



CUSTOMER APPROVAL SHEET

Company Name	Foryou
MODEL	C080EAT02.0
CUSTOMER APPROVED	Title : Name :

- ☐ APPROVAL FOR SPECIFICATIONS ONLY (Spec. Ver. 0.0)
- ☐ APPROVAL FOR SPECIFICATIONS AND ES SAMPLE (Spec. Ver. 0.0)
- ☐ APPROVAL FOR SPECIFICATIONS AND CS SAMPLE (Spec. Ver. 0.0)
- ☐ CUSTOMER REMARK :

1 Li-Hsin Rd. 2. Science-Based Industrial Park
Hsinchu 300, Taiwan, R.O.C.
Tel: +886-3-500-8899
Fax: +886-3-577-2730



Doc. Version	0.0
Total Page	26
Date	2016/12/08

Product Specification

8.0" COLOR TFT-LCD MODULE

MODEL NAME: C080EAT02.0

< ◆ > Preliminary Specification

< > Final Specification

Note: The content of this specification is subject to change.

© 2016 AU Optronics
All Rights Reserved,
Do Not Copy.

ALL RIGHTS STRICTLY RESERVED. ANY PORTION OF THIS PAPER SHALL NOT BE REPRODUCED, COPIED, OR TRANSFORMED TO ANY OTHER FORMS WITHOUT PERMISSION FROM AU OPTRONICS CORP.





Version 0.0

Page: 4/26

Contents

A. General Description	5
B. Features	5
C. Physical Specifications.....	6
1. TFT LCD Panel.....	6
D. Outline Dimension.....	7
1. TFT-LCD Module.....	7
2. OGS-TP.....	8
E. Electrical Specifications	9
1.1 TFT LCD Panel Pin Assignment	9
1.2 Touch sensor:.....	11
2. Differential Input Data Format.....	12
a. JEIDA format (DE mode).....	12
3. Input Timing Diagram	13
4. Absolute Maximum Ratings	14
5. DC Electrical Characteristics	14
a. Power Specification	14
b. Signal DC Electrical Characteristics.....	15
c. Backlight Driving Conditions (Note 1).....	16
6. AC Electrical Characteristics.....	17
a. Input AC characteristics	17
b. Differential signal AC characteristics.....	17
7. Power on/off sequence.....	18
a. Power on sequence:	18
b. Power off sequence:.....	20
c. VDD off to on timing	21
F. Optical specifications (Note 1, 2)	22
G. Reliability Test Items(Note 1~3).....	24
H. Packing and Marking	25
1. Packing Form.....	25
2. Module/Panel Label Information.....	26
3. Carton Label Information	26

ALL RIGHTS STRICTLY RESERVED. ANY PORTION OF THIS PAPER SHALL NOT BE REPRODUCED, COPIED, OR TRANSFORMED TO ANY OTHER FORMS WITHOUT PERMISSION FROM AU OPTRONICS CORP.



Version 0.0

Page: 5/26

A. General Description

C080EAT02.0 is an a-Si & Transmissive type Thin Film Transistor Liquid Crystal Display (TFT-LCD) with AHVA (Advanced Hyper View Angle) technology. This model is composed of a TFT-LCD, a driver, an FPC (flexible printed circuit), a backlight unit, and a capacitive touch sensor glass. TCON (timing controller) is also embedded in source driver.

B. Features

- 8.0"-inch display
- 1280 x 720RGB resolution in RGB stripe dot arrangement
- High brightness
- Interfaces: LVDS (8 bit, JEIDA, DE mode)
- AHVA – wide view technology
- RoHs compliance



Version 0.0

Page: 6/26

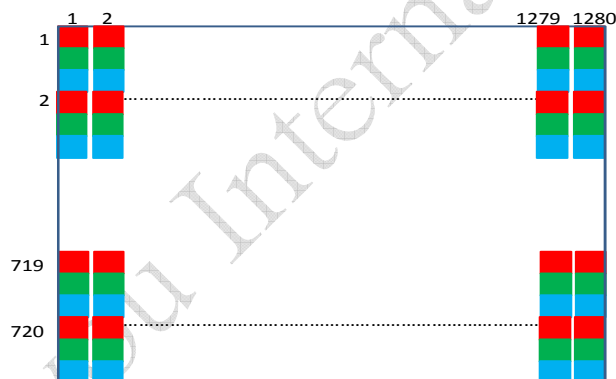
C. Physical Specifications

1. TFT LCD Panel

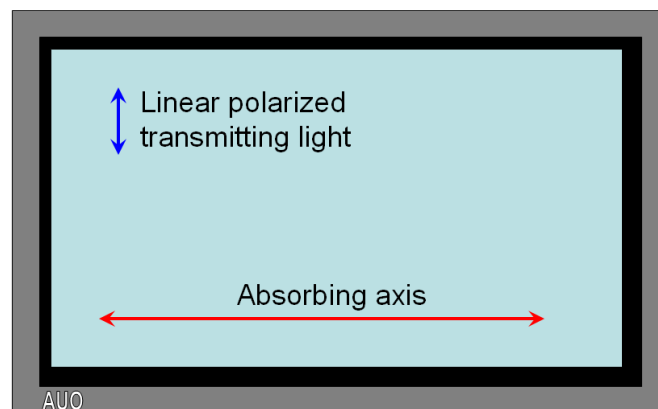
NO.	Item	Unit	Specification	Remark
1	Display Resolution	dot	1280(H)x 720RGB(V)	
2	Active Area	mm	175.64 x 98.36	
3	Screen Size	inch	8.0(Diagonal)	
4	Dot Pitch	μm	138	
5	Color Configuration	—	R. G. B. Stripe	Note. 2
6	Color Depth	—	16.7 M colors	
7	Overall Dimension	mm	339.51(H) × 118.45(V) × 8.49(T)	Note. 1
8	Weight	g	275 (TBD)	
9	Display Mode	—	Normally Black	
10	Surface Treatment	—	AG	

Note 1: FPCA is excluded

Note 2: Below figure shows dot stripe arrangement.



Note 3: Below figure shows absorbing axis



ALL RIGHTS STRICTLY RESERVED. ANY PORTION OF THIS PAPER SHALL NOT BE REPRODUCED, COPIED, OR TRANSFORMED TO ANY OTHER FORMS WITHOUT PERMISSION FROM AU OPTRONICS CORP.

