

NAN YA PLASTICS CORPORATION

SPECIFICATION OF
LCD MODULE
PRODUCT NO.: LTD79H298L5GK_

SPEC. NO.: LM298-5- \triangle 2

CUSTOMER
APPROVED BY

LCD DEPARTMENT
ELECTRONIC MATERIALS DIVISION
NAN YA PLASTICS CORPORATION
201, TUNG HWA N. ROAD, TAIPEI
TEL: 886-2-27122211 EXT. 5993~5995
FAX: 886-2-27178253
E-mail: lcdsales@npc.com.tw

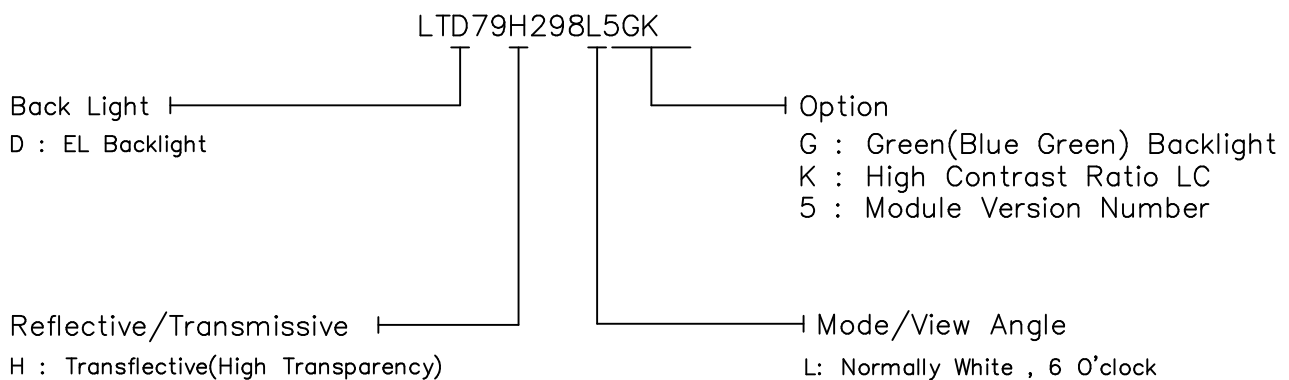
EDITED ON : AUGUST 23 ,2001

DESIGN MANAGER	DESIGN CHECK	DESIGNER
		C.Y.JAN

1. MECHANICAL DATA

- | | |
|--------------------------|---|
| (1) Product No. | LTD79H298L5GK_ |
| (2) Module Size | 73.28 (W)mm X 93.8 (H)mm X 7.5 (D)mm |
| (3) Dot Size | 0.225 (W)mm X 0.225 (H)mm |
| (4) Dot Pitch | 0.24 (W)mm X 0.24 (H)mm |
| (5) Number of Dots | 240 (W) X 320 (H) Dots |
| (6) Duty | 1/240 |
| (7) LCD Display Mode | FSTN: Black and White(Normally White,Paper White /Positive Image)
Rear Polarizer: Transflective(High Transparency) |
| (8) Viewing Direction | 6 O'clock |
| (9) Backlight | EL B/L |
| (10) Weight | 64.0g(Aprox.) |
| (11) Controller | Excluded |
| (12) DC/DC Converter | Included |
| (13) EL B/L inverter Ckt | Included |
| (14) Touch Panel | Included |

Note :



2. ABSOLUTE MAXIMUM RATINGS

(1) ELECTRICAL ABSOLUTE RATINGS

VSS=0V

ITEM	SYMBOL	MIN	MAX	UNIT	COMMENT
Power Supply for Logic	VDD	-0.3	7.0	V	Note 1
Power Supply For LC	VH	-0.3	+25.0	V	Note 1
	VM	VL-0.3	VH+0.3	V	Note 1
	VL	-20.0	+0.3	V	Note 1
Contrast adjust voltage	Vadj	18.0	24.0	V	Note 1
Static Electricity	-	-	-	-	Note 3

Note 1. All voltage values are referred to GND=0V

Note 2. $\overline{\text{DISP}}-\text{OFF}$, FLM ,CL1 ,CL2 ,D0~D3

Note 3. Make certain you are GROUNDED when handling LCM

(2) ENVIRONMENTAL ABSOLUTE MAXIMUM RATINGS

ITEM	OPERATING		STORAGE	
	MIN.	MAX.	MIN.	MAX.
Ambient Temperature	-20	70	-30	80
Humidity(Without Condensation)	Note 2,4		Note 3,4	

Note 1 LCM should be grounded during handling LCM.

