



SPECIFICATION	TITLE	20 Watts LED Driver		
	MODEL NO.	SH202-24V00A80ADA6		
	REVISION	01	DATE	2009/08/06


SPECIFICATION

of

20 Watts LED Driver

CUSTOMER	
CUSTOMER P/N	
ASIX MODEL NO.	SH202-24V00A80ADA6
ORDERING NO.	S21FPT02A52-0A
REVISION NO.	01
ISSUE DATE	2009/08/06
CUSTOMER SIGNATURE	

The information contained in this specification is preliminary, it may be changed without prior notices, please check the revision of the specification before using

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1. REVISION HISTORY:

Date	Rev.	Page	Summary
2009/08/06	01	1-19	Initial Version

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2. SCOPE:

This specification describes 90V~264V AC input with constant current output switching mode power supply for LED lighting used; it is a built-in type that capable to deliver 20W DC output.

3. ELECTRICAL SPECIFICATIONS:

3.1 AC INPUT CHARACTERISTICS:

3.1.1. Input voltage:

For the output to be within its specified limits, the input voltage shall be single phase sinusoidal with the RMS input voltage within the following limitation

Status	Minimum	Normal	Maximum	Unit
Normal	90	100~240	264	VRMS

3.1.2. Input frequency:

Minimum	Normal	Maximum	Unit
47	50~60	63	Hz

3.1.3. Maximum Input current:

AC inpt	110Vac/60Hz	230Vac/50Hz
Spec	\cong 0.45A	\cong 0.3A

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3.1.4. Inrush current:

After AC power is applied to the power supply in the stage of cold start, any peak inrush current surge shall not damage the PSU and the input fuse shall not blow under any conditions of DC output loading, temperature, input voltage including repeated, rapid cycling of the power line.

Less than 30A at 100~240Vac at 25°C temperature.

3.1.5. Efficiency:

80% ± 1% or greater at DC output with full load and normal AC input voltage range at 100Vac~240Vac for both 50/60Hz

3.1.6. Power factor:

Power factor of power supply shall \geq 0.95 at normal AC input.(90Vac~240Vac)
 Power factor of power supply shall \geq 0.90 at normal AC input.(240Vac~270Vac)
 Power factor of power supply shall \geq 0.90 at normal AC input.(270Vac~300Vac)

3.1.7 Total Harmonic Distortion (THD):

Shall be conforming to the requirements of EN61000-3-2 Class C: Lighting equipment.

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3.2. DC OUTPUT CHARACTERISTICS:

3.2.1. DC Output Characteristics:

Item	Value	Units
Output Current	830	mA
VF-max.	240	V
VF-min.	100	V
Regulation	10	%

Note:

1. The maximum DC output power should be less than 20 Watts.
2. Operating Temperatures -40 °C ~+50°C.

3.2.2. Ripple and noise:

The ripple RMS value of output voltage should less than 200mV

Note: Ripple is defined as a composite of a power line frequency component plus a high frequency component due to the PSU oscillator. Ripple RMS value measured by Digital Multi-meter with a bandwidth of 20 MHz.

3.2.3. Over-shoot and under-shoot:

Over/under shooting is <+/- 10%.

3.2.4. Turn-on delay time :

3 sec. Max. @ nominal AC Power ON.

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4. BROWNOUT & BROWNOUT RECOVERY:

4.1 Brownout:

I/P: 85Vac 50Hz 0Vac 50Hz 1sec @1 Vac

The power supply will be None-damage.

4.2 Brownout Recovery:

I/P: 0Vac 50Hz 80Vac 50Hz 1sec @1 Vac

The power supply will be None-damage with normally output.

5. PROTECTION:

5.1. Input current protection:

The input power line will be fused with a 1A / 250Vac fuse.

5.2. No load (Open circuit) voltage:

By used a non-latch mode, the output shall be protected from no load at all AC input conditions. The output voltage protection trigger level should be less than 230V.

5.3. Short circuit protection:

The power supply shall be hiccupped and no damage shall occur when any output operating in a short circuit condition under any line condition for an in-definite period of time. The power supply be self-recovery when the fault condition is removed.

The PSU will withstand a short circuit across the outputs without damage.

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6. ENVIRONMENTS:

6.1. Temperatures:

Condition	Minimum	Maximum	Unit
Operating	-40	+50	°C
Storage	-40	+80	°C

6.2. Humidity:

It based on relative humidity and non-condensing.

