

Demo Board Test Report for LD7832

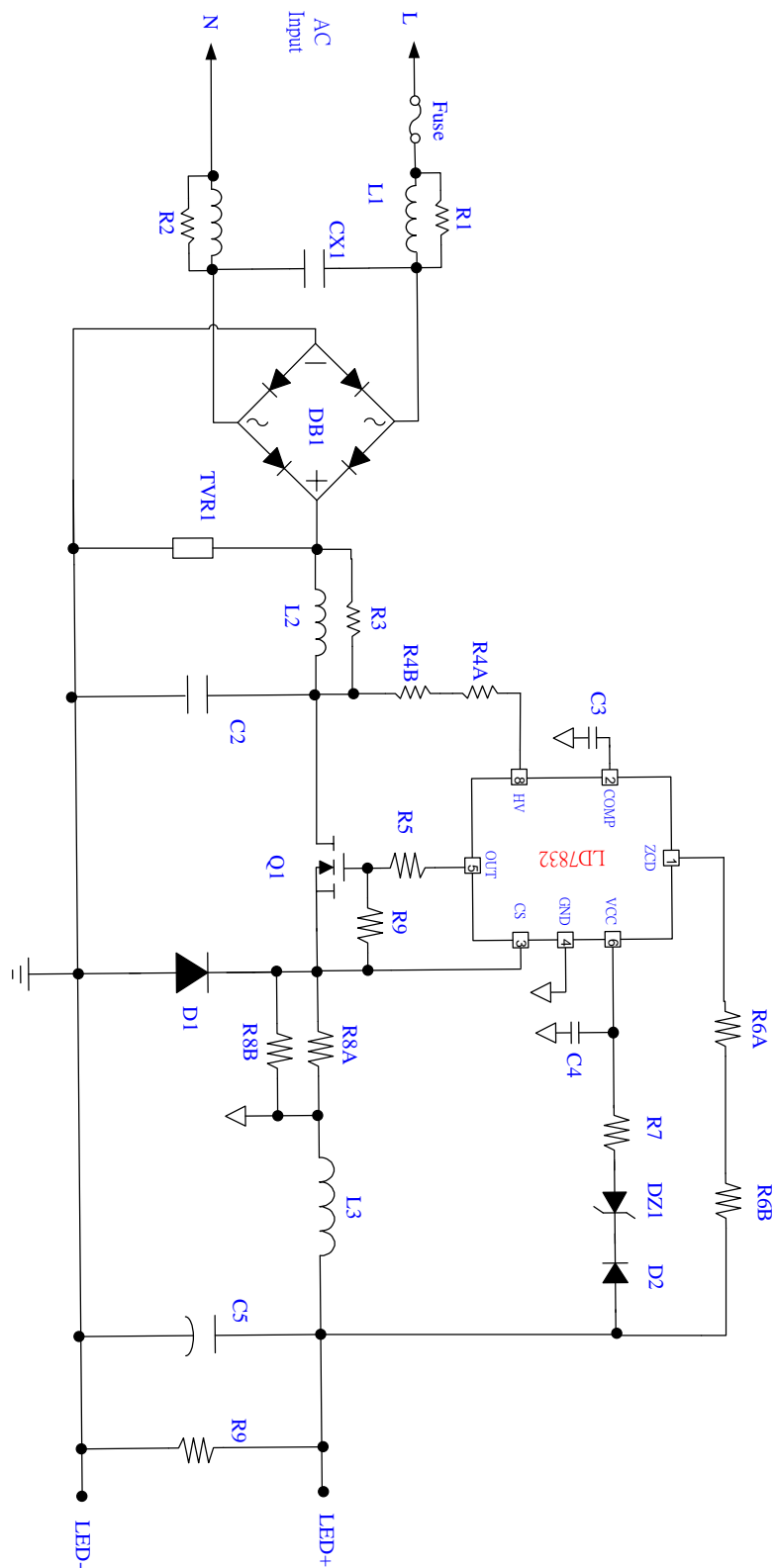
--- 7.2W (24V, 300mA) LED Lighting Power

Tested by	Reviewed by	Approved by
Jolin Lin	Scott Lin	Albert Huang

Total pages	Revision	Date
17	0	2012/08/31

Contents

I. SCHEMATIC	3
II. BOM.....	4
III. EXECUTIVE SUMMARY	6
IV. PHOTOGRAPH	16
V. GERBER FILE	17

I. Schematic


II. BOM

P/N	Component Value	Note
R1	10K Ω ,1206	
R2	10K Ω ,1206	
R3	10K Ω ,1206	
R4A	4.7K Ω ,1206	
R4B	4.7K Ω ,1206	
R5	56 Ω ,0805	
R6A	75K Ω ,1206	
R6B	75K Ω ,1206	
R7	9.1 Ω ,0805	
R8A	1.2 Ω ,1206	
R8B	1.5 Ω ,1206	
R9	47K Ω ,1206	
TVR1	5D471	
L1	2mH MCD-0608-202K	美磊
L2	2mH MCD-0608-202K	美磊
L3	330uH MCD-1012-331K	美磊

