

**Title :** Specification-Flat lamp panel (1.8'') CL180610U01

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**Dept. :**

CCFFL Product

Approved By	Review By	Prepared By
	Controlled Document	Yes No
	Confidential Document	

## Specification-Flat Lamp Panel (1.8") CL180610U01

### 1 PURPOSE

This specification describes the methods that how we measure CL180610U01 flat lamp panel. It includes CL180610P01 & Inverter reliability, optical characters and outline dimensions.

### 2 SCOPE

The specifications are applicable to the CL180610U01 flat lamp panel.

### 3 RESPONSIBILITIES

N.A.

### 4 REFERENCES

N.A.

### 5 APPLICABLE DOCUMENTS

N.A.

### 6 TERMS AND DEFINITIONS

N.A.

### 7 CONTENTS

#### 7.1 Operating and storage temperature range :

Operating temperature range	-10 to 60
Storage temperature range	-20 to 70

#### 7.2 Outline dimension

Refer to the attachment I.

#### 7.3 Weight 6.9 ±0.5 g

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7.4 Surface condition

The criteria for defects on that lamp active surface screen is as follows.

Item	Spec. ( mm )	Allowable points
Spot	0.2	--
	0.2 < 0.4	3
	0.4 <	0

is the equivalent diameter of the defect

NOTE : That any two defect spots with diameter of 0.2 mm < 0.4 mm whose distance between them is less than 10 mm is not allowed.

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7.5 Reliability : The testing criteria for CL180610U01 is as the following items:

No.	Test Item	Test Condition	Pass/Failure Criteria
1	Vibration Test	Sweep frequency : 10~55~10Hz Stoke : 1.5 mm Sweeping cycle : 1 cycle in 5 min Period : 2hrs ( in each of 3 mutually perpendicular axis )	1. Any deformation and visible defect of appearance and structure is not allowed.  2. Optical characteristics specified in §7.6.3 shall be satisfied.  3. The quality of effective screen, as specified in §7.6.3 shall be maintained.
2	Shock Test	Peak acceleration : 980m/s <sup>2</sup> ( 100G ) Duration of pulse : 6ms ±X , ±Y , ±Z Shock: 2 times (in both directions of mutually perpendicular axis)	
3	Drop Test (With normal packing)	Height: 60 cm Drop: 1 time (one corner, three edges and six surfaces )	
4	Pressure Proof Test	Absolute pressure: 1.5 ± 0.1atm Duration: 30 min	
5	High Temperature Storage Test	70±3 , 240 hrs	
6	Low Temperature Storage Test	-20±3 , 240 hrs	1. Any deformation and visible defect of appearance and structure is not allowed.  2. Luminance at the center of the screen should be larger than 70 % of min. of the spec. request in § 7.6.3-2.  3. Operation test condition : 5 V input with 6±1 cm high voltage cable
7	High Temperature & High Humidity Storage Test	60±3 , 90% 240 hrs	
8	Temperature Cycling Storage Test	-20 ±3 /15min 70 ±3 /15 min 24 cycles	
9	High Temperature Operational Test	60 ± 3 240 hrs	
10	Low Temperature Operational Test	-10± 3 240 hrs	
11	High Temperature & High Humidity Operational Test	60±3 , 90% 240hrs	

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No.	Test Item	Test Condition	Pass/Failure Criteria
12	Life Test	Operation for more than 5000hr ( Ambient temperature : 20~30 )	Luminance at the center of the screen should be more than 50% of min. of the spec. request in §7.6.3-2. Uniformity shall be more than 50%. ( Refer to §7.6.3-3 )

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7.6 Optical characteristics

7.6.1 Applied model number : CL180610U01

7.6.2 Test conditions and setups :

7.6.2.1 Temperature and humidity for testing environment:

Temperature: 25 ±3 ; Humidity: 45~85%

7.6.2.2 Before starting the test, the flat lamp to be measured shall be turned off and kept in the standard testing environment for at least one hour.

7.6.2.3 The testing should be held in a windless but not necessarily in airtight atmosphere.

7.6.2.4 Before take the optical characteristics measurement, shall let the flat lamp operate for at least one minute to warm up.

