



茂硕电源科技股份有限公司

MOSO POWER SUPPLY

TECHNOLOGY CO. LTD

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# 参考规格书

## SPECIFICATION FOR REFERENCE

CUSTOMER/客户: \_\_\_\_\_

CUSTOMER P.N./客户物料号: \_\_\_\_\_

MODEL NO./产品型号 MS-Z5000R120-060B0-Q

PRODUCT NO./产品编号: SCXXX-Q0/XXXXXX

SAMPLE DATE/送样日期: 2022-06-19

<b>CUSTOMER AUTHORIZED SIGNATURE/客户承认签核</b>		

Please return to us one copy of "SPECIFICATION FOR APPROVAL" with you approved signature./客户确认签字, 盖章后请回传一份承认书给我司.

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## 1. SCOPE/简述

The document details the electrical, mechanical and environmental specifications of a SMPS, the power supply provide 60W continuous output power.

资料详细描述了一款 60W 连续输出功率)开关电源的电气性,结构性及环境等要求.

The power supply shall meet the **RoHS** requirement.

此款电源符合 **RoHS** 要求.

### 1.1. Description

- SMPS Adaptor(Wall mount)/插墙式适配器       SMPS Adaptor(Desk-top)/桌面型适配器  
 Open Frame/开放式结构       SMPS Unit (metal Case)/带铁壳型  
 Others/其他

## 2. Input Characteristics/输入特性

### 2.1. Input Voltage & Frequency/输入电压与频率

The range of input voltage is from 90Vac to 264Vac single phase.

输入电压范围: 从 **90Vac** 到 **264Vac**, 单相输入.

	Minimum/最小	Nominal/额定值	Maximum/最大
Input Voltage/输入电压	90Vac	100Vac~240Vac	264Vac
Input Frequency/输入频率	47Hz	50Hz/60Hz	63Hz

### 2.2. Input AC Current/AC 输入电流

1.5A max. @ 100-240Vac input & Full load

输入电压 **100-240Vac** 满载时, 输入电流不超过 **1.5A**。

### 2.3. Inrush Current (cold start)/浪涌电流(冷启动)

No damage shall occur and not blow up

不会损害和发生危险。

### 2.4. Averaged Efficiency/平均效率

88.00% @115Vac input (Average @25%, 50%, 75% and 100% of max load).

输入电压 **115Vac** 时, **25%、50%、75%和 100%**载时的平均效率不低于 **88.00%**

89.00% @230Vac input (Average @25%, 50%, 75% and 100% of max load).

输入电压 **230Vac** 时, **25%、50%、75%和 100%**载时的平均效率不低于 **89.00%**

### 2.5. Energy Consumption /空载功耗

No load Consumption <0.15W(115Vac/60Hz).

输入电压 **115Vac** 时,空载功耗均小于 **0.15W**。

No load Consumption <0.15W(230Vac/50Hz).

输入电压 **230Vac** 时,空载功耗均小于 **0.15W**。

## 3. Output Characteristics/输出特性

### 3.1. Static Output Characteristics <Vo & R+N>/静态输出特性

Output	Rated Load/额定负载		Output Range 输出电压范围	R+N 纹波与噪声	Remark 备注
Rate	Min. Load	Max. Load			

+12.0V	0.0A	5.0A	11.4V ~ 12.6V	<200mVp-p	100-240v
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Ripple & Noise: Measurement is done by 20MHz b width oscilloscope paralleled a 0.1uF ceramic capacitor and a 10uF electrolytic capacitor. (test under the condition of rated input and rated output).

纹波与噪声: 测量时, 示波器选用 **20MHz** 带宽限制, 输出端要并联一颗 **0.1uF** 的陶瓷电容和一颗 **10uF** 的电解电容. (在额定输入及输出的条件下检测)

### 3.2. Line/ Load Regulation/线性/负载调整率

Output	Load Condition/负载条件		Line Regulation	Load Regulation	Remark
Rate	Min. Load	Max. Load	线性调整率	负载调整率	备注
+12.0V	0.0A	5.0A	±3%	±5%	

### 3.3. Turn - on Delay Time/开机延迟时间

3S max. @ 230Vac input & Full load

输入电压 **230V** 满载时, 开机延迟时间不超过 **3S**。

### 3.4. Hold-up Time/关机维持时间

5mS min. @ 115V/230V at 90 degree.

