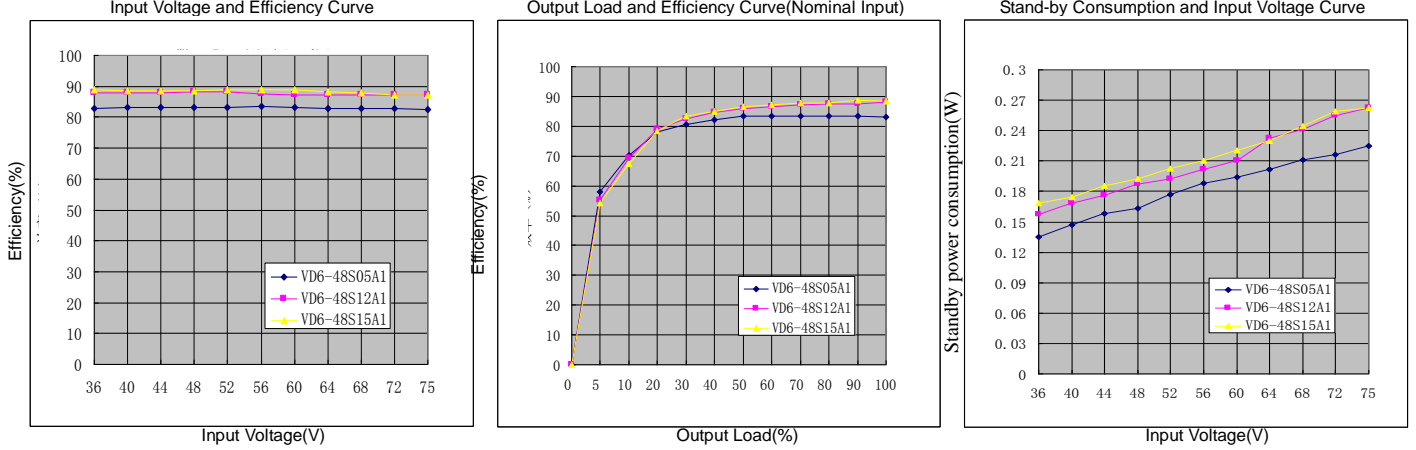
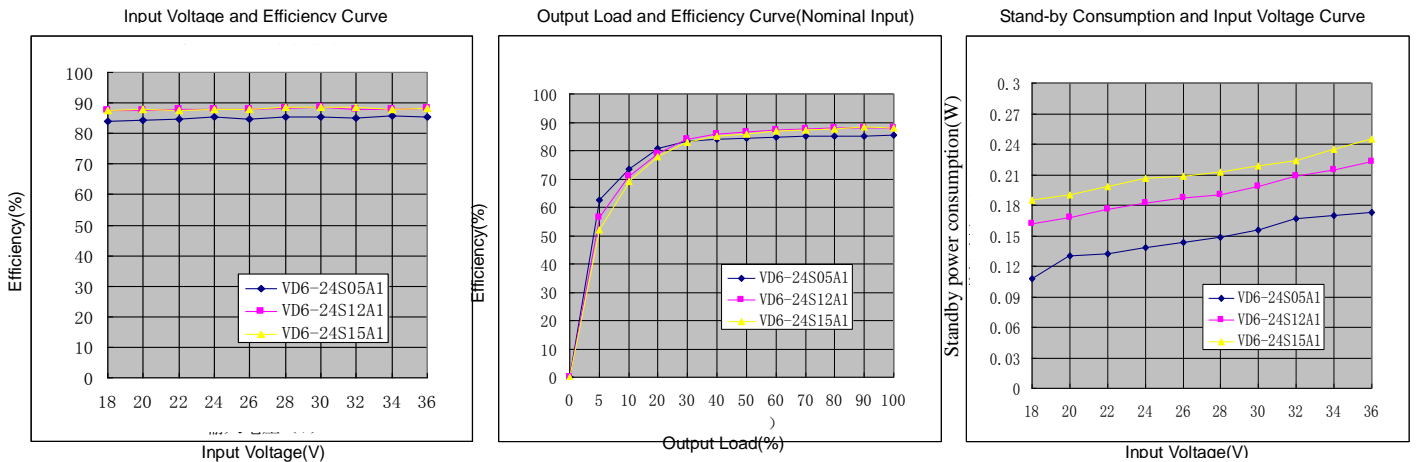
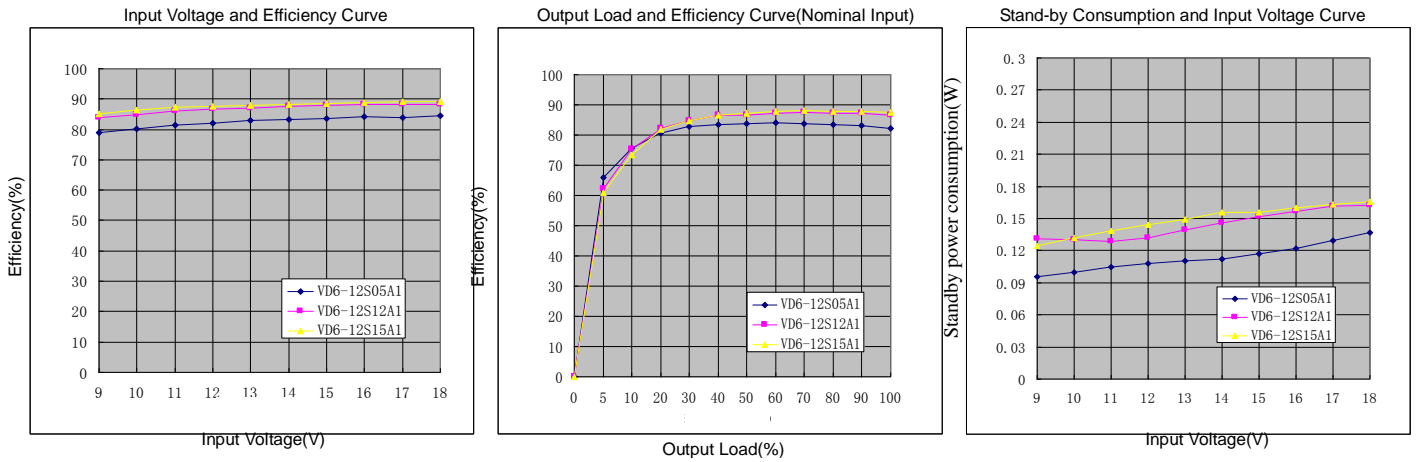
Operating Temperature and Output Load Curve(25°C)