7.6.2.5 Input voltage ( Inverter )

The tests should use DELTA OPTOELECTRONICS standard inverter.

(00A-2351A Ref. Attachment II )

Item	MIN	TYP	MAX	UNIT	
Input voltage	4.7	5	5.3	V	
Input SYNC. Pulse (input power: Typ. 0.9 w Max.:1.0 w) (for reference)	Frequency*	19.8	20.8	21.8	KHz
	Duty*	7.2	7.6	7.8	μs
	Pulse Level VH	4.5	5	5.5	V
	Pulse Level VL	-0.5	0	0.5	V
	Vsec-pp	~	1600	~	V
	Isec-pp	~	40	~	mA

“\*” : 1. frequency and duty are based on CCFLL panel operation only

2. operating with LCD panel, frequency and duty maybe need to fine tune to avoid

influence.

7.6.2.6 Instrument for measuring luminance and tints: Minolta colorimeter CS-100 with the close-up lens No. 122. (The distance between the lamp and the lens is about 30cm)

7.6.3 Optical measurements: Four optical characteristics optical characteristics.

	Item	Specification	Remarks
1	Effective Luminous Area	39.0x29.0mm ( 1.8" inch diagonal )	See attachment I
2	Luminance ( initial state )	2,500 cd/m <sup>2</sup> (typ.) 2000 cd/m <sup>2</sup> (min)	Measured at the center of the effective luminous screen area. ( with reflector )
3	Uniformity ( initial state )	70 %	See Note I
4	Tints ( initial state )	CIE : x=0.30 ± 0.02 ; y=0.30 ± 0.02 Phosphor : Three wave spectrum : R : 611nm G : 544nm B : 446nm	Measured at the center of the effective luminous screen area

7.7 Package: see attachment III

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## 8 FORM

N.A.

## 9 ATTACHMENT

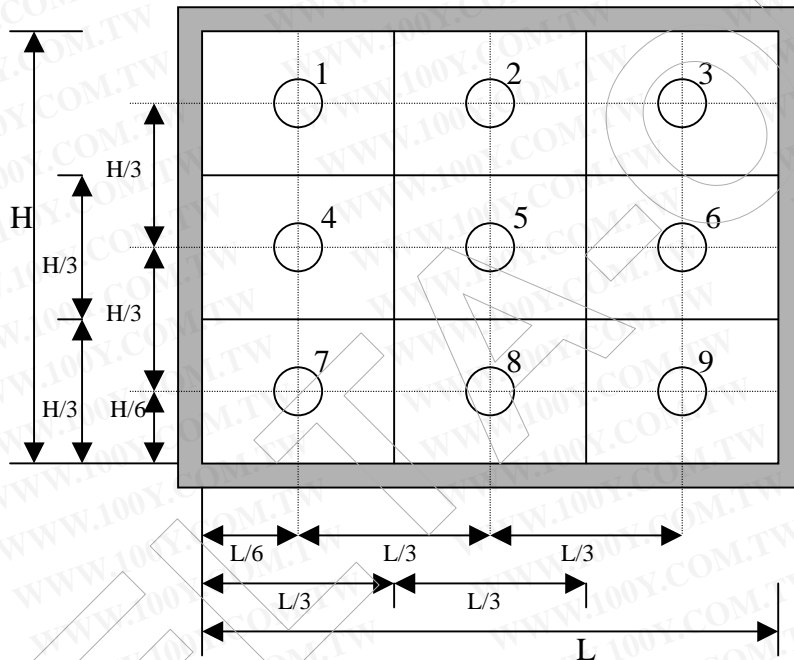
Attachment I: Outline dimensions

Attachment II: Driving circuit

Attachment III: Package diagram

## 10 NOTES

10.1 The luminance is measured at 9 points on the lighting surface of the module as shown below:



Definition :

Minimum luminance  $L_{\min}$ : the minimum luminance of the 9 measurement points

Maximum luminance  $L_{\max}$ : the maximum luminance of the 9 measurement points

Luminance uniformity:  $100 \% \times L_{\min} / L_{\max}$

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## 10.2 Application Pre-caution

