PRODUCT : LCD MODULE

MODEL NO. : YTS200CLAL-01-100N

SUPPLIER : ANSHAN YES

DATE : JAN.18.2013

SPECIFICATION

Approved	Checked	Department

CUSTOMER:
MODEL NO.: DATE:

Approved	Checked	Department

ADD: 215# QIANSHAN ROAD,ANSHAN LIAONING P.R.CHINA
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E-mail : yes@yes-lcd.com, yeslcd@globalsources.com
Web: http://www.yes-lcd.com
http://www.asiansources.com/sante.com

REVISION RECORD

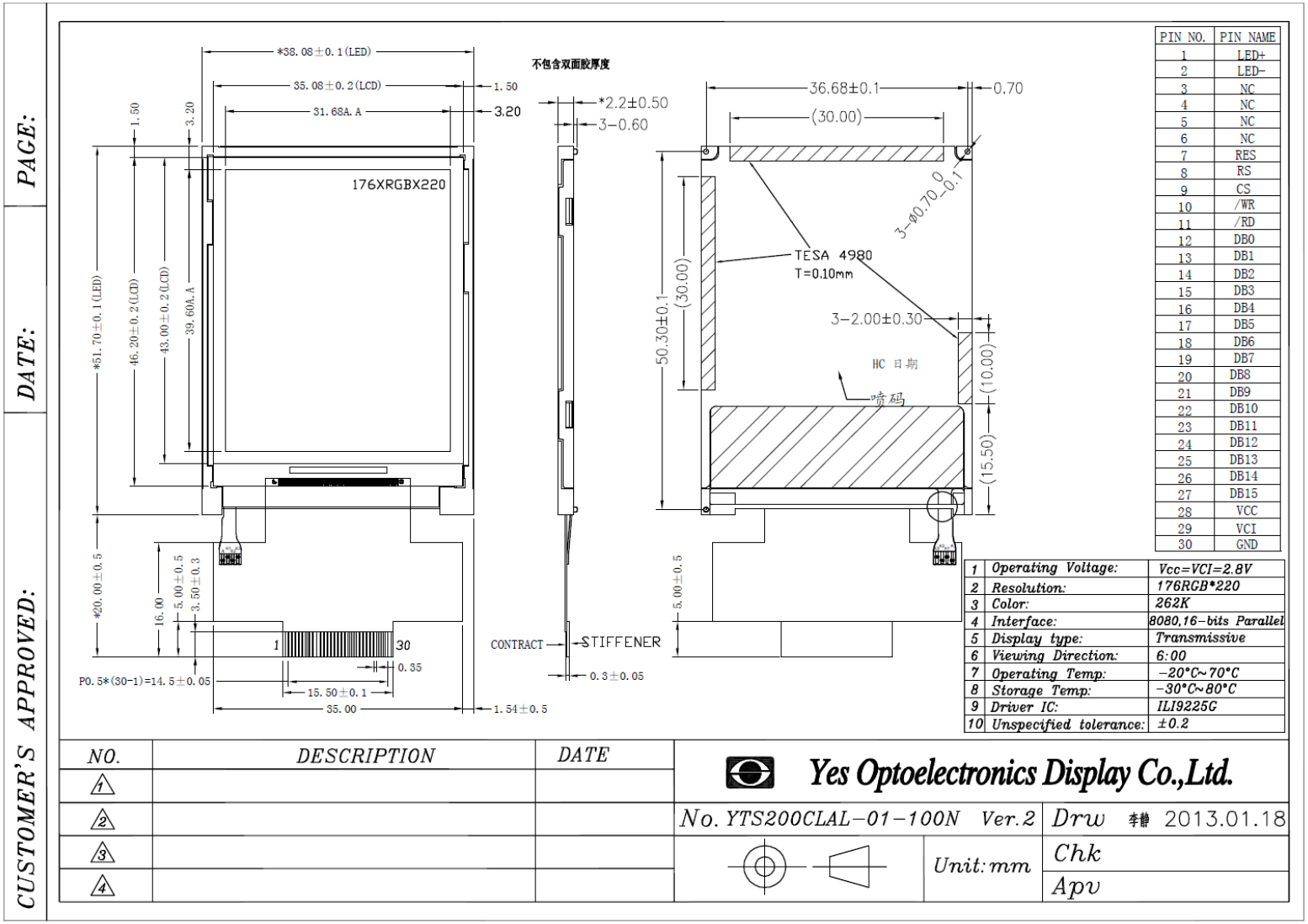
REV NO.	REV DATE	CONTENTS	REMARKS
1.0	2012.12.15	New creation	

CONTENTS

1. GENERAL INFORMATION

Item	Contents	Unit
LCD Type	TFT TRANSMISSIVE	/
Viewing direction	6:00	O' Clock
Module Size (W - H)	38.08*51.70	mm^2
Active area (W-H)	31.68*39.60	mm^2
Number of Dots	176(RGB) *220	/
Driver IC	ILI9225G	/
Colors	262K	/
Backlight type	LED	/
Interface Type	8080,16bits Parallel	/
Operating voltage	VCC=2.8V typ	V
Surface luminance(Typ)	176	cd/m^2

2. Drawing


PAGE:
DATE:
CUSTOMER'S APPROVED:
*38.08±0.1(LED)
35.08±0.2(LCD)
31.68A.A
1.50
3.20
176XRGBX220
*51.70±0.1(LED)
46.20±0.2(LCD)
43.00±0.2(LCD)
39.60A.A
*20.00±0.5
16.00
5.00±0.5
3.50±0.3
P0.5*(30-1)=14.5±0.05
35.00
1.54±0.5
0.35
15.50±0.1
不包含双面胶厚度
*2.2±0.50
3-0.60
CONTRACT
STIFFENER
0.3±0.05
36.68±0.1
0.70
(30.00)
3-φ0.70 0 -0.1
TESA 4980
T=0.10mm
50.30±0.1
3-2.00±0.30
HC 日期
喷码
(10.00)
(15.50)
5.00±0.5
PIN NO. | PIN NAME
1 LED+
2 LED-
3 NC
4 NC
5 NC
6 NC
7 RES
8 RS
9 CS
10 /WR
11 /RD
12 DB0
13 DB1
14 DB2
15 DB3
16 DB4
17 DB5
18 DB6
19 DB7
20 DB8
21 DB9
22 DB10
23 DB11
24 DB12
25 DB13
26 DB14
27 DB15
28 VCC
29 VCI
30 GND
1 Operating Voltage: Vcc=VCI=2.8V
2 Resolution: 176RGB*220
3 Color: 262K
4 Interface: 8080,16-bits Parallel
5 Display type: Transmissive
6 Viewing Direction: 6:00
7 Operating Temp: -20°C~70°C
8 Storage Temp: -30°C~80°C
9 Driver IC: ILI9225G
10 Unspecified tolerance: ±0.2
NO. DESCRIPTION DATE
Yes Optoelectronics Display Co.,Ltd.
No. YTS200CLAL-01-100N Ver.2
Drw 李静 2013.01.18
Unit:mm
Chk
Apv

3. TIMING OF POWER SUPPLY

Normal Write Mode (IOVCC = 1.65~3.3V, VCI=2.5~3.3V)

