

AC/DC power switch



SM-PLH03A-3W single circuit

PL bare circuit board range

SM-PLH03A Specifications



产品特点: product characteristics

1. Industrialized design , sub-mini volume ,low function
2. An international standard of Ac input voltage :85-264V AC OR 110-370V DC。
- 3.100% Full load aging
- 4.With full protections of over-current ,short-circuit and the temperature. Epistrophy takes place automatically after the overloading problems have been solved
- 5.Output voltage accuracy can be up to 1%
- 6.Product designed accords with all the safety standards
7. Product designed accords with 6 level energy efficiency standards, unload $\leq 0.1W$ efficiency77-80%
- 8.Guarantee period : 3 years

项 目 subject	条 件 conditions	本系列现有常规型号（可按客户要求订做任何不同输出电压和电流或任何要求的产品） This range has regular model (any various of types can be made as requested by clients)					
		PLH03A-03V	PLH03A-05V	PLH03A-09V	PLH03A-12V	PLH03A-15V	PLH03A-24V
一、输入特性 input characteristics							
交流输入 AC input (VAC)	85-264						
直流输入 DC input (VDC)	110-370						
频率范围 frequency range (Hz)	47-63						
输入电流 Input current (mA)	0.07/115VAC 0.03/230VAC						
浪涌电流 Surge current (A)	冷启动 Cold start: 10A/230VAC						
效率 frequency (TYP.)	75	78	78	82	85	85	
空载待机 unloded standby ((mW)	≤100mW						
二、输出特性 output characteristics							
输出电压 out voltage (VDC)	3.3V	5V	9V	12V	15V	24V	
输出电压精度 out voltage accuracy	±1%						
额定电流 rated current (ADC)	0.7A	0.6A	0.33A	0.25A	0.2A	0.125A	
额定功率 rated efficiency (W)	2.3W	3W	3W	3W	3W	3W	
纹波与噪声 ripple and noise (mvp-p)	额定输入电压, rated input voltage 20MHz 带宽 broad band		≤50mV	≤50mV			
线性调整率 linear adjustment rate	满 载 fulled loaded		±1%				
负载调整 negative adjustment rate	10-100%负载 load		±3%				
启动、上升时间 time of pulse-on and rising	满载 fulled loaded		2000ms, 30ms/115VAC		1000ms, 30ms/230VAC		
保持时间 retention time (ms)	满载 fulled loaded		16ms/115VAC 50ms/230VAC				
过载保 护 overload protection	额定输入电压 rated input voltage	额定输出功率的 rated output efficiency115%-150%					
		保护模式: 打嗝模式, 负载异常条件异常移除后可自动回复 Protected mode:burping mode ,reply automatically after the overloading problems have been removed					
短路保护 short-circuit protection	额定输入电压 rated input voltage	可长期短路, 自恢复 Long time short circuit ,self recovery					
过流保 护 over-current protection		≥1.1 倍 Io					