Condition	Minimum	Maximum	Unit
Operating	10%	95%	RH
Storage	5%	95%	RH


6.3. Vibration and shock:

The PSU shall withstand forces of 1.5 G at variable recurrent frequencies of 5 to 100 Hz and a simulated transportation test. The transportation test will consist of a 1/2 G vibration force at the resonant frequencies of the board or components.

The test shall be within 30 min.

6.4. Drop test:

The packaging of PSU shall successfully comply with the following drop test requirements of 6 random drops from a height of 70 cm onto concrete covered with 1/8 inch asphalt tile or similar material. No impairment of normal function, breaking away of any parts or change that would render PSU potentially harmful shall occur.

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7. SAFETY AND EMC :

7.1. Safety (to meet the standard):

Safety	Standard
UL	1012
ENEC / CE	EN61347-2-13

7.2. EMS:

Meet EN61547 standard


Test item	Test specification	IEC Standard
ESD	Air 8 KV, Contact 4KV	61000-4-2
EFT	2 KV on AC power line	61000-4-4
SURGE	4 KV (L – N) & 4 KV (L/N – PE) / 1.2 ~ 50Usec.	61000-4-5

7.3. Conducted EMI :

For 230 Vac input operation, the PSU must below the limit of EN55015/CISPR 15, for HF equipment and DP equipment with a 4 dB margin. For 120 Vac input operation, the PSU must below the limit of FCC part 18 sub-part A for Class A computing device with a 6 dB margin. For 100 Vac operation, the PSU must below the limit of VCCI by a 6 dB margin. Each conducted and radiated emissions shall be measured in the applicable system and complied with the required standards.

7.4. Radiated EMI and EMC :

No peak emission in the frequency range from 30 MHz to 1 GHz and it shall not exceed Class B limit when measured per ANSI C82.11, CISPR 15 and VCCI measurement procedures. Each conducted and radiated emissions shall be measured in the applicable system.

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7.5. Primary to Secondary Hi-POT Test :

7.5.1. 3750 Vac Hi-Pot Test from primary to secondary for a minimum of one minute.

7.5.2. Trip current < 5 mA

7.6. Insulation resistance :

7.6.1. Apply 500Vdc between primary and secondary for one minute, The Impedance >100M ohm.

7.6.2. Leakage Current: 0. 5mA MAX @240Vac/60Hz

8. RELIABILITIES

8.1. M.T.B.F. :

The mean time between failures of PSU shall equal or exceed 20,000 hours when operated at 75% continuous load in an ambient temperature of 25 °C as calculated by parts stress method of MIL-HDBK-217F.

8.2. Temperature rise :

The Maximum temperature measured at any point on the case surface shall not exceed 80 °C at room temperature of 50 °C.

8.3. Burn-in :

100 % burn-in on production line with load current (230Vac) at 40°C ± 5°C environment temperature for 2 hours.

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8.4 MAJOR MEASURE EQUIPMENT

- A. AC SOURCE :AFC 500W POWER SOURCE
- B. ELECTRONIC LOAD: Chroma 63030
- C. OSCILLOSCOPE: TDS3014B
- D. DIGITAL MULTIMETER : FLUKE 17B
- E. DC POWER: ABM8603D

9.MECHANICAL:


9.1. Input/Output connection:

9.1.1. AC input Line:

Input Line	
Color	Assignment
White	Line
Blue	Neutral
Green/Yellow	GND

9.1.2 DC output connector:

Output Line	
Color	Assignment
Red	V+
Black	V-

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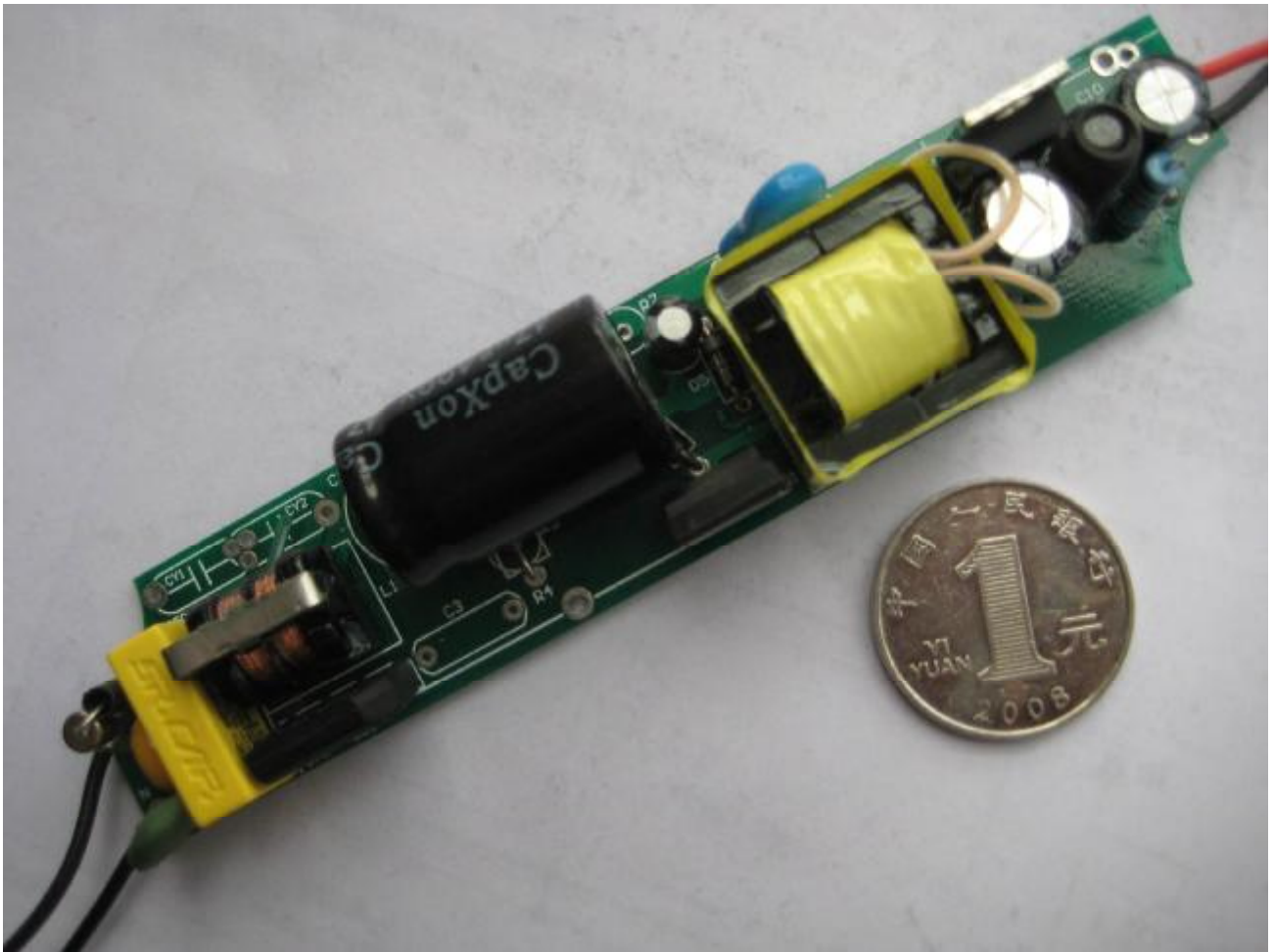
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9.2. Dimension :

The Size of the power supply shall be about

long 124 mm ± 0.2 width 25 mm ± 0.2 height 25 mm ± 0.2

9.3 SAMPLE VIEW



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10. SAMPLE PRELIMINARY TEST REPORT

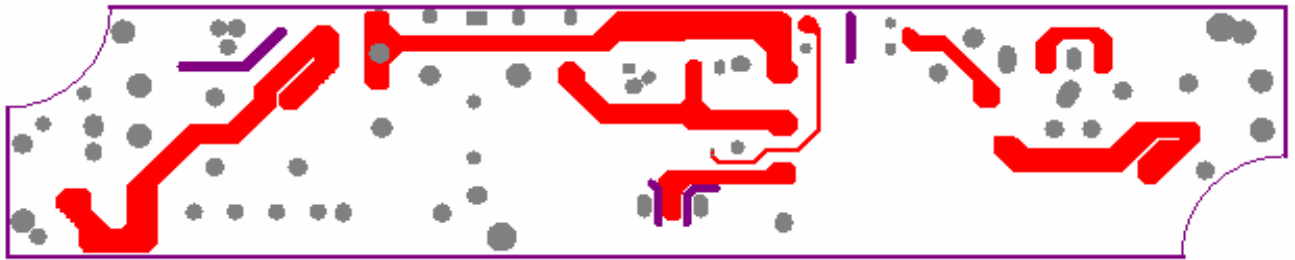
Test Items	Test Condition	Test Results						PASS /FAIL
		#1	#2				Unit	
CV mode output current (CV 23V) 770-830mA	110Vac	800	790				mA	PASS
	220Vac	805	798				mA	PASS
Output ripple & noise voltage ≤200mV	110Vac	88	78				mV	PASS
	220Vac	45	55				mV	PASS
Efficiency(Full load) ≥80%	110Vac	83.38	83.16				%	PASS
	220Vac	81.78	81.56				%	PASS
PF (Vin = 110Vac PF≥0.9)	110Vac							PASS
PF (Vin = 220Vac PF≥0.85)	220Vac							PASS
Shout-circuit protection test	110Vac	OK	OK				/	PASS
	220Vac	OK	OK				/	PASS
Appearance	No defective shown	OK	OK				/	PASS

