MOSO® 茂硕电源
股票代码：002660

茂硕电源科技股份有限公司
MOSO POWER SUPPLY TECHNOLOGY CO.,LTD

MOSO Industrial Park, Nanshan District, Shenzhen, Guangdong 518108, P. R. China
TEL: 86-755-27657000 27657555
P.C:518108
FAX: 86-755-27657908
http://www.mosopower.com

参考规格书
SPECIFICATION FOR REFERENCE

CUSTOMER: 客　　户：	
CUSTOMER P.N.: 客户料号：	
MODEL NO.: 产品型号：	**V30-V3000R120-036M0-DE**
PRODUCT NO.: 产品编号：	**SCXXX-V0**
SAMPLE DATE: 送样日期：	**2024-08-07**

CUSTOMER AUTHORIZED SIGNATURE 客户承认签核		

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。

ADD: MOSO Industrial Park, Nanshan District, Shenzhen, Guangdong 518108, P. R. China
地址:深圳市南山区茂硕科技园
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E-mail:moso@mosopower.com **http://www.mosopower.com**

MANUFACTURER AUTOGRAPH 制造商签名			
Reviser 修订	**Confirm** 确认	**Checked** 审查	**Approval** 批准

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E. C. LIST/变更履历表

Rev. 版本	Description of Change/变更内容描述		Changed Date/日期	ECN No.
	Before/变更前	After/变更后		
A1	Original Release（初次发行）	---	2024-08-07	---

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1. SCOPE/简述

The document details the electrical, mechanical and environmental specifications of a SMPS, the power supply provide 36W continuous output power.NO-Y.

资料详细描述了一款 36W 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 HSF requirement.

此款电源符合 HSF 要求。

1.1. Description /类型

☒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 (With Case)/带铁壳型
☐Others/其他

1.2. Green Requirements/环保要求

☒RoHS:2011/65/EU & (EU) 2015/863;
☒REACH:1907/2006/EC;
☐Halogen-free:IEC 61249-2-21;
☐CA Prop 65;
☒POPs:(EU)2023/1608;
☒PAHs: 2005/69/EC;
☒Packaging Directive:94/62/EC;
☒US EPA Toxic Substances Control Act (TSCA);
☒MOSO Environmental standards: WI-QM006-G;
☐Others

1.3. Energy Efficiency Requirements/能效要求

No.	Country/国家地区	Energy efficiency abbreviation/能效简称	Whether it meets the requirements/是否符合 (YES/是☒，NO/否☐)
1	USA/美国	DoE VI	☐
2		CEC	☐
3	Canada/加拿大	NRCan	☐
4	Australia/New Zealand/ 澳大利亚/新西兰	GEMS	☐
5	Europe/欧盟	Erp VI	☒
6		CoC V5 Tier 2	☐
7	South Korea/韩国	KMEPS	☐
8	Mexico/墨西哥	MEPS	☐
9	Byelorussia/白俄罗斯	MEPS	☐

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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 180Vac to 264Vac single phase.

输入电压范围：从 **180Vac** 到 **264Vac**，单相输入.

	Minimum/最小	Nominal/额定值	Maximum/最大
Input Voltage/输入电压	180Vac	200Vac-240Vac	264Vac
Input Frequency/输入频率	47Hz	50Hz /60Hz	63Hz

2.2. Input AC Current/AC 输入电流

1.0A max. @ 200-240Vac input & Full load.

输入电压 **200-240Vac** 满载时，输入电流不超过 **1.0A**。

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

No damage shall be presented at the cold start

冷启动时不能有损坏

2.4. Averaged Efficiency/平均效率

90% min. @230Vac input (@25%, 50%, 75% and 100% of max load).

输入电压 **230V 50Hz** 时，**25%、50%、75%**和 **100%**载时的平均效率不低于 **90%.**

2.5. Energy Consumption /空载功耗

No load Consumption ≤0.075W(230Vac/50Hz).

