

Frilcd Display Co., LTD

华瑞光电科技有限公司



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SPECIFICATION

CUSTOMER : _____

MODULE NO.: **HC320240A**

<p>APPROVED BY:</p> <p>(FOR CUSTOMER USE ONLY)</p>	<p>PCB VERSION: _____</p> <p>DATA: _____</p>
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SALES BY	APPROVED BY	CHECKED BY	PREPARED BY
ISSUED DATE: _____			

MODLE NO :

RECORDS OF REVISION

DOC. FIRST ISSUE

VERSION	DATE	REVISED PAGE NO.	SUMMARY
0	2007.09.03		First issue

Contents

- 1.Module classification information
- 2.Precautions in Use of LCM
- 3.General Specification
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- 5.Electrical Characteristics
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10. Power supply
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1. Module Classification Information

H C 3 2 0 2 4 0 A — - FCC

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

① Brand : FRILCD DISPLAY CORPORATION

② Display Type : Z→Character Type, D→Graphic Type, C→ Color

③ Display Font : 320 RxGxB * 240 Dots

④ Model serials number

⑤ Backlight Type :

N→Without backlight	T→LED, White
B→EL, Blue green	A→LED, Amber
D→EL, Green	R→LED, Red
W→EL, White	O→LED, Orange
F→CCFL, White	G→LED, Green
Y→LED, Yellow Green	

⑥ LCD Mode :

B→TN Positive, Gray	T→FSTN Negative
N→TN Negative,	C→STN Color
G→STN Positive, Gray	
Y→STN Positive, Yellow Green	
M→STN Negative, Blue	
F→FSTN Positive	

⑦ LCD Polarize Type/
Temperature range/
View direction

A→Reflective, N.T, 6:00	H→Transflective, W.T,6:00
D→Reflective, N.T, 12:00	K→Transflective,W.T,12:00
G→Reflective, W. T, 6:00	C→Transmissive, N.T,6:00
J→Reflective, W. T, 12:00	F→Transmissive, N.T,12:00
B→Transflective, N.T,6:00	I→Transmissive, W. T, 6:00
E→Transflective, N.T.12:00	L→Transmissive, W.T,12:00

⑧ Special Code N: Without Built in negative voltage ;
#Fit in with the ROHS Directions and regulations

2. Precautions in Use of LCD Module

- (1) Avoid applying excessive shocks to the module or making any alterations or modifications to it.
- (2) Don't make extra holes on the printed circuit board, modify its shape or change the components of LCD Module.
- (3) Don't disassemble the LCM.
- (4) Don't operate it above the absolute maximum rating.
- (5) Don't drop, bend or twist LCM.
- (6) Soldering: only to the I/O terminals.
- (7) Storage: please storage in anti-static electricity container and clean environment.

3. General Specification

ITEM	STANDARD VALUE	UNIT
Number of dots	320 x RGB x240	dots
Outline dimension	154.6(W)x 114.8(H)x 9.0ma x(T)	mm
View area	120.2(W)x 91.1(H)	mm
Active area	115.18(W)x 86.38(H)	mm
Dot Size	0.10 x 0.34	mm
Dot Pitch	0.12 x 0.36	mm
LCD type	STN Color, transmissive	
View direction	6 o'clock	
Backlight	CCFL White	

4. Absolute Maximum Ratings

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT
Operating Temperature	T_{OP}	0	—	+50	°C
Storage Temperature	T_{ST}	-20	—	+70	°C
Input Voltage	V_I	-0.3	—	V_{DD}	V

5. Electrical Characteristics

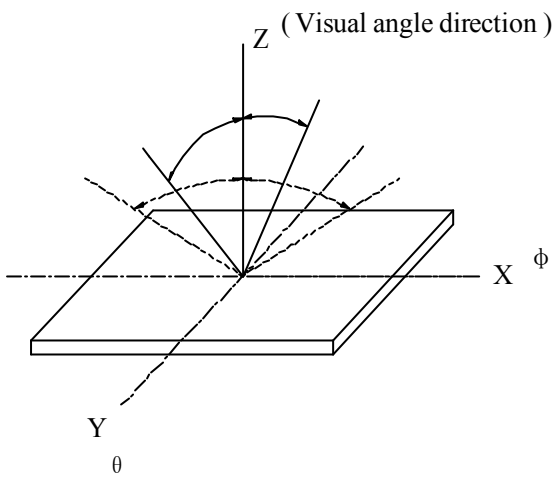
ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Logic Voltage	$V_{DD}-V_{SS}$	—	4.5	5.0	5.5	V
Supply Voltage For LCD	$V_{LCD}-V_{SS}$	Ta=-10°C	26.7	27.2	27.7	V
		Ta=25°C	25.1	25.6	26.1	V
		Ta=60°C	24.0	24.5	25.0	V
Input High Volt.	V_{IH}	—	$0.8V_{DD}$	—	V_{DD}	V
Input Low Volt.	V_{IL}	—	0	—	$0.2V_{DD}$	V
Output High Volt.	V_{OH}	—	$V_{DD}-0.4$	—	—	V
Output Low Volt.	V_{OL}	—	—	—	0.4	V
Supply Current For Logic	I_{DD}	V=5.0V	—	2.5	5	mA

6. Optical Characteristics

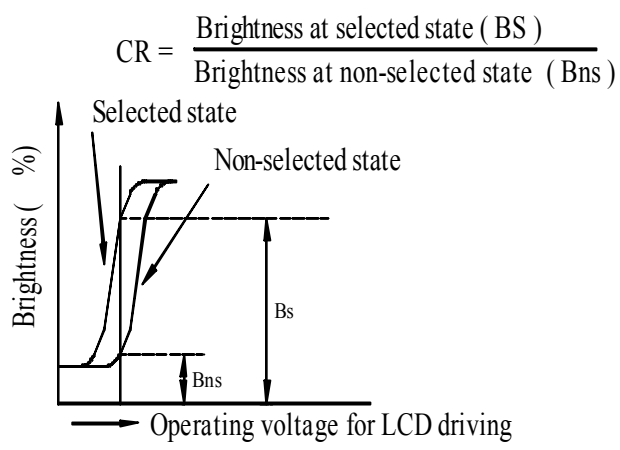
ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
View Angle	(V) θ	$CR \geq 10$	20	—	40	deg.
	(H) φ	$CR \geq 10$	-30	—	30	deg.
Contrast Ratio	CR	—	—	25	—	—
Response Time	T rise	—	240	300	450	ms
	T fall	—	80	100	150	ms

