































Table15.

Voltage	Min(V)	Max(V)
3.3V	3.9	4.5
5V	5.7	6.5
12V	13.0	15.6

### 4.2 Under Voltage Protection (UVP)

When +12V,+5V,+3.3V occurs UVP, the power supply should latch off and must be able to turn on through toggling PS ON/OFF or AC ON/OFF re-cycle after remove the protection.

Table16.

Output	+12V	+3.3V	+5V
UVP Range(V)	8.5-10.5	2.0-2.5	3.0-4.0

### 4.3 Over Temperature Protection (OTP)

The power supply will be protected against over temperature conditions caused by loss of fan cooling or excessive ambient temperature. In an OTP condition the PSU will shut down and latch-off.

The ambient over temperature point is  $55\pm 5^{\circ}\text{C}$ .

### 4.4 Short Circuit

All output to GND. The power supply shall shut down and latch off when +12V output is short circuit (impedance less than 0.1 $\Omega$ ), and 5VSB shall be auto restart. The power should be under protection to keep component safe whatever the outputs is shorten before turn on or shorten after turn on. The +12V can be recovery after removing short by AC on/off or PSON/OFF, but +5VSB can be auto restart after short is removed.

### 4.5 Over Current Protection (OCP)

The power supply should have over current protection to prevent the outputs from exceeding limits, if the OCP occurred, the power supply should shut down and latch-off and the latch will be cleared by toggling the PSON signal or an AC on/off cycle operation.

**Table17. OCP Limited Table**

Output	Min(A)	Max(A)
3.3V	28.0	40.0
5V	28.0	40.0
12V	53.0	70.0

Note:

1. After OCP, the +12V output is turned off and locked, and by AC ON/OFF or PSON/OFF unlock, and +5VSB output can automatic restart. When the OCP conditions removed, +5VSB should return to normal.

## 5.0 OPERATE ENVIRONMENT

### 5.1 Operate Temperature

Operate temperature: -20°C to +50°C.

### 5.2 Storage Temperature

Storage temperature: -40°C to +70°C.

### 5.3 Operate Humidity

Operating (non-condensing): 10% to 90% at 40°C.

### 5.4 Storage Humidity

Storage Humidity (non-condensing): 5% to 95% at 55°C.

### 5.5 Operate Altitude

Operate Altitude: 0 to 5000m.

### 5.6 Storage Altitude

Storage Altitude: 0 to 10000m.

### 5.7 Cold Start

The power supply shall be able to turn on at 0degC.



## 6.0 SAFETY

### 6.1 Safety Certification

Meet EN60950-1(Europe).

Meet GB4943.1-2011(CCC-CNCA Certification) (CHINA).

Meet FCC Part 15: Subpart B (Class A)

### 6.2 Hi-pot

Primary to secondary Hi-pot withstand voltage: 3000Vac or 4242Vdc, 60s, leakage current <10mA.

Primary to grounding Hi-pot withstand voltage: 1500Vac or 2121Vdc, 60s, leakage current <10mA.

### 6.3 Grounding Impedance Test

Grounding impedance test using grounding current 32A for 180s and the impedance is less than 100mohm.

### 6.4 Insulation Resistance

Primary to Secondary: 500Vdc for 60S, the isolation resistance shall not be less than 100Mohm.

### 6.5 Leakage Current

264Vac/60Hz conditions to be less than 3.5mA.





