规 格 承 认 书
SPECIFICATION FOR APPROVAL

客户名称 Customer	NHP
客户料号 Customer No	
产品类别 Product Type	SWITCHING ADAPTER
设计编号 Designed No.	21049
产品型号 Model No.	MP65A-080812-K1
样单编号 Sample No.	
版 本 Version	A0.07
送样日期 Sample Date	2021/11/11

客户承认签核 CUSTOMER AUTHORIZED SIGNATURE		
Lauterbach GmbH E. Valkema Eckhard Valkema (Director Operations)	LAUTERBACH GmbH Altlaufstraße 40 D-85635 Höhenkirchen-Siegertsbrunn Telefon +49 8102 9676-0 Fax +49 8102 9679 999	19.11.2021

PLEASE SIGN AND RETURN ONE COPY 请签字确认并回传本司.

With your signature ,you agree that all contents in this approval sheet are correct and all production units will be manufactured according to the specification described in this sheet.
签字后,您同意本承认书内容,所有产品将按此要求生产.

REMARKS: Please make sure the EMI has been tested with your system/end application and the test result are conformed.
备注 :请将我们的产品与配套产品终端连接测 EMI OK 后签字.

东 莞 市 盈 正 电 子 有 限 公 司
MITRA POWER SOLUTIONS CO.,LTD

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SPECIFICATION CHANGE RECORD 变更记录

Revision 版本	Change record 变更记录	Confirmed 确认者	Changed date 变更日期
A0	Preliminary Release.	骆琦惜	
A0.01	Modify the directory/修改目录	骆琦惜	2021/05/07
A0.02	Add/增加：7.5.1.1 ON/OFF SWITCH 开关	骆琦惜	2021/05/11
A0.03	Change the wire and modify the catalog/变更线材及修改目录	骆琦惜	2021/06/05
A0.04	Change the magnetic ring position of the DC cable/更改DC线磁环位置	李猛	2021/6/22
A0.05	Change the description of safety standard wire drawing and appearance drawing/更改安全标准描述，线材图纸、外观图	周恒健	2021/9/3
A0.06	Add DC head internal specification data, change circuit diagram change the screen printing diagram change socket change nameplate changed to side label printing change directories/添加DC头内部规格资料,更改线路图,更改丝印图，更改插座，更改铭牌，侧喷贴纸改为侧喷印刷，更改目录	周恒健	2021/9/28
A0.07	Change overall drawing barcode dimension; Change nameplate reduce class II mark; Change Leakage Current criterion with class I; Change importer's name and address of CE / 变更外观图条形码尺寸；变更铭牌去掉II类绝缘符号；变更泄漏电流测试标准为I类；变更CE进口商名称和地址	周恒健	2021/11/11

APPROVE BY	CHECK BY	PREPARED BY
工程师 2021-11-11 练庆海	工程师 2021-11-11 刘育华	工程师 2021-11-11 周恒健

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2.1 Power Supply Description 产品概述

This is a series of general purpose AC/DC adapters which convert 100Vac ~240Vac to a stabilized DC voltage of 8V with rated output current of 8.12A.

本通用型电源是将100Vac ~240Vac 交流输入电压转换成稳定的直流电压8VDC，额定输出电流8.12A。

2.2 Power Supply Change Notification 变更事前通知

The vendor will notify customer for significant design changes, before the implementation. However, process improvements can be an exception.

有重大设计变动时,在变更实施之前,供应商将通知到客户.工艺改善可以例外。

2.3 Power Supply Frame 电源结构型式

☐ Wall mount 插墙式　　■ Desk-top 桌上式

☐ Open frame 开放式结构/裸板　　☐ Other 其它

3.0 ELECTRICAL CHARACTERISTICS 电气性能

3.1 AC Input Voltage and Frequency 输入电压及频率

3.1.1 Rated Input Voltage 额定输入电压 : AC100-240V

3.1.2 Reliable Input Voltage 可输入电压范围 : AC90-264V

3.1.3 Rated Input Frequency 额定输入频率: 50/60Hz

3.1.4 Reliable Input Frequency 可输入频率范围 : 47-63Hz

3.2 Maximum AC Current 最大输入电流

Input rated voltage,Ouput rated load. Input AC Current 2.0Amps Maximum.

输入额定电压,输出额定负载条件下,最大输入电流为:2.0Amps.

3.3 Input Inrush Current 最大浪涌(突入)电流

Input 100VAC 60Hz,Ouput rated load(cold start) inrush Current 72Amps peak.

输入100Vac 60Hz,输出额定负载(冷启动)条件下,最大浪涌(突入)电流为:72Amps@T < 8.3 msec

Input 240VAC 50Hz,Ouput rated load(cold start) inrush Current 72Amps peak.

输入240Vac 50Hz,输出额定负载(冷启动)条件下,最大浪涌(突入)电流为:72Amps@T < 8.3 msec

3.4 No-load Loss Power 空载功耗

Input 115/230Vac,Output no load. Maximum loss power 0.21Watts.

输入115/230Vac,输出空载,最大空载功耗为:0.21瓦.