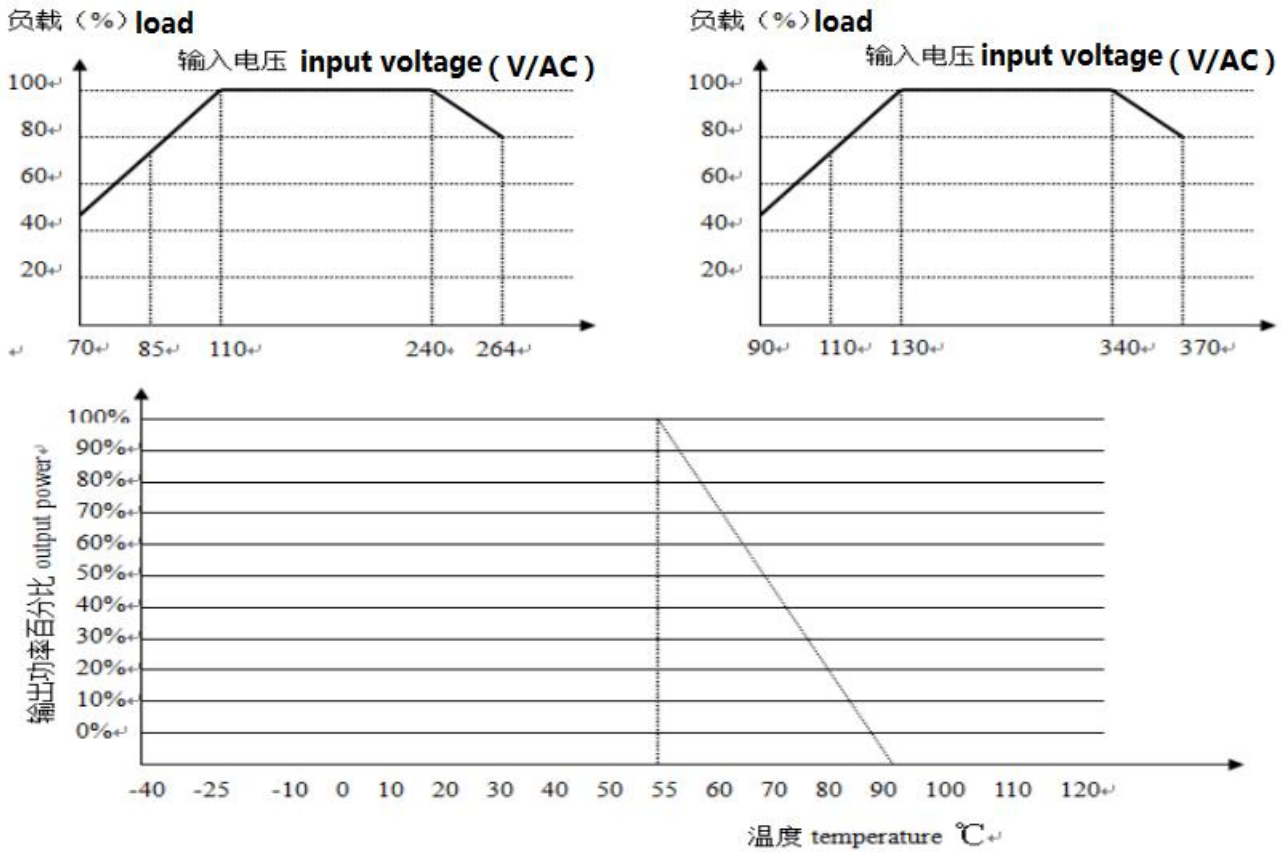
启动延迟时间 (ms)period of start-up delay	Vin:230VAC	500ms
掉电保持时间 (ms)period of power off protection		20ms

三、一般特性 general characteristics

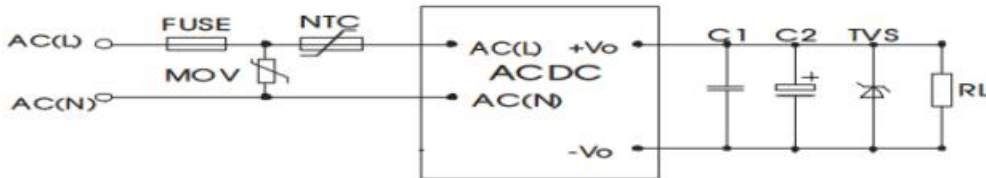
工作温度 (°C)working temperature	/	-25-70°
工作湿度 (RH)working humidity	/	20-90%, 无冷凝 no condensation
温漂系数 temperature drift number	/	±0.02%/°C
存储温度与湿度 storage temperature and humidity		-40~+85°C 10-95%RH
开关频率(KHz)switching frequency		5-65 (变频控制芯片) (frequency conversion control chip)
绝缘电压 (VAC)insulation voltage	输入对输出, 测试 60s, ≤5mA	3KV ≤5mA 60S
绝缘电阻(M Ω)insulation resistance	输入对输出, 500VDC Input to output	100
泄漏电流(mA) Leakage current	500VDC	输入对输出 Input to output ≤1mA/RMS 值
MTBF	@25°C	>250000H
安全等级 Security classification	/	适应 adaption: CLASS B
耐振动 Vibration resistance	/	10—500Hz 2G 10 分钟 mins/周期 cycle.X、Y、Z 各 60 分钟 mins separately
电磁兼容 electromagnetic compatibility	/	适应 adaption: EN55022(CISPR22) Class B EN61000-3-2,-3

