

億力光電股份有限公司

EVERVISION ELECTRONICS CO., LTD.

Product Specification For LCD Module

(KVPF-7B-002-16)

Model NO. : VGG127201-0TSLWB(RoHS)

REVISION : 3

☒ APPROVAL FOR SPECIFICATIONS ONLY






☐ APPROVAL FOR SPECIFICATIONS AND SAMPLE

CUSTOMER :

STD.

APPROVED BY :

EVERVISION LCM R&D CENTER

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2. Record of Revisions

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3. Module Numbering System

V G G 1272 01- 0 T S L W B

Serial No: A~Z

Backlight Color:

N: Without Backlight;
A: Amber; **B:** Blue; **G:** Green;
L: Yellow; **O:** Orange; **R:** Red;
W: White; **Y:** YellowGreen;
X: Others

Backlight Type:

N: Without Backlight; **E:** EL; **F:** CCFL;
L: General LED; **H:** High NTSC LED ;
R: RGB LED; **X:** Others

LCD Model:

A: ASTN; **B:** STN Blue; **C:** CSTN; **D:** DSTN;
F: TFT; **G:** STN Gray; **H:** HTN; **I:** IBN;
K: Black Mask TN **L:** LTPS; **M:** MVA;
N: others; **O:** OLED; **P:** PLED; **S:** IPS;
T: TN; **U:** FSC TN; **W:** FSTN Black/white;
X: FFSTN; **Y:** STN Yellow;

LCD Type:

R: Reflective/Positive;
S : Reflective/Negative ;
F : Transflective/Positive ;
G: Transflective/Negative ;
U: Transmissive/Positive ;
T: Transmissive/Negative ; **N:** Others

Temperature Range & View Direction:

General Purpose : **1:**6H **2:**12H **3:**3H **4:**9H **5:**Others
High Performance: **6:**6H **7:**12H **8:**3H **9:**9H **0:**Others

STD Product Serial No.: 01~99

Customer Made Serial No.: A1,A2...A9,B1,B2...B9,C1..

Display Function:

Segment Number / Characters Lines / Column and Row Dots
/ Length * Width of Other

Display Type:

C: Character Type; **G:** Graphic Type; **S:** Segment Type; **O:** Other

Package Type:

B: COB; **F:** COF; **G:** COG; **H:** Heat Seal; **S:** SMT; **T:** TAB; **O:** Others

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4. Application

This specification is applied to the 8 inch HD supported TFT-LCD module, and can display true 16.7M colors (8 bit/ color). The module is designed for OA, Car TV application and other electronic products which require flat panel display of digital signal interface. This module is composed of a 8" TFT-LCD panel, a driver circuit, and backlight unit.

5. Features

- HD (1280×720 pixels) resolution.
- 6 bit & 8 bit LVDS Interface

6. General Specifications

Item	Specifications	Unit
Screen Size	8 (Diagonal)	inch
Display Format	1280 RGB(H)×720 (V)	dot
Active Area	176.64(H)×99.36(V)	mm
Pixel Pitch	0.138(H)×0.138(V)	mm
Pixel Configuration	RGB Vertical Stripe	-
Display Mode	IPS Type / Transmissive Mode / Normally black	-
Surface Treatment	Anti-Glare	-
Viewing Direction	Full view angle	-
Outline Dimension	192.8(W)×116.9(H)×9.5(D)	mm
Weight	(TBD)	g
RoHS Compliance	Evervision certifies this product to be in compliance with European Union Directive 2015/863/EU on the restriction of certain hazardous substances in electrical and electronic equipment.	-

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7. Absolute Maximum Ratings

7.1 Absolute Ratings of Environment

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Storage Temperature	T _{ST}	-40	+90	°C	(1)(2)
Operating Ambient Temperature	T _{OP}	-30	+85	°C	(1)(2)

Note1: Background color changes slightly depending on ambient temperature.

This phenomenon is reversible.

Note2: Please refer to item of RELIABILITY.

7.2 Electrical Absolute Ratings

7.2.1 TFT-LCD Module

(Ta=25±2°C)

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Power Supply Voltage	VDD	-0.3	3.96	V	-

7.2.2 BACKLIGHT UNIT

(Ta=25±2°C)

Items	Symbol	Min	Max	Unit	Remark
LED Reverse Voltage	VR	-	-	V	Note 3
LED Forward Current	IF	-	150	mA	Each LED

Note 1: With in Ta= 25°C

Note 2: Permanent damage to the device may occur if exceed maximum values

Note 3: Do not reverse the connection of LED

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8. Electrical Characteristics

8.1 TFT-LCD Module

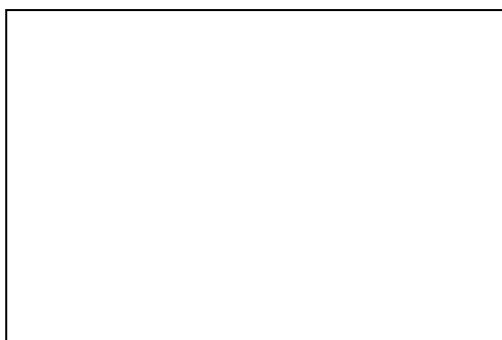
(Ta=25±2°C)

Item	Symbol	Value			Unit	Note
		Min.	Typ.	Max.		
Power Supply Voltage	V _{DD}	3.0	3.3	3.6	V	(1)
Power Supply Current	I _{DD}	-	300	425	mA	-
Input logic high voltage	V _{IH}	0.7V _{DD}	-	V _{DD}	V	(2)
Input logic low voltage	V _{IL}	GND	-	0.3V _{DD}	V	(2)
Internal Pull low / high resistor	RI	200	350	850	kΩ	(2)

Note 1: VDD setting should match the signals output voltage of customer's system board .

Note 2: RESET, STBYB, SELB(DINT), L/R, U/D

White Pattern / 255 Gray



Active Area

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8.2 Backlight Unit

(Ta=25±2°C)

Parameter	Min.	Typ.	Max.	Unit	Note
LED voltage (VL)	-	(18.6)	-	[V]	(1)(3)
LED current (IL)	-	260	-	[mA]	-
LED Life Time	20000	-	-	[Hour]	(2)

Note 1: The LED Supply Voltage is defined by the number of LED at Ta=25°C and IL = 260 mA

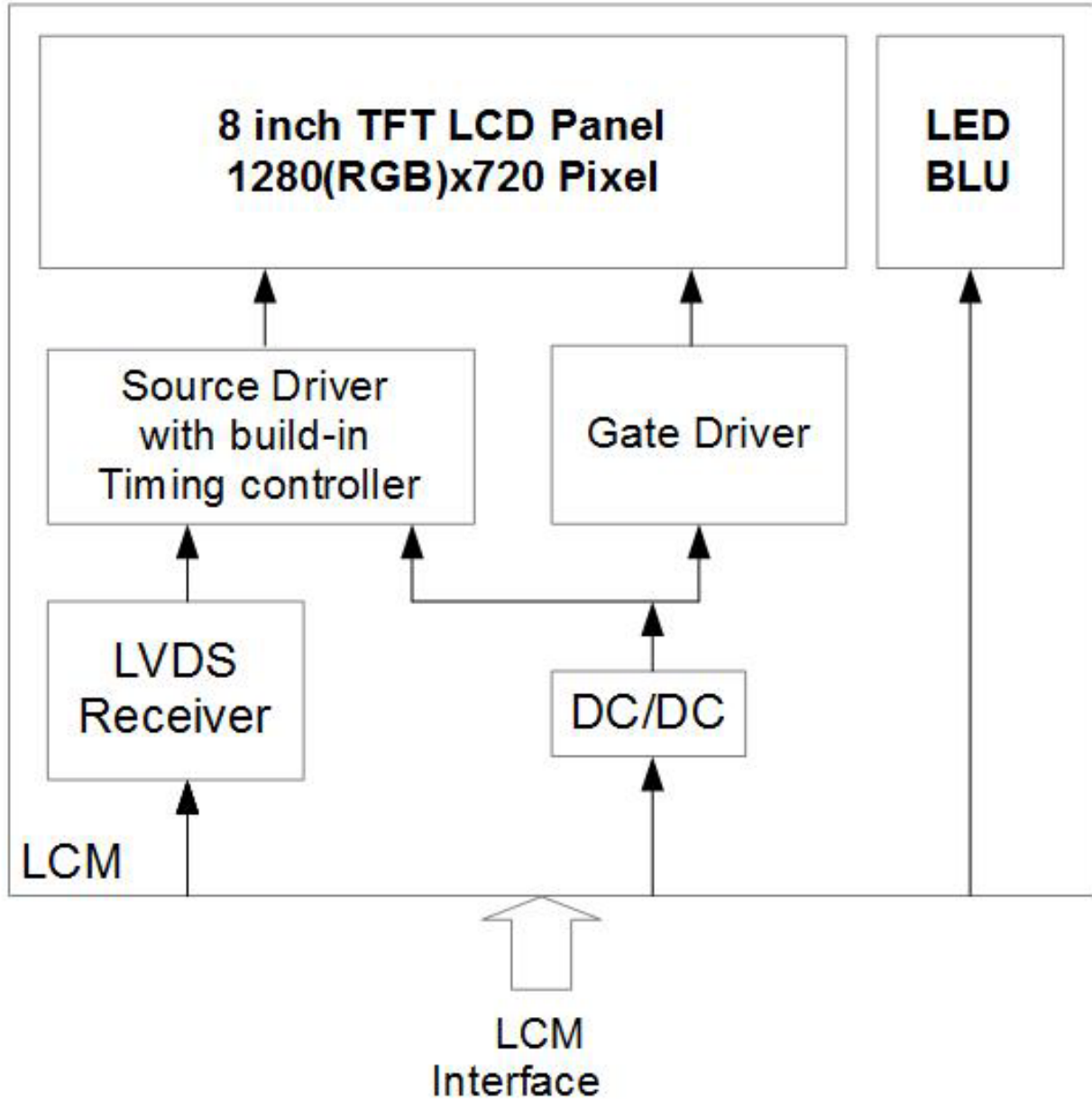
Note 2: The “LED life time” is defined as the module brightness decrease to 50% original brightness at Ta=25°C and IL =260 mA. The LED lifetime could be decreased if operating IL is larger than 260 mA.