输入电压 **115V/230V** 时, 关机时间最差情况不小于 **5 毫秒**。

### 3.5. Rise Time/上升时间

50mS max. @ Rated load

额定负载时, 上升时间不超过 **50 毫秒**

### 3.6. Fall Time/下降时间

50mS max. @ Full load

满载时, 下降时间不超过 **50 毫秒**。

### 3.7. Output Overshoot / Undershoot/输出过冲/欠冲

10% max. When the power on or off, when it is the full input voltage and full load

开关机时, 输出过冲/欠冲均不大于 **10%**。

### 3.8. Output Load Transient Response/输出负载瞬态响应

Output voltage within 10.8-13.2V for load step from 25% to 50% to 25%, 50% to 75% to 50%  
 R/S: 0.25A/uS, Transient Response Recovery Time :200uS, Dynamic response overshoot 10%

输出电压 **10.8-13.2V** 时, 负载从 **25%** 到 **50%**到 **25%**, 或 **50%** 到 **75%**到 **50%**逐步变化, 斜率 **0.5A/uS**, 动态响应恢复时间 **200uS**, 动态响应过冲均保持 **±10%**。

## 4. Protection Requirements/保护要求

### 4.1. Over Current Protection/过流保护

Over Current Point Limited/过流点限制:  $I > 5A$

The output shall hiccup when the over currents applied to the output rail, and shall be self-recovery when the fault condition is removed

过流时, 输出将进入打嗝模式, 过流情况解除后, 产品将会自动恢复正常。

### 4.2. Short Circuit Protection/短路保护

The input power shall decrease when the output rail short, the power supply shall no damage,

and shall be self-recovery when the fault condition is removed

输出短路时, 输入功率会降低, 且电源不会损坏, 当短路情况解除后, 电源将会自动恢复正常

#### 4.3. Over Voltage Protection/过压保护

The power supply has to be protected against over voltage conditions. No damage allowed. The power supply must come back to nominal working without on/off powering after removal of the over voltage condition. Maximum output value 18V at In any others conditions (over voltage protection).

当过压保护时, 产品输出功率不会损伤, 当过压情况解除后, 产品恢复正常. 过电压保护时, 最大输出 18V。

### 5. Environment Requirements/环境要求

#### 5.1. Operating Temperature and Relative Humidity/操作温/湿度要求

0°C to +40°C, 5%RH to 95%RH

#### 5.2. Storage Temperature and Relative Humidity/存储温/湿度要求

-20°C to +70°C, 5%RH to 95%RH non-condensing @ Sea level shall be low 5,000m.  
海拔 5,000 米以下, 温度 -20°C to +70°C, 湿度 5%RH to 95%RH。

#### 5.3. Vibration/振动

10 to 300Hz sweep at a constant acceleration of 1.0G(Breadth: 3.5mm) for 1Hour for each of the perpendicular axes X, Y, Z

扫描频率: 10 to 300Hz, 恒定加速度: 1.0G(位移: 3.5mm), X, Y, Z 三垂直坐标轴向各振动 1 小时

#### 5.4. Drop Test/跌落

Height: 1m; the product should be fell off on the hardwood with the thickness of 20mm ,6 Surfaces, The electric performance and Hi-Pot test must be OK after the drop tests.

跌落高度: 1m, 产品应跌落到厚度为 20mm 的硬木上, 6 面, 跌落后产品电气性能及高压测试 OK。

### 6. Reliability Requirements/可靠性要求

#### 6.1. Burn-in/老化

The power supply shall be burn-in for 2 Hours under normal input and 80% rated load at 40°C ± 5°C, the electric performance and Hi-Pot test must be OK

40°C ± 5°C, 电源在正常输入电压和 80%额定负载条件下老化 2 小时后, 电气性能及高压测试 OK。

#### 6.2. MTBF Qualification/平均间隔故障时间估算

The MTBF shall be at least 50,000hours at 25°C, Full load and nominal input condition.

平均间隔故障时间: 在 25°C, 额定输入与满载条件下, 至少工作 50,000 小时,

### 7. EMI/EMS Standards/EMI/EMS 标准

#### 7.1. EMI Standards/EMI 标准

FCC Part15 EN55032 EN55035

#### 7.2. EMS Standards/EMS 标准

7-2-1 EN 61000-4-2, electrostatic discharge(ESD) requirement/静电抗扰度要求

Discharge characteristic/静电规格

Test level/测试条

Test criteria/试验标准

	件	
Air discharge/空气放电	+/-10KV	A
Contact discharge/接触放电	+/-6KV	A

7-2-2 EN 61000-4-3, radiated electromagnetic field susceptibility(rs)/辐射骚扰场强

Test level/测试条件	Test criteria/试验标准
3V/m (r.m.s)	A
80-1000MHz,80%AM(1KHz) sine-wave	