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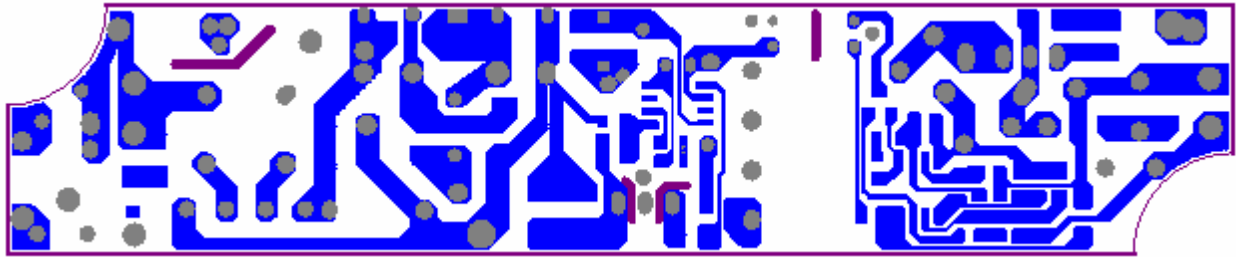
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11. PCB LAYER/PCB VIEW

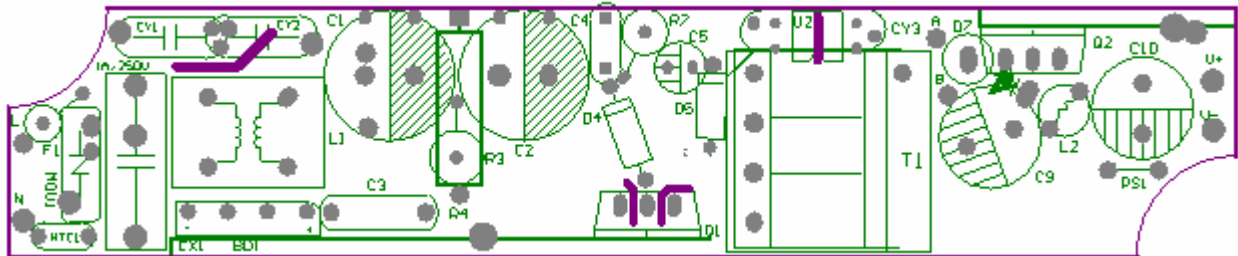
11.1 toplayer



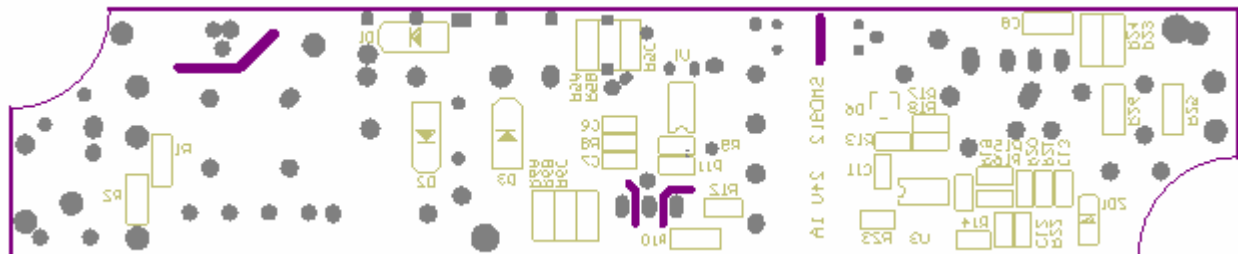
11.2 bottomlayer




11.3 topoverlay



11.4 bottomoverlay

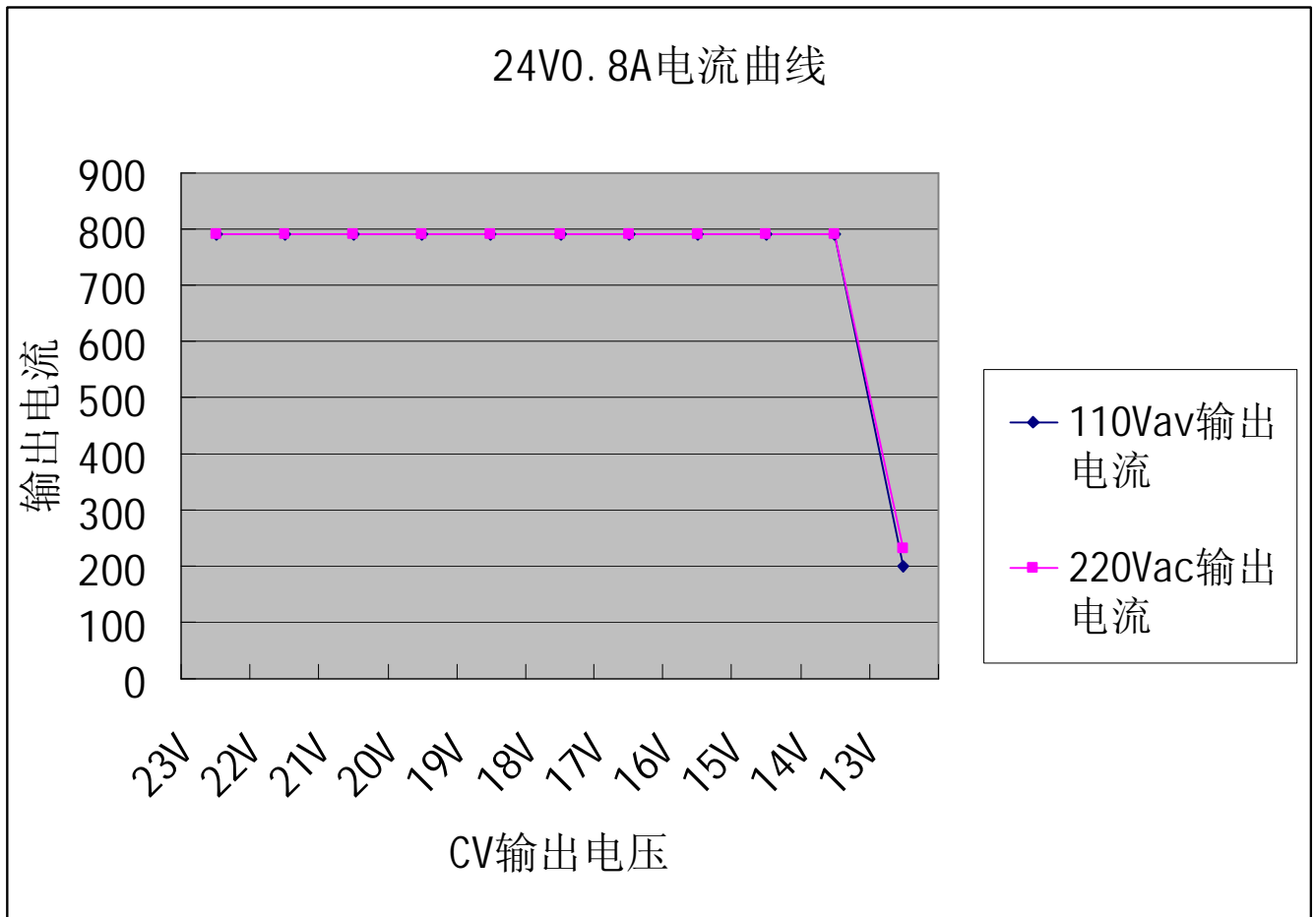


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12. Graph of Test



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14. BILL OF MATERIAL


機種名稱:		Shamrock SMD912 24V0.8A		
項目	插件位置	規格項目-名稱 說明	類別	數量
1	R1	510K/1206/J	RESISTOR	0
2	R2	510K/1206/J	RESISTOR	0
3	R3	CF3WS10RJ 10R 3WS	RESISTOR	0
4	R4	CF3WS10RJ 10R 3WS	RESISTOR	0
5	R5A	300K/1206/J	RESISTOR	1
6	R5B	300K/1206/J	RESISTOR	1
7	R5C	300K/1206/J	RESISTOR	1
8	R6A	3R/1206/F	RESISTOR	1
9	R6B	3R/1206/F	RESISTOR	1
10	R6C	3R/1206/F	RESISTOR	1
11	R7	CF1W1RJ 1R 1W	RESISTOR	0
12	R8	1K/0805/J	RESISTOR	1
13	R9	6.49K/0805/F	RESISTOR	1