Note 3: The BLU is driven by constant current, the voltage value is for reference only.

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9. Block Diagram

9.1 TFT-LCD Module with Backlight Unit



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10. Input / Output Terminals Pin Assignment

10.1 TFT-LCD Module

Connector: 20647-040E-01 manufactured by I-PEX or EQUIALENT

Pin No.	Symbol	I/O	Description
1	NC	-	Keep floating
2	VDD	P	External main and I/O power supply ; Power3V3
3	VDD	P	External main and I/O power supply ; Power3V3
4	NC	-	Keep floating
5	Reset	I	Global reset pin, active low.
6	STBYB	I	Standby mode setting pin, active low.
7	GND	P	Ground
8	RXIN0-	I	LVDS odd data 0-
9	RXIN0+	I	LVDS odd data 0+
10	GND	P	Ground
11	RXIN01-	I	LVDS odd data 1-
12	RXIN01+	I	LVDS odd data 1+
13	GND	P	Ground
14	RXCLKIN-	I	LVDS odd clk -
15	RXCLKIN+	I	LVDS odd clk +
16	GND	P	Ground
17	RXIN02-	I	LVDS odd data 2-
18	RXIN02+	I	LVDS odd data 2+
19	GND	P	Ground
20	RXIN03-	I	LVDS odd data 3-
21	RXIN03+	I	LVDS odd data 3+
22	GND	P	Ground
23	NC	-	Keep floating

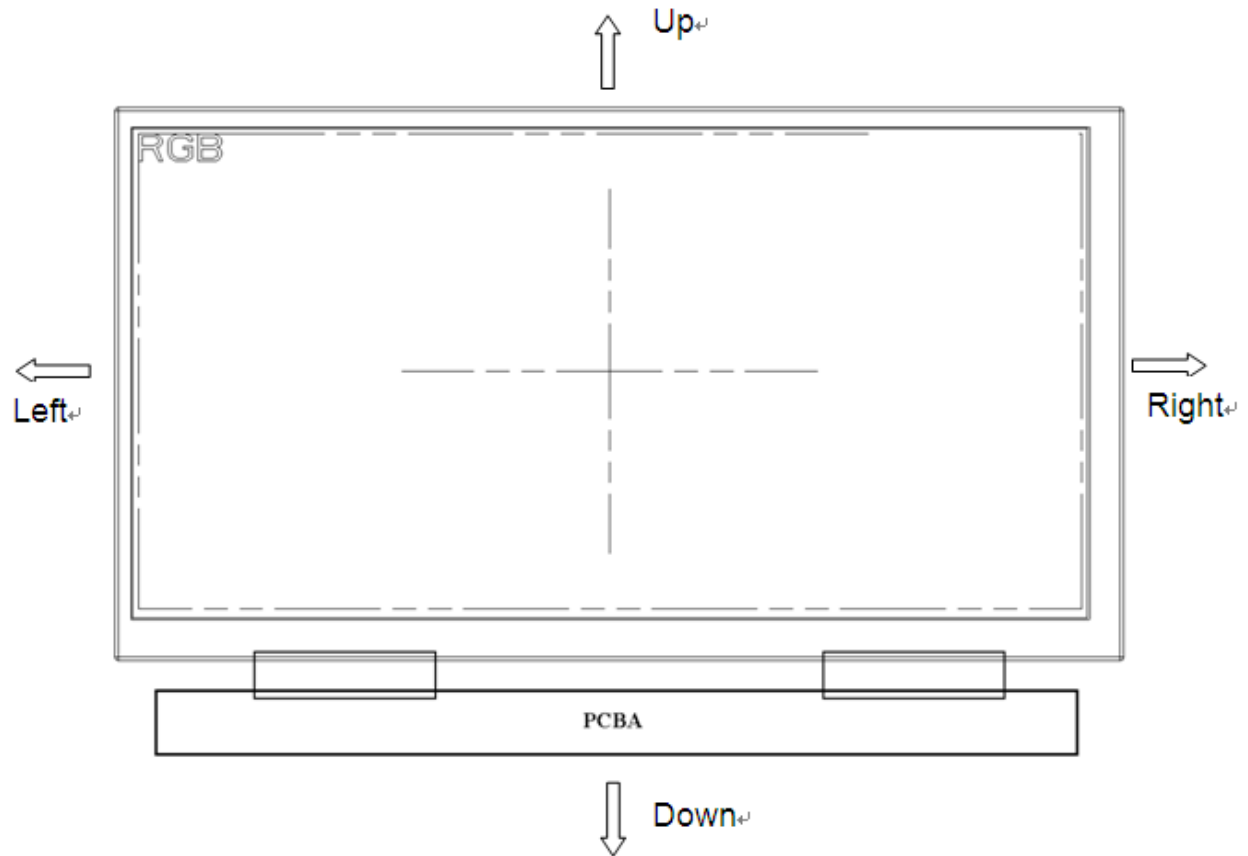
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24	NC	-	Keep floating
25	GND	P	Ground
26	NC	-	Keep floating
27	NC	-	Keep floating
28	SELB(DINT)	I	Input data format selection DINT = 1 : 8-bit DINT = 0 : 6-bit
29	NC	-	Keep floating
30	GND	P	Ground
31	LED-	P	Negative Backlight voltage
32	LED-	P	Negative Backlight voltage
33	L/R	I	Horizontal shift direction (source output) selection. RL = 1: Left -> Right(default: Customer to Pull high, internal IC Pull high) RL = 0: Right -> Left
34	U/D	I	Vertical shift direction (gate output) selection. TB = 0: Bottom->Top TB = 1: Top ->Bottom (default: Customer to Pull high, internal IC Pull high)
35	NC	-	Keep floating
36	NC	-	Keep floating
37	NC	-	Keep floating
38	NC	-	Keep floating
39	LED+	P	Positive Backlight voltage
40	LED+	P	Positive Backlight voltage

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Note: Definition of scanning direction.