6.1 Definitions

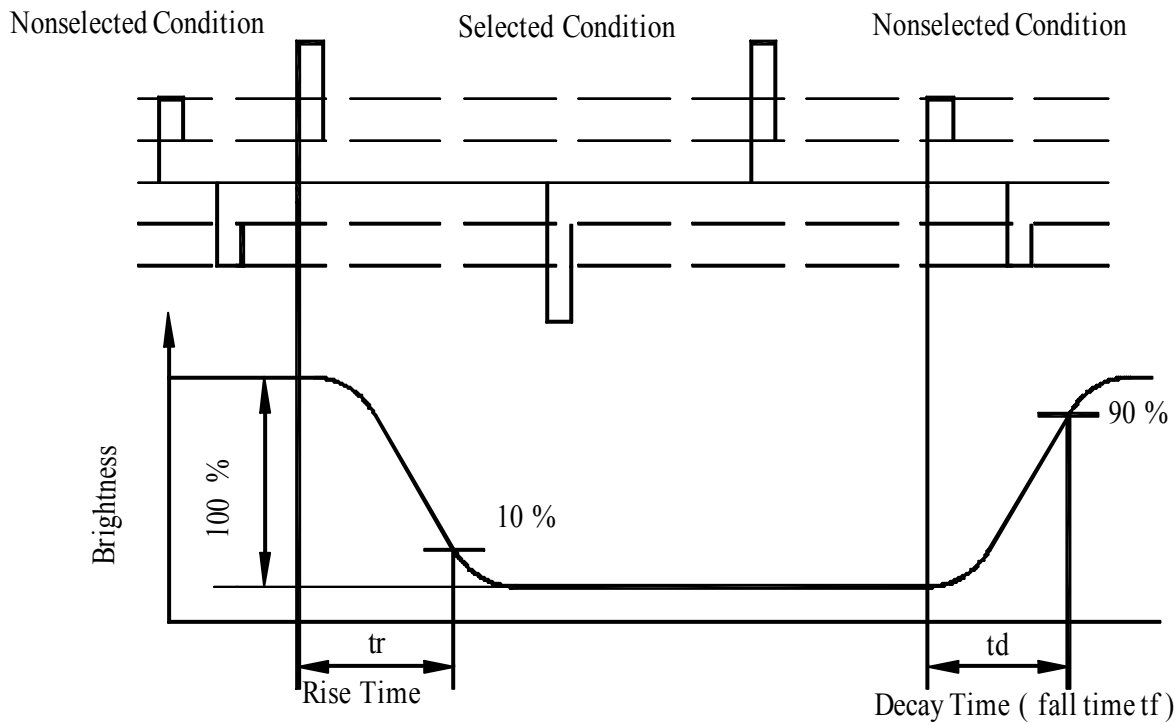
View Angles



Contrast Ratio



Response time



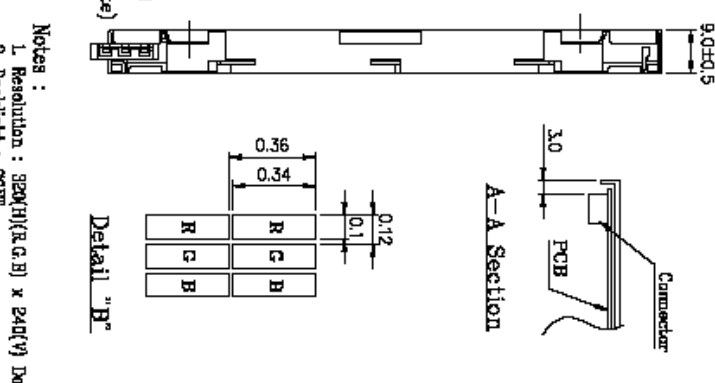
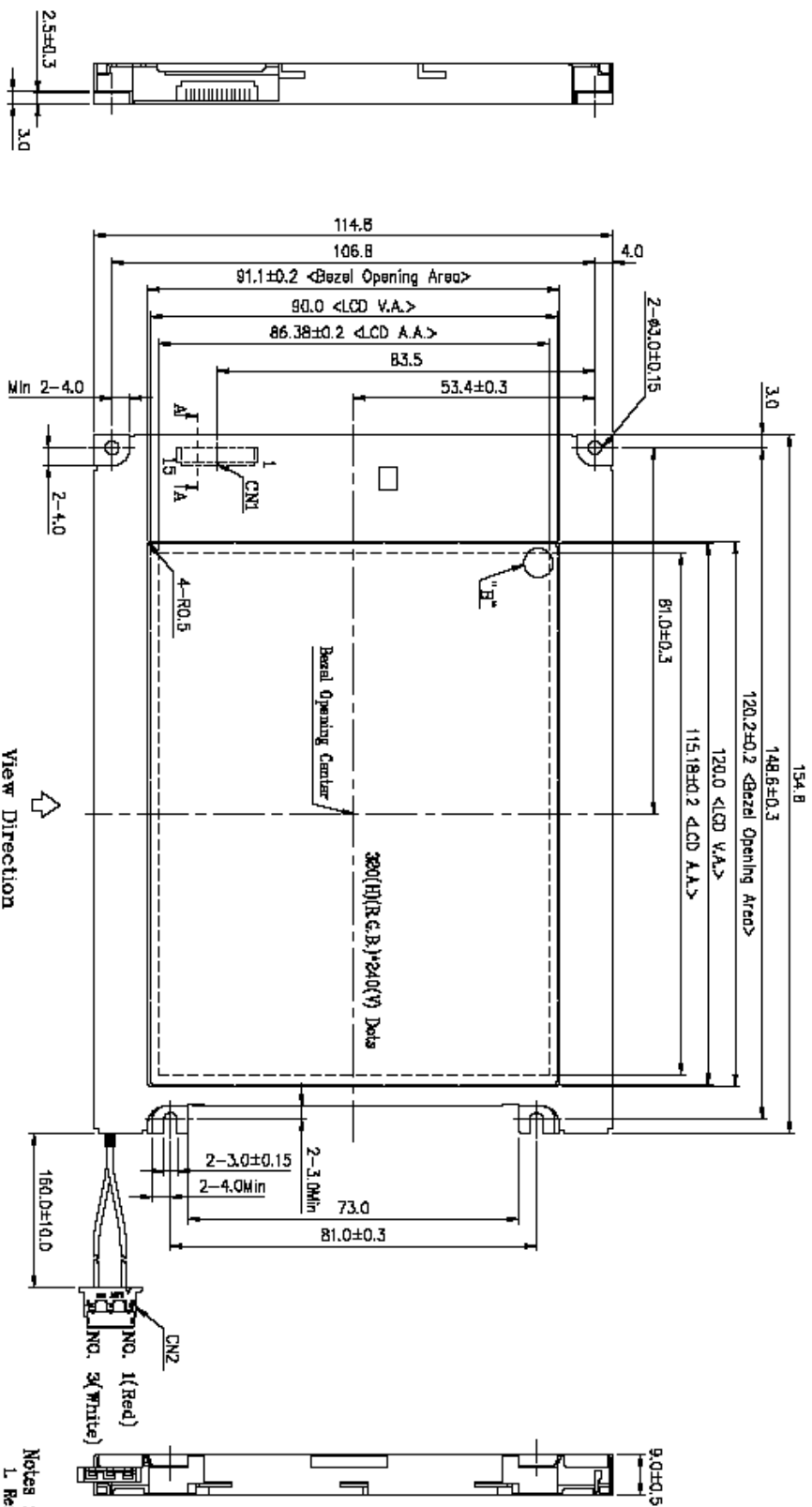
7. Interface Description

