

产品规格承认书
SPECIFICATION

文件编号 File No.: UME-EG-SP17092201/A1

客户 Customer	AKON	核准 Approval	ZL
品名 Product	开关电源 Switching power supply	品管确认 QC	LTF
型号 Model	AD-A090P200	审核 Check	ZL
日期 Date	2023-06-27	拟制 Execution	BMD

客户承认意见 Confirmation by Customer	客户签署 Stamp & Signature
<input type="checkbox"/> 合格 Accept	
<input type="checkbox"/> 不合格 Reject	
<input type="checkbox"/> 条件合格 Conditional Acceptance	

确认签署后, 请回传一份。有任何问题, 请尽快告知我们。

Please return one copy to us with your signature and feel free to contact us for any questions.

厦门友盟电子有限公司

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产品规格承认书 SPECIFICATION				文件编号 File No.	UME-EG-SP17092201/A1
品名 Product	开关电源 SPS	型号 Model	AD-A090P200	日期 Date	2023-06-27

目录 INDEX

1	变更履历 Revision History.....	1-3
2	概述 Summary	2-4
3	技术要求 Technical requirements.....	3-4
	3.1 安全标准 Safety Standards.....	3-4
	3.2 Input	3-4
	3.3 Output.....	3-4
	3.4 可靠性及质量控制 Reliability and Quality Control.....	3-5
	3.6 测试线路图 Test Circuit	3-9
4	线路图 Schematic Diagram	4-9
5	电路板图 P.C.B.....	5-10
6	Cord (单位 unit: mm 颜色 color: BK)	6-11
7	外观示意图 Mechanical Drawing (单位 unit: mm 颜色 color: BK)	7-12
8	铭板标识 Label.....	8-13
9	包装方式 Packaging	9-13
10	材料清单 BOM.....	10-14

*** The products limited warranty period is 18 months.
(From date code of product.)**

*** The products meet RoHS requirements.**

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品名 Product	开关电源 SPS	型号 Model	AD-A090P200	日期 Date	2023-06-27

1 变更履历 Revision History

版本 REV	变更日期 Date	变更内容 Content of Change	制表 Execution	审核 Check	批准 Approval
V1.0	2017-09-22	1. First Issue	LMY	ZLiang	JB
V1.1	2022-03-28	1. Add second source of fuse	BMD	ZL	JB
V1.2	2023-06-27	1. Improve output efficiency redesign	BMD	ZL	ZL

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品名 Product	开关电源 SPS	型号 Model	AD-A090P200	日期 Date	2023-06-27

2 概述 Summary

2.1 本文件包含一般的客户要求及电气、机构和安全性能等方面的描述。

This document contains general customer requirements and those of specific electrical, mechanical and safety for this product.

3 技术要求 Technical requirements

3.1 安全标准 Safety Standards

Japan: 電安法別表第八【JET6108-61010-1006】

3.2 Input

Rated Input Voltage	100-240Vac
Operating Range	90-264Vac
Rated Input Frequency	50~60Hz
Rated Input Current	0.5A
Maximum Input Power	23W
Input Power (No Load)	0.1W Max
Primary Current Protection	Over current protection: Current fuse

3.3 Output

Rated Dc Output Voltage	9V ± 5%
Rated Load Current	2000mA
Over Current Protection	The power supply will be protection when output power over 110% ~ 150% of all rated DC output.
Line Regulation	The line regulation is less than ±2% while measuring at rated load and +/-5% of input voltage changing.
Ripple	≦ 200mVp-p
Switching Efficiency	85% minimum @ input 115AC/230VAC to meet DOE6
DC Plug	Φ2.1*5.5*9.5mm
DC Cord	20AWG 2464 L = 1500mm, Black Lead-free soldering

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3.4 可靠性及质量控制 Reliability and Quality Control

