

NAN YA PLASTICS CORPORATION

SPECIFICATION OF
LCD MODULE
PRODUCT NO.: LDA86SE59J1KS_

SPEC. NO.: LME59-1-0

CUSTOMER
APPROVED BY
DATE:

LCD DEPARTMENT
ELECTRONIC MATERIALS DIVISION
NAN YA PLASTICS CORPORATION
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EDITED ON : Dec. 19. 2006

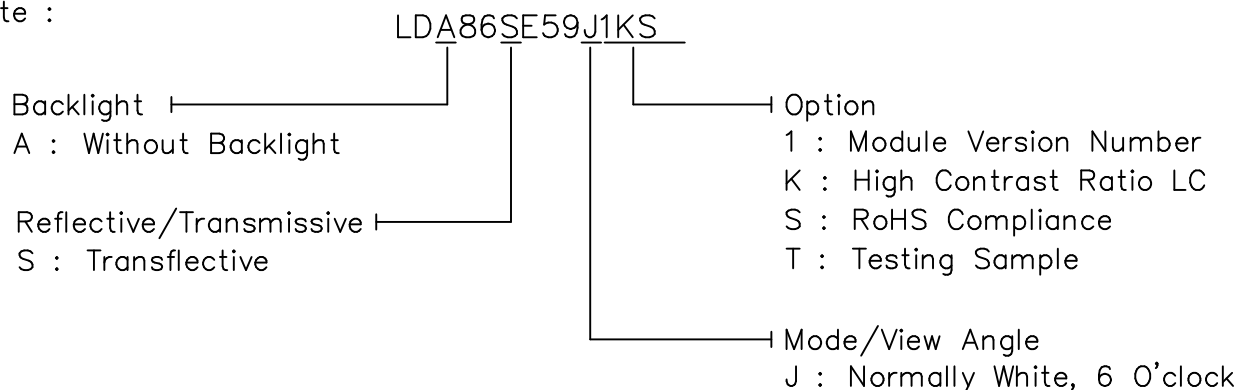
Q.C. DEPT.	DESIGN MANAGER	DESIGN CHECK	DESIGNER
			W.R.HSU

[illegible]

1.MECHANICAL DATA

NO	ITEM	CONTENTS	UNIT
1	Product No.	LDA86SE59J1KS_	—
2	Module Size	88.3 (W) x 69.1 (H) x MAX. 2.2 (D)	mm
3	Dot Size	0.225 (W) x 0.225 (H)	mm
4	Dot Pitch	0.24 (W) x 0.24 (H)	mm
5	Number of Dots	320 (W) x 240 (H)	Dot
6	Duty	1/240	—
7	LCD Display Mode	FSTN, Normally White / Positive Image	—
8	Rear Polarizer	Transflective Type	—
9	Viewing Direction	6	O'clock
10	Backlight	Excluded	—
11	Controller	Excluded	—
12	DC/DC Converter	Excluded	—
13	Touch Panel	Excluded	—
14	Weight	25 (Approx.)	g

Note :



RoHS Compliance.

Nan Ya guarantees that this project doesn't include any materials (6 materials) or includes less than specified quantities which are regulated by RoHS Compliance.

REV/DATE	R0/ 12.19.06'					BY W.R.HSU
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2.ABSOLUTE MAXIMUM RATINGS

(1) ELECTRICAL ABSOLUTE RATINGS

VSS=0V

	SYMBOL	MIN.	MAX.	UNIT	COMMENT
Power Supply for Logic	VDD-GND	-0.3	5.5	V	
Input Voltage	VI	-0.3	VDD	V	
Static Electricity	-	-	-	-	Note 1

Note 1 LCM should be grounded during handling LCM.

(2) ENVIRONMENTAL ABSOLUTE MAXIMUM RATINGS

ITEM	WIDE TEMP.			
	OPERATING		STORAGE	
	MIN.	MAX.	MIN.	MAX.
Ambient Temperature	-20	70	-40	80
Humidity (Without Condensation)	Note 2,4		Note 3,4	

Note 2 $T_a \leq 70^{\circ}\text{C}$: 75%RH max

Note 3 Please refer to item of reliability test

Note 4 Background color will change slightly depending on ambient temperature.
That phenomenon is reversible.

3. ELECTRICAL CHARACTERISTICS

ITEM	SYMBOL	CONDITION		MIN.	TYP.	MAX.	UNIT
Power Supply for Logic	VDD-GND	—		2.7	3.0	3.3	V
Input Voltage	VIH	H level		0.8VDD	—	VDD	V
	VIL	L level		0	—	0.2VDD	
Recommended LC Driving Voltage	VLCD-GND (Vop)	Duty= 1/240 Bias= 1/12	-20°C	16.4	16.9	17.4	V
			0°C	15.7	16.2	16.7	
			25°C	15.6	16.1	16.6	
			50°C	15.3	15.8	16.3	
			70°C	15.0	15.5	16.0	
Power Supply Current	IDD	VDD-GND=3.0V VLCD-GND=16.1V FLM=70Hz M=FLM/2 Ta=25°C Pattern: □ ■ □ ■ □ ■ ■ □ ■ □ ■ □		—	0.1	0.3	mA
	ILCD			—	0.5	1	

4.OPTICAL CHARACTERISTICS

WIDE TEMPERATURE MODE

AT V_{OP}

ITEM MODE	Cr(Contrast Ratio)										θ (Viewing Angle)		θ (Viewing Angle)	
	-20℃		0℃		25℃		50℃		70℃		25℃		25℃	
	MIN.	TYP.	MIN.	TYP.	MIN.	TYP.	MIN.	TYP.	MIN.	TYP.	MIN.	TYP.	MIN.	TYP.
S	J	1	2.5	1.5	3	2	3.5	1.5	2.5	1	1.5	—	F: 35 R: 20	— L: 30 R: 30
NOTE		NOTE 6										NOTE 5		

NOTE :

S : Transflective

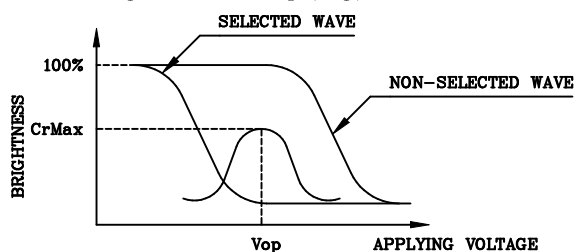
J : Normally White, 6 O'clock

AT $\phi=0^\circ$ $\theta=0^\circ$

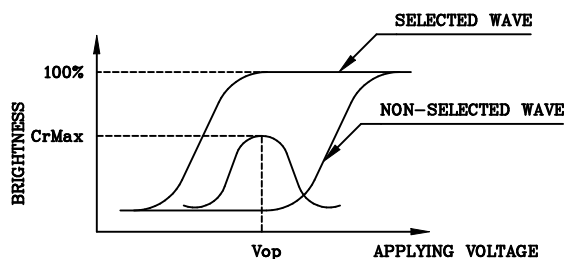
ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	NOTE
Response Time (rise)	Tr	-20℃	4500	5600	8400	ms	NOTE 2
		0℃	2200	2600	3900		
		25℃	450	580	870		
		50℃	190	240	360		
		70℃	150	180	270		
Response Time (fall)	Tf	-20℃	3800	4800	7200	ms	NOTE 2
		0℃	2000	2500	3750		
		25℃	200	270	400		
		50℃	100	130	190		
		70℃	70	80	130		

(NOTE 1)

Definition of Operation Voltage(Vop)



(positive type)



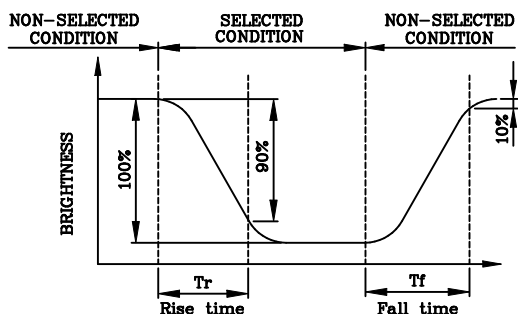
(negative type)

*Conditions

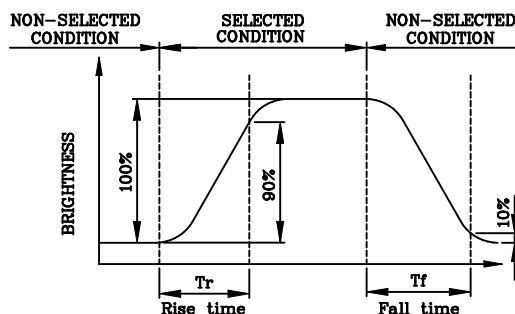
Viewing Angle : 0
Frame Frequency : 70Hz
Applying Waveform : 1/N duty 1/a bias