3.5 Output Voltage 输出电压

负载 (Load)	最小负载（Min. Load）	最大负载（Max. Load）
电流(Current)	0A	8.12A
电压(Voltage)	8Vdc±5%	8Vdc±5%

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3.6 Output Ripple Voltage 输出纹波电压

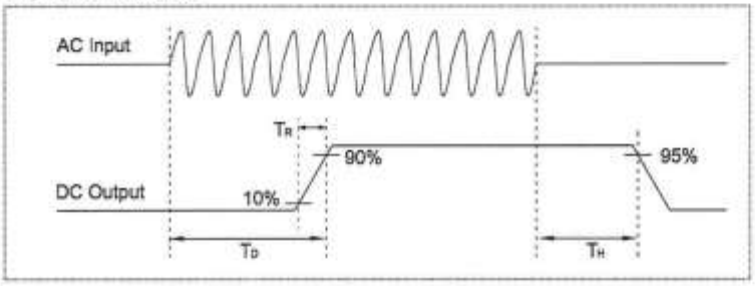
3.6.1 Output ripple voltage tested at rated input and output (25℃).
在额定输入及输出的条件下（25℃）测试输出纹波电压.

3.6.2 Peak to peak ripple is measured with an oscilloscope with a bandwidth of 20MHz.
纹波量测时示波器选用20MHz带宽限制.

3.6.3 Measurement of ripple should include a 0.1uFceramic capacitor and a 47uF electrolytic capacitor at the input of the measuring oscilloscope.
测试时在输出端要并联一颗0.1uF的陶瓷电容和一颗47uF的电解电容.

Input	Output Rated Voltage	Output Current	Output Ripple & Noise
100Vac-240Vac	+8V	8.12A	<80mVpp

3.7 Time Sequence 时序特性



3.7.1 Turn-On Delay Time(T_D) **开机输出延迟时间:**
The maximum cold start turn-on delay shall not exceed 3 second at input 100-240Vac and the rated load condition.
在输入100-240Vac,额定负载情况下,最大冷启动打开的延迟不会超出3秒.

3.7.2 Hold-Up Time(T_H) **关机输出维持时间:**
3.7.2.1 The maximum turn-off hold-up time shall be least 10mS at input 100Vac and the rated load condition.
在输入100Vac及额定负载情况下,关机输出维持时间不低于10mS.

The maximum turn-off hold-up time shall be least 10mS at input 240Vac and the rated load condition.
在输入240Vac及额定负载情况下,关机输出维持时间不低于10mS.

3.7.3 Output Rise Time(T_R) **输出上升时间:**
Input 100Vac/240Vac and rated load, The rise time shall not exceed 100mS that the output voltage rise from 10% to 90% rated voltage.
在输入100Vac/240Vac,输出额定负载条件下,输出电压由10%额定电压上升至90%额定电压的上升时间不会超过100mS.

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3.8 Output Overshoot 输出过冲

3.8.1 10% Rated Voltage Max. when the power turn on.
当电源开机时,过冲电压值最大为额定电压值的10%.

3.8.2 10% Rated Voltage Max. when the power turn off.
当电源关机时,过冲电压值最大为额定电压值的10%.

Output Rated Voltage	Overshoot Voltage(V)	
	Turn on	Turn off
+8V	10%	10%

3.9 Output transient response 输出瞬态响应

Output Voltage Tolerance Limited 输出电压范围	Rate Slew 斜率	Load change 负载变化
8Vdc±10%	0.25A/μs	20% to 80% Load

Transient response and load change should be measured at A frequency of 100Hz to 10kHz/ slope of 0.25A/μs and output voltage of 7.2V to 8.8V .
测量瞬态响应与负载改变的频率应在100Hz至10kHz/斜率0.25A/μs,输出电压7.2V-8.8V之间

3.10 Protection Function 保护功能

3.10.1 Over Voltage Protection **过压保护**
The power supply shall protect itself from any over voltage condition.
Over Voltage protection points between9 and 13V。
电源在过压情况下可自动保护,过压保护点为9-13V之间。

3.10.2 Over Current Protection **过流保护**
In the input voltage 115/230Vac, over-current protection points between8.9A and 16A。
在 115/230Vac输入时，过流保护点为8.9A-16A之间。

3.10.3 Short Circuit Protection **短路保护**
Shorting of output will not cause power supply to damage, or any safety hazard.
The power supply shall resume normal operation after the short is removed.
输出短路时电源不会损坏,不会有任何的安全危险,短路解除后电源恢复正常工作.

3.10.4 Input Protection **输入保护**
The power supply is input protected by A current fuse of 3.5A/250VAC.
该电源由一颗电流保险丝3.5A/250VAC来达到输入保护.

3.11 Average Efficiency 平均效率

Input 115/230Vac. and 100%,75%,50%,25% Rated Load condition. Average efficiency (η):88% Min(Meet ERP level VI).
在输入115/230Vac,输出100%,75%,50%,25%额定负载,平均效率 (η): 88% Min (符合ERP VI等级).