【Electrical Test Items】

Item	Conditions	Criteria
1	Leakage Current Measure the leakage current between Primary and Secondary when adding rated input. AC input = Rating voltage (100/240V)	Less than 250 μ A
2	ESD Test 1. Test is conducted at room temperature/humidity.(25°C, RH 50-60%) 2. Test set is 150pF/150 Ω . 3.(1) \pm 4KV:Contact discharge test. +phase: 3times, -phase: 3times, total: 6times. (2) \pm 8KV:Air discharge test. +phase : 3times, -phase: 3times, total: 6times. (Note) After each ESD test, it should be discharged.	No malfunction (must be in spec after test).
	1. Test is conducted at room temperature/humidity.(25°C, RH 50-60%) 2. Test set is 150pF/150 Ω . 3.(1) \pm 6KV:Contact discharge test. + phase: 3times, -phase: 3times total: 6times. (2) \pm 10KV:Air discharge test. + phase: 3times, -phase: 3times, total: 6times. (Note)After each ESD test, it should be discharged.	No destruction
	ESD Test (Ability test) 1. Test is conducted at room temperature/humidity.(25°C, RH 50-60%) 2. Test condition: 150pF/150 Ω . 3, Contact discharge / Air discharge 4, Load: 1)no load 2)rated load 5. Impressing 10 times continuously to plus and minus each. 6, Discharging once after impressing 10 times (To confirm the capacity of unit up to the unit destroyed)	It confirms at which voltage value the adapter breaks.(Note: Not part of qualification)
3	Hi-POT test Condition=AC3000V, 1min. Test place=Between AC blade and DC plug Sensitivity current=10mA	No malfunction. (damage, arc, breakdown etc)
4	Insulation resistance DC500V, 1min. Between AC blade and DC plug	More than 100M Ω
5	Temperature Rise Test 1. Apply rating input voltage(100/240V), 2. Load: Charge actual Cellular phone 3. Measure the surface temperature of the adaptor 4. T ambient = The room temperature 5. Condition: Until it carries out temperature saturation (the definition of temperature than 1°C in 1 hour).	Housing surface Temperature rise is less than 45K.
	1. Apply rating input voltage(100/240V),	Housing surface

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品名 Product	开关电源 SPS	型号 Model	AD-A090P200	日期 Date	2023-06-27

		2.No Load 3.Measure the surface temperature of the adaptor	Temperature rise is less than 15K.
6	Input over / under	Apply voltage=(rating input voltage)x(1±30%) Impressed time : 24h	No destruction
7	EMI/Conducted Emission	Telephone stand by mode with rapid-charge condition	Conform to: FCC 47CFR Part 15 Class B (for US) J55032 (For Japan)
8	Surge	IEC61000-4-5 1.2×50μs 1.0KV Positive and negative all three times, Current limiting impedance 100 Ω, Time interval 30 seconds min.	No destruction.

【Environmental Test Items】

Item	Conditions	Criteria
1	Temperature range Electrical performance guarantees temperature range: 0°C to 40°C Electrical performance not guarantees working temperature range: -20°C to 50°C Storage temperature range: -30°C to 80°C	No abnormal appearance, mechanic performance or electric performance
2	High Temperature Leave 1. Temperature 80°C for 96 hours. 2. After that test, test set is left in normal temperature, humidity condition for more than 1hour, then evaluate.	No abnormal appearance, mechanic performance or electric performance
3	Low Temperature Leave 1. Temperature -30°C for 96 hours. 2. After that test, test set is left in normal temperature, humidity condition more than 1(hour), then evaluate.	
4	High Temperature Humidity 1. Temperature 50°C, air moisture 90-95% RH for 96 hours. 2. After that test, test set is left in normal temperature, humidity condition more than 30min, then evaluate.	
5	Temperature Humidity test 1. Temperature 40°C, air moisture 90-95% RH for 96 hours. 2. After that test, test set is left in normal temperature, humidity condition more than 30min, then evaluate.	
6	Heat Shock Test 1. Condition: -30°C/ 1 hour to +80°C/ 1 hour, 60 cycles 2. After that test, test set is left in normal temperature, humidity condition more than 1 hour, then evaluate.	

