



茂硕电源科技股份有限公司

MOSO POWER SUPPLY

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客户承认书

SPECIFICATION FOR APPROVAL

CUSTOMER/客户： 海康威视

CUSTOMER P.N./客户物料号： _____

MODEL NO./产品型号： MSA-C2000IC12.0-24P-AU

PRODUCT NO./产品编号： S7108-S0/201601040

SAMPLE DATE/送样日期： _____

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。

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拟 制：	审 核：	批 准：
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1. SCOPE

The document detail the electrical, mechanical and environmental specifications of a SMPS, the power supply provide 24W continuous output power.

资料详细描述了一款 **24.0W**(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 (With 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	60Hz/50Hz	63Hz

2.2. Input AC Current/AC 输入电流

0.7Amax. @ 100-240Vac input & Full load/满载情况下, 输入电流最大 **0.7A**

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

80Amax. @ 264Vac input

2.4. Averaged Efficiency /平均效率

86.8% min. (115/230Vac)

2.5. Energy Consumption /空载功耗

空载功耗 ≤ 0.075W (115/230Vac)

3. Output Characteristics/输出特性

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

Output Rate	Rated Load/额定负载		Output Range 输出电压范围	R+N 纹波与噪声	Remark 备注
	Min. Load	Max. Load			
+12.0V	0.0A	2A	11.4V ~12.6V	120mVp-p	100-240V

Ripple & Noise: Measurement is done by 20MHz bandwidth oscilloscope and the output paralleled a 0.1uF ceramic capacitor and a 10uF electrolysis 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 **10uF** 的电解电容. (在额定输入及输出的条件下检测)

注: 低温 **-30℃** 能开机启动, 纹波不大于 **500mV**.

3.2. Line/ Load Regulation/线性/负载调整率

Output Rate	Load Condition/负载条件		Line Regulation 线性调整率	Load Regulation 负载调整率	Remark 备注
	Min. Load	Max. Load			
+12.0V	0.0A	2A	± 3%	± 5%	

3.3. Turn - on Delay Time/开机延迟时间

3S max. @ 100 Vac to 240 Vac input & Full load/满载

3.4. Hold-up Time/关机维持时间

10mS min. @ Full load & 115Vac/60Hz input turn off at worst case/在最差情况关机

20mS min. @ Full load & 230Vac/50Hz input turn off at worst case/在最差情况关机

3.5. Rise Time/上升时间

30mS max. @ Rated load/额定负载

3.6. Fall Time/下降时间

30mS max. @ Full load/满载

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

10% max. When the power on or off/当电源开/关机时

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: 100Hz, 80%负载持续时间为 8mS.

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: $5A > I > 3.2A(100-240Vac)$

4.2. Peak Current /峰值电流

Peak Current 3.1A Input voltage 100-240Vac, Out voltage @ 11.4-12.6V

产品在输入 100-240V 时, 输出峰值电流达 3.1A, 输出电压在 11.4-12.6V 之间。

(90V/60Hz 输入时, 峰值电流 3.2A 输出时, 输出电压不低于 11V)

4.3. Over Voltage protection/过压保护

Over Voltage protection: 18V (max) /过压保护最大为 18V。

4.4. 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

当输入电流短路时, 状态解除后产品要能自动恢复正常使用。

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

20%RH to 85%RH

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

-20℃ to +70℃,
5%RH to 95%RH

5.3. Sea level 5,000 meter/海拔 5,000 米**5.4. 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, 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

5.5. 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 two times on all surface.

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, 每面各 2 次.

6. Reliability Requirements/可靠性要求**6.1. Burn-in/煲机**

The power supply shall be burn-in for 4 Hours under normal input and 80% rated load at 40℃ ± 5℃

产品至少要在 40℃ ± 5℃ 的环境及 80% 额定负载条件下煲机 4 小时

6.2. MTBF/平均无故障时间

The MTBF shall be at least 10,000H at 25℃, under 80% load and 100V/240VAC input condition.

产品在额定电压100-240V输入电压, 输出80%负载, 常温25度环境下, 平均无故障时间达到10万小时以上。

6.3. E-caps lifetime/电容寿命

The E-caps used in this PSU must be with lifetime of 2 years @ 40℃ @ 90Vac/60Hz、115Vac/60Hz、230Vac/50Hz、264Vac/50Hz Input.

