



SPECIFICATION

PV043021T0140W

Preliminary Specification

Final Specification

KINGTECH:

CUSTOMER:

Made By: Du xiaogang

Checked By:

Approved By:

Quality:

Date:

Note:

Approved By:

Date:

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1. General Specification

Item	Contents	Unit
LCD TYPE	TFT/TRANSMISSIVE	
MODULE SIZE (W*H*T)	105.5*67.2*2.9	MM
ACTIVE SIZE (W*H)	95.04*53.86	MM
PIXEL PITCH (W*H)	0.1188*0.1122	MM
NUMBER OF DOTS	800*480	
DRIVER IC	HX8264D03+HX8664B	
INTERFACE TYPE	24 BIT RGB	
TOP POLARIZER TYPE	ANTI-GLARE	
RECOMMEND VIEWING DIRECTION	ALL	O'CLOCK
GRAY SCALE INVERSION DIRECTION	-	O'CLOCK
BACKLIGHT TYPE	10-DIES WHITE LED	
TOUCH PANEL TYPE	WITHOUT	

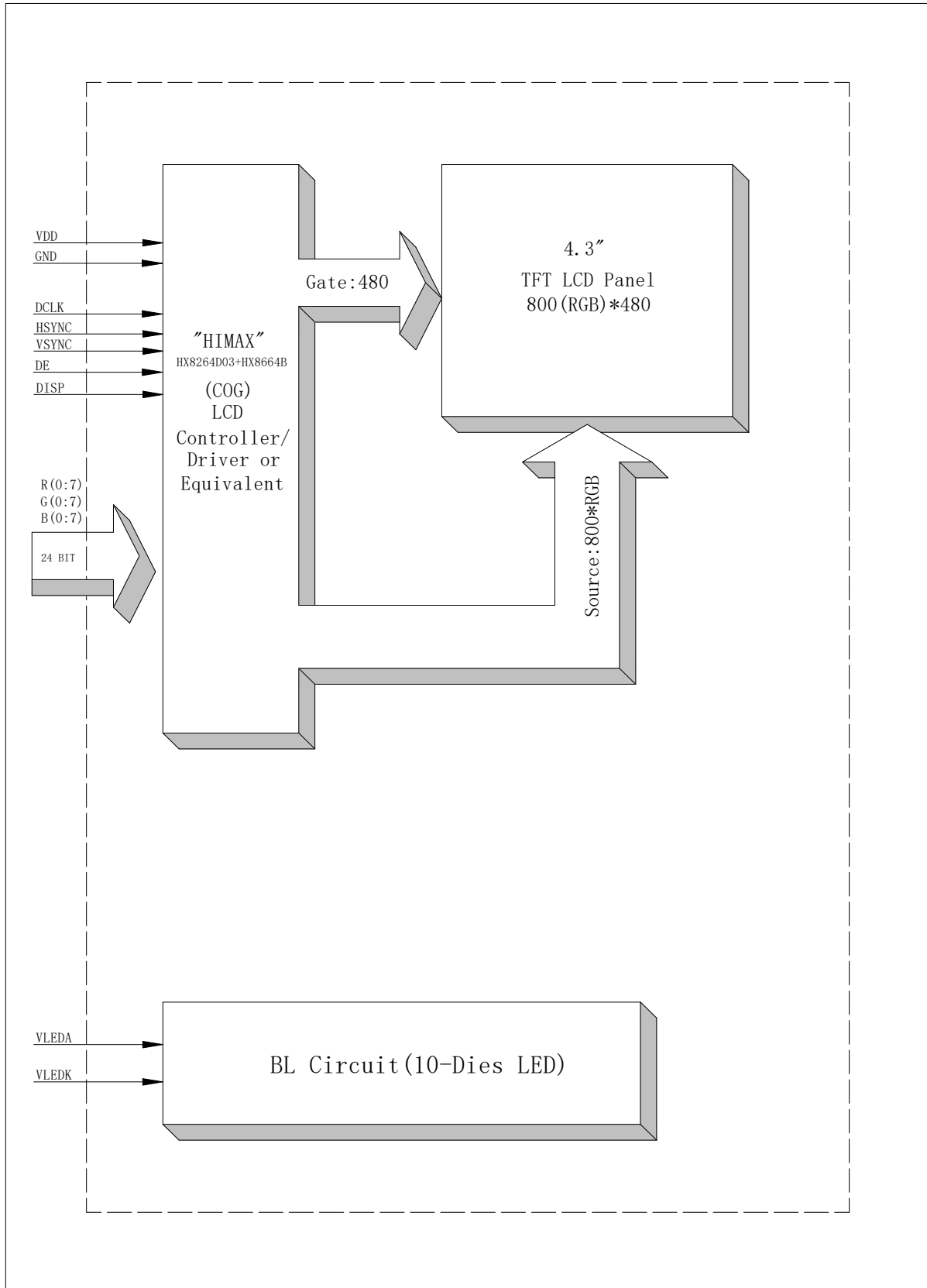


2. Mechanical Drawing

<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th>PIN</th><th>Symbol</th></tr> <tr><td>1</td><td>VLED_K</td></tr> <tr><td>2</td><td>VLED_A</td></tr> <tr><td>3</td><td>GND</td></tr> <tr><td>4</td><td>VDD</td></tr> <tr><td>5</td><td>R0</td></tr> <tr><td>6</td><td>R1</td></tr> <tr><td>7</td><td>R2</td></tr> <tr><td>8</td><td>R3</td></tr> <tr><td>9</td><td>R4</td></tr> <tr><td>10</td><td>R5</td></tr> <tr><td>11</td><td>R6</td></tr> <tr><td>12</td><td>R7</td></tr> <tr><td>13</td><td>G0</td></tr> <tr><td>14</td><td>G1</td></tr> <tr><td>15</td><td>G2</td></tr> <tr><td>16</td><td>G3</td></tr> <tr><td>17</td><td>G4</td></tr> <tr><td>18</td><td>G5</td></tr> <tr><td>19</td><td>G6</td></tr> <tr><td>20</td><td>G7</td></tr> <tr><td>21</td><td>R0</td></tr> <tr><td>22</td><td>R1</td></tr> <tr><td>23</td><td>R2</td></tr> <tr><td>24</td><td>R3</td></tr> <tr><td>25</td><td>R4</td></tr> <tr><td>26</td><td>R5</td></tr> <tr><td>27</td><td>R6</td></tr> <tr><td>28</td><td>R7</td></tr> <tr><td>29</td><td>GND</td></tr> <tr><td>30</td><td>DCLK</td></tr> <tr><td>31</td><td>DISP</td></tr> <tr><td>32</td><td>HSYN</td></tr> <tr><td>33</td><td>VSYNC</td></tr> <tr><td>34</td><td>DE</td></tr> <tr><td>35</td><td>NC</td></tr> <tr><td>36</td><td>GND</td></tr> <tr><td>37</td><td>VDD</td></tr> <tr><td>38</td><td>VDD</td></tr> <tr><td>39</td><td>VDD</td></tr> <tr><td>40</td><td>VDD</td></tr> </table>	PIN	Symbol	1	VLED_K	2	VLED_A	3	GND	4	VDD	5	R0	6	R1	7	R2	8	R3	9	R4	10	R5	11	R6	12	R7	13	G0	14	G1	15	G2	16	G3	17	G4	18	G5	19	G6	20	G7	21	R0	22	R1	23	R2	24	R3	25	R4	26	R5	27	R6	28	R7	29	GND	30	DCLK	31	DISP	32	HSYN	33	VSYNC	34	DE	35	NC	36	GND	37	VDD	38	VDD	39	VDD	40	VDD	<p style="text-align: center;">PI Stiffener</p> <p style="text-align: center;">5.00±0.2</p> <p style="text-align: center;">? PPT?? 0.3±0.05mm</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Display Type</td><td>IFT</td></tr> <tr><td>Viewing Angle</td><td>NORMALLY BLACK TRANSMISSIVE</td></tr> <tr><td>Upper Polarizer Type</td><td>ANTI-GLARE</td></tr> <tr><td>LCD Driver IC</td><td>HX8264D03+HX8664B</td></tr> <tr><td>Operating Voltage</td><td>VDD=3.3V</td></tr> <tr><td>Operation Temperature</td><td>-30°C TO 85°C</td></tr> <tr><td>Storage