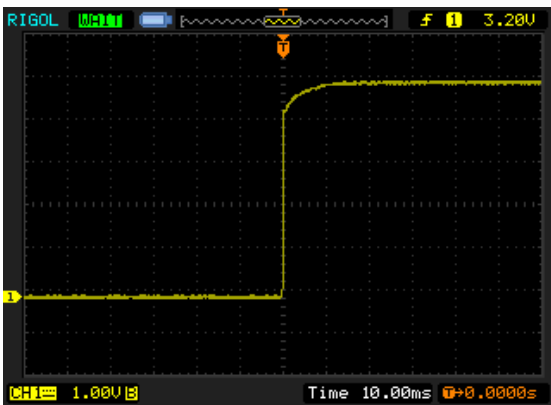
Temperature Derating Curve



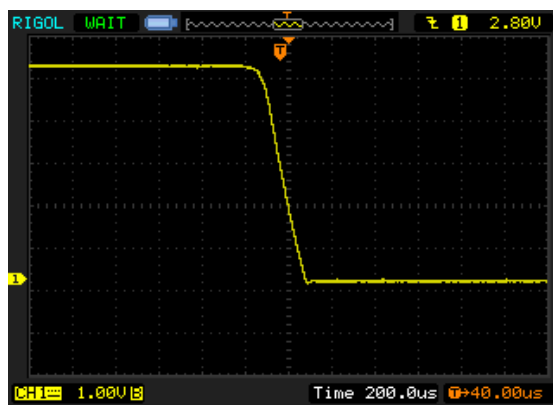
# Efficiency VS Standby Power Consumption Curve