10.2.1 To avoid the hard object knocking the panel, specially the tube part

10.2.2 To care the tube protection for the tray of storage and transportation

10.2.3 To avoid the acid liquid contamination on the frit to cause micro-leakage

10.2.4 Electrode soldering process

10.2.4.1 To prevent the frit and electrode conjunction damaged, avoid over pulling, bending the electrode

10.2.4.2 To prevent the thermal shock on the frit and electrode conjunction do not solder too long time

10.2.4.3 To avoid less than 1.9 mm counted from the frit to bend the electrode

10.2.5 To prevent inverter input/output voltage drop due to bad soldering, length between power supply and inverter, length between inverter and panel

10.2.6 Non-correlation between CCFLL turn on voltage and failure mode

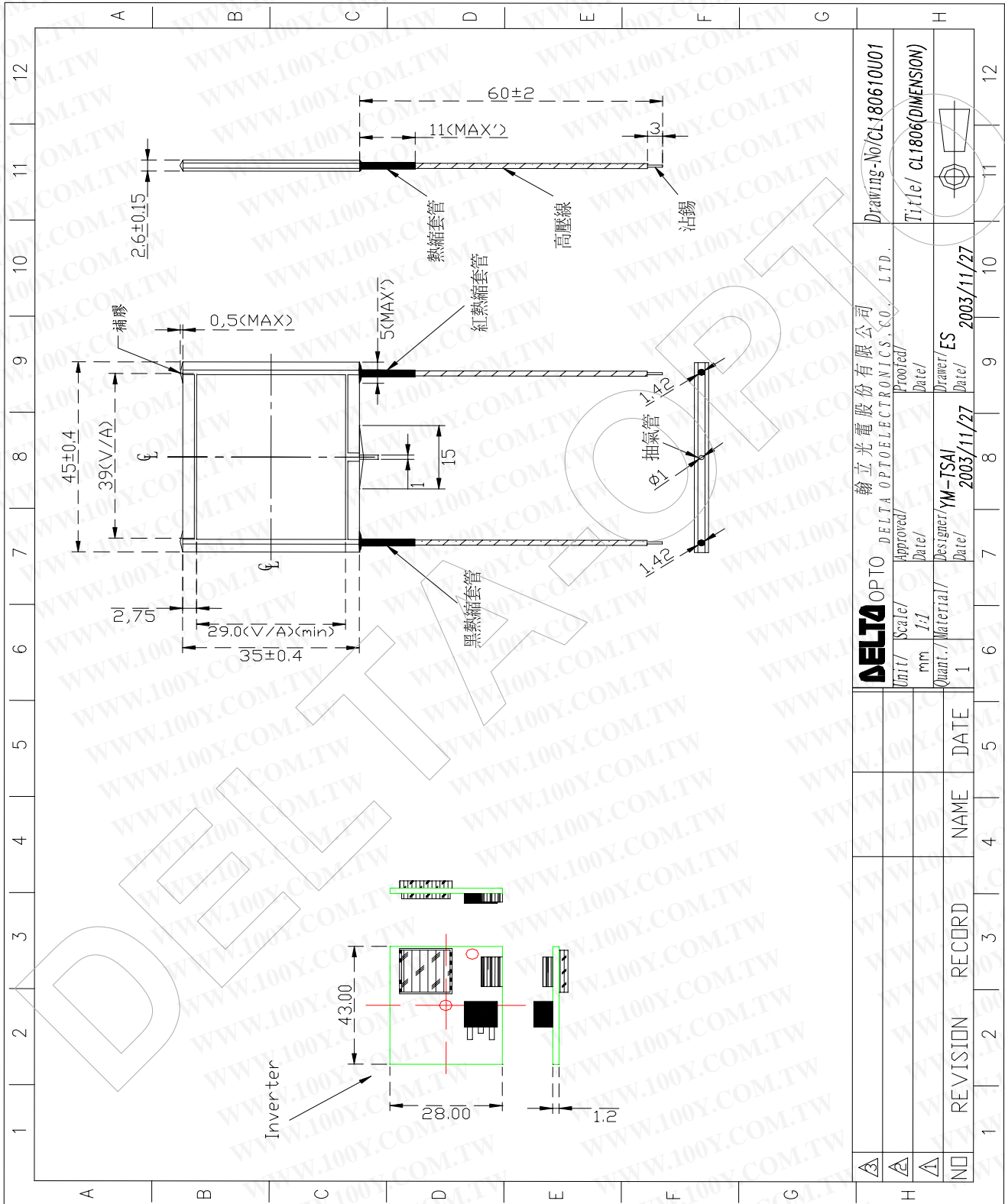
10.2.7 Operation and storage temperature range should be within specification