Temperature</td><td>-40°C TO 85°C</td></tr> <tr><td>Interface</td><td>24 BIT-RGB</td></tr> <tr><td>Backlight</td><td>10-LED WHITE</td></tr> <tr><td>Surface luminance</td><td>500cd/m²</td></tr> <tr><td>White X/Y</td><td></td></tr> </table>	Display Type	IFT	Viewing Angle	NORMALLY BLACK TRANSMISSIVE	Upper Polarizer Type	ANTI-GLARE	LCD Driver IC	HX8264D03+HX8664B	Operating Voltage	VDD=3.3V	Operation Temperature	-30°C TO 85°C	Storage Temperature	-40°C TO 85°C	Interface	24 BIT-RGB	Backlight	10-LED WHITE	Surface luminance	500cd/m ²	White X/Y		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td colspan="2">DRAWING NO.</td></tr> <tr><td colspan="2">PV043021T0140W</td></tr> <tr><td>UNIT</td><td>mm</td></tr> <tr><td>SCALE</td><td>SCALE</td></tr> <tr><td>3rd Angle</td><td>1 OF 1</td></tr> </table>	DRAWING NO.		PV043021T0140W		UNIT	mm	SCALE	SCALE	3rd Angle	1 OF 1
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3. Block Diagram





4. Interface Pin Function

Pin No.	Symbol	Description
1	VLEDK	Cathode of led backlight
2	VLEDA	Anode of led backlight
3	GND	Power ground
4	VDD	Power voltage
5	R0	Red data(LSB)
6	R1	Red data
7	R2	Red data
8	R3	Red data
9	R4	Red data
10	R5	Red data
11	R6	Red data
12	R7	Red data(MSB)
13	G0	Green data(LSB)
14	G1	Green data
15	G2	Green data
16	G3	Green data
17	G4	Green data
18	G5	Green data
19	G6	Green data
20	G7	Green data(MSB)
21	B0	Blue data(LSB)
22	B1	Blue data
23	B2	Blue data
24	B3	Blue data
25	B4	Blue data
26	B5	Blue data
27	B6	Blue data
28	B7	Blue data(MSB)
29	GND	Power ground
30	DCLK	Pixel clock
31	DISP	Display on/off
32	HSYNC	Horizontal sync signal
33	VSNC	Vertical sync signal
34	DE	Data enable
35	NC	No connect
36	GND	Power ground
37	NC(YU)	No connect
38	NC(XL)	No connect
39	NC(YD)	No connect
40	NC(XR)	No connect



5. Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Supply voltage for analog	VDD	-0.3	3.96	V
Supply voltage for logic	VDD	-0.3	3.96	V
Supply current (One LED)	I _{LED}		30	mA
Operating temperature	T _{OP}	-30	+85	°C
Storage temperature	T _{ST}	-40	+85	°C

Note: The absolute maximum rating values of this product are not allowed to be exceeded at any times. Should a module be used with any of the absolute maximum ratings exceeded, the characteristics of the module may not be recovered, or in an extreme case, the module may be permanently destroyed.



6. Electrical Characteristics

6.1 Input Power

Item	Symbol	Min	Typ.	Max	Unit	Applicable terminal
Supply Voltage for Analog	VDD	2.7	3.3	3.6	V	
Supply Voltage for Logic	VDD	2.7	3.3	3.6	V	
Input Voltage	V _{IL}	GND	-	0.4VDD	V	
	V _{IH}	0.7 VDD	-	VDD		
Input leakage Current	I _{LKG}	-		-	μA	

6.2 Backlight Driving Conditions

Item	Symbol	Value			Unit	Remark
		Min.	Typ.	Max.		
Voltage for LED Backlight	V _F	14	15.5	17	V	I _L =40mA
Current for LED Backlight	I _L		40	-	mA	
Power Consumption	P		0.62		W	
LED Life Time		30,000	50,000		Hr	Note

Note: Brightness to be decreased to 50% of the initial value at ambient temperature TA=25°C

