



CUSTOMER APPROVAL SHEET

Company Name	
MODEL	C080EAN04.3
CUSTOMER APPROVED	Title : Name :

- ☐ APPROVAL FOR SPECIFICATIONS ONLY (Spec. Ver. 0.1)
- ☐ APPROVAL FOR SPECIFICATIONS AND ES SAMPLE (Spec. Ver. 0.1)
- ☐ APPROVAL FOR SPECIFICATIONS AND CS SAMPLE (Spec. Ver. 0.1)
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Product Specification

8.0" COLOR TFT-LCD MODULE

MODEL NAME: C080EAN04.3

< ◆ > Preliminary Specification

< > Final Specification

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

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A. General Description

C080EAN04.3 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), and a backlight unit. 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



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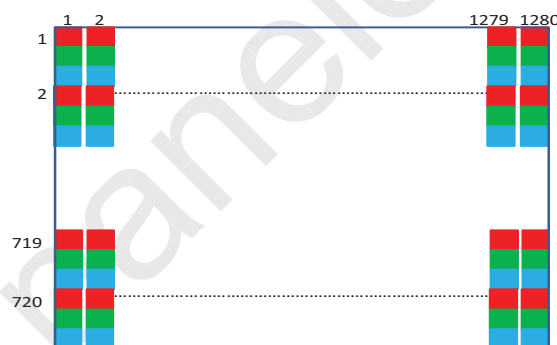
C. Physical Specifications

1. TFT LCD Panel

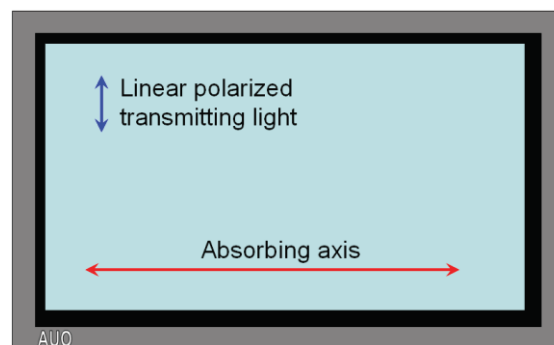
NO.	Item	Unit	Specification	Remark
1	Display Resolution	dot	1280(H)x 720RGB(V)	
2	Active Area	mm	176.64 x 99.36	
3	Screen Size	inch	8.0(Diagonal)	
4	Dot Pitch	μm	138	
5	Color Configuration	—	R. G. B. Stripe	Note. 2
6	Color Depth	—	16.7 M colors	
7	Overall Dimension	mm	188.5(H) × 117.22(V) × 6.6 (T) (LCD W/O FPCA)	Note. 1
8	Weight	g	200g	
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



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E. Electrical Specifications

1. TFT LCD Panel Pin Assignment

Recommended Connector: AORORA F31L - 1A7H1 - 21040

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

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	NC	PI	Dummy	
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	

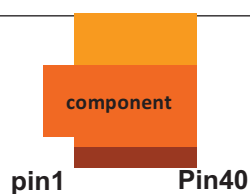
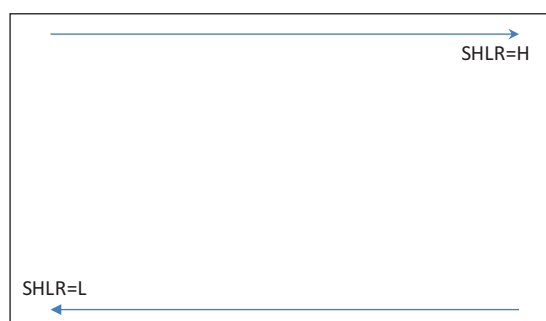
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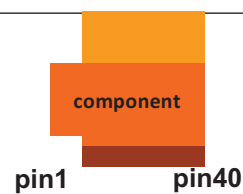
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34	GND	G	Ground.	
35	NC		Dummy	
36	VGH	PI	Positive power supply voltage for TFT.	
37	NC		Dummy	
38	VGL	PI	Negative power supply voltage for TFT.	
39	NC		Dummy	
40	NC		Dummy	

Note1

金手指朝下



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2. Differential Input Data Format

a. JEIDA format (DE mode)