10.2.8 Inverter input voltage should be within specification

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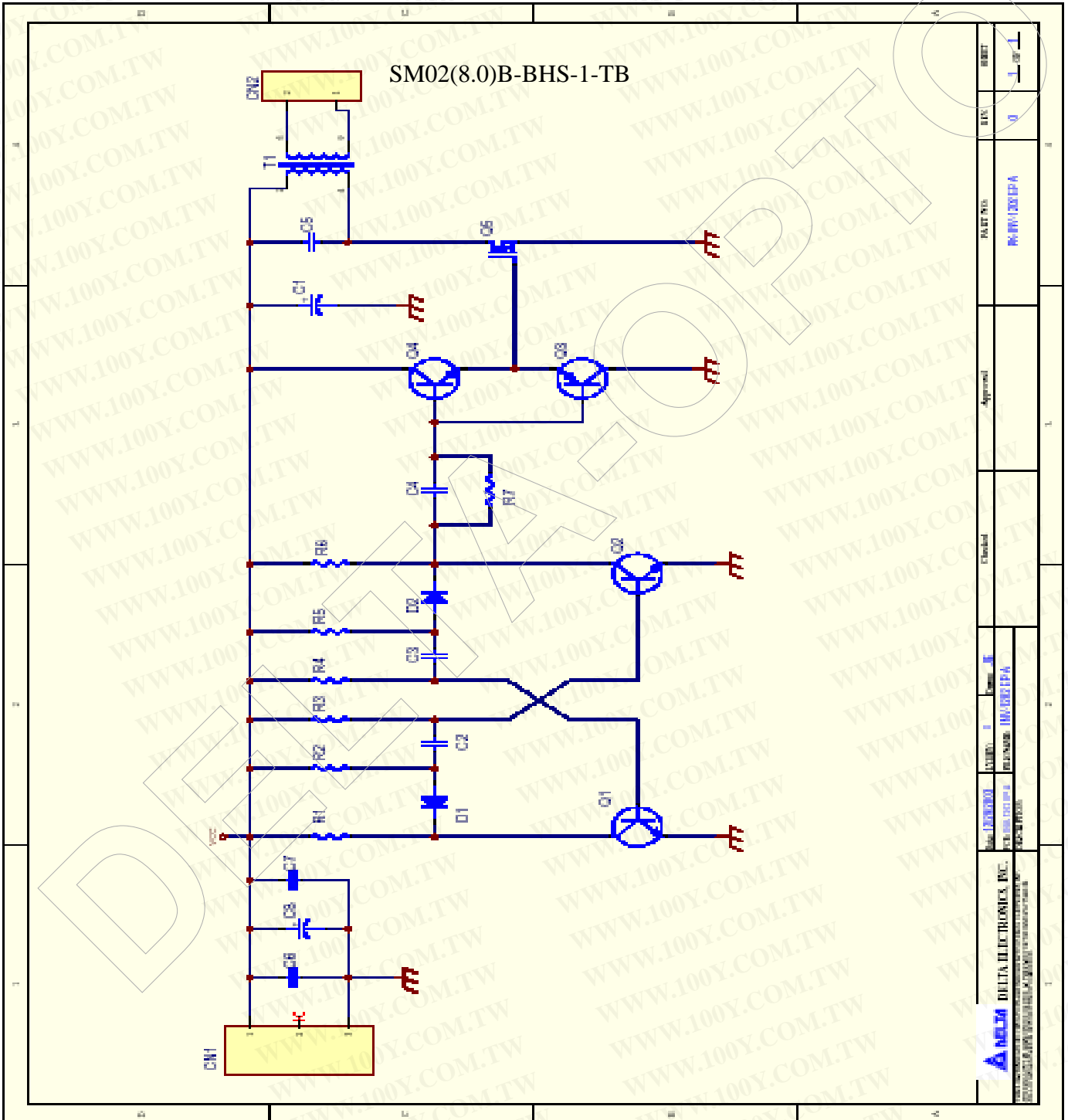
Attachment I: Outline dimensions