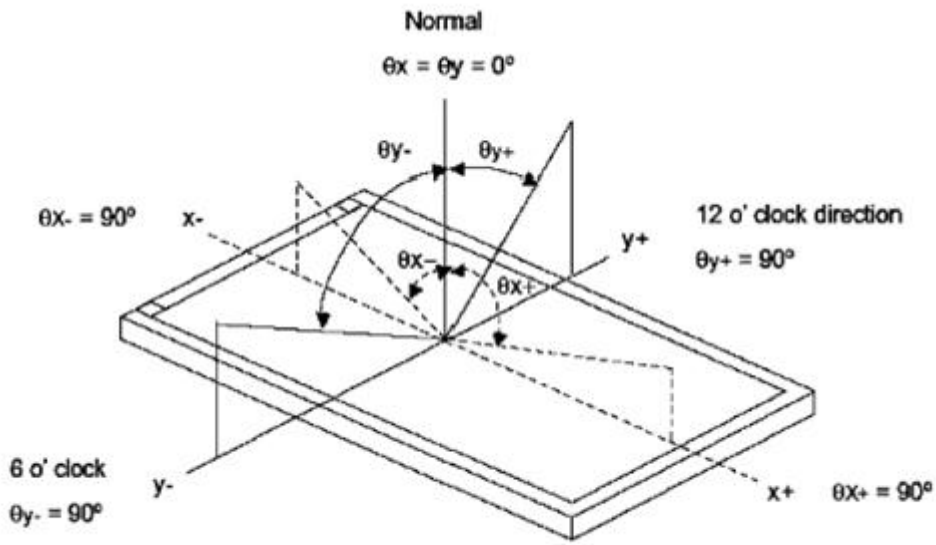


7. Optical Characteristics

ITEM	SYMBOL	CONDITIONS	SPECIFICATIONS			UNIT	NOTE
			MIN	TYP.	MAX		
Luminance	L	$I_L = 40\text{mA}$	400	500	700	Cd/m^2	
Contrast Ratio	CR	$\theta = 0^\circ$	640	800			
Response Time	T_{ON}	25°C		30	40	ms	
	T_{OFF}						
CIE Color Coordinate	Red	X_R	Viewing normal angle				
		Y_R					
	Green	X_G					
		Y_G					
	Blue	X_B					
		Y_B					
	White	X_W					
		Y_W					
Viewing Angle	Hor.	θ_{X+}	$CR \geq 10$	70	80	Degree	
		θ_{X-}		70	80		
	Ver.	θ_{Y+}		70	80		
		θ_{Y-}		70	80		
Uniformity	Un			80		%	



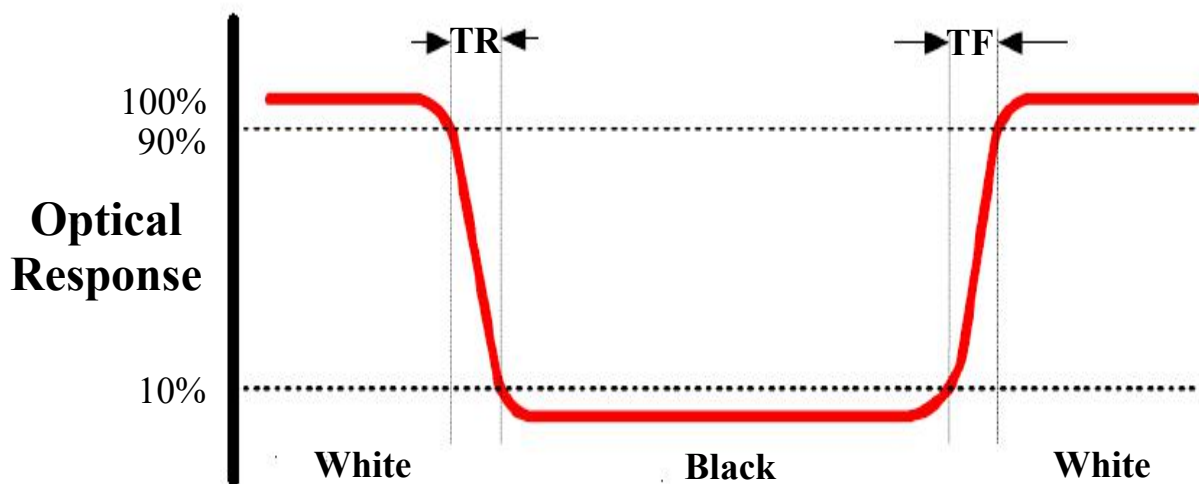
Note 1: Definition of Viewing Angle θ_x and θ_y :



Note 2: Definition of contrast ratio CR:

$$CR = \frac{\text{Luminance of white state}}{\text{Luminance of black state}}$$

Note 3: Definition of Response Time (T_r, T_f)