(NOTE 2)

Definition of Response Time(Tr,Tf)



(positive type)



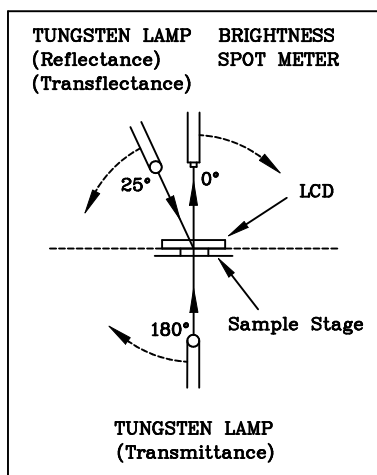
(negative type)

*Conditions

Operating Voltage : Vop
Viewing Angle (θ, ϕ) : (0,0)
Frame Frequency : 70Hz
Applying Waveform : 1/N duty 1/a bias

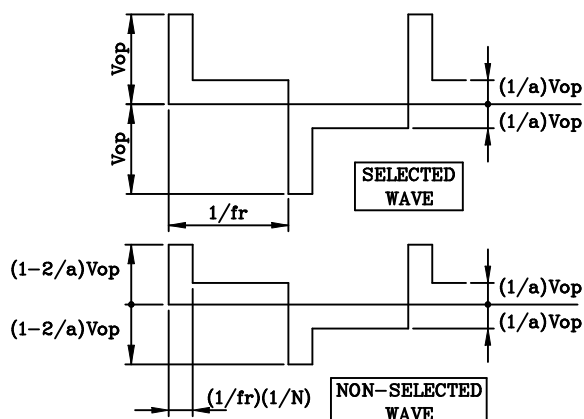
(NOTE 3)

Description of Measuring Equipment and Driving Waveforms



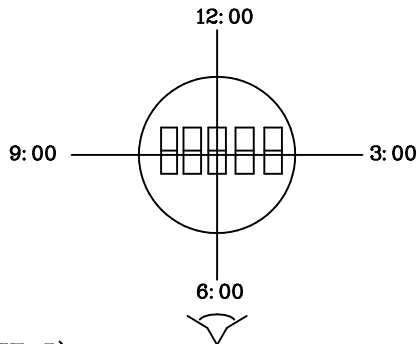
CONST.
TEMP.
CHAMBER

Multiplex Driving (1/N duty 1/a bias)



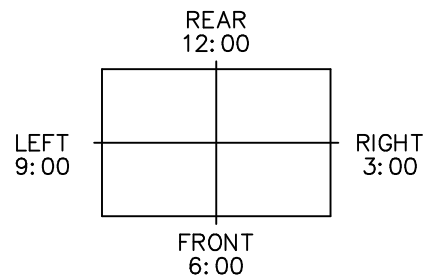
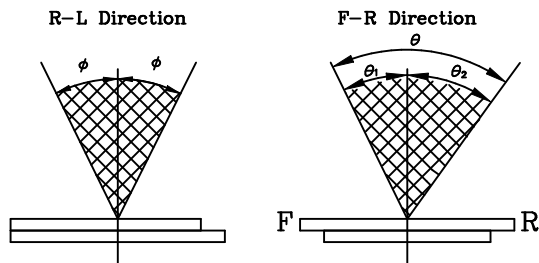
(NOTE 4)

Definition of Viewing Direction



(NOTE 5)

Definition of Viewing Angle



*For This Product

The Viewing Direction Is 6 O'clock
So $\theta_1 > \theta_2$

$$\theta = \theta_1 + \theta_2$$

*Conditions

Operating Voltage : V_{op}

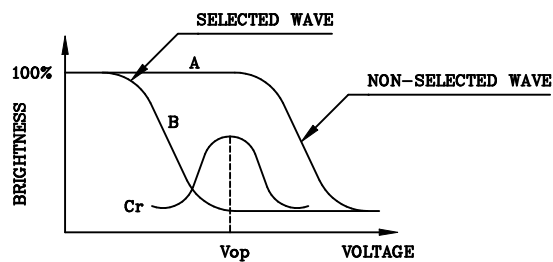
Frame Frequency : 70Hz

Applying Waveform : 1/N duty 1/a bias

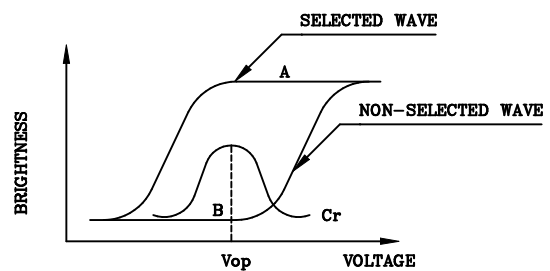
Contrast Ratio : larger than 2

(NOTE 6)

Definition of Contrast Ratio (Cr)



(positive type)



(negative type)

$$\text{Contrast Ratio : } Cr = A/B$$

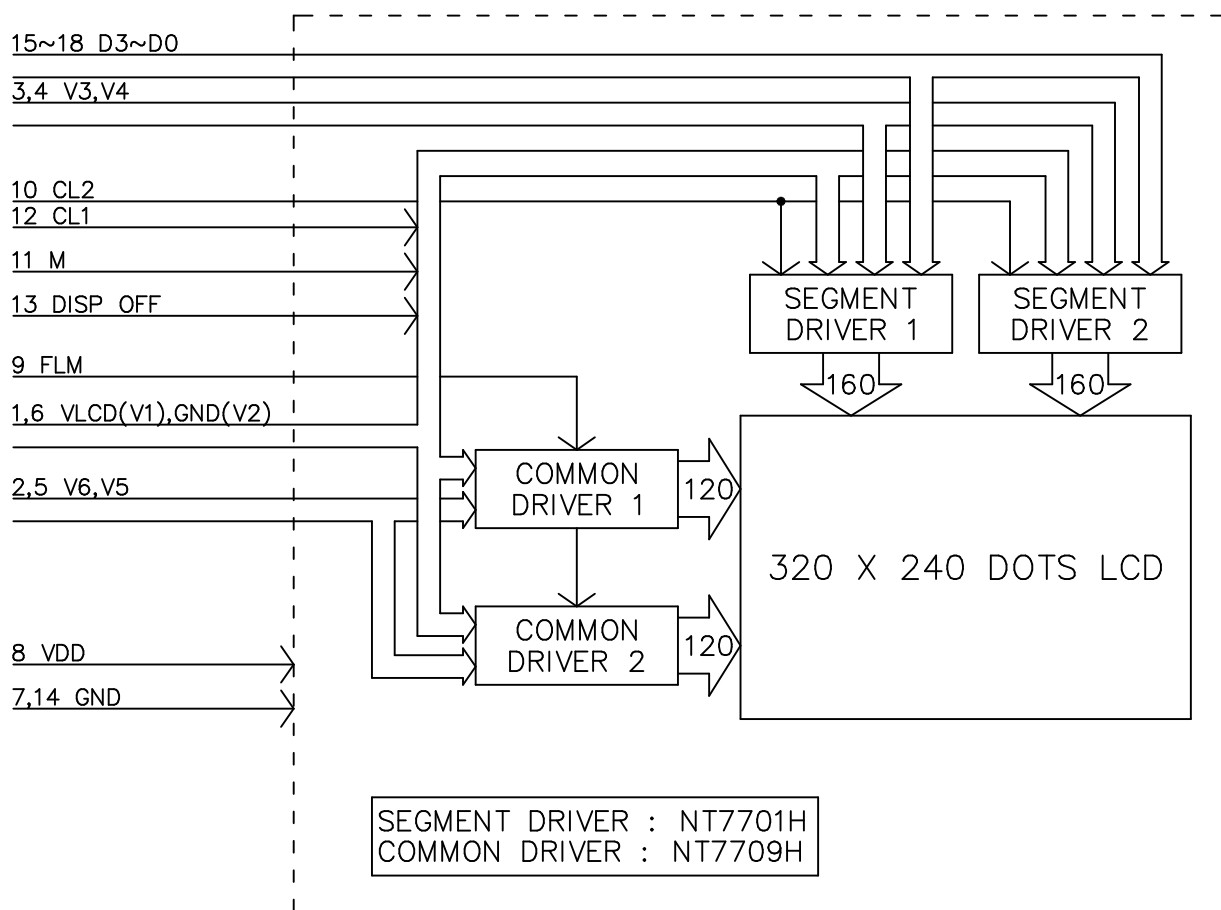
*Conditions

Viewing Angle : 0

Frame Frequency : 70Hz

Applying Waveform : 1/N duty 1/a bias

5. BLOCK DIAGRAM



Note :