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

$T_a > 70^\circ\text{C}$: Absolute humidity must be lower
than the humidity of 75%RH at 70°C

Note 3 T_a at -30°C will be < 48hrs, at 80°C will be < 120hrs

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

3. ELECTRICAL CHARACTERISTICS

(VDD= 3.3V ± 10%)

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	
Input Voltage	VIH	H level	0.8VDD	-	VDD	V	
	VIL	L level	0	-	0.2VDD	V	
Recommended LC Driving Voltage	Vadj	-20°C	-	-	25.0	V	
		25°C	-	22.7	-		
		70°C	20.0	-	-		
Power Supply Current	I _{DD}	VDD= 3.3V VSS= 0V Vadj=22.7V Bias=1/13 VOP=18.7V FLM=70Hz PATTERN : □ ■ □ ■ □ ■ ■ □ ■ □ ■ □	-	10.0	15.0	mA	
	I _{adj}		-	0.9	1.5		
EL Power Supply Current	I _{EL}	V _{EL} =3.3VDC V _{BLE} =3.3VDC V _{ELG} =0.0VDC	-	16.0	24.0	mA	
LCM Surface Luminance	H298L	-	(Dots All On) PATTERN: ■ ■ ■ ■ ■ ■ ■ ■	-	0.08	-	cd/m ²
			(Dots All Off) PATTERN: □ □ □ □ □ □ □ □	-	0.43	-	

4.OPTICAL CHARACTERISTICS

AT V_{OP}

ITEM		Cr(Contrast Ratio)										θ (Viewing Angle)		ϕ (Viewing Angle)	
		-20°C		0°C		25°C		50°C		70°C		25°C		25°C	
MODE		MIN.	TYP.	MIN.	TYP.	MIN.	TYP.	MIN.	TYP.	MIN.	TYP.	MIN.	TYP.	MIN.	TYP.
H	L	6.5	7.5	12.0	13.0	12.0	13.0	8.0	9.0	4.0	4.5	-	90	-	38-38
Note		NOTE 6										NOTE 5			

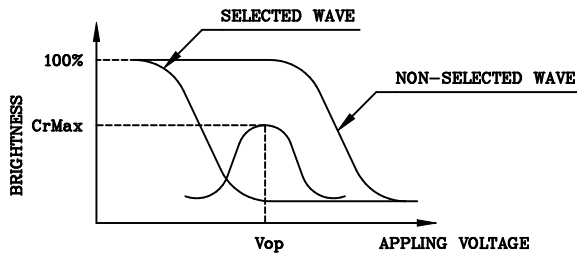
NOTE : H: TRANSFLECTIVE
L: NORMALLY WHITE,6 O'CLOCK

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

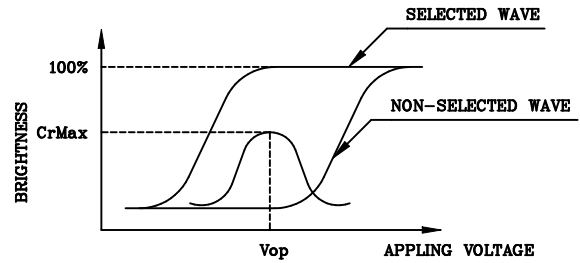
ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	NOTE
Response Time (rise)	Tr	-20°C	-	7700	-	ms	NOTE 2
		0°C	-	1200	-		
		25°C	-	290	-		
		50°C	-	160	-		
		75°C	-	80	-		
Response Time (fall)	Tf	-20°C	-	3200	-	ms	NOTE 2
		0°C	-	550	-		
		25°C	-	210	-		
		50°C	-	90	-		
		75°C	-	60	-		

(NOTE 1)

Definition of Operation Voltage(Vop)



(positive type)



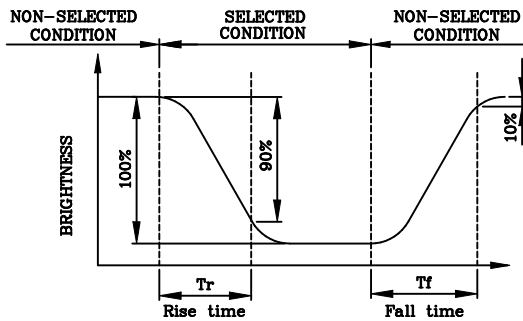
(negative type)

*Conditions

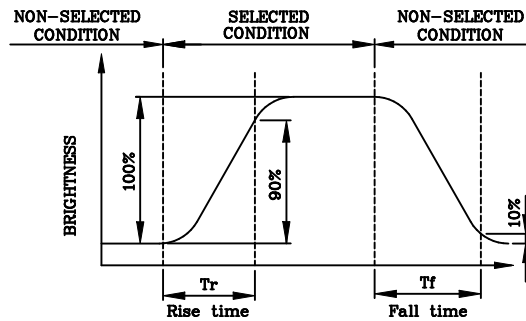
Viewing Angle : 0
 Frame Frequency : 70Hz
 Appling Waveform : 1/N duty 1/a bias

