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1.

SCOPE/概述

1.1. The document details the electrical, mechanical and environmental specifications of a SMPS, the power supply provides 11W continuous output power.

资料详细描述了一款 11 W(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 requirements.

此款电源符合 RoHS 要求.

Description/描述：

■ SMPS Adapter(Wall mount)/插墙式适配器 ☐ SMPS Adapter(Desk-top)/桌面型适配器

☐ Open Frame/开放式结构 ☐ SMPS Unit (With Case)/带铁壳型

☐ Others/其它

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 with a single phase.

输入电压范围：从 90Vac 到 264Vac，单相输入.

	Minimum/最小	Rating/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/输入交流电流

0.5Amax. @ 100Vac input & Full load./在 100Vac 输入和满载条件下最大 0.5A。

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

50Amax. @ 264Vac input./在 264Vac 输入条件下最大 50A。

2.4. Average Efficiency /平均效率

While input 115Vac and 230Vac, the average efficiency is more than 80.00%.The test point is at 25%,50%,75% and 100% of max load respectively. The efficiency is more than 70.1% at 10% of max load. (Working 30 minutes before test, test at USB port).

在输入 115Vac 和 230Vac 条件下，平均效率不小于 80.00%。测试点分别是最大载的 25%,50%,75%和 100%，最大负载 10%的时候，效率大于 70.1%。（测试前热机 30 分钟，测试 USB 端）

2.5. No-Load Input Power Dissipation/输入空载功率损耗

While input 115Vac ~ 264Vac and the output (5V)is no load, the input power loss must be less than 0.075W.

在输入 115Vac~264Vac，5V 输出空载功耗小于 0.075W。

2.6. Flow Backward Electric Current Tests/倒灌电流测试

When cut down AC power, input 0—5V DC power into charger, the current should less than 5mA.

当充电器不接交流电的条件下，在充电器输出端加入 0—5VDC 直流电压,通过充电器的电流应小于 5mA。

3. Output Characteristics/输出特性

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

Output	Rated Load/额定负载	Peak	Output Range	R+N	Remark

Rating	Min. Load	Max. Load	Load	输出电压范围	纹波与噪声	备 注
+5.0V	0A	2.0A	/	5.0V ~ 5.5V	200mVp-p	输出电压为 USB 端电压

1. Load range CV： Under the input Voltage 100 Vac~240Vac.

CV 模式测试在 100Vac~240Vac 输入条件下测试。

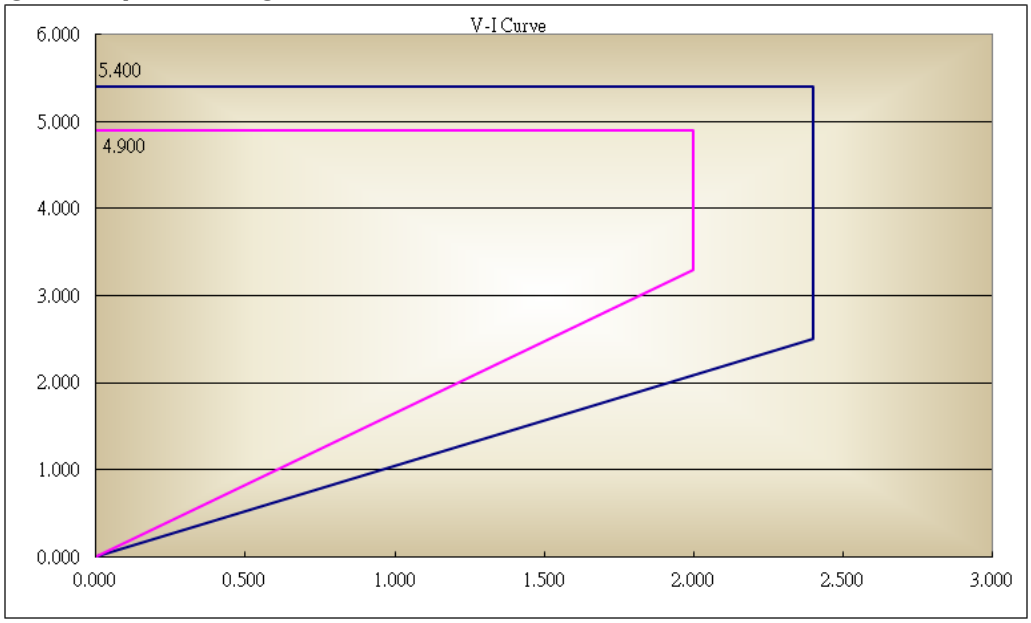
2. Under the input Voltage 100 Vac~240Vac.