- 1) Controller and bias voltage supply circuit are not included.
- 2) VLCD(V1), GND(V2), V6, V3, V4 and V5 are power supply voltage for LCD.
(V1>V6>V3>V4>V5>V2)

6.INTERNAL PIN CONNECTION

PIN NO.	SYMBOL	FUNCTION
1	VLCD(V1)	Bias voltage(Liquid crystal drive voltage)
2	V6	Bias voltage($V1 > V6 > V3 > V4 > V5 > V2$)
3	V3	
4	V4	
5	V5	
6	GND(V2)	(GND: 0V)
7	GND	0V
8	VDD	Power supply voltage: +3.0V typ
9	FLM	Frame signal(sync. Of display)
10	CL2	Display data shift clock
11	M	LCD drive signal(AC signal)
12	CL1	Display data latch signal
13	DISP OFF	Display ON/OFF control signal("H":Display ON,"L":Display OFF)
14	GND	0V
15	D3	Display data
16	D2	
17	D1	
18	D0	

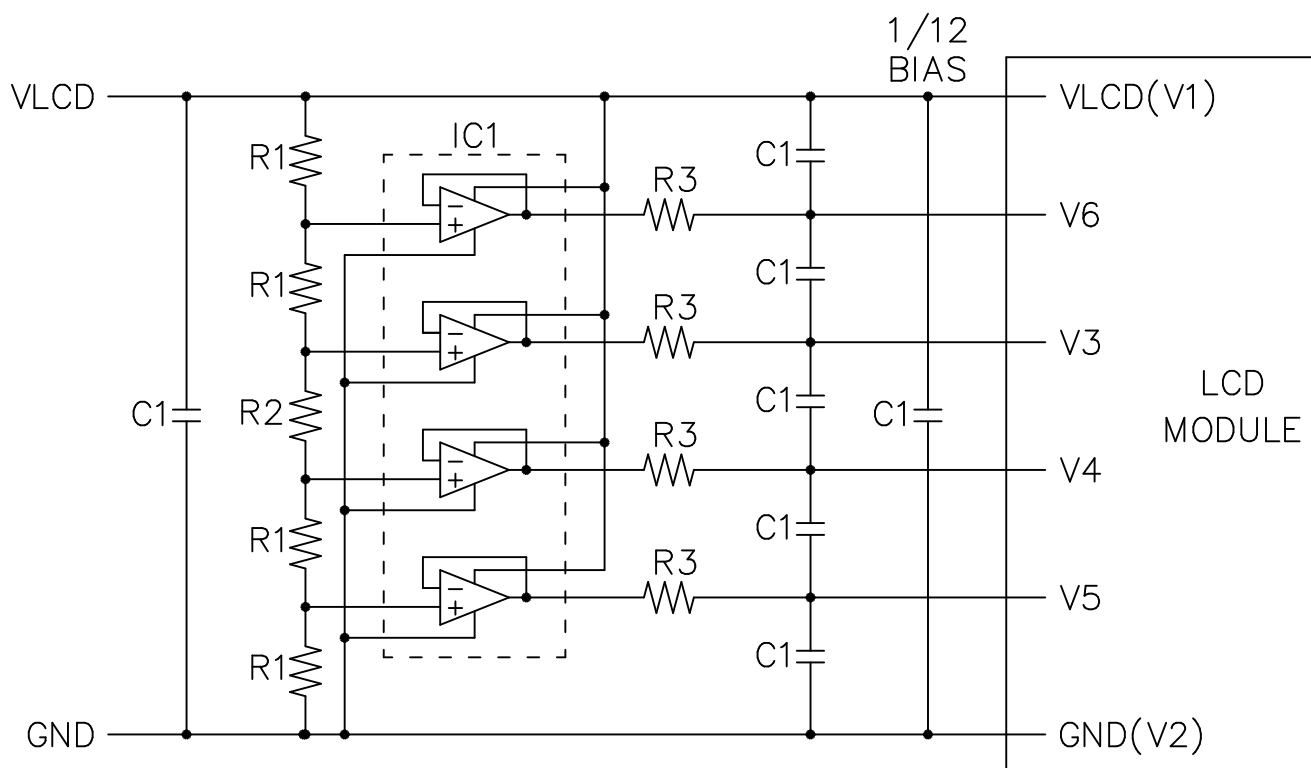
LCD INTERFACE CABLE :

FPC,N18,Pitch 1.0 mm (Thickness = 0.3 mm)

CORRESPONDABLE LCD CONNECTOR :

MOLEX 52271-1869 or COMPATIBLE

7. POWER SUPPLY



IC1 : LP324M@NOPB(NATIONAL SEMICONDUCTOR)
R1 : 22(KOHM) $\pm$ 0.5%, R2 : 180(KOHM) $\pm$ 2%, R3 : 4.7(OHM) $\pm$ 5%
C1 : 2.2-4.7(uF)

Note : These are general values.

In case to decrease LCD driving voltage with minimizing bias value, set these values with check display to avoid display's deterioration (response etc).

8.TIMING CHARACTERISTICS

8-1.INTERFACE TIMING

@ VDD=3.0V±10%, Ta=-20~70℃

Item	Symbol	Test condition	Min.	Typ.	Max.	Unit
CL2 Cycle Time	tC	Fig.a	125	—	—	ns
CL2 Pulse Width	tSWH,tSWL	Fig.a	51	—	—	ns
CL2 Rise/Fall Time	tCR,tCF	Fig.a	—	—	50	ns
Data Set Up Time	tDSU	Fig.a	30	—	—	ns
Data Hold Time	tDHD	Fig.a	40	—	—	ns
CL1 Cycle Time	tL	Fig.b	250	—	—	ns
CL1 "H" Pulse Width	tLWH	Fig.a , Fig.b	51	—	—	ns
CL1 Rise/Fall Time	tLR,tLF	Fig.b	—	—	50	ns
CL2 To CL1 Delay Time	tCL	Fig.a	0	—	—	ns
CL1 To CL2 Delay Time	tLC	Fig.a	51	—	—	ns
FLM TO CL1 SETUP TIME	tFLS	Fig.b	30	—	—	ns
FLM TO CL1 HOLD TIME	tFLH	Fig.b	50	—	—	ns

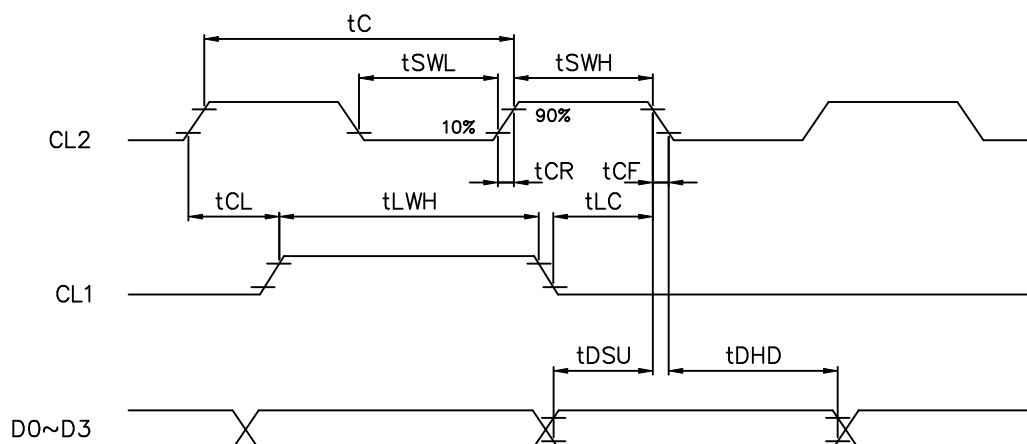


Fig . a Interface timing (SEGMENT)