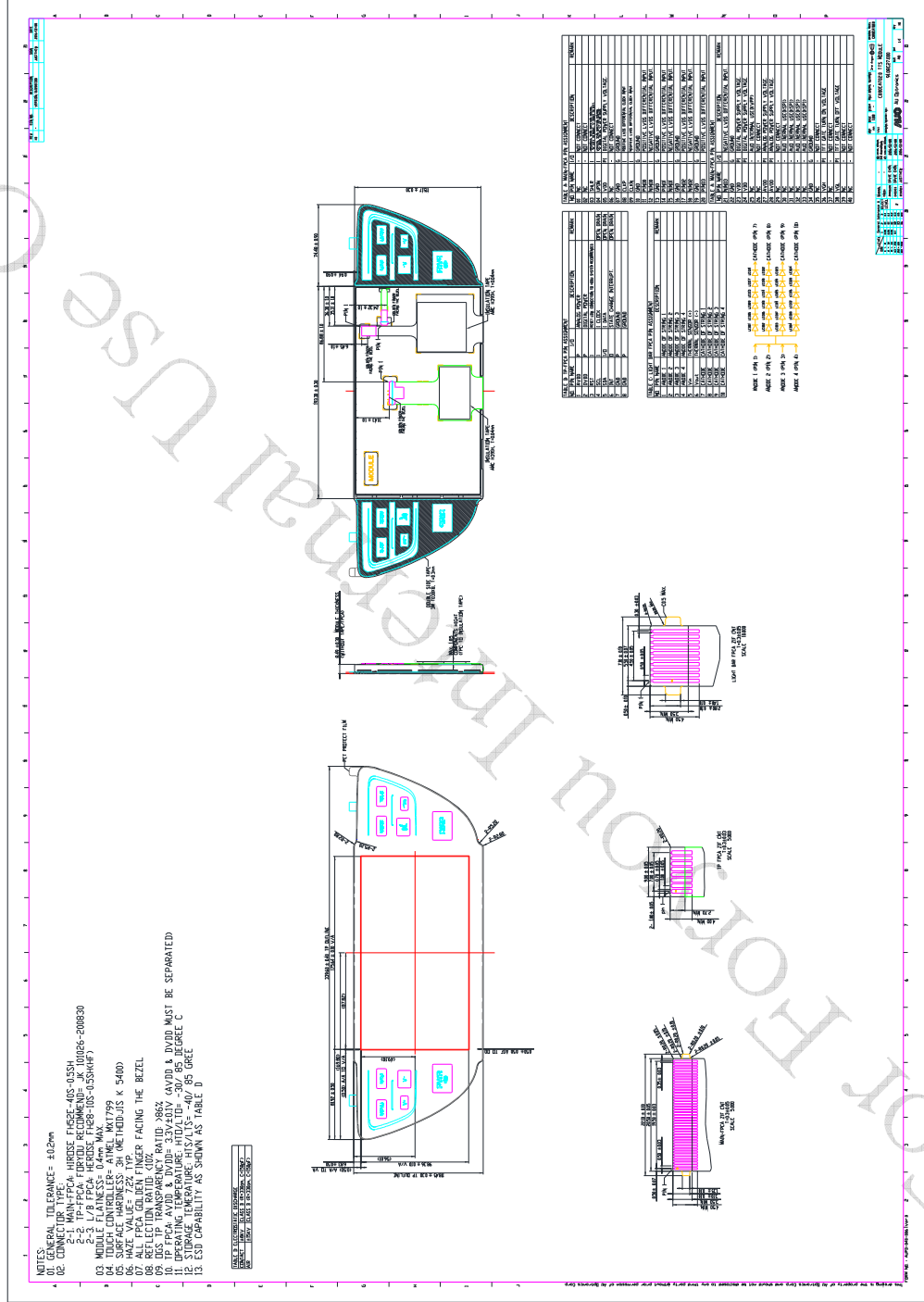


Version 0.0

Page: 7/26

D. Outline Dimension

1. TFT-LCD Module





Version 0.0

Page: 9/26

E. Electrical Specifications

1.1 TFT LCD Panel Pin Assignment

Recommended Connector: HIROSE FH52E-40S-0.5SH

No.	Pin Name	I/O	Description	Remarks
1	NC		Dummy	
2	NC		Dummy	
3	SHLR	I	Horizontal scan direction control. “H” Left to Right; “L” Right to Left.	Note1
4	UPDN	I	Vertical scan direction control. “H” Down to Up; “L” Up to Down.	Note1
5	VDD	PI	Digital power supply voltage.	
6	NC		Dummy	
7	GND	G	Ground.	
8	CLKP	I	Positive LVDS differential clock input.	
9	CLKN	I	Negative LVDS differential clock input.	
10	GND	G	Ground.	
11	PIND0	I	Positive LVDS differential input.	
12	NIND0	I	Negative LVDS differential input.	
13	GND	G	Ground.	
14	PIND1	I	Positive LVDS differential input.	
15	NIND1	I	Negative LVDS differential input.	
16	GND	G	Ground.	
17	PIND2	I	Positive LVDS differential input.	
18	NIND2	I	Negative LVDS differential input.	
19	GND	G	Ground.	
20	PIND3	I	Positive LVDS differential input.	
21	NIND3	I	Negative LVDS differential input.	
22	GND	G	Ground.	
23	VDD	PI	Digital power supply voltage.	
24	VDD	PI	Digital power supply voltage.	
25	NC/VPP		Dummy	
26	NC		Dummy	
27	AVDD	PI	Analog power supply voltage.	
28	AVDD	PI	Analog power supply voltage.	
29	NC		Dummy	
30	NC/CS		Dummy	
31	NC/SCL		Dummy	
32	NC/SDO		Dummy	
33	NC/SDI		Dummy	

ALL RIGHTS STRICTLY RESERVED. ANY PORTION OF THIS PAPER SHALL NOT BE REPRODUCED, COPIED, OR TRANSFORMED TO ANY OTHER FORMS WITHOUT PERMISSION FROM AU OPTRONICS CORP.