Refer to the figure as below:

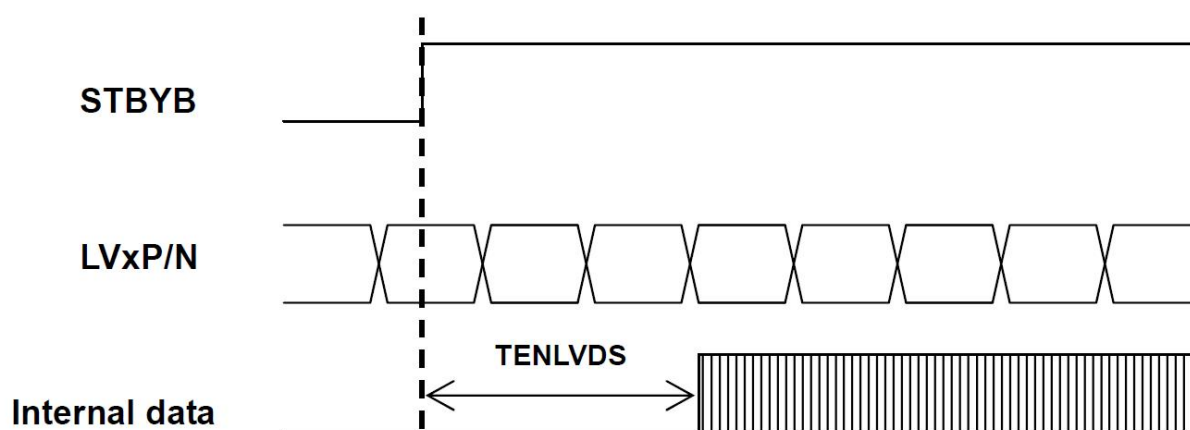


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11. Interface Timing

11.1.1 AC Electrical Characteristics

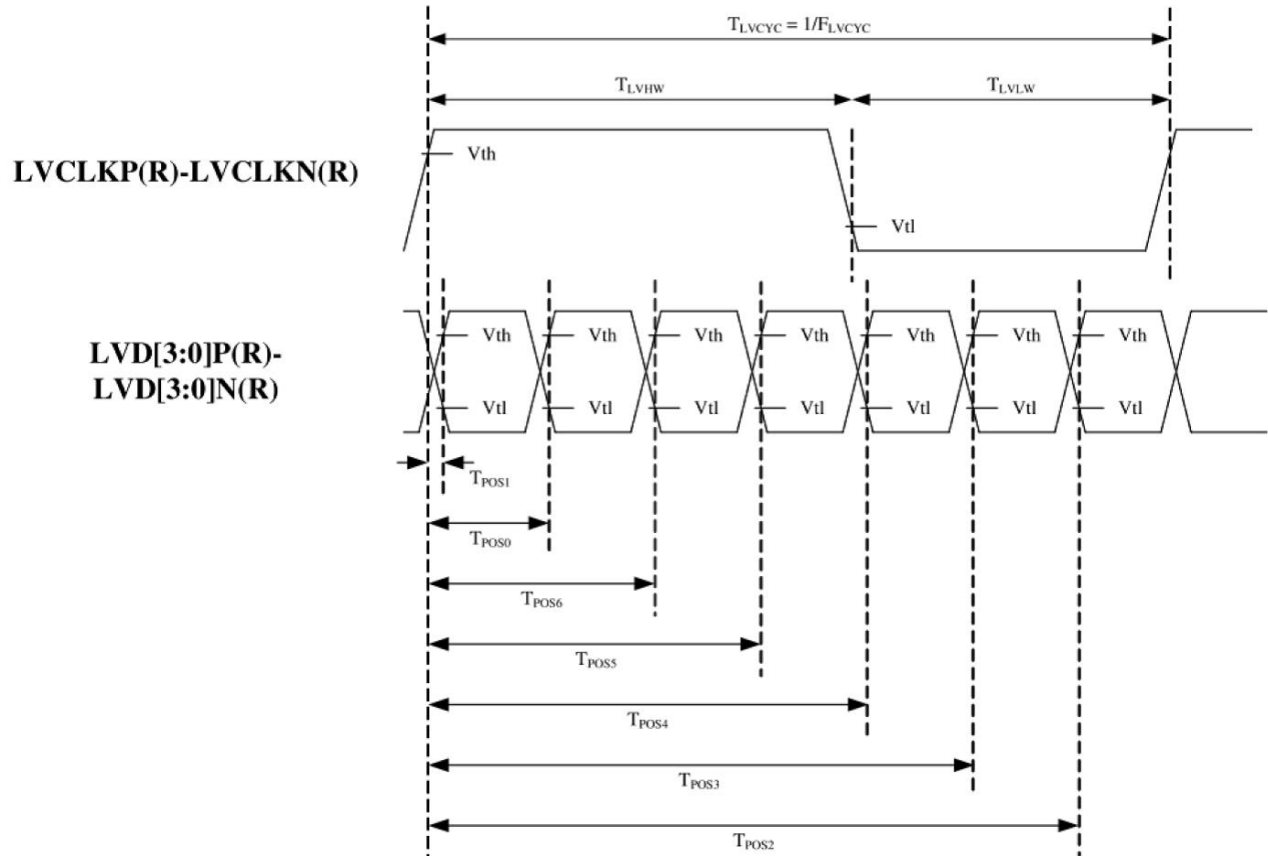
Parameter	Symbol	Spec.			Unit	Remark
		Min.	Typ.	Max.		
Clock frequency	FLVCYC	10	-	85	MHz	Frame rate=60Hz
Clock Period	TLVCYC	11.76	-	100	Nsec	Frame rate=60Hz
1 data bit time	UI	-	1/7	-	TLVCY	
Clock high time	LVHW	2.9	4	4.1	UI	
Clock low time	LVLW	2.9	3	4.1	UI	
Position 1	TPOS1	-0.2	0	0.2	UI	
Position 0	TPOS0	0.8	1	1.2	UI	
Position 6	TPOS6	1.8	2	2.2	UI	
Position 5	TPOS5	2.8	3	3.2	UI	
Position 4	TPOS4	3.8	4	4.2	UI	
Position 3	TPOS3	4.8	5	5.2	UI	
Position 2	TPOS2	5.8	6	6.2	UI	
Input eye width	TEYEW	0.6	-	-	UI	
Input eye border	TEX	-	-	0.2	UI	
LVDS wake up time	TENLVD	-	-	150	ns	



LVDS wake up time

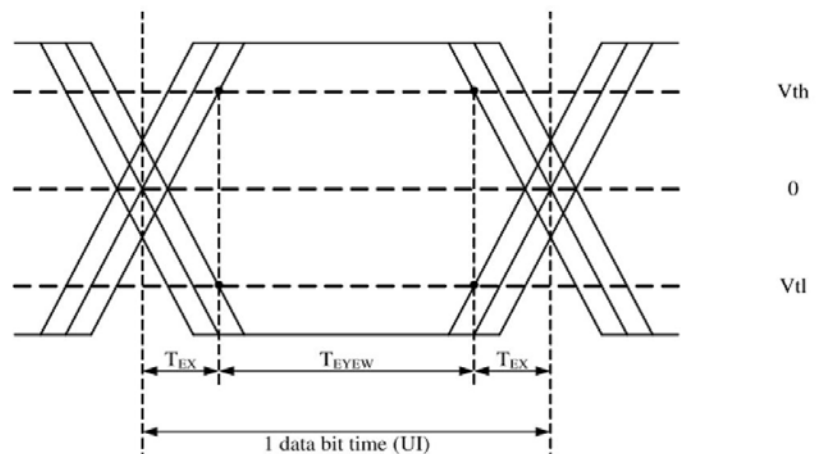
11.1.2 Input Clock and Data Timing Diagram

LVDS input timing



Differential:

LVD[3:0]P-LVD[3:0]N

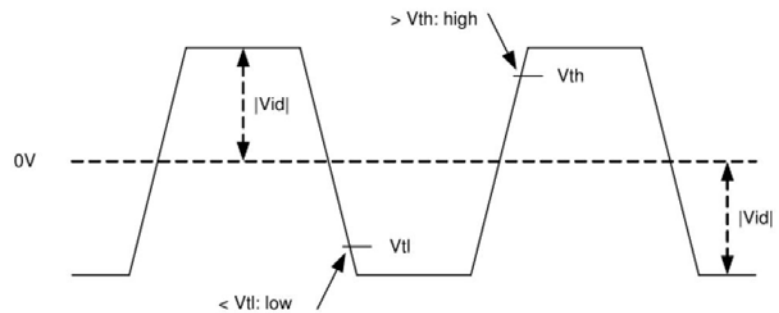


LVDS input eye diagram

11.1.3 DC Electrical Characteristics

Parameter	Symbol	Spec.			Unit	Remark
		Min.	Typ.	Max.		
Differential input high Threshold voltage	Vth	-	-	+0.1	V	Vcm=1.2V
Differential input low Threshold voltage	Vtl	-0.1	-	-	V	
Differential input common Mode voltage	Vcm	1	1.2	$1.8 - V_{id} /2$	V	-
LVDS input voltage	V _{INLV}	0.7		1.8	V	
Differential input	V _{id}	0.2	-	0.6	V	-
Differential input leakage Current	Vleak	-10	-	+10	μA	-
Termination Resistor	Z _{id}	80	100	120	Ω	-