P/N	Component Value	Note
C2	0.1uF/450V	
C3	470nF, 16V, 0805	
C4	10uF, 50V, 1206	
C5	100uF/50V	
CX1	X2, 0.01uF/275V	
D1	2A/600V(ER2J)	PANJIT
D2	1A/600V(US1006FL)	PANJIT
DB1	1A/1000V (TB10S)	PANJIT
DZ1	9.1V Zener	
F1	FRN 1/2W 5 Ω	Tyohm
Q1	4A/600V(P0460AI)	Niko-sem
IC1	LD7832 D/C:122810-1	Leadtrend

III. EXECUTIVE SUMMARY	6
1. Current Accuracy	6
2. PF Test	7
3. Efficiency Test.....	8
4. THDi Test	9
5. Start-up Waveforms.....	10
6. Output Open Test.....	11
7. Output Short Test.....	12
8. CS Short Test	13
9. Power Component Stress Voltage	14
10. Thermal Test.....	15

III. EXECUTIVE SUMMARY

Office	Taipei
Model Name	LD7832 DemoBoard#01
Version	
IC	LD7832

1. Current Accuracy
Test Conditions:
Input: 90Vac/110Vac/220Vac/264Vac (60Hz)

Output: CV mode (20.4V~27.6V)

Ambient Temperature: 25°C

$V_{out}(V)$ \ $I_{out}(mA)$	CV:20.4V	CV:24V	CV:27.6V
90Vac	295.130	295.060	294.990
110Vac	295.110	295.170	295.080
220Vac	295.360	295.530	295.650
264Vac	295.680	295.770	295.780

Table 1

Current Accuracy (%):

$$V_{cc}(\%) = \frac{Max - Min}{Max + Min} \times 100 = 0.13$$

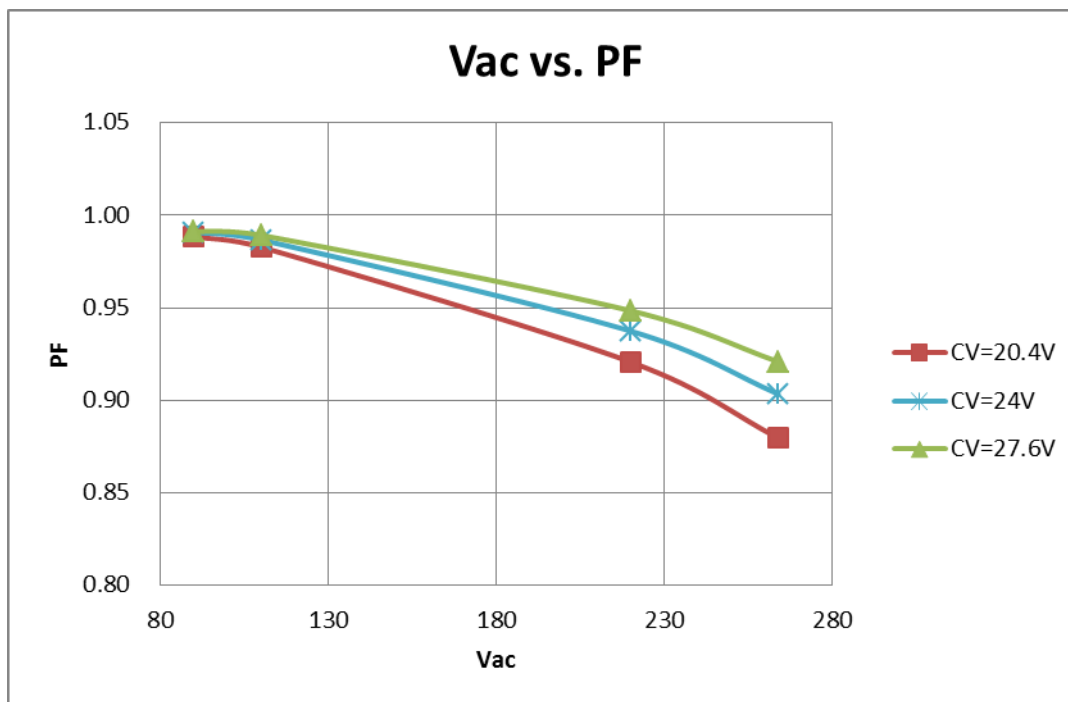
2. PF Test
Test Conditions:
Input: 90Vac/110Vac/220Vac/264Vac (60Hz)