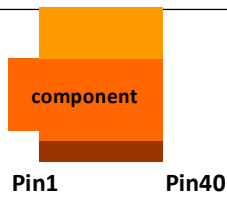
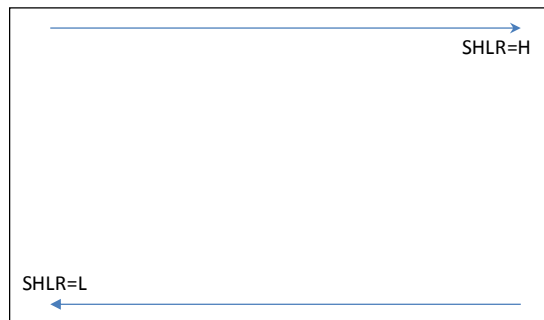


Version 0.0

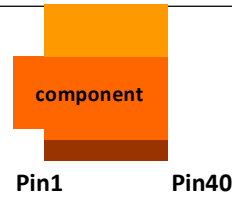
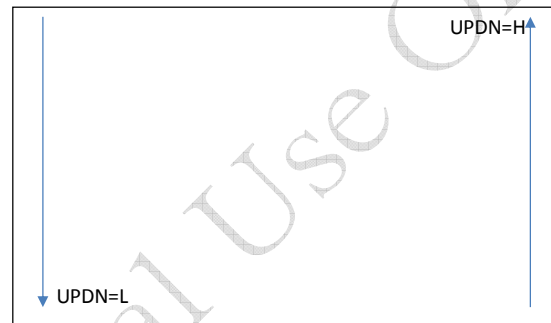
Page: 10/26

34	GND	G	Ground.	
35	NC		Dummy	
36	VGH	PI	Positive power supply voltage for TFT.	
37	NC		Dummy	
38	VGL	PI	Negative power supply voltage for TFT.	
39	NC		Dummy	
40	NC		Dummy	

I: Digital signal input, O: Digital signal output, G: GND, PI: Power input

Note1

金手指朝下



金手指朝下

ALL RIGHTS STRICTLY RESERVED. ANY PORTION OF THIS PAPER SHALL NOT BE REPRODUCED, COPIED, OR TRANSFORMED TO ANY OTHER FORMS WITHOUT PERMISSION FROM AU OPTRONICS CORP.



Version 0.0

Page: 11/26

1.2 Touch sensor:

Connector =捷康 101026-200850 (Recommended by Foryou)

Pin No.	Symbol	Description	Remark
1	AVDD	Analog Power	
2	DVDD	Digital Power	
3	RST	Reset, active low.	
4	SCL	I2C Clock	Open drain
5	SDA	I2C Data	Open drain
6	INT	Change line interrupt.	Open drain
7	GND	Ground	
8	GND	Ground	

ALL RIGHTS STRICTLY RESERVED. ANY PORTION OF THIS PAPER SHALL NOT BE REPRODUCED, COPIED, OR TRANSFORMED TO ANY OTHER FORMS WITHOUT PERMISSION FROM AU OPTRONICS CORP.



Version 0.0

Page: 12/26

2. Differential Input Data Format

a. JEIDA format (DE mode)