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产品规格承认书 SPECIFICATION				文件编号 File No.	UME-EG-SP17092201/A1
品名 Product	开关电源 SPS	型号 Model	AD-A090P200	日期 Date	2023-06-27

7	Heat/humidity Cycle Test	<p>A, C, D : RH=90 ± 10% B : RH= 90 ± 5% E : No limit After 5cycles, put EUT at room temperature/humidity condition</p>	
8	Humidity	Operation is 10~85%. Storages is 5~95%	Non-condensing

【Mechanical Test Items】

Item	Conditions	Criteria	
1	Drop Test	No parts remove, no abnormal mechanic performance, (outside scratches are acceptable)	
2	Package Drop Test		
3	Unit Vibration Test		
4	Package Vibration		
5	AC Plug in/out Test (AC Blade part)	1. AC Plug in/out test more than 5000times 2.10(times/min). 1 time is in/out action.	
6	Exfoliate with cellophane tape and examine it	Use Nichiban 18mm or 24mm width	A character do not disappear.
7	The reliability to face	① -40℃ ② 80℃ ③ 50℃ 90% Each 96 hours	Don't take the label off the main

批准 Approval:	ZL	审核 Check:	ZL	制表 Execution:	BMD
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品名 Product	开关电源 SPS	型号 Model	AD-A090P200	日期 Date	2023-06-27

	each other to come off the label	④ ③ After, it is a thermal shock examination of 96 cycles	body
8	No tally part step	Difference of the pitch by height differences of the tally part between casts	less than 0.25mm after an environmental examination

【DC cord Test Items】

Item	Conditions	Criteria
1 DC Cord strength (adaptor side / plug side)	1. Test part: Between adaptor and DC cord 2. Pull a cord with 49N(5Kgf) force 3. Time: 1min.	No abnormality such as wire cut, bushing come off
2 DC Cord Bending Test (adaptor side / plug side)	Weight = 4.9N(500g) Angle = +/-90° Cycles in every minute = 40times/min. Test cycles = 1000times Note: contrarotate 90°, and then rotate it clockwise with 180°(+90°~-90°), and at last return to origin. (1 Cycle : 0°⇒-90°⇒0°⇒+90°⇒0°)	Operate properly.

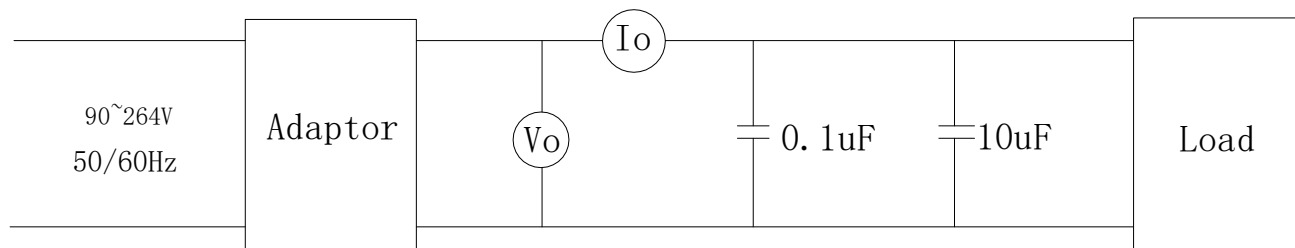
【Safety Test Items】

1	MTBF	Make a measurement condition, a calculation standard clear	More than 50,000 hours
2	Part materials	It is maintenance or the incombustibility of contact / part materials approaching it in an outer fence, the charge department of the electric part	same as UL94V-0; more than it
3	print board	Incombustibility	same as UL94V-0; more than it
4	No tally part step	Difference of the pitch by height differences of the tally part between casts	less than 0.25mm after an environmental examination