产品按下面公式计算, 在40度环境下, 在90Vac/60Hz、115Vac/60Hz、230Vac/50Hz、264Vac/50Hz输入电压, 电容寿命达2年。

$$* \text{Standard: Life Time} = L_r * 2^{(T_o - T_x)/10} * 2^{(\Delta T_o - \Delta T)/5} \\ (\Delta T_o - \Delta T)/5 = 1 - [I_a / (I_s * T_f * F_f)]^2$$

Note-3 CE Capacitor Life time

ΔT_o : Self Heat Coefficient (85℃ = 10, 106℃ = 5)

L_r : Capacitor Life Spec

I_a : Measured Ripple Current

T_o : Capacitor Temp Spec

I_s : Ripple Current spec

T_x : Capacitor case Temp

F_f : Frequency Factor

ΔT : Capacitor Self Heat

T_f : Temperature Factor

7. EMC Standards/ EMC 标准

7.1.EMI Standards/EMI 标准

AS/NZS CISPR22

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	Test criteria/测试标准
Air discharge/空气放电	+/-8KV	B
Contact discharge/接触放电	+/-6KV	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	Test criteria/测试标准
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/测试标准
AC-input/交流输入	1 KV	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/测试标准
Differential mode/差模 +/-2KV	A
Common mode/共模 +/-4KV	

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/测试标准
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: 3000Vac /10mAMax / 60 second

初级对次级: **3000Vac / 10mAMax / 60 秒** (安规试验)

Primary to Secondary: 3300Vac /5mAMax / 3S

初级对次级: **3300Vac / 5mAMax /3S**(生产作业)

8.2. Leakage Current/漏电流

0.25mAmx. at 264Vac / 60Hz

8.3. Insulation Resistance/绝缘阻抗

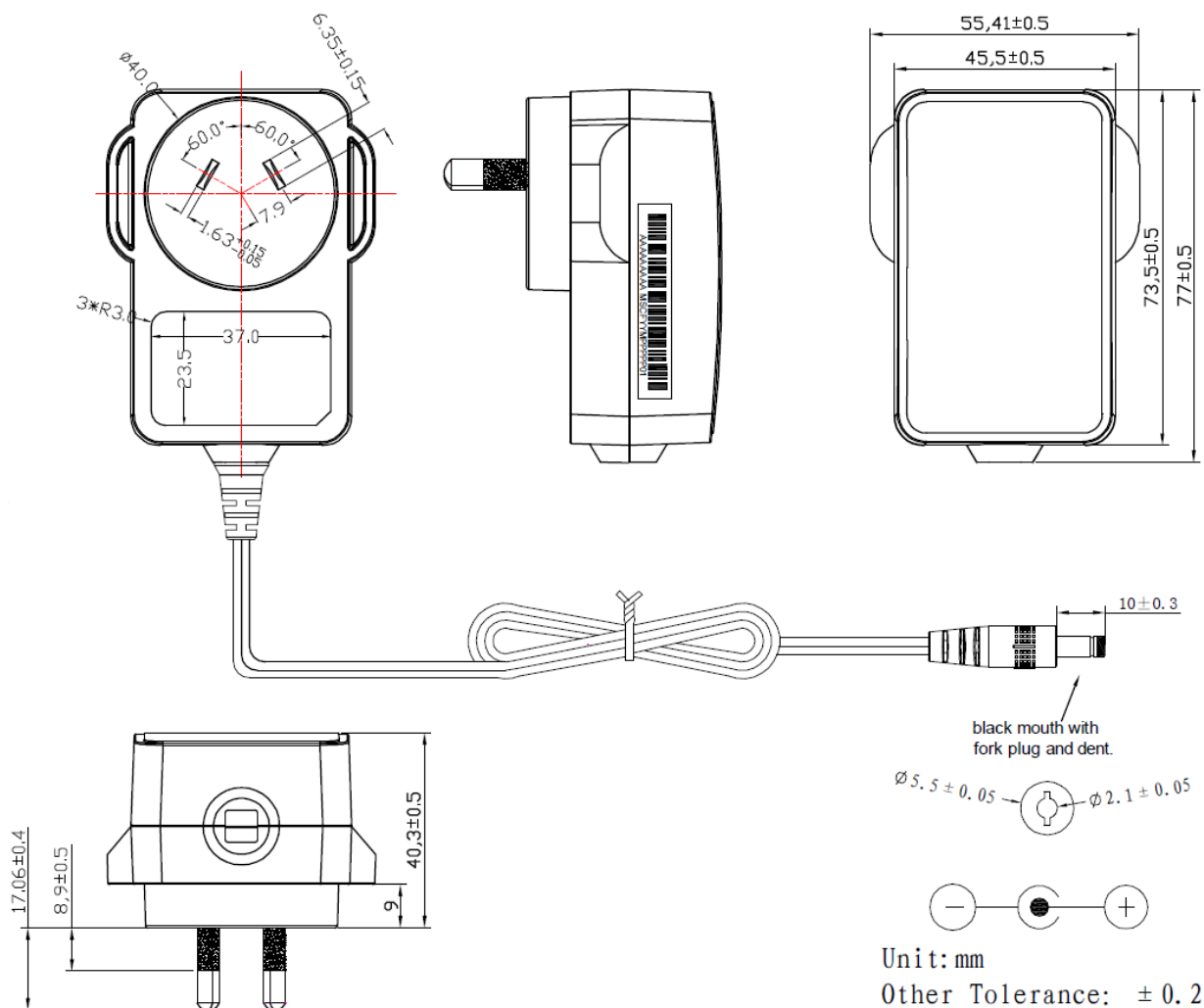
100MΩ min. at primary to secondary add 500Vdc/1min test voltage