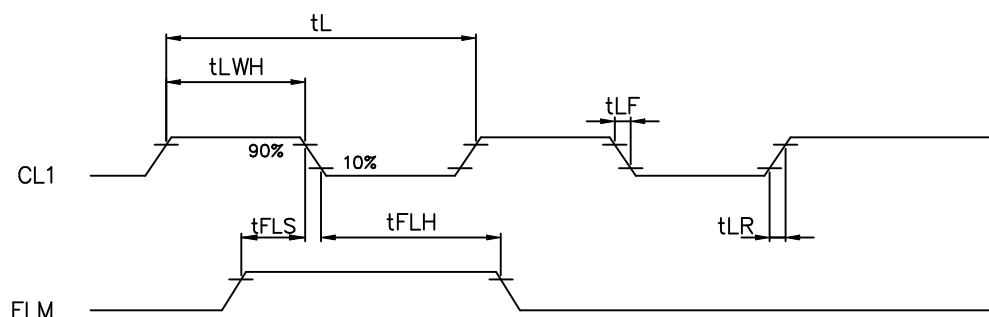
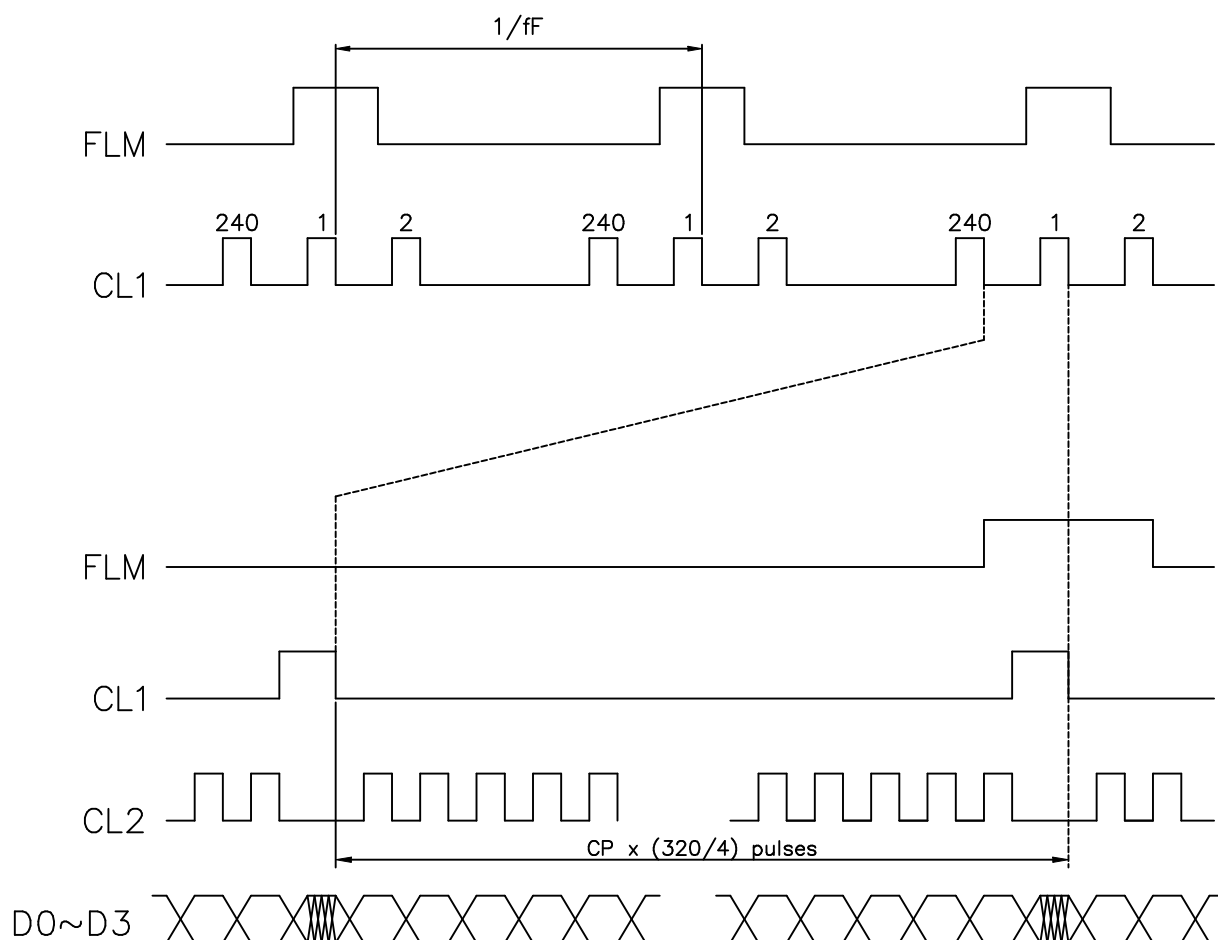
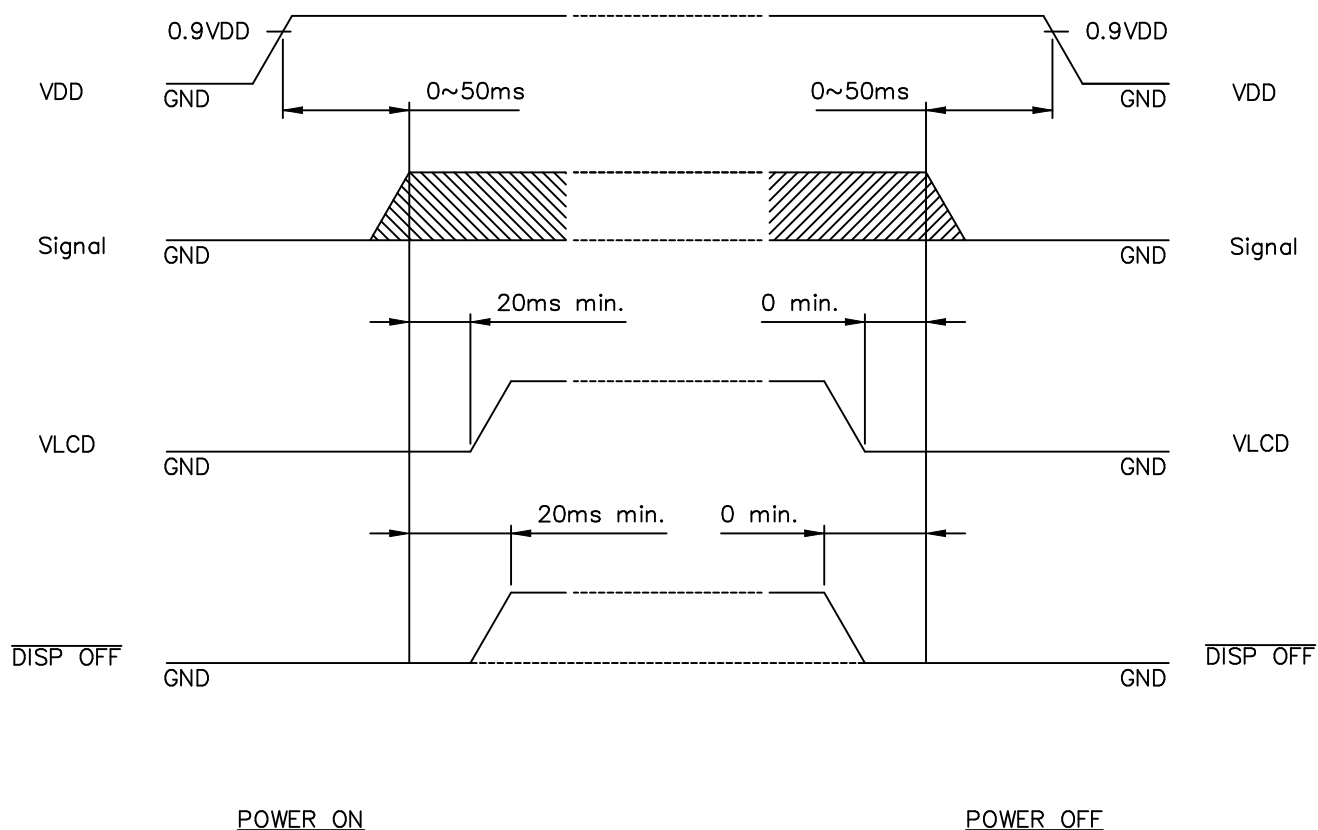


Fig . b Interface timing (COMMON)