Output: CV mode (20.4V~27.6V)

Ambient Temperature: 25°C

$V_{out}(V)$ \ PF	CV:20.4V	CV:24V	CV:27.6V
90Vac	0.988	0.991	0.991
110Vac	0.983	0.987	0.989
220Vac	0.921	0.938	0.949
264Vac	0.880	0.904	0.921

Table 2


Fig. 1 Vac vs. PF curve

3. Efficiency Test

Test Conditions:

Input: 90Vac/110Vac/220Vac/264Vac (60Hz)

Output: CV mode (20.4V~27.6V)

Ambient Temperature: 25°C

Eff.(%) \ V _{out} (V)	CV:20.4V	CV:24V	CV:27.6V
90Vac	85.796	86.383	86.817
110Vac	86.257	86.997	87.533
220Vac	85.753	86.626	87.393
264Vac	85.144	86.068	86.745

Table 3

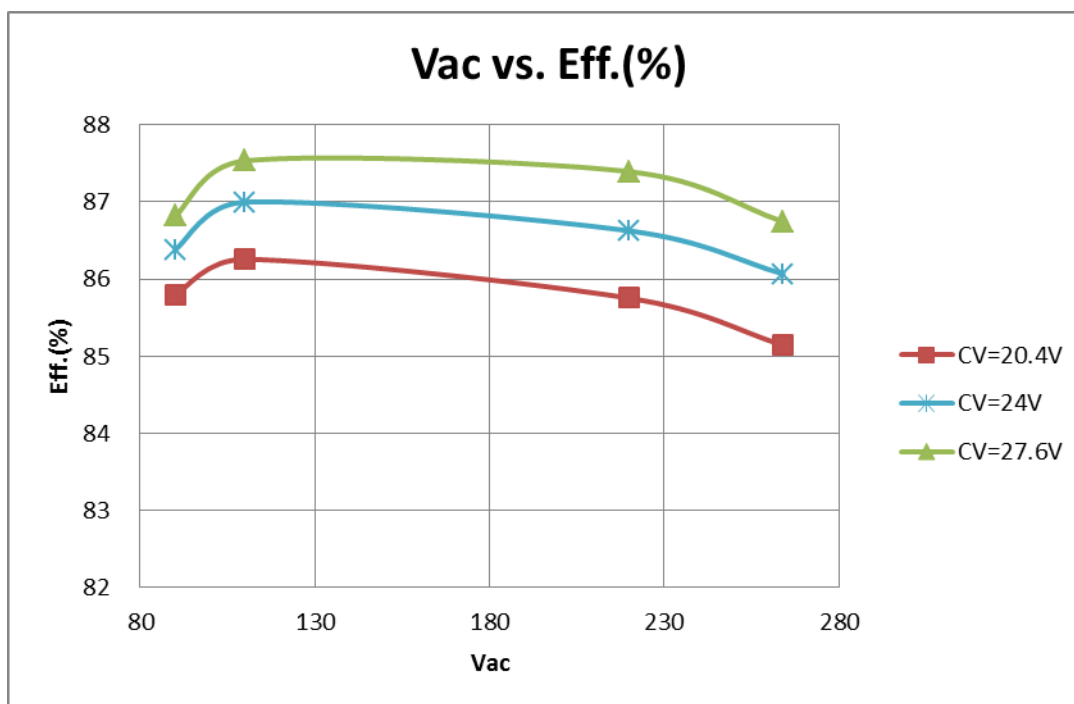


Fig. 2 Vac vs. Efficiency curve

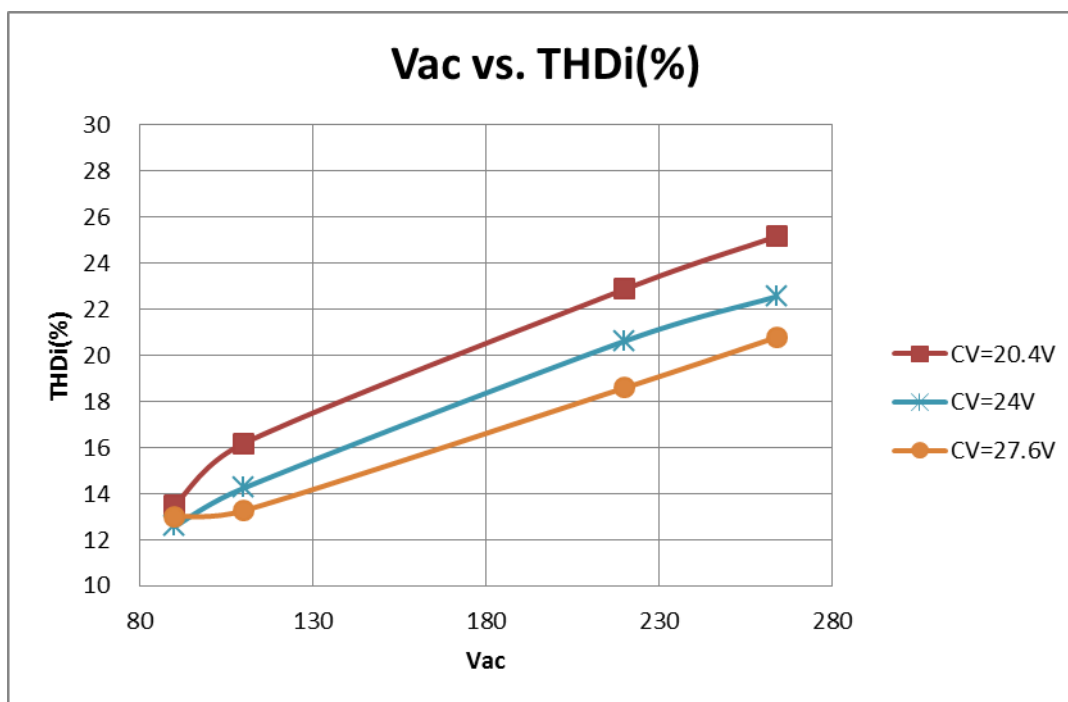
