

Demo Board Test Report for LD7830

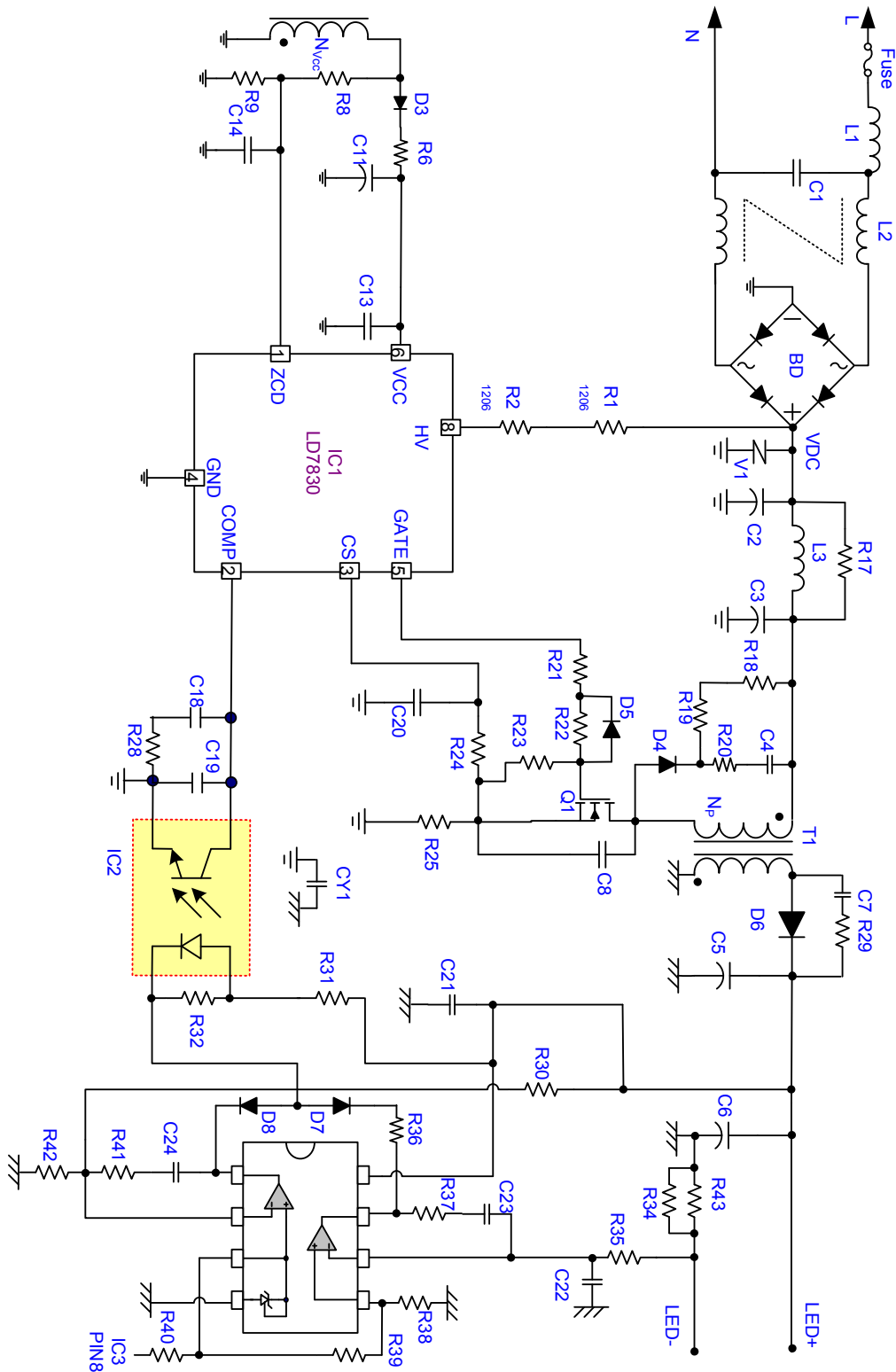
--- 16.8W (24V, 0.7A) LED Lighting Power

Tested by	Reviewed by	Approved by
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I. Schematic