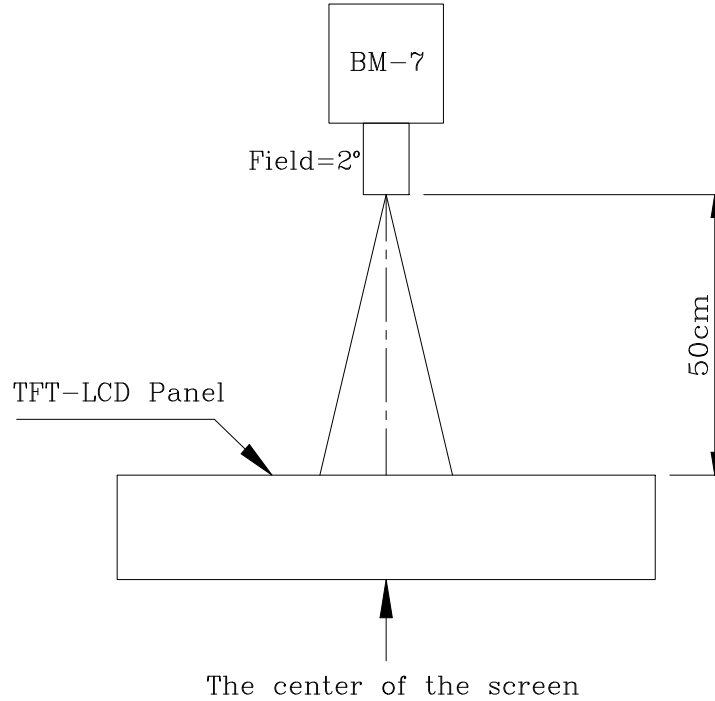




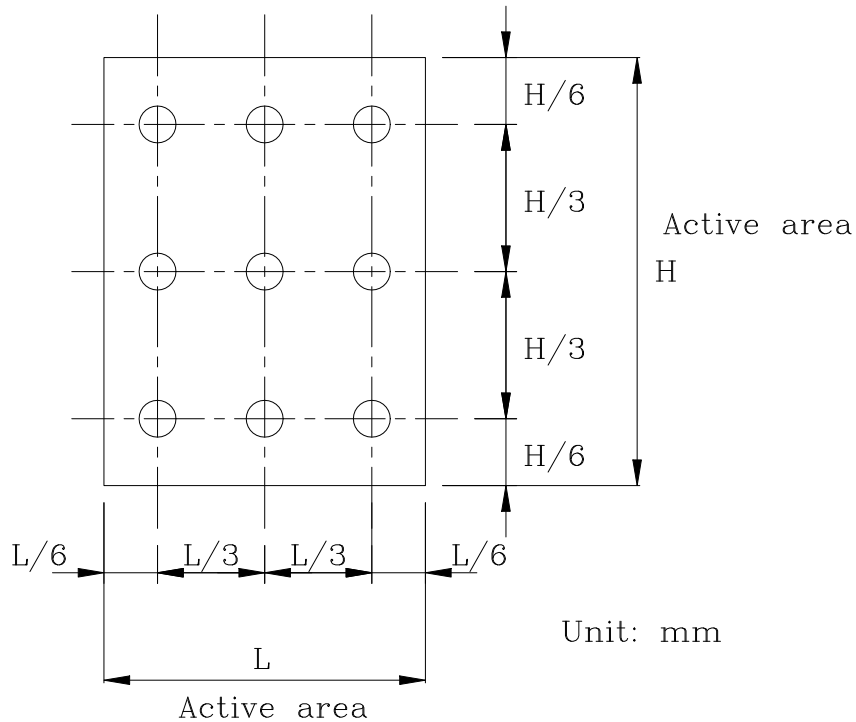
Note 4: Definition of Luminance

① The Brightness Test Equipment Setup

Field=2° (As measuring “black” image, field=2° is the best testing condition)



② The Brightness Test Point Setup





8. Timing Characteristics

8.1 AC electrical characteristics

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
HS setup time	T_{hst}	8	-	-	ns
HS hold time	T_{hhd}	8	-	-	ns
VS setup time	T_{vst}	8	-	-	ns
VS hold time	T_{vhd}	8	-	-	ns
Data setup time	T_{dsu}	8	-	-	ns
Data hold time	T_{dhd}	8	-	-	ns
DE setup time	T_{esu}	8	-	-	ns
DE hold time	T_{ehd}	8	-	-	ns
VDD Power On Slew rate	T_{POR}	-	-	20	ms
RSTB pulse width	T_{Rst}	10	-	-	μ s
CLKIN cycle time	T_{cph}	20	-	-	ns
CLKIN pulse duty	T_{cwh}	40	50	60	%
Output stable time	T_{sst}	-	-	6	μ s

8.2 Data input format

- **Horizontal timing**

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
Horizontal Display Area	thd	800			DCLK
DCLK frequency	fclk	-	30	50	MHz
One Horizontal Line	th	889	928	1143	DCLK
HS pulse width	thpw	1	48	255	DCLK
HS Back Porch (Blanking)	thb	88			DCLK
HS Front Porch	thfp	1	40	255	DCLK
DE mode Blanking	th-thd	85	128	512	DCLK

- **Vertical timing**

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
Vertical Display Area	tvd	480			T_H
VS period time	tv	513	525	767	T_H
VS pulse width	tvpw	3	3	255	T_H
VS Back Porch (Blanking)	tvb	32			T_H
VS Front Porch	tvfp	1	13	255	T_H
DE mode Blanking	tv-tvd	4	45	255	T_H