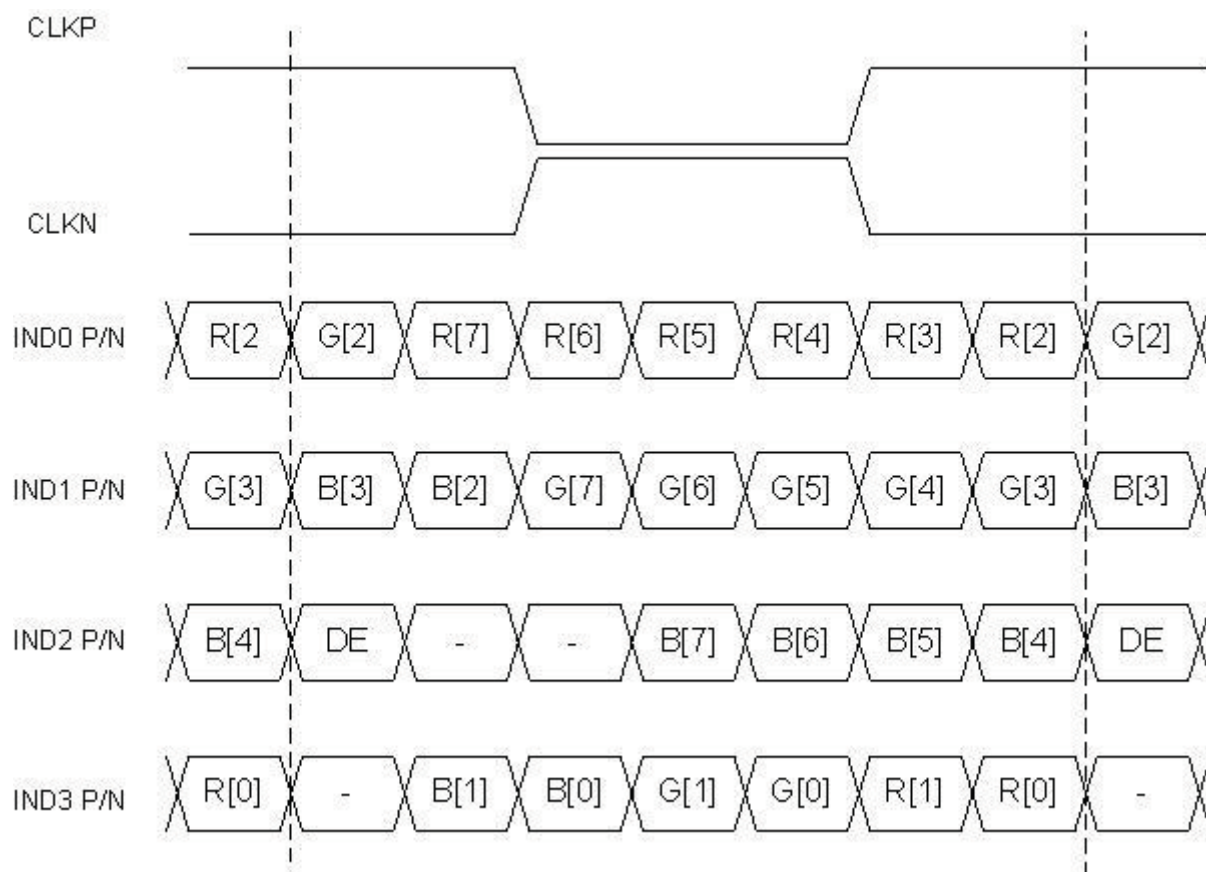


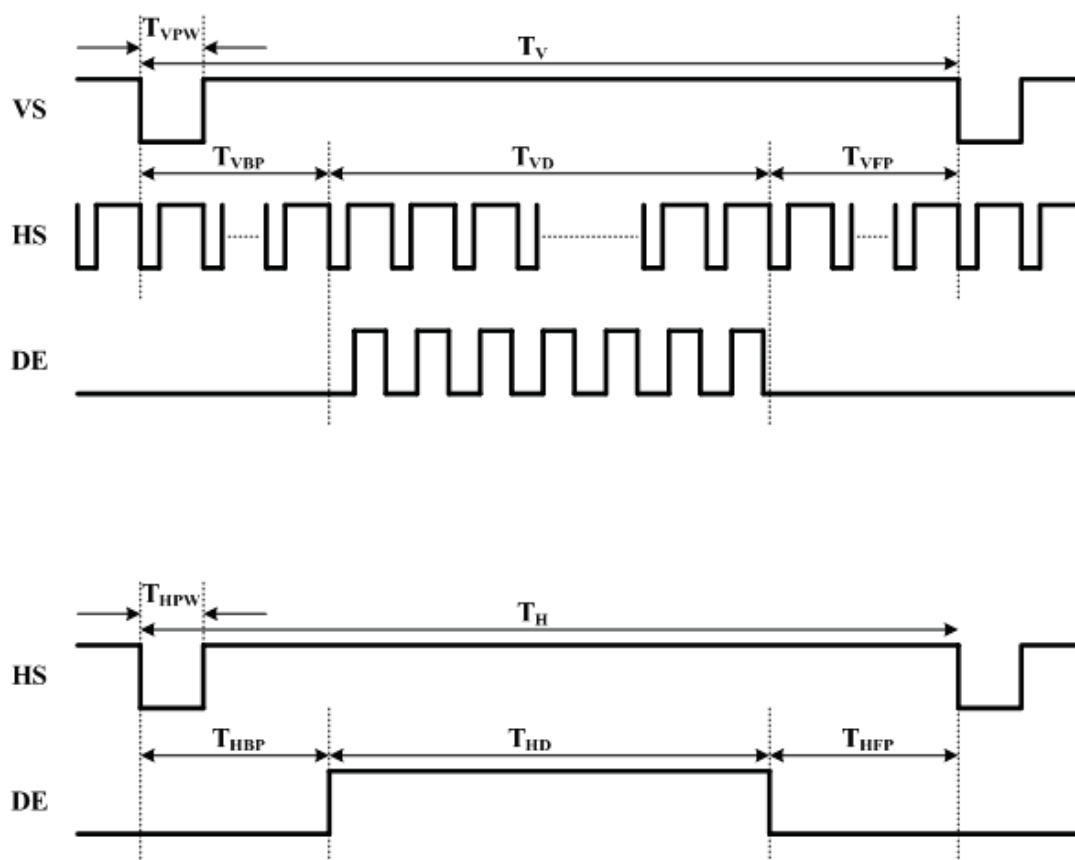
Fig. 1. LVDS input data JEIDA format



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3. Input Timing Diagram



Parameter		Symbol	Min.	Typ.	Max.	Unit.	Remark
CLK Frequency		F_{CLK}	69.49	71.15	75.54	MHz	
HSYNC	Period	T_H	1524	1540	1566	CLK	
	Horizontal display area	T_{HD}	1280			CLK	
	Blanking	$T_{HBP} + T_{HFP}$	244	260	286	CLK	
VSYNC	Period	T_V	760	770	804	HS	
	Vertical display area	T_{VD}	720			HS	
	Blanking	$T_{VBP} + T_{VFP}$	40	50	84	HS	