备注 Remarks	<p>1. 未特别说明, 所以规格参数均在输入 230VAC、额定负载、25°C 环境温度下进行测量。 Under the situation of no special instructions , All specification parameters should be tested within the range of 230VAC ,rated loading ,25°C</p> <p>2. 纹波和噪声测量方法: 使用一条 12 " 双绞线, 同时终端要并联 0.1uF 和 10uF 的电容, 在 20MHz 带宽下进行测量。Measure of ripple and noise: use one twisted-pair,meanwhile Terminal should be paralleled to0.1uFand 10uF capacitance</p> <p>3. 精度: 包含舍得误差、线性调整率和负载调整率。 Accuracy: concatenation error , linear adjustment rate and load regulation rate</p> <p>4. 电源应视为系统内元件的一部分, 需结合终端设备进行电磁兼容相关确认。 Current source should be taken as one part of system element, EMC related validation should be carried out in combination with terminal equipment</p> <p>5. 低输入电压下需减额输出, 具体请参照减额曲线图。 Reducing output at low input voltage, please refer to the chart for details .</p> <p>6. 外置 EMC 元件, 见下面参考设计。 External EMC element , please refer to the following designs</p>
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产品性能曲线图 Product function curve



典型应用电路 Typical application circuit:



输入部分 input part:

原件位号/推荐器件 original number	作用 function	推荐值 recommendation value
FUSE/保险管 protective tube	本产品异常时, 保护电路免于收到伤害 Protect the circuit from damaging	1A/250VAC,慢熔断 slow fuse
MOV	压敏电阻, 防雷击 piezoresistor ,lightning protection	7D471
NTC	负的热敏电阻, 防浪涌电流 negative thermistor ,surge current prevention	5D-7

输出部分: output part

输出电压 output voltage	C2	TVS	C1
3.3V	680uF/10V	SMBJ5.0A	Ceramic capacitor 陶瓷电容 104/50V
5V		SMBJ7.0A	Ceramic capacitor 陶瓷电容 104/50V
9V	470uF/16V	SMBJ12A	Ceramic capacitor 陶瓷电容 104/50V
12V	330uF/25V	SMBJ15A	Ceramic capacitor 陶瓷电容 104/50V
15V		SMBJ18A	Ceramic capacitor 陶瓷电容 104/50V
24V	220uF/35V	SMBJ28A	Ceramic capacitor 陶瓷电容 104/50V

EMC 推荐电路 EMC recommended circuit:

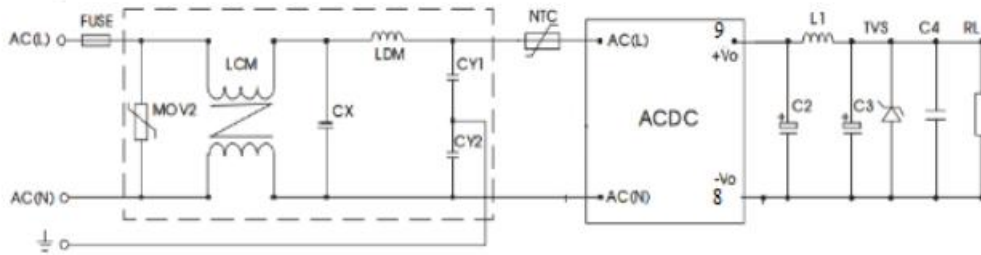


图 2

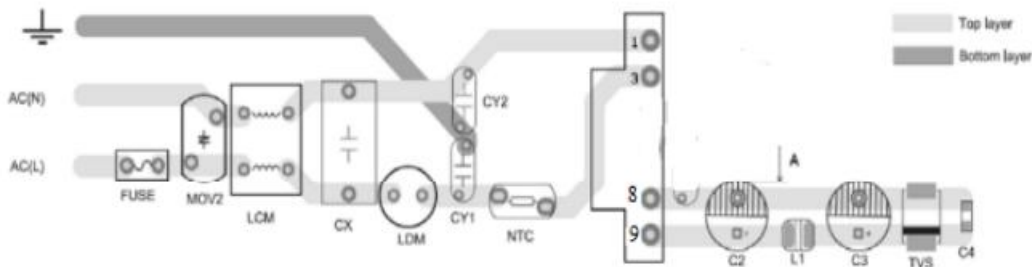


图 3

安规及走线宽度建议：线宽 $\geq 3\text{mm}$ ，线之间距离 $\geq 6\text{mm}$ ， $A \geq 6.4\text{mm}$

Suggestions for safety regulations & wire to wire placement distance : wire diameter $\geq 3\text{mm}$, wire to wire distance $\geq 6\text{mm}$, wire to ground distance $\geq 6\text{mm}$ A $\geq 6.4\text{mm}$