Pin No.	Symbol	Level	Description
1	FRM	H	SCAN START-UPSINGAL
2	LOAD	H to L	Data signal latch clock
3	CP	H to L	Data signal latch clock
4	DISP	H/L	H: Display ON, L: Display OFF
5	V _{DD}	5.0V	Power supply for Logic
6	V _{SS}	0V	Ground
7	V _{ee}	(Variable)	Power supply for LCD
8	D7	H/L	Display data
9	D6	H/L	Display data
10	D5	H/L	Display data
11	D4	H/L	Display data
12	D3	H/L	Display data
13	D2	H/L	Display data
14	D1	H/L	Display data
15	D0	H/L	Display data

CCFL

Pin No.	Symbol	Level	Description
1	HV	AC	Power supply for CCFL
2	NC	-	No connection
3	GND	-	Ground Line (form inverter)

8. Contour Drawing & Block diagram



Notes :
 1. Resolution : 320(H) x 240(V) Data
 2. Backlight : CCFL
 3. Frame Material : SBCX (±=0.5)

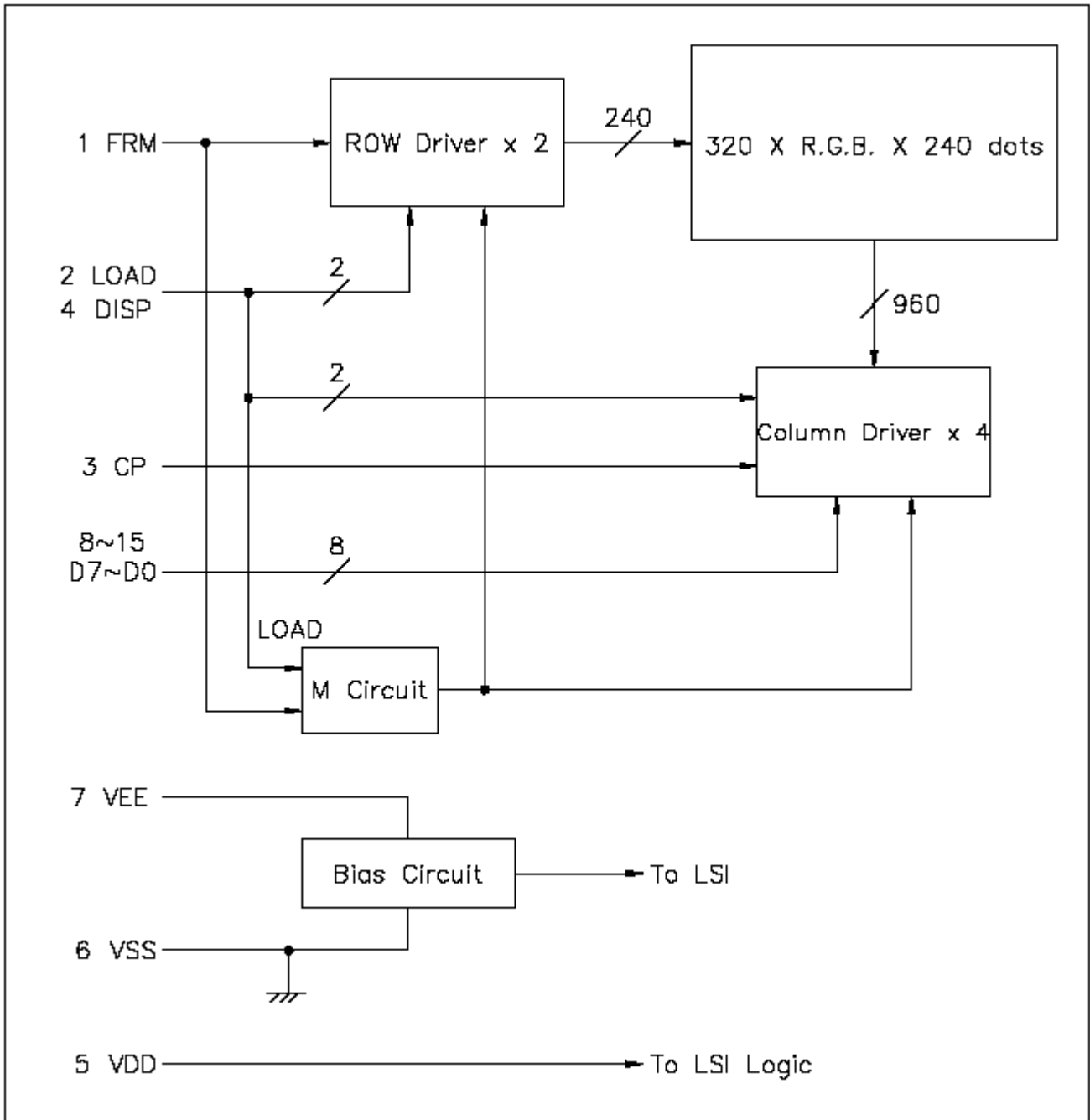
CN1 : 59261-1571(Molex)

Pin No.	Symbol	Function	Level	Pin No.	Symbol	Function	Level
1	FRM	Synchronous signal for driving scanning line	H	10	D6	Display data	H(ON)/L(OFF)
2	LOAD	Data signal latch clock	H → L	11	D4		
3	CP	Data signal shift clock	H → L	12	D3		
4	DISP	Display control signal	H(ON)/L(OFF)	13	D2		
5	VDD	Power supply for logic	-	14	D1		
6	VSS	GND	-	15	D0		
7	VEE	Power supply for LCD	-	CN2 : BHR-03WS-1 (JST)			
B	D7		-	1	HY	Power supply for CCFL	-
9	D6	Display data	H(ON)/L(OFF)	2	NC	NO Connection	-
				3	GND	Ground line (from inverter)	-

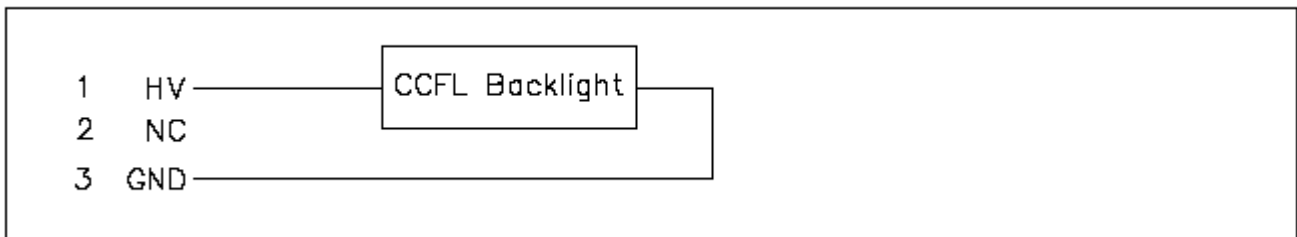
GENERAL TOLERANCE LIST

DIMENSION	TOLERANCE
L ≤ 6	±0.25 (mm)
6 < L ≤ 18	±0.3 (mm)
18 < L ≤ 50	±0.4 (mm)
50 < L ≤ 125	±0.5 (mm)
125 < L	±0.6 (mm)
ANGLE	±1° (DEG)