测试在 100Vac~240Vac 输入条件下测试。

3. Ripple & Noise:Tested by an oscilloscope using 20MHz bandwidth and the output is paralleled a 0.1uF ceramic capacitor and a 10uF electrolysis capacitor. (Under the input Voltage 100~240Vac).

纹波与噪声:量测时示波器选用 20MHz 带宽限制,输出端要并联 0.1uF 的陶瓷电容和 10uF 电解电容各一颗.(输入电压 100~240Vac)。

3.2. Charger Output Voltage/Current Characteristics/充电器输出电压/电流 V-I 特性图



CV 模式下的保护点范围 2.7~3.5V

5V 下限		典型值		5V 上限	
4.9	0	5	0	5.5	0
4.9	2.0	5	2.1	5.5	2.4
3.5	2.0	3	2.1	2.7	2.4
3.5	0	0	0	0	2.4
0	0	0	0	0	2.4
		0	0	0	0

3.3. Turn - on Delay Time/开机延迟时间

3S max. @ 90Vac input & Full load./在 90Vac 输入和满载条件下最大 3S。

3.4. Hold-up Time/关机维持时间

5mS min. @ Full load &115Vac/60Hz ,230Vac/50Hz input turn off at worst case.

在 115Vac/60Hz， 230Vac/50Hz 输入,满载同时最差情况下关机，最小 5mS。

3.5. Rise Time/上升时间

50mS max. @ Full load（There must be a smooth and continuous ramp of DC voltage）.

在满载条件下最大 50mS（输出波形单调上升，不能有二次启动现象）。

3.6. Fall Time/下降时间

20mS max. @ Full load./满载条件下最大 20mS。

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

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

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

Output voltage is within 4.5-5.8V while the load step is from 10% to 90% ,0%to 50%of max load, R/S: 0.25A/uS,Periods 1mS.

输出电压在 4.5-5.8V 之间，负载变化: 从最大载的 10%到 90%,0%到 50%斜率: 0.25A/uS,周期 1mS。

3.9. Capacitance Load/容性负载

While input 115Vac and Capacitance load is 1000uF, the power supply can turn on normally and the output is in the rated range.

在输入 115Vac，1000uF 容性负载条件下，电源能正常开机，并且输出电压范围在额定范围内。

4. Protection Requirements/保护要求

4.1. Over Current Protection/过流保护

OCP Point Limited: 2.1A~2.5A/保护点限制: 2.1A~2.5A

The power supply must shut-down in an over current condition and automatically return to normal operating condition once the fault condition has been removed.

当过电流时,电源关断,当过流情况解除后,产品将会自动恢复正常。

4.2. Short Circuit Protection/短路保护

The power supply must shut-down in the event of a short circuit and automatically return to normal operating condition once the fault condition has been removed.

当输出发生短路时,电源关断,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

OVP point limit:<150% 保护点限制：<150%.

When the output voltage is over, the output voltage is less than 150% of the rated output voltage.

当输出过压时,输出电压不高于额定输出电压的 1.5 倍。

5. Environment Requirements/环境要求

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

-10℃ to +45℃

5%RH to 95%RH，Sea level shall below 5,000 meter/在海拔低于 5000 米的条件下，能正常工作。

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

-40℃ to +70℃

5%RH to 95%RH （non-condensing） @ Sea level shall below 9,000 meter.

在海拔低于 9,000 米的条件下，低温存储下限为-40℃（无结冰环境）；高温存储上限为+70℃,相对湿度为 5%RH to 95%RH。

6. Reliability Requirements/可靠性要求

6.1. Life time/寿命

The lifetime shall be at least 21900 hours at 25℃, 80% full load and 115Vac/230Vac input condition.

寿命至少 21900 小时，25℃工作温度环境，115Vac/230Vac 输入与 80%负载条件。

6.2. MTBF Qualification/平均间隔故障时间估算

The MTBF shall be at least 100,000 hours at 25℃, Full load and normal input condition.

平均间隔故障时间：至少 100,000 小时，25℃环境及额定输入与满载条件下

6.3. Environmental reliability/环境可靠性

6.3.1. High and low temperature storage /高低温存储

The power supply with non-operated stored in -40℃/70℃ for 24 hours, , no abnormality in electric and mechanical characteristic after 2 hours recovery at the room temperature.

在低温-40℃—70℃环境下存储 24 小时，恢复 2 小时后，电源能正常开机，输出电压范围在额定范围内。

6.3.2. High and low temperature operating /高低温工作

Ambient temperature: -10℃—45℃, input voltage: 90Vac/264Vac & full load, in two input voltage for each work 12hours; No abnormality in electric and mechanical characteristic after 2 hours recovery at the room temperature.