Item		Symbol	Unit	Min.	Max.	Test Condition
Bus cycle time	Write	t_{CYCW}	ns	66	-	-
	Read	t_{CYCR}	ns	300	-	-
Write low-level pulse width		PW_{LW}	ns	35	500	-
Write high-level pulse width		PW_{HW}	ns	35	-	-
Read low-level pulse width		PW_{LR}	ns	150	-	-
Read high-level pulse width		PW_{HR}	ns	150	-	
Write / Read rise / fall time		t_{WRr}/t_{WRf}	ns	-	15	
Setup time	Write (RS to nCS, E/nWR)	t_{AS}	ns	10	-	
	Read (RS to nCS, RW/nRD)			5	-	
Address hold time		t_{AH}	ns	5	-	
Write data set up time		t_{DSW}	ns	10	-	
Write data hold time		t_H	ns	15	-	
Read data delay time		t_{DDR}	ns	-	100	
Read data hold time		t_{DHR}	ns	5	-	

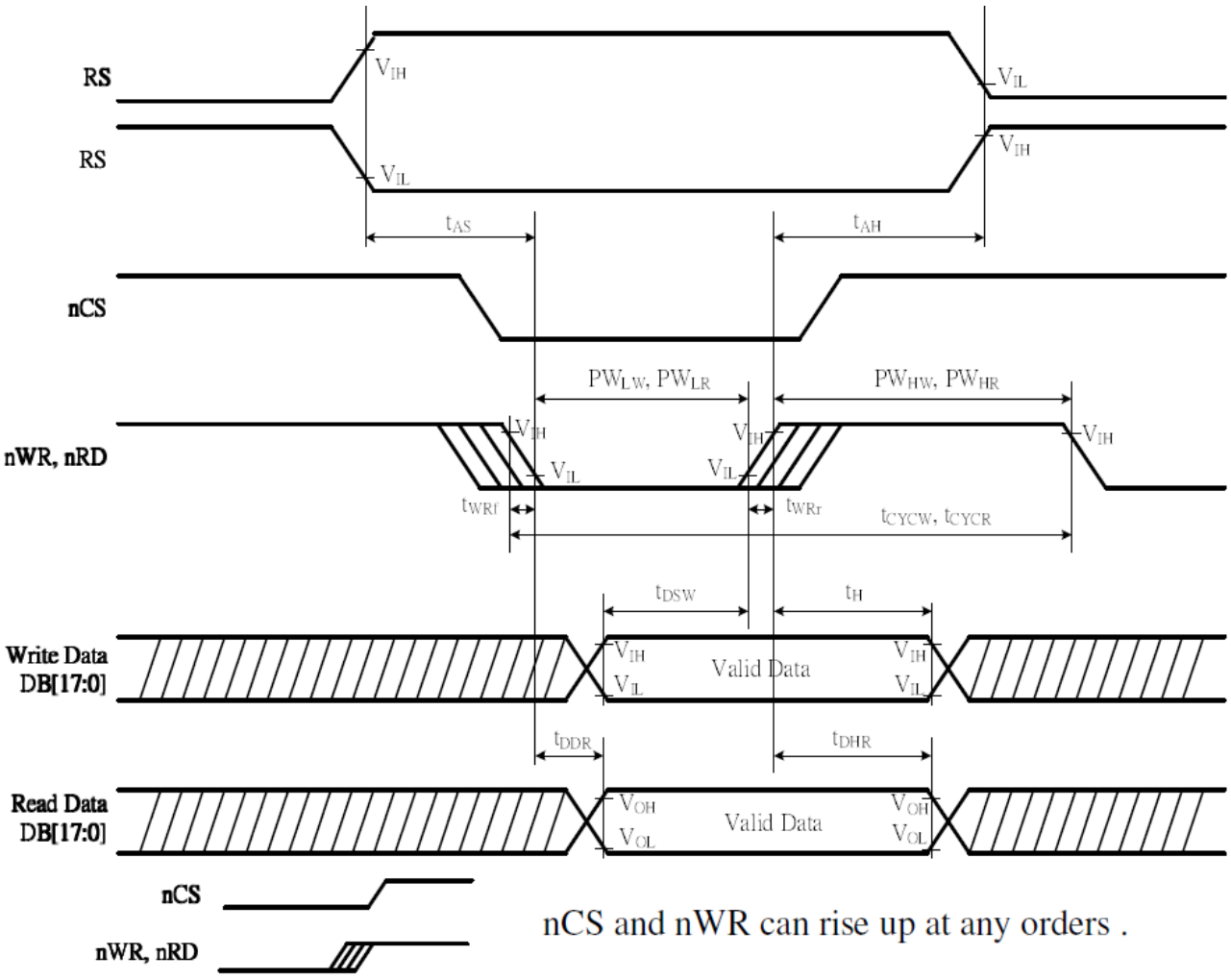


Figure45 i80-System Bus Timing

i80 Read/Write Timing:

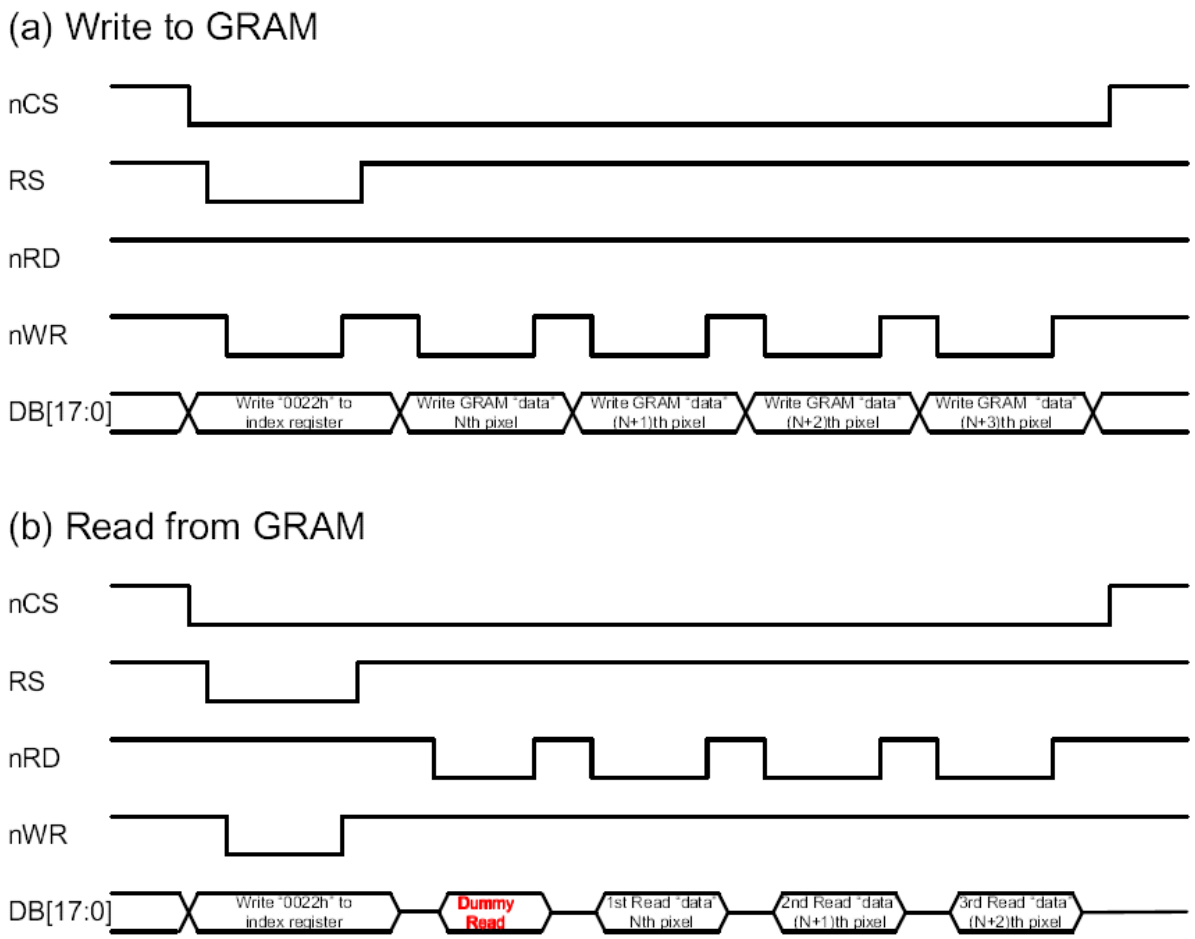
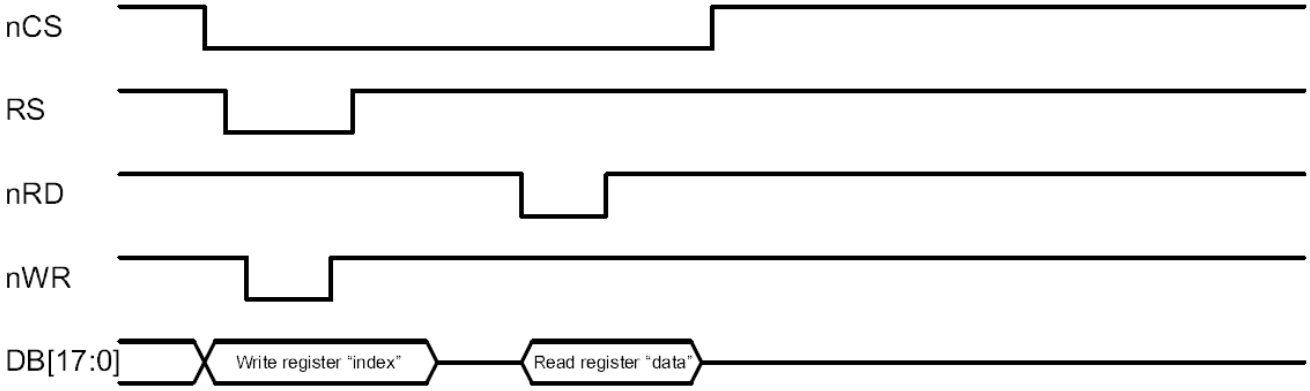


Figure4 i80 16/18-bit System Interface Timing

i80 18-/16-bit System Bus Interface Timing

(a) Write to register

(b) Read from register



4. Absolute Maximum Ratings

The absolute maximum rating is listed on following table. When ILI9225G is used out of the absolute maximum ratings, the ILI9225G may be permanently damaged. To use the ILI9225G within the following electrical characteristics limit is strongly recommended for normal operation. If these electrical characteristic conditions are exceeded during normal operation, the ILI9225G will malfunction and cause poor reliability.

Item	Symbol	Unit	Value	Note
Power supply voltage (1)	IOVCC	V	-0.3 ~ + 4.6	1, 2
Power supply voltage (1)	VCI – GND	V	-0.3 ~ + 4.6	1, 4
Power supply voltage (1)	AVDD – GND	V	-0.3 ~ + 6.0	1, 4
Power supply voltage (1)	GND –VCL	V	-0.3 ~ + 4.6	1
Power supply voltage (1)	AVDD – VCL	V	-0.3 ~ + 9.0	1, 5
Power supply voltage (1)	VGH – GND	V	-0.3 ~ + 18.5	1, 5
Power supply voltage (1)	GND – VGL	V	-0.3 ~ + 18.5	1, 6
Input voltage	Vt	V	-0.3 ~ VCI+ 0.3	1
Operating temperature	Topr	℃	-40 ~ + 85	8, 9
Storage temperature	Tstg	℃	-55 ~ + 110	8, 9

Notes:
1. VCI,GND must be maintained
2. (High) VCI ≥ GND (Low), (High) IOVCC ≥ GND (Low).
3. Make sure (High) VCI ≥ GND (Low).
4. Make sure (High) AVDD ≥ ASSD (Low).
5. Make sure (High) AVDD ≥ VCL (Low).
6. Make sure (High) VGH ≥ ASSD (Low).
7. Make sure (High) ASSD ≥ VGL (Low).
8. For die and wafer products, specified up to 85℃.
9. This temperature specifications apply to the TCP package

5. Electrical Specification

Item	Symbol	Specification			Unit
		Min.	Typ	Max.	
TFT gate on voltage	VGH	-	+15	-	V
TFT gate off voltage	VGL	-	-10	-	V
TFT common electrode voltage	VcomH	+2.5	-	+4.5	V
	VcomL	-2.0	-	0	

Note: (1) Vcom must be adjusted to optimize display quality :cross-talk, contrast ratio and etc.

(2) VGH is TFT gate operating voltage

(3) VGL is TFT gate operating voltage

(4) Environmental condition: 25±5℃

(5) Reference waveform for panel light on is as below:

6. OPTICAL SPECIFICATIONS

Item		Symbol	Conditions	Specifications			Unit	Note
				Min.	Typ.	Max.		
Transmittance		T%	Viewing normal angle $\theta_X = \theta_Y = 0°$	-	5.5	-	%	All left side data are based on CMI's following condition – 1.LC : TN 2.Light Source :CMI LED BLU 3.Film : 日東 NPF TEG 1465DU 4.Machine : DMS 803
Contrast Ratio		CR		-	300	-		
Response Time (by Quick)		T_{on}		-	10	-	ms	
		T_{off}		-	20	-	ms	
Viewing Angle	Hor.	θ_{X+}	Center CR>10	-	45	-	deg.	
		θ_{X-}		-	45	-		
	Ver.	θ_{Y+}		-	45	-		
		θ_{Y-}		-	20	-		
CF only Color Chromaticity (CIE 1931)	Red	X_R	Viewing normal angle $\theta_X = \theta_Y = 0°$	(0.587)	(0.617)	(0.647)		1.Under C light Simulation 2.NTSC 55%
		Y_R		(0.300)	(0.330)	(0.360)		
	Green	X_G		(0.252)	(0.282)	(0.312)		
		Y_G		(0.521)	(0.551)	(0.561)		
	Blue	X_B		(0.131)	(0.161)	(0.191)		
		Y_B		(0.081)	(0.111)	(0.141)		
	White	X_W		(0.276)	(0.306)	(0.336)		
		Y_W		(0.292)	(0.322)	(0.352)		

*Note (1) Definition of Contrast Ratio (CR):

The contrast ratio can be calculated by the following expression.