在初级与次级间加 **500Vdc/1min** 进行测试, 绝缘阻抗: 正常大气下 **100MΩ**, 湿热条件下 **10 MΩ**

8.4. Regulatory Standards/安规标准

Type/安规	Country/国家	Standard/标准	State/状况	Note/备注
RCM	Australia	AS/NZS60950.1	Approved	

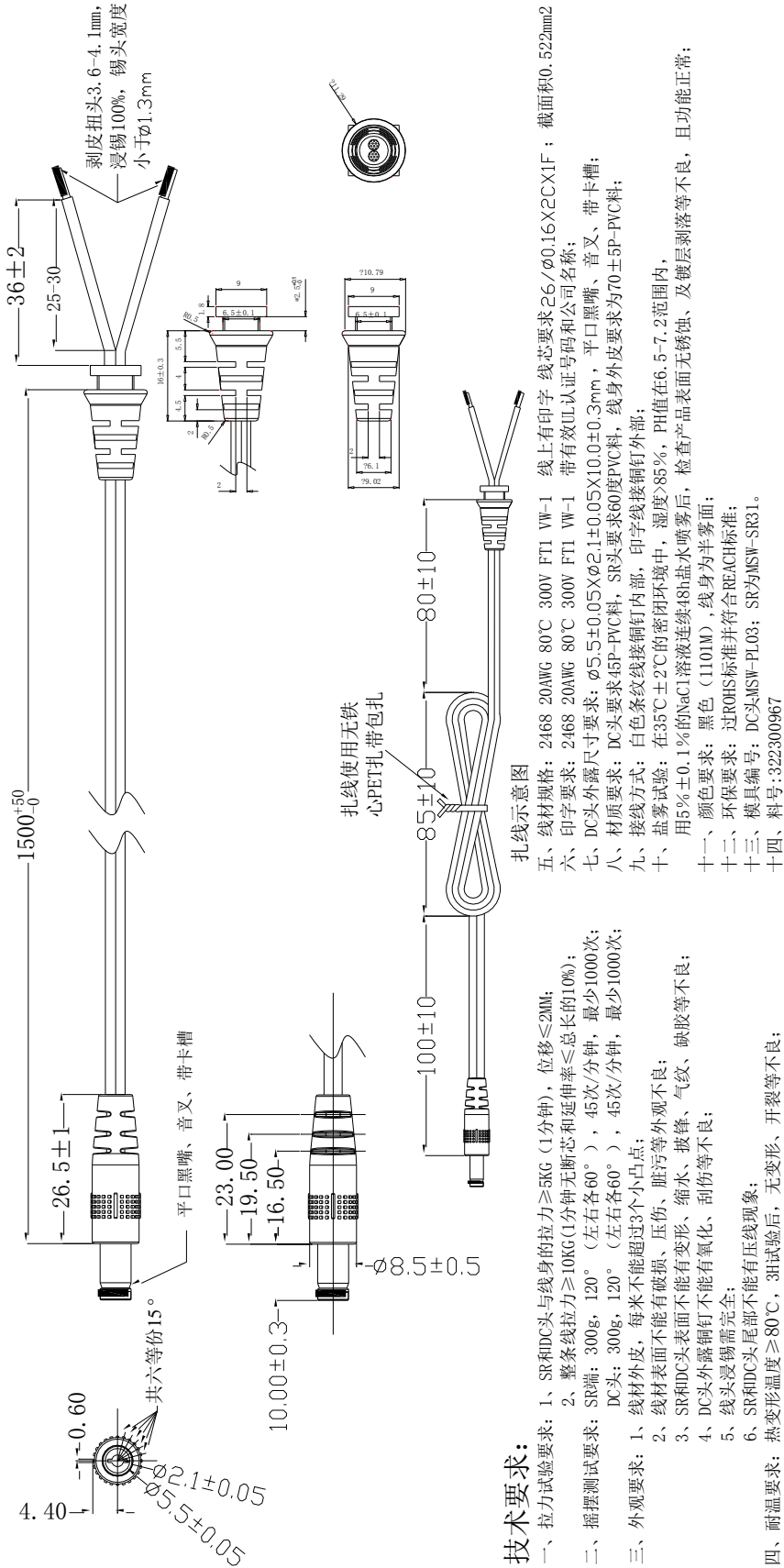
9. Mach. Outline Drawing/外观示意图



Unit: mm
Other Tolerance: ± 0.2

外壳材质: PC 耐温: 120°C
 PC+ABS 耐温: 95°C
 备注: PC 材质符合球压测试要求

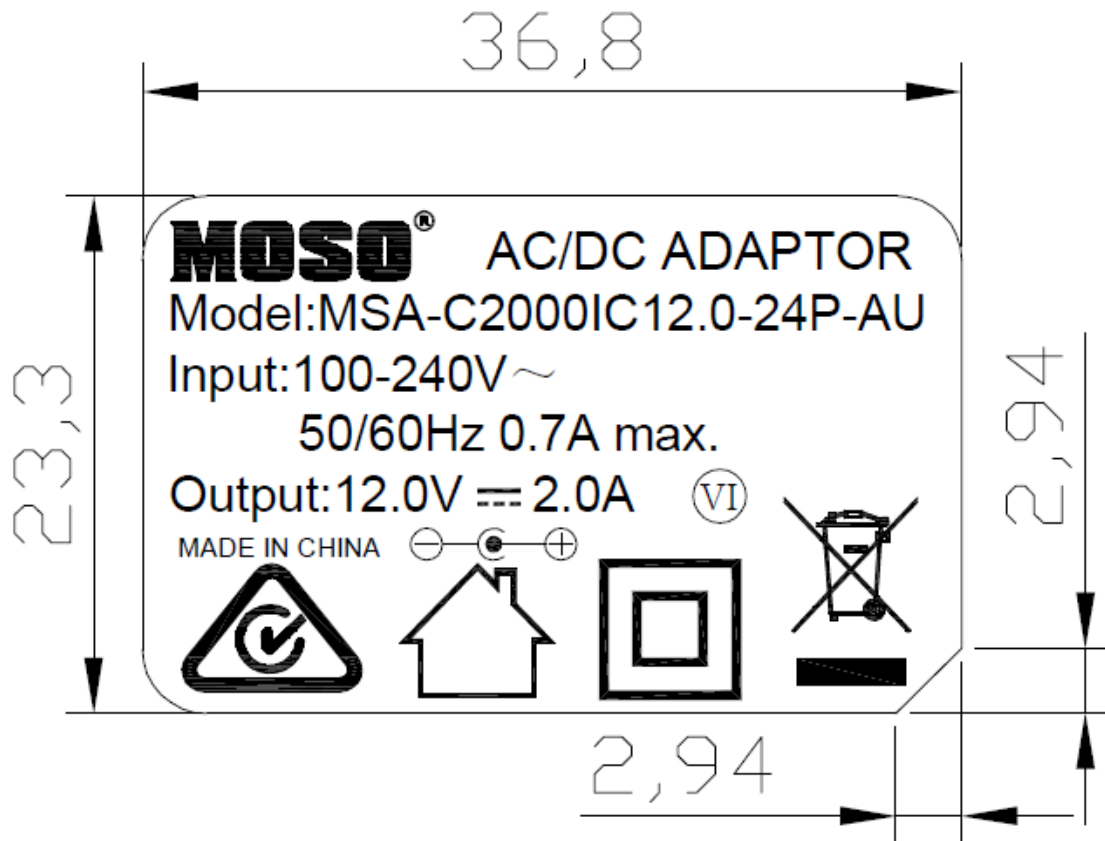
10. DC Cord Drawing/DC 线示意图



技术要求:

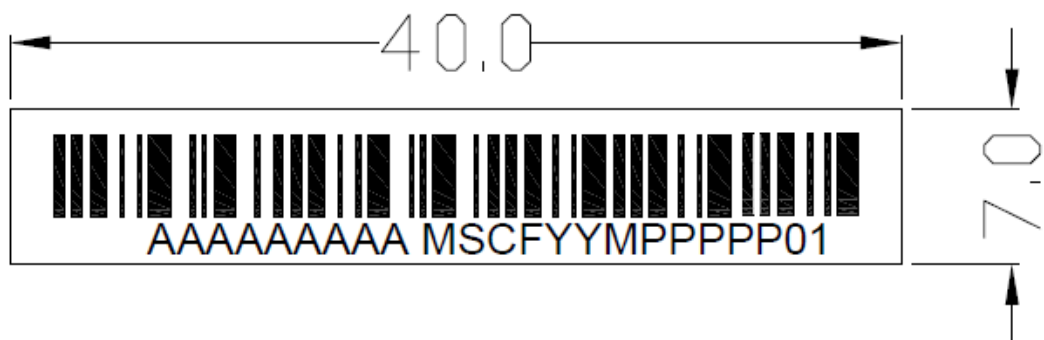