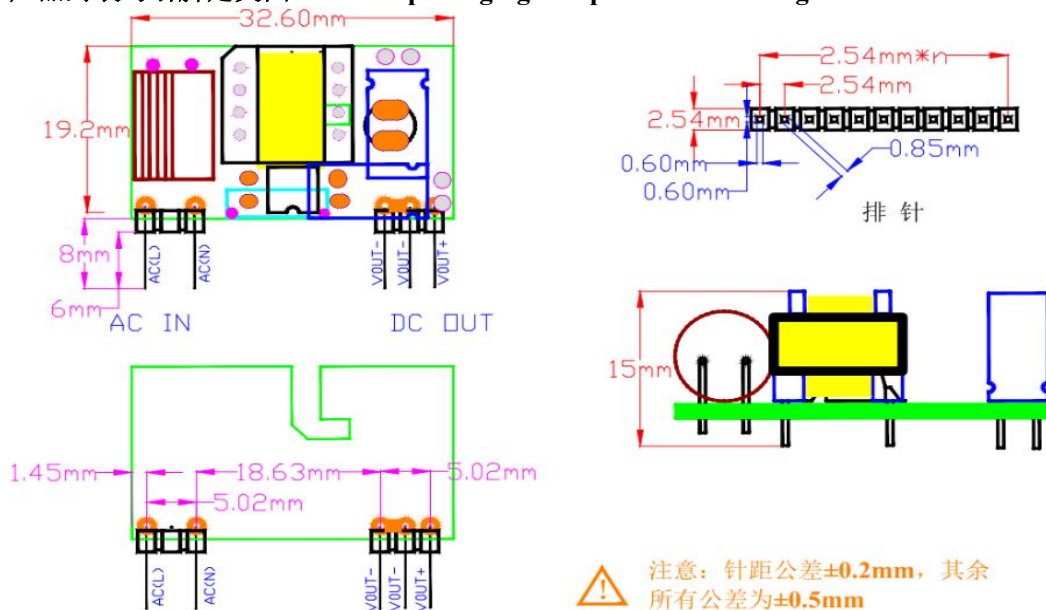
输入部分：input part

原件位号/推荐器件 original number	作用 function	推荐值 recommendation value
FUSE/保险管 protective tube	电源异常时，保护电路免于受到伤害。 Protect the circuit from damaging in the situation of abnormality	0.5A/250VAC,慢熔断（必接）
NTC:热敏电阻 thermal resistor	抑制浪涌电流，保护模块不受损坏。 Suppress surge current to prevent the module from damaging	5D-7
MOV:压敏电阻 piezoresistor	在雷击浪涌时保护模块不受损坏。Protection of the module against lightning surge from damaging	14D511K
C4:X2 电容 capacitance	抑制差模干扰。Suppress interference by differential mode	0.22uF/275VAC
C5,C6:Y2 电容 capacitance	抑制共模干扰，提高设备的抗干扰能力及系统的可靠性。 Suppress interference by common mode, improving the anti-interference ability and reliability of the system	1000pF/250VAC
LCM:工字电感 I-type inductor		4.7 mH

输出部分：output part

输出电压 output voltage	C2	C3	L1	TVS
3.3V	680uF/10V	220uF/35V	电 感 量 inductance quantity 8uH-15uH, 铜 线直径 copper wires diameter $\geq 0.45\text{mm}$	SMBJ6.0A
5V				SMBJ7.0A
9V	470uF/16V			SMBJ12A
12V	330uF/25V			SMBJ15A
15V				SMBJ18A
24V	220uF/35V	SMBJ28A		

产品封装与引脚定义图 Product packaging and pin definition diagram:



Product selections and precautions

1. Please refer to the specifications of performance parameters index while using otherwise it will not guarantee the reliability of the power supply .
2. All the specifications of performance parameters index are being tested according to the internal standards of our company.
3. Highly suggest that the loading frequency do not exceed 80% of the power rated frequency while using
4. Using a power supply with multiple outputs, each output must be loaded at a corresponding rate
5. We can provide product customization
6. Any changes in product specifications are to be without further notice
7. Please log in our website :www.sanmim.com for more product information

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