

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		
1	Original Release	---	2017-07-31	---

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1. SCOPE/概述

The document details the electrical, mechanical and environmental specifications of a SMPS, the power supply provides 60 W 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** 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/其他

2. Input Characteristics/输入特性

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

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

2.2. Input AC Current/输入交流电流

1.7A max. @ 90Vac input & output full-loading /在 90Vac 输入和输出满载条件下最大 1.7A

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

Power supply inrush current shall be less than the ratings of its critical components (including rectifiers, fuses and other surge limiting devices) under all conditions of line voltage of Section 2.1.

在 2.1 中所有输入条件下,浪涌电流应小于关键器件的额定值(包括整流桥、保险丝和其他浪涌限制元件)。

2.4. Average Efficiency /平均效率

Test condition after heat-up 30minutes/测试条件产品预热 30 分钟后。

Input Voltage Range	Output Voltage	Average Efficiency	Load Condition
115VAC and 230VAC	5V	78.7	25%,50%,75%,100%
	9V	85	25%,50%,75%,100%
	20V	88	25%,50%,75%,100%

2.5. No-Load Input Power Dissipation

Test condition after heat-up 15minutes/测试条件产品预热 15 分钟后

While input at the 115Vac and 230Vac, output voltage is 5V and no load, the input power loss must be less than 0.1W.

在输入 115V 和 230Vac 时, 输出为 5V 时, 空载功耗小于 0.1W.

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>

The max Ripple & Noise is 350mVp-p.

Ripple & Noise: Tested by a 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)

最大输出纹波值为 350mVp-p.

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(输入电压 100~240Vac)

3.2. Line/ Load Regulation/线性/负载调整率

Output Voltage	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			
+5V	0A	2A	± 5%	± 5%	
+9V	0A	2A	± 5%	± 5%	
+20V	0A	3A	± 5%	± 5%	

3.3. Turn - on Delay Time/开机延迟时间

3S max. @ 115Vac input & Full load/在 115Vac 输入条件下最大 3S

3.4. Rise Time/上升时间

100mS max. @ 5V/2A / 在输出 5V/2A 条件下最大 100mS

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

Output Voltage	Load Condition(A)	Frequency (Hz)	Overshoot (V)	Undershoot (V)	Load Slew Rate
+5V	0.003-2	50	0.6	0.5	0.2 A / us
+9V	0.003-2	50	1.5	1.5	2.5 A / us
+20V	0.003-3	50	1.5	1.5	2.5 A / us

Output is within output voltage range, while the load step is within load condition, R/S: +5V is 0.2A/us,+12V and +20V are 2.5A/uS, frequency: 50Hz and 10mS duration at 100% of max load.

负载在给定范围内变化,斜率: 2.5A/uS,频率: 50Hz, 100%负载持续时间为 10mS,输出过冲、欠冲都在规定范围内.

3.6. Capacitance Load/容性负载

While input 100~240Vac and capacitance load is 100uF, output voltage is for +5V or +12Vdc or +20Vdc, the adapter can turn on normally and the output is in the rated range.

在输入 100~240Vac, 100uF 容性负载条件下, 输出电压为 5V, 12V 或 20V, 适配器能正常开机。并且输出电压范围在额定范围下。

4. Protection Requirements/保护要求

4.1. Over Current Protection/过流保护

The output shall hiccup when the over current applied to the output, and shall be

self-recovery when the fault condition is removed, the max OCP point is 5A.
当过电流时,输出将进入打嗝模式,当过流情况解除后,产品将会自动恢复正常,
最大过流点为 5A。

4.2. Short Circuit Protection/短路保护

The input power shall decrease when the output is short to GND, the power supply shall not damage, Input power reduce. and shall be self-recovery when the fault condition is removed

当输出对地短路时,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 Temperature Protection/过温保护

A temperature sensor and associated protection circuitry are installed inside the adapter to detect the case internal temperature and provide protection against damage to the adapter.

过温保护电路被设置在适配器内部,避免适配器损坏

4.4. Over Voltage Protection/过压保护

The power supply shall be Latch off mode, when the output is over voltage, and the power supply shall not be damaged.

当输出过压时,电源进入将闭锁保护模式产品不会损伤。

5. Environment Requirements/环境要求

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

0°C to +30°C

8%RH to 80%RH

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

-20°C to +60°C

8%RH to 80%RH (non-condensing) @ Sea level shall below 10,000 feet

在海拔低于 10,000 英尺的条件下,低温存储下限为-30°C (无结冰环境);高温存储上限为 +60°C,相对湿度为 8%RH ~ 80%RH。

6. Reliability Requirements/可靠性要求

6.1. MTBF Qualification/平均间隔故障时间估算

The MTBF shall be at least 30,000hours at 25°C, Full load and nominal input condition

平均间隔故障时间: 至少 30,000 小时,25°C 环境及额定输入与满载条件下

7. EMI/EMS Standards/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

EN 61000-3-2	Harmonic current emissions
EN 61000-3-3	Voltage fluctuations & flicker
EN 61000-4-2	Electrostatic Discharge(ESD): 8kV air discharge, 6kV contact discharge
EN 61000-4-3	Radio-Frequency Electromagnetic Field Susceptibility Test-RS
EN 61000-4-4	Electrical Fast Transient/Burst-EFT
EN 61000-4-5	Surge Immunity Test: Differential mode ± 1 kV, Common mode ± 2 kV
EN 61000-4-6	Conducted Radio Frequency Disturbances Test-CS
EN 61000-4-8	Power Frequency Magnetic Field Test
EN 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 / 10mA / 60 seconds

Or 4242Vdc / 10mA / 60 seconds

初级对次级: 3000Vac / 10mA / 60 秒或 4242Vdc / 10mA / 60 秒

8.2. Leakage Current/漏电流

0.25mAmax. at 240Vac / 50Hz input/在输入 240Vac/50Hz 的条件下最大 0.25mA

8.3. Insulation Resistance/绝缘阻抗

100M Ω min. @ primary to secondary add a 500Vdc test voltage

在初级与次级间加 500Vdc 进行测试,最小 100M Ω

8.4. Regulatory Standards/安规标准

Type	Country	Standard	Type	Country	Standard
<input type="checkbox"/> UL/CUL	USA	UL60950-1	<input type="checkbox"/> PSB	Singapore	IEC60950-1
<input type="checkbox"/> TUV/GS	Europe	EN60950-1	<input type="checkbox"/> PSE	Japan	J60950
<input type="checkbox"/> CCC	China	GB4943	<input type="checkbox"/> NOM	Mexico	NOM-001
<input checked="" type="checkbox"/> CE	Europe	EN60950-1	<input type="checkbox"/> EAC	Russia	MEK60950
<input type="checkbox"/> C-Tick	Australia	AS/NZS 3548	<input type="checkbox"/> KC	Korea	K60950-1
<input type="checkbox"/> BSMI	Taiwan .China	CNS 14336			

9. Match .Outline Drawing/外观图