(NOTE 2)

Definition of Response Time(Tr,Tf)



(positive type)



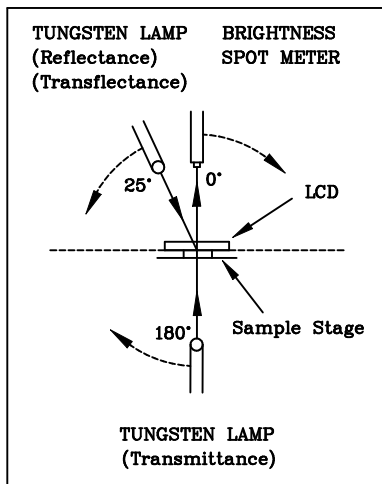
(negative type)

*Conditions

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

(NOTE 3)

Description of Measuring Equipment and Driving Waveforms



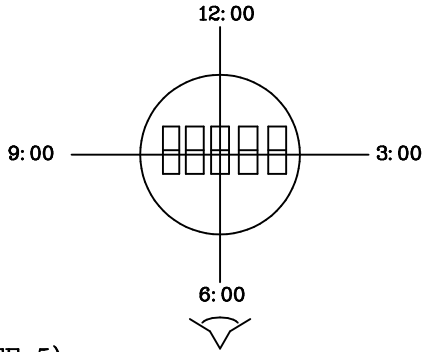
CONST.
TEMP.
CHAMBER

The voltage relationship of each signal is as follow
 Multiplex Driving (1/N duty 1/a bias)

Segment voltage	Segment Waveform	Common Waveform	Common voltage
VO	[Square wave]	[Pulse]	VH
VM			VM
V1	[Square wave]	[Pulse]	VL
	Normally display period	Off-display period	

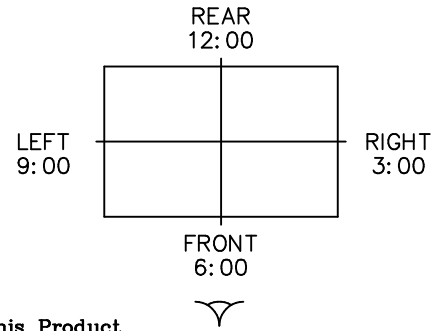
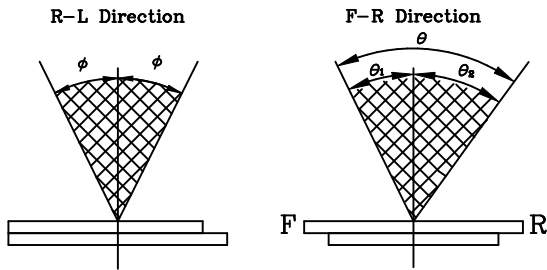
(NOTE 4)

Definition of Viewing Direction



(NOTE 5)

Definition of Viewing Angle



*For This Product
 The Viewing Direction Is 6 O'clock
 So $\theta_1 > \theta_2$

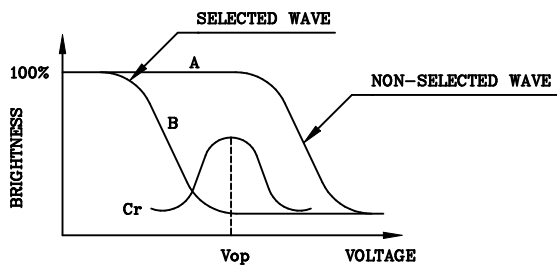
$$\theta = \theta_1 + \theta_2$$

*Conditions

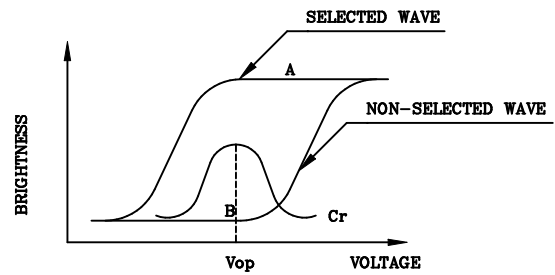
Operating Voltage : V_{op}
 Frame Frequency : 70Hz
 Applying Waveform : 1/N duty 1/a bias
 Contrast Ratio : larger than 2

(NOTE 6)

Definition of Contrast Ratio (Cr)



(positive type)