LCD



CCFL

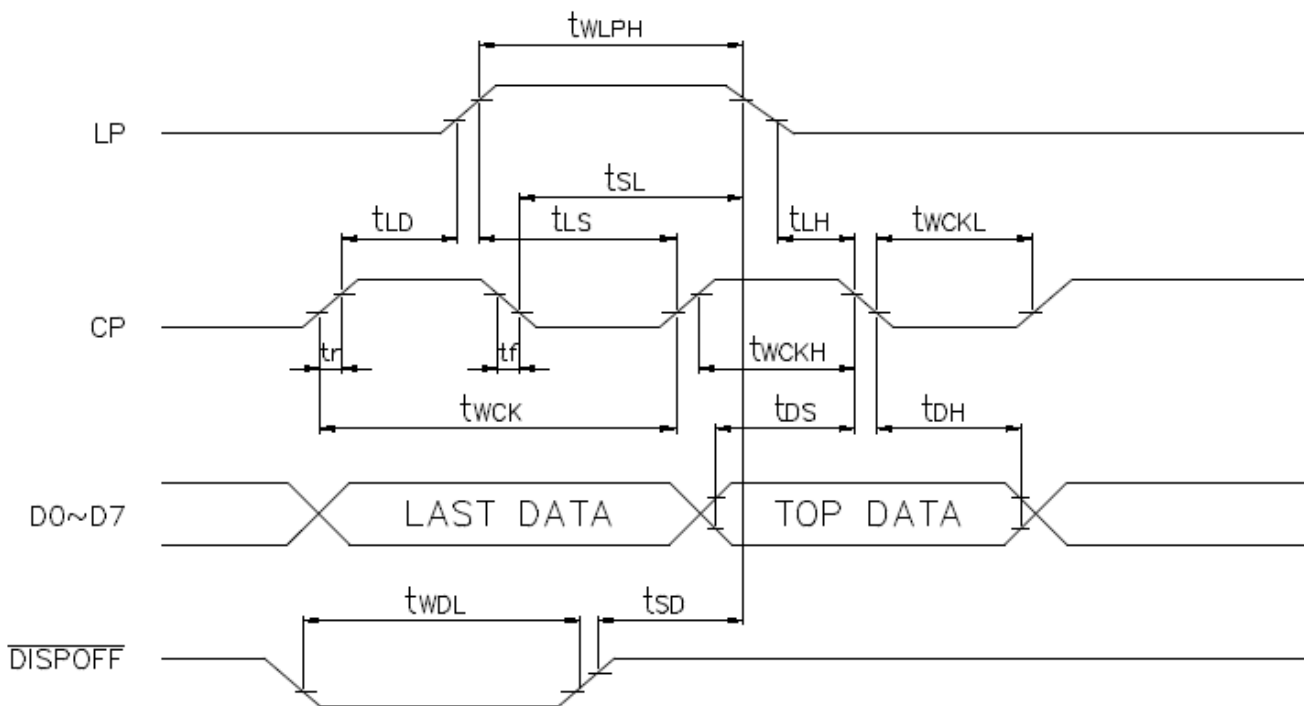


9. Timing Characteristics

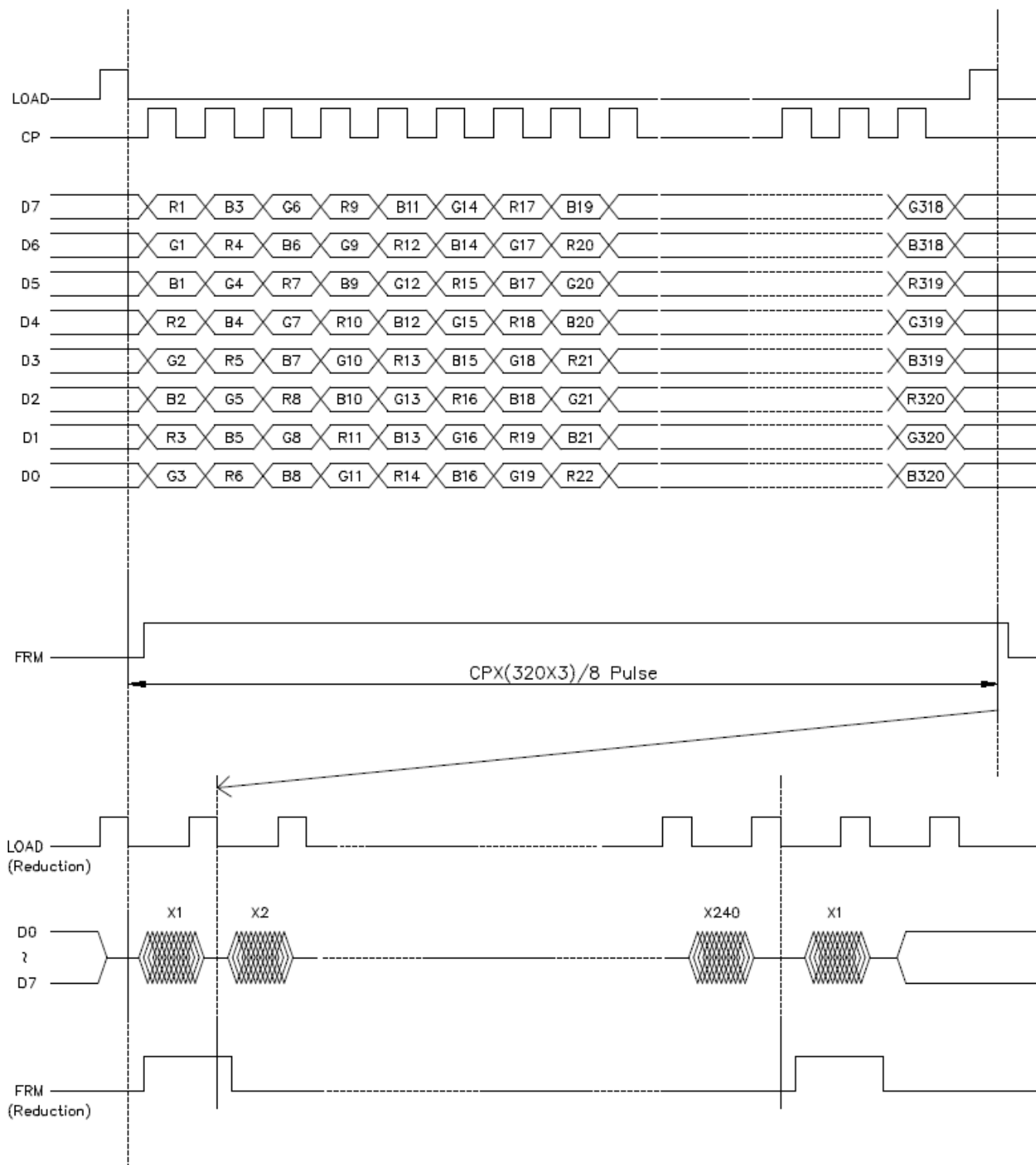
9.1 Interface timing

VDD=3.3V ± 10%

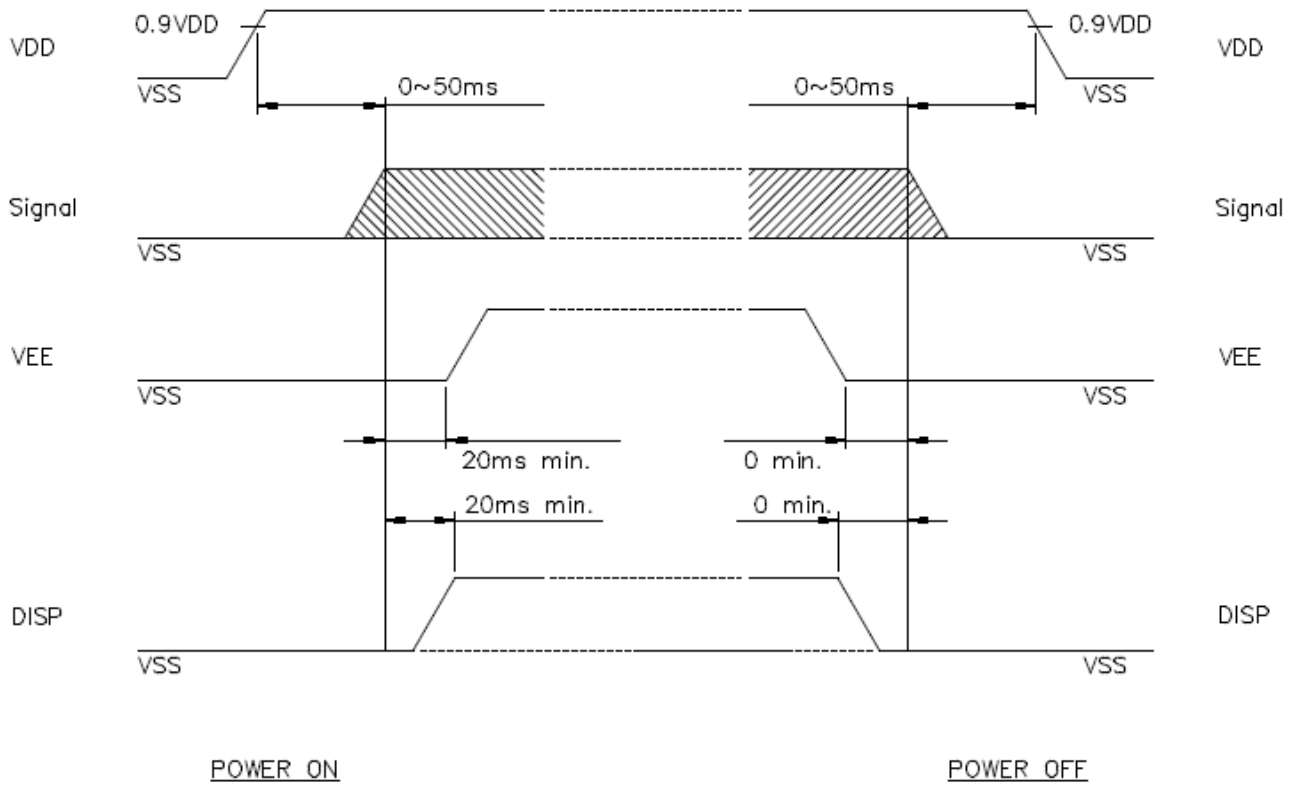
Parameter	SYMBOL	MIN.	MAX.	UNIT
CLOCK PULSE CYCLE TIME	t_{wck}	66	—	ns
CLOCK PULSE HIGH LEVEL WIDTH	t_{wckH}	23	—	ns
CLOCK PULSE LOW LEVEL WIDTH	t_{wckL}	23	—	ns
LATCH PULSE HIGH LEVEL WIDTH	t_{wLPH}	30	—	ns
CP→LP RISE TIME	t_{LD}	10	—	ns
CP→LP FALL TIME	t_{SL}	30	—	ns
LP→CP RISE TIME	t_{LS}	30	—	ns
LP→CP FALL TIME	t_{LH}	30	—	ns
CLOCK PULSE RISE/FALL TIME	t_r, t_f	—	30	ns
DATA SETUP TIME	t_{DS}	10	—	ns
DATA HOLD TIME	t_{DH}	25	—	ns
$\overline{DISPOFF}$ LOW LEVEL WIDTH	t_{WDL}	1.2	—	μs
$\overline{DISPOFF}$ CANCELLATION TIME	t_{SD}	100	—	ns