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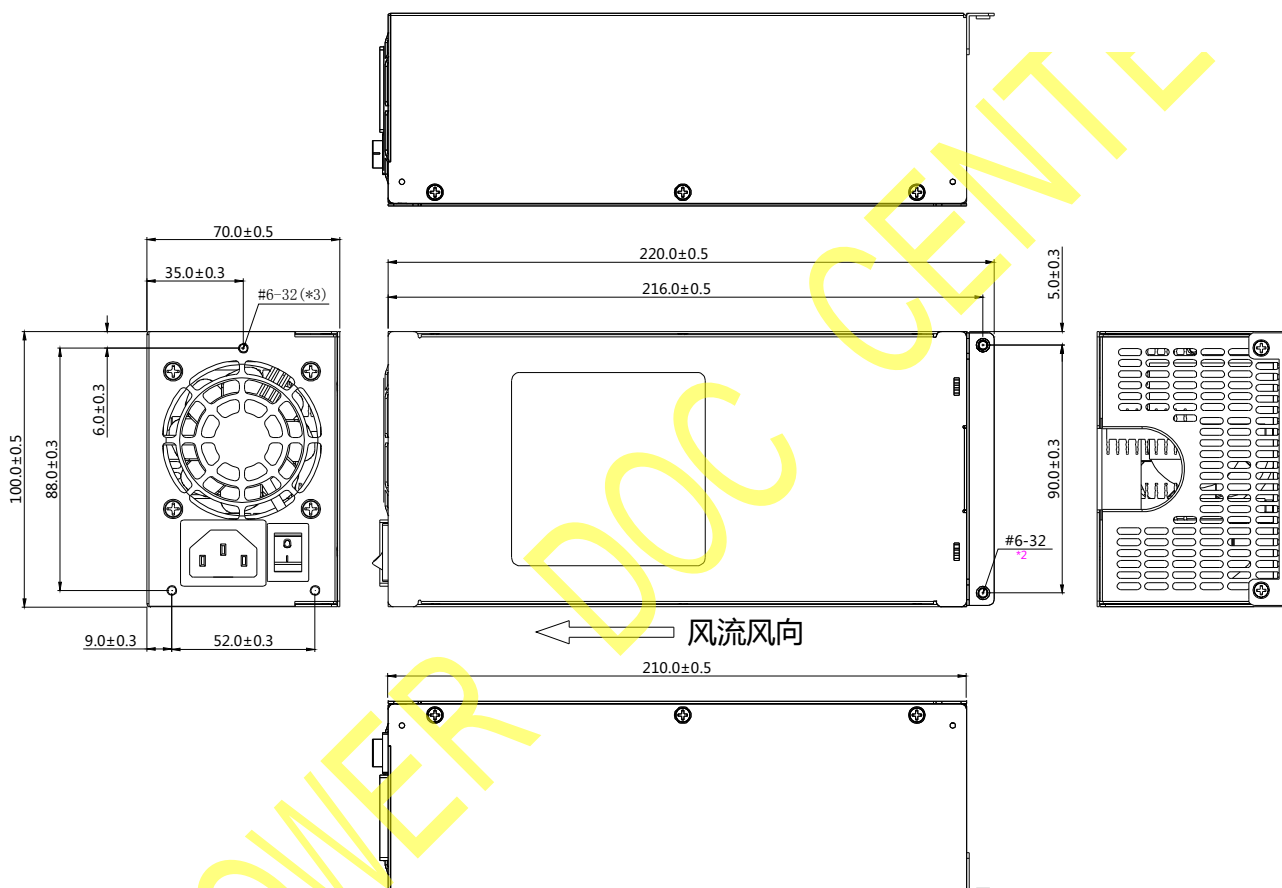
## 7.0 OUTLINE STRUCTURE

Outline dimension:

Length: 210.0mm

Width: 100.0mm

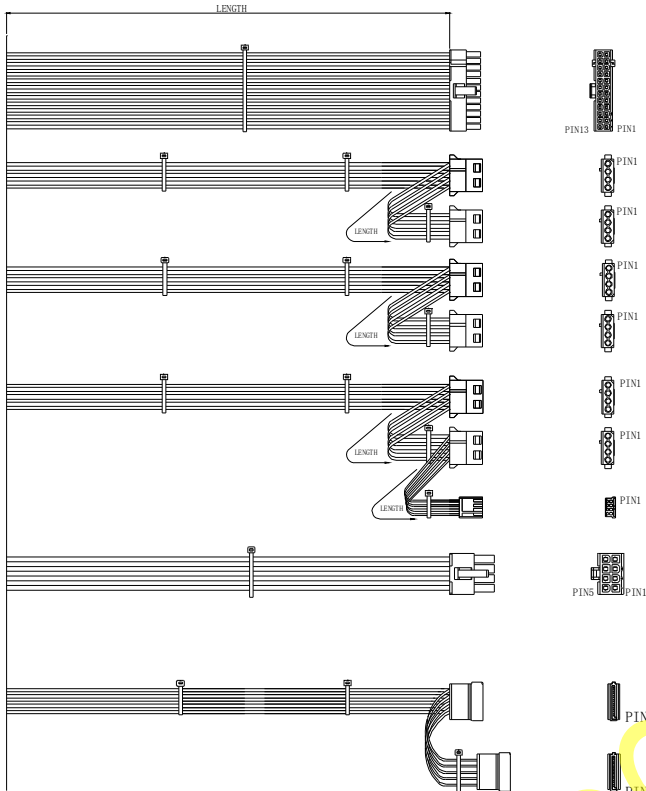
Thickness: 70.0mm





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PA

PB

PC

PB

PC

PD

PE

PF

PG

PH

PI

CONN	PIN	WIRE COLOR	OUTPUT	WIRE SPECIFICATION	LENGTH (mm)	HOUSING (OR EQ)
PA	1	ORANGE	+3.3VDC	UL/CSA 1007 18AWG 80° C 300V	330±30	WST P20+4-142002K2
	2	ORANGE	+3.3V REMOTE SENSE			
	3	BLACK	GND			
	4	RED	-5VDC			
	5	BLACK	GND			
	6	RED	-5VDC			
	7	BLACK	GND			
	8	GRAY	PG			
	9	PURPLE	-5 VSB			
	10	YELLOW	+12VDC			
	11	YELLOW	+12V REMOTE SENSE			
	12	ORANGE	+3.3VDC			
	13	ORANGE	+3.3VDC			
	14	BLUE	+12VDC			
	15	BLACK	GND			
	16	GREEN	PS-ON			
	17	BLACK	GND			
	18	BLACK	GND			
	19	BLACK	GND			
	20	NC	NC			
	21	RED	-5VDC			
	22	RED	-5V REMOTE SENSE			
	23	RED	-5VDC			
	24	BLACK	GND			
PB	1	YELLOW	+12VDC	UL 1007 18AWG 80° C 300V	PB 330±30mm	WST P4-A10202
PC	2	BLACK	GND		PC PE 150±10mm	
PD	3	BLACK	GND			
PE	4	RED	-5VDC			
PF	1	YELLOW	+12VDC	UL 1007 20AWG 80° C 300V	150±10mm	WST P4-125001
	2	BLACK	GND			
	3	BLACK	GND			
	4	RED	-5VDC			
PG	1	BLACK	GND	UL 1007 18AWG 80° C 300V	330±30mm	WST P8-142002
	2	BLACK	GND			
	3	BLACK	GND			
	4	BLACK	GND			
	5	YELLOW	+12VDC			
	6	YELLOW	+12VDC			
	7	YELLOW	+12VDC			
	8	YELLOW	+12VDC			
PH PI	1	ORANGE	+3.3VDC	UL/CSA 1007 18AWG 80° C 300V	PH 330±30mm PI 150±10mm	WST P5-112707
	2	BLACK	GND			
	3	BLACK	GND			
	4	BLACK	GND			
	5	BLACK	GND			
	6	BLACK	GND			
	7	RED	-5VDC			
	8	RED	-5VDC			
	9	RED	-5VDC			
	10	BLACK	GND			
	11	BLACK	GND			
	12	BLACK	GND			
	13	BLACK	GND			
	14	YELLOW	+12VDC			
15	YELLOW	+12VDC				

## 8.0 ROHS

Power supply must meet be Rohs6 compliant including the component, PCB, soldering material, case, wire, and so on.

