

# PN8370+PN8305 5V3A DOE VI

多模式（**PFM+PWM+QR**）+同步整流  
专利高压启动模块+低工作电流  
超低待机功耗小于**50mW**  
六级能效裕量充足，消除异音  
零炸机风险



# General Design Specification:

- 1** AC Input Range 90-264VAC
- 2** DC Output 5.0V/3A
- 3** Meet “75mW@5V” No-Load Standby Power Consumption Requirement
- 4** Meet “DOE LEVEL VI” Efficiency Requirement
- 5** Max Output Ripple & Noise < 100mV

# 1、Specification

Description		Symbol	Min	Typ	Max	Unit	Comment
Input							
Voltage		Vin	90		264	V	
Frequency		Flin		50		Hz	
No-load Input Power(230V)					40	mW	
Output							
5V/3A	Output Voltage	Vout	4.94		5.17	V	
	Output Current	Iout	0		3	A	
	Over Current Protection	Iocp			3.2	A	
	Ripple & Noise	Vripple			50	mVP_P	
	Average Efficiency	$\eta$	82.39%				DOE LEVEL VI(81.39%)
Ambient Temperature		Tamb	0		40	° C	

Test condition:

Test at the end of the line terminal(20# 1.5m)



# 3、Circuit Board Photograph

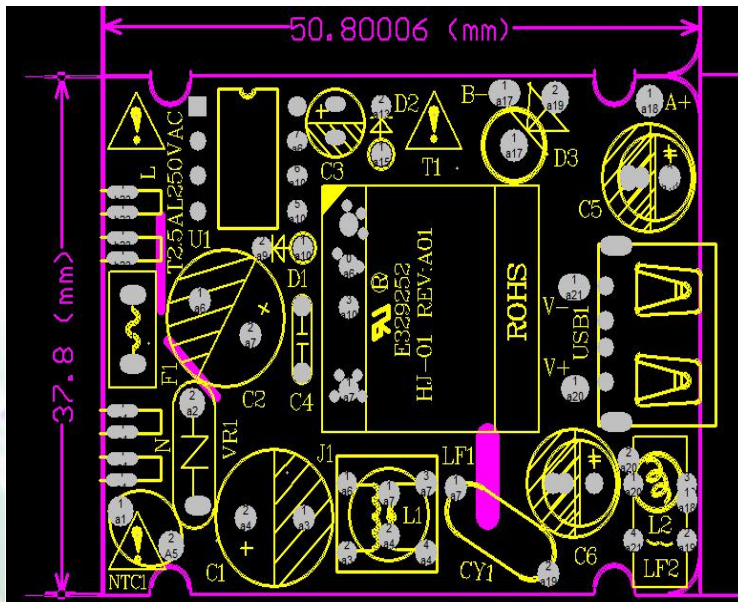
Top View



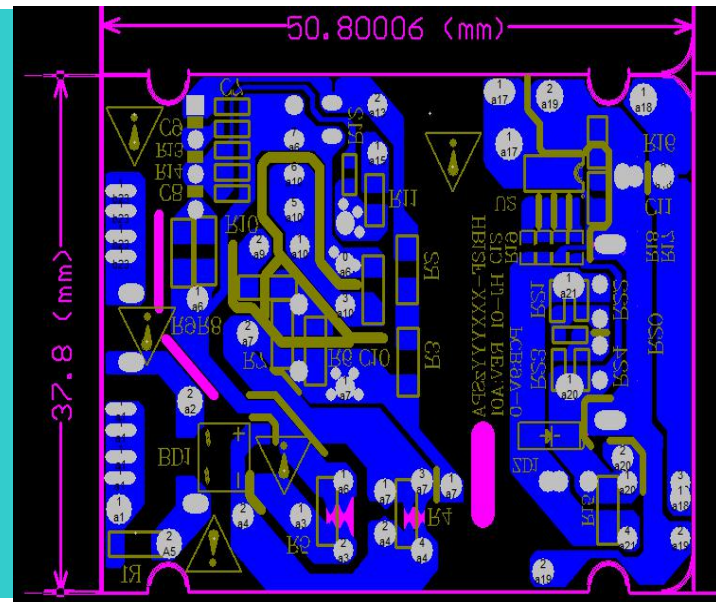
Bottom View



# 4、Layout



top layer



bottom layer

# 5.1、Bill of Material

Item	Qty	Ref	Description	Package
1	1	F1	T2.5A/500V	4*8mm
2	1	BD1	ABS10	ABS
3	1	D1	1N4007	DO-41
4	1	D2	FR107	DO-41
5	2	C1 C2	400V/15uF	φ 10*16mm
6	1	C3	电解电容50V/10uF	φ 5*10.0mm
7	1	C4	涤纶电容2J102	脚距5.0mm
8	1	C5	固态电容6.3V/820uFLowESR	φ 6.3*8.5mm
9	1	C6	固态电容6.3V/680uFLowESR	φ 6.3*8.5mm
10	1	C7	104/50V 0603	0603
11	1	C8	22pF/50V 0603	0603
12	1	C11	102/50V 0805	0805
13	1	C12	104/50V	0603
14	1	U1	PN8370	SOP-7
15	1	U2	PN8305	ESOP-8
16	1	L1	1.2mH	脚距3.2mm
17	1	L2	2.5uH	脚距3.0mm
18	1	R1	0Ω	1206
19	1	R5	0Ω	1206
20	2	R6 R7	430K 1206	1206
21	2	R8 R9	1.4Ω 1206	1206 1%
22	1	R10	51Ω 1206	1206
23	1	R11	2.2Ω	0805
24	1	R12	39K	0603 1%
25	1	R13	7.5K	0603 1%