9.2 Timing chart



9.3 Power ON/OFF timing



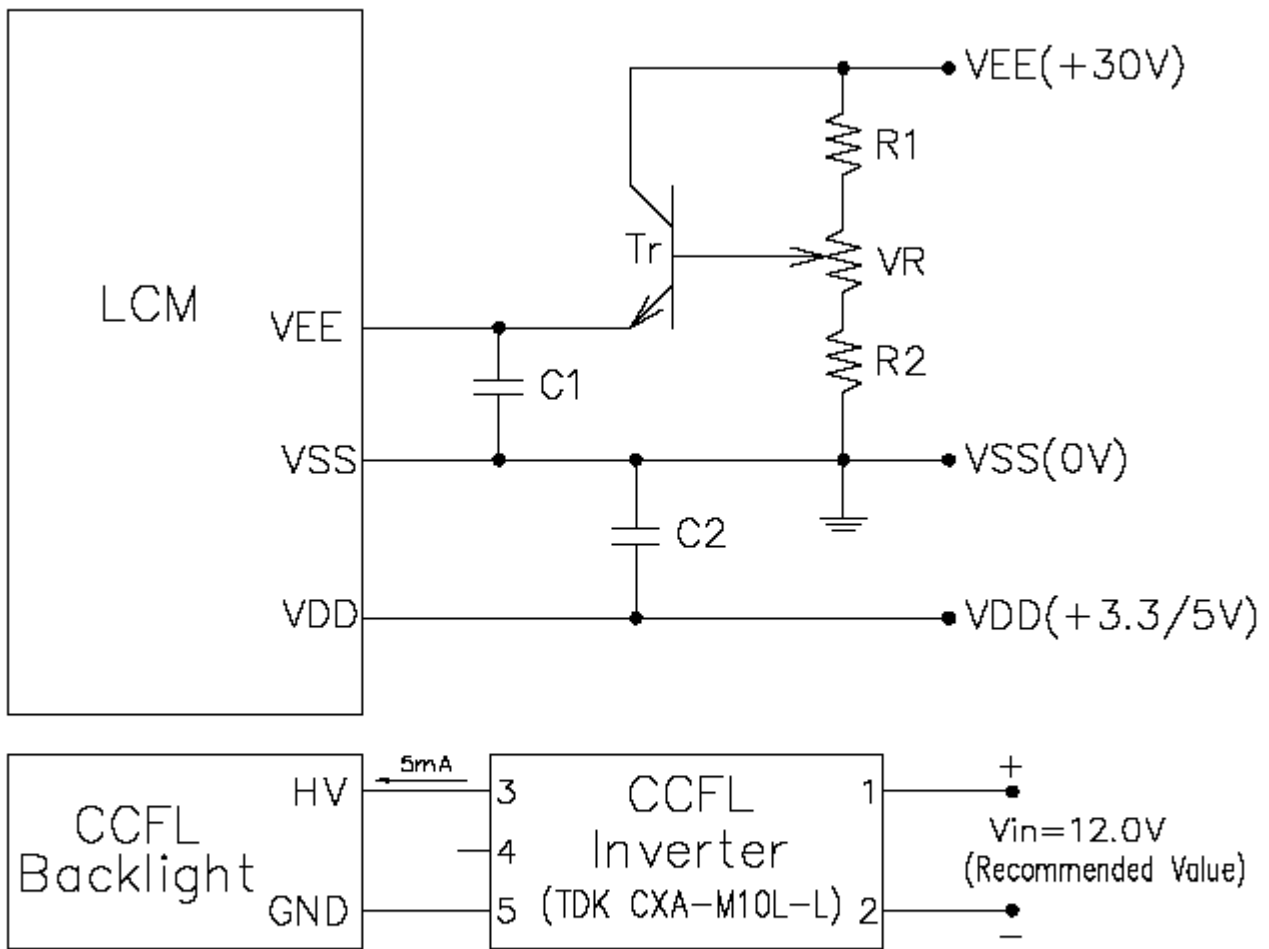
The missing pixels may occur when the LCM is driven beyond above power interface timing sequence.

8.4 Display pattern

START DATA

	Y1			Y2			Y3			Y318			Y319			Y320		
X1	R1	G1	B1	R2	G2	B2	R3	G3	B3	R318	G318	B318	R319	G319	B319	R320	G320	B320
	D7	D6	D5	D4	D3	D2	D1	D0	D7	D0	D7	D6	U5	D4	D3	D2	D1	D0
X2	R1	G1	B1	R2	G2	B2	R3	G3	B3	R318	G318	B318	R319	G319	B319	R320	G320	B320
	D7	D6	D5	D4	D3	D2	D1	D0	D7	D0	D7	D6	U5	D4	D3	D2	D1	D0
X239	R1	G1	B1	R2	G2	B2	R3	G3	B3	R318	G318	B318	R319	G319	B319	R320	G320	B320
	D7	D6	D5	D4	D3	D2	D1	D0	D7	D0	D7	D6	U5	D4	D3	D2	D1	D0
X240	R1	G1	B1	R2	G2	B2	R3	G3	B3	R318	G318	B318	R319	G319	B319	R320	G320	B320
	D7	D6	D5	D4	D3	D2	D1	D0	D7	D0	D7	D6	U5	D4	D3	D2	D1	D0

10. POWER SUPPLY



1. $R1 + R2 + VR = 10 \sim 20K \Omega$
 $C1, C2 = 10 \mu F$

11. RELIABILITY

Content of Reliability Test (Normal temperature, 0°C~50°C)

Environmental Test			
Test Item	Content of Test	Test Condition	Note
High Temperature storage	Endurance test applying the high storage temperature for a long time.	70°C 200hrs	2
Low Temperature storage	Endurance test applying the high storage temperature for a long time.	-20°C 200hrs	1,2
High Temperature Operation	Endurance test applying the electric stress (Voltage & Current) and the thermal stress to the element for a long time.	50°C 200hrs	—
Low Temperature Operation	Endurance test applying the electric stress under low temperature for a long time.	0°C 200hrs	1
High Temperature Humidity Operation	The module should be allowed to stand at 60%~90%RH max. no-load condition excluding the polarizer, Then taking it out and drying it at normal temperature.	40°C,90%RH 96hrs	1,2
Thermal shock resistance	The sample should be allowed stand the following 10 cycles of operation 0°C 25°C 50°C 30min 5min 30min 1 cycle	0°C/50°C 10 cycles	—
Vibration test	Endurance test applying the vibration during transportation and using.	Total fixed amplitude : 1.5mm Vibration Frequency : 10~55Hz One cycle 60 seconds to 3 directions of X,Y,Z for Each 15 minutes	3
Static electricity test	Endurance test applying the electric stress to the terminal.	VS=800V,RS=1.5kΩ CS=100pF 1 time	—

Note1: No dew condensation to be observed.

Note2: The function test shall be conducted after 4 hours storage at the normal Temperature and humidity after remove from the test chamber.

Note3: Vibration test will be conducted to the product itself without putting it in a container.

12. Backlight Information

Used Lamp Rating

Temp.=25°C

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT	REMARK
Lamp Voltage	V_L	—	450	—	Vrms	—
Lamp current	I_L	—	5	—	mArms	—
Lamp power consumption	P_L	—	2.25	—	W	(*1)
Starting voltage	V_S	—	—	600	Vrms	$T_a=25^\circ\text{C}$
		—	—	780	Vrms	$T_a=0^\circ\text{C}$
Lamp life time	L_L	40000	—	—	hrs	at $I_L = 5 \text{ mArms}$ $T_a=25^\circ\text{C}$ (*2)

Surface Luminance of LCM	L	IL=5 mArms Ta=25°C Pattern: Dots All ON(White)	150	180	—	cd/m ²
		IL=5 mArms Ta=25°C Pattern: Dots All OFF(Black)	—	8	—	

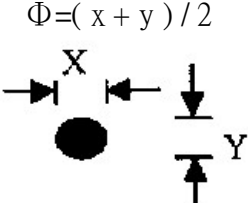
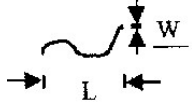
(*1) Power consumption excluded inverter loss .

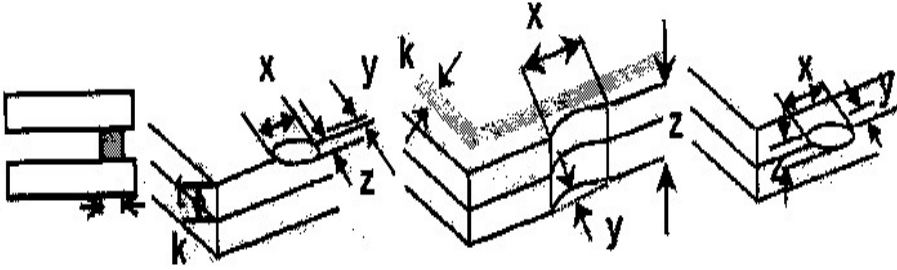
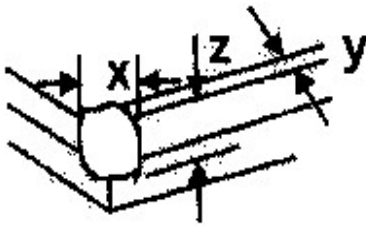
(*2) Lamp life time is defined as follows : The final brightness is at 50% of original brightness .