II. BOM

P/N	Component Value	Note
Fuse	2A/250V	
V1	Varistor	471
R1	4.7k/ 1206	
R2	4.7k/1206	
R6	0/0805	
R8	200k/ 0805	
R9	36k/ 0805	
R17	1k/ 1206	
R18, R19	51k/ 1206	
R20	10/ 1206	
R21	4.7/ 0805	
R22	47/ 0805	
R23	100k/ 0805	
R24	220/ 0805	
R25	0.36/ 1W	
R28	510/ 0805	
R29	51/ 1206	
R30	200k/ 0805	
R31	6.8k/ 0805	
R32	NC	
R34	0.1/ 1W	
R35	1k/ 0805	
R36, R37	0/ 0805	
R38	6.2k/ 0805	
R39	215k/ 0805	
R40	13k	
R41	39k/ 0805	
R42	22k/ 0805	
R43	NC	
C1	0.1uF	X-cap
C2	0.047uF/400V	塑膠電容
C3	0.1uF/400V	塑膠電容
C4	2.2nF/1206/500V	
C5, C6	470uF/ 35V	電解電容
C7	330pF/ 500V	
C8	NC	
C11	22uF/ 50V	
C13	0.1uF/ 0805	
C14	NC	
C18	3.3uF/ 0805	
C19	0.33uF/ 0805	

P/N	Component Value	Note
C21	0.1uF/ 50V	
C22	1uF/ 10V	
C23	0.1uF/ 50V	
C24	0.1uF/ 50V	
D3	RS1006FL	
D4	PS1010R	
D5, D7, D8	1N4148	
D6	10A/ 100V	
BD	600V/1A	
T1	T2250-01 1030	
L1	220uH/ MCD-0608-221k	美磊
L2	Leadtrend Design	
L3	1mH/ MCD-0912-102k	美磊
Q1	650/ 7A	Nikos
IC1	LD7830	SOP-7
IC2	EL817	
IC3	TSM103	SOP8
CY1	470pF/3kV	Y 電容

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III. EXECUTIVE SUMMARY

Office	HC
Model Name	LD7830 DemoBoard#01
Version	0
IC	LD7830(D/C: M8)

TEST	Result	Comments
5. Green Mode Power Consumption	PASS	
6. Turn On Delay Time	PASS	
7. Output Short Protection	PASS	
8. Efficiency , PF Test	PASS	
9. Stress Voltage Test	PASS	
10. Thermal Test	PASS	

1. Input Voltage & Frequency

The unit shall be capable of operating as a universal AC input power supply accepting AC inputs. The power supply shall operate between the following voltages (from 90V to 264V). The supply will be designed to operate for a Table 1.

	Minimum	Normal	Maximum
Input Voltage	90Vac	110Vac	264Vac
Frequency	60HZ	60HZ	60HZ

Table 1.

2. Output Loads

Parameter	Output Voltage			Output Constant Current (at CV:24V, or CR: 34.2Ω)		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
		24V		0.665A	0.7A	0.735

Table 2.

3. Line Regulation

Test Conditions:

Input: 90Vac/115Vac/230Vac/264Vac(60Hz)

Output: CV mode (24V)&CR mode(34.2Ω)&NoLoad

Ambient Temperature : 25°C

Input Voltage(Vac)	90Vac	115Vac	230Vac	264Vac
Output Curren(A)	704	703	702	701

Table 4-1. CV mode (24V)

Input Voltage(Vac)	90Vac	115Vac	230Vac	264Vac
Output Curren(A)	704	704	701	701

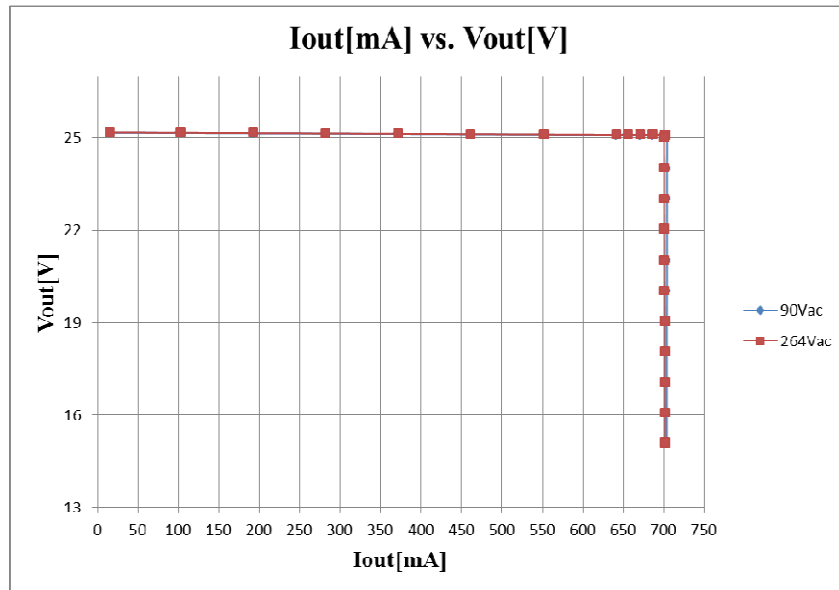
Table 4-2. CR mode (34.2Ω)