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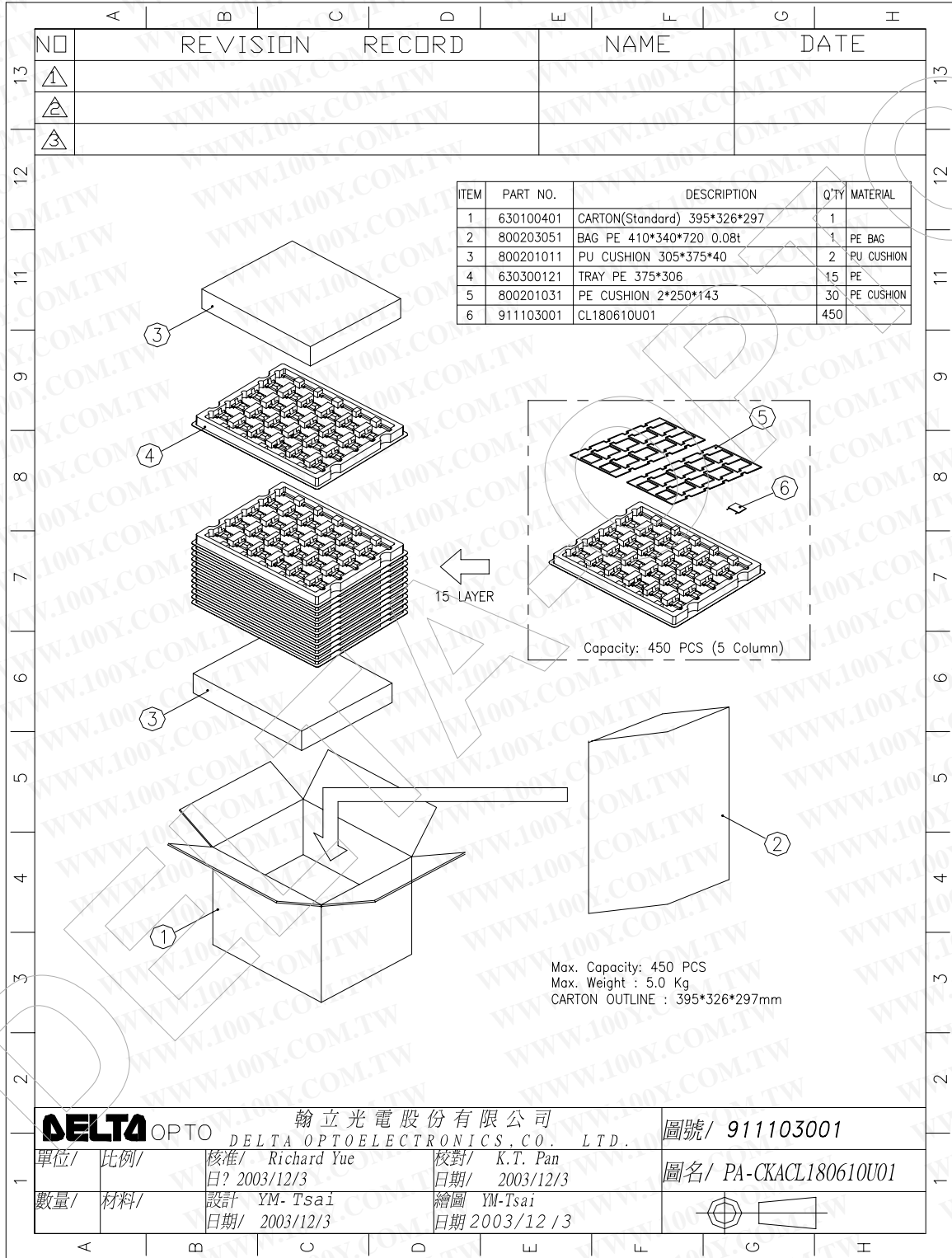
Attachment II: Driving circuit

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Attachment III: Package diagram



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