8-2.TIMING CHART OF INPUT SIGNAL



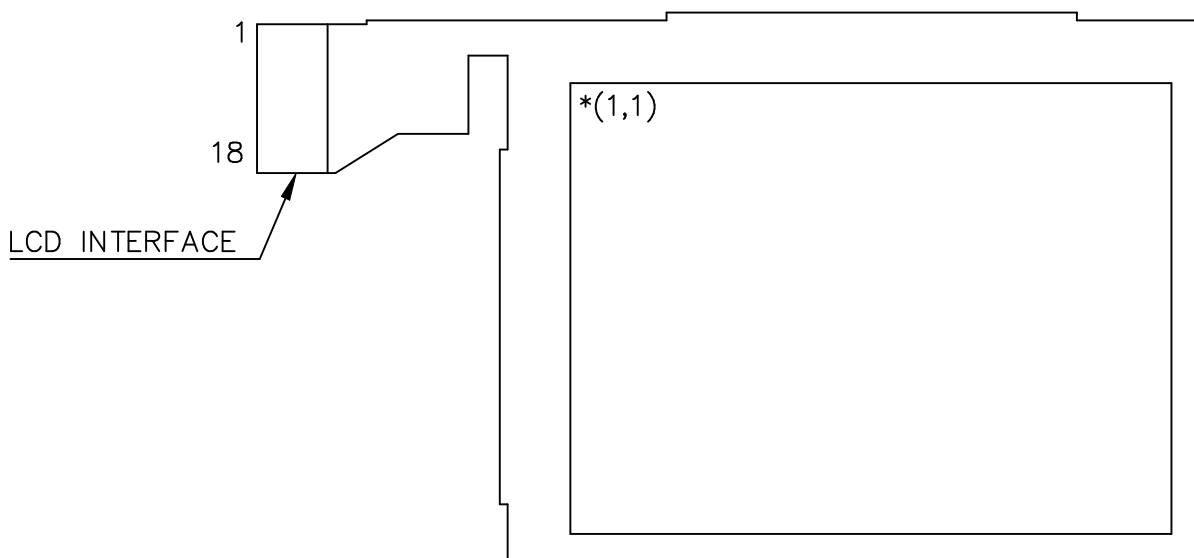
8-3. POWER ON/OFF TIMING



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

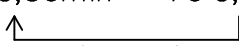
8-4.DISPLAY PATTERN

	Column1	Column2	Column3	Column4	Column320
Row 1	1 • 1	1 • 2	1 • 3	1 • 4	1 • 320
Row 2	2 • 1	2 • 2	2 • 3		
Row 3	3 • 1	3 • 3			
D0: (1 • 4)↘(1 • 8)(240 • 320) D1: (1 • 3)↘(1 • 7)(240 • 319) D2: (1 • 2)↘(1 • 6)(240 • 318) D3: (1 • 1)↘(1 • 5)(240 • 317)					
Row 240	240 • 1				240 • 320



9. RELIABILITY TEST

WIDE TEMPERATURE RELIABILITY TEST

NO	ITEM	CONDITION			STANDARD	NOTE
1	High Temp. Storage	80°C	120Hrs		Appearance without defect	
2	Low Temp. Storage	-40°C	120Hrs		Appearance without defect	
3	High Temp. & High Humi. Storage	60°C 90%RH	120Hrs		Appearance without defect	
4	High Temp. Operating Display	70°C	120Hrs		Appearance without defect	
5	Low Temp. Operating Display	-20°C	120Hrs		Appearance without defect	
6	Thermal Shock	-20°C, 30min → 70°C, 30min  (1cycle)			Appearance without defect	10 cycles

Inspection Provision

1.Purpose

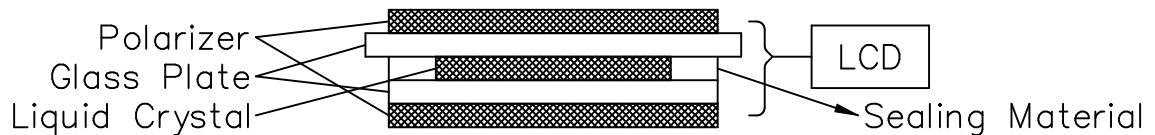
The NAN YA inspection provision provides outgoing inspection provision and its expected quality level based on our outgoing inspection of NAN YA LCD produces.

2.Applicable Scope

The NAN YA inspection provision is applicable to the arrangement in regard to outgoing inspection and quality assurance after outgoing.

3.Technical Terms

3-1 NAN YA Technical Terms



4.Outgoing Inspection

4-1 Inspection Method

MIL-STD-105E Level II Regular inspection

4-2 Inspection Standard

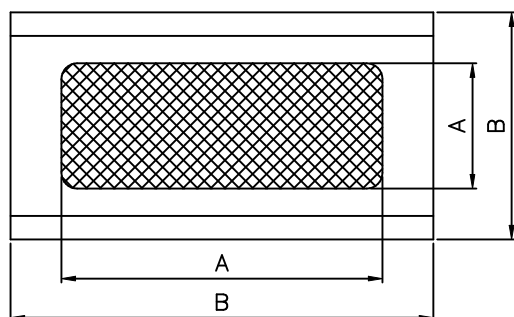
	Item		AQL(%)	Remarks
Major Defect	Dots	Opens Shorts Erroneous operation	0.4	faults which substantially lower the practicality and the initial purpose difficult to achieve.
	Solder appearance	Shorts Loose		
	Cracks	Display surface cracks		

	Dimensions	External from Dimensions	0.4	
Minor Defect	Inside the glass	Black spots	0.65	faults which appear to pose almost no obstacle to the practicality, effective use, and operation.
	Polarizing plate	Scratches, foreign Matter, air bubbles, and peeling		
	Dots	Pinhole, deformation		
	Color tone	Color unevenness		
	Solder appearance	Cold solder Solder projections		

4-3 Inspection Provisions

*Viewing Area Definition

Fig. 1



A : Zone Viewing Area
B : Zone Glass Plate Outline

*Inspection place to be 500 to 1000 lux illuminance uniformly without glaring.

The distance between luminous source(daylight fluorescent lamp and cool white fluorescent lamp) and sample to be 30cm to 50cm.

*Test and measurement are performed under the following conditions, unless otherwise specified.

Temperature 20± 15℃
Humidity 65± 20%R.H.
Pressure 860~1060hPa(mmbar)

In case of doubtful judgment, it is performed under the following conditions.

Temperature 20± 2℃
Humidity 65± 5%R.H.
Pressure 860~1060hPa(mmbar)

5.Specification for quality check
5-1 Electrical characteristics

NO.	Item	Criterion
1	Non operational	Fail
2	Miss operating	Fail
3	Missing dot	Fail
4	Contrast irregular	Fail
5	Response time	Within Specified value

5-2 External Appearance Defect

NO.	Item	Criterion																		
1	Black spots, foreign matter, and white spots (Including light leakage due to pinholes of polarizing plates, etc.)	(1)–1–Spots <table><tr><th>Average Diameter(mm):D</th><th>Number of pieces permitted</th></tr><tr><td>$D\leq 0.1$</td><td>Ignore</td></tr><tr><td>$0.1 < D \leq 0.2$</td><td>5</td></tr><tr><td>$0.2 < D \leq 0.3$</td><td>2</td></tr><tr><td>$0.3 < D$</td><td>0</td></tr></table> Number of total pieces is set to within 5 pieces. Note that when there are 2 pieces or more, they are not to be concentrated. Set as: Average diameter = (Long diameter + Short diameter)/2 (1)–2–Blurred Spots(At lighting condition) <table><tr><th>Average Diameter(mm):D</th><th>Number of pieces permitted</th></tr><tr><td>$D\leq 0.3$</td><td>Ignore</td></tr><tr><td>$0.3 < D \leq 0.75$</td><td>5</td></tr><tr><td>$0.75 < D$</td><td>0</td></tr></table> Number of total pieces is set to within 5 pieces. Note that when there are 2 pieces or more, they are not to be concentrated. Set as: Average diameter = (Long diameter + Short diameter)/2	Average Diameter(mm):D	Number of pieces permitted	$D\leq 0.1$	Ignore	$0.1 < D \leq 0.2$	5	$0.2 < D \leq 0.3$	2	$0.3 < D$	0	Average Diameter(mm):D	Number of pieces permitted	$D\leq 0.3$	Ignore	$0.3 < D \leq 0.75$	5	$0.75 < D$	0
Average Diameter(mm):D	Number of pieces permitted																			
$D\leq 0.1$	Ignore																			
$0.1 < D \leq 0.2$	5																			
$0.2 < D \leq 0.3$	2																			
$0.3 < D$	0																			
Average Diameter(mm):D	Number of pieces permitted																			
$D\leq 0.3$	Ignore																			
$0.3 < D \leq 0.75$	5																			
$0.75 < D$	0																			

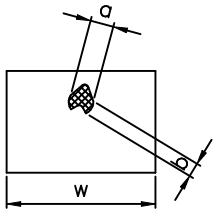
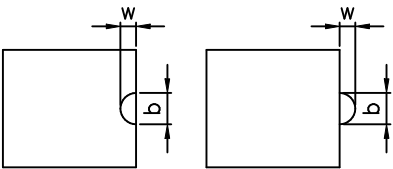
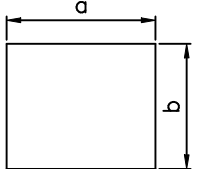
SPECIFICATION