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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	-	(40)	-	mA	
	AVDD	13.3	13.5	13.7	V	
	IAVDD	-	(17)	-	mA	
	VGH	(17)	(18)	(19)	V	
	IVGH	-	(1)	-	mA	
	VGL	(-9)	(-8)	(-7)	V	
	IVGL	-	(1)	-	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.



Fig1. Typical current situation



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



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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

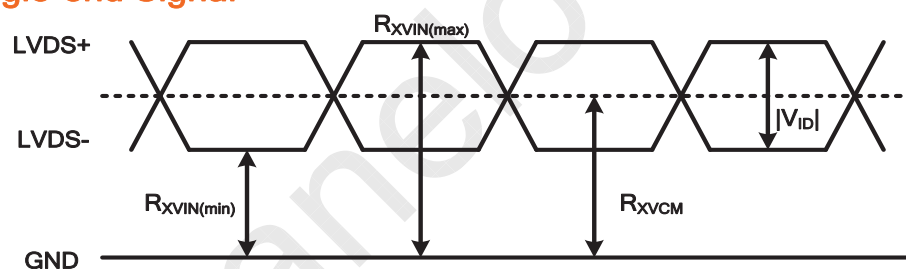
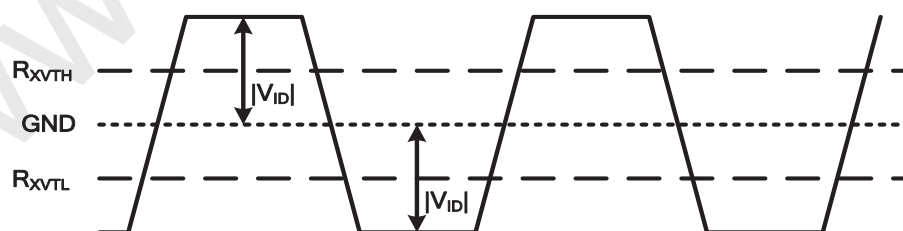
Single-end Signal**Differential Signal**