14	R10	100R /0805/J	RESISTOR	1
15	R11	1.2K /0805/J	RESISTOR	1
16	R12	27R /0805/J	RESISTOR	1
17	R13	100K /0805/F	RESISTOR	1
18	R14	0R /0805/J	RESISTOR	1
19	R15	5.1 K /0805/F	RESISTOR	1
20	R16	24 K /0805/F	RESISTOR	1
21	R17	2.7 K /0805/F	RESISTOR	1
22	R18	NA	RESISTOR	0
23	R19	100 K /0805/F	RESISTOR	1
24	R20	39 K /0805/F	RESISTOR	1
25	R21	470K /0805/F	RESISTOR	1
26	R22	10 K /0805/J	RESISTOR	1
27	R23	20R /1206/J	RESISTOR	1
28	R24	20R /1206/J	RESISTOR	0
29	R25	20R /1206/J	RESISTOR	0
30	R26	20R /1206/J	RESISTOR	0
31	RS1	CF1W0.82RJ 0.82R 1W	RESISTOR	1
32	NTC1	SCK103	RESISTOR	1
33	MOV1	TVR07471	VARISTOR	1
34	C1	SK 47uF/400V 16*26	CAPACITOR	1

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35	C2	NA	CAPACITOR	0
36	C3	MMX0450J223,NISSEI	CAPACITOR	1
37	C4	222/1KV	CAPACITOR	1
38	C5	SK 22uF/50V 5*11	CAPACITOR	1
39	C6	102 50V 0805	CAPACITOR	0
40	C7	102 50V 0805	CAPACITOR	0
41	C8	102 50V 1206	CAPACITOR	1
42	C9	SK 680uF/35 V 10*16	CAPACITOR	1
43	C10	SK 220uF/35 V 8*12	CAPACITOR	1
