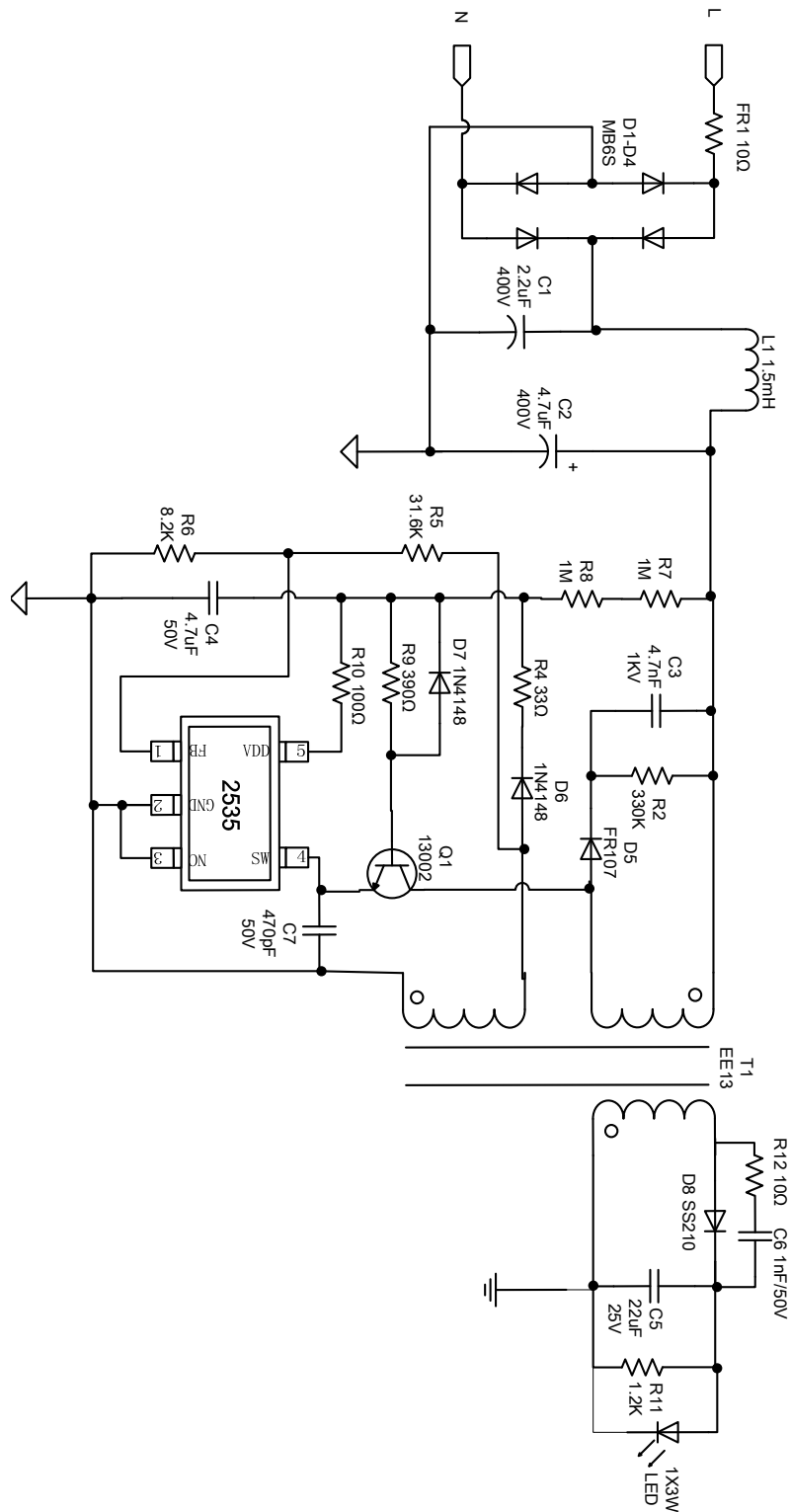


基于2535的低成本小体积1X3W LED驱动应用方案

1. 电路原理图



2. 样机照片

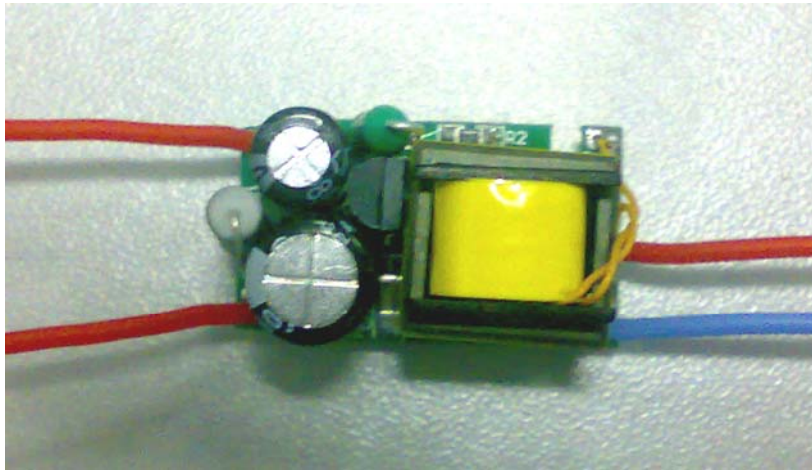


图1, 正面 (26mm x 15mm x 17mm)

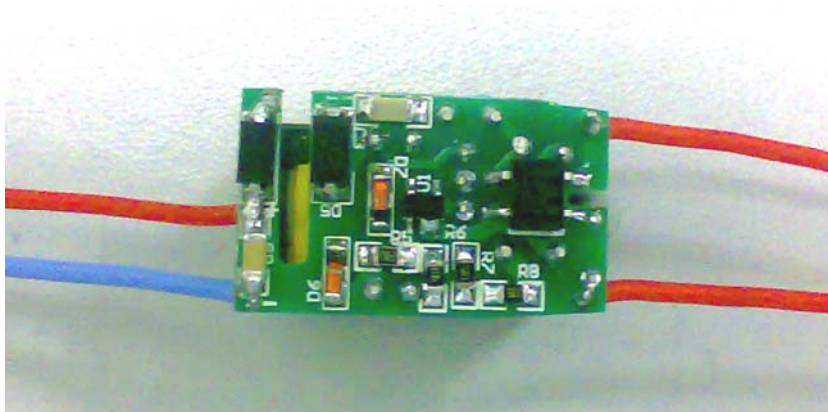


图2, 背面(26mm x 15mm x 17mm)