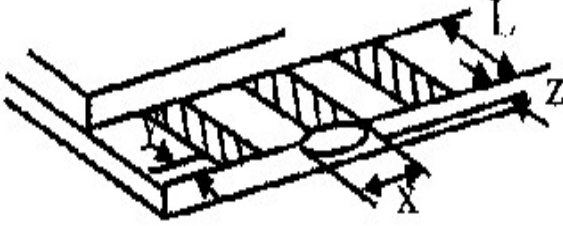
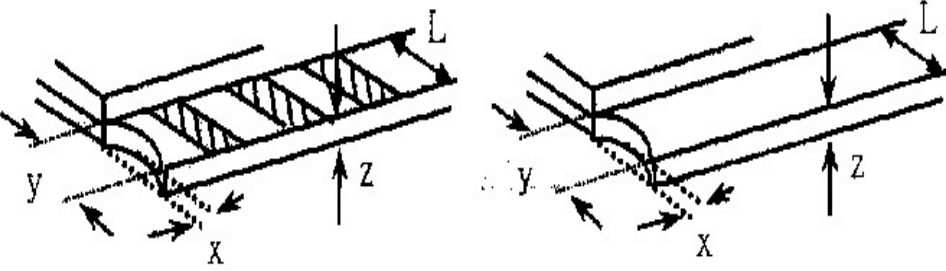
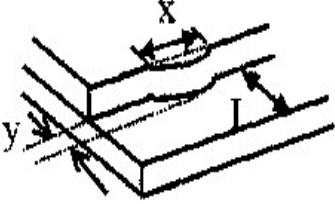
(*3) a. Please follow the table of Lamp Characteristics shown above if not to use the inverter recommended by Nan Ya .

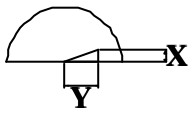
b. If customers want to design inverter by themselves , please inform Nan Ya to offer the detail lamp specification .

13. 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 Contrast defect.	0.65												
02	Black or white spots on LCD(display only)	2.1 White and black spots on display $\leq 0.25\text{mm}$, no more than three white or black spots present. 2.2 Densely spaced: No more than two spots or lines within 3mm	2.5												
03	LCD black spots, white spots, contamination (non-display)	3.1 Round type : As following drawing $\Phi = (x + y) / 2$  <table border="1" data-bbox="922 952 1401 1272"> <thead> <tr> <th>SIZE</th> <th>Acceptable QTY</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>1</td> </tr> <tr> <td>$0.25 < \Phi$</td> <td>0</td> </tr> </tbody> </table>	SIZE	Acceptable QTY	$\Phi \leq 0.10$	Accept no dense	$0.10 < \Phi \leq 0.20$	2	$0.20 < \Phi \leq 0.25$	1	$0.25 < \Phi$	0	2.5		
		SIZE	Acceptable QTY												
$\Phi \leq 0.10$	Accept no dense														
$0.10 < \Phi \leq 0.20$	2														
$0.20 < \Phi \leq 0.25$	1														
$0.25 < \Phi$	0														
3.2 Line type : (As following drawing)  <table border="1" data-bbox="758 1344 1401 1668"> <thead> <tr> <th>Length</th> <th>Width</th> <th>Acceptable QTY</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>$0.02 < W \leq 0.03$</td> <td rowspan="2">2</td> </tr> <tr> <td>$L \leq 2.5$</td> <td>$0.03 < W \leq 0.05$</td> </tr> <tr> <td>---</td> <td>$0.05 < W$</td> <td>As round type</td> </tr> </tbody> </table>	Length	Width	Acceptable QTY	---	$W \leq 0.02$	Accept no dense	$L \leq 3.0$	$0.02 < W \leq 0.03$	2	$L \leq 2.5$	$0.03 < W \leq 0.05$	---	$0.05 < W$	As round type	2.5
Length	Width	Acceptable QTY													
---	$W \leq 0.02$	Accept no dense													
$L \leq 3.0$	$0.02 < W \leq 0.03$	2													
$L \leq 2.5$	$0.03 < W \leq 0.05$														
---	$0.05 < W$	As round type													
04	Polarizer bubbles	If bubbles are visible, judge using black spot specifications, not easy to find, must check in specify direction.	2.5												

NO	Item	Criterion	AQL																		
05	Scratches	Follow NO.3 LCD black spots, white spots, contamination																			
06	Chipped glass	<p>Symbols Define:</p> <p>x: Chip length y: Chip width z: Chip thickness</p> <p>k: Seal width t: Glass thickness a: LCD side length</p> <p>L: Electrode pad length:</p> <p>6.1 General glass chip :</p> <p>6.1.1 Chip on panel surface and crack between panels:</p>  <table border="1" data-bbox="391 1097 1300 1294"> <thead> <tr> <th>z: Chip thickness</th> <th>y: Chip width</th> <th>x: Chip length</th> </tr> </thead> <tbody> <tr> <td>$Z \leq 1/2t$</td> <td>Not over viewing area</td> <td>$x \leq 1/8a$</td> </tr> <tr> <td>$1/2t < z \leq 2t$</td> <td>Not exceed $1/3k$</td> <td>$x \leq 1/8a$</td> </tr> </tbody> </table> <p>⊙If there are 2 or more chips, x is total length of each chip.</p> <p>6.1.2 Corner crack:</p>  <table border="1" data-bbox="391 1787 1300 1984"> <thead> <tr> <th>z: Chip thickness</th> <th>y: Chip width</th> <th>x: Chip length</th> </tr> </thead> <tbody> <tr> <td>$Z \leq 1/2t$</td> <td>Not over viewing area</td> <td>$x \leq 1/8a$</td> </tr> <tr> <td>$1/2t < z \leq 2t$</td> <td>Not exceed $1/3k$</td> <td>$x \leq 1/8a$</td> </tr> </tbody> </table> <p>⊙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	$Z \leq 1/2t$	Not over viewing area	$x \leq 1/8a$	$1/2t < z \leq 2t$	Not exceed $1/3k$	$x \leq 1/8a$	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 $1/3k$	$x \leq 1/8a$	2.5
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 $1/3k$	$x \leq 1/8a$																			
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 $1/3k$	$x \leq 1/8a$																			