● **Horizontal timing**

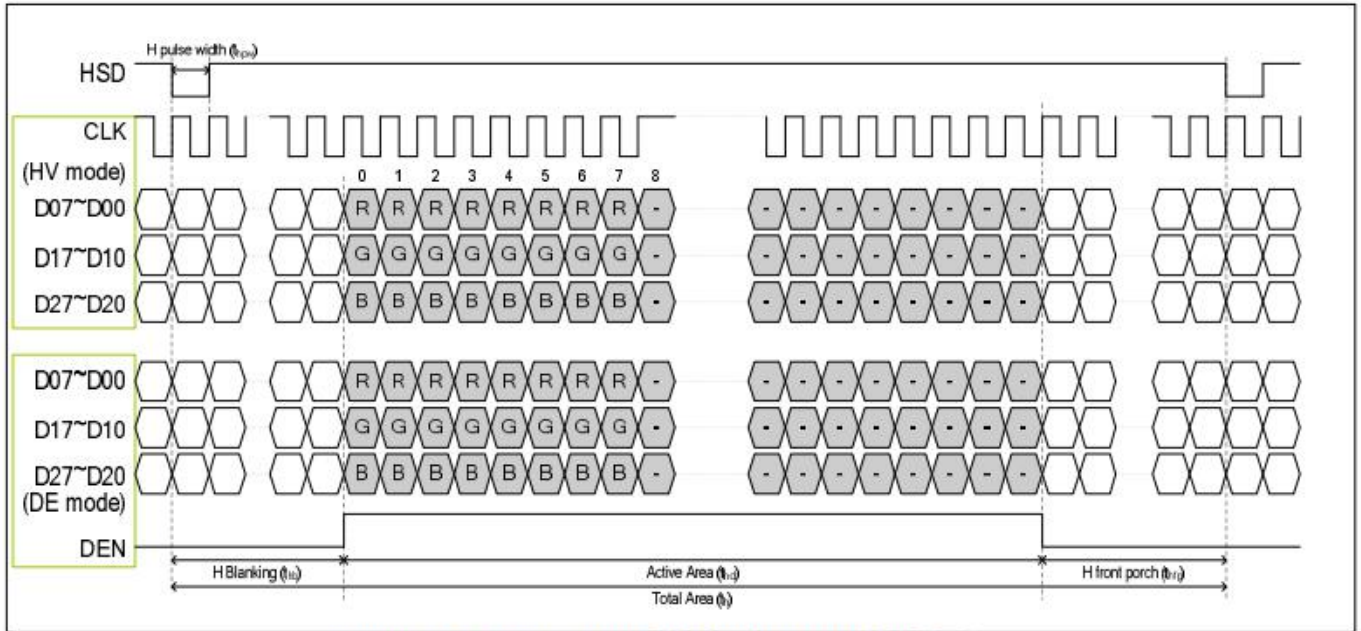


Figure 11.1: Horizontal Input Timing Diagram

● **Vertical timing**

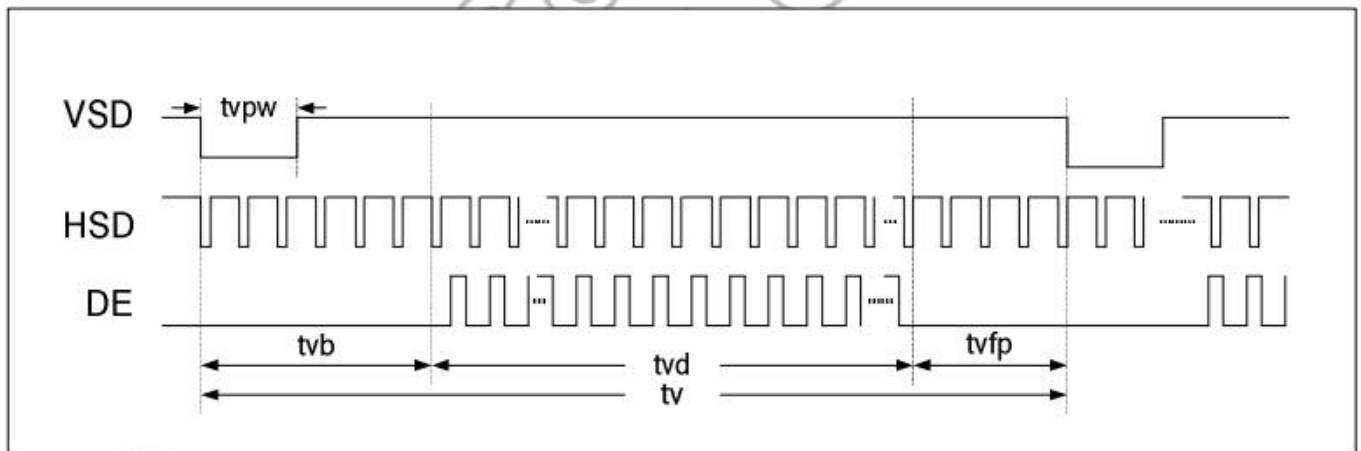


Figure 11.2: Vertical Input Timing Diagram



9. Standard Specification for Reliability

9.1 Standard Specification for Reliability of LCD Module

No	Test Item	Condition	Remarks
1	High Temperature Operation	Ts = +85°C, 240 hours	IEC60068-21:2007 GB2423.2-2008
2	Low Temperature Operation	Ta = -30°C, 240 hours	IEC60068-2-1:2007 GB/2423.1-2008
3	High Temperature Storage	Ta = +85°C, 240 hours	IEC60068-21:2007 GB/2423.2-2008
4	Low Temperature Storage	Ta = -40°C, 240 hours	IEC60068-21:2007 GB/2423.1-2008
5	Storage at High Temperature and Humidity	Ta = +60°C, 90% RH max, 240 hours	IEC60068-2-78 :2001 GB/T2423.3—2006
6	Thermal Shock (non-operation)	-30°C 30 min~+80°C 30 min, Change time:5min, 20 Cycle	Start with cold temperature, End with high temperature, IEC60068-214:1984, GB/2423.22-2002
7	ESD	C=150pF,R=330Ω,5point/panel Air:±8Kv,5times; Contact:±4Kv,5times (Environment:15°C~35°C, 30%~60%.86Kpa~106Kpa)	IEC61000-42:2001 GB/T17626.2-2006
8	Vibration Test	Frequency range:10~55Hz Stroke:1.5mm Sweep:10Hz~55Hz~10Hz 2 hours for each direction of X.Y.Z (6 hours for total)	IEC60068-2-6:1982 GB/T2423.101995
9	Mechanical Shock (Non Op)	Half Sine Wave60G 6ms, ±X,±Y,±Z 3times for each direction	IEC60068-2-27:1987 GB/T2423.5—1995
10	Package Drop Test	Height:80cm, 1corner,3 edges,6 surfaces	IEC60068-2-32:1990 GB/T2423.8—1995

Note1: Ts is the temperature of panel's surface.

Note2: Ta is the ambient temperature of sample.



9.2 Testing Conditions and Inspection Criteria

For the final test, the testing sample must be stored at room temperature for 24 hours. After the tests listed in Table 9.2, standard specifications for reliability will be executed in order to ensure stability.

No.	Item	Test Model	In section Criteria
01	Current Consumption	Refer To Specification	The current consumption should conform to the product specification.
02	Contrast	Refer To Specification	After the tests have been executed, the contrast must be larger than half of its initial value prior to the tests.
03	Appearance	Visual inspection	Defect free.

9.3 MTBF

MTBF	Functions, performance, appearance, etc. shall be free from remarkable deterioration within 50,000 hours under ordinary operating and storage conditions room temperature (25±5°C), normal humidity (50±10% RH), and in area not exposed to direct sun light.
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10. General Precautions

10.1. Safety

- Liquid crystal is poisonous. Do not put it in your mouth. If liquid crystal touches your skin or clothes, wash it off immediately by using soap and water.

10.2. Handling

- The LCD panel is plate glass. Do not subject the panel to mechanical shock or to excessive force on its surface.
- The polarizer attached to the display is easily damaged. Please handle it carefully to avoid scratch or other damages.
- To avoid contamination on the display surface, do not touch the module surface with bare hands.
- Keep a space so that the LCD panels do not touch other components.
- Put cover board such as acrylic board on the surface of LCD panel to protect panel from damages.
- Transparent electrodes may be disconnected if you use the LCD panel under environmental conditions where the condensation of dew occurs.
- Do not leave module in direct sunlight to avoid malfunction of the ICs.

10.3. Static Electricity

- Be sure to ground module before turning on power or operating module.
- Do not apply voltage which exceeds the absolute maximum rating value.

10.4. Storage

- Store the module in a dark room where must keep at $25\pm 10^{\circ}\text{C}$ and 65%RH or less.
- Do not store the module in surroundings containing organic solvent or corrosive gas.
- Store the module in an anti-electrostatic container or bag.

10.5. Cleaning

- Do not wipe the polarizer with dry cloth. It might cause scratch.
- Only use a soft cloth with IPA to wipe the polarizer, other chemicals might permanent damage to the polarizer.



11. Specification of Quality Assurance

This standard of Quality Assurance confirms to the quality of LCD module products supplied by Kingtech.

11.1 Quality Test

Before delivering, the supplier should conduct the following tests to confirm the quality of products.