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4.0 ENVIRONMENTAL REQUIREMENTS 环境要求

4.1 Temperature **温度**

4.1.1 Storage temperature (Non-operating) **可存储温度(非操作状态)**:

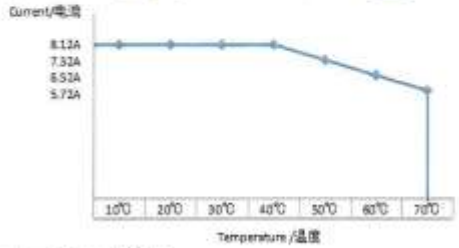
-40 to 85 degrees C [-40] 至 [85]摄氏度.

Typical values:25 degrees C. 典型值:25摄氏度.

4.1.2 Operating temperature Limits **可操作温度 (Safety certification is only 0 to 40℃ 安规认证只做到0 to 40℃)**:

0 to 50 degrees C with derating [0] 至 [50]摄氏度.

Typical values:25 degrees C. 典型值:25摄氏度.



4.2 Relative Humidity **相对湿度**

4.2.1 Storage Humidity (Non-operating) **存储湿度(非操作状态)**:

5% to 90% RH (Non-condensing) [5%] 至 [90%],无凝水状态.

4.2.2 Operating Humidity Limits **操作湿度**:

5% to 90% RH (Non-condensing) [5%] 至 [90%],无凝水状态.

4.3 The Sea Level Altitude **海拔高度**

4.3.1 Storage Altitude **可存储海拔度(非操作状态)**:

0 to +5,000m above the sea level [0] 至 [5,000]米.

4.3.2 Operating Altitude **可工作海拔度**:

0 to +5,000m above the sea level [0] 至 [5,000]米.

4.4 Cooling Method **冷却方法**

Natural air convection 自然冷却

5.0 Reliability 可靠性

5.1 MTBF: Mean Time Between Failure **平均故障间隔时间**

The power supply shall be designed and manufactured to have more than100,000H operating hours for 24-hour-operation a day) of mean time between failure (MTBF) @ 25°C. There is 3 yecrs warranty

在如下条件,该电源设计和制造平均故障间隔时间(MTBF)将超过100,000H个操作时间(大约操作24小时)。有效保修期3年。

AC Input Voltage:	115/230Vac
输入电压:	115/230Vac
Output Load:	of Rated load
输出负载:	额定负载条件
Ambient Temperature:	at 25 degrees C Room Temperature
环境温度:	室温25摄氏度

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5.2 Insulation Resistance 绝缘阻抗

Test Points 检测部位		Condition & Specification 条件及规格
Input to Output	输入-输出	DC500V 7MΩ min. (at ambient temperature 25 degree C,humidity 90%) DC500V 7MΩ 最小. (在室温25摄氏度,湿度90%条件下).
Input to Case	输入- 外壳	DC500V 7MΩ min. (at ambient temperature 25 degree C,humidity 90%) DC500V 7MΩ 最小. (在室温25摄氏度,湿度90%条件下).
Output To Case	输出 - 外壳	Non Isolated

5.3 Hi-Pot 绝缘耐压

Test Points 检测部位		Condition & Specification 条件及规格
Input to Output	输入-输出	3000Vac 50Hz, 60S, ≤5mA.
Input to Case	输入- 外壳	3000Vac 50Hz, 60S, ≤5mA.
Outpu to Case	输出- 外壳	Non Isolated

When AC voltage of 3KV is applied, and the voltage applied to the insulation under test is gradually raised from zero to the prescribed voltage in 60s,and held at that value for 60s between the input and output and between the input and housing, the current sensitivity shall be less than 5mA. After this test, the adapter shall exhibit no electrical and mechanical abnormalities. （AC voltage of 3KV,2s and sensitivity current 5mA shall be applied to the product line).
在输入端对输出端及输入端对外壳间施加了3KV电压,并且测试中施加在绝缘上的电压是在60s内由0V逐渐上升到规定值,然后保持60S,电流灵敏度设置在5mA。经过以上测试,电源应不发生电气及机械上的异常.(注: 在生产线批量生产时以3KV,2s 5mA进行测试).

5.4 Leakage Current 漏电流

The leakage current shall not exceed 0.25mA for class I when power supply is operated maximum input voltage and maximum load.
当电源供应器操作在最大输入及最大负载情况下，其漏电流应小于0.25mA,满足class I 等级。

5.5 Functional Test 功能测试

100% of the produced units need to be submitted to an End of Line Test.
所有产品必须100%功能测试并保存数据归档。
The listed items below need to be tested at an input voltage of 120Vac and 230Vac.
下列项目需要在120Vac和230Vac的输入电压下进行测试。
Data need to be filed and can be provided on request
测试结果需要存档，必要时按要求提供。

Required items 必测项目
AC Input Current AC 输入电流
Output Voltage Tolerance at: 0A, 2,5A, 4,7A, 8,12A 在负载0A,2.5A,4.7A,8.12A时的输出电压
Output Ripple at: 0,0A, 2,5A, 4,7A, 8,12A 在负载0A,2.5A,4.7A,8.12A时的输出纹波

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6.0 Safety Standards 安全标准

This power supply shall compliance with the following Criterion 本电源将遵照以下标准:

6.0.1 International: IEC62368-1 CB Test report, tested by TÜV

6.0.2 EU: EN62368-1 the TÜV/GS will be printed on the unit, tested by TÜV

6.0.3 USA: tested according to UL62368-1; ETL mark will be printed on the product, tested at Intertek

6.0.4 China: GB4943-1; tested by: certified authority

6.0.5 Korea: K62368-1, KN32, KN35; tested by: certified authority

6.0.6 Japan, based on CB report, done by TÜV

6.0.7 UKCA: EN62368-1 the UKCA will be printed on the unit

6.1 ELECTROMAGNETIC COMPATIBILITY (EMC) 电磁兼容性

6.1.1 Immunity Requirements: EN55032: 2015, CISPR 32: 2015: tested by TÜV

6.1.2 Immunity Requirements: EN55035: 2017, CISPR 35: 2016 tested by TÜV

6.1.3 FCC part 15 class B tested by Intertek together with safety testing

6.1.4 GB9254-2008; tested by certified authority

6.1.5 ESD **静电抗扰度**

Standard: * EN61000-4-2

AIR DISCHARGE at 8KV, CONTACT DISCHARGE at 4KV.

6.1.6 Surge **雷击浪涌**

differential mode: 1KV common mode: 2KV

The common mode must test with end application. 共模雷击搭配客户产品测试.

Remarks: EMC-SPECIFICATION test with the Pure resistance as load to test,and we only responsible for the product we supplied.

电磁兼容性测试是以纯电阻作为负载测试的，我们只对单品测试负责。

7.0 MECHANICAL CHARACTERISTICS 机械性能

7.1 Tensile Strength Test 拉力测试

put the weight of 4 kg on SR for 1 minute, SR should not shift or damage.

put the weight of 7 kg on DC Cable after 1 minute,inner core shall not break .

在DC线的SR卡上施以4Kg之重量1分钟，产品无短路，无开路，围卡无松脱。

在DC线线体上施以7Kg之重量1分钟后，检查内芯不可有拉断现象。

7.2 Drop Test 跌落测试

The adapter drop test meets the safety requirements (EN 62368-1)

适配器跌落测试符合(EN 62368-1)安规要求

7.3 Vibration test specifications non-operating with packing 振动测试(未运行,带包装)

10Hz to 55Hz with sweep at a breadth 2.0mm for 20 Minutes for each of the perpendicular axes X,Y,Z. After the test the electrical performance shall be normal.

振动频率: 10Hz-50Hz; 振幅:2mm; X、Y、Z三个方向各20分钟; 振动测试后产品电气性能应是正常的.

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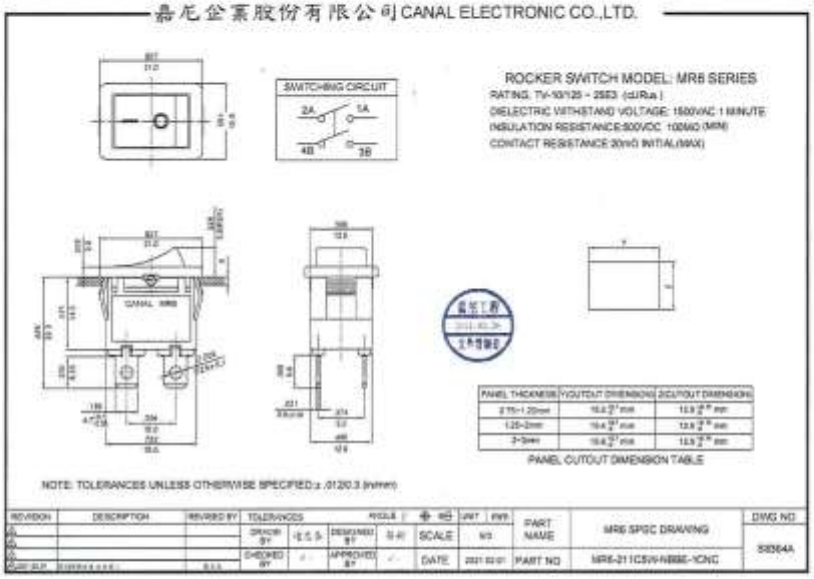
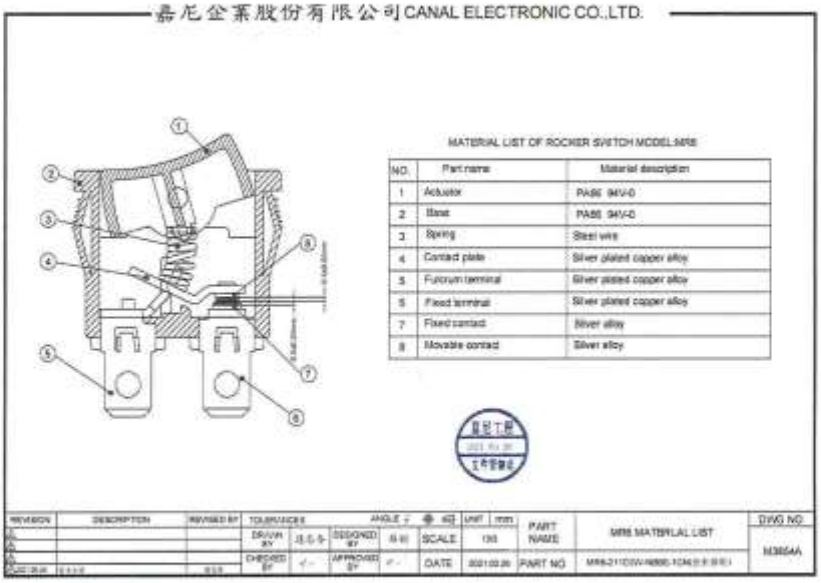
7.4 Input & Output Connection 输入输出连接:

7.4.1 AC Socket and Termainal Type 母座或端子式

☐ 2PIN Socket ■ 3PIN Socket ☐ Terminal type

7.4.1.1 ON/OFF SWITCH 开关:





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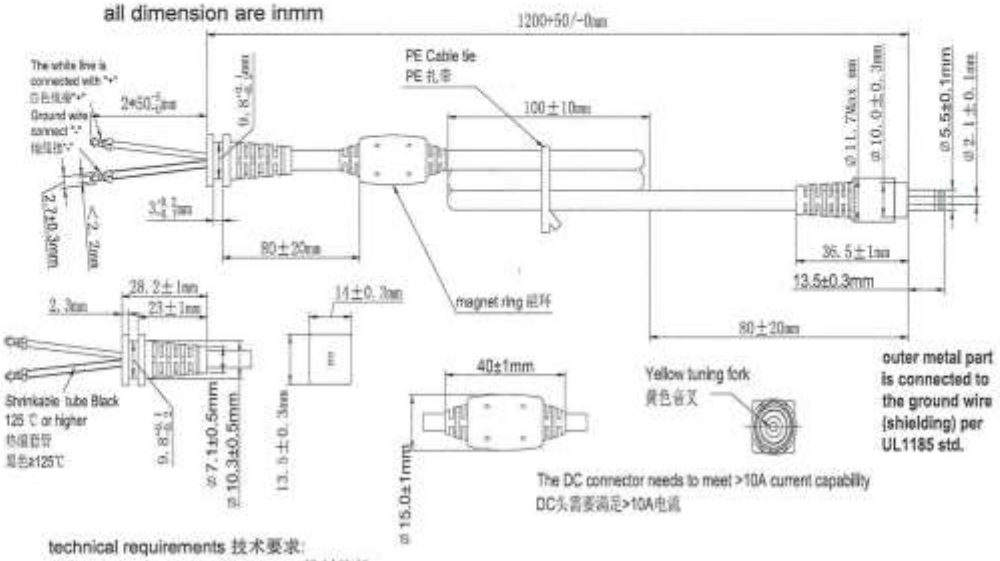
7.4.2 DC CABLE SPEC DC 线规格:

all dimension are inmm



technical requirements 技术要求:

1.Physical properties of the wire 线材物性:
Wire specifications 线材规格: UL AWM 1185 14AWG(41/0.254TS白+100/0.16TS缠绕) 80℃ 300V VW-1;
colour 颜色:Black 黑色; Unit 单位: mm 毫米
Wire hardness 线材硬度: DUROMETER TYPE A 70±10; SR胶料硬度: 邵氏A 65-75度;
Wire polarity 线材极性: Shielding 屏蔽

2.Reliability test requirement 可靠性测试要求:
swing test 摇摆试验:Lifting weight 500g, 40 times per minute, Angle ±60° swing at least 3000 times;
Disconnection rate is not more than 30% 吊重500g,每分钟40次,角度±60°摇摆至少3000次;断线率不大于30%;
Hoisting test of wire rod 线材吊重试验:Lifting weight 3KG,60 seconds, SR shift should be less than or equal to 2mm
吊重3KG,60秒, SR移位应小于或等于 2 mm;
SR Tensile Test SR拉力测试: The SR tension of wire rod should be greater than or equal to 89N for 2 minutes, and SR and wire should not be separated 线材SR拉力需≥89N,保持2分钟, SR与线不得分离;
SR torsion test SR扭力测试: The SR torque of wire rod should be greater than or equal to 0.25N. M and kept for 1 minute. SR and wire should not rotate or be damaged, and the positive and negative poles should not be short circuited
线材SR扭力需≥0.25N.m,保持1分钟, SR与线不旋转, 不能损, 正负极不能短路;
DC terminal plug and pull test: required 3000 times, speed 12.5mm/ min, plug and pull force to meet 0.3~3KGF
DC端子插拔试验:要求3000次, 速度12.5mm/分钟,插拔力满足0.3~3KGF;
DC terminal salt spray test :35±2°C closed environment, humidity >85%, pH value 6.5~7.2, with 5±0.1% NaCl solution
The liquid can be sprayed continuously for 24h without rust, oxidation, blistering, orange peel and other phenomena on the sample surface
DC端子盐雾试验:35±2°C密闭环境, 湿度>85%, PH值6.5~7.2, 用5±0.1%的Nacl溶
液连续喷雾24h, 样品表面不得有生锈、氧化、起泡、桔皮等现象。

3.surface quality 外观要求: The surface shall not be bruised, smudged, exposed to copper, blistered and severe shrinkage and other defects 表面不得有压伤, 脏污, 露铜, 起泡和严重缩水等不良;

4.All materials meet ROHS2.0 and REACH environmental requirements 所有物料满足ROHS2.0和REACH环保要求。

7 The weight of the unit power supply shall be about 318 g(Ref).

产品单重大约: 318 克 (供参考).