Contrast Ratio (CR) = L63 / L0

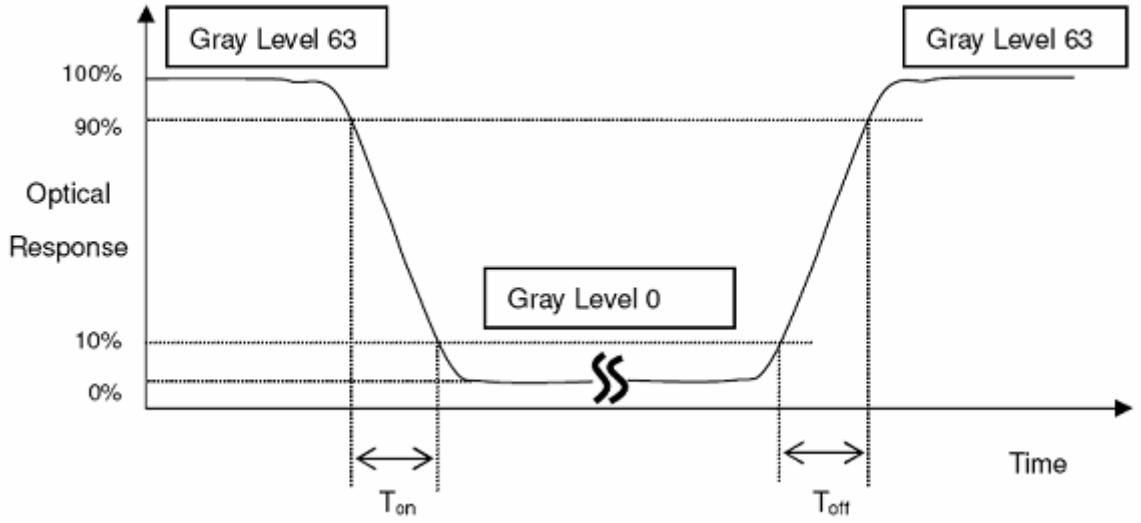
L63: Luminance of gray level 63

L0: Luminance of gray level 0

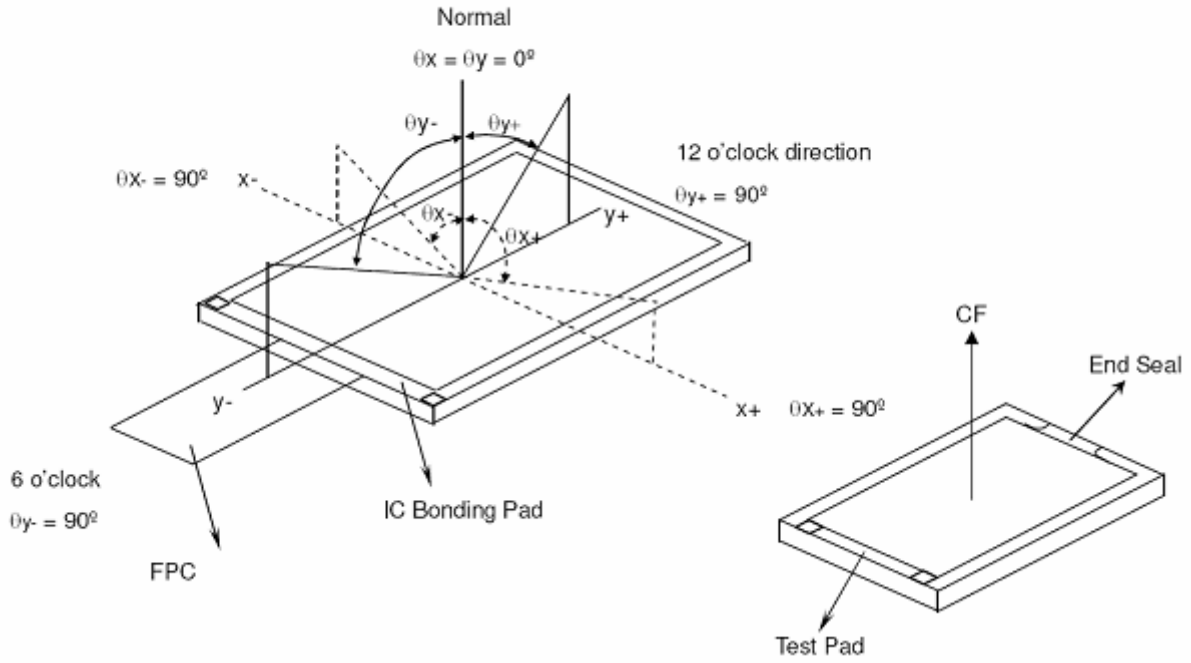
CR = CR (5)

CR (X) is corresponding to the Contrast Ratio of the point X at Figure in Note (5).

*Note (2) Definition of Response Time (TR, TF):