Differential:
LVCLKP(R)-LVCLKN(R),
LVD[3:0]P(R)-
LVD[3:0]N(R)



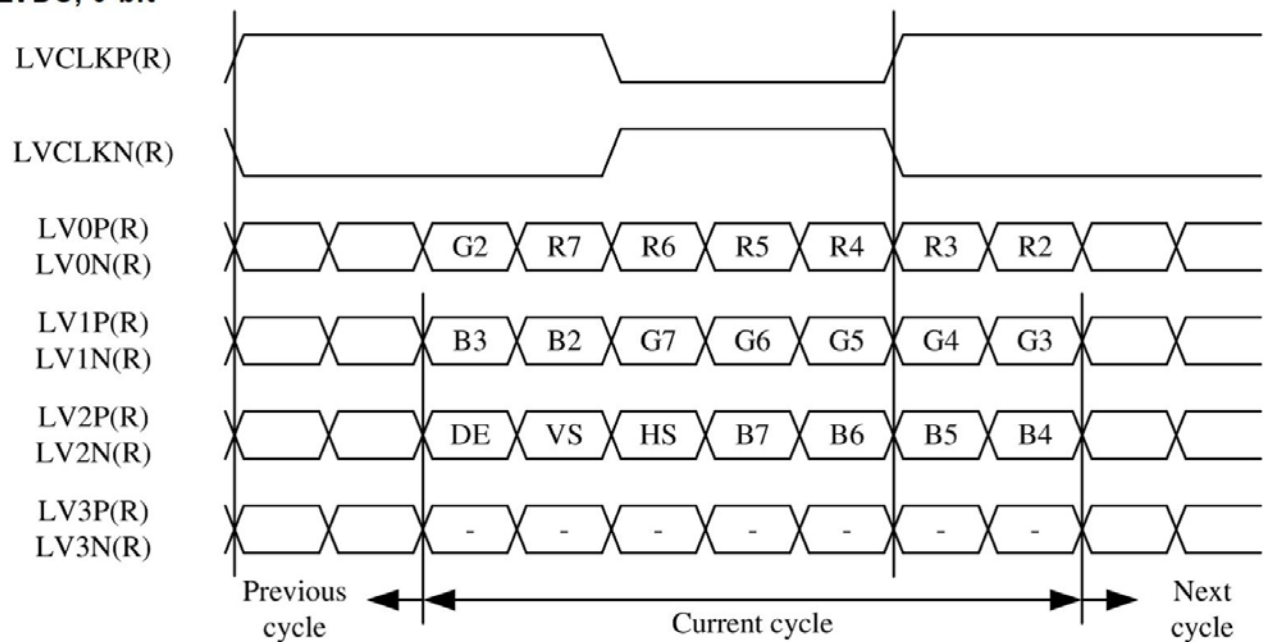
11.1.4 Timing

Parameter	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
DCLK Frequency	F DCLK	58.5	63.7	76.3	MHz	Frame rate=60Hz
Horizontal valid data	t _{hd}	1280			DCLK	
H-blanking	t _{hb}	56	60	192	DCLK	
1 Horizontal Line	t _h	1336	1340	1472	DCLK	
Vertical valid data	t _{vd}	720			H	
V-blanking	t _{vb}	10	72	144	H	
1 Vertical field	t _v	730	792	864	H	

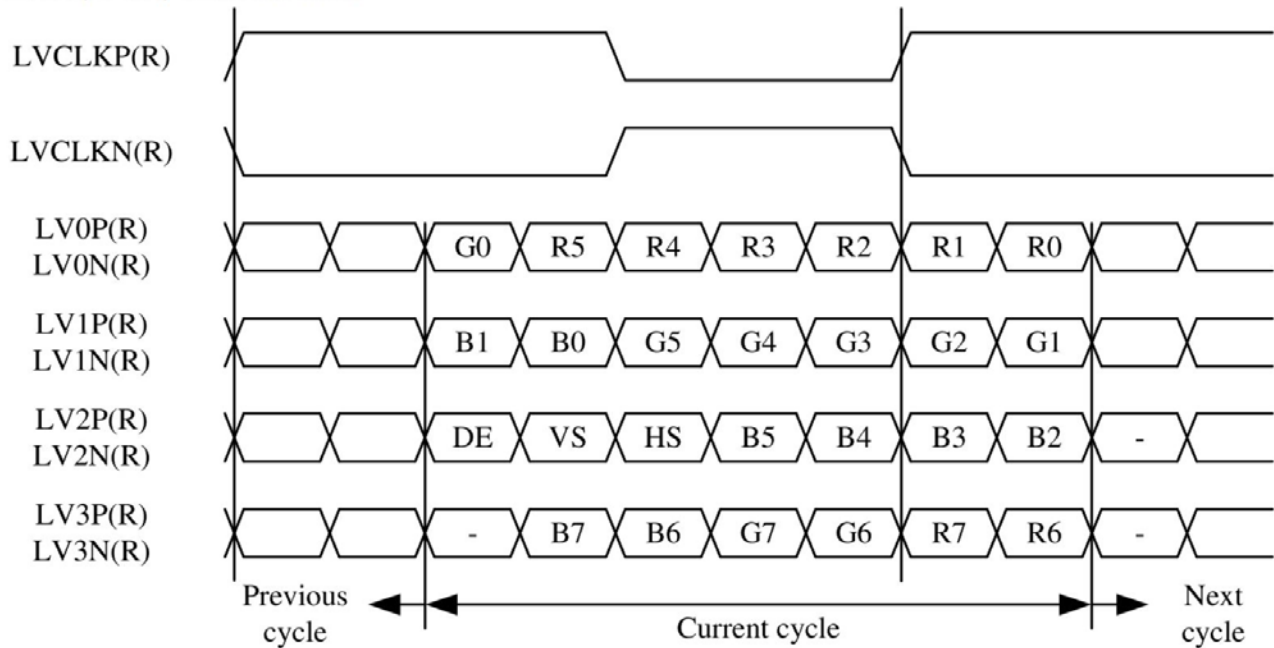
Note: DE mode only.

11.1.5 Data Input Format

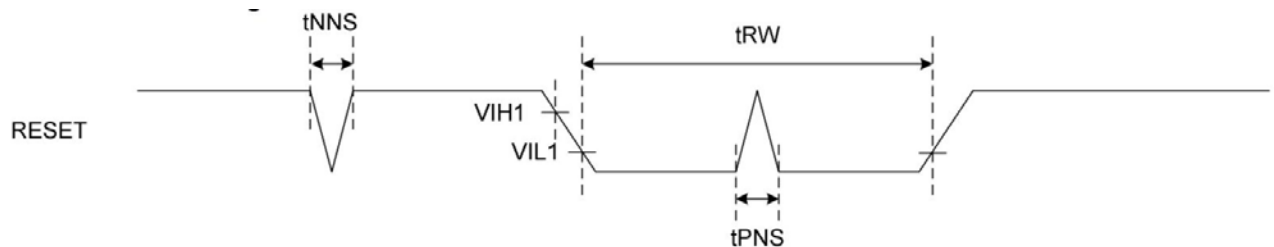
LVDS, 6-bit



LVDS, 8-bit, VESA format



11.1.6 Reset timing



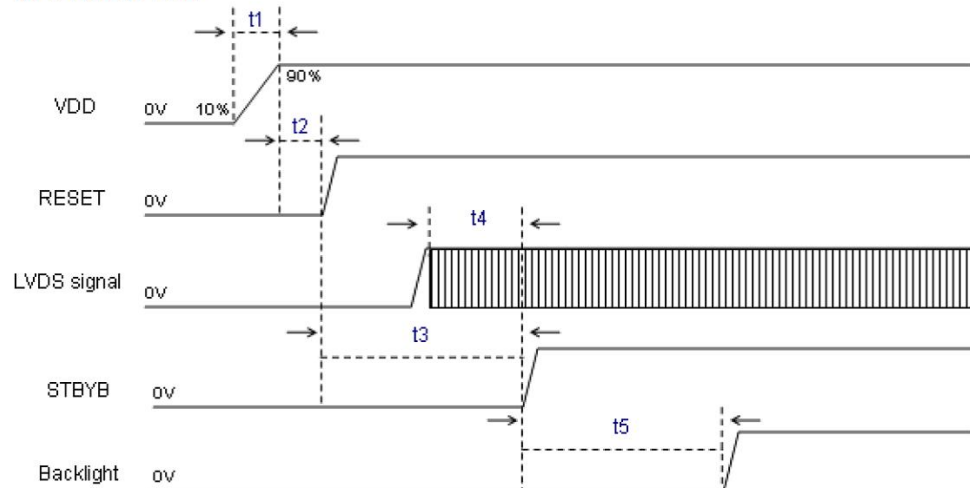
(VDD=3.3V~3.6V)