3. PCB绘制图

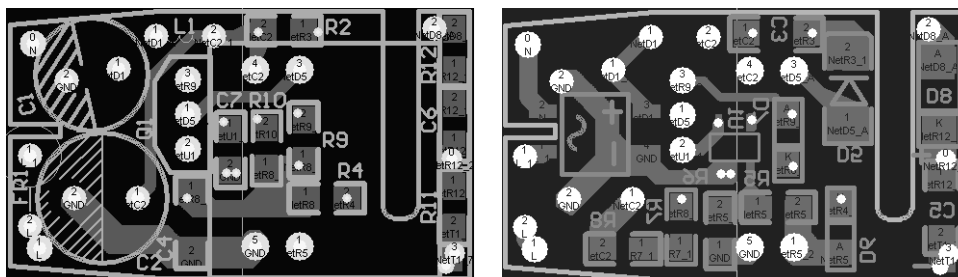


图3, PCB板设计

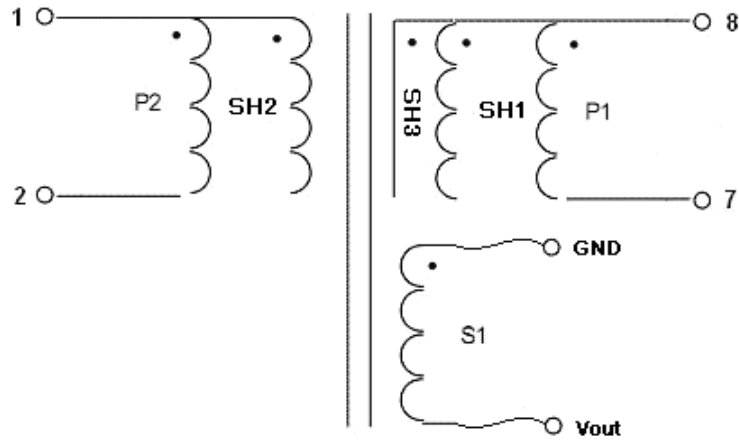
4. 材料清单

序号	元件符号	描述	数量
1	FR1	Resistor,10ohm,1W	1
2	R2	Resistor,330Kohm,5%,SMT,0805	1
3	R4	Resistor,33ohm,5%,SMT,0805	1
4	R5	Resistor, 31.6Kohm,1%,SMT,0805	1
5	R6	Resistor,8.2Kohm,1%,SMT,0805	1
6	R7	Resistor,1Mohm,5%,SMT,0805	1
7	R8	Resistor,1Mohm,5%,SMT,0805	1
8	R9	Resistor,390ohm,5%,SMT,0805	1
9	R10	Resistor,100ohm,5%,SMT,0805	1
10	R11	Resistor,1.2Kohm,5%,SMT,0805	1
11	R12	Resistor,10ohm,5%,SMT,0805	1
12	C1	Capacitor,Electrolytic,2.2uF/400V,6.3x11	1
13	C2	Capacitor,Electrolytic,4.7uF/400V,8x12	1
14	C3	Capacitor,Ceramic,4.7nF/1KV	1
15	C4	Capacitor, Ceramic,4.7uF/50V	1
16	C5	Capacitor, Ceramic,22uF/25V	1
17	C6	Capacitor,Ceramic,1nF/50V	1
18	C7	Capacitor,Ceramic,470pF/50V	1
19	L1	Inductor,1.5mH,0410	1
20	T1	Transformer,Lp=1.7mH,EE13	1
21	D1-D4	Bridge,Rectifier,600V,0.5A,MB6S	1