## 9.0 EMC

### 警告

此为 A 级产品，在生活环境中，该产品可能会造成无线电干扰。在这种情况下，可能需要用户对干扰采取切实可行的措施。



Table18. EMI (Electromagnetic Interference) Requirements Table

Item	Description and Requirement	Criterion	Notes
Radiated Emissions	Frequency:30MHz~1GHz	EN 55032	230V/50Hz input
	ClassA with 6dB Margin	FCC part 15	120V/60Hz input
Conducted Emissions	Frequency:150KHz~30MHz	EN 55032	230V/50Hz input
	ClassA with 6dB Margin	FCC part 15	120V/60Hz input
Harmonic	IEC 61000-4-13 Class A	IEC 61000-3-2	230V/50Hz input
Voltage Flicker	Pst $\leq$ 1.0 and Plt $\leq$ 0.65 Voltage change $\leq$ 3.3% Relative Voltage change $\leq$ 4% The voltage changed over 3.3% duration time should $\leq$ 500ms	EN 61000-3-3	230V/50Hz input

Table19. EMS (Electromagnetic Susceptibility) Requirements Table

Item	Description and Requirement	Level	Criterion
Surge	Different Mode: $\pm$ 1KV Common Mode: $\pm$ 2KV	A	EN61000-4-5
Electrical Fast Transient Group(EFT)	$\pm$ 1KV	A	EN61000-4-4 EN 55035
Electrical Static Discharge (ESD)	Touch: $\pm$ 4KV Air: $\pm$ 8KV	A	EN61000-4-2 EN 55035
Radiated Susceptibility (RS)	80M Hz~1000MHz 10V/M	A	EN 61000-4-3 EN 55035
Conducted Susceptibility (CS)	150KHz~80MHz 3V/M	A	EN 61000-4-6 EN 55035
Voltage Dips and Interruptions	0% Ut: 10ms	B	EN 61000-4-11
	70% Ut: 500ms	B	EN 61000-4-29
	0% Ut: 5000ms	C	EN 55035 / 60601



## 10.0 PART CONTROL REQUIREMENTS

1. All current limiting devices shall have UL, TUV or VDE certification and shall be identified as applications in which the device complies with IEC60950.
2. All printed circuit board ratings shall meet UL94V - 0 and those from UL certified PCB manufacturers.
3. All joints shall pass UL certification and UL flame retardant rating UL94V-0.
4. All wiring harness shall be from UL certified wiring harness manufacturer. SELV cable is rated at minimum 80V, 130degC.
5. Product safety labels must be printed with UL certified labels and ribbons. In addition labels can be purchased from UL label manufacturers for approval.
6. The product must have the correct regulatory marks to support the certification specified in this document.

## 11.0 MECHANICAL PERFORMANCE

Mechanical vibration experiment is mainly to simulate the product vibration experiment in the work and transport process, the purpose is to test whether the product can meet certain specifications of vibration intensity, the main test items include:

1. Work random vibration.
2. Work shock.
3. Packaging random vibration.



Table20.

NO	Experiment Item	Sample	Standard	Parameter	Criterion
1	work random vibration	≥3	IPC9592A-201 0 IEC60068-2-6 4	ASD: 20~1000Hz: 0.04g <sup>2</sup> /Hz; 1000~2000Hz: 6db/oct; 2000Hz: 0.01g <sup>2</sup> /Hz. About 8Grms. 3 axial, each axial at least 10min. Test process sample power on, normal input voltage, no load. During the test, each power output and signal output should be monitored continuously. The monitoring period should be less than 1ms.	Power supply voltage is Within the specification limits during the test.
2	work shock	≥3	IPC9592A-201 0 IEC60068-2-2 7	Half sine wave, 16ms, at least 30g. 3 axial, each axial 3 times. During the test, each power output and signal output should be monitored continuously. The monitoring period should be less than 1ms.	Power supply voltage is Within the specification limits during the test.
3	packaging random vibration	≥3	IPC9592A-201 0 IEC60068-2-6 4	ASD: 5~1000Hz: 0.05g <sup>2</sup> /Hz; 1000~2000Hz: 6db/oct; 2000Hz: 0.0125g <sup>2</sup> /Hz. About 9Grms.	After the test, product should be inspected. Allows minor damage without affecting appearance,