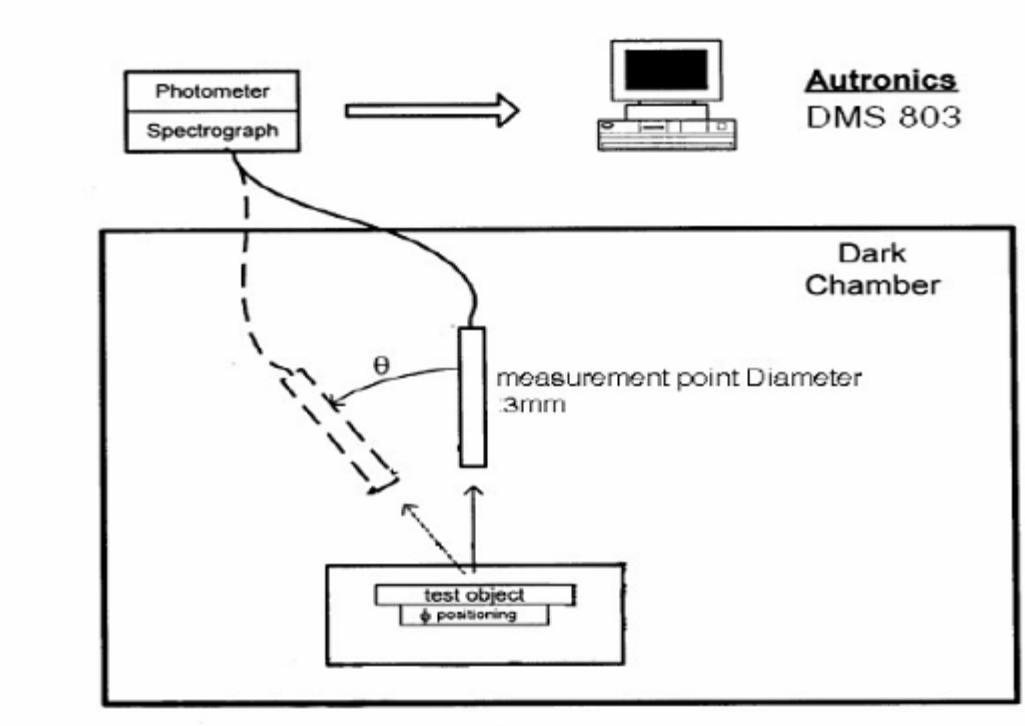
*Note(3) Definition of Viewing Angle



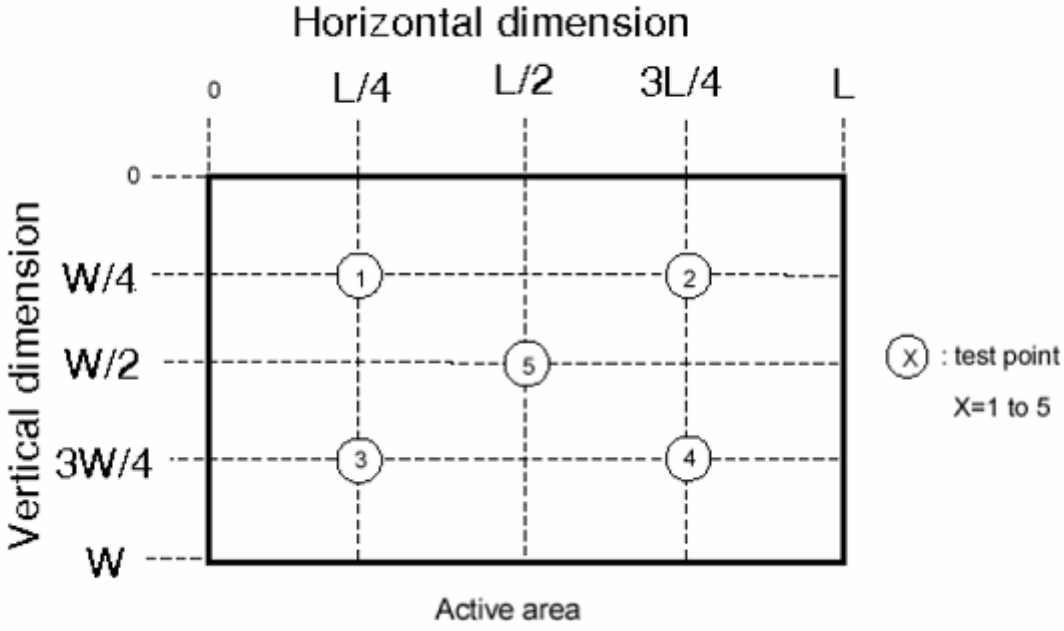
*** The above "Viewing Angle" is the measuring position with Largest Contrast Ratio; not for good image quality. View Direction for good image quality is 6 O'clock. Module maker can increase the "Viewing Angle" by applying Wide View Film.

*Note (4) Measurement Set-Up:

The LCD module should be stabilized at a given temperature for 20 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 20 minutes in a windless room.


Photometer
Spectrograph
Autronics
DMS 803
Dark
Chamber
θ
measurement point Diameter
:3mm
test object
positioning

*Note (5)


Horizontal dimension
0
L/4
L/2
3L/4
L
Vertical dimension
0
W/4
W/2
3W/4
W
1
2
3
4
5
X : test point
X=1 to 5
Active area

7. Backlight Characteristics

Ta=25℃

Item		Symbol	min.	typ.	max.	Unit	Condition
Main screen	Luminance	Lv	3200	3700	4700	cd/㎡	If=45 mA Measure tolerance: Luminance:±5% Colour coordinate:±0.008 Voltage:±0.1V
	Uniformity	Avg	80			%	
	Colour Coordinate	X	0.250		0.300		
		Y	0.250		0.300		
Sub screen	Luminance	Lv				cd/㎡	
	Uniformity	Avg				%	
	Colour Coordinate	X					
		Y					
Forward Voltage		Vf	2.9	3.2	3.5	V	
Reverse Current		Ir			25	μA	Vr= 5 V

8. INTERFACE DESCRIPTION

Pin No.	Symbol	Description
1	LED+	LED backlight
2	LED-	LED backlight
3-6	NC	No connection
7	RES	Reset signal
8	RS	Command/Parameter or display data selection pin in parallel bus system interface.
9	CS	Chip select input pin
10	/WR	Write enable pin I80 parallel bus system interface.
11	/RD	Read enable pin I80 parallel bus system interface.
12-27	DB0-DB15	Data bus
28	VCC	Power supply
29	VCI	Analog power supply.VCI=2.5~3.3V
30	GND	Ground

9. APPLICATION CIRCUIT

Please consult our technical department for detail information.

10. INITIAL CODE

Please consult our technical department for detail information

11. RELIABILITY TEST

No.	Test Item	Test Condition	Inspection after test
1	High Temperature Storage	80±2℃/200 hours	Inspection after 2~4hours storage at room temperature,the sample shall be free from defects: 1.Air bubble in the LCD; 2.Sealleak; 3.Non-display; 4.missing segments; 5.Glass crack; 6.Current Idd is twice higher than initial value.
2	Low Temperature Storage	-30±2℃/200 hours	
3	High Temperature Operating	70±2℃/120 hours	
4	Low Temperature Operating	-20±2℃/120 hours	
5	Temperature Cycle	−25℃ ~ 25℃~ 70℃ × 10cycles (30min.) (5min.) (30min.)	
6	Damp Proof Test	50℃±5℃×90%RH/120 hours	
7	Vibration Test	Frequency：10Hz~55Hz~10Hz Amplitude：1.5mm, X，Y，Z direction for total 3hours (Packing condition)	
8	Drooping test	Drop to the ground from 1m height, one time, every side of carton. (Packing condition)	
9	ESD test	Voltage:±8KV R: 330Ω C: 150pF Air discharge, 10time	

Remark:
1.The test samples should be applied to only one test item.
2.Sample size for each test item is 5~10pcs.
3.For Damp Proof Test, Pure water(Resistance＞10MΩ) should be used.
4.In case of malfunction defect caused by ESD damage, if it would be recovered to normal state after resetting, it would be judge as a good part.
5.EL evaluation should be excepted from reliability test with humidity and temperature: Some defects such as black spot/blemish can happen by natural chemical reaction with humidity and Fluorescence EL has.
6.Failure Judgment Criterion: Basic Specification, Electrical Characteristic, Mechanical Characteristic, Optical Characteristic.
7.Please use automatic switch menu(or roll menu) testing mode when test operating mode.

12.INSPECTION CRITERION

OUTGOING QUALITY STANDARD	PAGE 1 OF 4
TITLE:FUNCTIONAL TEST & INSPECTION CRITERIA	

This specification is made to be used as the standard acceptance/rejection criteria for Color mobile phone LCM.

1 Sample plan

Sampling plan according to GB/T2828.1-2003/ISO 2859-1：1999 and ANSI/ASQC Z1.4-1993, normal level 2 and based on:

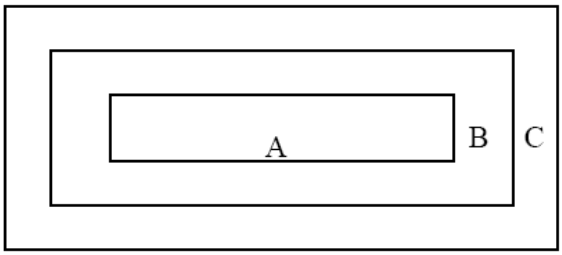
Major defect: AQL 0.65

Minor defect: AQL 1.5

2. Inspection condition

Viewing distance for cosmetic inspection is about 30cm with bare eyes, and under an environment of 20~40W light intensity, all directions for inspecting the sample should be within
45° against perpendicular line.