Fig. 4. LVDS DC characteristics diagram



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6. Backlight Driving Conditions

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
BLU Power				6720		mW	
LED Current for Chain	I_F	At 25°C		80		mA	
Forward Voltage	V_F	IF=80(mA) At 25°C	18.9	21.0	23.1	V	

Recommended Backlight FPC connector = HIROSE FH52-10S-0.5SH

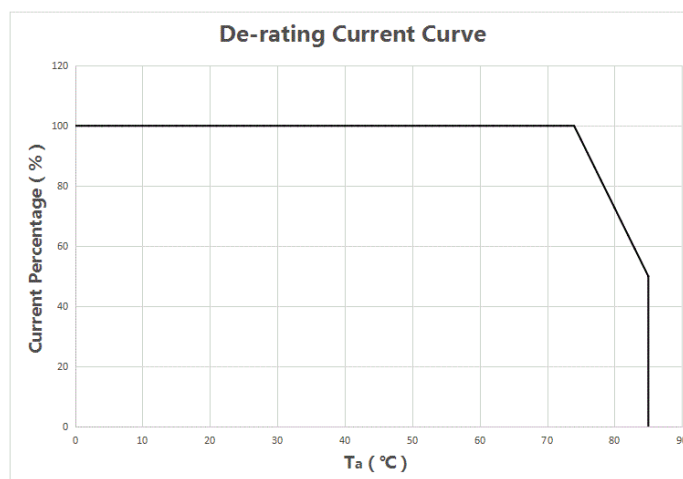
No.	Pin Name	I/O	Description	Remarks
1	ANODE	V_{in}	ANODE OF STRING	
2	ANODE	V_{in}	ANODE OF STRING	
3	ANODE	V_{in}	ANODE OF STRING	
4	ANODE	V_{in}	ANODE OF STRING	
5	Vin	R	THERMAL SENSOR (+)	
6	Vout	R	THERMAL SENSOR (-)	
7	CATHODE 1	G	CATHODE OF STRING 1	
8	CATHODE 2	G	CATHODE OF STRING 2	
9	CATHODE 3	G	CATHODE OF STRING 3	
10	CATHODE 4	G	CATHODE OF STRING 4	

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

Gold finger side:

Derating Current Curve

Ta (°C)	Current Percentage (%)
0~74	100
75	95
76	91
77	86
78	82
79	77
80	73
81	68
82	64
83	59
84	55
85	50



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LED Life Time	Continuity	>30000Hrs
	Criteria	1. $T_a = 25^{\circ}\text{C}$, $I_{\text{Light bar (for each single string)}} = 80\text{ mA}$ 2. More than 50% of initial luminance.

AC Electrical Characteristics

a. Input AC characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
VDD power on slew time	T_{POR}	1	-	-	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	