输入电压 **230Vac/50Hz** 时,空载功耗均小于 **0.075W**。

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	R+N	Remark
Rate	Min. Load	Max. Load	输出电压范围	纹波与噪声	备 注
+12.0V	0.0A	3.0A	11.4V-12.6V	<120mV	200-240Vac

Ripple & Noise: Measurement is done by 20MHz bandwidth oscilloscope and the output paralleled a 0.1uF ceramic capacitor and a 47uF electrolytic capacitor. (test under the condition of rated input and rated output)

纹波与噪声：量测时示波器选用 **20MHz** 带宽限制,输出端要并联一颗 **0.1uF** 的陶瓷电容和一颗 **47uF** 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	3.0A	± 2%	±5%	

3.3. Turn - on Delay Time/开机延迟时间

3S max. @200~240Vac input & Full load

输入电压 **200~240Vac** 满载时，开机延迟时间不超过 **3S**。

3.4. Hold-up Time/关机维持时间

10mS min. @ Full load &230Vac/60Hz input turn off at worst case

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输入电压 **230Vac/60Hz** 满载时，关机时间最差情况不小于 **10** 毫秒。

3.5. Rise Time/上升时间

30mS max. @ Rated load, output voltage from 10% to 90%.

额定负载时，输出电压从 **10%**上升 **90%,**上升时间不超过 **30** 毫秒。

3.6. 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，输入全电压时，全负载时，输出电压小于 **10%**。

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

Output voltage within 11.4-12.6V for load step from 20% to 80%, R/S: 0.5A/uS, Frequency: 100Hz duration and 8mS at 80%.

输出电压在 **11.4-12.6V** 时，负载从 **20%**到 **80%**，斜率 **0.5A/uS,**频率：**100Hz. 80%**负载持续时间为 **8Ms**

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

Output voltage within 11.4-12.6V for load step from 20% to 80%, R/S: 0.5A/uS, Frequency: 100Hz duration and 8mS at 80%.

输出电压在 **11.4-12.6V** 之间,负载变化：从 **20%**到 **80%**，斜率 **0.5A/uS**，频率：在 **80%**负载 **100Hz** 持续 **8 mS.**

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**:** 6.0A＞I＞3.3A (200-240Vac)

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.

当输出短路时,产品输入功率降低且不会损伤,当短路情况解除后,产品将会自动恢复正常。

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.

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.

5. Environment Requirements/环境要求

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

0℃ to +40℃, 5%RH to 90%RH

温度 **0**℃到**+40**℃，湿度 **5%RH** 到 **90%RH**。

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

-25℃ to +70℃, 5%RH to 95%RH non-condensing ,@ Sea level shall be low 5,000m.

海拔 **5,000** 米以下，温度**-25**℃ **to +70**℃，湿度 **5%RH to 95%RH**

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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 in/跌落

Height: 1m; the product should be fell off on the hardwood with the thickness of 20mm, and the hardwood should be put on the base of the cement or on the ground without flexibility. Apply one times on all surfaces, total 6 times. The electric performance and Hi-Pot test must be OK after the drop tests.

跌落高度:1 米，并跌落到厚度为 20mm 的硬木上,且硬木应放在水泥基座或等同的无弹性地面上,6 个面，每面各 1 次，在跌落后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 nominal input and 80%~100% load at ambient temperature of 40℃±5℃.

电源在额定输入和 80%~100%负载下，在 40℃±5℃环境温度下老化 2 小时。

6.2. MTBF/平均故障间隔时间

The MTBF of power supply shall be over than 50,000 Hours @ 25℃100%Load.

平均故障间隔时间: 在 25℃，额定输入与 100%负载条件下，至少工作 50,000 小时.

6.3. E-caps lifetime/电容寿命

The E-caps used in this PSU must be with lifetime of 5 years @35℃@100% load@ 230Vac/50Hz input.

35℃下，在 100%负载和 230VAC 输入条件，电解电容寿命必须有 5 年.

7. EMI/EMS Standards/EMI/EMS 标准

7.1. EMI Standards/EMI 标准

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/测试条件	judgment criteria/评定标准
Air discharge/空气放电	+/-8KV	B
Contact discharge/接触放电	+/-4KV	B

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

Test level/测试条件	judgment criteria/评定标准
3V/m (r.m.s)	B
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	judgment criteria/评定标准

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AC-input/交流输入	+/-1KV	A
AC-input/交流输入	+/-2KV	B

7-2-4 K.21+,surge capability requirement/浪涌抗扰度要求

Surge voltage/雷击电压	judgment criteria/评定标准
Common mode/共模 +/-6KV	B
Differential mode/差模 +/-6KV	

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	judgment criteria/评定标准
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

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8. Safety Standards/安规标准

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

Primary to Secondary: 3000Vac /10mA max. / 60S (when safety testing)

初级对次级: 3000Vac / 10mA max. / 60 秒（安规试验）

Primary to Secondary: 3300Vac /5mA max. / 3S (when production)

初级对次级: 3300Vac / 5mA max. /3S(生产作业)

8.2. Leakage Current/漏电流

0.25mA max. at 264Vac / 50Hz

8.3. Insulation Resistance/绝缘阻抗

100MΩ 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 100MΩ.