7-2-3 EN 61000-4-4, electric fast transients(burst) immunity requirement/电快速瞬变脉冲群

Coupling/测试端口	Test level/测试条件	Test criteria/试验标准
AC-input/交流输入	1KV	A
AC-input/交流输入	2KV	B

7-2-4 EN 61000-4-5, surge capability requirement/浪涌抗扰度要求

Surge voltage/雷击电压	Test criteria/试验标准
Common mode/共模 +/-2KV	A
Differential mode/差模 +/-2KV	

7-2-5 EN 61000-4-6, Induced radio frequency fields conducted disturbances immunity requirement/电源端子传导骚扰实验

Test level/测试条件	Test criteria/试验标准
3V	A
0.15-80 MHz,80%AM(1KHz)	

7-2-6 Assessment criteria /评估标准

Acceptance criteria 可接受标准	Performance 性能
A	Agreed operational behavior within the specified limits 性能不允许变化；如果性能会发生变化，则变化的范围在产品规格书规定的范围内。
B	Time limited functional diminishment or malfunction during the tests is permitted. The function is self-reactivated by the unit following completion of the tests. 设备在测试过程中，性能降低允许在产品规格书要求范围内，干扰消除后，设备能恢复正常，不允许出现复位和任何方式的人工干预。
C	Malfunction is permitted .The function can be reactivated either by reconnection to the mains or by operator intervention. 在测试过程中，设备允许出现业务中断，测试完毕后允许自行恢复或者人工干预恢复（包括硬件上干预）；测试中只允许初级防护器件损坏，并且更换损坏的初级防护器件后，设备能恢复正常



## 8. Safety Standards/安规标准

### 8.1. Dielectric Strength(Hi-pot)/介电耐压强度(高压)

Primary to Secondary: 1800Vac /10mA max. / 60S (when safety testing).

初级对次级: 1800Vac / 10mA max. / 60 秒 ( 安规试验 ) .

Primary to Secondary: 1800Vac /5mA max. / 3S (when production).

初级对次级: 1800Vac / 5mA max. /3S(生产作业).

### 8.2. Leakage Current/漏电流

0.5mA max. at 264Vac / 60Hz.

### 8.3. Insulation Resistance/绝缘阻抗

50MΩ min. at primary to secondary add 500Vdc test voltage.

在初级与次级之间加载测试电压 500V 测试, 绝缘阻抗最小 50MΩ.