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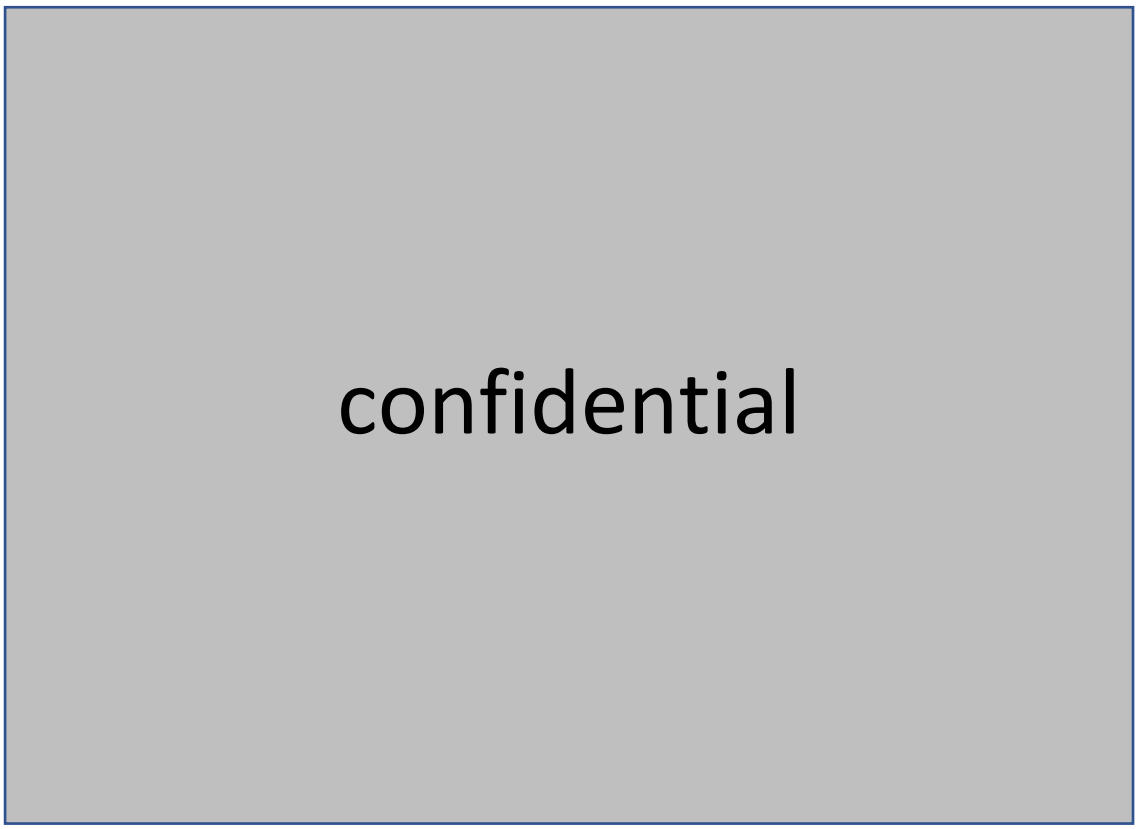
8.1 CIRCUIT DIAGRAM 电路图(供参考)