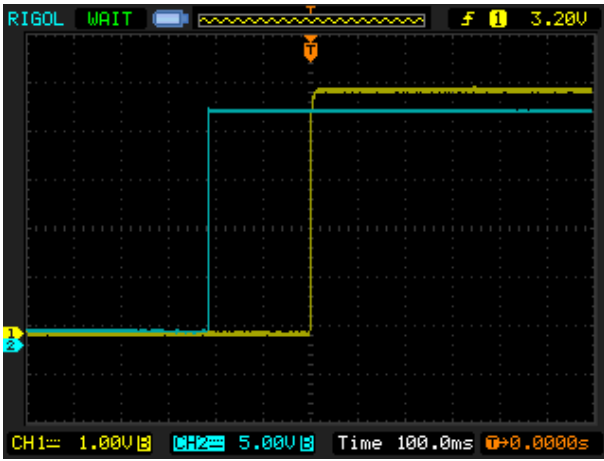
## Product Characteristic Curve (Below picture is the test waveform of model VD6-24S05A1)



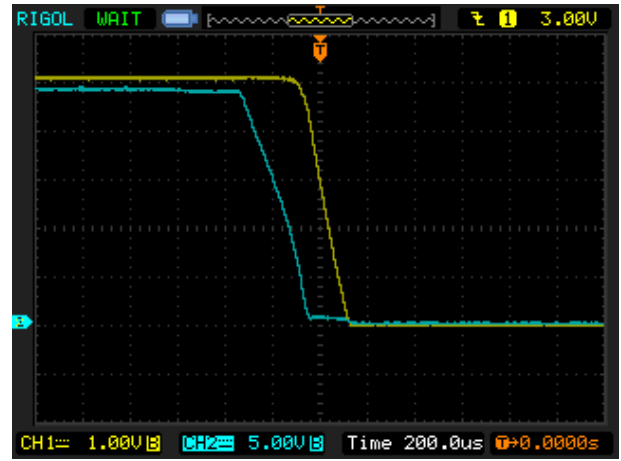
Output Rise time waveform(Nominal input full Load)



Output drop time waveform(Nominal input full Load)



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

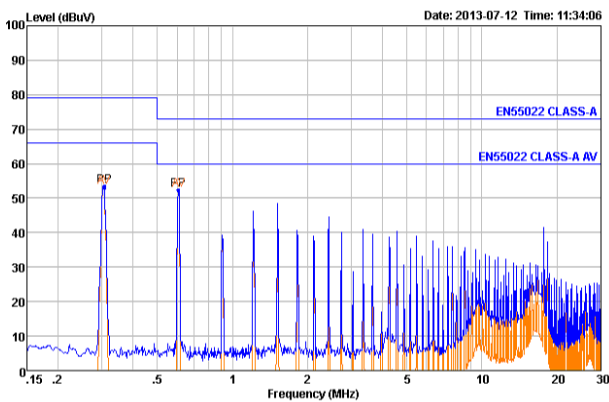


Turn-off delay time waveform(Nominal input full load)