- Electrical-Optical Characteristics: According to the individual specification to test the product.
- Appearance Characteristics: According to the individual specification to test the product.
- Reliability Characteristics: According to the definition of reliability on the specification for testing products.

11.2 Delivery Test

Before delivering, the supplier should conduct the delivery test.

- Test method: According to MIL-STD105E. General Inspection Level II take a single Time.
- The defects classify of AQL as following:
 - Major defect: AQL = 0.65
 - Minor defect: AQL = 1.5
 - Total defects: AQL = 1.5

11.3 Non-conforming Analysis & Deal With Manners

11.3.1 Non-conforming Analysis

- Purchaser should provide the data detail of non-conforming sample and the non-conforming.
- After receiving the data detail from purchaser, the analysis of non-conforming should be finished within two weeks.
- If the analysis can't be finished on time, supplier must notice purchaser 3 days in advance.



11.3.2 Disposition of non-conforming

- If any product defect be found during assembling, supplier must change the good for every defect after confirmation.
- Both supplier and customer should analyze the reason and discuss the disposition of non-conforming when the reason of nonconforming is not sure.

11.4 Agreement items

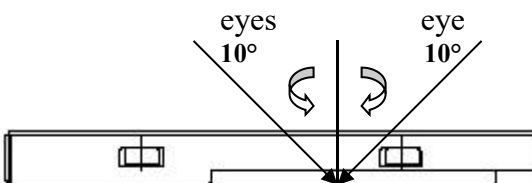
Both parties should negotiate together when the following problems happen.

- There is any problem of standard of quality assurance, and both sides should agree that it must be modified.
- There is any argument item which does not record in the standard of quality assurance.
- Any other special problem.

11.5 Standard of The Product Appearance Test

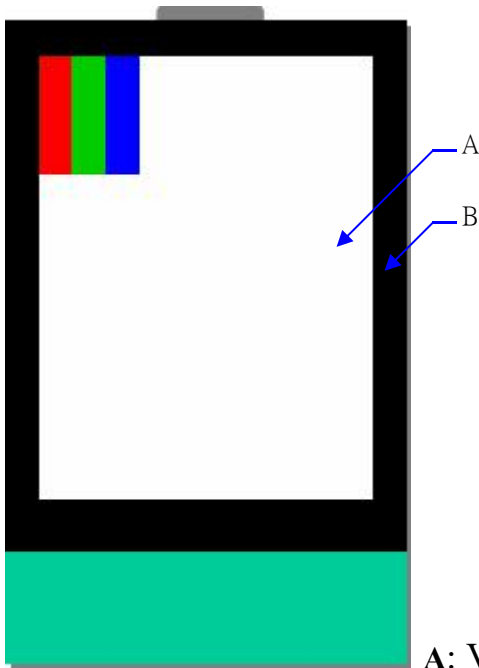
11.5.1 Manner of appearance test

- The test must be under 20W × 2 or 40W fluorescent light, and the distance of view must be at 30±5cm.
- When test the model of transmissive product must add the reflective plate.
- The test direction is base on around 10° of vertical line.
- Temperature: 25±5°C Humidity: 60±10%RH





- Definition of area:



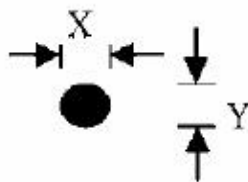
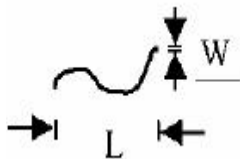
A: Viewing area B: Outside viewing area

11.5.2 Basic principle

- When the standard can not be described, AQL will be applied.
- The sample of the lowest acceptable quality level must be negotiated by both supplier and customer when any dispute happened.
- New item must be added on time when it is necessary.



11.6 Inspection Specification

NO.	Item	Criterion	AQL												
01	Electrical Testing	1.1 Missing vertical, horizontal segment, segment contrast defect. 1.2 Missing character, dot or icon. 1.3 Display malfunction. 1.4 No function or no display. 1.5 Current consumption exceeds product specifications. 1.6 LCD viewing angle defect. 1.7 Mixed product types. 1.8 Flicker	0.65												
02	Black or White spots or Bright spots or Color spots on LCD (Display only)	2.1 White and black or color spots on display $\leq 0.25\text{mm}$, no more than Five spots. 2.2 Densely spaced: No more than three spots within 3mm.	1.5												
03	LCD and Touch Panel black spots, white spots, contamination (non – display)	3.1 Round type: As following drawing $\Phi = (X+Y) / 2$  <table border="1" data-bbox="821 1086 1348 1332"> <thead> <tr> <th>Size(mm)</th> <th>Acceptable Q'ty</th> </tr> </thead> <tbody> <tr> <td>$\Phi \leq 0.10$</td> <td>Accept no dense</td> </tr> <tr> <td>$0.10 < \Phi \leq 0.20$</td> <td>2</td> </tr> <tr> <td>$0.20 < \Phi \leq 0.25$</td> <td>2</td> </tr> <tr> <td>$0.25 < \Phi \leq 0.30$</td> <td>1</td> </tr> <tr> <td>$0.30 < \Phi$</td> <td>0</td> </tr> </tbody> </table> <p>* Densely spaced: No more than two spots within 3mm.</p>	Size(mm)	Acceptable Q'ty	$\Phi \leq 0.10$	Accept no dense	$0.10 < \Phi \leq 0.20$	2	$0.20 < \Phi \leq 0.25$	2	$0.25 < \Phi \leq 0.30$	1	$0.30 < \Phi$	0	1.5
		Size(mm)	Acceptable Q'ty												
$\Phi \leq 0.10$	Accept no dense														
$0.10 < \Phi \leq 0.20$	2														
$0.20 < \Phi \leq 0.25$	2														
$0.25 < \Phi \leq 0.30$	1														
$0.30 < \Phi$	0														
3.2 Line type: (As following drawing)  <table border="1" data-bbox="726 1489 1348 1758"> <thead> <tr> <th>Length(mm)</th> <th>Width(mm)</th> <th>Acceptable Q'ty</th> </tr> </thead> <tbody> <tr> <td>---</td> <td>$W \leq 0.02$</td> <td>Accept no dense</td> </tr> <tr> <td>$L \leq 3.0$</td> <td>$0.02 < W \leq 0.05$</td> <td rowspan="2">2</td> </tr> <tr> <td>$L \leq 2.5$</td> <td>$0.03 < W \leq 0.08$</td> </tr> <tr> <td>---</td> <td>$0.08 < W$</td> <td>Rejection</td> </tr> </tbody> </table> <p>* Densely spaced: No more than two lines within 3mm.</p>	Length(mm)	Width(mm)	Acceptable Q'ty	---	$W \leq 0.02$	Accept no dense	$L \leq 3.0$	$0.02 < W \leq 0.05$	2	$L \leq 2.5$	$0.03 < W \leq 0.08$	---	$0.08 < W$	Rejection	1.5
Length(mm)	Width(mm)	Acceptable Q'ty													
---	$W \leq 0.02$	Accept no dense													
$L \leq 3.0$	$0.02 < W \leq 0.05$	2													
$L \leq 2.5$	$0.03 < W \leq 0.08$														
---	$0.08 < W$	Rejection													