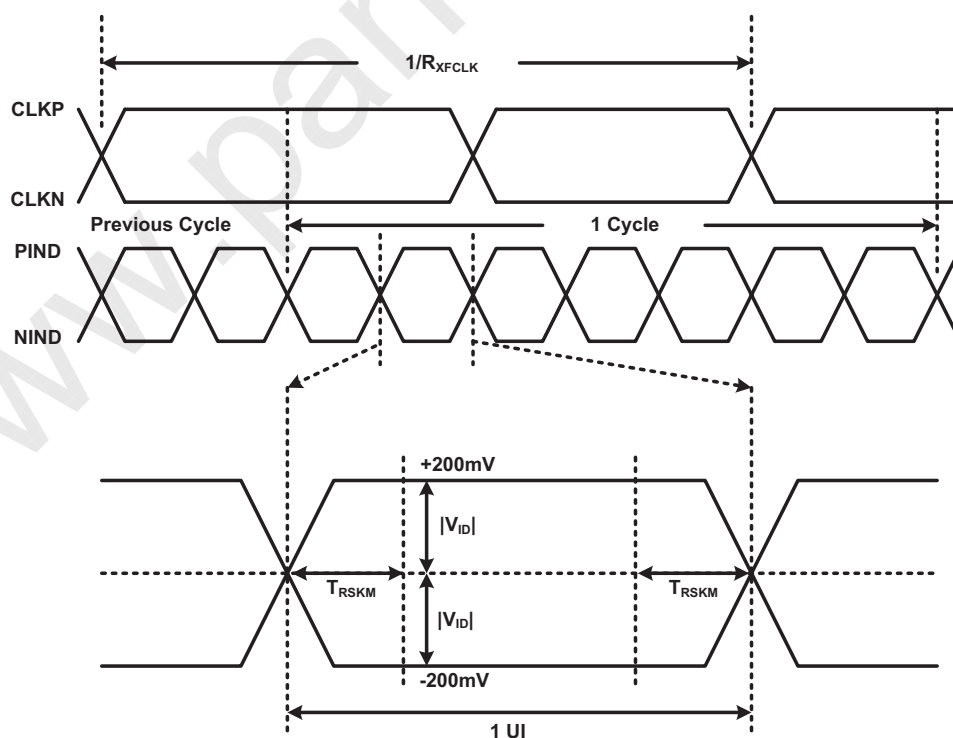


Fig. 7 LVDS AC characteristics diagram

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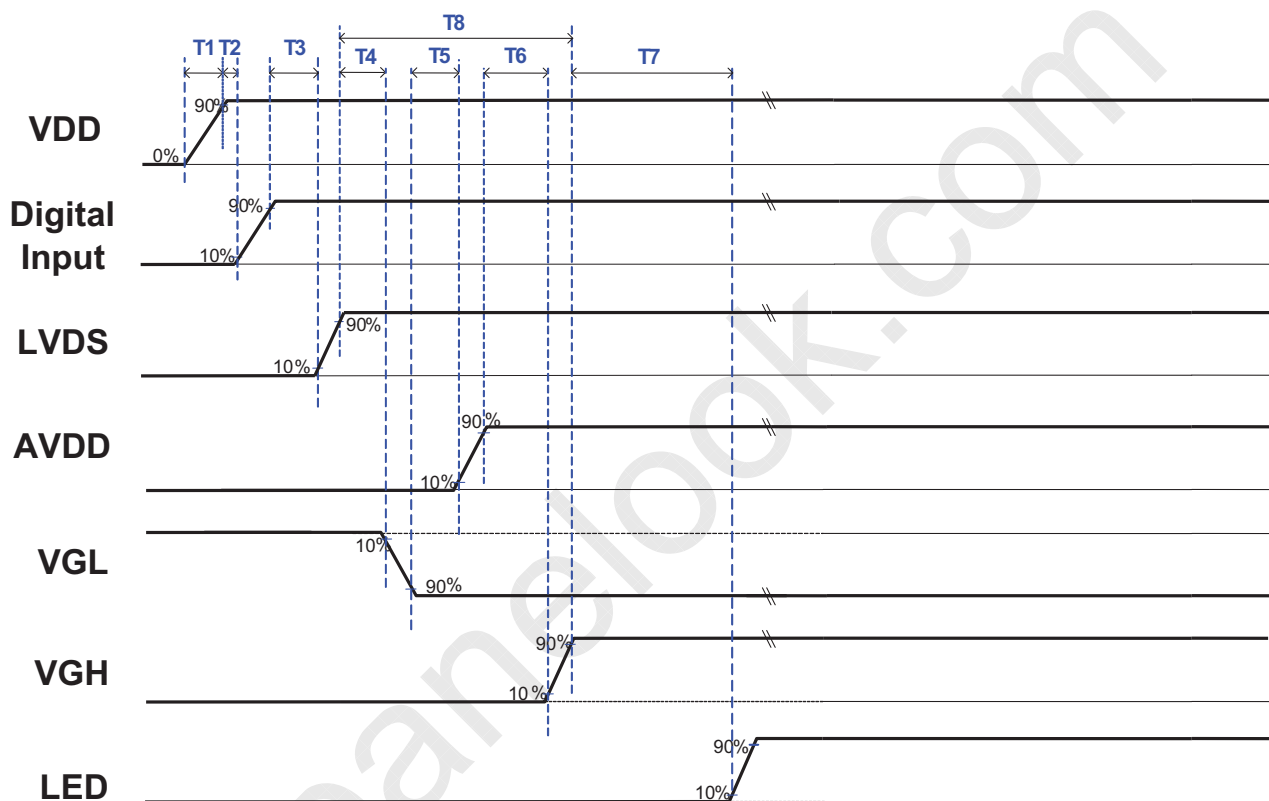
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7. Power on/off sequence