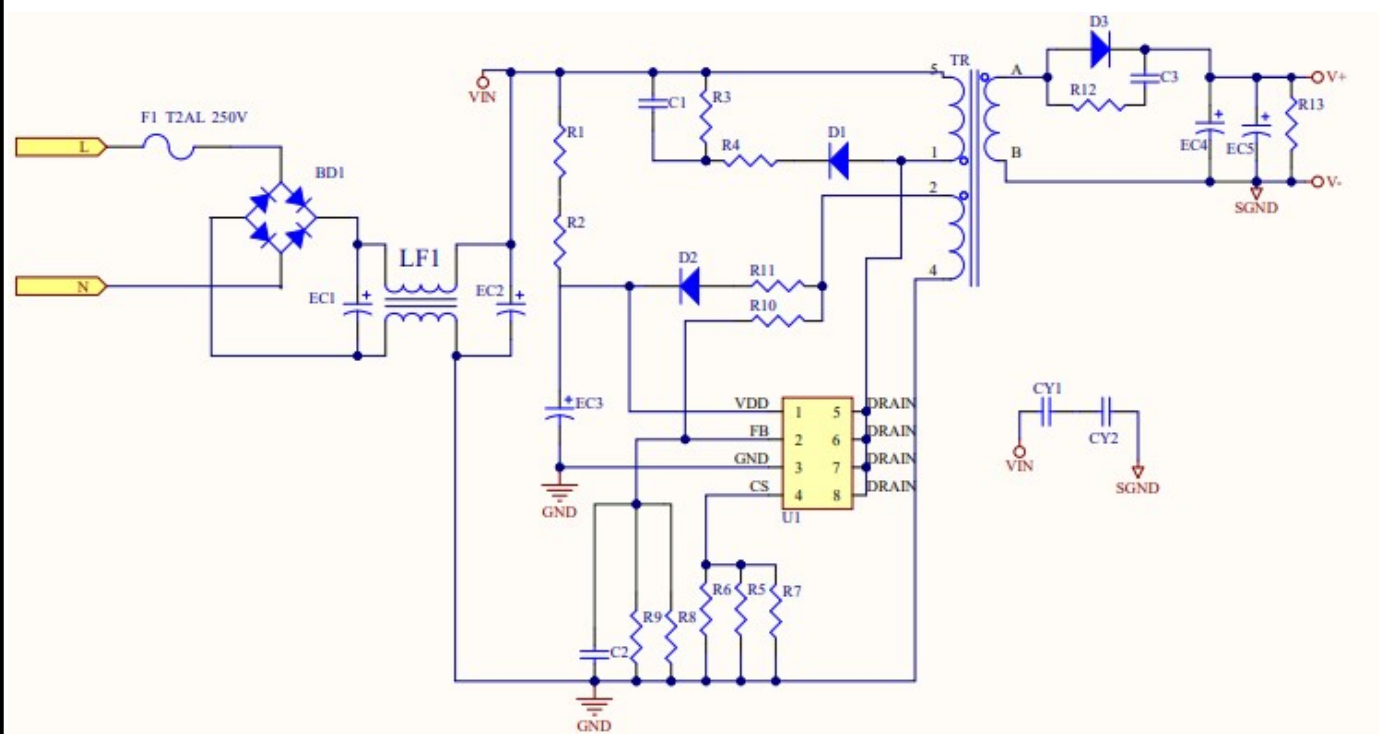
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3.6 测试线路图 Test Circuit



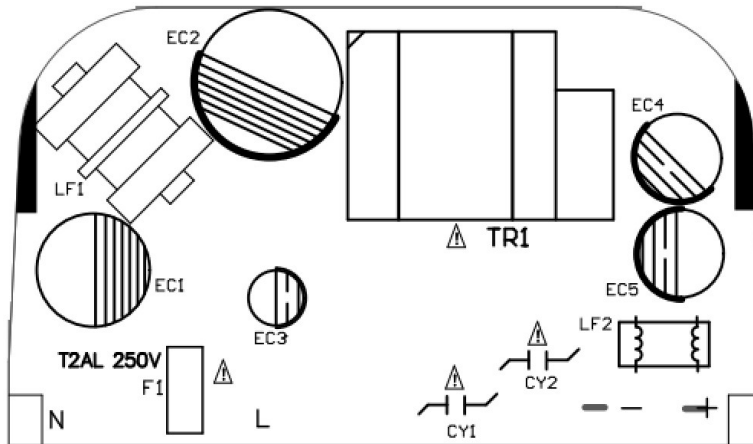
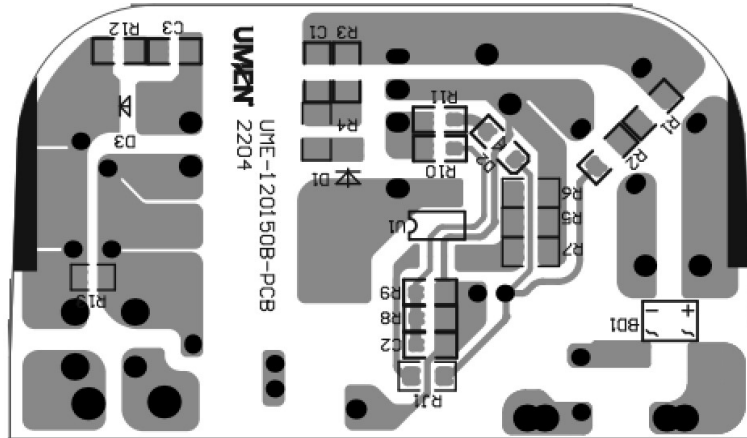
4 线路图 Schematic Diagram