4. THDi Test
Test Conditions:
Input: 90Vac/264Vac (60Hz)

Output: CV mode (20.4V~27.6V)

Ambient Temperature: 25°C

Eff.(%) \ V _{out} (V)	CV:20.4V	CV:24V	CV:27.6V
	90Vac	13.510	12.570
110Vac	16.180	14.240	13.260
220Vac	22.860	20.610	18.580
264Vac	25.160	22.550	20.780

Table 4


Fig. 3 Vac vs. THDi curve

5. Start-up Waveforms

Test Conditions:

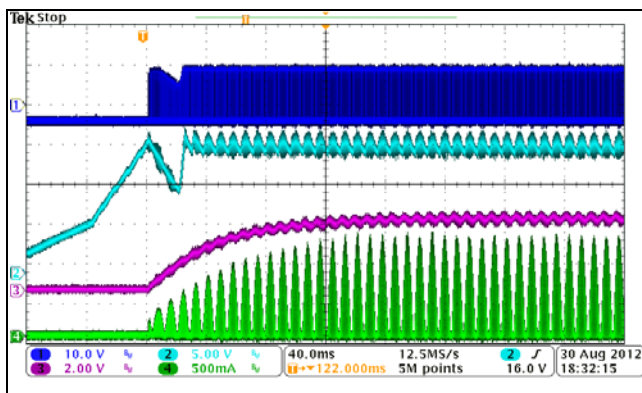
Input: 90Vac (60Hz)

Output: CV mode (24V)

Ambient Temperature: 25°C

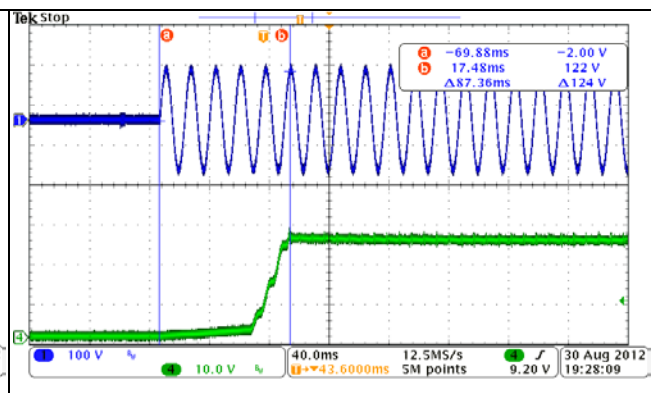
Input	T _{turn on delay}
90Vac	87.36ms

Table 5



Start-up Waveforms
 Vin: 90Vac
 O/P : +24V/300mA
 CH1: Gate, CH2:Vcc, CH3:Comp, CH4:IL