3. Definition of inspection zone in LCD.



Zone A: character/Digit area

Zone B: viewing area except Zone A (ZoneA+ZoneB=minimum Viewing area)

Zone C: Outside viewing area (invisible area after assembly in customer's product)

Fig.1 Inspection zones in an LCD.

Note: As a general rule, visual defects in Zone C are permissible, when it is no trouble for quality and assembly of customer's product.

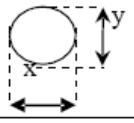
OUTGOING QUALITY STANDARD	PAGE 2 OF 4
TITLE:FUNCTIONAL TEST & INSPECTION CRITERIA	

4. Inspection standards

4.1 Major Defect

Item No	Items to be inspected	Inspection Standard	Classification of defects
4.1.1	All functional defects	1) No display 2) Display abnormally 3) Missing vertical，horizontal segment 4) Short circuit 5) Back-light no lighting, flickering and abnormal lighting.	Major
4.1.2	Missing	Missing component	
4.1.3	Outline dimension	Overall outline dimension beyond the drawing is not allowed.	

4.2 Cosmetic Defect

Item No	Items to be inspected	Inspection Standard	Classification of defects
4.2.1	Clear Spots Black and white Spot defect Pinhole, Foreign Particle, Dirt under polarizer	For dark/white spot, size Φ is defined as Φ= $(x+y)/2$  1.	Minor

Size(mm) \ Zone	Acceptable Qty		
	A	B	C
Φ≤0.10	Ignore		
0.10＜Φ≤0.15	2		Ignore
0.15＜Φ≤0.20	1		
Φ＞0.20	0		

Dim Spots Circle shaped and dim edged defects	2.			Minor

Size(mm) \ 2. Zone	Acceptable Qty		
	A	B	C
Φ≤0.2	Ignore		
0.20＜Φ≤0.40	3		Ignore
0.40＜Φ≤0.60	2		
0.60＜Φ≤0.80	1		
0.80＜Φ	0		

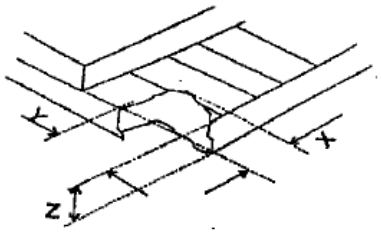
OUTGOING QUALITY STANDARD	PAGE 3 OF 4
TITLE: FUNCTIONAL TEST & INSPECTION CRITERIA	

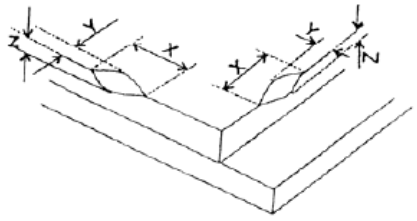
4.2. Cosmetic Defect

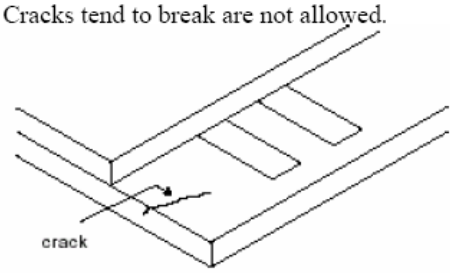
<table>
<tr><th>Item No</th><th>Items to be inspected</th><th>Inspection Standard</th><th>Classification of defects</th></tr>
<tr><td>4.2.2</td><td>Line defect
Black line,
White line,
Foreign material under polarizer,</td><td>
<table>
<tr><th colspan="2">Size(mm)</th><th colspan="3">Acceptable Qty</th></tr>
<tr><th rowspan="2">L(Length)</th><th rowspan="2">W(Width)</th><th colspan="3">Zone</th></tr>
<tr><th>A</th><th>B</th><th>C</th></tr>
<tr><td>Ignore</td><td>W≦0.02</td><td colspan="2">Ignore</td><td rowspan="4">Ignore</td></tr>
<tr><td>L≦3.0</td><td>0.02＜W≦0.03</td><td colspan="2">2</td></tr>
<tr><td>L≦2.0</td><td>0.03＜W≦0.05</td><td colspan="2">1</td></tr>
<tr><td></td><td>0.05＜W</td><td colspan="2">Define as spot defect</td></tr>
</table>
</td><td>Minor</td></tr>
<tr><td>4.2.3</td><td>Polarizer scratch</td><td>If the Polarizer scratch can be seen after mobile phone cover assembling or in the operating condition, judge by the line defect of 4.2.2.
If the Polarizer scratch can be seen only in non-operating condition or some special angle, judge by the following.
<table>
<tr><th colspan="2">Size(mm)</th><th colspan="3">Acceptable Qty</th></tr>
<tr><th rowspan="2">L(Length)</th><th rowspan="2">W(Width)</th><th colspan="3">Zone</th></tr>
<tr><th>A</th><th>B</th><th>C</th></tr>
<tr><td>Ignore</td><td>W≦0.03</td><td colspan="2">Ignore</td><td rowspan="4">Ignore</td></tr>
<tr><td>5.0＜L≦10.0</td><td>0.03＜W≦0.05</td><td colspan="2">2</td></tr>
<tr><td>L≦5.0</td><td>0.05＜W≦0.08</td><td colspan="2">1</td></tr>
<tr><td></td><td>0.08＜W</td><td colspan="2">0</td></tr>
</table>
</td><td>Minor</td></tr>
<tr><td>4.2.4</td><td>Polarize
Air bubble</td><td>Air bubbles between glass & polarizer
<table>
<tr><th>2. Zone
Size(mm)</th><th colspan="3">Acceptable Qty</th></tr>
<tr><th>A</th><th>B</th><th>C</th></tr>
<tr><td>Φ≦0.2</td><td colspan="2">Ignore</td><td rowspan="4">Ignore</td></tr>
<tr><td>0.20＜Φ≦0.30</td><td colspan="2">2</td></tr>
<tr><td>0.30＜Φ≦0.50</td><td colspan="2">1</td></tr>
<tr><td>0.50＜Φ</td><td colspan="2">0</td></tr>
</table>
</td><td>Minor</td></tr>
</table>

OUTGOING QUALITY STANDARD	PAGE 4 OF 4
TITLE:FUNCTIONAL TEST & INSPECTION CRITERIA	

4.3. Cosmetic Defect

<table>
<tr><th>Item No</th><th>Items to be inspected</th><th>Inspection Standard</th><th>Classification of defects</th></tr>
<tr><td rowspan="3">4.3.5</td><td rowspan="3">Glass defect</td><td>(i) Chips on corner
 

<table><tr><th>X</th><th>Y</th><th>Z</th></tr><tr><td>≦2.0</td><td>≦S</td><td>Disregard</td></tr></table>Notes: S=contact pad length
Chips on the corner of terminal shall not be allowed to extend into the ITO pad or expose perimeter seal.</td><td>Minor</td></tr>
<tr><td>(ii)Usual surface cracks
 

<table><tr><th>X</th><th>Y</th><th>Z</th></tr><tr><td>≦3.0</td><td><Inner border line of the seal</td><td>Disregard</td></tr></table></td><td>Minor</td></tr>
<tr><td>(iii) Crack
Cracks tend to break are not allowed.
 