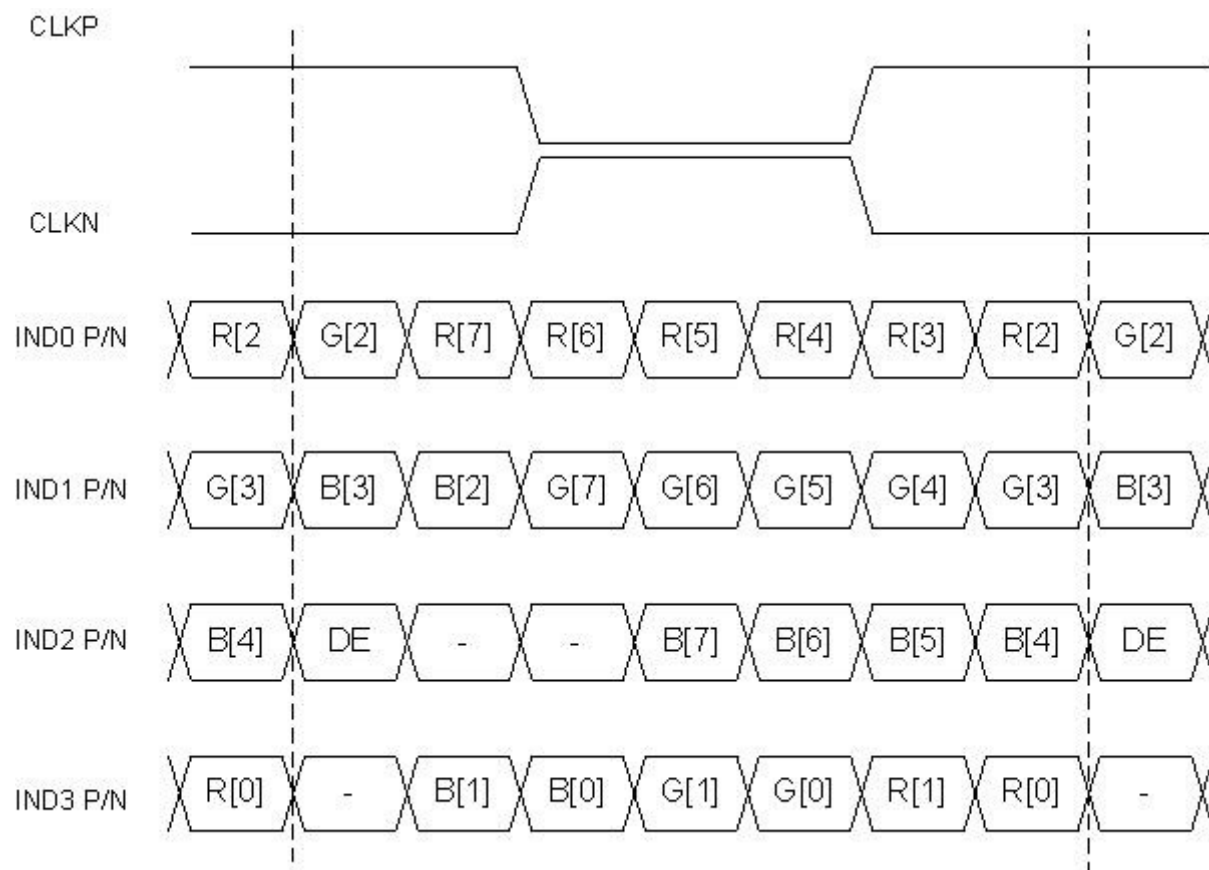


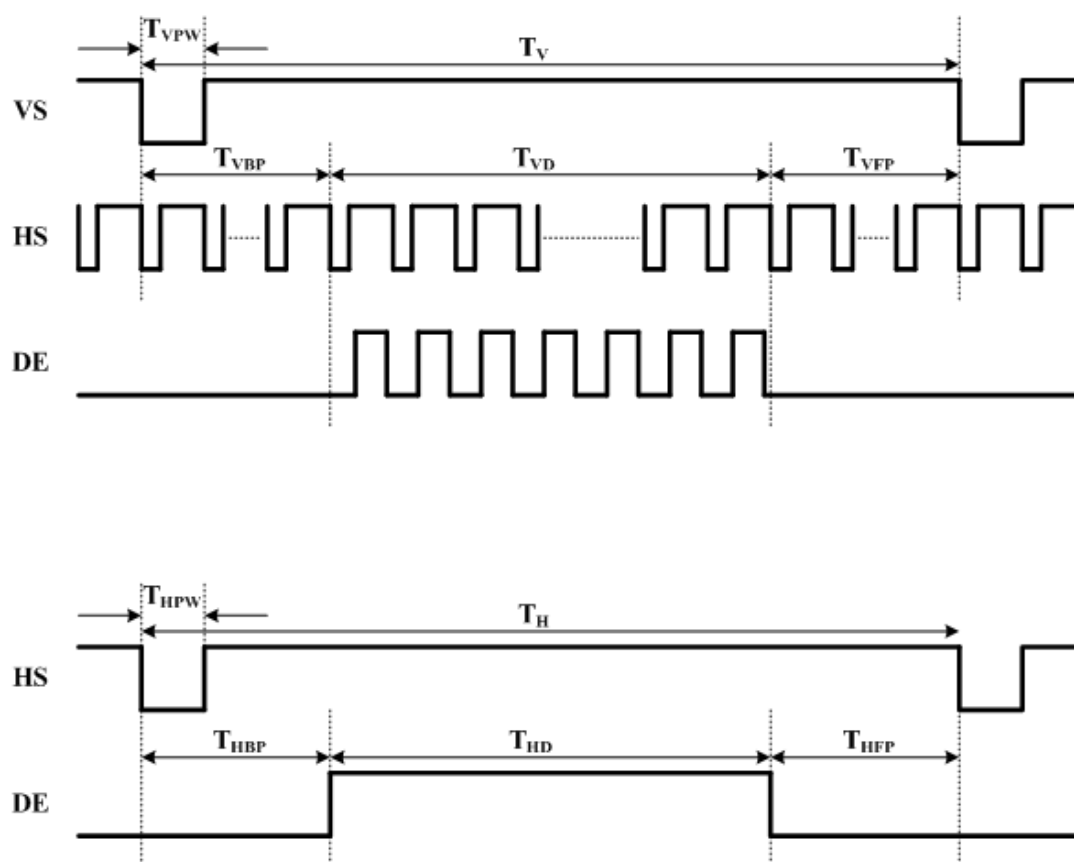
Fig. 1. LVDS input data JEIDA format



Version 0.0

Page: 13/26

3. Input Timing Diagram



Parameter		Symbol	Min.	Typ.	Max.	Unit.	Remark
CLK Frequency		F_{CLK}		71.2		MHz	
HSYNC	Period	T_H		1540		CLK	
	Horizontal display area	T_{HD}		1280		CLK	
	Blanking	$T_{HBP} + T_{HFP}$		260		CLK	
VSYNC	Period	T_V		770		HS	
	Vertical display area	T_{VD}		720		HS	
	Blanking	$T_{VBP} + T_{VFP}$		50		HS	

ALL RIGHTS STRICTLY RESERVED. ANY PORTION OF THIS PAPER SHALL NOT BE REPRODUCED, COPIED, OR TRANSFORMED TO ANY OTHER FORMS WITHOUT PERMISSION FROM AU OPTRONICS CORP.



Version 0.0

Page: 14/26

4. Absolute Maximum Ratings

Items	Symbol	Values		Unit	Condition
		Min.	Max.		
Power Voltage	VDD	-0.5	5	V	GND = 0V
	AVDD	-0.5	15	V	GND = 0V
	VGH	-0.3	40	V	GND = 0V
	VGL	-20	0.3	V	GND = 0V
	VGH-VGL	-0.3	40	V	GND = 0V
Operation Temperature	Topa	-30	85	°C	Ambient
Storage Temperature	Tstg	-40	95	°C	Ambient

Note: Functional operation should be restricted under normal ambient temperature.

5. DC Electrical Characteristics

The following items are measured under stable condition and suggested application circuit.

a. Power Specification

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Power Supply	VDD	3	3.3	3.6	V	
	IVDD	-	TBD	TBD	mA	
	AVDD	TBD	13.5	TBD	V	
	IAVDD	-	TBD	TBD	mA	
	VGH	TBD	(18)	TBD	V	
	IVGH	-	TBD	TBD	mA	
	VGL	TBD	(-8)	TBD	V	
	IVGL	-	TBD	TBD	mA	

Note 1: All conditions should be set typical value

Note 2: The panel can operate normally in the recommended operating condition.

Note 3: Test pattern is as the following picture..

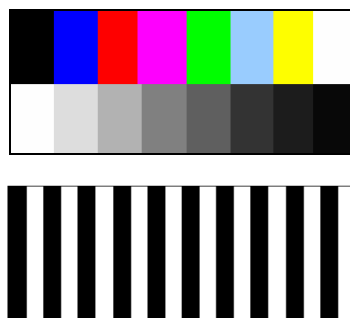


Fig2. Max current situation: Vertical stripe pattern alternating 0 gray scale with 255 gray scale every dot



Version 0.0

Page: 15/26

b. Signal DC Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Input signal voltage	V_i	-0.3	-	VDD	V	
Input high level voltage	V_{IH}	0.7VDD	-	VDD	V	
Input low level voltage	V_{IL}	GND	-	0.3VDD	V	
Differential input high threshold	R_{XVTH}	0.2	-	-	V	Note 1
Differential input low threshold	R_{XVTL}	-	-	-0.2	V	Note 1
Input voltage range (singled-end)	R_{XVIN}	0	-	(VDD-1.2)	V	Note 1
Input differential voltage	$ V_{ID} $	0.2	-	0.6	V	Note 1
Differential Input Common Mode Voltage	R_{XVCM}	$ V_{ID} /2$	-	(VDD-1.2) - $ V_{ID} /2$	V	Note 1