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产品规格承认书 SPECIFICATION				文件编号 File No.	UME-EG-SP17092201/A1
品名 Product	开关电源 SPS	型号 Model	AD-A090P200	日期 Date	2023-06-27

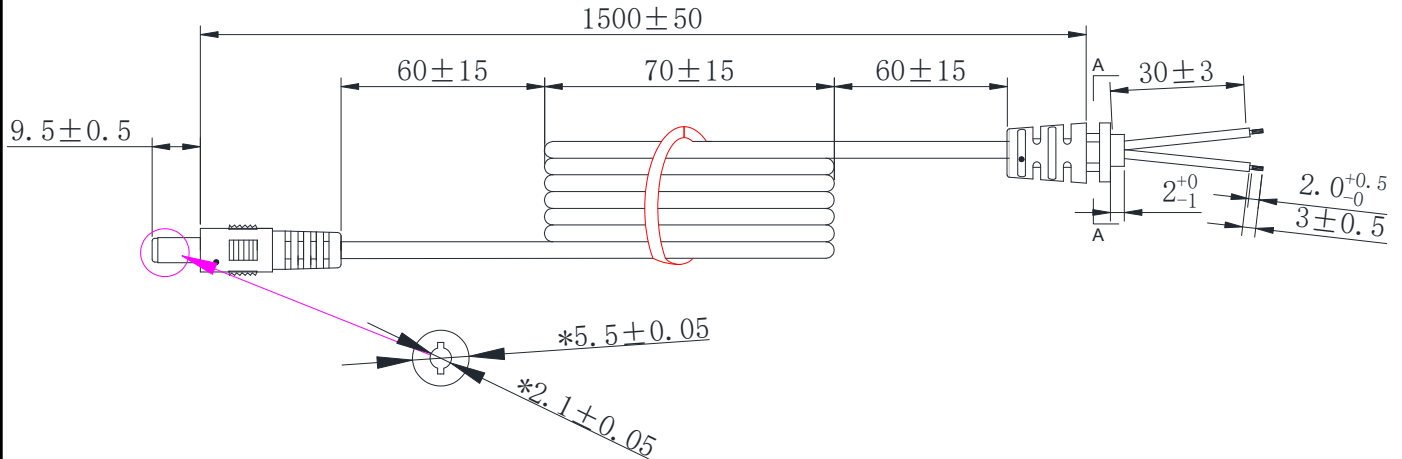
5 电路板图 P.C.B



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品名 Product	开关电源 SPS	型号 Model	AD-A090P200	日期 Date	2023-06-27