Signal	Parameter	Symbol	Spec.			Unit	Remark
			Min.	Typ.	Max.		
RESET	Reset pulse width	t_{RW}	10	-	-	μs	-
	Positive spike noise width	t_{PNS}	-	-	100	ns	-
	Negative spike noise width	t_{NNS}	-	-	100	ns	-

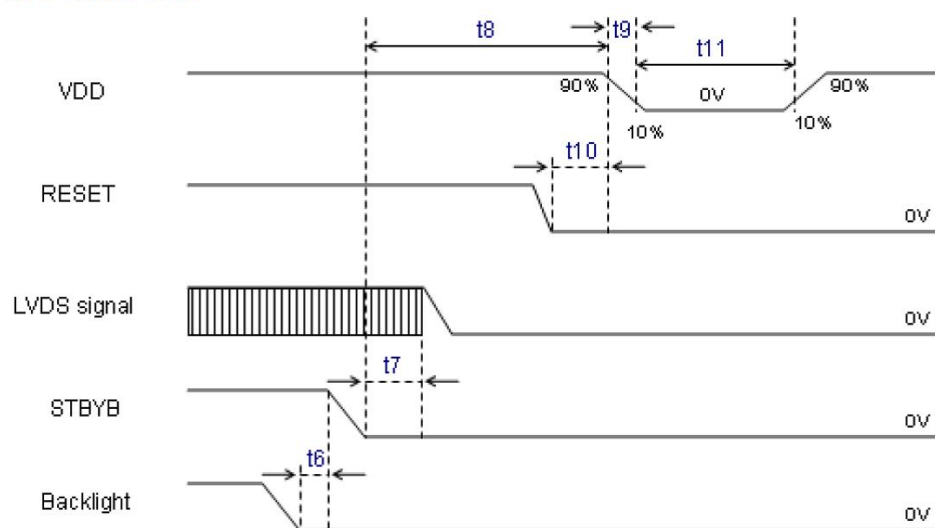
11.2 Power Sequence

VDD = 3.0~3.6V

a. Power on:



b. Power off:



Symbol	SPEC.			Unit	Remark
	Min.	Typ.	Max.		
t1	0.5	5	10	ms	t1
t2	30	40	50	us	t2
t3	10	15	20	ms	t3
t4	1	5	t3	ms	t4
t5	100	117	133	ms	t5
t6	0	25	50	ms	t6
t7	118	119	t8	ms	t7
t8	120	128	135	ms	t8
t9	0.5	5	10	ms	t9
t10	0	5	10	ms	t10
t11	500	650	800	ms	t11

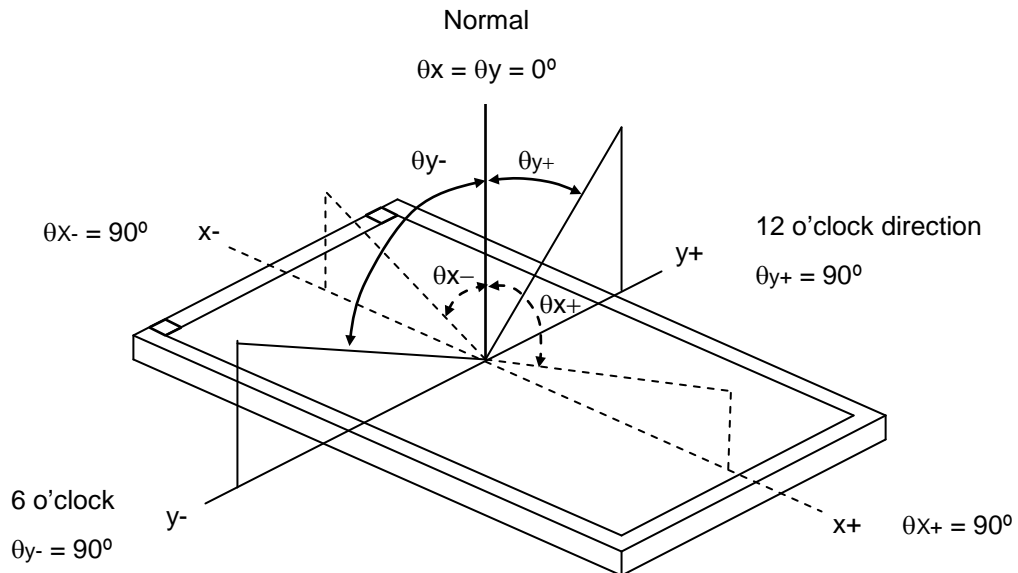
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12. Optical Characteristics

The optical characteristics should be measured in a dark environment (≤ 1 lux) or equivalent state with the methods shown in Note (4).

Item		Symbol	Conditions	Min.	Typ.	Max.	Unit	Note
Contrast Ratio		CR	$\theta_x=0^\circ, \theta_y=0^\circ$ Viewing Normal Angle	600	(1000)	-	-	(2)
Response Time		T_R		-	10	20	ms	(3)
		T_F		-	15	30	ms	
Luminance(Center)		Y		600	(750)	-	cd/m ²	(4)
Brightness uniformity		BUNI		75	(80)	-	%	(5)
Color Chromaticity	White	W_x		0.260	0.310	0.360	-	
		W_y		0.280	0.330	0.380	-	
Viewing Angle	Horizontal	θ_{x+}	CR \geq 10	75	(85)	-	deg.	(1),(4)
		θ_{x-}		75	(85)	-		
	Vertical	θ_{y+}		75	(85)	-		
		θ_{y-}		75	(85)	-		

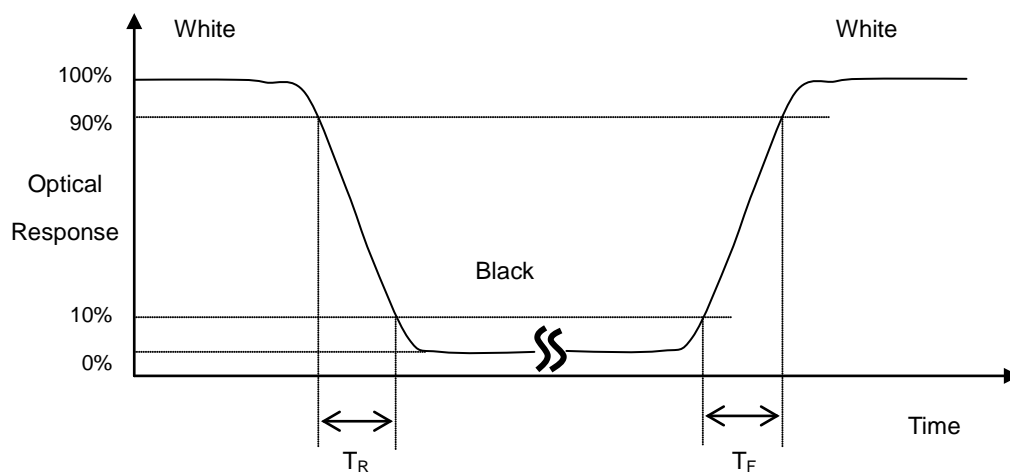
Note (1) Definition of Viewing Angle (θ_x , θ_y):