Note 1: LVDS interface signal DC characteristic

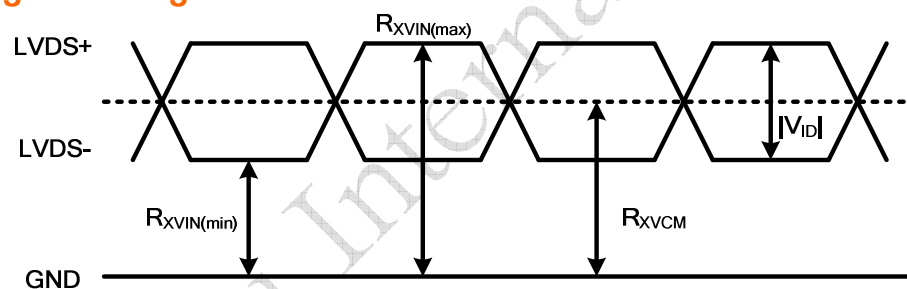
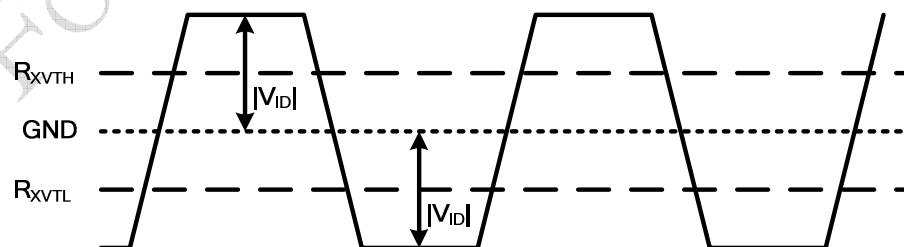
Single-end Signal**Differential Signal**

Fig. 4. LVDS DC characteristics diagram



Version 0.0

Page: 16/26

c. Backlight Driving Conditions (Note 1)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
BLU Power				5760		mW	Note 2
LED Current for Chain	I_F	At 25°C		80		mA	Single serial Note 3
Forward Voltage	V_F	$I_F=80(\text{mA})$ At 25°C	16.2	18	20.4	V	
LED Life Time	T_{LED}	At 25°C	10,000			hr	Note 4

Note 1: LED backlight is 24 LEDs (4strings, 6pcs for each string). Ambient temperature is 25 °C

Note 2: The LED supply power is for 4 strings of LED.

Note 3: The LED lifetime 10000hrs means , after normal use at 80mA, under +25°C, the brightness of **LED unit** decreases to 50% of original level.

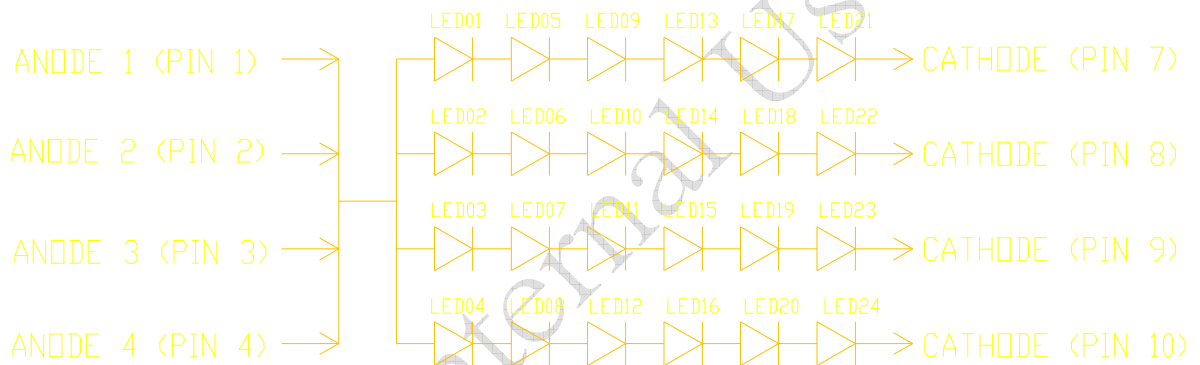


Fig. 5. Light bar structure

Backlight FPC connector = HIROSE FH28-10S-0.5SH(05)

No.	Pin Name	I/O	Description	Remarks
1	Anode 1	V_{in}	LED power supply voltage string 1	
2	Anode 2	V_{in}	LED power supply voltage string 2	
3	Anode 3	V_{in}	LED power supply voltage string 3	
4	Anode 4	V_{in}	LED power supply voltage string 4	
5	Thermistor(+)	R	Thermistor Sensor	
6	Thermistor(-)	R	Thermistor Sensor	
7	Cathode 1	G	Cathode	
8	Cathode 2	G	Cathode	
9	Cathode 3	G	Cathode	
10	Cathode 4	G	Cathode	

R: Resistance, G: GND, V_{in} : Power input

Gold finger side:

ALL RIGHTS STRICTLY RESERVED. ANY PORTION OF THIS PAPER SHALL NOT BE REPRODUCED, COPIED, OR TRANSFORMED TO ANY OTHER FORMS WITHOUT PERMISSION FROM AU OPTRONICS CORP.



Version 0.0

Page: 17/26

6. AC Electrical Characteristics

a. Input AC characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
VDD power on slew time	T_{POR}	10	-	-	ms	From 0V to 90% VDD

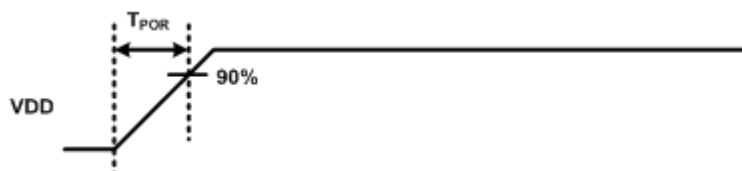


Fig. 6. VDD timing diagram

b. Differential signal AC characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
Clock frequency	R_{XFCLK}	69.5	71.15-	75.5	MHz	
Input Data Skew Margin	T_{RSKM}			400	ps	