- 一、拉力试验要求: 1、SR和DC头与线身的拉力≥5KG (1分钟), 位移≤2MM; 2、整条线拉力≥10KG (1分钟)无断芯和延伸率≤总长的10%;
- 二、摇摆测试要求: SR端: 300g, 120° (左右各60°), 45次/分钟, 最少1000次; DC头: 300g, 120° (左右各60°), 45次/分钟, 最少1000次;
- 三、外观要求: 1、线材外皮, 每米不能超过3个小凸点; 2、线材表面不能有破损、压伤、脏污等外观不良; 3、SR和DC头表面不能有变形、缩水、披锋、气纹、缺胶等不良; 4、DC头外露铜钉不能有氧化、刮伤等不良; 5、线头浸锡需完全; 6、SR和DC头尾部不能有压线现象;
- 四、耐温要求: 热变形温度≥80℃, 3H试验后, 无变形、开裂等不良;
- 五、线材规格: 2468 20AWG 80℃ 300V FTI VW-1 线上有印字 线芯要求26/φ0.16X2CC1F; 截面积0.522mm²
- 六、印字要求: 2468 20AWG 80℃ 300V FTI VW-1 带有有效印字以证号码和公司名称;
- 七、DC头外露尺寸要求: φ5.5±0.05Xφ2.1±0.05X10.0±0.3mm, 平口黑嘴、音叉、带卡槽;
- 八、材质要求: DC头要求45P-PVC料, SR头要求60度PVC料, 线身外皮要求为70±5P-PVC料;
- 九、接线方式: 白色条纹线接铜钉内部, 印字线接铜钉外部;
- 十、盐雾试验: 在35℃±2℃的密闭环境中, 湿度>85%, PH值在6.5-7.2范围内, 用5%±0.1%的NaCl溶液连续48h盐水喷雾后, 检查产品表面无锈蚀、及镀层剥落等不良, 且功能正常;
- 十一、颜色要求: 黑色 (I101M), 线身为半雾面;
- 十二、环保要求: 过ROHS标准并符合REACH标准;
- 十三、模具编号: DC头MSW-PL03; SR为MSW-SR31.
- 十四、料号: 322300967

11. I/O Marking Drawing/铭牌示意图

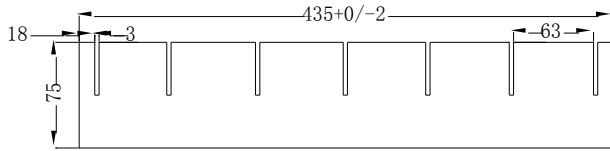


Remark:

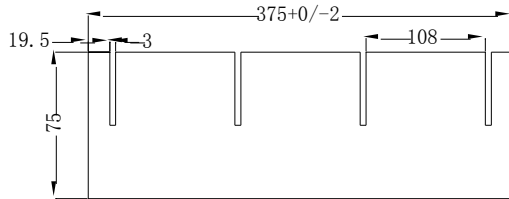
1. Above label is laser engraved.
2. The size of mark "回" is not less than 5mm.
3. The size of garbage bin is no less than 7mm.



12. Package Drawing/包装示意图



七刀卡435*75



四刀卡375*75

包装说明:

- 一、将产品每PCS装入250*120 (mm)PE袋中包好, 再将包装的产品放入刀卡槽中, 每层装18PCS, 共装4层, 每箱装72PCS

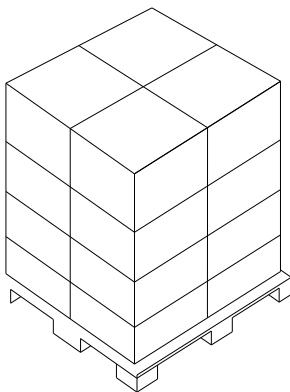
即: 18pcs/层*4层=72PCS/箱

二、包装材料使用说明为:

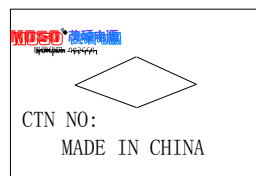
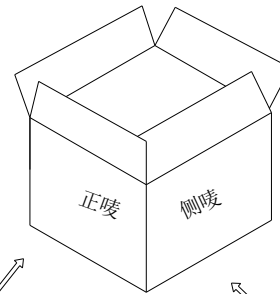
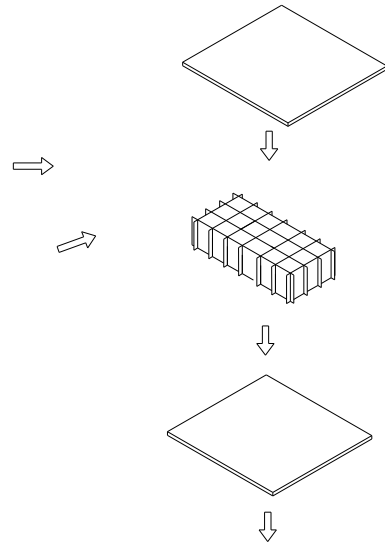
- 1、七刀卡435*75用量: 16PCS
- 2、四刀卡375*75用量: 28PCS
- 3、PE袋250*120用量: 72PCS
- 4、平卡435*375用量: 5PCS
- 6、纸箱450*390*335: 1PCS

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



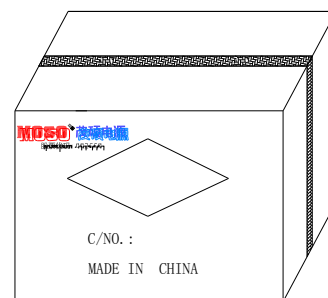
栈板堆放示意图



P/O NO.
ITEM NO.
QTY
G. W. : N. W. :
CTN SIZE:

450*390*335MM

纸箱的外尺寸: 450L*390W*335H



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.



茂硕电源科技股份有限公司

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13. Sample Test Report/样品测试报告