Fig. 1

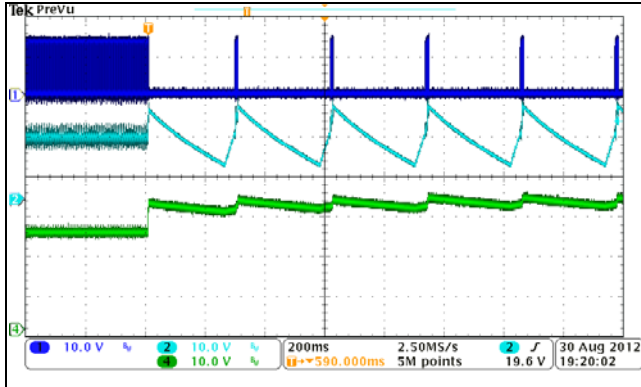


Turn On Delay Time
 Vin: 90Vac
 O/P : +24V/300mA
 CH1:Vin, CH4:Vout

Fig. 2

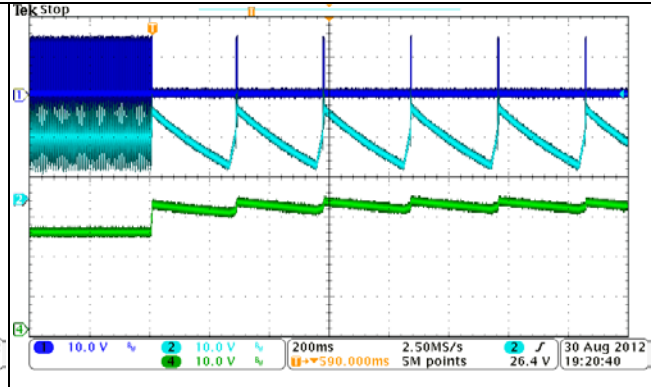
6. Output Open Test
Test Condition:
Input: 90Vac/264Vac (60Hz)

Output: CV mode (24V)

Ambient Temperature: 25°C


Output Open protection
 Vin: 90Vac
 O/P : +24V → Open
 CH1: Gate, CH2: Vcc, CH4: Vout

Fig. 3



Output Open protection
 Vin: 264Vac
 O/P : +24V → Open
 CH1: Gate, CH2: Vcc, CH4: Vout

Fig. 4

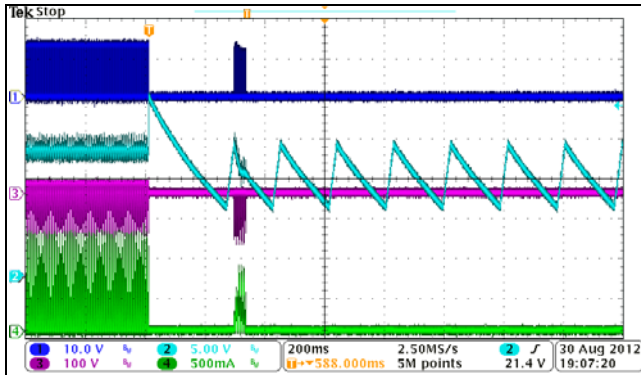
7. Output Short Test

Test Condition:

Input: 90Vac/264Vac(60Hz)

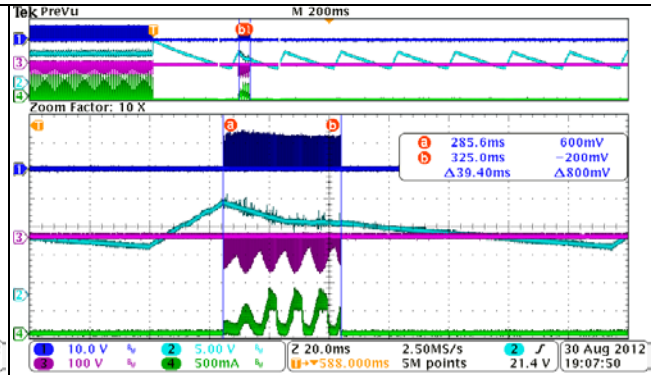
Output: CV mode (24V)

Ambient Temperature: 25°C



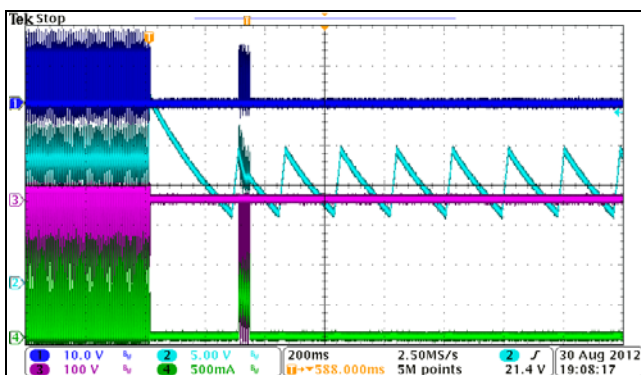
Output Short Protection
 Vin: 90Vac
 O/P : +24V/300mA→Short
 CH1: Gate, CH2:Vcc, CH3:V_L, CH4:I_L