8.4. 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	

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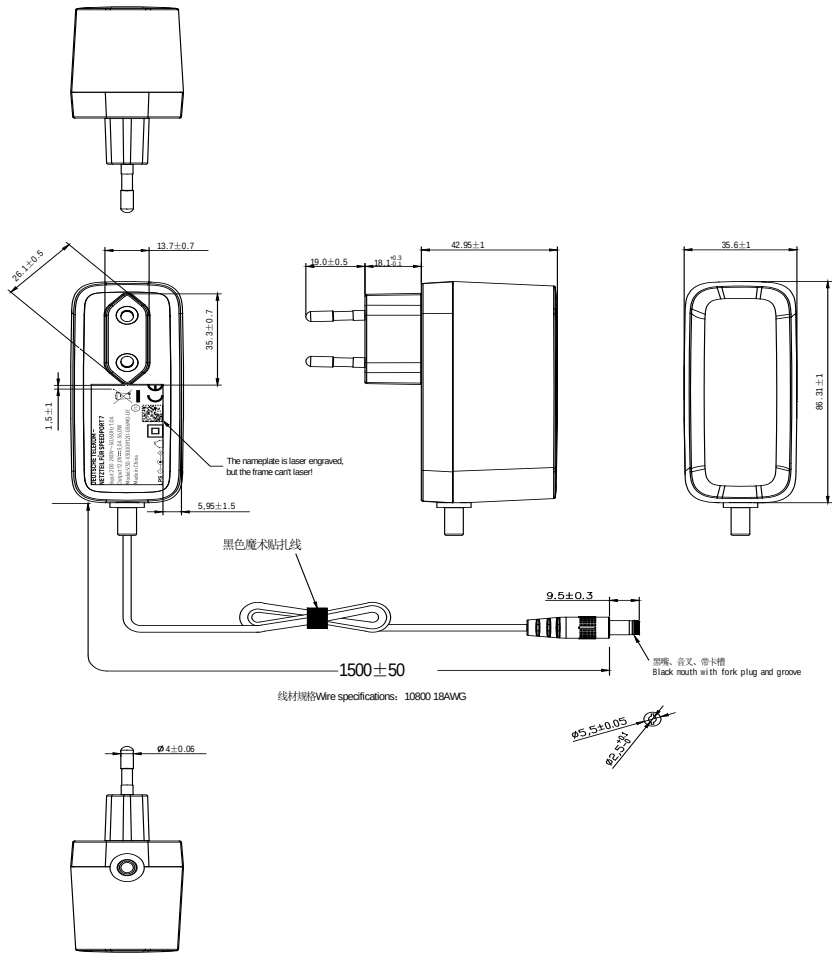
9. Mechanical Outline Drawing/外观示意图



外壳材质：■PC 耐温：120℃.

□PC+ABS 耐温：95℃.

备注：1)PC 材质符合球压测试要求.

2)外壳与线材为黑色.