MOSO 茂硕电源科技股份有限公司										
消费类电源适配器样品测试报告										
客户	海康	产品型号	MSA-C2000IC12.0-24P-AU			日期	2016-1-26			
室温	25 °C	产品编号	S7108-S0			判定结果	Pass			
输入电压/频率	100Vac-240Vac 50/60Hz		输出电压/电流				12/2A			
测试内容		1#样机				2#样机				判定
测试项目	测试标准	90V	100V	240V	264V	90V	100V	240V	264V	PASS/NG
空载电压	11.4-12.6V	12.17	12.17	12.17	12.17	12.2	12.24	12.24	12.24	PASS
满载电压	11.4-12.6V	11.8	11.91	11.9	11.91	11.95	11.96	11.96	11.97	PASS
输出负载瞬态响应	± 5 %	4.1	3.3	4.1	4.1	3.3	3.3	4.1	4.1	PASS
空载纹波与噪声	< 120 mV	49	44	56	55	39	38	46	46	PASS
满载纹波与噪声	< 120 mV	108	99	96	97	103	102	98	97	PASS
最大输入电流	< 0.7 A	0.545	0.498	0.27	0.26	0.545	0.5	0.28	0.26	PASS
短路保护	无损坏,可恢复或自锁 OK/NG	ok	ok	ok	ok	ok	ok	ok	ok	PASS
过流保护	> 3.2 A < 5 A	3.6	3.8	4.6	4.6	3.7	4	4.6	4.7	PASS
过压保护(光耦开环)	< 18 V	14.6	14.7	14.5	14.6	14.6	14.6	14.6	14.7	PASS
启动延迟时间	< 3 S	2.38	2.18	0.77	0.71	2.38	2.06	0.78	0.7	PASS
输出保持时间	> 10 ms	20.8	28	80	103	16.8	22.4	80	116	PASS
上升时间	< 30 ms	6.41	6.59	7.31	7.45	7.8	7.5	7.2	7.3	PASS
下降时间	< 30 ms	7.26	7.12	7.5	7.47	6.8	6.7	6.9	7.14	PASS
开机过冲	< 10 %	3.36%	3.39%	3.36%	3.39%	3.36%	3.38%	3.36%	3.39%	PASS
雷击电压	共模: +/- 4 KV 差模: +/- 2 KV					判定结果	雷击测试: <input checked="" type="checkbox"/> OK <input type="checkbox"/> NG			PASS
绝缘强度测试	ACS.0KV 60S	< 10 mA	泄漏电流 0.43 mA	绝缘击穿: <input type="checkbox"/> 有 <input checked="" type="checkbox"/> 无		泄漏电流 0.52 mA	绝缘击穿: <input type="checkbox"/> 有 <input checked="" type="checkbox"/> 无			PASS
绝缘阻抗测试	DC500V 60S	> 100MΩ	绝缘阻抗 868MΩ	绝缘击穿: <input type="checkbox"/> 有 <input checked="" type="checkbox"/> 无		绝缘阻抗766MΩ	绝缘击穿: <input type="checkbox"/> 有 <input checked="" type="checkbox"/> 无			PASS
泄漏电流测试	264V	< 0.25 mA	泄漏电流 0.068 mA			泄漏电流 0.073 mA				PASS
能效测试 (1#)	额定效率> 86.8% 空载功耗< 0.1W 10%效率> 76.8 %	输入电压	100%	75%	50%	25%	10%	平均效率	空载功耗	
		115V	85.89%	87.06%	87.88%	87.68%	85.79%	87.12	0.03w	PASS
		230V	87.64%	87.82%	87.81%	87.12%	84.30%	87.59	0.06w	PASS
能效测试 (2#)	额定效率> 86.8% 空载功耗< 0.1W 10%效率> 76.8 %	输入电压	100%	75%	50%	25%	10%	平均效率	空载功耗	
		115V	85.67%	87.01%	87.69%	87.50%	85.45%	86.96	0.03w	PASS
		230V	87.47%	87.71%	87.75%	87.05%	83.91%	87.49	0.06w	PASS
90V/264V输入时满载开关机测试	各10次	正常开机: <input checked="" type="checkbox"/> OK <input type="checkbox"/> NG				正常开机: <input checked="" type="checkbox"/> OK <input type="checkbox"/> NG				PASS
基本电性能测试: <input checked="" type="checkbox"/> OK <input type="checkbox"/> NG	老化测试: <input checked="" type="checkbox"/> OK <input type="checkbox"/> NG	EMC测试: <input checked="" type="checkbox"/> OK <input type="checkbox"/> NG				温升测试: <input checked="" type="checkbox"/> OK <input type="checkbox"/> NG				PASS
外壳尺寸确认: <input checked="" type="checkbox"/> OK <input type="checkbox"/> NG	输出线材确认: <input checked="" type="checkbox"/> OK <input type="checkbox"/> NG				铭牌确认: <input checked="" type="checkbox"/> OK <input type="checkbox"/> NG					
测试员: 高志成	确认: 王何				核准: 刘春林					