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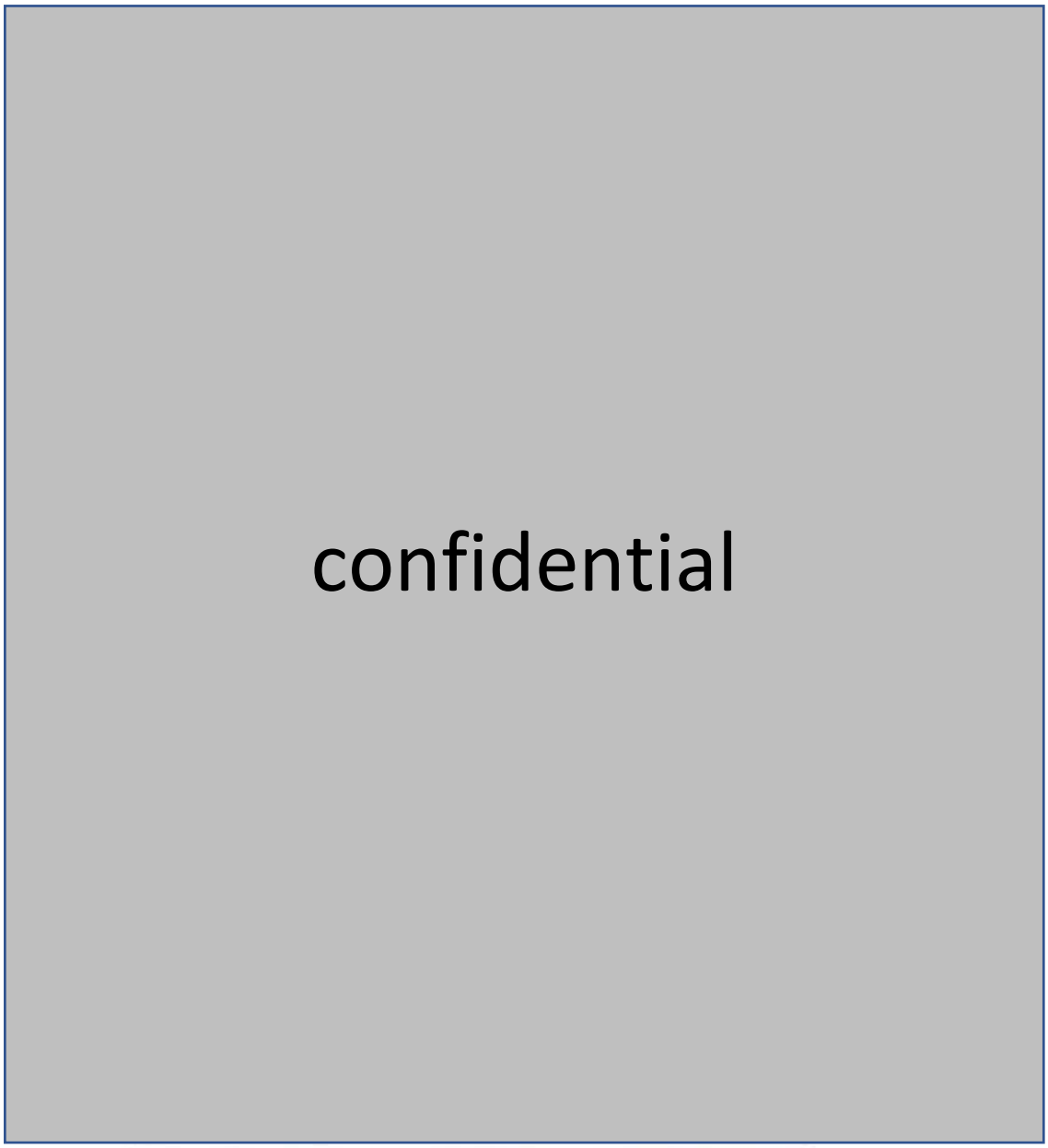
8.2 Screen printing figure 丝印图(供参考)

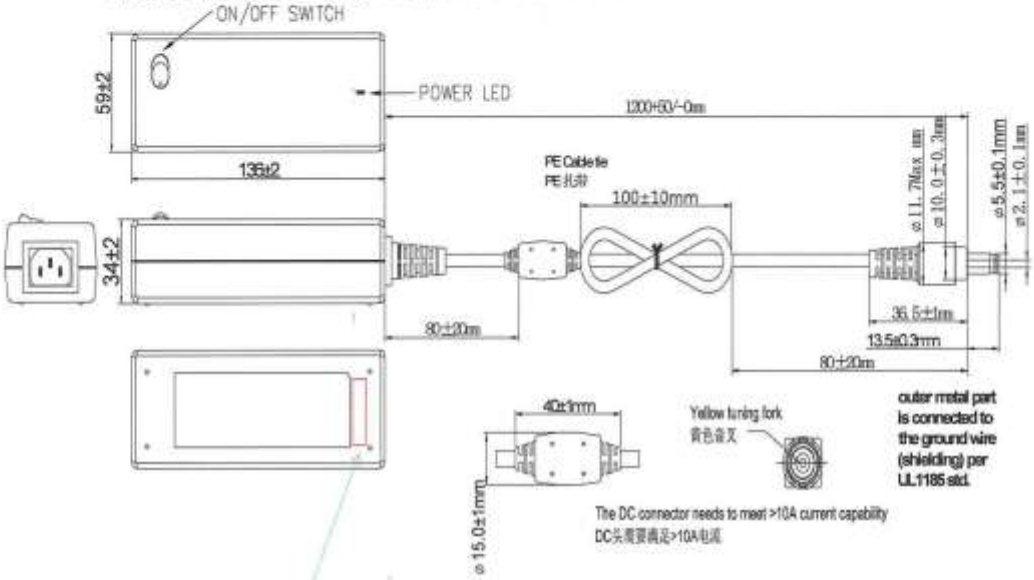


VAL

8.3 Overall Drawing 外观图

8.3.1外壳(Enclosure): BLACK(LEAD FREE) 外壳：黑色

外壳尺寸(The power supply size): L:136*W:59*H:34mm



备注：

1.印刷：白底黑字
Printing: Black words with white background

2.材质：UL承认白银特多龙
Material: UL approval polyester

3.Barcode Type: Code 128

4.Barcode内容为
西元年后两码+周期两码+流水号六码（10码）
YYWW+Series Number（中间不需空格）
Ex：1734123456
（Series Number每周从000001开始）