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:

DVDD → Digital Input → LVDS → AVDD → VGH → LED



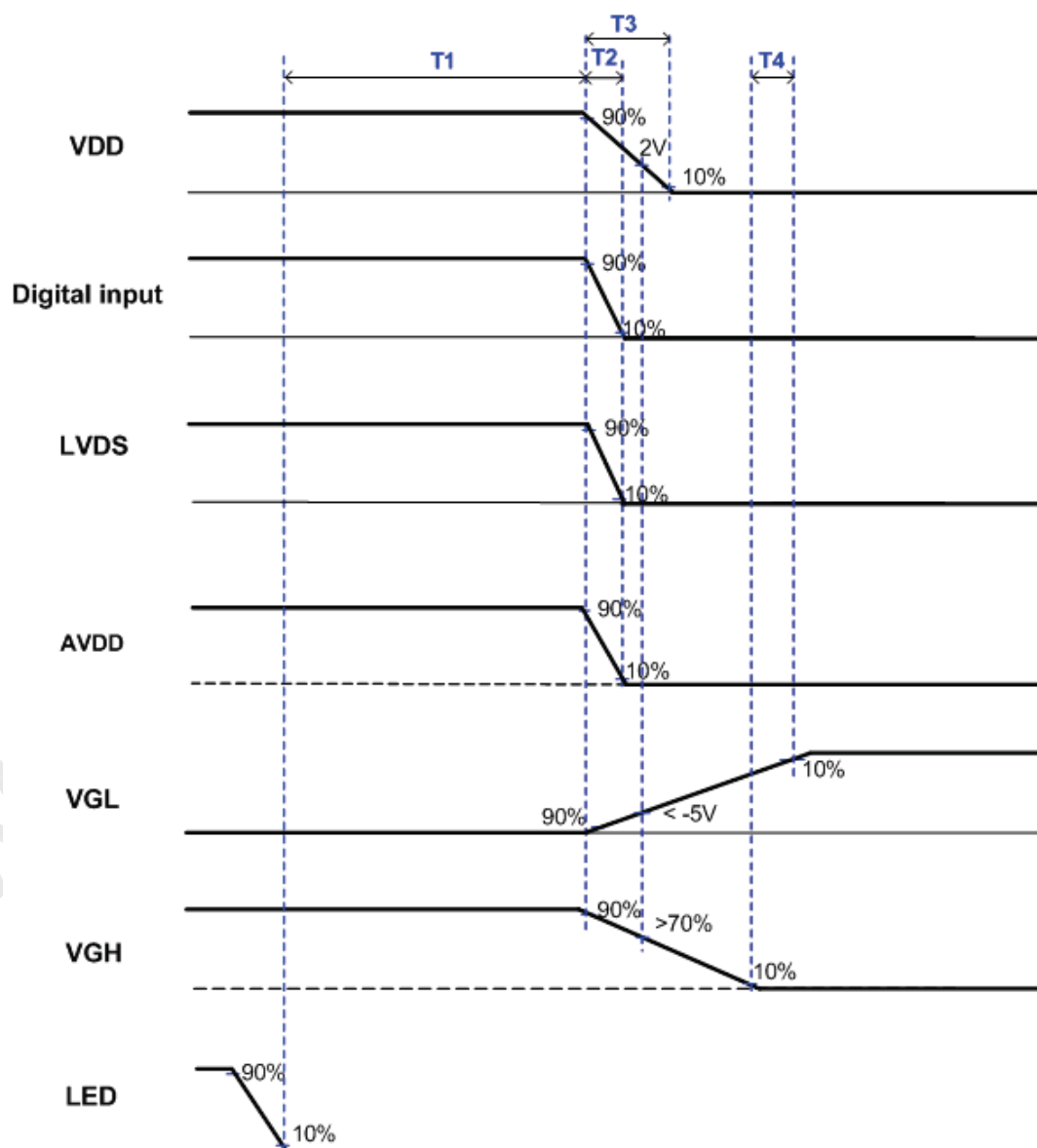


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Power on timing:

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

b. Power off sequence:**LED → LVDS → VGH → AVDD & VGL → Digital Input & DVDD**



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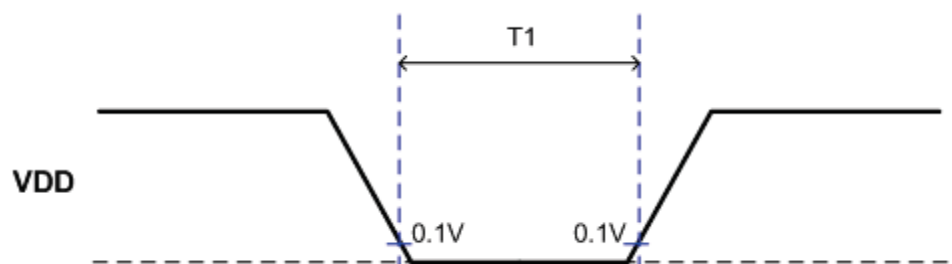
Power off timing:

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

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.





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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	$\theta=0^\circ$	800	900	-	cd/m^2	Note 1,2,9
White Chromaticity	X	$\theta=0^\circ$	0.2953	0.3253	0.3553		Note 8
	Y	$\theta=0^\circ$	0.294	0.324	0.354		
Red Chromaticity	X	$\theta=0^\circ$	0.5978	0.6378	0.6778		
	Y	$\theta=0^\circ$	0.2948	0.3348	0.3748		
Green Chromaticity	X	$\theta=0^\circ$	0.2962	0.3362	0.3762		
	Y	$\theta=0^\circ$	0.5653	0.6053	0.6453		
Blue Chromaticity	X	$\theta=0^\circ$	0.1048	0.1448	0.1848		
	Y	$\theta=0^\circ$	0.0396	0.0796	0.1196		
NTSC				65		%	
Uniformity of white pattern	Uw	$\theta=0^\circ$	80%				Note 10

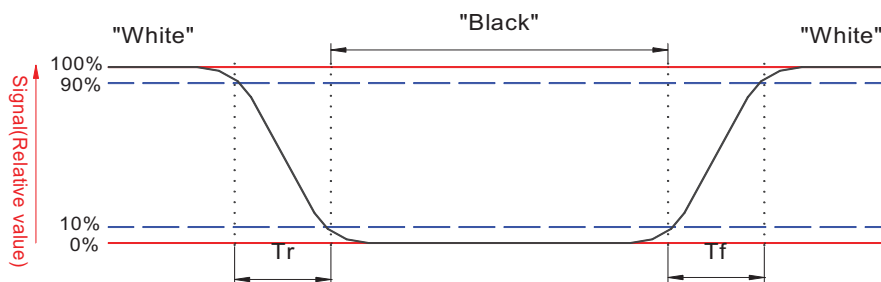
PS. Regarding Color Chromaticity, will be updated after real sample out.

Note 1: Measurement should be performed in the dark room, optical ambient temperature $=25^\circ\text{C}$, 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 .

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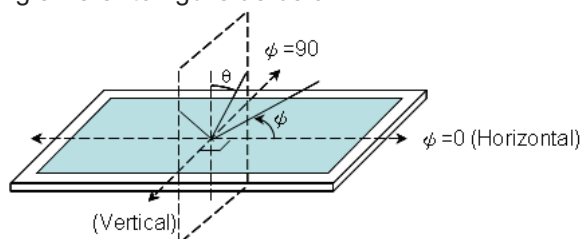
Note 5. Contrast ratio is calculated with the following formula.

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

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.

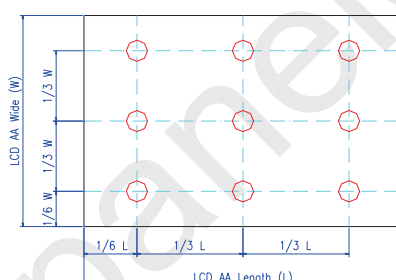


Note 8. The viewing angles are measured at the center area of the panel when all the input terminals of LCD panel are electrically opened.

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)





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G. Reliability Test Items(Note 1~3)

No.	Test items	Conditions		Remark
1	High temperature storage	Ta= 95℃	500 Hrs	
2	Low temperature storage	Ta= -40 ℃	500 Hrs	
3	High temperature operation	Ta= 85℃	500 Hrs	
4	Low temperature operation	Ta= -30 ℃	500 Hrs	
5	High temperature and high humidity	Ta= 60 ℃ , 90 % RH	500 Hrs	Operation
6	Heat shock	-30 ℃ (0.5hr) ~ 85 ℃ (0.5hr) / 100 cycles		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 after reliability test. All the cosmetic specification is judged before the reliability stress.