Input Voltage(Vac)	90Vac	115Vac	230Vac	264Vac
Output Voltage (V)	25.19	25.19	25.19	25.19

Table 4-3. No Load

4. CV-CC Curve
Test Condition:
Input: 90Vac/115Vac/230Vac/264Vac (60Hz)

Output: CC mode(15mA–700mA) and CV mode(15V-25V)

Ambient Temperature: 25°C

5. Green Mode Power Consumption

The input power of power supply shall remain **less than 500mW** under output at no load condition.

Test Condition:
Input: 90Vac/115Vac/230Vac/264Vac (60Hz)

Output: No Load

Ambient Temperature: 25°C

Test Result: PASS

V _{in} (Vac)	P _{out} (W)	P _{in} (mW)
90	No Load	230.5
115	No Load	246.8
230	No Load	236.1
264	No Load	245.5

Table 3

6. Turn On Delay Time

Turn on delay time will be less than 3 seconds at full load. Turn on delay time is measured as the delay between input voltage being applied at 0° phase angle and when the outputs arrive within 10% of their operating value. Turn on delay time is measured using an input voltage of 90VAC(rms) and input frequency of 60Hz.

Test Conditions:

Input: 90Vac(60Hz)

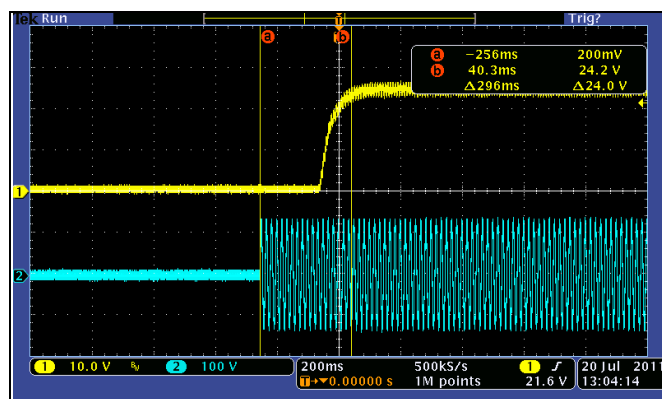
Output: CV mode (24V)

Ambient Temperature : 25°C

Test Result: PASS

Input	T _{turn on delay}
90Vac	296ms

Table 5.



Turn on Time Test
 Vin: 90Vac/60Hz
 O/P: 24V/0.7A
 CH1: V_{O_+24V}
 CH2: AC Input Voltage
 Reading: **296ms**

Fig.1

7. Output Short Protection

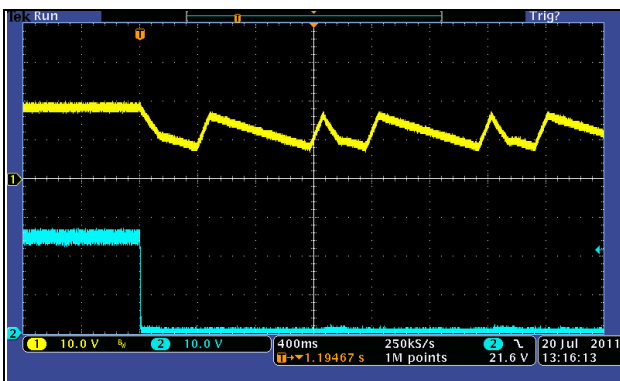
The supply shall be designed with appropriate output short circuit protection. This protection shall be activated in the event of a short or long-term condition happened. The primary shall limit the total power without inflicting any damage to any internal supply components and shall be reversible pending removal of the cause of the condition and without any user intervention.