44	C11	472 50V 0805	CAPACITOR	1
45	C12	103 50V 0805	CAPACITOR	1
46	C13	104 50V 0805	CAPACITOR	1
47	CX1	104/275V X2	CAPACITOR	1
48	CY1	222M 250V Y1	CAPACITOR	1
49	CY2	471M 250V Y2	CAPACITOR	1
50	CY3	471M 250V Y2	CAPACITOR	1
51	BD1	KDP206G 2A/600V	BRIDGE	1
52	D1	M7 1A/1000V	DIODE	0
53	D2	M7 1A/1000V	DIODE	0
54	D3	M7 1A/1000V	DIODE	0
55	D4	1N4007 1A/1000V DIP	DIODE	1
56	D5	1N4007 1A/1000V DIP	DIODE	1
57	D6	BAW56 共阳二极管 SOT-23	DIODE	1
58	D7	HER306 3A500V	DIODE	0
59	Q1	mosfet 4A/600V TO-220F	MOSFET	1
60	Q2	STPRA1020CT 10A/200V TO-220	STPR DIODE	1
61	U1	SMD912 SOT-8	IC	1
62	U2	PC817	IC	1
63	U3	SMD601 SOT-8	IC	1
64	L1	UU9.8 0.2mm 30 mH	CHOKE	1
65	L2	棒型电感 3*10 3-5UH	CHOKE	1
66	T1	EF20 卧式 4+4PIN 24V 0.8A 0.45MH	T1	1
67	F101	1A/250V 慢断 3.6*10	FUSE	1
68	L	UL1007 22 AWG 80MM 黑色	引线	1
69	N	UL1007 22 AWG 80MM 黑色	引线	1
70	LED-	UL1007 22 AWG 80MM 黑色	引线	1
71	LED+	UL1007 22 AWG 80MM 红色	引线	1
72	PCB	PCB: FR-4 L124MM*W25MM*T1.6MM	PCB	1


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