Note (2) Definition of Contrast Ratio (CR):

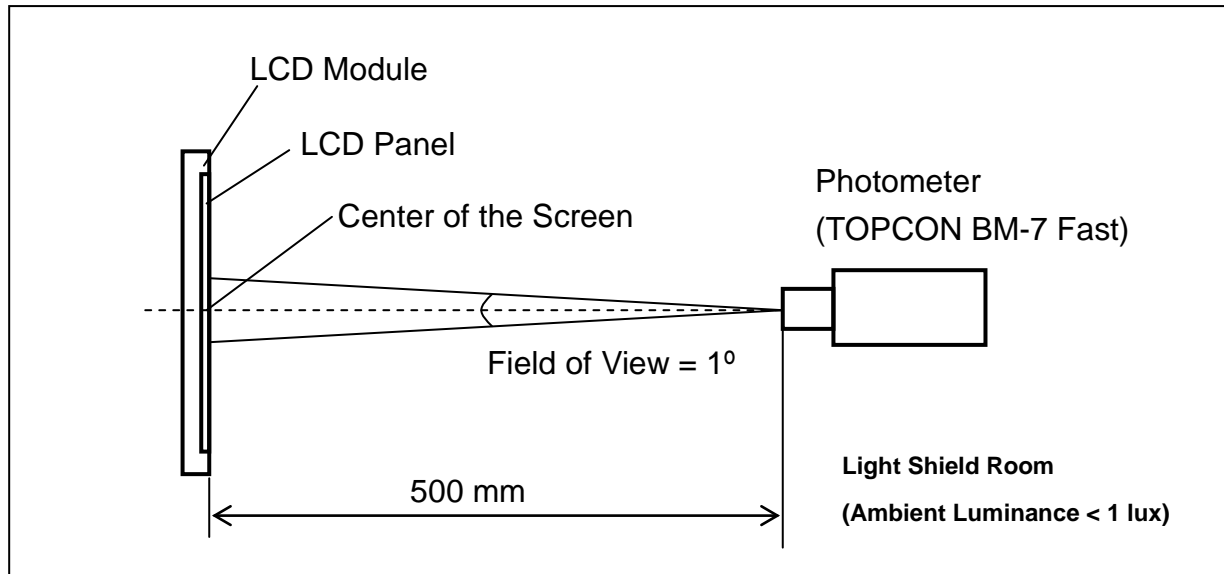
$$\text{Contrast ratio (CR)} = \frac{\text{Luminance measured when LCD on the "White" state}}{\text{Luminance measured when LCD on the "Black" state}}$$

Note (3) Definition of Response Time (T_R , T_F):

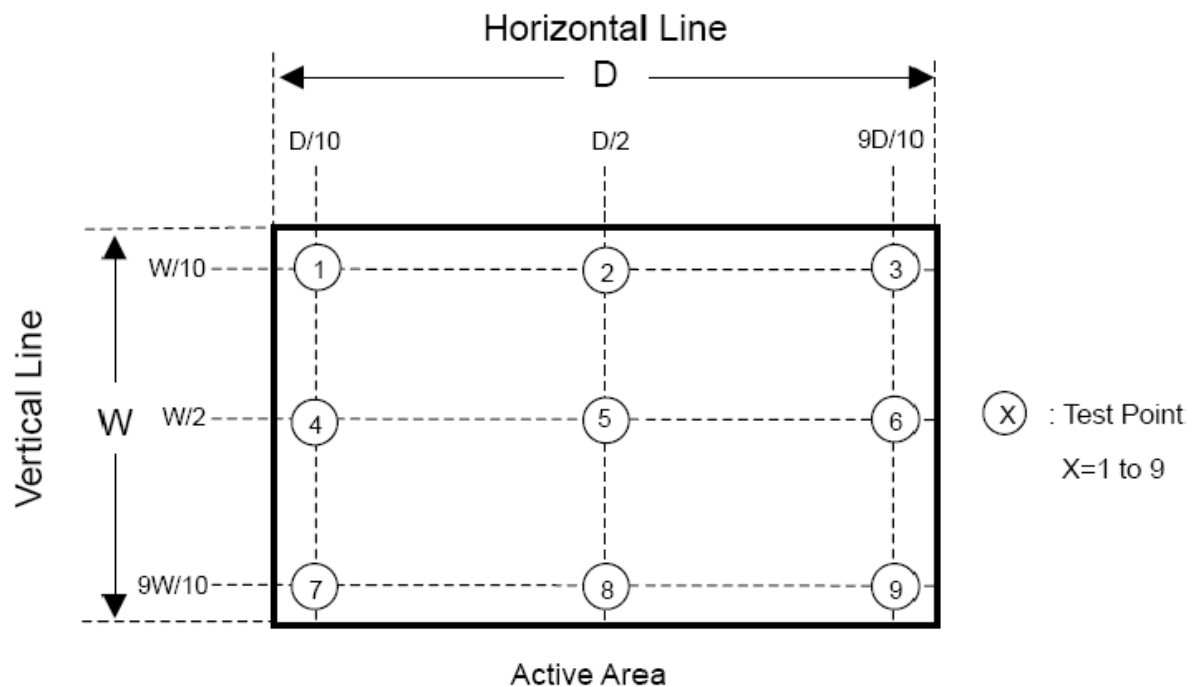


Note (4) Measurement Set-Up:

The LCD module should be stabilized at a given temperature for 30 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 30 minutes in a dark room or equivalent condition.

**Note (5) Definition of brightness uniformity**

Brightness uniformity = (Min Luminance of 9 points) / (Max Luminance of 9 points) × 100%



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13. Reliability Test

No.	Test Items	Test Condition	Remark
1	High Temperature Storage Test	T _a = 90℃ 500 hours	(1),(3),(4)
2	Low Temperature Storage Test	T _a = -40℃ 500 hours	(1),(3),(4)
3	High Temperature Operation Test	T _s = 85℃ 500 hours	(2),(3),(4)
4	Low Temperature Operation Test	T _a = -30℃ 500 hours	(1),(3),(4)
5	High Temperature and High Humidity Operation Test	T _a =60℃ 90%RH 500 hours	(3),(4)
6	Electro Static Discharge Test (non-operating)	-Panel Surface/Top Case : 150pF, 330Ω Air : ±15kV, Contact: ±8Kv	(3)
7	Mechanical Shock Test (non-operating)	Half sine wave, 100G, 6ms 3 times shock of each six surfaces	(3)
8	Vibration Test (non-operating)	Sine wave:10 ~ 55 ~ 10Hz amplitude:1.5mm 3 axis, 2 hours/axis	(3)
9	Thermal Shock Test (non-operating)	-30℃ (30min) ~ 85℃ (30min) ,10 cycles	(3),(4)
10	Drop Test(with Carton)	Height : 60 _{cm} 1 corner, 3 edges, 6 surfaces	(3)