Test Condition:

Input: 90Vac/264Vac (60Hz)

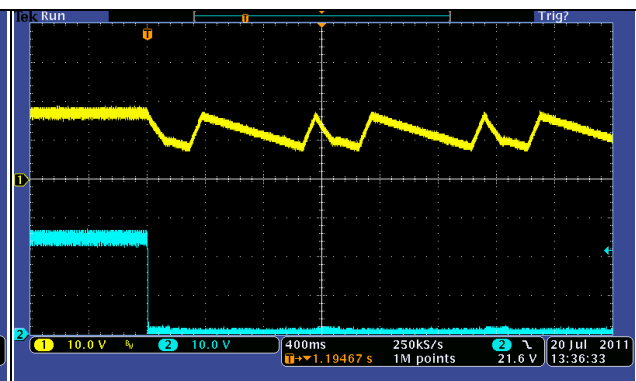
Ambient Temperature: 25°C

Test Result: PASS



Output Short Protection
 Vin: 90Vac
 O/P : +24V=0A→Short
 CH1: V_{O,+24V} CH2: V_{cc}

Fig.2



Output Short Protection
 Vin: 264Vac
 O/P : +24V=0A→Short
 CH1: V_{O,+24V} CH2: V_{cc}

Fig.3

8. Efficiency and PF Test

The efficiency of power supply shall be measured throughout its specified operating input range and at output maximum load conditions. It should remain **80% minimum**. PF > 0.9 .

Test Condition:

Input: 90Vac/115Vac/230Vac/264Vac(60Hz)

Output: CV mode (24V)&CR mode(34.2Ω)

Ambient Temperature: 25°C

Test Result: **PASS**

VIN,ac	90V	115V	230V	264V
PF(CV mode) Electronic Load:24V	0.988	0.986	0.941	0.928
PF(CR mode) Electronic Load:34.2Ω	0.987	0.986	0.942	0.943
Efficiency (CR mode) Electronic Load:24V	86.48 %	87.94 %	88.94 %	88.76 %

Table 6 Efficiency, PF TEST.

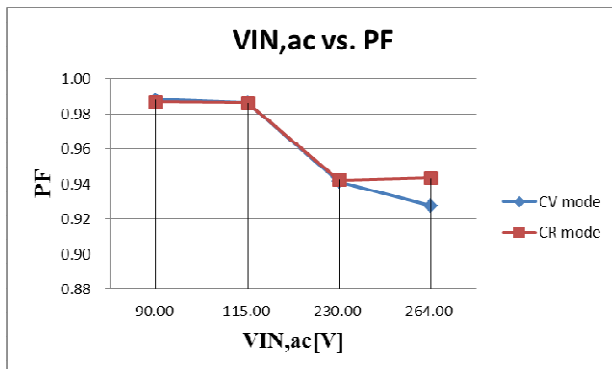


Fig.4 VIN,ac vs. PF curve

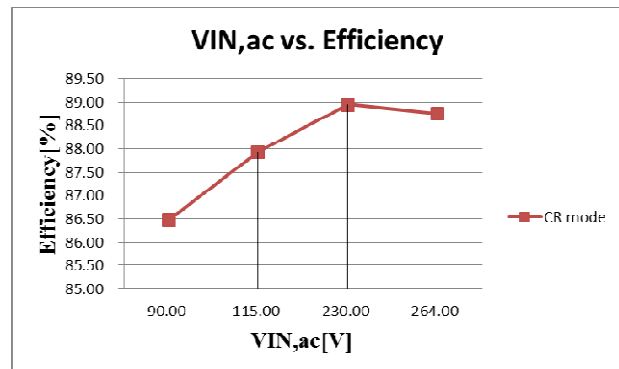


Fig.5 VIN,ac vs. Efficiency curve

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%**.
- Input line bulk capacitors limits are **100%** (continuous).

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

Output Power: CR mode (34.2Ω)

No.	Location	Max. Rating(V)	Steady State(90V / 60HZ)	
			Measurement	Derating(%)
			V	V
1	Q1	700	392	56.00%
2	D6	100	47.6	47.60%

Table 7-1.

No.	Location	Max. Rating(V)	Transient State(90V / 60HZ)	
			Measurement	Derating(%)
			V	V
1	Q1	650	397	61.08%
2	D6	100	52.2	52.20%

Table 7-2.

No.	Location	Max. Rating(V)	Steady State(264V / 60HZ)	
			Measurement	Derating(%)
				V
1	Q1	650	628	96.62%
2	D6	100	92	92.00%

Table 7-3.

No.	Location	Max. Rating(V)	Transient State(264V / 60HZ)	
			Measurement	Derating(%)
				V
1	Q1	650	634	97.54%
2	D6	100	96	96.00%

Table 7-4.