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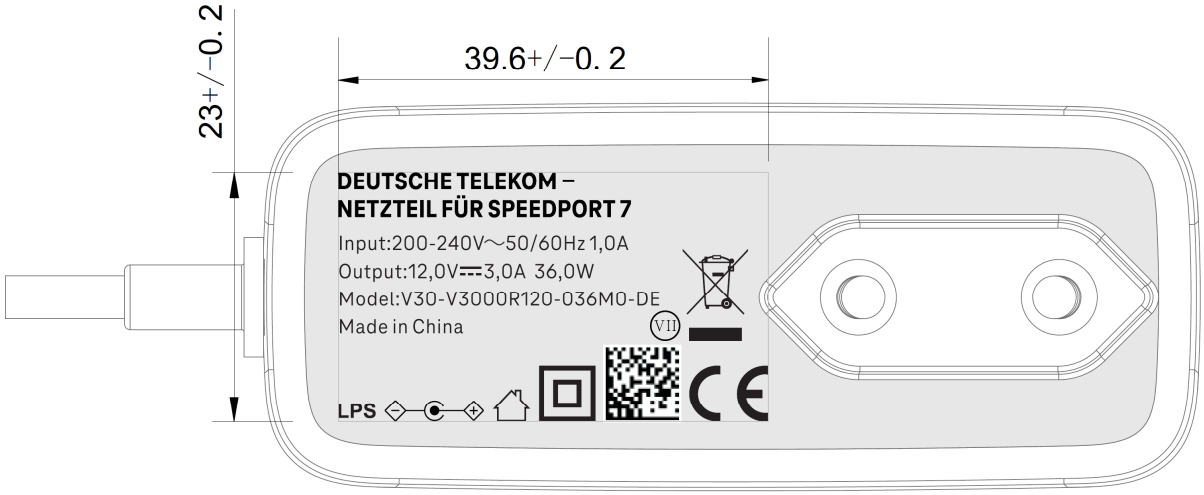
10. I/O Marking Drawing/铭牌示意图

grey area has VDI 21 very fine texture.
Rest of PSU has texture VDI 3400 Ref.33
There is a 0.2mm step between these textures.
All inscriptions (including symbols) are lasered.



紫光镭射，颜色需接近Pantone Cool Gray 3C
调试参数可参考截图文件

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

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二维码规格为: Datamatrix

The serial number can be on the on the place defined in the mechanical definition as described below:
序列号可以放在机械定义中定义的位置, 如下所述

- 2D code size: 7 x 7mm
  二维码大小：7x7mm(±0. 3)
- Code format: Datamatrix ISO/IEC 16022 using the same colors as the main label
  代码格式：数据矩阵ISO/IEC 16022使用与主标签相同的颜色
- To insure sufficient contrast to be scanned, the color uniform area of each pixel must be at least 0.5 x 0.5mm
  为了保证足够的对比度进行扫描，每个像素的颜色均匀面积至少为0.5 x 0.5mm
- Symbol quality must fulfill the requirements of ISO/IEC 15415 for grade A, B or C.
  质量必须满足 ISO/IEC 15415 的A, B 或者 C等级
- Human readable translation under the 2D code.
  二维码下的内容需要满足人类可读性

Format: YYWWDLNNNXXXXX

- YY is the 2 last digits of the year in which the adapter was manufactured
  (YY是适配器生产年份的最后两位数, 如: 24)
- WW is the standard EEC week number in which the adapter was manufactured
  (WW是适配器是制造的标准的欧洲经济共同体周号, 如32)
- D is the day within WW (starting on Monday with 1, Tuesday with 2 etc...)
  (D是WW中的一天（从周一开始, 周一用1, 周二用2, 等等）)
- L is a code from used manufacturing line or manufacturing plant
  (code defined by the manufacturer,H stands for Huizhou MOSO,R stands for Shenzhen RD)
  (L是来自生产商代码（由制造商定义, 如H意思为惠州茂硕, R表示深圳研发）)
- NNN is the 3 last digits of the code ,813 means SC813 ,fixed
  (813是S编码的后三位数字, 代表SC813 ,固定不变)
- XXXXX is a running number started by 00001 when D is counted up
  (XXXXX是在D计数时由00001开始的一个连续数, 如00003)

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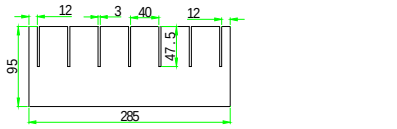
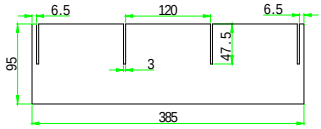
11. Package Drawing/包装示意图



partitioning card 7:285*95



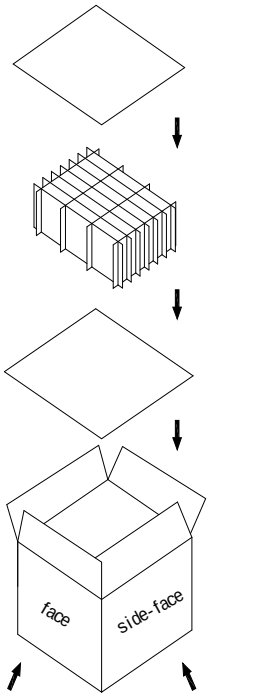
partitioning card 4:385*95

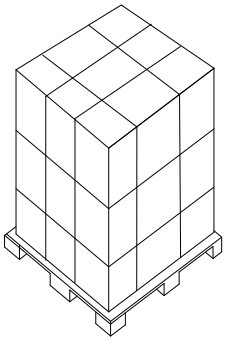
Packing Instruction:

I. the product put in the PE bag, then the packing product put in the pattitioning card groove, 18PCS/floor, 3 floors in all, 54PCS/box
such as:18pcs/floor*3floor=54 PCS/box

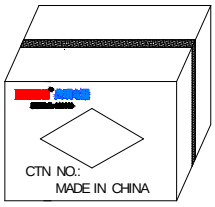
II. the usage of the packing materials:
1. the usage of the sever partitioning card 285*95: 12PCS
2. the usage of the four partitioning card 385*95: 21PCS
3. the usage of the PE bag 250*120: 54PCS
4. the usage of the flat 385*287:4PCS
5. carton box 400*300*315: 1PCS

III. Pallet stacke instruction:
1. Pallet size is:L1200*W950*H120mm
2. per floor set 9pcs
3. stacke per 3floor*9pcs carton
total 27 pcs carton





The pallet stact drawing



The product will be packed in the carton box and the box will be sealed by the sticker

The requirement of PE bag packing: ☐PE bag without sealing by adhesive tape.
☐PE bag with sealing by adhesive tape.
☐Other requirement.

Remark: If the customer has not chose the PE bag packing way,
we will use the PE bag without sealing by adhesive tape.

MOSO Industrial Park, Nanshan District,
Shenzhen, Guangdong 518108, P. R. China
TEL: 86-755-27657000　27657555
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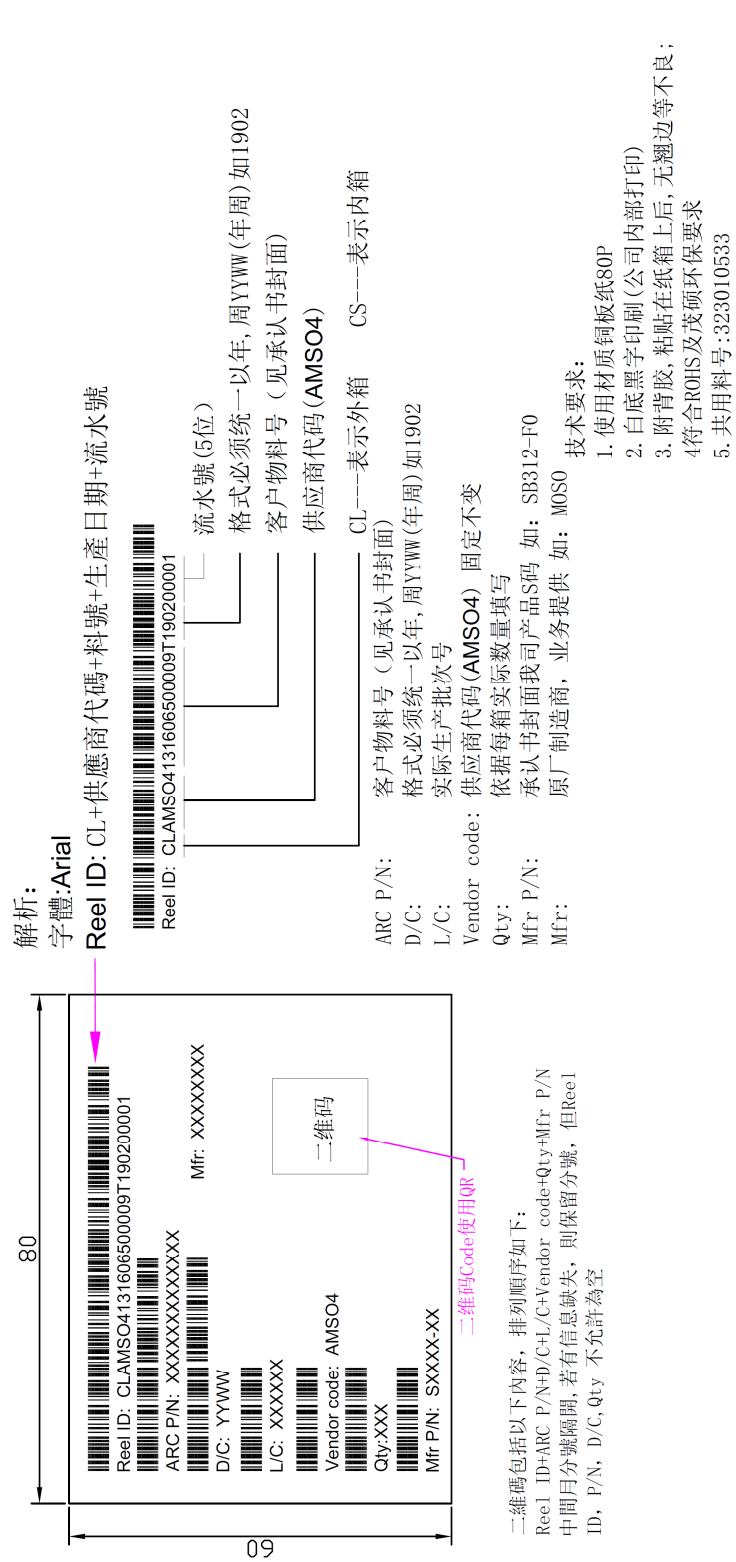
http://www.mosopower.com