6 Cord (单位 unit: mm 颜色 color: BK)



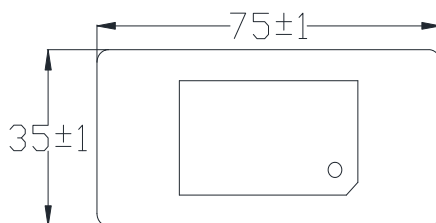
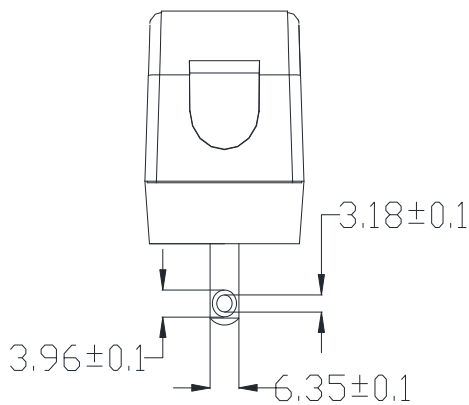
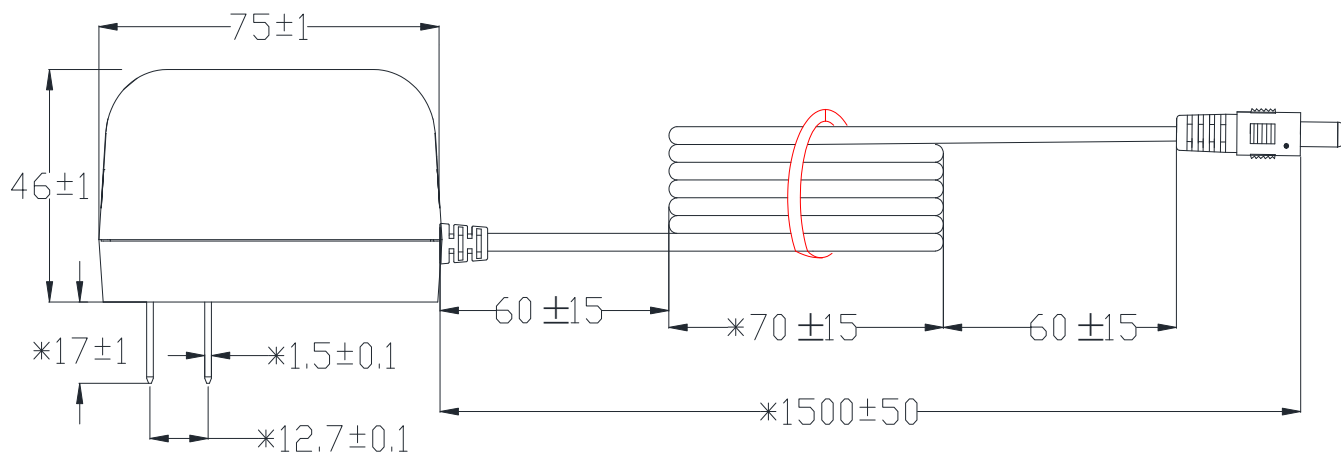
备注:

- 导线规格: 20AWG 2464 音叉型 黑色, 芯线颜色: 红色+黑色, 导线总长 1500mm; 材质符合RoHS要求。导线按图示尺寸捆扎、测试, 导线间应开路, 对应线头线尾应短路导通, 极性连接正确;
- 两头剥线焊锡, 剥线长度 $3\text{mm}+1/-0$ 。剥线要求如图所示, 剥丝线焊锡的直径为 1.15mm MAX 。接线方式: 红色芯线接PIN中心, 黑色芯线接外侧, PG头成型, SR-002成型; SR002尺寸为 $6.8*7.8\text{mm}$ 。
- SR拉力测试: 吊重 $1\text{Kg}/10$ 分钟, 不可有位移, 吊重 $5\text{Kg}/1$ 分钟, 位移 2mm MAX
- 插拔力测试: 插入力 2Kgf MAX , 拔出力 0.3Kgf MIN ; 插拔 6000MIN 次不允许有电气和机械性能的损坏, 且满足拔出力 0.1Kg MIN ;
- 摇摆测试: 吊重 500g , 以 40次/分 作 90° 往返, 每一往返为一次, 至少 1000 次;
- PLUG绝缘阻抗测试: $100\text{M}\Omega\text{ MIN}$ 在 500DC/分 ; PLUG接触阻抗测试: $100\text{m}\Omega\text{ MAX}$;
- 导线, SR, PLUG非移行性依据厂内一般进行; 禁止使用VDE所禁用的物质。
- 打*号尺寸, 为入料检查项目;