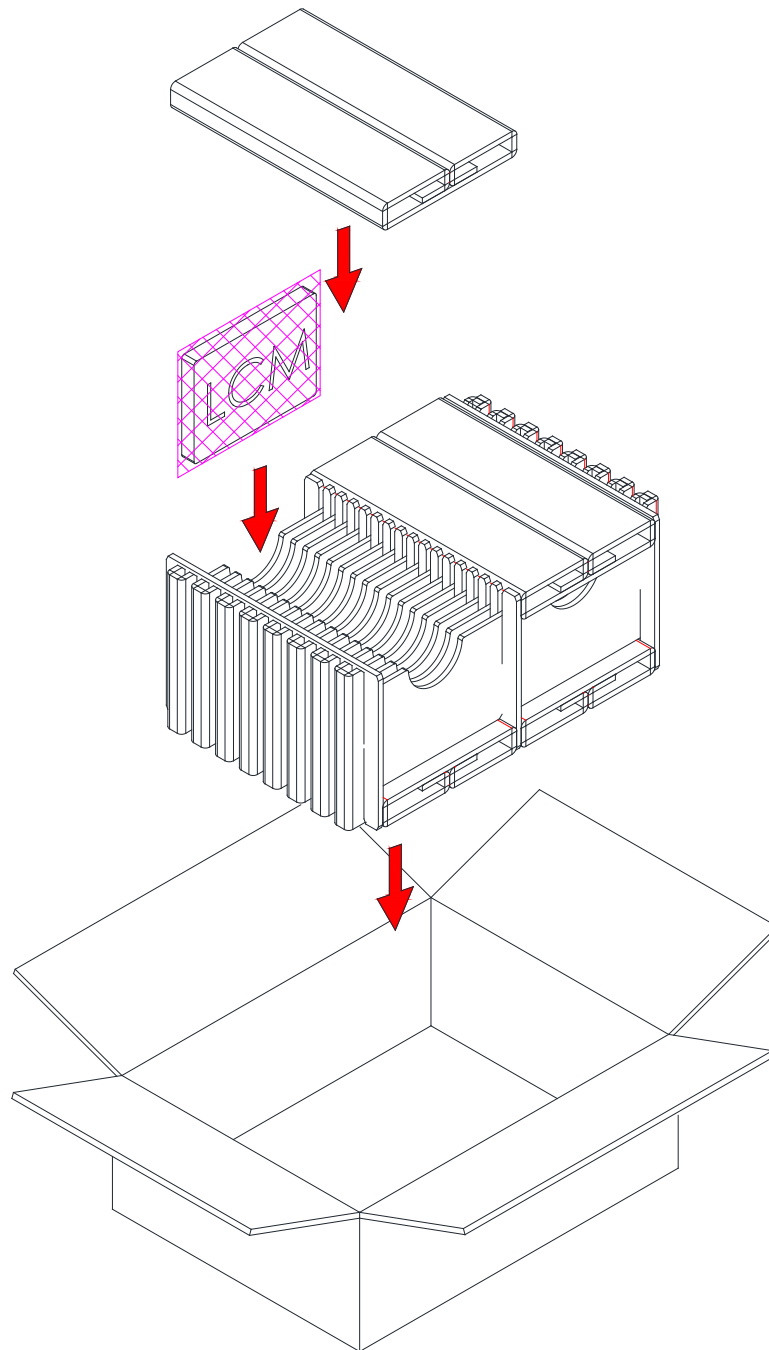
Note 1 : T_a is the ambient temperature of samples.

Note 2 : T_s is the temperature of panel' s surface.

Note 3 : In the standard condition, there shall be no practical problem that may affect the display function.
After the reliability test, the product only guarantees operation, but don' t guarantee all of the cosmetic specification.

Note 4 : Before cosmetic and function test, the product must have enough recovery time, at least 2 hours at room temperature.

14. Packaging



	PARTS LIST				
	ITEM	SIZE(L×W×H) unit : mm	MATERIAL	Q.T.Y	NOTE
1	ANTI-STATIC PE BAG	230×240×0.08		30	
2	CARD BOARD	350×221×8	CARTON	3	
3	CARD BOARD	515×26.7×221	CARTON	8	
4	CARD BOARD	22.1×350×37.5	CARTON	4	
5	EXTERNAL BOX	520×355×241	CARTON	1	
6	PRODUCT	192.8×116.9×9.5		30	

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15. Precautions

15.1 Assembly and Handling Precautions

- (1) Do not apply rough force such as bending or twisting to the module during assembly.
- (2) It's recommended to assemble or to install a module into the user's system in clean working areas. The dust and oil may cause electrical short or worsen the polarizer.
- (3) Don't apply pressure or impulse to the module to prevent the damage of LCD panel and Backlight.
- (4) Always follow the correct power-on sequence when the LCD module is turned on. This can prevent the damage and latch-up of the CMOS LSI chips.
- (5) Do not plug in or pull out the I/F connector while the module is in operation.
- (6) Do not disassemble the module.
- (7) Use a soft dry cloth without chemicals for cleaning, because the surface of polarizer is very soft and easily scratched.
- (8) Moisture can easily penetrate into LCD module and may cause the damage during operation.
- (9) High temperature or humidity may deteriorate the performance of LCD module. Please store LCD module in the specified storage conditions.
- (10) When ambient temperature is lower than 10°C, the display quality might be reduced. For example, the response time will become slow.

15.2 Safety Precautions

- (1) If the liquid crystal material leaks from the panel, it should be kept away from the eyes or mouth. In case of contact with hands, skin or clothes, it has to be washed away thoroughly with soap.
- (2) After the module's end of life, it is not harmful in case of normal operation and storage.

15.3 Terms of Warrant

- (1) Acceptance inspection period

The period is within one month after the arrival of contracted commodity at the buyer's factory site.

- (2) Applicable warrant period

The period is within twelve months since the date of shipping out under normal using and storage conditions.

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15.4 Caution

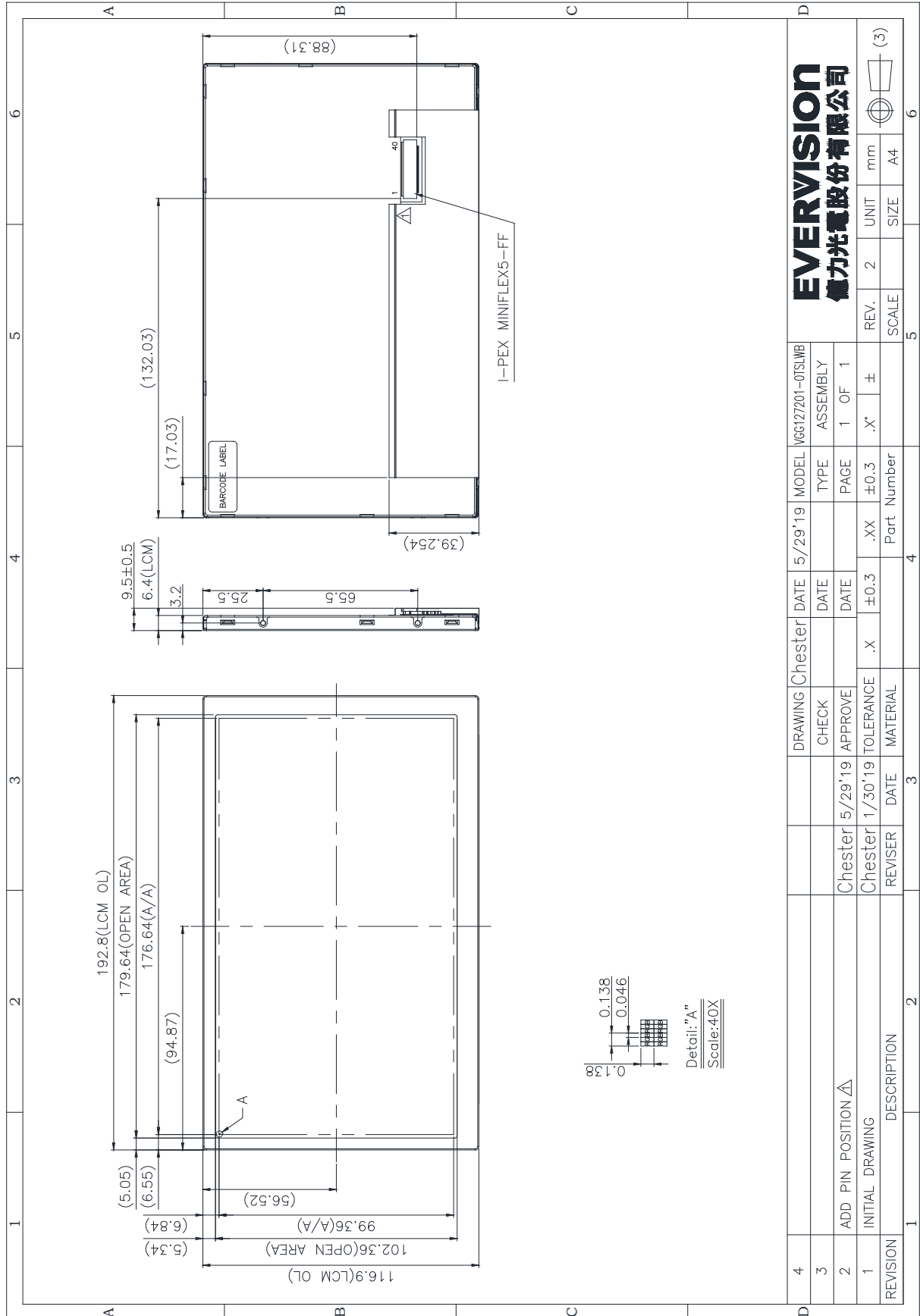
This Evervision LCD module has been specifically designed for use only in electronic devices in the areas of audio control, office automation, industrial control, home appliances, etc. The modules should not be used in applications where module failure could result in physical harm or loss of life, and Evervision expressly disclaims any and all liability relating in any way to the use of the module in such applications.