NO	Item	Criterion	AQL								
06	Glass crack	<p>Symbols :</p> <p>x: Chip length y: Chip width z: Chip thickness</p> <p>k: Seal width t: Glass thickness a: LCD side length</p> <p>L: Electrode pad length</p> <p>6.2 Protrusion over terminal :</p> <p>6.2.1 Chip on electrode pad :</p>  <table border="1" data-bbox="304 875 1214 1010"> <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>	y: Chip width	x: Chip length	z: Chip thickness	$y \leq 0.5\text{mm}$	$x \leq 1/8a$	$0 < z \leq t$	2.5		
		y: Chip width	x: Chip length	z: Chip thickness							
$y \leq 0.5\text{mm}$	$x \leq 1/8a$	$0 < z \leq t$									
<p>6.2.2 Non-conductive portion:</p>  <table border="1" data-bbox="376 1373 1214 1507"> <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 the chipped area touches the ITO terminal, over 2/3 of the ITO must remain and be inspected according to electrode terminal specifications.</p> <p>⊙If the product will be heat sealed by the customer, the alignment mark not be damaged.</p> <p>6.2.3 Substrate protuberance and internal crack.</p>  <table border="1" data-bbox="727 1839 1233 1973"> <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	$y \leq L$	$x \leq 1/8a$	$0 < z \leq t$	y: width	x: length	$y \leq 1/3L$	$x \leq a$	
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
07	Cracked glass	The LCD with extensive crack is not acceptable.	2.5
08	Backlight elements	8.1 Illumination source flickers when lit. 8.2 Spots or scratched that appear when lit must be judged. Using LCD spot, lines and contamination standards. 8.3 Backlight doesn't light or color wrong.	0.65 2.5 0.65
09	Bezel	9.1 Bezel may not have rust, be deformed or have fingerprints, stains or other contamination. 9.2 Bezel must comply with job specifications.	2.5 0.65
10	PCB · COB	10.1 COB seal may not have pinholes larger than 0.2mm or contamination. 10.2 COB seal surface may not have pinholes through to the IC. 10.3 The height of the COB should not exceed the height indicated in the assembly diagram. 10.4 There may not be more than 2mm of sealant outside the seal area on the PCB. And there should be no more than three places. 10.5 No oxidation or contamination PCB terminals. 10.6 Parts on PCB must be the same as on the production characteristic chart. There should be no wrong parts, missing parts or excess parts. 10.7 The jumper on the PCB should conform to the product characteristic chart. 10.8 If solder gets on bezel tab pads, LED pad, zebra pad or screw hold pad, make sure it is smoothed down. 10.9 The Scraping testing standard for Copper Coating of PCB  $X * Y \leq 2\text{mm}^2$	2.5 2.5 0.65 2.5 2.5 0.65 0.65 2.5 2.5
11	Soldering	11.1 No un-melted solder paste may be present on the PCB. 11.2 No cold solder joints, missing solder connections, oxidation or icicle. 11.3 No residue or solder balls on PCB. 11.4 No short circuits in components on PCB.	2.5 2.5 2.5 0.65

NO	Item	Criterion	AQL
12	General appearance	12.1 No oxidation, contamination, curves or, bends on interface Pin (OLB) of TCP.	2.5
		12.2 No cracks on interface pin (OLB) of TCP.	0.65
		12.3 No contamination, solder residue or solder balls on product.	2.5
		12.4 The IC on the TCP may not be damaged, circuits.	2.5
		12.5 The uppermost edge of the protective strip on the interface pin must be present or look as if it cause the interface pin to sever.	2.5
		12.6 The residual rosin or tin oil of soldering (component or chip component) is not burned into brown or black color.	2.5
		12.7 Sealant on top of the ITO circuit has not hardened.	0.65
		12.8 Pin type must match type in specification sheet.	0.65
		12.9 LCD pin loose or missing pins.	0.65
		12.10 Product packaging must the same as specified on packaging specification sheet.	0.65
		12.11 Product dimension and structure must conform to product specification sheet.	

14. Material List of Components for RoHs

1. FRILCD Display Co., Ltd hereby declares that all of or part of products (with the mark “#”in code), including, but not limited to, the LCM, accessories or packages, manufactured and/or delivered to your company (including your subsidiaries and affiliated company) directly or indirectly by our company (including our subsidiaries or affiliated companies) do not intentionally contain any of the substances listed in all applicable EU directives and regulations, including the following substances.

Exhibit A : The Harmful Material List

Material	(Cd)	(Pb)	(Hg)	(Cr6+)	PBBs	PBDEs
Limited Value	100 ppm	1000 ppm	1000 ppm	1000 ppm	1000 ppm	1000 ppm
Above limited value is set up according to RoHS.						

2.Process for RoHS requirement :

(1) Use the Sn/Ag/Cu soldering surface ; the surface of Pb-free solder is rougher than we used before.

(2) Heat-resistance temp. :

Reflow : 250°C,30 seconds Max. ;

Connector soldering wave or hand soldering : 320°C, 10 seconds max.

(3) Temp. curve of reflow, max. Temp. : 235±5°C ;

Recommended customer’s soldering temp. of connector : 280°C, 3 seconds.

LCM Sample Estimate Feedback Sheet

Module Number : _____

Page: 1

1、Panel Specification :

1. Panel Type : Pass NG _____
2. View Direction : Pass NG _____
3. Numbers of Dots : Pass NG _____
4. View Area : Pass NG _____
5. Active Area : Pass NG _____
6. Operating Temperature : Pass NG _____
7. Storage Temperature : Pass NG _____
8. Others : _____

2、Mechanical Specification :

1. PCB Size : Pass NG _____
2. Frame Size : Pass NG _____
3. Material of Frame : Pass NG _____
4. Connector Position : Pass NG _____
5. Fix Hole Position : A Pass NG _____
6. Backlight Position : Pass NG _____
7. Thickness of PCB : Pass NG _____
8. Height of Frame to PCB : Pass NG _____
9. Height of Module : Pass NG _____
10. Others : Pass NG _____

3、Relative Hole Size :

1. Pitch of Connector : Pass NG _____
2. Hole size of Connector : Pass NG _____
3. Mounting Hole size : Pass NG _____
4. Mounting Hole Type : Pass NG _____
5. Others : Pass NG _____

4、Backlight Specification :

1. B/L Type : Pass NG _____
2. B/L Color : Pass NG _____
3. B/L Driving Voltage (Reference for LED Type) : Pass NG _____
4. B/L Driving Current : Pass NG _____
5. Brightness of B/L : Pass NG _____
6. B/L Solder Method : Pass NG _____
7. Others : Pass NG _____

>> **Go to page 2** <<

Module Number : _____

Page: 2

5、Electronic Characteristics of Module :

- | | | |
|------------------------------|-------------------------------|-------------------------------------|
| 1. Input Voltage : | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 2. Supply Current : | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 3. Driving Voltage for LCD : | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 4. Contrast for LCD : | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 5. B/L Driving Method : | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 6. Negative Voltage Output : | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 7. Interface Function : | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 8. LCD Uniformity : | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 9. ESD test : | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 10. Others : | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |

6、Summary :

Sales signature : _____

Customer Signature : _____

Date : / /