Fig. 5



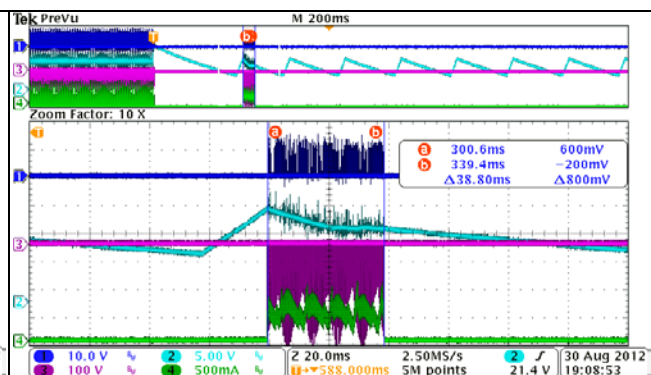
Zoom-in Fig. 5
 Vin: 90Vac
 O/P : +24V/300mA→Short
 CH1: Gate, CH2:Vcc, CH3:V_L, CH4:I_L

Fig. 6



Output Short Protection
 Vin: 264Vac
 O/P : +24V/300mA→Short
 CH1: Drain, CH2:Vcc, CH3:V_L, CH4:I_L

Fig. 7



Zoom-in Fig. 7
 Vin: 264Vac
 O/P : +24V/300mA→Short
 CH1: Gate, CH2:Vcc, CH3:V_L, CH4:I_L

Fig. 8

8. CS Short Test

Test Condition:

Input: 90Vac/264Vac(60Hz)

Output: CV mode (24V)

Ambient Temperature: 25°C

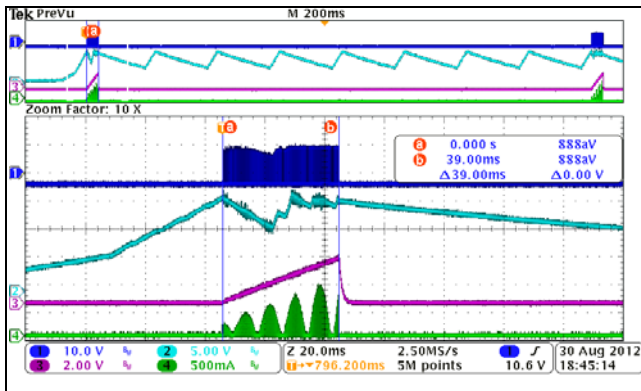


Fig. 9

CS Short Protection

Vin: 90Vac

O/P : +24V/300mA→CS Short

CH1: Drain, CH2:Vcc, CH3:Comp, CH4:IL

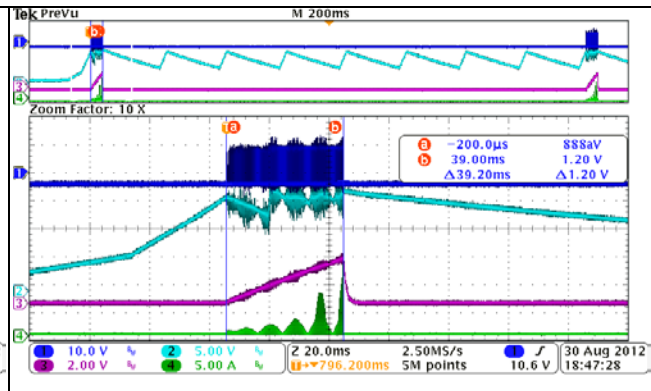


Fig. 10

CS Short Protection

Vin: 264Vac

O/P : +24V/300mA→CS Short

CH1: Drain, CH2:Vcc, CH3:Comp, CH4:IL

9. Power Component Stress Voltage

Test Condition:

- Set the output loads at full load and ambient 25 °C.
- The PSU test on everyone voltage and frequency.

Check:

- Under Steady state the derating shall be below **100%**.
- Under Transient state the derating shall be below **100%**.

Result:

Input Voltage: 90Vac/264Vac (60Hz)

Output Power: CV mode (24V)

No.	Location	Max. Rating(V)	Steady State(90V / 60HZ)	
			Measurement	Derating(%)
			V	V
1	Q1	600	130	21.67%
2	D1	600	133	22.17%

Table 6-1

No.	Location	Max. Rating(V)	Transient State(90V / 60HZ)	
			Measurement	Derating(%)
			V	V
1	Q1	600	124	20.67%
2	D1	600	132	22.00%

Table 6-2

No.	Location	Max. Rating(V)	Steady State(264V / 60HZ)	
			Measurement	Derating(%)
				V
1	Q1	600	380	63.33%
2	D1	600	394	65.67%