22	D5	Diode,UltraFast,FR107	1
23	D6	Diode,Switching, 1N4148,1206	1
24	D7	Diode,Switching,1N4148,1206	1
25	D8	Diode,Schottky, SS210	1
26	Q1	Transistor,NPN, 13002,TO-92	1
27	IC1	IC,PWM, 2535BH,SOT-23-5	1

表1: 材料清单表

5. 变压器规格

5.1 示意图



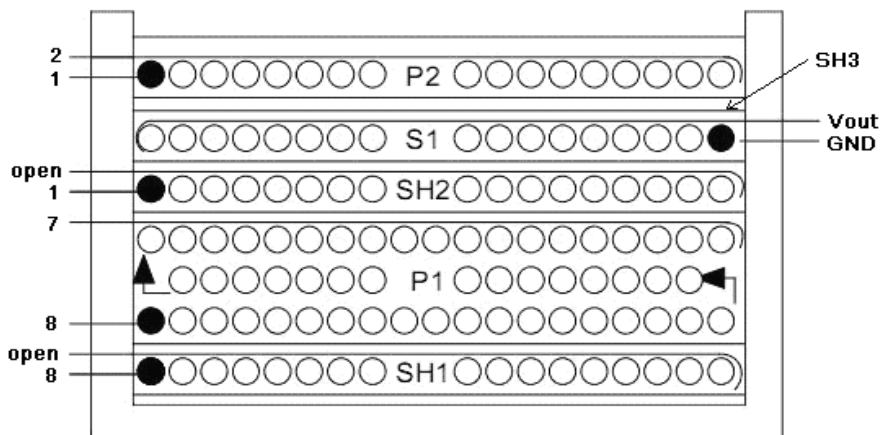
变压器示意图

5.2 材料清单

绕组	脚位		匝数	绝缘导线/铜箔		
	开始	结束		类型	线径/数量	层数
SH1	8	Open	25	2UEW	0.1Φ/2	1
P1	8	7	120	2UEW	0.15Φ/1	3
SH2	1	Open	25	2UEW	0.1Φ/2	1
S1	GND	Vout	10	TEX-E	0.4Φ/1	2
SH3	8	Open	0.9	铜箔	0.025*5mm	1
P2	1	2	32	2UEW	0.15Φ/1	1

注：SH1、SH2为屏蔽层， P1、P2为初级， S1为次级。

5.3 装配图



装配图

5.4 电气规格

序号	描述	条件	限值
1	电气绝缘强度	60Hz, 1 分钟, pins 1-4 到 pins 5-6	3000 Vac
2	初级P1电感	Pin1 到Pin2 电感量, 在1Vac & 1kHz	1.7mH ± 0.14mH

6. 性能测试数据

6.1. 短路功耗

输入电压	85 VAC	115 VAC	230 VAC	264 VAC	平均功耗
功耗 (mW)	14	48	178	238	119.5

6.2. 效率

条件\Vac	85 VAC	115 VAC	230 VAC	264 VAC	平均效率
1X3WLED	61.26%	60.38%	60.26%	59.94%	60.46%