1	Line	(1)-1-Lines <table> <tr> <th>Width(mm): W</th><th>Length(mm): L</th><th>Number of pieces permitted</th></tr> <tr> <td>$W \leq 0.03$</td><td>Ignore</td><td>Ignore</td></tr> <tr> <td>$0.03 < W \leq 0.08$</td><td>$L \leq 4$</td><td>2</td></tr> <tr> <td>$0.08 < W \leq 0.1$</td><td>$L \leq 1$</td><td>1</td></tr> </table> Object exceeding 0.1mm follow the standards of the spots form. Note that when there are 2 pieces or more, they are not to be concentrated. (1)-2-Blurred Lines(At lighting condition) <table> <tr> <th>Width(mm): W</th><th>Length(mm): L</th><th>Number of pieces permitted</th></tr> <tr> <td>$W \leq 0.03$</td><td>Ignore</td><td>Ignore</td></tr> <tr> <td>$0.03 < W \leq 0.08$</td><td>$L \leq 3$</td><td>6</td></tr> <tr> <td>$0.08 < W$</td><td>$3 < L$</td><td>None</td></tr> </table> Object exceeding 0.1mm follow the standards of the spots form. Note that when there are 2 pieces or more, they are not to be concentrated.	Width(mm): W	Length(mm): L	Number of pieces permitted	$W \leq 0.03$	Ignore	Ignore	$0.03 < W \leq 0.08$	$L \leq 4$	2	$0.08 < W \leq 0.1$	$L \leq 1$	1	Width(mm): W	Length(mm): L	Number of pieces permitted	$W \leq 0.03$	Ignore	Ignore	$0.03 < W \leq 0.08$	$L \leq 3$	6	$0.08 < W$	$3 < L$	None
Width(mm): W	Length(mm): L	Number of pieces permitted																								
$W \leq 0.03$	Ignore	Ignore																								
$0.03 < W \leq 0.08$	$L \leq 4$	2																								
$0.08 < W \leq 0.1$	$L \leq 1$	1																								
Width(mm): W	Length(mm): L	Number of pieces permitted																								
$W \leq 0.03$	Ignore	Ignore																								
$0.03 < W \leq 0.08$	$L \leq 3$	6																								
$0.08 < W$	$3 < L$	None																								
2	Scratches(Glass, reflection plates, and polarizing plates)	In accordance with black spots. (At non lighting condition)																								
3	Color irregular	Not remarkable color irregular.																								

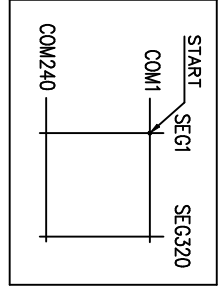
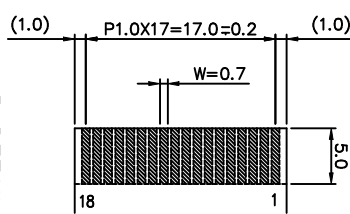
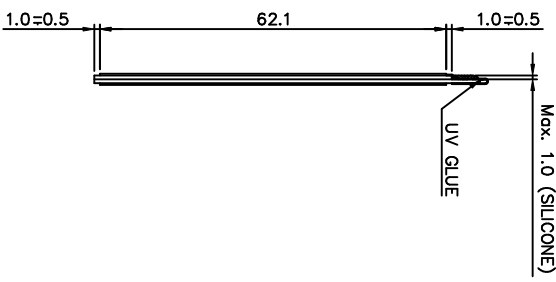
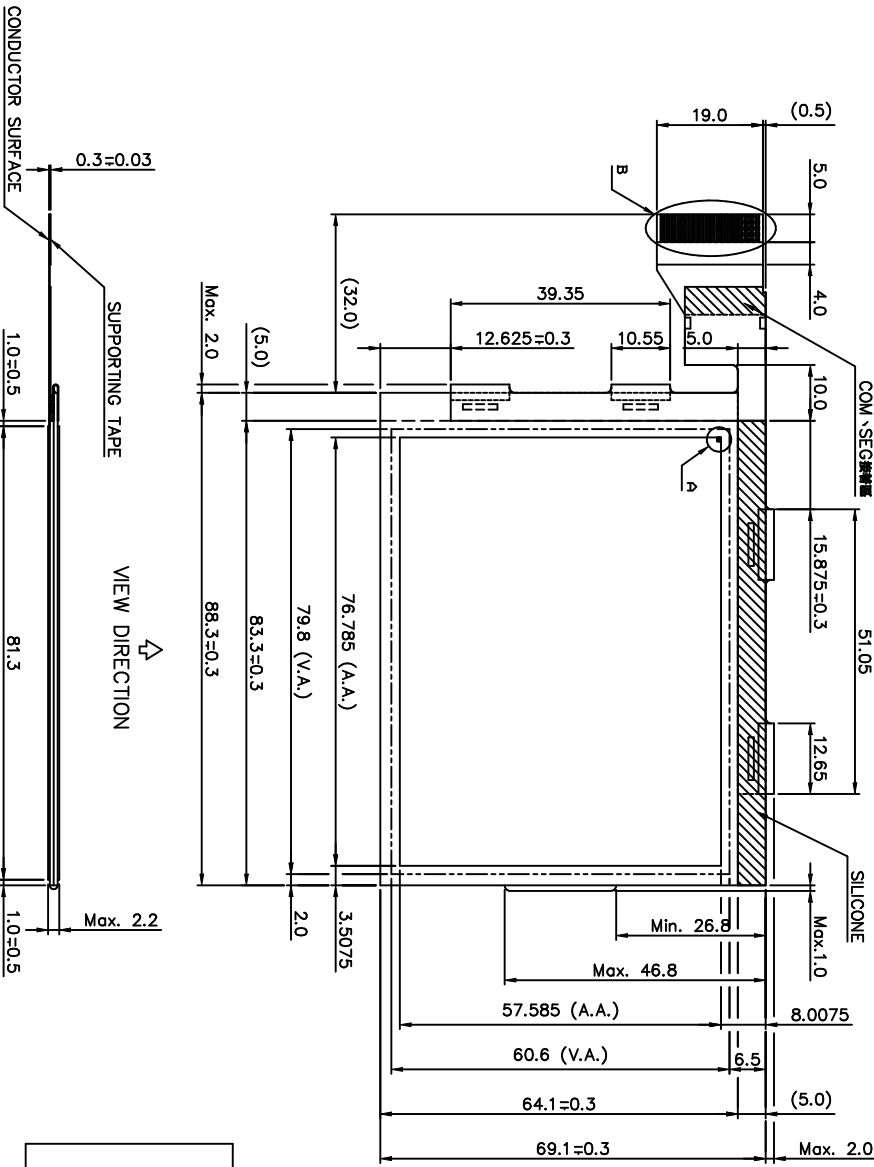
4	Air bubbles polarizing plates, and reflection plates	<table><tr><td>Average Diameter (mm):D</td><td>Number of pieces permitted</td><td rowspan="2">Average diameter = (Long diameter + Short diameter)/2</td></tr><tr><td>$D \leq 0.3$ $0.3 < D$</td><td>Ignore 0</td></tr></table> Note that when there are 4 pieces or more, they are not to be concentrated.	Average Diameter (mm):D	Number of pieces permitted	Average diameter = (Long diameter + Short diameter)/2	$D \leq 0.3$ $0.3 < D$	Ignore 0					
Average Diameter (mm):D	Number of pieces permitted	Average diameter = (Long diameter + Short diameter)/2										
$D \leq 0.3$ $0.3 < D$	Ignore 0											
5	Cracks	<table><tr><td>(1)General crack</td><td>$a \leq 5$ $b \leq 2$ $c \leq t$ Where, a and b are ignored when less than or equal to 0.5 The numbers of pieces are set at up to 5 pieces.</td></tr><tr><td>(2)Corner crack</td><td>$a \leq 2.5$ $b \leq 2.5$ $c \leq t$ $a + b \leq 4$</td></tr><tr><td>(3)Seal portion crack</td><td>$a \leq \text{The seal width} \times 1/3$ $b \leq t \times 2/3$ $c \leq 5$ The numbers of pieces are set at up to 5 pieces.</td></tr><tr><td>(4)ITO Pin crack</td><td>$a \leq 5$ $b \leq 1/3 \text{ pin length}$ $c \leq t$</td></tr><tr><td>(5)Progressive cracks</td><td>All taken to be unacceptable.</td></tr></table>	(1)General crack	$a \leq 5$ $b \leq 2$ $c \leq t$ Where, a and b are ignored when less than or equal to 0.5 The numbers of pieces are set at up to 5 pieces.	(2)Corner crack	$a \leq 2.5$ $b \leq 2.5$ $c \leq t$ $a + b \leq 4$	(3)Seal portion crack	$a \leq \text{The seal width} \times 1/3$ $b \leq t \times 2/3$ $c \leq 5$ The numbers of pieces are set at up to 5 pieces.	(4)ITO Pin crack	$a \leq 5$ $b \leq 1/3 \text{ pin length}$ $c \leq t$	(5)Progressive cracks	All taken to be unacceptable.
(1)General crack	$a \leq 5$ $b \leq 2$ $c \leq t$ Where, a and b are ignored when less than or equal to 0.5 The numbers of pieces are set at up to 5 pieces.											
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(5)Progressive cracks	All taken to be unacceptable.											