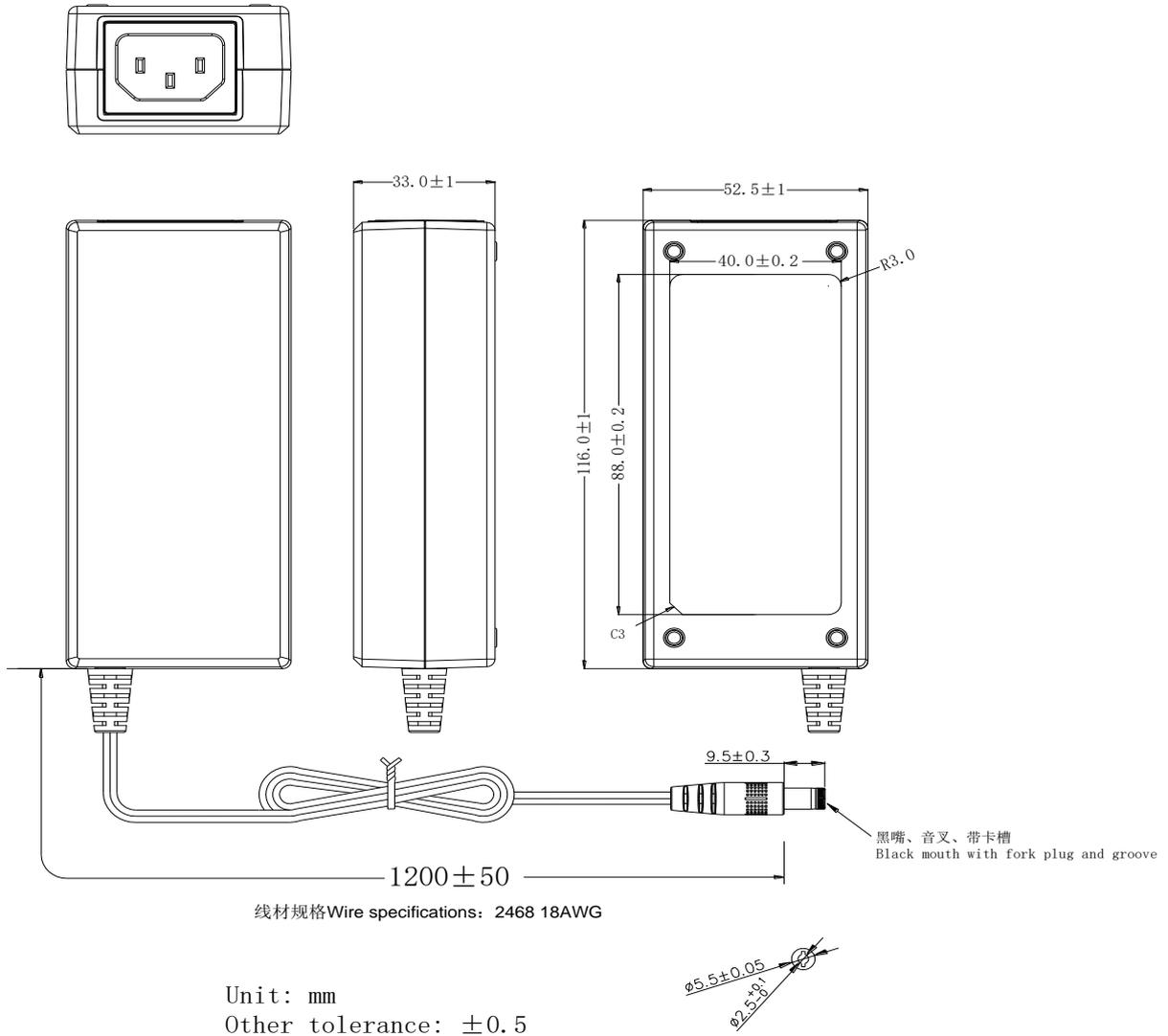
### 8.4. Earthing Resistance/接地阻抗测试

Earthing Resistance: <0.1 Ω at 12VDC/25A/1S.

### 8.5. Regulatory Standards/安规标准

Type/安规	Country/国家	Standard/标准	State/状况	Note/备注
CE	Europe	EN62368-1	APPROVAL	
UL	USA	UL62368-1	APPROVAL	