				<p>About 9Grms, 3 axial, each axial at least 10min. Each PSU should have independent packaging follow normal delivery.</p>	<p>installation, or function. Connector pins are not allowed to bend, switch damage, handle damage. Label readability is poor, metal deformation or bending.</p> <p>All equipment through functional testing. Test shipment packaging damage degree does not make judgment requirements.</p>
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### 12.0 MTBF

Quantitative reliability (Quantitative) performance requirements: MTBF (MTBF Mean Time Between Critical Failure), according to the Bellcore standard SR-332 Issue3, the PSU operates continuously under 25degC condition, 115VAC/60Hz 230V/50HZ, input voltage under max load, and MTBF is more than 100000 hours, the testing process should not be interrupted.

**Table21.**

Input Voltage	Load	MTBF
115VAC/60Hz	600W	100000hours
230VAC/50Hz	600W	100000hours

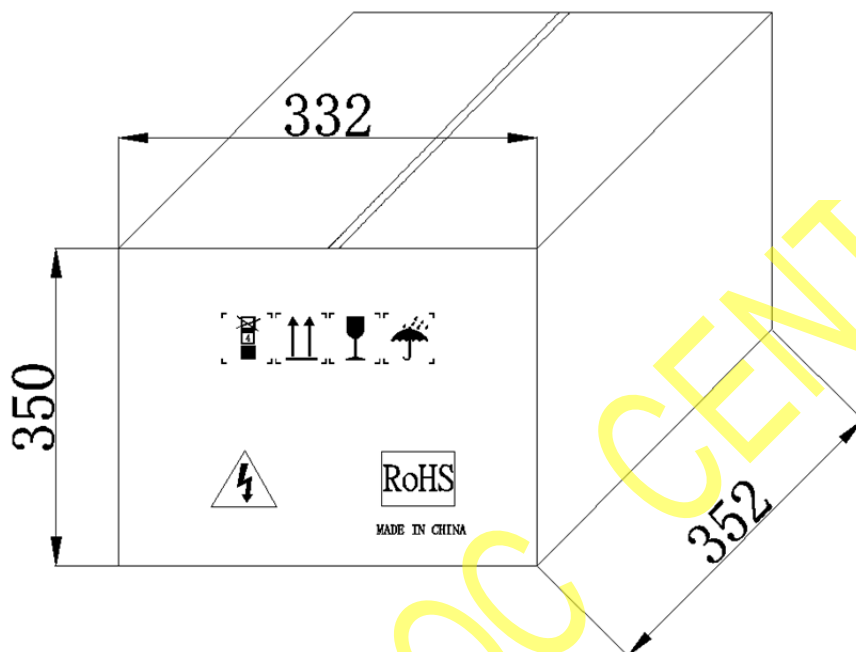


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## 13.0 PACKAGE

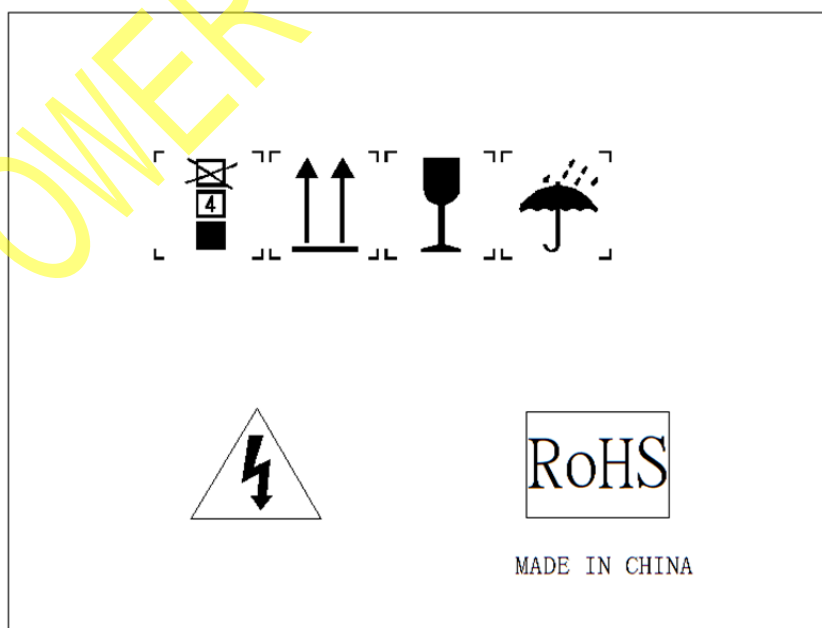
### 13.1 Outline Diagram of Carton



Note:

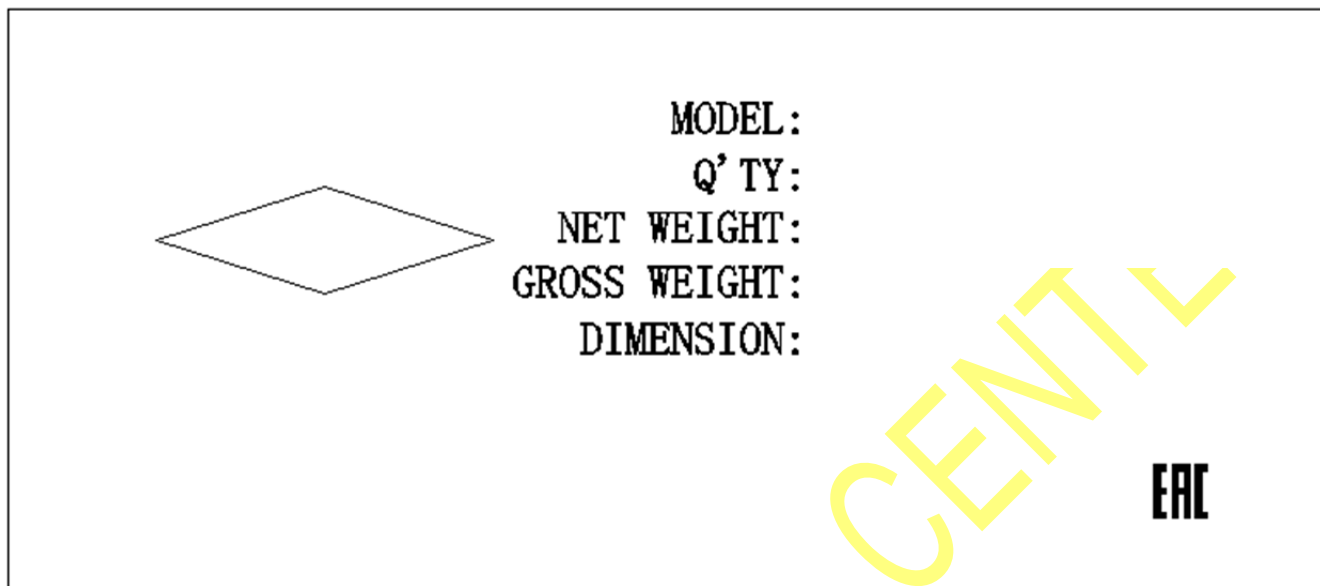
Material: K=K, five layers of corrugated paper.

### 13.2 Side Label





### 13.3 Front Label



### 14.0 STRESS/COMPONENT DE-RATING

The following component de-rating requirements shall be followed:

1. The semiconductor junction temperature at all loads condition, all input voltage range, and ambient of 50°C shall not exceed 90% rated specification.