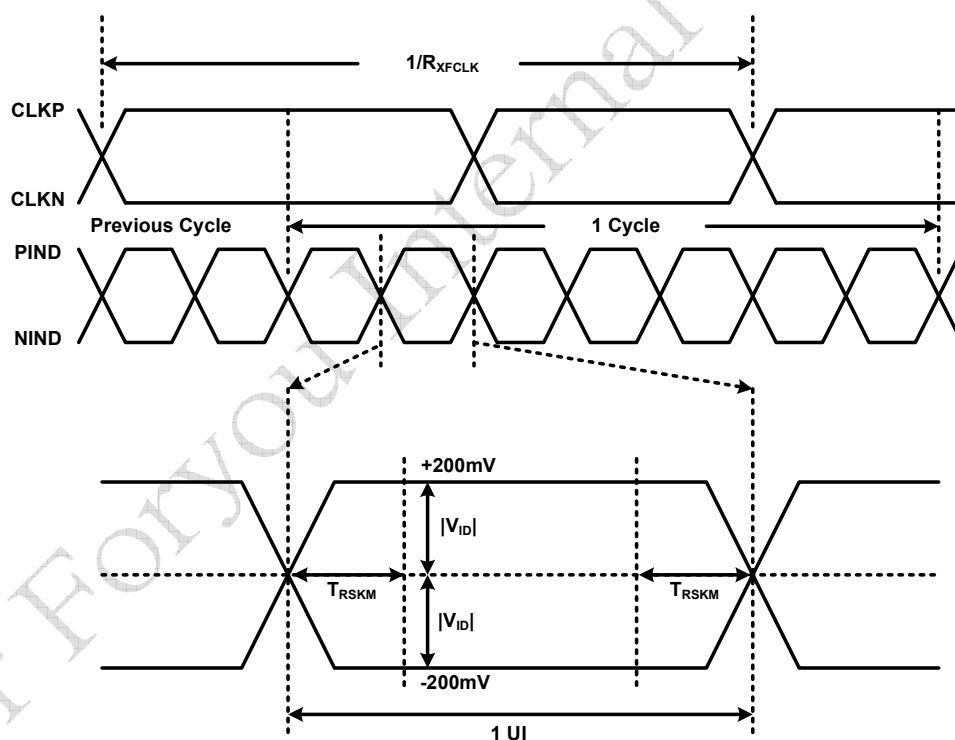


Fig. 7 LVDS AC characteristics diagram



Version 0.0

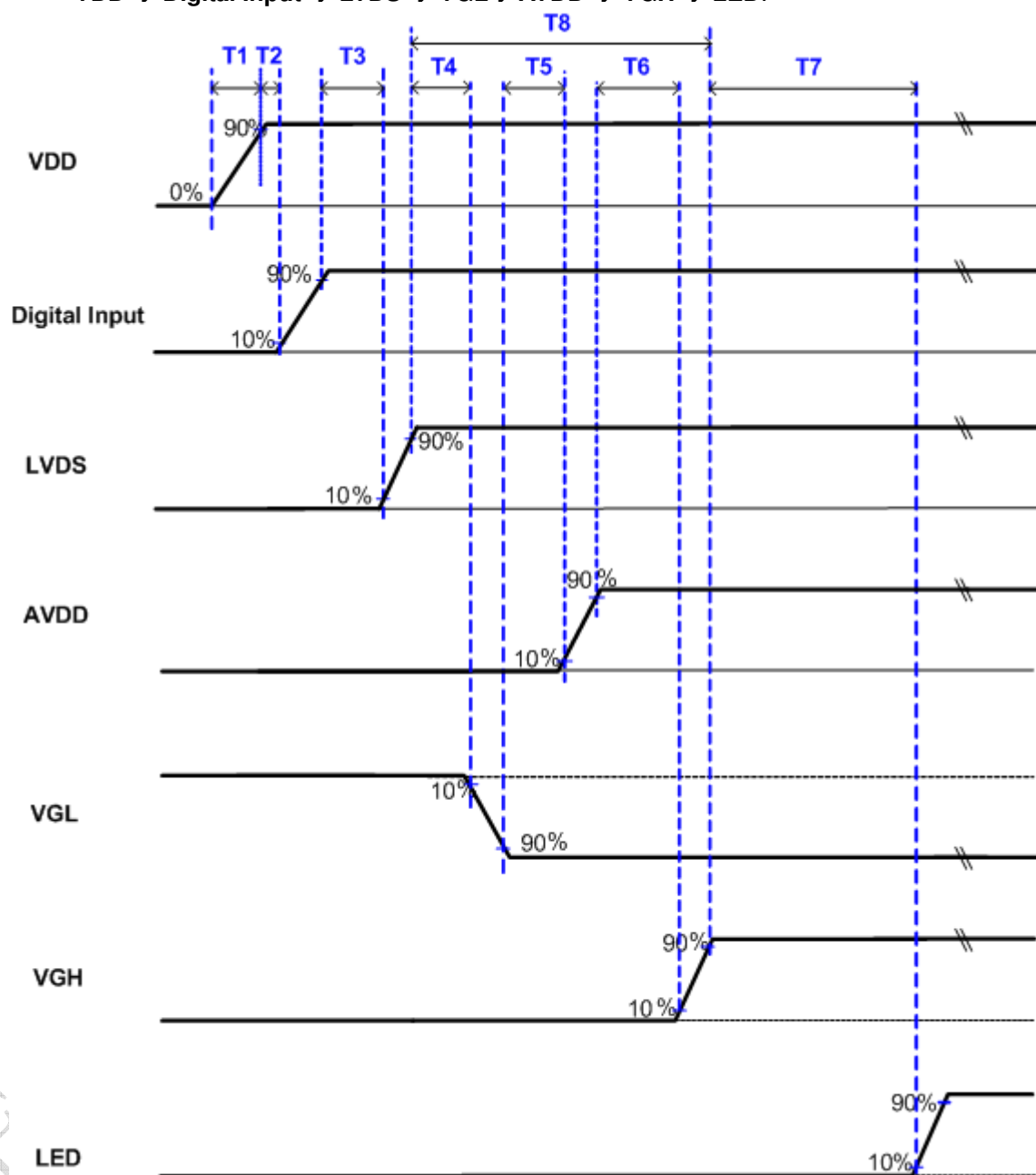
Page: 18/26

7. Power on/off sequence

The LCD adopts high voltage driver IC, so it could be permanently damaged under a wrong power on/off sequence. The suggested LCD power sequence is below:

a. Power on sequence:

VDD → Digital Input → LVDS → VGL → AVDD → VGH → LED:





Version 0.0

Page: 19/26

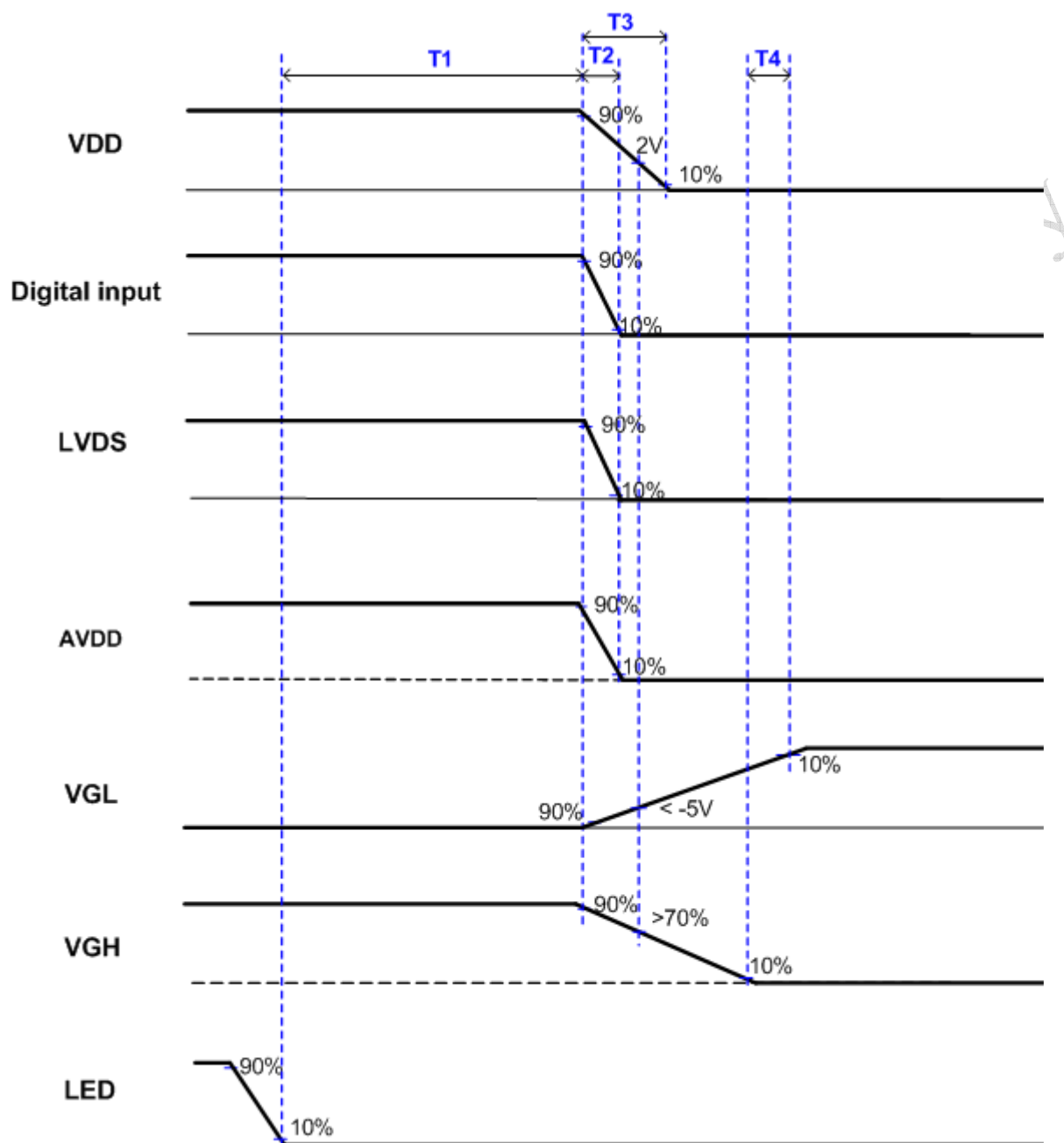
Power on timing:

Parameter	Value			Units
	Min.	Typ.	Max.	
T1	10	--	--	ms
T2	1	--	--	ms
T3	0	--	--	ms
T4	16			ms
T5	0	--	--	ms
T6	0	--	--	ms
T7	100	--	--	ms
T8	--	--	80	ms



Version 0.0

Page: 20/26

b. Power off sequence:**LED → VDD&Digital input&LVDS&AVDD&VGL&VGH**



Version 0.0

Page: 21/26

Power off timing:

Parameter	Value			Units
	Min.	Typ.	Max.	
T1	90	100	--	ms
T2	--	--	40	ms
T3	50	--	--	ms
T4	0	--	--	ms

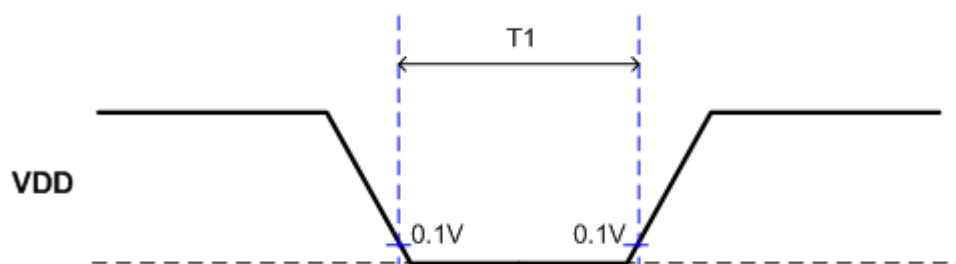
Note1: VGH must be maintained at more than 70% when VDD falling to 2V.

Note2: VGL must be maintained at less than -5V when VDD falling to 2V.

c. VDD off to on timing

Parameter	Value			Unit	Remark
	Min.	Typ.	Max.		
T1	1		--	s	Note 1

*Note 1 : Before VDD turns ON, please make sure that AVDD; VGH; VGL; are all below intensity of 0.1V.





Version 0.0

Page: 22/26

F. Optical specifications (Note 1, 2)

Item	Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Response	Tr+Tf	$\theta=0^\circ$, 25°C	-	-	20	ms	Note 3
Contrast ratio	CR	$\theta=0^\circ$	800		-		Note 4, 5, 6
Viewing Angle Top Bottom Left Right		$\text{CR} \geq 10$	70 70 70 70	80 80 80 80	- - - -	deg.	Note 7, 8
Brightness	Y_L	$\theta=0^\circ$	650		-	cd/m^2	Note 1,2,9
White Chromaticity	X	$\theta=0^\circ$	0.278	0.318	0.358		Note 8
	Y	$\theta=0^\circ$	0.278	0.318	0.358		
Red Chromaticity	X	$\theta=0^\circ$	0.608	0.648	0.688		
	Y	$\theta=0^\circ$	0.267	0.307	0.347		
Green Chromaticity	X	$\theta=0^\circ$	0.260	0.300	0.370		
	Y	$\theta=0^\circ$	0.605	0.645	0.685		
Blue Chromaticity	X	$\theta=0^\circ$	0.100	0.140	0.180		
	Y	$\theta=0^\circ$	0.032	0.072	0.112		
Uniformity of white pattern	Uw	$\theta=0^\circ$	80%				Note 10

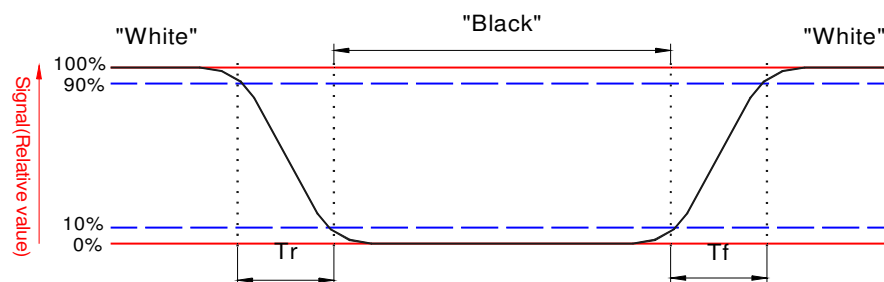
PS. Regarding Color Chromaticity, will be updated after real sample out.