Table 6-3

No.	Location	Max. Rating(V)	Transient State(264V / 60HZ)	
			Measurement	Derating(%)
				V
1	Q1	600	378	63.00%
2	D1	600	396	66.00%

Table 6-4

10. Thermal Test
Test Condition:

- Set the output loads at full load and ambient **25°C**.
- The PSU test on everyone voltage and frequency.
- Burn-In 2 hours

Check:

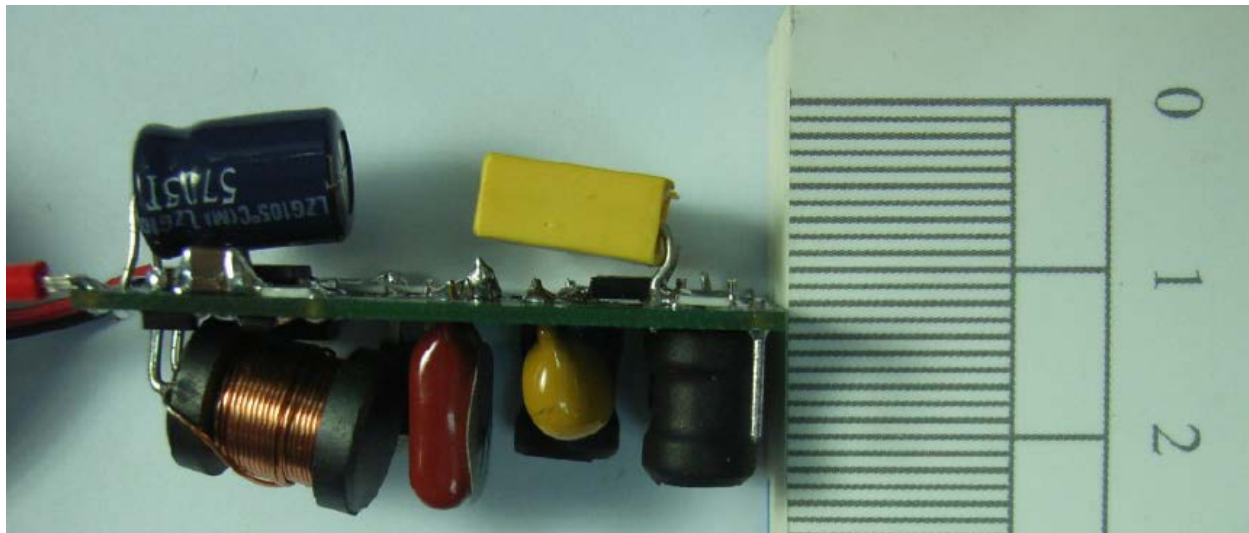
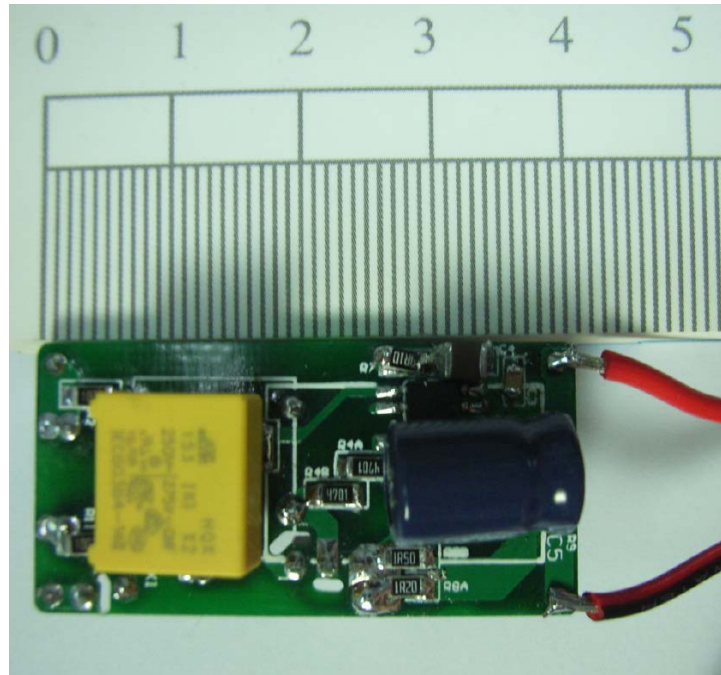
- All of component and magnetic device (transformer, Filter choke) shall NOT exceed 100°C.