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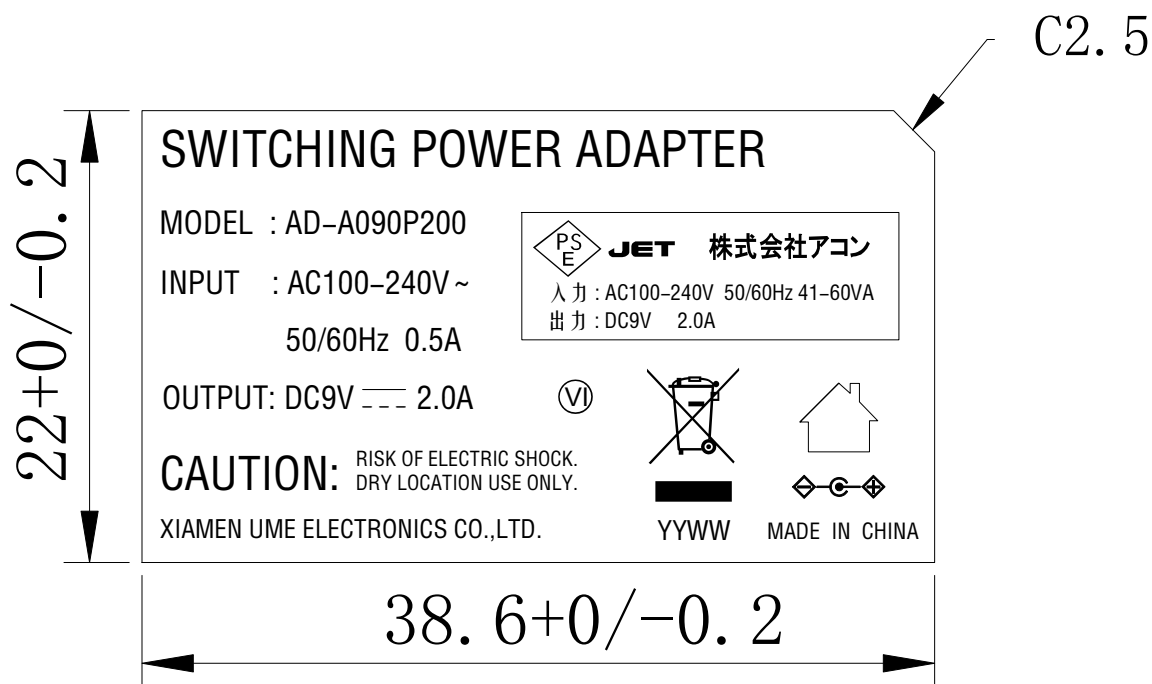
7 外观示意图 Mechanical Drawing (单位 unit: mm 颜色 color: BK)



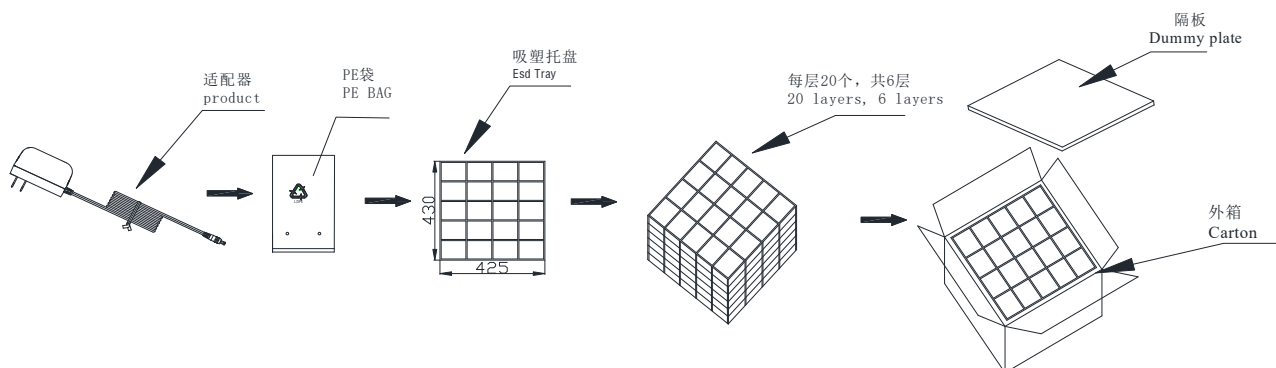
批准 Approval:	ZL	审核 Check:	ZL	制表 Execution:	BMD
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品名 Product	开关电源 SPS	型号 Model	AD-A090P200	日期 Date	2023-06-27