5.公差+/-2mm

6.材质证明参考59-16578-03
Material certificate is subject to 59-16578-03

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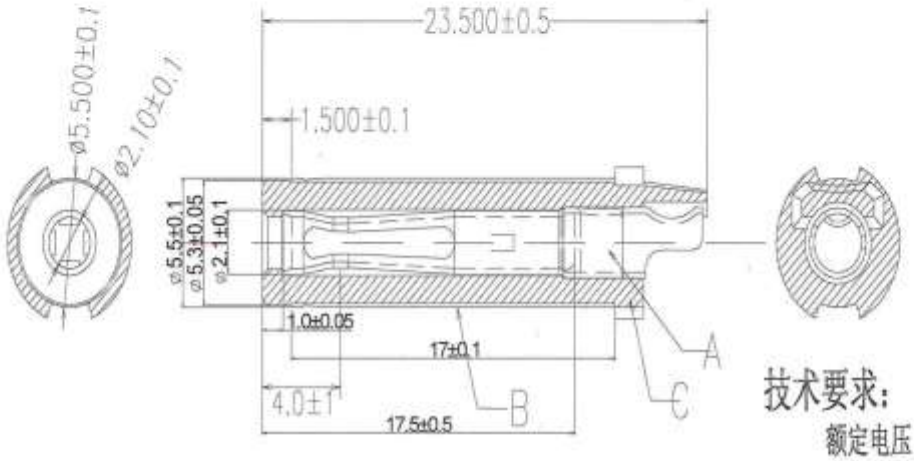
8.4 Internal view of DC head DC头内部图



技术要求:

额定电压 24V以下.

额定电流 10A

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8.5 Nameplate Drawing 铭牌图

Note：此铭牌内容镭雕于外壳，外框线不用镭雕

Note：Marking will be laser printed(engraved)onto the housing/case.

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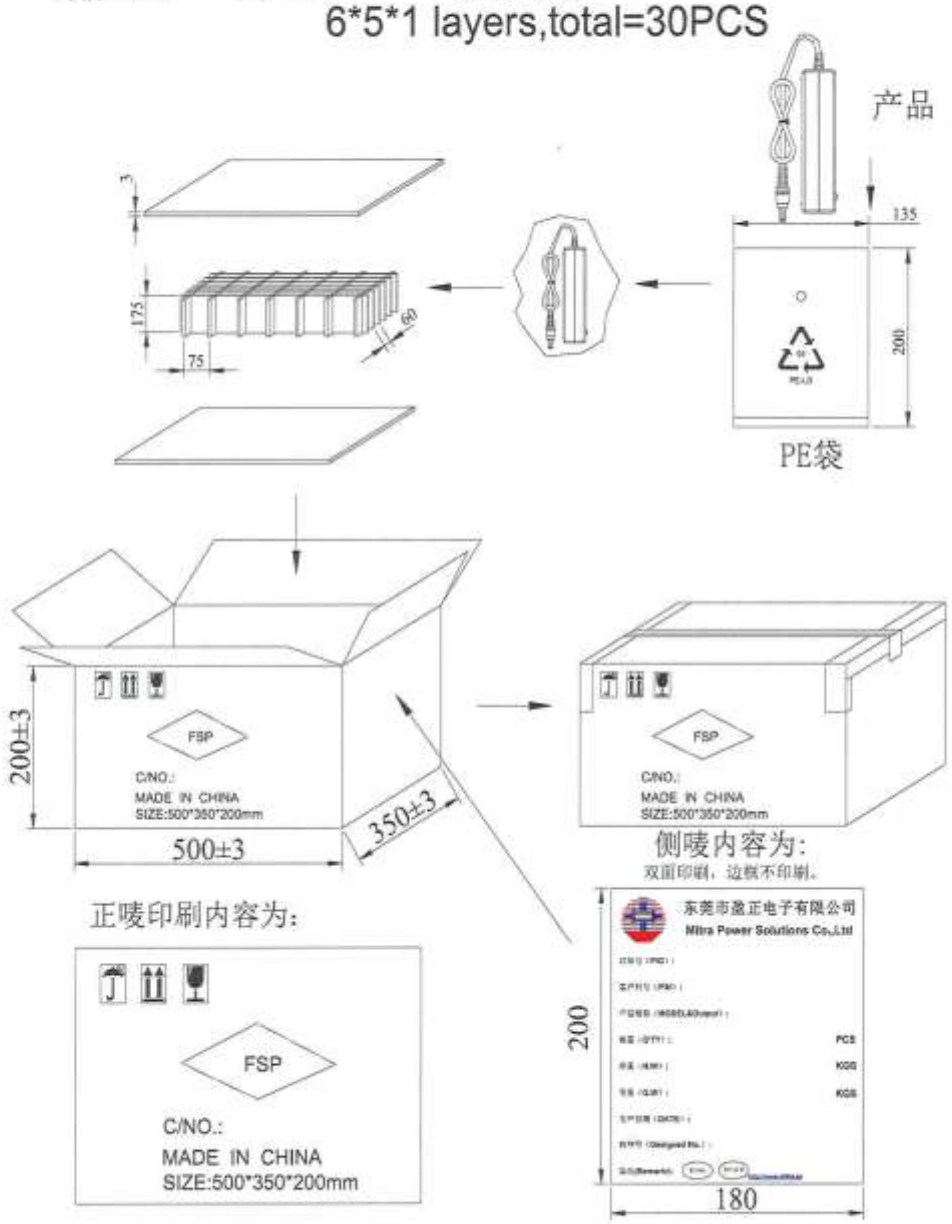
8.6 Packing Drawing 包装图

外箱：B=B　　平卡：B33　　刀卡：B=C

6*5*1 layers,total=30PCS



正唛印刷内容为：

VAL