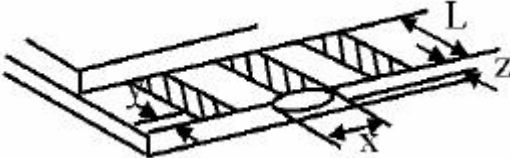
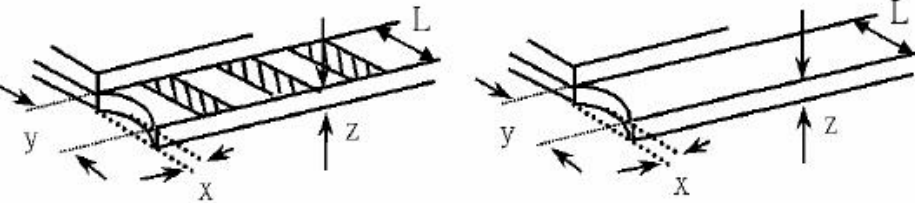
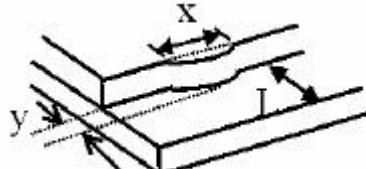


NO.	Item	Criterion		AQL	
04	Polarizer bubbles	If bubbles are visible, judge using black spot specifications, not easy to find, must check in specify direction	Size Φ (mm)	Acceptable Q'ty	1.5
			$\Phi \leq 0.20$	Accept no dense	
			$0.20 < \Phi \leq 0.50$	3	
			$0.50 < \Phi \leq 1.00$	2	
			$1.00 < \Phi$	0	
			Total Q'ty	3	
05	Scratches	Follow NO.3 -2 Line Type.			
06	Chipped glass	Symbols: x: Chip length y: Chip width z: Chip thickness k: Seal width t: Glass thickness a: LCD side length L: Electrode pad length 6.1 General glass chip: 6.1.1 Chip on panel surface and crack between panels:		1.5	
		z: Chip thickness	y: Chip width		x: Chip length
		$Z \leq 1/2t$	Not over viewing area		$x \leq 1/8a$
$1/2t < z \leq 2t$	Not exceed 1/3k	$x \leq 1/8a$			
⊙ Unit: mm ⊙ If there are 2 or more chips, x is the total length of each chip 6.1.2 Corner crack:					
z: Chip thickness	y: Chip width		x: Chip length		
$Z \leq 1/2t$	Not over viewing area		$x \leq 1/8a$		
$1/2t < z \leq 2t$	Not exceed 1/3k	$x \leq 1/8a$			
⊙ Unit: mm ⊙ If there are 2 or more chips, x is the total length of each chip					

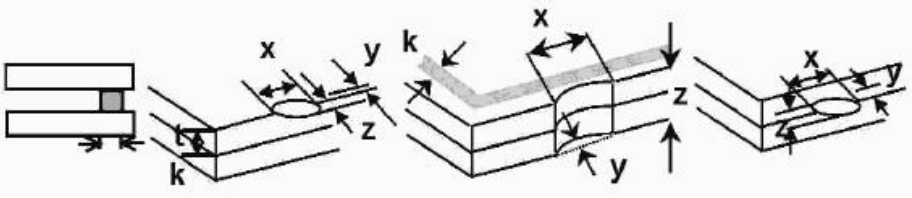
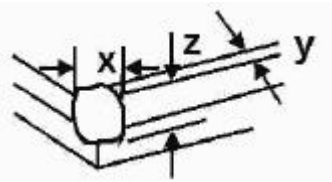


NO.	Item	Criterion	AQL
08	Cracked glass	The LCD with extensive crack is not acceptable.	1.5
09	Backlight elements	9.1 Illumination source flickers when lit. 9.2 Spots or scratches that appear when lit must be judged. Using LCD spot, lines and contamination standards. 9.3 Backlight doesn't light or color is wrong.	1.5 1.5 0.65
10	Bezel	Bezel must comply with product specifications.	1.5
11	PCB、COB	11.1 COB seal may not have pinholes larger than 0.2mm or contamination. 11.2 COB seal surface may not have pinholes through to the IC. 11.3 The height of the COB should not exceed the height indicated in the assembly diagram. 11.4 There may not be more than 2mm of sealant outside the seal area on PCB. And there should be no more than three places. 11.5 Parts on PCB must be the same as on the production characteristic chart, There should be no wrong parts, missing parts or excess parts. 11.6 The jumper on the PCB should conform to the product characteristic chart.	1.5 1.5 1.5 1.5 0.65 0.65
12	FPC	12.1 FPC terminal damage \cong 1/2 FPC terminal width and can not affect the function , we judge accept. 12.2 FPC alignment hole damage \cong 1/2 alignment area and can not affect the function , we judge accept.	1.5 1.5
13	Soldering	13.1 No cold solder joints, missing solder connections, oxidation or icicle. 13.2 No short circuits in components on PCB or FPC.	1.5 0.65