10. Thermal Test
Test Condition:

- Set the output loads at full load and ambient 25°C.
- The PSU test on everyone voltage and frequency.
- Born-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	BD	150	56.1	39	37.40%	26.00%
2	D4	150	52.2	21.9	34.80%	14.60%
3	T1	150	51.9	58.9	34.60%	39.27%
4	D6	130	58.6	58.1	45.08%	44.69%
5	R34	150	43.9	40.9	29.27%	27.27%
6	Q1 Body	150	47.1	47.1	31.40%	31.40%
7	IC1	150	41.6	43.5	27.73%	29.00%
8	R18	150	59.6	60.3	39.73%	40.20%
Ambient					--	--

Table 8. Key Parts for Thermal Test

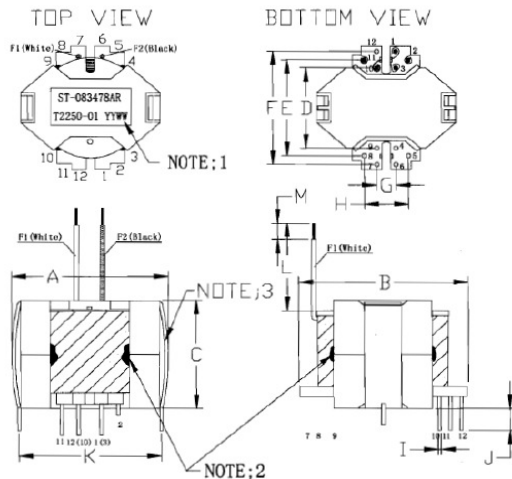
IV. Transformer Specification:

朝電科技股份有限公司

Customer: 通嘉科技

Descriptions: ST-083478AR

1. DIMENSION (UNIT: mm)

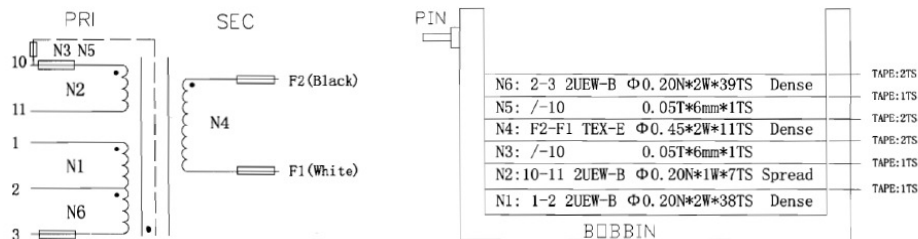


A	28.0max.
B	26.0max.
C	18.5max.
D	14.4±0.5
E	18.0±0.5
F	21.5±0.5
G	3.5±0.5
H	7.1±0.5
I	φ0.6±0.1
J	3.0min.
K	25.0±0.5
L	40.0±3.0
M	10.0±2.0

Note :

1. marking
2. Epoxy
3. clip
4. pin2 cut off 1/2
5. pin4,5,6,7,8,9,12 cut off
6. vacuumize varnish

2. CONNECTION



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 E-Mail:Sales@AsatechCorp.net

朝電科技股份有限公司

3. ELECTRICAL CHARACTERISTICS (1KHz/1.0V)

L(1-3): 1.4mH ± 5%

DCR (1-3): 1.02Ω max

4. Hi-Pot Test:

AC 3000V/60Hz/5mA ; Between Wire Pri. to Wire Sec. for one seconds.

AC 1500V/60Hz/5mA ; Between Wire to Coil for one seconds.

5. Insulation Test:

The insulation resistance is between coil to coil to core measured
by DC 500V must be over 100MΩ

6. Material List:

No.	Description	Material	manufacturer	UL File No.
1	Core	Ferrite core size : RM8	PF-2A equate	Huayuan.Co.,ltd
2	Bobbin	Phenolic T375J 94V-0	Changchun	E59481(S)
3	Wire	2UEW-B	Guangdong Ronsen Super Micro-Wire Co., ltd	E164502
4	Insulating Tape	PZ-280 130°C	Jingjiang Yahua Pressure Sensitive Glue Co.,ltd	E178515
5	Teflon Tube	Teflon tube TFL 150V 200°C	Fureda Plastic Co., ltd	E254113
6	Epoxy	BN-600H	Bangning Co., ltd	
7	Copper Foil	0.5T*6mm	HongLiYuanElectronics (ShenZhen) Co., ltd	
8	Triple Insulating Wire	TEX-E	Dah Jin Technology Co.,ltd	E236542
9	Varnish	1032BH 國精 Class B 130°C	Qualipoly Chemical Corp	E213437

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