Result:

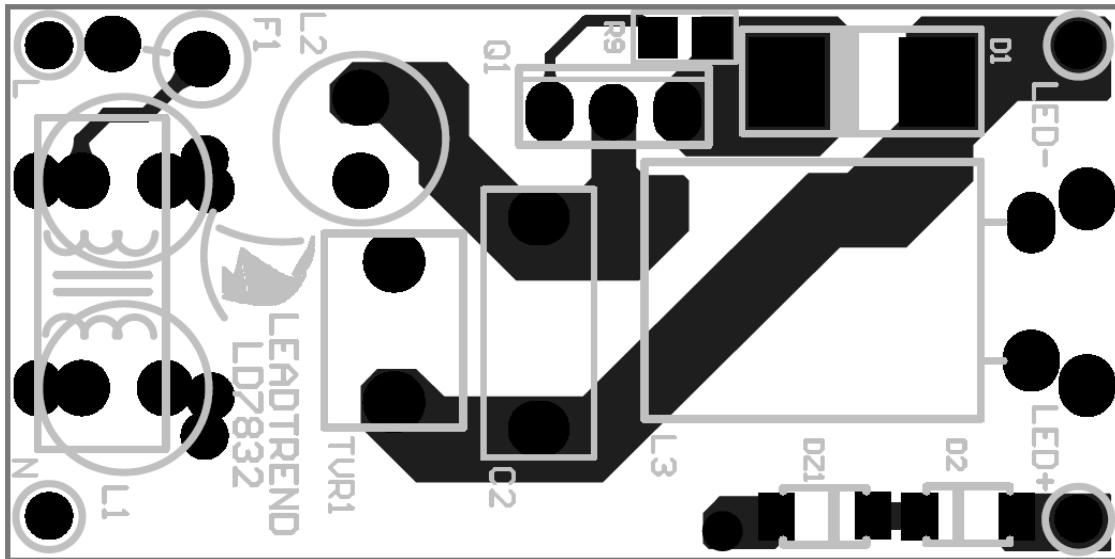
No.	Location	Max. Rating(°C.)	90V/60Hz(°C.)	264/60Hz(°C.)	Derating(%)	
					90V/60Hz	264/60Hz
1	BD1	150	49.3	45.4	32.87%	30.27%
2	D1	150	56.1	49.1	37.40%	32.73%
3	L3 wire	125	51.2	61.3	40.96%	49.04%
4	D2	150	42.2	62.4	28.13%	41.60%
5	IC1	150	49.9	56.4	33.27%	37.60%
6	R6A	150	53.2	62.7	35.47%	41.80%
7	Q1(Back)	150	30.9	31.8	20.60%	21.20%
Ambient					--	--

Table 7 Key Parts for Thermal Test

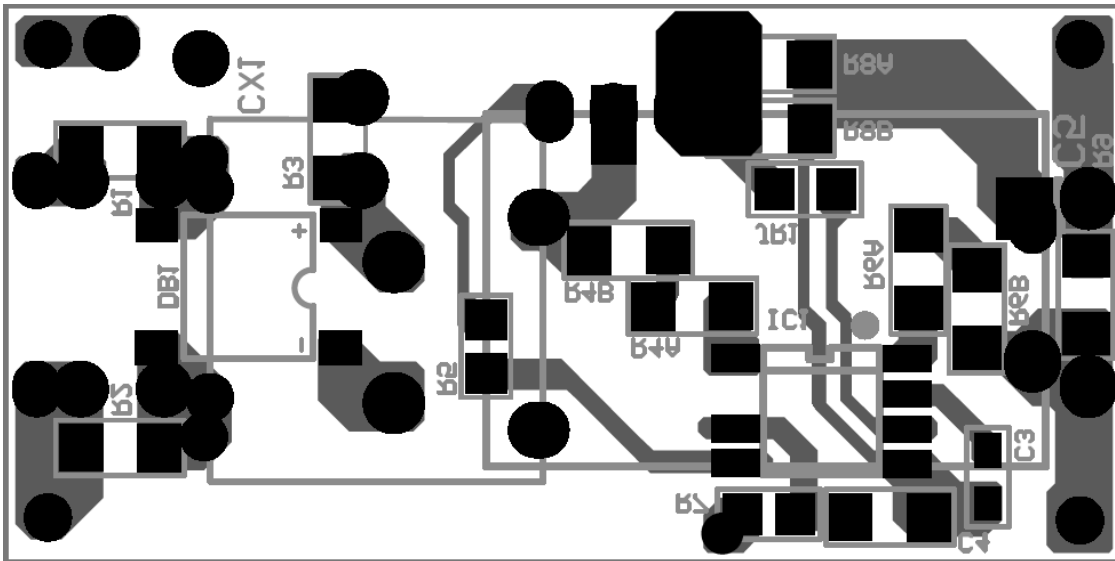
IV. Photograph



V. Gerber file



TOP LAYER



BOTTOM LAYER