Note 3: I_L = 80mA

Note 4: All Optical data is measured at ambient Temp. 25 deg. C, at perpendicular, on center area of panel with typ. Value of Back Light current.

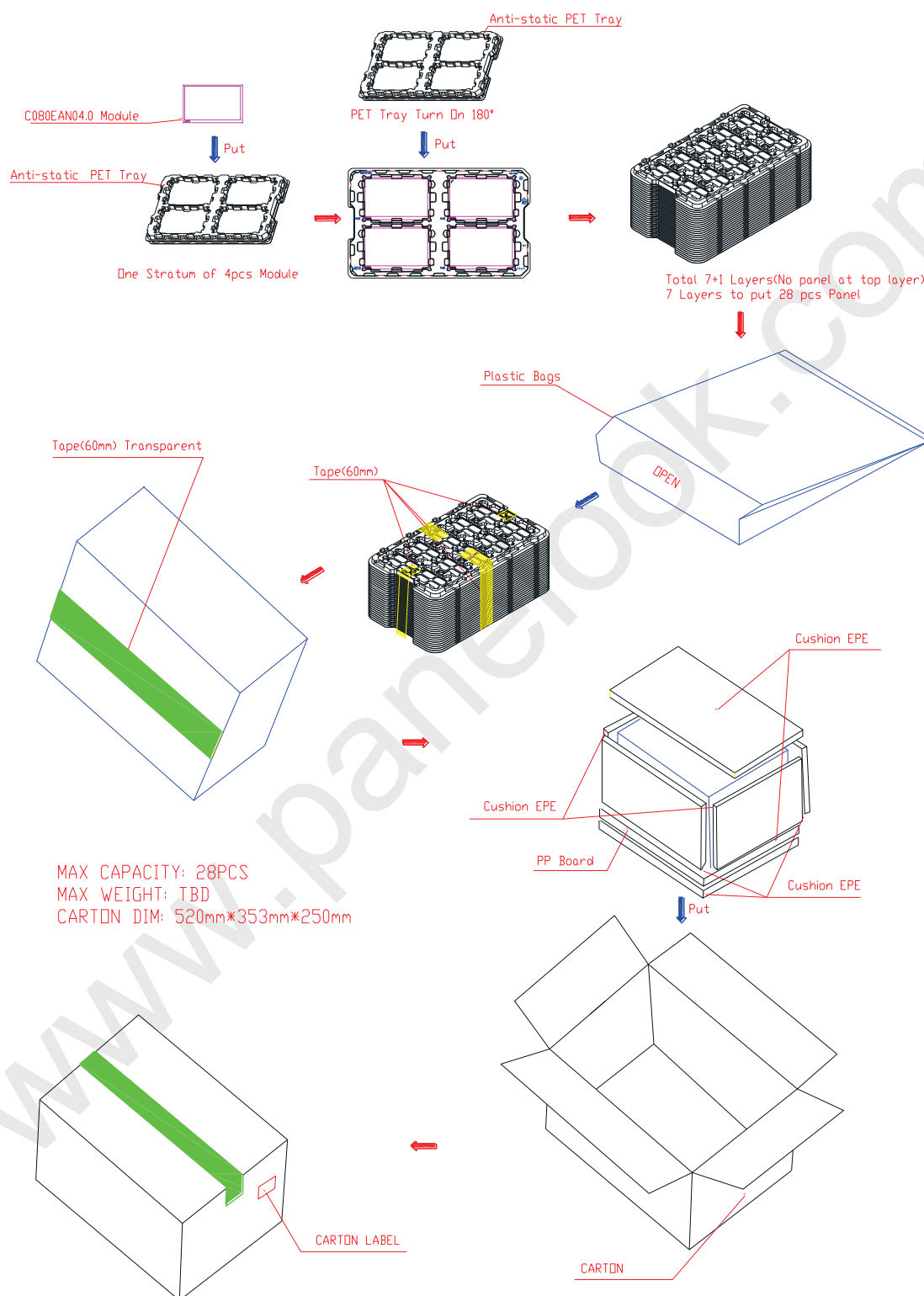


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H. Packing and Marking

1. Packing Form



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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:

ABCDEFGHIJKLMN OPQRST UV

- 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.