Carton label



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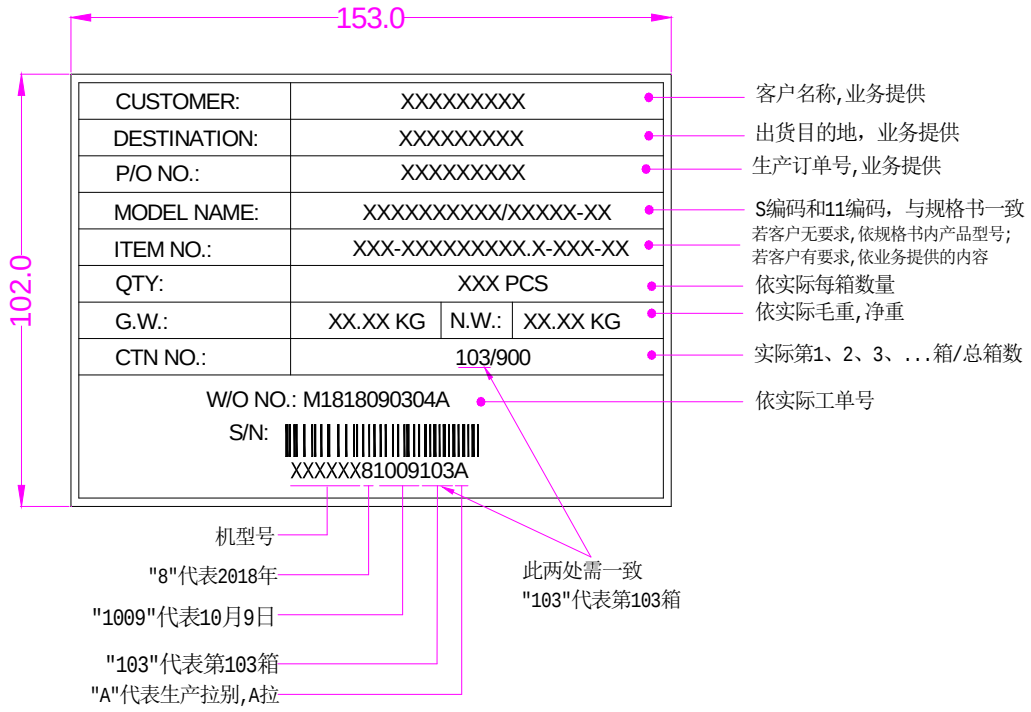

技术要求:

1.材质:80P铜版纸(来料为空白标签)
2.颜色:白底黑字,公司内部打印
3.背附胶,粘贴在纸箱上后,无翘边等不良;
4.符合ROHS标准及茂硕环保要求
5.使用空白料号3230200011