15.5 Precautions of Storage

If the displays are going to be stored for years, please be aware the following notices.

- (1) Please store the displays in a dark room to avoid any damages from sunlight and other sources of UV light.
- (2) The recommended long term storage temperature is between 10 ~35°C and <60% humidity to avoid causing bubbles between polarizer and LCD glasses, and polarizer peeling from LCD glasses.
- (3) It would be better to keep the displays in the container, which is shipped from Evervision, and do not unpack it.
- (4) Please do not stick any labels on the display surface for a long time, especially on the polarizer.

16.Outline Drawing



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17. Definition of Labels

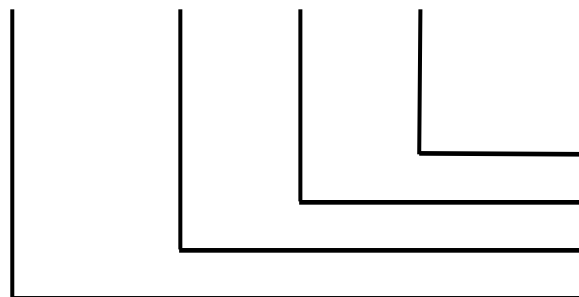
The bar code nameplate is pasted on each module as illustration, and its definitions are as following explanation.



(a) Module Name : VGG127201-0TSLWB

(b) Serial ID :

A B C D E F G H I J K L



Serial No.
Factory Code
Manufactured Date
Screen Size

Serial ID includes the information as below :

(a) Screen size (Diagonal) : Inch Code (ABCD)

3.5" → 0350

10.4" → 1040

(b) Manufactured Date : Year, Month, Day (EFG)

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Year (E)

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Mark	0	1	2	3	4	5	6	7	8	9
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Mark	A	B	C	D	E	F	G	H	I	J
Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Mark	K	L	M	N	O	P	Q	R	S	T
Year	2030	2031	2032	2033	2034	2035				
Mark	U	V	W	X	Y	Z				

Month (F)

Month	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Mark	1	2	3	4	5	6	7	8	9	A	B	C

Day (G)

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Mark	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	G
Day	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Mark	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	

(c) Factory Code (H) :

For EVERVISION internal use.

(d) Serial No. (IJKL) :

Manufacturing sequence of product, for example : 0001~9999.

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18. Incoming Inspection Standards

1.The environmental condition of inspection

1.Description

These inspection standards shall be applied to LCD Module supplied by EVERVISION Corporation.

2.Classification of defects

Defects are classified two types, major defect and minor defect according to the defect. And, the definition of defects is classified as below.

(1) Major defect

Any defect may result in functional failure, or reduce the usability of product for its purpose. For example, electrical failure, deformation and etc..

(2) Minor defect

A defect that is not to reduce the usability of product for its intended purpose and un-uniformity, dot defect and etc..

The criteria on major or minor judgment will be according with the classification of defects.

3.The environmental condition of inspection

The environmental condition and visual inspection shall be conducted as below.

(1) Ambient temperature : 25 ± 5 °C

(2) Humidity : 25~75 % RH

(3) Panel visual inspection on the operation condition for cosmetic shall be conducted at the distance 30~40cm or more between the LCD module and eyes of inspector.

Ambient Illumination : 800~1200Lux for external appearance inspection

Ambient Illumination : 200~500 Lux for light on inspection

(4) The viewing angle :

a) ± 15 degree to the front surface of display panel in vertical direction.

b) ± 15 degree to the front surface of display panel in horizontal direction.

(5) Display panel shall be conducted at the distance 30~40cm between the LCD module and eyes of inspector (Fig. 1)

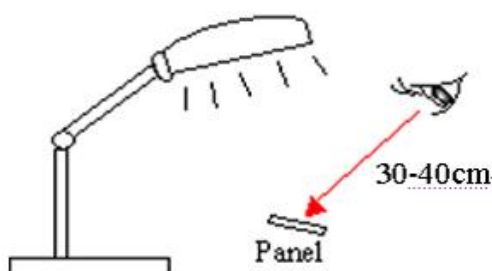


Fig. 1

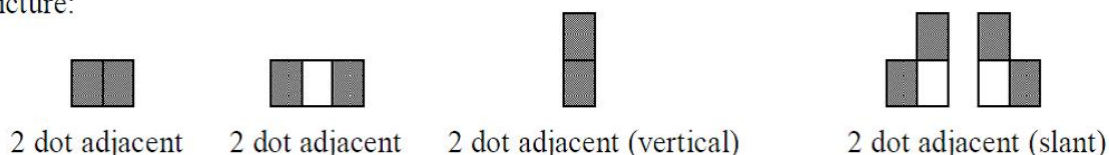
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Incoming Inspection LCD

(1) Definition of dot defect induced from the panel inside

- a) Full bright dot : Dots appear bright and unchanged in size in which LCD panel is displaying under black pattern.
- b) Full dark dot : Dots appear dark and unchanged in size in which LCD panel is displaying under pure red, green, blue picture.
- c) 2 dot adjacent = 1 pair = 2 dots

Picture:



(1) Display Inspection

Items		Acceptable count
Full Bright dot	Random	$N \leq 0$
	2 dots adjacent	$N \leq 0$
	3 dots adjacent or more	$N \leq 0$
Full Dark dot	Random	$N \leq 4$
	2 dots adjacent	$N \leq 0$
	3 dots adjacent or more	$N \leq 0$
Total full bright and full dark dot		$N \leq 4$
Distance	Minimum Distance Between full dark dots	$\geq 5\text{mm}$
Display failure (V-line/H-line/Cross line etc.)		Not allowable
Mura	Not visible through 5% ND filter in 50% gray or judge by limit sample if necessary	
Foreign Black/White/Bright Spot	$D \leq 0.15\text{mm}$, Ignore $0.15\text{mm} < D \leq 0.3\text{mm}$, $N \leq 4$ Distance $\geq 5\text{mm}$ It is shown in Fig. 2.	
Foreign Black/White/Bright Line	$W \leq 0.01\text{mm}$, Ignore $0.01\text{mm} < W \leq 0.05\text{ mm}$, $L \leq 3.0\text{ mm}$, $N \leq 4$ It is shown in Fig. 3.	

(3) External Appearance Inspection Criteria (Power off)

Item		Standards
Polarizer Dent/Air Bubble		$D \leq 0.15\text{mm}$, Ignore $0.15\text{mm} < D \leq 0.3\text{mm}$, $N \leq 4$ Distance $\geq 5\text{mm}$ It is shown in Fig. 2.
Polarizer Scratches		$W \leq 0.01\text{ mm}$, Ignore $0.01\text{mm} < W \leq 0.05\text{ mm}$, $L \leq 3.0\text{ mm}$, $N \leq 4$ It is shown in Fig. 3.
FPC cable	Cable not continuous 、Break-off 、Connector Burn-off /Break-off	
Metal frame (Bezel)	Scratch	*Noticeable scratch and exfoliation coating are not permitted. *The oxidized metal is not permitted.
	Incomplete assembly is not permitted.	
Backlight	Scratch	The scratch which may causes a problem in practical use is not permitted.
	Break-off	Breaking off is not permitted.
	Crack	The crack is not permitted.
Stain on Polarizer	The stain, which can't be wiped off, is not permitted.	
Tape/Label	Incorrect position, missed label is not permitted.	
Connector	Assembly NG or Function fail caused by deformation is not permitted	
Outline size	Spec. out is not permitted.	

1. W : Width
2. L : Length
3. D : Average Diameter
4. N : Count

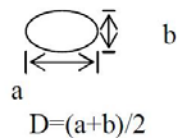


Fig. 2



W: width, L : length

Fig. 3

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18.2 Handling of LCM

- (1) Don't give external shock.
- (2) Don't apply excessive force on the surface.
- (3) Liquid in LCD is hazardous substance. Must not lick and swallow. when the liquid is attach to your hand, skin, cloth etc. Wash it out thoroughly and immediately.
- (4) Don't operate it above the absolute maximum rating.
- (5) Don't disassemble the LCM.