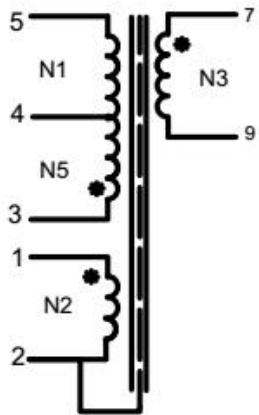
## 5.2、 Bill of Material

Item	Qty	Ref	Description	Package
27	1	R16	22Ω	0805
28	1	R17	0Ω	0603
29	1	R18	18Ω	0603
30	1	R19	33K	0603
31	1	CY1	102/250Vac	脚距10.0mm
32	1	T1	EE16加宽5+5AE=38mm <sup>2</sup>	



# 6、Transformer Drawing

## 1.原理图



<<NOTE>>

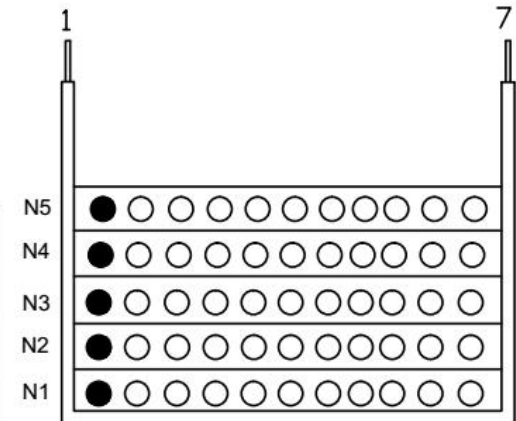
1. N3绕组使用三层绝缘线.
2. 气隙研磨中柱.
3. 磁芯中柱要点黑胶固定
4. 磁芯接地

## 3.电气特性:

- 1.1 电感量:PIN3- 5 1.2mH +/-5%; 测试条件: 1KHz 0.25V
- 1.2 漏感量:PIN3- 5 200uH Max 测试条件:10KHz 0.25V; PIN9-7 短路.
- 1.3 高压测试:
  - 1.3.1 初级-次级 3750VAC 5mA 60S
  - 1.3.2 初、次级-磁芯 1500VAC 5mA 60S
- 1.4 绝缘电阻: 100Mohm Min; 测试条件: 500VDC

## 2.绕线结构

绕组	起末端	漆包线	圈数(TS)	胶带圈数(TS)	绕线方式	备注
N1	3-4	UEW $\varnothing$ 0.25mm X 1P	60	2	平整密绕	两层
N2	1-2	UEW $\varnothing$ 0.25mm X 2P	14	2	平整密绕	一层
N3	9-7	TEX-1 $\varnothing$ 0.55mm X 2P	5	2	反绕一层	一层
N4	2-NC	UEW $\varnothing$ 0.25mm X2P	6	2	匀绕一层	一层
N5	4-5	UEW $\varnothing$ 0.25mm X1P	28	2	平整密绕	一层



BOBBIN

EE16加宽立式  $A_e=38mm^2$  5+5pin PC40

# 7.1 Regulation, Ripple and Efficiency

Vin (V)	Pin (W)	Iout (A)	Vout (V)	Pout (W)	Vripple MAX (mVp-p)	$\eta$ (%)	Avera $\eta$	OCP (A)	Doe Level VI Requirement
115Vac /60Hz	0.03	0	5.1				81.90%	3.2	81.39%
	1.82	0.3	5.14	1.54	50	84.73%			
	4.47	0.75	5.07	3.80	50	85.07%			
	9.11	1.5	5.02	7.53	50	82.66%			
	13.96	2.25	5.01	11.27	50	80.75%			
	18.73	3	4.94	14.82	50	79.12%			
230Vac /50Hz	0.03	0	5.17				82.88%	3.15	
	1.83	0.3	5.11	1.53		83.77%			
	4.48	0.75	5.09	3.82	50	85.21%			
	9.02	1.5	5.04	7.56	50	83.81%			
	13.84	2.25	5.04	11.34	50	81.94%			
	18.4	3	4.94	14.82	50	80.54%			

Test condition:

Test at the end of the line terminal(20# 1.5m)



# Thank you

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