6.3. 输入电压和负载调整率

条件\Vac	85 VAC	115 VAC	230 VAC	264 VAC	平均电流
1X3WLED	691.3mA	693.9mA	715.1mA	718mA	704.6mA

6.4 雷击

测试条件	测试方法	测试限制	通过/不通过
220Vac 1X3W	火线——零线 5次/45度相位 1次间隔60秒	0.5KV	通过

6.5 EMI测试

6.5.1 传导

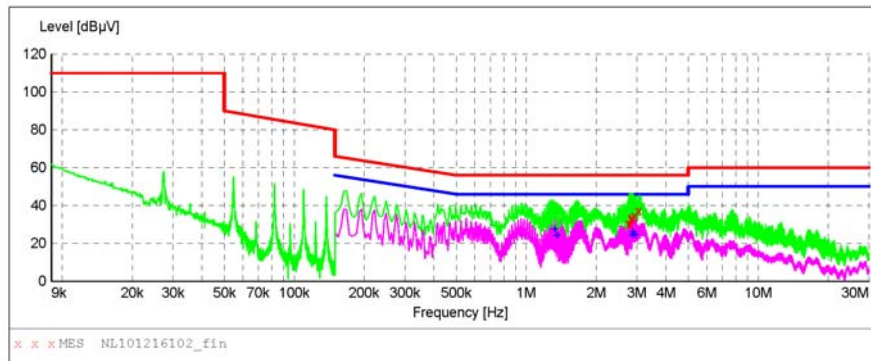
Anbotek Compliance Laboratory Limited

Voltage Mains EN 55015

EUT: LED LIGHT M/N:2535 1*3W
 Manufacturer: AI WEI
 Operating Condition: ON
 Test Site: 1# Shielding Room
 Operator: WELL WANG
 Test Specification: AC 230V 50Hz
 Comment: L
 Temp.=22.2 Hum.=60%

SCAN TABLE: "Voltage (9K~30M) FIN"

Short Description: 9K-30M Disturbance Voltages



MEASUREMENT RESULT: "NL101216102_fin"

12/16/2010 10:04AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
2.778000	30.30	9.8	56	25.7	QP	L1	GND
2.805000	30.50	9.8	56	25.5	QP	L1	GND
2.836500	33.00	9.8	56	23.0	QP	L1	GND
2.863500	33.70	9.8	56	22.3	QP	L1	GND
2.922000	34.70	9.8	56	21.3	QP	L1	GND
3.061500	37.40	9.8	56	18.6	QP	L1	GND

MEASUREMENT RESULT: "NL101216102_fin2"

12/16/2010 10:04AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
1.329000	27.60	9.9	46	18.4	AV	L1	GND
1.356000	24.30	9.9	46	21.7	AV	L1	GND
2.868000	24.60	9.8	46	21.4	AV	L1	GND
2.895000	26.00	9.8	46	20.0	AV	L1	GND
2.953500	24.40	9.8	46	21.6	AV	L1	GND

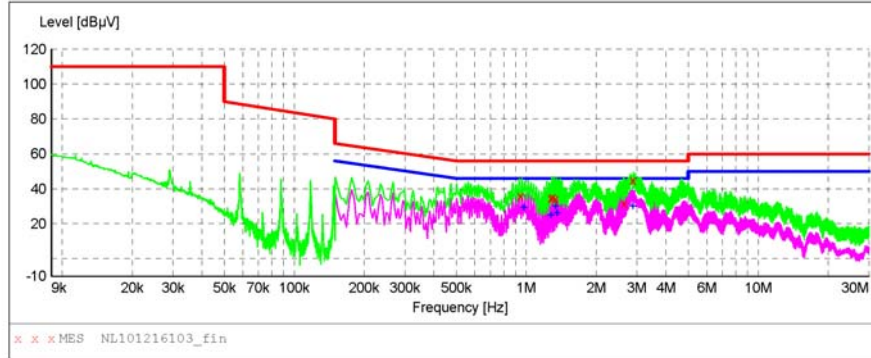
Anbotek Compliance Laboratory Limited

Voltage Mains EN 55015

EUT: LED LIGHT M/N:2535 1*3W
 Manufacturer: AI WEI
 Operating Condition: ON
 Test Site: 1# Shielding Room
 Operator: WELL WANG
 Test Specification: AC 230V 50Hz
 Comment: N
 Temp.=22.2 Hum.=60%