2. CAP: Ripple Current: 90% of rated specification at frequency and temperature.

Voltage: 90% of the rated specification. Bulk cap voltage de-rating  $\leq 90\%$  of the rated specification, if not meet this limited, manufacturers need to provide guarantee letter.

3. Resistor: The power of resistor's de-rating  $\leq 65\%$  of the rated specification whatever is ambient or high 50°C condition and all of input voltage range.

Temperature: 80% of rated specification at ambient of 50°C.

4. Static voltage/power/current de-rating of all components:  $\leq 90\%$  of the rated specification. The OCP current must be considered the output component de-rating.  $V_r/I_{peak}/I_f$  of diode shall meet 90% of spec rating. The voltage and current rating for Dynamic/output short/input on off of all component:  $\leq 100\%$  of the rated specification. Main switch MOSFET voltage de-rating  $\leq 90\%$  of the rated specification at steady status,  $\leq 100\%$  of the rated specification at transient status;

5. Transformer and Inductor:

Transformer and Inductor core and coil temperature shall not exceed 110°C and 80% of rated temperature ambient of 50°C.





The core/junction temperature of all other components at all load condition, all input voltage range, and ambient of 55°C shall not exceed 110°C(130°C max) and 150°C(175°C max) , and the thermal rating must be less than 80% rated specification.

The component thermal shall not reach its max specification rating while the OTP/OCP of the power supply trips due to the excessive heat in the all load/input voltage condition.

6. Component select requirements:

For PFC booster:  $V_{ds} \geq 600V$

For main switching MOSFET  $V_{ds} \geq 600V$ ; (full/half bridge or double forward topology)

For 5Vsb  $V_{ds} \geq 800V$  for single forward or flyback topology), and the MOSFET must separate from switching controller, so the TOP switch or Tiny switch shall be prohibited.

Bulk cap: The max voltage of  $\geq 450V$ . Temperature is 105°C.

Basic life  $L_o$  of bulk capacitor must be 3000Hrs or above to meet 5years life time, Less than 3000Hrs cannot be acceptable, Otherwise supplier must provide the evidence to ensure the life time shall be able to meet 5 years by the calculating formula which is acceptable by capacitor manufacture.

7. MOV / Spark gap:

MOV/spark gap voltage must be up to 300Vrms if the MOV or spark gap is used. The voltage of other primary side components must also suffer up to 300Vrms.

8. The board material (PWB) shall be rated 130°C minimum. And the surface temperature shall not exceed 100°C.

9. Gold thickness of gold finger shall be more than 30 u inches.

Thermal derating for all components must be at ambient of 50°C as well as other ambient temperature. Supplier must provide the stress/component de-rating report to customer approval.



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## 15.0 Label

### 15.1 Specifications label

**SWITCHING POWER SUPPLY**  
**交换式电源供应器**

**Qdion**

MODEL NO. (型号) : U2A-B20600-S  
Produced by ASPOWER

AC INPUT (交流输入) ~	电压 (VOLTAGE)		电流 (CURRENT)		频率 (FREQUENCY)	
	100V-240V		10A Max.		50/60Hz	
DC OUTPUT (直流输出) ==	+5V	+3.3V	+12V	-12V	+5Vsb	最大功率600W
	25A	25A	48A	0.5A	3A	

Attention:  
 Combined 5V&3.3V power not exceed 150W  
 5V及3.3V综合输出功率不超过150W  
 Maximum continuous output is 600W  
 最大连续输出600W

**EAC 80+**

Attention :  
Indoor use only and chassis-assembly!  
注意:仅供室内和搭配机箱使用!

⚡ Don't remove this cover, Hazardous voltage in power supply!  
请勿拆开外壳, 电源内有危险电压!

线材颜色定义	
+5V	红色
+3.3V	橙色
+12V	黄色
-12V	蓝色
+5Vsb	紫色
GND	黑色
P.G	灰色
PS/ON	绿色

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Made In China

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SHENZHEN HONOR ELECTRONIC CO.,LTD.