6	Outer dimensions	Should be within the tolerance.
7	Newton ring(touch panel)	Orbicular of interference fringes is not allowed in the optimum contrast within the active area under viewing angle.
8	Soldering	Should be no defective soldering such as shorting, loose terminal cold solder, peeling of printed circuit board pattern, improper mounting position, etc.

5-3 Dot Appearance Defect

NO.	Item	Criteria
1	Pinhole	 Dot display a and b are each $\leq 0.2\text{mm}$ The overall total is taken be with in 10 units. Note that they are not to be concentrated.
2	Missing	 Dot display a and b are each $\leq 0.2\text{mm}$ The overall total is taken to be with in 10 units.
3	Thick and thin display	 Taken to be within $\pm 1.5\%$ of display character width(a) and height(b).

NAN YA PLASTICS CORP. ELEC. MATERIALS DIV. LCD DEPARTMENT	SPECIFICATION	SPEC. NO. : LME59-1 DATE : Dec. 19. 2006 SHEET NO. : 22/23
NOTICE: • SAFETY 1.If the LCD panel breaks, be careful not to get the liquid crystal to touch your skin. 2.If the liquid crystal touches your skin or clothes, please wash it off immediately by using soap and water. • HANDLING 1.Avoid static electricity which can damage the CMOS LSI. 2.Do not remove the panel or frame from the module. 3.The polarizing plate of the display is very fragile. So, please handle it very carefully. 4.Do not wipe the polarizing plate with a dry cloth, as it may easily scratch the surface of plate. 5.Do not use ketonics solvent & Aromatic solvent. Use a soft cloth soaked with a cleaning naphtha solvent. • STORAGE 1.Store the panel or module in a dark place where the temperature is 25°C±5°C and the humidity is below 65% RH. 2.Do not place the module near organics solvents or corrosive gases. 3.Do not crush, shake, or jolt the module. • 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.		
REV/DATE	R0/ 12.19.06'	BY W.R.HSU



Layout Diagram

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)

Note:

1. RESOLUTION : 320x240 DOTS
 2. DRIVER IC : NOVATEK NT7709
- NOVATEK NT7701

PIN NO	SYMBOL	FUNCTION	PIN NO	SYMBOL	FUNCTION
1	VLCD(V1)	Bias voltage(Liquid crystal drive voltage)	10	CL2	Display data shift clock
2	V6	Bias voltage(V1>V6>V3>V4>V5>V2)	11	M	LCD drive signal(AC signal)
3	V3		12	CL1	Display data latch signal
4	V4		13	DSP OFF	Display ON/OFF control signal("H":Display ON,"L":Display OFF)
5	V5		14	GND	0V
6	GND(V2)	(GND:0V)	15	D3	Display data
7	GND	0V	16	D2	
8	VDD	Power supply voltage: +3.0V typ	17	D1	
9	FLM	Frame signal(sync. Of display)	18	D0	

南亞塑膠工業股份有限公司
NAN YA PLASTICS CORPORATION

製品圖

LDAB6SE59J1KS_

APPROVE	CHECK	DESIGN	DRAWN	DWG NO.	DATE	THIRD ANGLE P.

SCALE	UNIT
1/1	mm

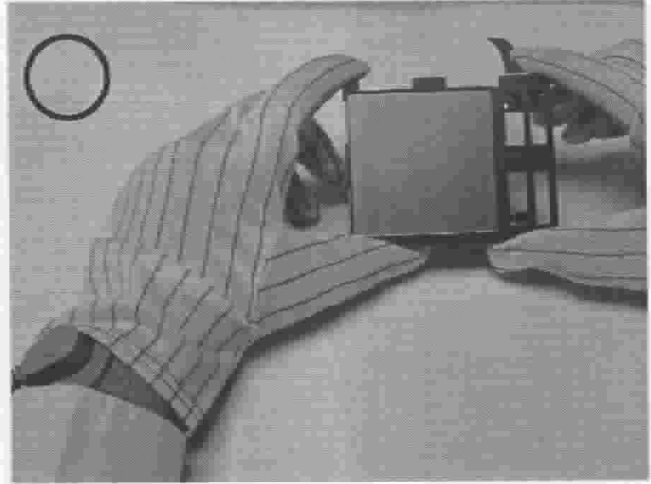
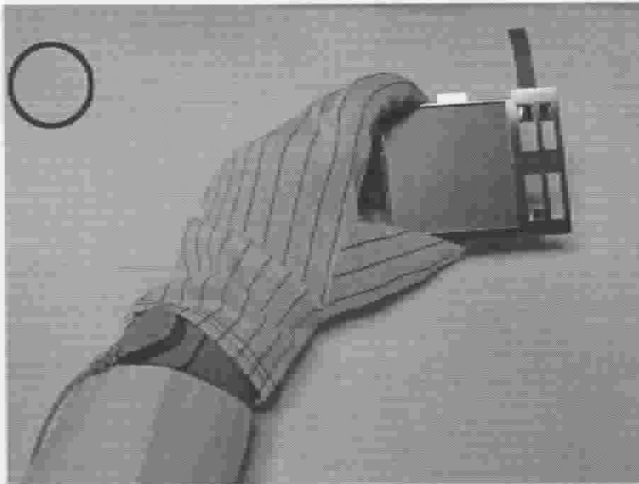
REV. NO.	DESCRIPTION	DATE	DESIGN	CHECK	APPROVE

THE NOTES OF LCM USING

LCM is easy to damage.

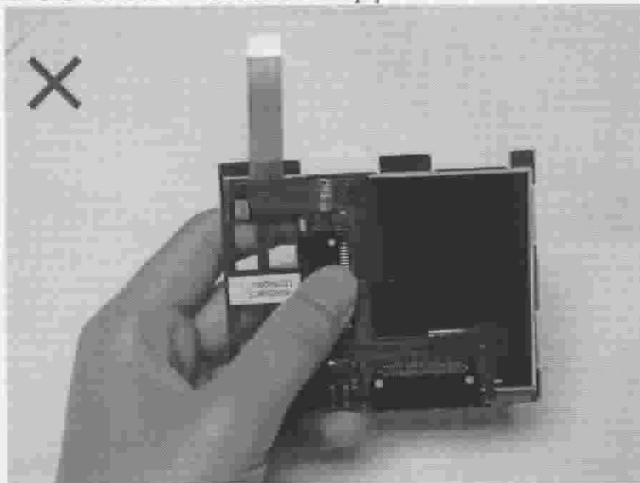
Please follow the notes as bellows, and be careful of handling!

Correct handling

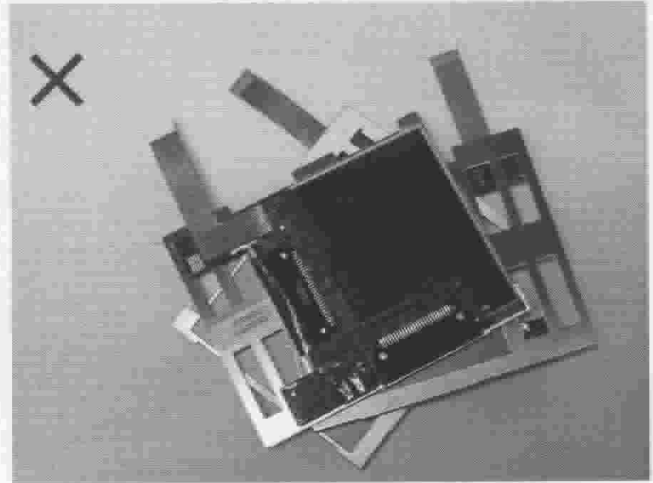


As above picture, please handle with glove by LCM edges and full EOS/ESD protection.