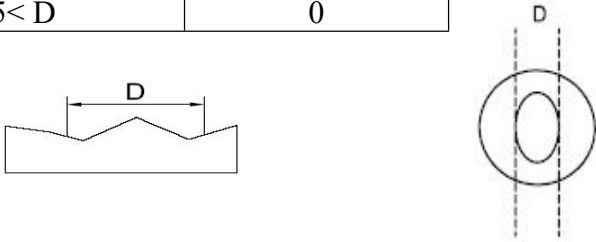


NO.	Item	Criterion	AQL																
07	Glass crack	<p>Symbols: x: Chip length y: Chip width z: Chip thickness k: Seal width t: Glass thickness a: LCD side length L: Electrode pad length</p> <p>7.2 Protrusion over terminal: 7.2.1 Chip on electrode pad:</p>  <table border="1" data-bbox="558 716 1236 862"> <tr> <td>y: Chip width</td> <td>x: Chip length</td> <td>z: Chip thickness</td> </tr> <tr> <td>$y \leq 0.5\text{mm}$</td> <td>$x \leq 1/8a$</td> <td>$0 < z \leq t$</td> </tr> </table> <p>7.2.2 Non-conductive portion:</p>  <table border="1" data-bbox="558 1232 1236 1377"> <tr> <td>y: Chip width</td> <td>x: Chip length</td> <td>z: Chip thickness</td> </tr> <tr> <td>$y \leq L$</td> <td>$x \leq 1/8a$</td> <td>$0 < z \leq t$</td> </tr> </table> <p>⊙ If there chipped area touches the ITO terminal, over 2/3 of the ITO must remain and be inspected according to electrode terminal specifications. ⊙ If the product will be heat sealed by the customer, the alignment mark must not be damaged.</p> <p>7.2.3 Substrate protuberance and internal crack</p>  <table border="1" data-bbox="885 1702 1316 1848"> <tr> <td>y: width</td> <td>x: length</td> </tr> <tr> <td>$y \leq 1/3L$</td> <td>$X \leq a$</td> </tr> </table>	y: Chip width	x: Chip length	z: Chip thickness	$y \leq 0.5\text{mm}$	$x \leq 1/8a$	$0 < z \leq t$	y: Chip width	x: Chip length	z: Chip thickness	$y \leq L$	$x \leq 1/8a$	$0 < z \leq t$	y: width	x: length	$y \leq 1/3L$	$X \leq a$	1.5
y: Chip width	x: Chip length	z: Chip thickness																	
$y \leq 0.5\text{mm}$	$x \leq 1/8a$	$0 < z \leq t$																	
y: Chip width	x: Chip length	z: Chip thickness																	
$y \leq L$	$x \leq 1/8a$	$0 < z \leq t$																	
y: width	x: length																		
$y \leq 1/3L$	$X \leq a$																		



NO.	Item	Criterion	AQL												
14	Touch Panel Chipped glass	<p>Symbols: x: Chip length y: Chip width z: Chip thickness k: Seal width t: Touch Panel Total thickness a: LCD side length L: Electrode pad length</p> <p>14.1 General glass chip: 14.1.1 Chip on panel surface and crack between panels:</p>  <table border="1" data-bbox="451 752 1270 967"> <tr> <td style="text-align: center;">z: Chip thickness</td> <td style="text-align: center;">y: Chip width</td> <td style="text-align: center;">x: Chip length</td> </tr> <tr> <td style="text-align: center;">$Z \leq t$</td> <td style="text-align: center;">$\cong 1/2 k$ and not over viewing area</td> <td style="text-align: center;">$x \leq 1/8a$</td> </tr> </table> <p>⊙ Unit: mm ⊙ If there are 2 or more chips, x is the total length of each chip</p> <p>14.1.2 Corner crack:</p>  <table border="1" data-bbox="451 1346 1270 1561"> <tr> <td style="text-align: center;">z: Chip thickness</td> <td style="text-align: center;">y: Chip width</td> <td style="text-align: center;">x: Chip length</td> </tr> <tr> <td style="text-align: center;">$z \leq t$</td> <td style="text-align: center;">$\cong 1/2 k$ and not over viewing area</td> <td style="text-align: center;">$x \leq 1/8a$</td> </tr> </table> <p>⊙ Unit: mm ⊙ If there are 2 or more chips, x is the total length of each chip</p>	z: Chip thickness	y: Chip width	x: Chip length	$Z \leq t$	$\cong 1/2 k$ and not over viewing area	$x \leq 1/8a$	z: Chip thickness	y: Chip width	x: Chip length	$z \leq t$	$\cong 1/2 k$ and not over viewing area	$x \leq 1/8a$	1.5
z: Chip thickness	y: Chip width	x: Chip length													
$Z \leq t$	$\cong 1/2 k$ and not over viewing area	$x \leq 1/8a$													
z: Chip thickness	y: Chip width	x: Chip length													
$z \leq t$	$\cong 1/2 k$ and not over viewing area	$x \leq 1/8a$													



NO.	Item	Criterion	AQL										
15	Touch Panel(Fish eye、dent and bubble on film)	<table border="1" data-bbox="443 342 976 548"> <thead> <tr> <th>SIZE(mm)</th> <th>Acceptable Q'ty</th> </tr> </thead> <tbody> <tr> <td>$\Phi \leq 0.2$</td> <td>Accept no dense</td> </tr> <tr> <td>$0.2 < D \leq 0.4$</td> <td>5</td> </tr> <tr> <td>$0.4 < D \leq 0.5$</td> <td>2</td> </tr> <tr> <td>$0.5 < D$</td> <td>0</td> </tr> </tbody> </table> 	SIZE(mm)	Acceptable Q'ty	$\Phi \leq 0.2$	Accept no dense	$0.2 < D \leq 0.4$	5	$0.4 < D \leq 0.5$	2	$0.5 < D$	0	1.5
SIZE(mm)	Acceptable Q'ty												
$\Phi \leq 0.2$	Accept no dense												
$0.2 < D \leq 0.4$	5												
$0.4 < D \leq 0.5$	2												
$0.5 < D$	0												
16	Touch Panel Newton ring	Newton ring dimension $\leq 1/2$ touch panel area and not affect font and line distortion($\leq 2.5\%$) , it is acceptable.	1.5										
17	Touch Panel Linearity	Less than 1.5% is acceptable.	1.5										
18	LCD Ripple	Touch the touch panel , can not see the LCD ripple. Pen: R 1.0mm silicon rubber. Operation Force: 80g	1.5										
19	General appearance	19.1 Pin type must match type in specification sheet. 19.2 LCD pin loose or missing pins. 19.3 Product packaging must the same as specified on packaging specification sheet. 19.4 Product dimension and structure must conform to product specification sheet.	0.65 0.65 0.65 0.65										



12.Packing Method

No.	Item	Dimensions(mm)	Quantity	Remark
1	LCM Module	105.5*67.2*2.9	160PCS	
2	PALLET	344*285*85 (include 80pcs products/one pallet)	2PCS	
3	LARGE CARTON	385*315*227 (include 160pcs products/one carton)	1PCS	