Note 1: Measurement should be performed in the dark room, optical ambient temperature $\approx 25^\circ\text{C}$, and backlight current $I_L=80\text{ mA}$

Note 2: To be measured on the center area of panel with a field angle of 1° by Topcon luminance meter SR-3, after 30 minutes operation.

Note 3: Definition of response time:

The output signals of photo detector are measured when the input signals are changed from "black" to "white" (falling time) and from "white" to "black" (rising time), respectively.



Note 4. From liquid crystal characteristics, response time will become slower and the color of panel will become darker when ambient temperature is below 25°C .

Note 5. Contrast ratio is calculated with the following formula.

ALL RIGHTS STRICTLY RESERVED. ANY PORTION OF THIS PAPER SHALL NOT BE REPRODUCED, COPIED, OR TRANSFORMED TO ANY OTHER FORMS WITHOUT PERMISSION FROM AU OPTRONICS CORP.



Version 0.0

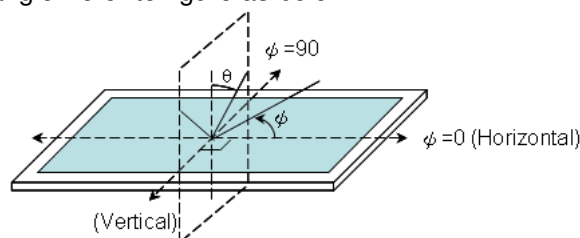
Page: 23/26

$$\text{Contrast ratio} = \frac{\text{Photo detector output when LCD is at "White" state}}{\text{Photo detector output when LCD is at "Black" state}}$$

Note 6. When "White" state, R[7:0]=G[7:0]=B[7:0]=11111111

When "Black" state, R[7:0]=G[7:0]=B[7:0]=00000000

Note 7. Definition of viewing angle: refer to figure as below.

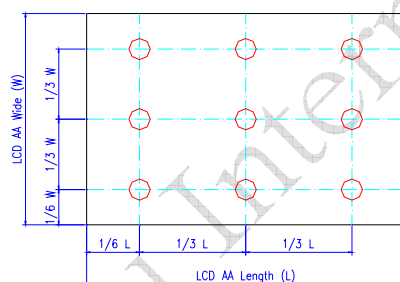


Note 8. The viewing angles are measured at the center area of the panel when all the input terminals of LCD panel are electrically opened.

Note 9. Brightness is measured at the center of the display with white pattern in 80mA

Note 10. Luminance Uniformity is defined as following within the 9 measurements ,

Luminance Uniformity(%) = Minimum luminance(brightness)/Maximum luminance(brightness)





Version 0.0

Page: 24/26

G. Reliability Test Items(Note 1~3)

No.	Test items	Conditions		Remark
1	High temperature storage	Ta= 95 °C	240 Hrs	
2	Low temperature storage	Ta= -40 °C	240 Hrs	
3	High temperature operation	Ta= 85 °C	240 Hrs	
4	Low temperature operation	Ta= -30 °C	240 Hrs	
5	High temperature and high humidity	Ta= 60 °C, 90 % RH	240 Hrs	Operation
6	Heat shock	-30 °C ~ 85 °C / 100 cycles 1 Hrs/cycle		Non-operation
7	Shock	100 G, 6 ms, ±X, ±Y, ±Z 3 times for each direction		
8	Electrostatic Discharge	Contact = ± 8 kV, class B Air = ± 15 kV, class B		IEC61000-4-2
9	Vibration	Frequency range	8 ~ 33.3 Hz	JIS D1601,A10 Condition A
		Stoke	1.3 mm	
		Sweep	2.9 G, 33.3 ~ 400Hz	
		Cycle	15 min.	
		2 hours for each direction of X, Z 4 hours for Y direction		
10	Vibration (with carton)	Random vibration: 0.015 G ² /Hz from 5 ~ 200 Hz -6 dB/Octave from 200 ~ 500 Hz		IEC 68-34
11	Drop (with carton)	Height: 60 cm 1 corner, 3 edges, 6 surfaces		

Note 1: Ta: Ambient temperature

Note 2: In the standard condition, there is no display function NG issue occurred. All the cosmetic specification is judged before the reliability stress.

Note 3: I_L = 80mA



Version 0.0

Page: 25/26

H. Packing and Marking

1. Packing Form

TBD

For Foryou Internal Use Only

ALL RIGHTS STRICTLY RESERVED. ANY PORTION OF THIS PAPER SHALL NOT BE REPRODUCED, COPIED, OR TRANSFORMED TO ANY OTHER FORMS WITHOUT PERMISSION FROM AU OPTRONICS CORP.



Version 0.0

Page: 26/26

2. Module/Panel Label Information

The module/panel (collectively called as the "Product") will be attached with a label of Shipping Number which represents the identification of the Product at a specific location. Refer to the Product outline drawing for detailed location and size of the label. The label is composed of a 22-digit serial number with the following definition:

ABCDEFGHIJKLMNQRSTU

- For internal system usage and production serial numbers.
- AUO Module or Panel factory code, represents the final production factory to complete the Product
- Product version code, ranging from 0~9 or A~Z (for Version after 9)
- Week Code, the production week when the product is finished at its production process

Example:

501M06ZL06123456781Z05:

Product Manufacturing Week Code: WK50

Product Version: Version 1

Product Manufacturing Factory: M06

3. Carton Label Information

The packing carton will be attached with a carton label where packing Q'ty, AUO Model Name, AUO Part Number, Customer Part Number (Optional) and a series of Carton Number in 13 or 14 digits are printed. The Carton Number is appearing in the following format:

ABC-DEFG-HIJK-LMN

- DEFG appear after first "-" represents the packing date of the carton
 - Date from 01 to 31
 - Month, ranging from 1~9, A~C. A for Oct, B for Nov and C for Dec.
 - A.D. year, ranging from 1~9 and 0. The single digit code represents the last number of the year

Refer to the drawing of packing format for the location and size of the carton label.