SCAN TABLE: "Voltage (9K~30M) FIN"

Short Description: 9K-30M Disturbance Voltages



MEASUREMENT RESULT: "NL101216103_fin"

12/16/2010 10:10AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.946500	35.90	9.9	56	20.1	QP	N	GND
1.279500	34.70	9.9	56	21.3	QP	N	GND
1.306500	35.30	9.9	56	20.7	QP	N	GND
1.338000	34.10	9.9	56	21.9	QP	N	GND
2.656500	31.60	9.8	56	24.4	QP	N	GND
2.895000	44.90	9.8	56	11.1	QP	N	GND

MEASUREMENT RESULT: "NL101216103_fin2"

12/16/2010 10:10AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.978000	29.50	9.9	46	16.5	AV	N	GND
1.279500	25.00	9.9	46	21.0	AV	N	GND
1.342500	30.20	9.9	46	15.8	AV	N	GND
1.356000	26.30	9.9	46	19.7	AV	N	GND
2.881500	30.30	9.8	46	15.7	AV	N	GND

6.5.2 辐射

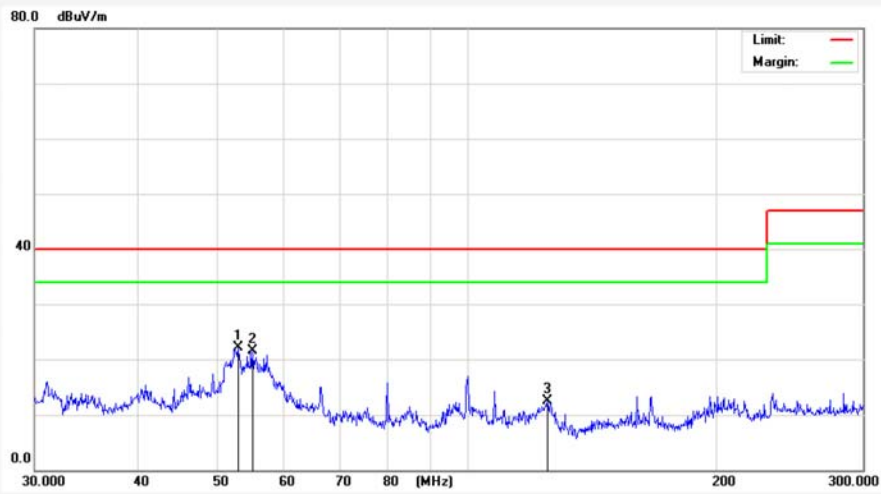


Anbotek Compliance Laboratory Limited
2/F, Langfeng Building, Kefa Road North, Hi-tech Industrial
Park, Nanshan District, Shenzhen 518057, China

Site: 966 Chamber
Tel: (86)755-26014771
Fax: (86)755-26014772

Job No.: File :艾微	Polarization: Horizontal
Standard: (RE)EN55015	Power Source: AC 230V/50Hz
Test item: Radiation Test	Date: 10/12/16/
Temp.(C)/Hum.(%) 24.3 / 55 %	Time: 11/20/34
EUT: 2535 1x3W	Engineer Signature: JUICE XU
Mode: ON	Distance: 3m
Model: 1x3W	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Remark
1	52.8593	47.09	-25.03	22.06	40.00	-17.94	peak	
2	54.9694	46.53	-25.12	21.41	40.00	-18.59	peak	
3	124.7732	43.22	-30.73	12.49	40.00	-27.51	peak	



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Site: 966 Chamber

Tel: (86)755-26014771

Fax: (86)755-26014772

Job No.: File :艾微	Polarization: Vertical
Standard: (RE)EN55015	Power Source: AC 230V/50Hz
Test item: Radiation Test	Date: 10/12/16/
Temp.(C)/Hum.(%) 24.3 / 55 %	Time: 11/22/13
EUT: 2535 1x3W	Engineer Signature: JUICE XU
Mode: ON	Distance: 3m
Model: 1x3W	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Remark
1	51.5373	57.20	-24.98	32.22	40.00	-7.78	peak	
2	59.1727	55.26	-25.38	29.88	40.00	-10.12	peak	
3	83.0082	55.71	-28.29	27.42	40.00	-12.58	peak	
4	95.7461	52.45	-24.86	27.59	40.00	-12.41	peak	
5	124.4862	54.30	-25.69	28.61	40.00	-11.39	peak	