8 铭板标识 Label



9 包装方式 Packaging



批准 Approval:	ZL	审核 Check:	ZL	制表 Execution:	BMD
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品名 Product	开关电源 SPS	型号 Model	AD-A090P200	日期 Date	2023-06-27

10 材料清单 BOM

NO.	ITEM	DESCRIPTION	SPECIFICATION	QTY	MANUFACTURER
1	PCB	PCB	UME-120150B-PCB	1	TengShengXing/HG
2	R1,R2	CHIP R	1.5MΩ±5% 1206	2	YAGEO/FENG HUA
3	R3	CHIP R	300KΩ±5% 1206	1	YAGEO/FENG HUA
4	R4	CHIP R	100Ω±5% 1206	1	YAGEO/FENG HUA
5	R5,R6	CHIP R	2.4Ω±1% 1206	2	YAGEO/FENG HUA
6	R7	CHIP R	2Ω±1% 1206	1	YAGEO/FENG HUA
7	R8	CHIP R	3.6KΩ±1% 0805	1	YAGEO/FENG HUA
8	R10	CHIP R	21.5KΩ±1% 0805	1	YAGEO/FENG HUA
9	R11	CHIP R	4.7Ω±5% 0805	1	YAGEO/FENG HUA
10	R12	CHIP R	22Ω±5% 0805	1	YAGEO/FENG HUA
11	R13	CHIP R	5.1KΩ±5% 0805	1	YAGEO/FENG HUA
12	C1	CHIP R	471 500V±10% 1206 X7R	1	YAGEO/FENG HUA
13	C2	CHIP R	22PF 50V 0805 COG	1	YAGEO/FENG HUA
14	C3	CHIP R	102 100V±10% 0603 X7R	1	YAGEO/FENG HUA
15	BD1	Rectifier Bridge	WRABS M10 1000V 1A	1	JF/ World
16	D1	Diode	M7 SMA	1	JF
17	D2	Diode	F7 1A/1000V/SOD-123FL	1	JF
18	D3	Diode	SP10U60L 10A 60V TO-277 SMD	1	JF
19	U1	IC	OB2571ATCPH SO-8	1	OB
20	LF1	Inductor	18mH MIN UU9.8	1	HXH/CS
21	LF2	Inductor	187uH Φ0.6mm 5*11mm	1	HXH/CS
22	CY1, CY2	Y Cap	Y2 222 250V±20%	2	STE/HJ
23	TR1	TRANSFORMER	TR-090200B	1	HM/ HXH
24	EC1, EC2	E cap	18uF 400V±20% 105℃ Φ10*20 mm(BXW)	2	RUBYCON
25	EC3	E cap	4.7uF 50V±20% 105℃ 2000H Φ5*11mm(YXF)	1	RUBYCON
26		E cap	4.7uF 50V ±20% 105℃ 5000H Φ5*11mm(YXJ)		RUBYCON
27	EC4,EC5	Fuse	680uF 16V±20% 105℃ Φ8*16mm(ZLH)	2	RUBYCON
28	L, N		UL 1007 24AWG 30mm	2	xinchengda
29	CASE	CASE	UME2001A(BK)	1	JLF/YGE
30	CASE	CASE	UME2001B(BK)	1	JLF/YGE
31	DC cord	Cable	Φ2.1*5.5*9.5mm L:1500mm 20AWG 2464 BK	1	DPK/GC
32	NAP	NAP	NAP-090200D-PSE	1	Yihangxin /JinXin

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33	PE bag	215*135*0.05	1	Xincheng
34	Out carton	430*440*220mm	0.0833	XinRuicheng/ FuXing
35	Partition	435*418*3mm	0.0833	XinRuicheng/ FuXing
36	Esd Tray	430*425*35mm	0.05	XinRuicheng/ FuXing
37	White glue	AP-688	0.9	JX
38	Solder Bar	1Cu 99Sn	0.4	Yun Nan TIN
39	Solder wire	0.3Ag 0.7Cu 99Sn	0.2	Yun Nan TIN

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