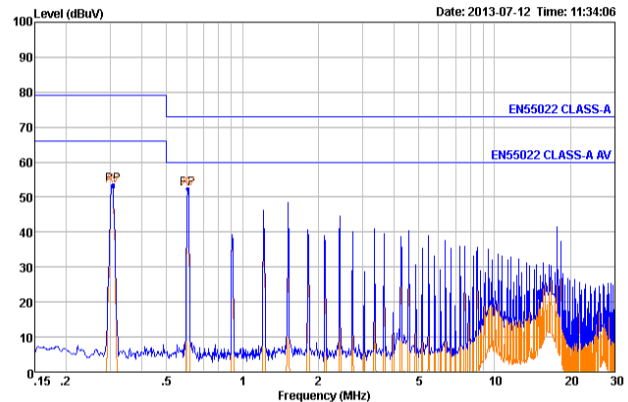
### EMC Characteristics

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	

### EMI Test Result(Bare Board)

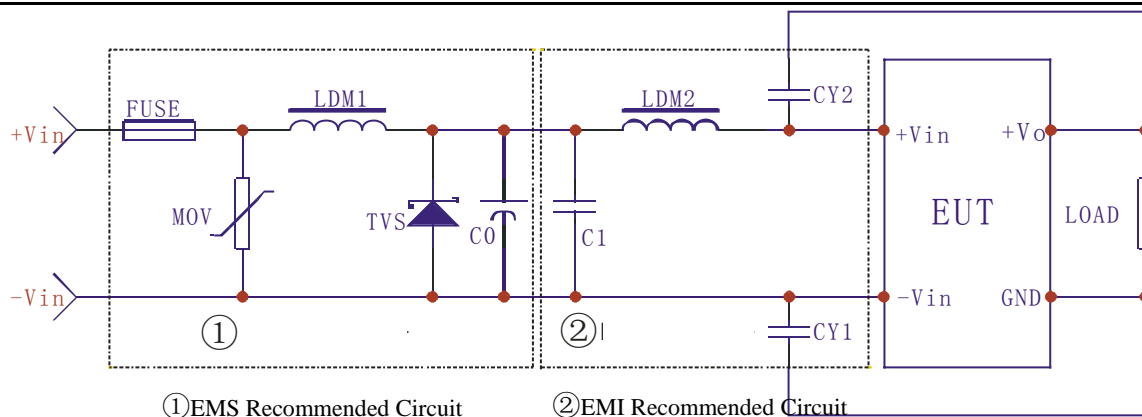


VD6-24S05A1 conducted emission positive of power supply test result



VD6-24S05A1 conducted emission negative of power supply test result

### EMC External Recommended Circuit



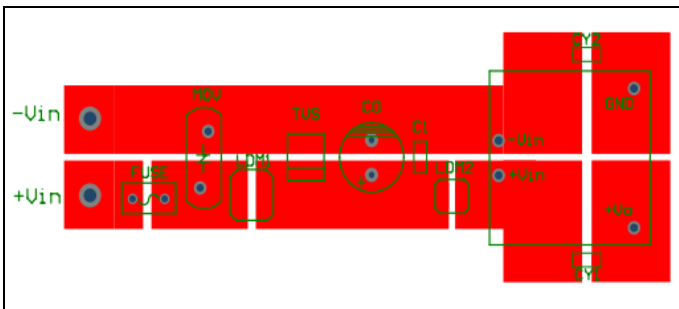
① EMS Recommended Circuit

② EMI Recommended Circuit

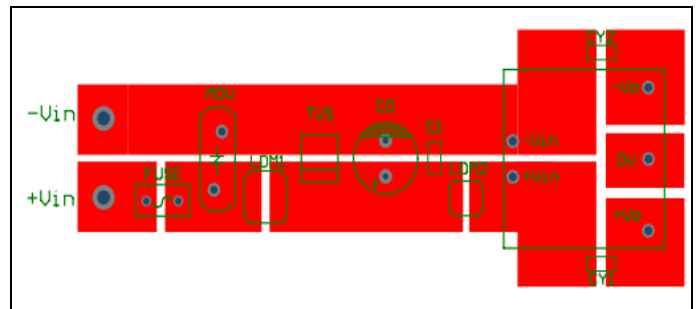
Parameters Recommended:

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



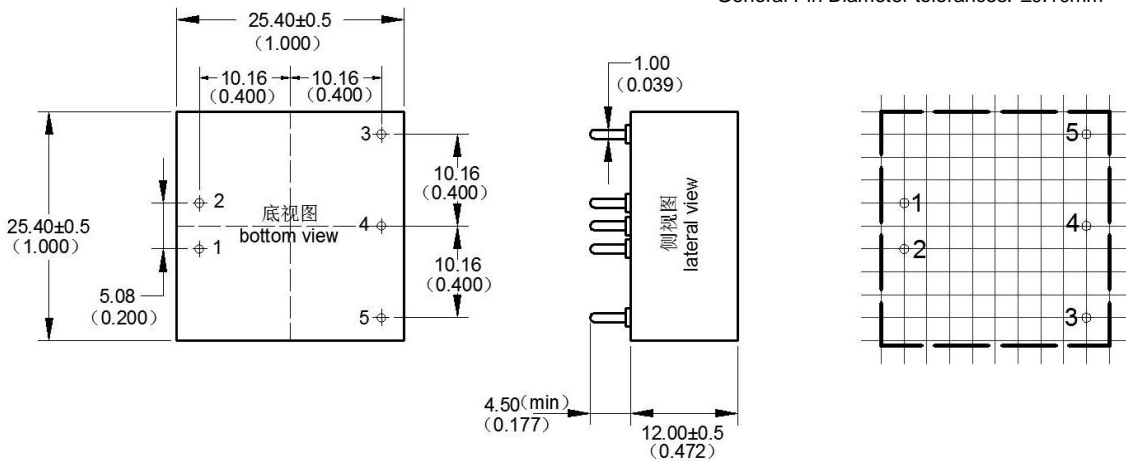
Recommended PCB layout for Single Output Product



Recommended PCB Layout for Dual Output Product

Packing Dimension, Pin Function

Unit: mm(inch); Grid:2.54mm(0.1inch);  
 Printed board vertical view;  
 General tolerances: ±0.25mm;  
 General Pin Diameter tolerances: ±0.10mm



Single Output(S)	1	2	3	4	5
	-VIN	+Vin	+Vo	NP	GND
Positive Negative Dual Output (D)	1	2	3	4	5
	-VIN	+Vin	+Vo	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	
A	25.40 x 25.40 x 12mm	1.000x 1.000 x 0.472inch

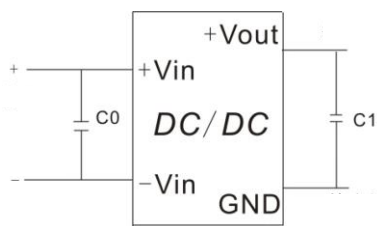
## Design and Application Reference

### Recommended circuit

①DC/DC test circuit:

Normal recommended capacitor: C0:47-100uF; C1: 10-22uF.

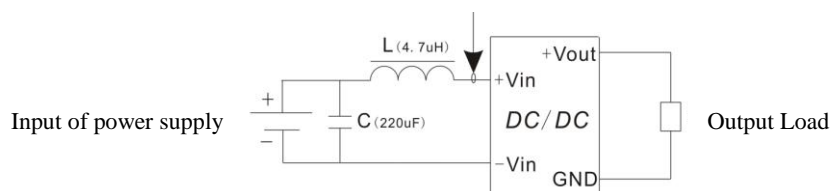
voltage value should be bigger than maximum of input voltage;



②Input Reflected ripple current test circuit:

Capacitor C should choose low ESR type, withstand

Input terminal of Current Probe

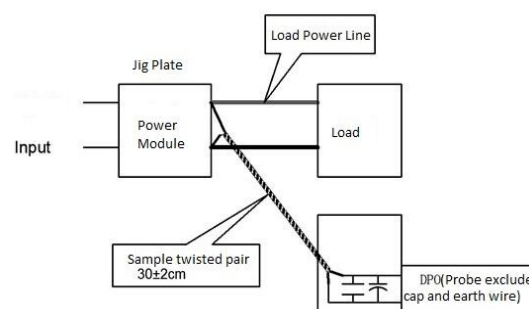


③Ripple & Noise Test: (Twisted Pair Method 20MHZ bandwidth)

Test Method:

(1) 12# twisted pair to connect, Oscilloscope bandwidth set as 20MHz, 100M bandwidth probe, terminated with 0.1uF polypropylene capacitor and 47uF 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±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 loads 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.