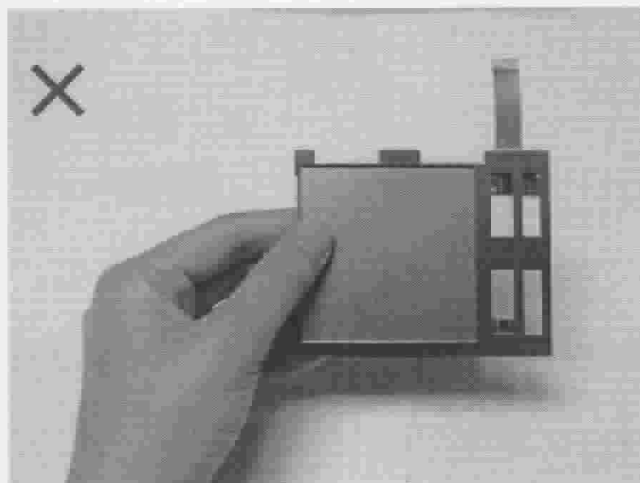
Incorrect handling



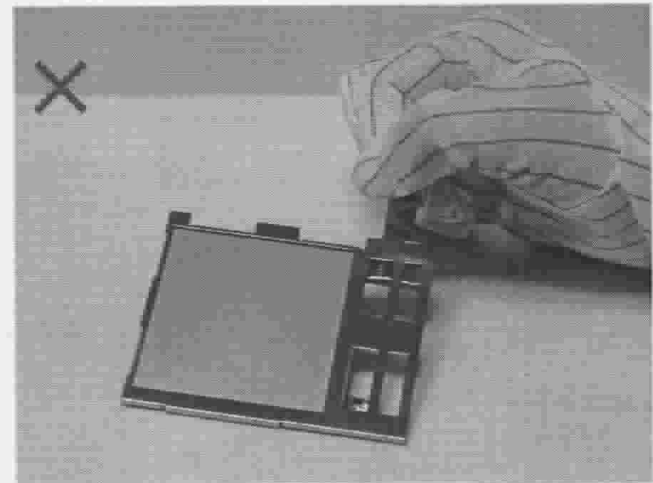
Please don't touch IC directly.



Please don't put one on another LCM.



Please don't hold the surface of LCM.



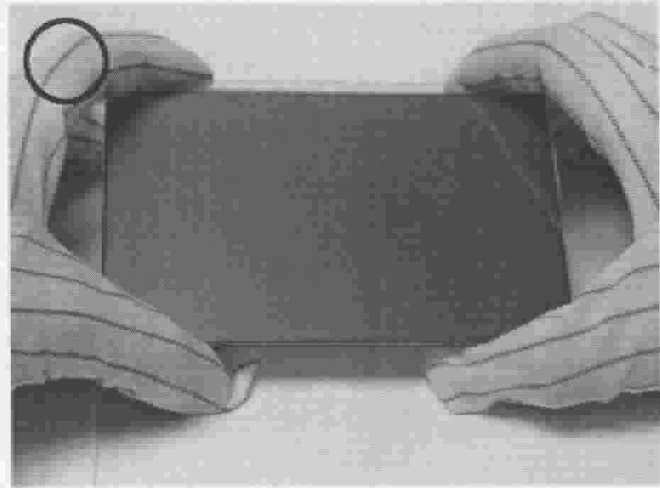
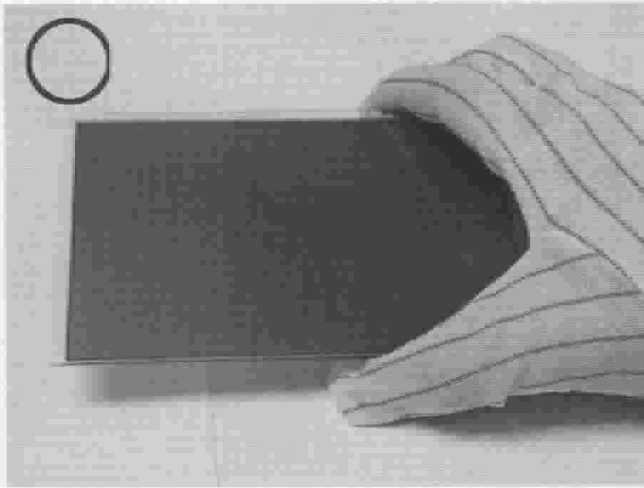
Please don't stretch interface of output.

THE NOTES OF LCD USING

LCD is easy damage.

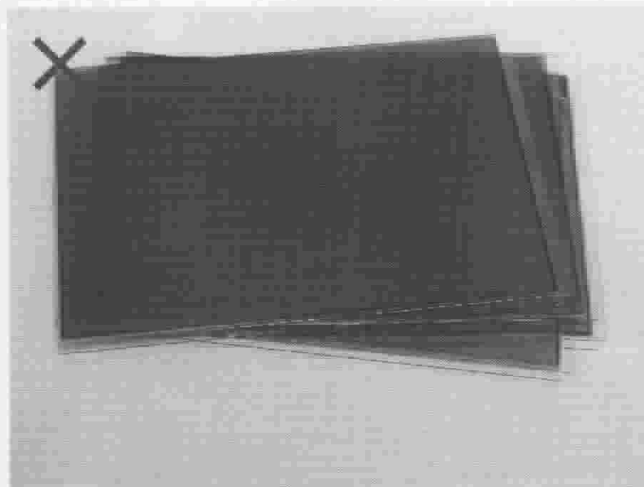
Please follow notes as bellows, and be careful of handling!

Correct handling

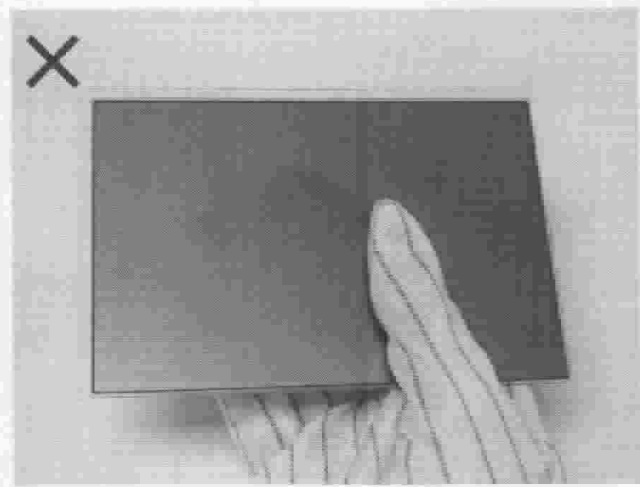


As above picture, please handle with glove by LCD edges and full EOS/ESD protection.

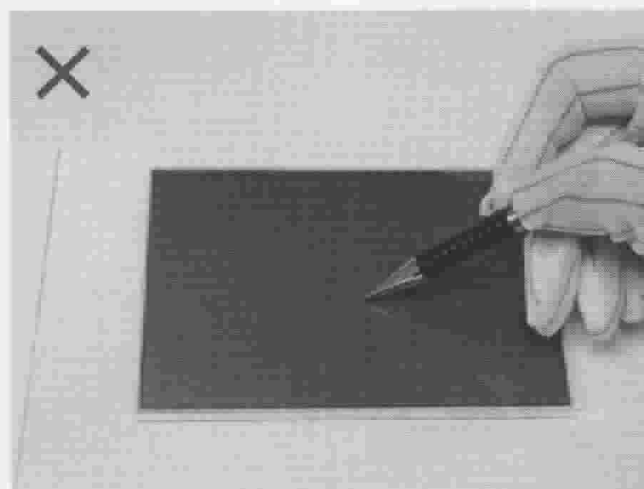
Incorrect handling



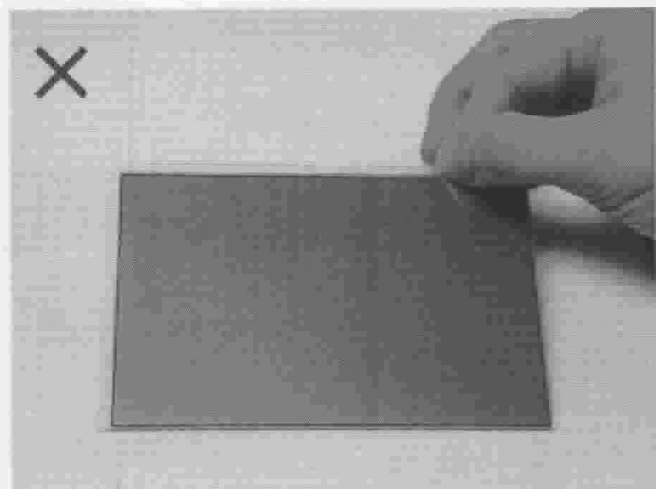
Please don't put one on another LCD.



Please don't hold the surface of LCD.



Please don't operate with sharp stick such as sharp pencil.



Please don't touch ITO glass without anti-static gloves.