**9. Mechanical Outline Drawing/外观示意图**

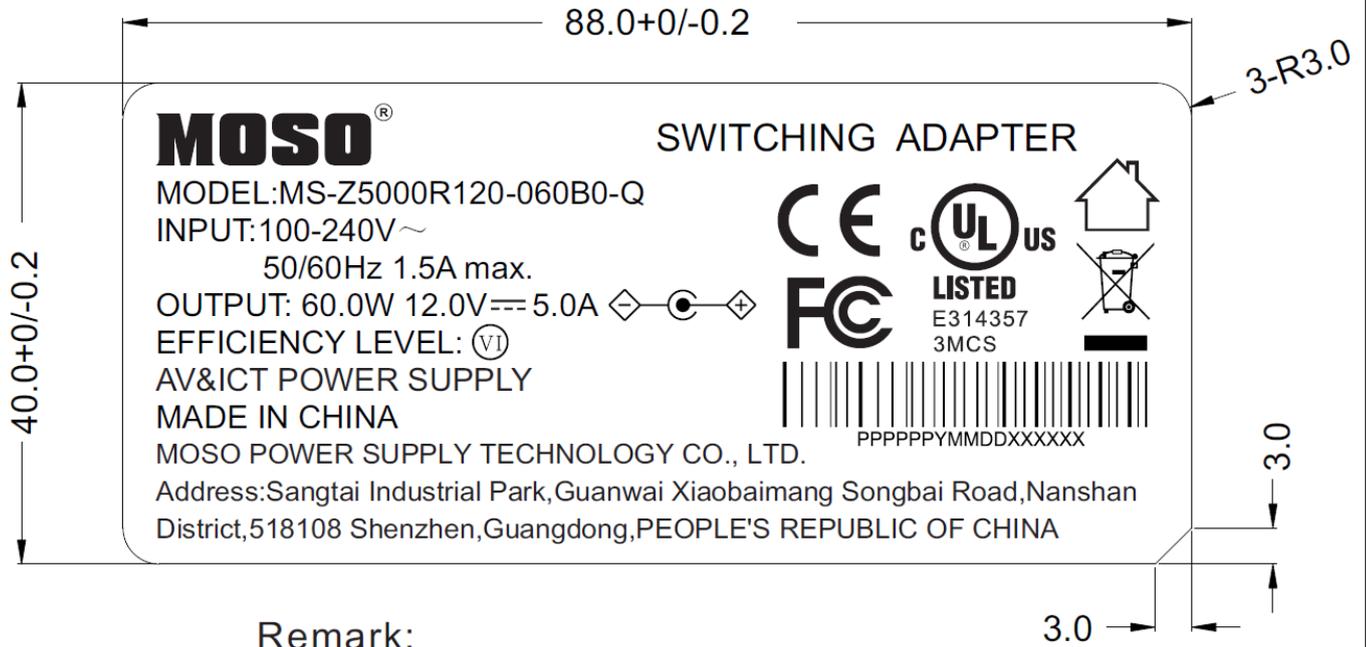


外壳材质: ■PC 耐温: 120°C

□PC+ABS 耐温: 95°C

备注: 1)PC 材质符合球压测试要求;  
2)外壳与线材为黑色.

10. I/O Marking Drawing/铭牌示意图



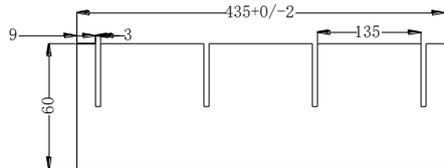
Remark:

- 1.Above label is laser engraved.
- 2.The height dimension of double insulation mark and CE mark can NOT less than 5mm
- 3.The dimension of garbage bin mark can NOT less than 7mm.

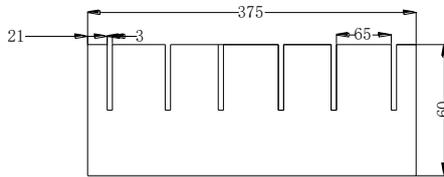


- product code(产品编码:实际S编码后六位, 如SB250-Q0,取B250Q0)
- producing year(产品实际生产年份,年份最后一位, 如2021年, 取1)
- producing month(产品实际生产月份, 如11月, 取11)
- producing date(产品实际生产日期, 如12日, 取12)
- product listing number(产品序列号,000001-999999)

### 11. Package Drawing/包装示意图



四刀卡435\*60



六刀卡375\*60

包装说明:

- 一、将产品每PCS装入250\*140 (mm)PE袋中包好, 再将包装的产品放入刀卡槽中, 每层装15PCS, 共装5层, 每箱装75PCS

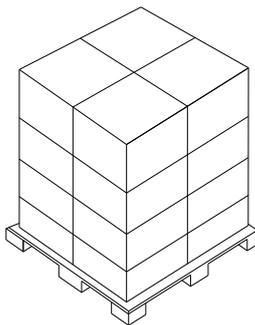
即: 15pcs/层\*5层=75PCS/箱

- 二、包装材料使用说明为:

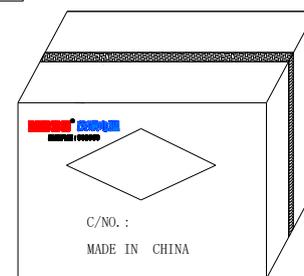
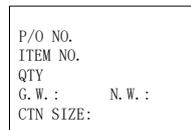
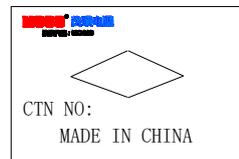
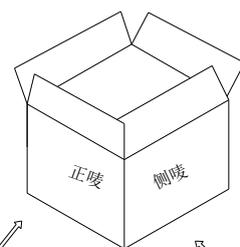
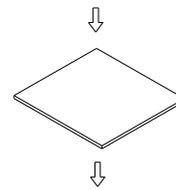
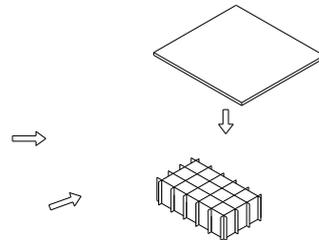
- 1、四刀卡435\*60用量: 30PCS
- 2、六刀卡375\*60用量: 20PCS
- 3、PE袋250\*140用量: 75PCS
- 4、平卡435\*375用量: 6PCS
- 6、纸箱450\*390\*335: 1PCS

- 三、栈板堆放说明为:

- 1、栈板尺寸为: L1000\*W800\*H100mm
- 2、每层放2行\*2列=4箱
- 3、竖直堆放4层\*4箱共16箱



栈板堆放示意图



产品装入包装箱用胶袋封箱, 位置参考图中所示.

- PE 袋包装要求:  PE 袋不用胶带封口;  
 PE 袋用胶带封口;  
 其它要求;

备注: 若客户未进行选择 PE 袋包装要求或备注时, 我司默认采用 PE 袋不用胶带封口包装方式.