

Specification For 18 Watts/ Switching Mode Power Supply

Product No./产品编号:	Model No./产品型号:HKA01812015-2H
Customer/客户:PIGEON	File No./文件编号: 试产
Revision/版本: 1	Date/日期: 2018-01-22

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1. SCOPE/概述

The document details the electrical, mechanical and environmental specifications of a SMPS, the power supply provides 18 W continuous output power.

资料详细描述了一款 18W(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 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 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. @ 90Vac input & Full load/在 90Vac 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)

80Amax. @ 220Vac input/在 220Vac 输入条件下最大 80A

2.4. Average Efficiency /平均效率

While input 115Vac and 230Vac, the average efficiency is more than 85.45%.The test point is at 25%,50%,75% and 100% of max load respectively.(warm up after 30 minutes)
 在输入 115Vac 和 230Vac 条件下, 平均效率不小于 85.45%。测试点分别是最大载的 25%,50%,75%和 100%。(热机半小时后测试)

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

While input 115Vac or 230Vac and the output is no load, the input power loss must be less than 75mW. 在输入 115Vac/230Vac, 空载功耗小于 75mW.

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 Rating	Rated Load/额定负载		Peak Load	Output Range 输出电压范围	R+N 纹波与噪声	Remark 备注
	Min. Load	Max. Load				
+12.0V	0A	1.5A	3.1A/5S	11.4V ~ 12.6V	120mVp-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)

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)

-30℃起机, 热机半小时后, 纹波与噪音<500mVp-p。

3.2. Line/ Load Regulation/线性/负载调整率

Output Rating	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	0A	1.5A	± 2%	± 5%	

3.3. Turn - on Delay Time/开机延迟时间

3S max. @110Vac input & Full load/在 110Vac 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 & 110Vac/60Hz input turn off at worst case

在 110Vac 输入,满载同时最差情况下关机, 最小 5mS

3.5. Rise Time/上升时间

200mS max. @ Full load/在满载条件下最大 200mS

3.6. Fall Time/下降时间

20mS max. @ Full load/在满载条件下最大 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

11.4-12.6V while the load step is from 10% to 90% of max load, R/S: 0.5A/uS, frequency: 100Hz and 8mS duration at 90% of max load.

输出电压在 11.4-12.6V 之间,负载变化: 从最大载的 10%到 90%,斜率: 0.5A/uS,频率: 100Hz, 90%负载持续时间为 8mS.

4. Protection Requirements/保护要求

4.1. Over Current Protection/过流保护

OCP Point Limited: 2.5A~4.0A /保护点限制: 2.5A~4.0A

The output shall hiccup when the over current applied to the output, and shall be Self-recovery when the fault condition is removed

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

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, 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 Voltage Protection/过压保护

OVP Point limited: 18V of Max. /保护点限制: 最大 18V

The power supply shall be protected when the output is over voltage, and the power supply shall not be damaged

当输出过压时,产品保护且不会损伤

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 +40°C 20%RH to 85%RH

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

-20°C to +70°C

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

在海拔低于 5,000 米的条件下, 低温存储下限为-20°C (无结冰环境); 高温存储上限为

+70°C, 相对湿度为 5%RH to 95%RH。

6. Reliability Requirements/可靠性要求

6.1. Vibration/振动

5 to 500Hz sweep at a shift gears for 20 minute for each of the perpendicular axes X, Y, Z thereinto :acceleration frequency for 10 m2/s3 at 5~10HZ; acceleration frequency for 3 m2/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 频率范围的加速度频率为 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

6.2. Drop in/跌落

1 Corner, 3 Edges, 6 Surfaces each once, Height: 100cm, on the cement plane

1 角, 3 棱, 6 面各一次, 跌落高度: 100 厘米, 跌落到水泥地板上

6.3. 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 normal input condition

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

6.4. The lifetime electrolyte capacitor/电解电容寿命

The lifetime of electrolyte capacitor shall be at least 50,000 hours at 25°C, 100% load and rated input condition

电解电容寿命至少 50,000 小时, 25°C 环境及额定输入与 100% 负载条件下

7. EMI/EMS Standards/EMI/EMS 标准

7.1. EMI Standards/EMI 标准

EN 55032: 2015

EN 61000-3-2:2014

EN 61000-3-3:2013

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) Level3: 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 Level3
EN 61000-4-5	Surge Immunity Test: Differential mode $\pm 2kV$, Common mode $\pm 2kV$
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 / 3.5mA / 60 seconds

Or 4242Vdc / 3.5mA / 60 seconds

初级对次级: 3000Vac / 3.5mA / 60 秒

或 4242Vdc / 3.5mA / 60 秒

8.2. Leakage Current/漏电流

0.25mAmax. at 264Vac / 50Hz input/在输入 264Vac/50Hz 的条件下最大 0.25mA

8.3. Insulation Resistance/绝缘阻抗

50M 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 50M 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	Europe	EN60950-1	<input checked="" type="checkbox"/> PSE	Japan	J60950
<input type="checkbox"/> CCC	China	GB4943	<input type="checkbox"/> NOM	Mexico	NOM-001
<input type="checkbox"/> CE	Europe	EN60950-1	<input type="checkbox"/> GOST	Russia	MEK60950

9. Mach. Outline Drawing/外观图