</td><td>Major</td></tr>
<tr><td>4.3.6</td><td>Parts alignment</td><td>1) Not allow IC and FPC/heat-seal lead width is more than 50% beyond lead pattern.
2) Not allow chip or solder component is off center more than 50% of the pad outline.</td><td>Minor</td></tr>
<tr><td>4.3.7</td><td>SMT</td><td>According to the <Acceptability of electronic assemblies> IPC-A-610C class 2 standard. Component missing or function defect are Major defect, the others are Minor defect.</td><td></td></tr>
</table>

13.PRECAUTIONS FOR USING LCD MODULES

Handing Precautions

(1) The display panel is made of glass and polarizer. As glass is fragile. It tends to become or chipped during handling especially on the edges. Please avoid dropping or jarring. Do not subject it to a mechanical shock by dropping it or impact.

(2) If the display panel is damaged and the liquid crystal substance leaks out, be sure not to get any in your mouth. If the substance contacts your skin or clothes, wash it off using soap and water.

(3) Do not apply excessive force to the display surface or the adjoining areas since this may cause the color tone to vary. Do not touch the display with bare hands. This will stain the display area and degraded insulation between terminals (some cosmetics are determined to the polarizer).

(4) The polarizer covering the display surface of the LCD module is soft and easily scratched. Handle this polarizer carefully. Do not touch, push or rub the exposed polarizers with anything harder than an HB pencil lead (glass, tweezers, etc.). Do not put or attach anything on the display area to avoid leaving marks on. Condensation on the surface and contact with terminals due to cold will damage, stain or dirty
the polarizer. After products are tested at low temperature they must be warmed up in a container before coming is contacting with room temperature air.

(5) If the display surface becomes contaminated, breathe on the surface and gently wipe it with a soft dry cloth. If it is heavily contaminated, moisten cloth with one of the following solvents

- Isopropyl alcohol
- Ethyl alcohol

Do not scrub hard to avoid damaging the display surface.

(6) Solvents other than those above-mentioned may damage the polarizer. Especially, do not use the following.

- Water
- Ketone
- Aromatic solvents

Wipe off saliva or water drops immediately, contact with water over a long period of time may cause deformation or color fading. Avoid contacting oil and fats.

(7) Exercise care to minimize corrosion of the electrode. Corrosion of the electrodes is accelerated by water droplets, moisture condensation or a current flow in a high-humidity environment.

(8) Install the LCD Module by using the mounting holes. When mounting the LCD module make sure it is free of twisting, warping and distortion. In particular, do not forcibly pull or bend the I/O cable
or the backlight cable.

(9) Do not attempt to disassemble or process the LCD module.

(10) NC terminal should be open. Do not connect anything.

(11) If the logic circuit power is off, do not apply the input signals.

(12) Electro-Static Discharge Control，Since this module uses a CMOS

LSI, the same careful attention should be paid to electrostatic discharge as for an ordinary CMOS IC. To prevent destruction of the elements by static electricity, be careful to maintain an optimum work environment.

- Before remove LCM from its packing case or incorporating it into a set, be sure the module and your body have the same electric potential.Be sure to ground the body when handling the LCD modules.
- Tools required for assembling, such as soldering irons, must be properly grounded. make certain the AC power source for the soldering iron does not leak. When using an electric screwdriver to attach LCM, the screwdriver should be of ground potentiality to minimize as much as possible any transmission of electromagnetic waves produced sparks coming from the commutator of the motor.
- To reduce the amount of static electricity generated, do not conduct assembling and other work under dry conditions. To reduce the generation of static electricity be careful that the air in the work is not
too dried. A relative humidity of 50%-60% is recommended.As far as possible make the electric potential
of your work clothes and that of the work bench the ground potential

The LCD module is coated with a film to protect the display surface. Exercise care when peeling off this protective film since static electricity may be generated.

（13）Since LCM has been assembled and adjusted with a high degree of precision, avoid applying
excessive shocks to the module or making any alterations or modifications to it.

- Do not alter, modify or change the shape of the tab on the metal frame.
- Do not make extra holes on the printed circuit board, modify its shape or change the positions of components to be attached.
- Do not damage or modify the pattern writing on the printed circuit board.
- Absolutely do not modify the zebra rubber strip (conductive rubber) or heat seal connector.
- Except for soldering the interface, do not make any alterations or modifications with a soldering iron.
- Do not drop, bend or twist LCM.

Storage Precautions

When storing the LCD modules, the following precaution is necessary.

(1) Store them in a sealed polyethylene bag. If properly sealed, there is no need for the dessicant.

(2) Store them in a dark place. Do not expose to sunlight or fluorescent light, keep the temperature between 0°C and 35°C.

(3) The polarizer surface should not come in contact with any other objects. (We advise you to store
them in the container in which they were shipped).

Others

Liquid crystals solidify under low temperature (below the storage temperature range) leading to defective orientation or the generation of air bubbles

(black or white). Air bubbles may also be generated if the module is subject to a low temperature.

If the LCD modules have been operating for a long time showing the same display patterns, the display patterns may remain on the screen as ghost images and a slight contrast irregularity may also appear. A normal operating status can be regained by suspending use for some time. It should be noted that this phenomenon does not adversely affect performance reliability.

To minimize the performance degradation of the LCD modules resulting from destruction caused by static electricity etc., exercise care to avoid holding the following sections when handling the modules.

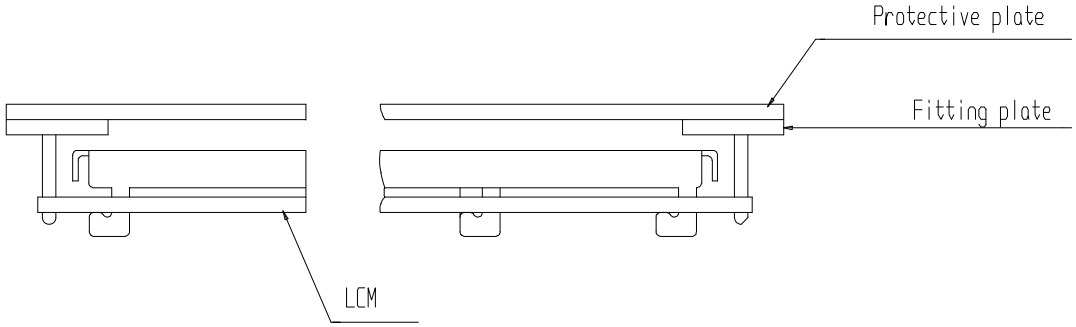
- Exposed area of the printed circuit board.
-Terminal electrode sections.

USING LCD MODULES

Installing LCD Modules

The hole in the printed circuit board is used to fix LCM as shown in the picture below. Attend to the following items when installing the LCM.