环境温度为-10℃—45℃，输入电压为 90Vac 和 264Vac。工作负载 为满载。在二种电压应力下分别工作 12 小时。测试结束后在常温下恢复 2 小时，电气性能和机械性能无异常。

6.4. Mechanical reliability/机械可靠性

6.4.1. Working vibration test/工作振动测试

5 to 500Hz sweep at a shift gears for 20 minute for each of the perpendicular axes X, Y, Z there into :acceleration frequency for 10 m2/s3 at 5~10HZ; acceleration frequency for 3m2/s3 at 10~200HZ; acceleration frequency for 1 m2/s3 at 200~500HZ.

扫描频率: 5 to 500Hz 随机振动, X, Y, Z 三垂直坐标轴向各振动 20 分钟,其中: 5~10HZ 频率范围的加速频率为 10 m2/s3 ，10~200HZ 频率范围的加速度频率为 3 m2/s3，200~500HZ 频率范围的加速度频率为 1 m2/s3

6.4.2. Working impact test/工作冲击测试

3 Edges thrice, half sine wave, acceleration 30G, pulse breadth for 11 mS.

半正弦波，加速度为 30G，脉冲宽度为 11mS，X、Y、Z 三方向，各 3 次。

6.4.3. Charger room temperature controlled drop test/常温受控跌落测试

6 Surfaces each once, Height: 100cm, on the cement floor.

6 面各一次，跌落高度: 100 厘米，跌落到水泥地板上。

6.4.4. Label/Nameplate durability test/标示/铭牌耐久性测试

Dips in water cotton cloth to wipe 15S, then dip gasoline cotton cloth to wipe 15S.

蘸水棉布擦拭 15S，然后蘸汽油棉布擦拭 15S。

7. EMI/EMS 标准

7.1. EMI Standards/EMI 标准

EN 55022
EN 61000-3-2
EN 61000-3-3
CISPR 22
AS/NZS CISPR 22
满足最新标准

7.2. EMS Standards/EMS 标准

IEC 61000-3-2	Harmonic current emissions
IEC 61000-3-3	Voltage fluctuations & flicker
IEC*61340-5-1*	Electrostatic Discharge(ESD): 15kV air discharge,8kV contact discharge
IEC 61000-4-3	Radio-Frequency Electromagnetic Field Susceptibility Test-RS
IEC 61000-4-4	Electrical Fast Transient/Burst-EFT±1kV
IEC 61000-4-5	Surge Immunity Test: Differential mode 1kV, Common mode 2kV
IEC 61000-4-6	Conducted Radio Frequency Disturbances Test-CS
IEC 61000-4-8	Power Frequency Magnetic Field Test
IEC 61000-4-11	Voltage Dips

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 / 3.5mA / 60second Or 4242Vdc / 3.5mA / 60second.**

初级对次级: 3000Vac / 3.5mA / 60 秒 或 4242Vdc / 3.5mA / 60 秒。

8.2. Leakage Current/漏电流

20uA max. at 264Vac / 50Hz input./在输入 264Vac/50Hz 的条件下最大 20uA。

8.3. Insulation Resistance/绝缘阻抗

100MΩ min. @ primary to secondary add a 500Vdc test voltage.
在初级与次级间加 500Vdc 进行测试,最小 100MΩ。
10MΩ min. @ primary to case add a 500Vdc test voltage.
在初级与外壳间加 500Vdc 进行测试,最小 10MΩ。

8.4. Regulatory Standards/安规标准

Type	Country	Standard	Type	Country	Standard
☐ UL/CUL	USA	UL60950-1	☐ PSB	Singapore	IEC60950-1
☐ TUV	Europe	EN60950-1	☐ PSE	Japan	J60950-1
■ CCC	China	GB4943	☐ NOM	Mexico	NOM-001
☐ CE	Europe	EN60950-1	☐ GOST	Russia	IEC 60950-1
☐ BSMI	Taiwan .China	CNS 14336-1	☐ C-Tick	Australia	AS/NZS 3548
☐ IRAM	Argentina	IEC60950-1	☐ KC	Korea	K60950-1

☐ FCC	America	FCC Part15	☐ SAA	Australia	AS/NZS 60950
☐ SIRIM	Malaysia	IEC60950-1	☐ DOC	Ukraine	IEC61000
☐ RCM	Australia	AS/NZS IEC60950-1	☐ CQC	China	GB4943

9. Net Weight/净重：

净重为 **40g/1PCS**

10. Mach. Outline Drawing/外观图