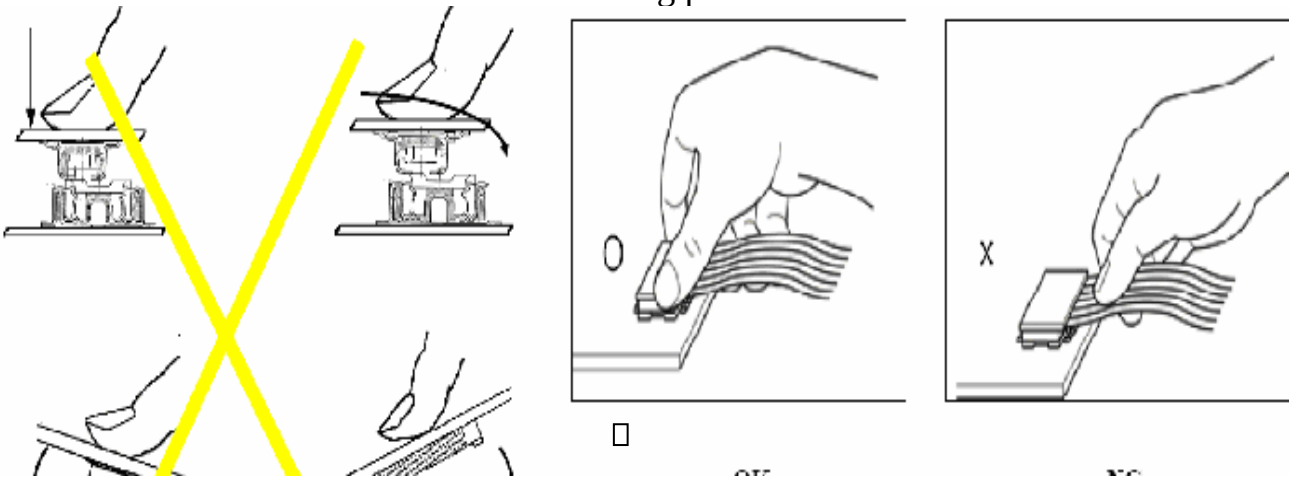
(1) Cover the surface with a transparent protective plate to protect the polarizer and LC cell.



(2) When assembling the LCM into other equipment, the spacer to the bit between the LCM and the fitting plate should have enough height to avoid causing stress to the module surface, refer to the individual specifications for measurements. The measurement tolerance should be ±0.1mm.

Precaution for assemble the module with BTB connector:

Please note the position of the male and female connector position,don’t assemble or assemble like the method which the following picture shows



Precaution for soldering to the LCM

	Hand soldering	Machine drag	Machine press soldering
No ROHS	290°C ~350°C. Time : 3-5S.	330°C ~350°C. Speed : 4-8 mm/s.	300°C ~330°C. Time : 3-6S.
ROHS product	340°C ~370°C. Time : 3-5S.	350°C ~370°C. Time : 4-8 mm/s.	330°C ~360°C. Time : 3-6S.

(1)If soldering flux is used, be sure to remove any remaining flux after finishing to soldering operation. (This does not apply in the case of a non-halogen type of flux.) It is recommended that you protect the LCD surface with a cover during soldering to prevent any damage due to flux spatters.

(2) When soldering the electroluminescent panel and PC board, the panel and board should not be detached more than three times. This maximum number is determined by the temperature and time conditions mentioned above, though there may be some variance depending on the temperature of the soldering iron.

(3) When remove the electroluminescent panel from the PC board, be sure the solder has completely melted, the soldered pad on the PC board could be damaged.

Precautions for Operation

(1) Viewing angle varies with the change of liquid crystal driving voltage (VLCD). Adjust VLCD to show the best contrast.

(2) It is an indispensable condition to drive LCD's within the specified voltage limit since the higher voltage then the limit cause the shorter LCD life.An electrochemical reaction due to direct current causes LCD's undesirable deterioration, so that the use of direct current drive should be avoided.

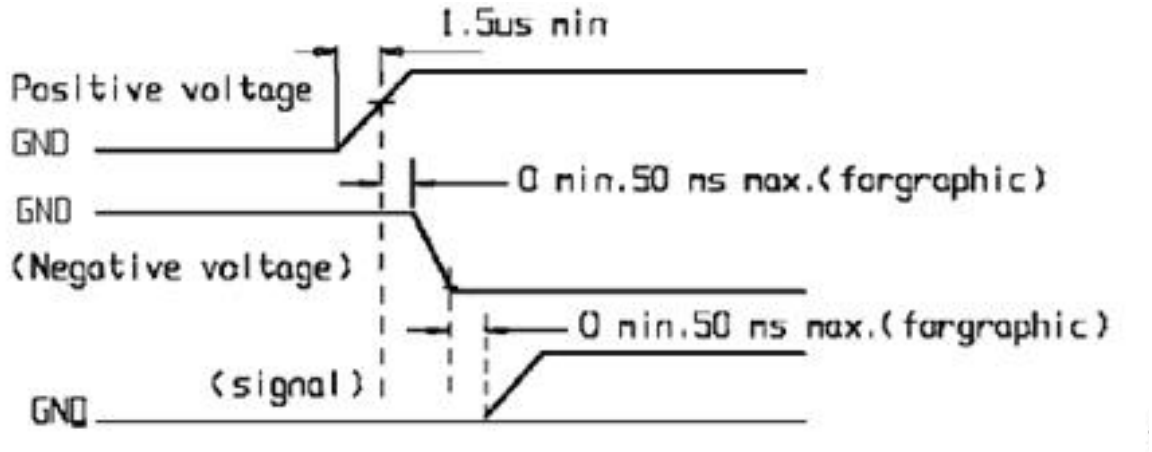
(3) Response time will be extremely delayed at lower temperature than the operating temperature range and on the other hand at higher temperature LCD's show dark color in them.However those phenomena do not mean malfunction or out of order with LCD's, Which will come back in the specified operating temperature.

(4) If the display area is pushed hard during operation, the display will become abnormal. However, it will return to normal if it is turned off and then back on.

(5) A slight dew depositing on terminals is a cause for electro-chemical reaction resulting in terminal open circuit. Usage under the maximum operating temperature,50%RH or less is required.

(6) Input each signal after the positive/negative voltage becomes stable.

(7) Please keep the temperature within specified range for use and storage. Polarization degradation, bubble generation or polarizer peel-off may occur with high temperature and high humidity.



Safety

(1) It is recommended to crush damaged or unnecessary LCDs into pieces and wash them off with solvents such as acetone and ethanol, which should later be burned.

(2) If any liquid leaks out of a damaged glass cell and comes in contact with the hands, wash off thoroughly with soap and water.

14.PRIOR CONSULT MATTER

1.①For YES standard products, we keep the right to change material, process ... for improving the product property without notice on our customer.

②For OEM products, if any change needed which may affect the product property, we will consult with our customer in advance.

2.If you have special requirement about reliability condition, please let us know before you start the test on our samples.

15. FACTORY

FACTORY NAME: ANSHAN YES OPTOELECTRONICS DISPLAY CO., LTD
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