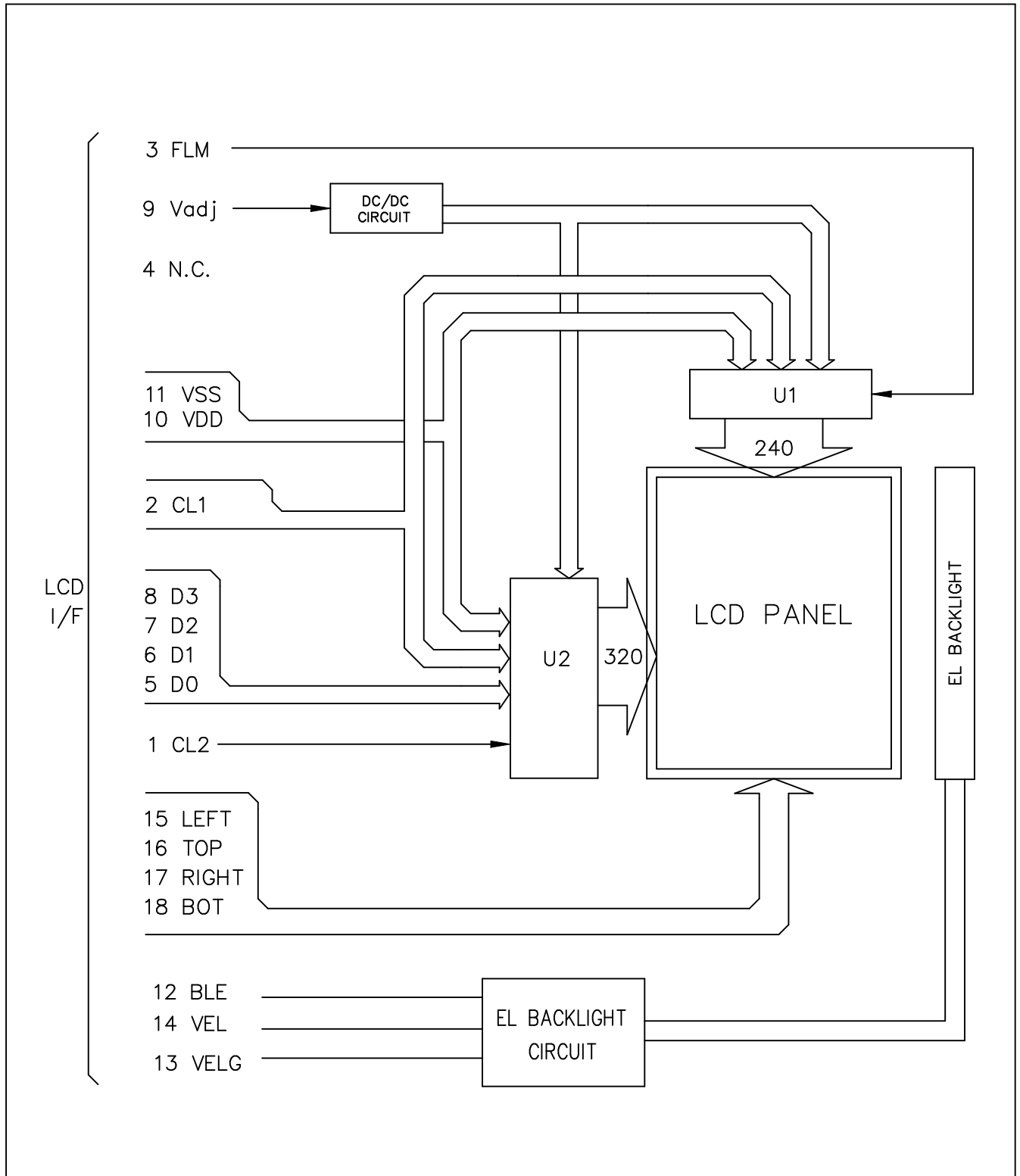
(negative type)

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

*Conditions

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

5. BLOCK DIAGRAM



6. INTERNAL PIN CONNECTION

CN1

Pin No.	Symbol	Level	Function
1	CL2	H/L	Data Shift Clock Signal
2	CL1	H/L	Data Latch Clock Signal
3	FLM	H/L	Frame Signal
4	N.C.	—	No Connecting
5	D0	H/L	Display Data
6	D1	H/L	
7	D2	H/L	
8	D3	H/L	
9	Vadj	—	Contrast adjust voltage
10	VDD	—	Power Supply for Logic
11	VSS	—	Power Supply (0V)
12	BLE	H/L	H: EL Enable ; L: EL Disable
13	VELG	—	Power Supply for EL (GND,0V)
14	VEL	—	Power Supply for EL (+)
15	LEFT	—	Touch Panel Connection
16	TOP	—	
17	RIGHT	—	
18	BOT	—	

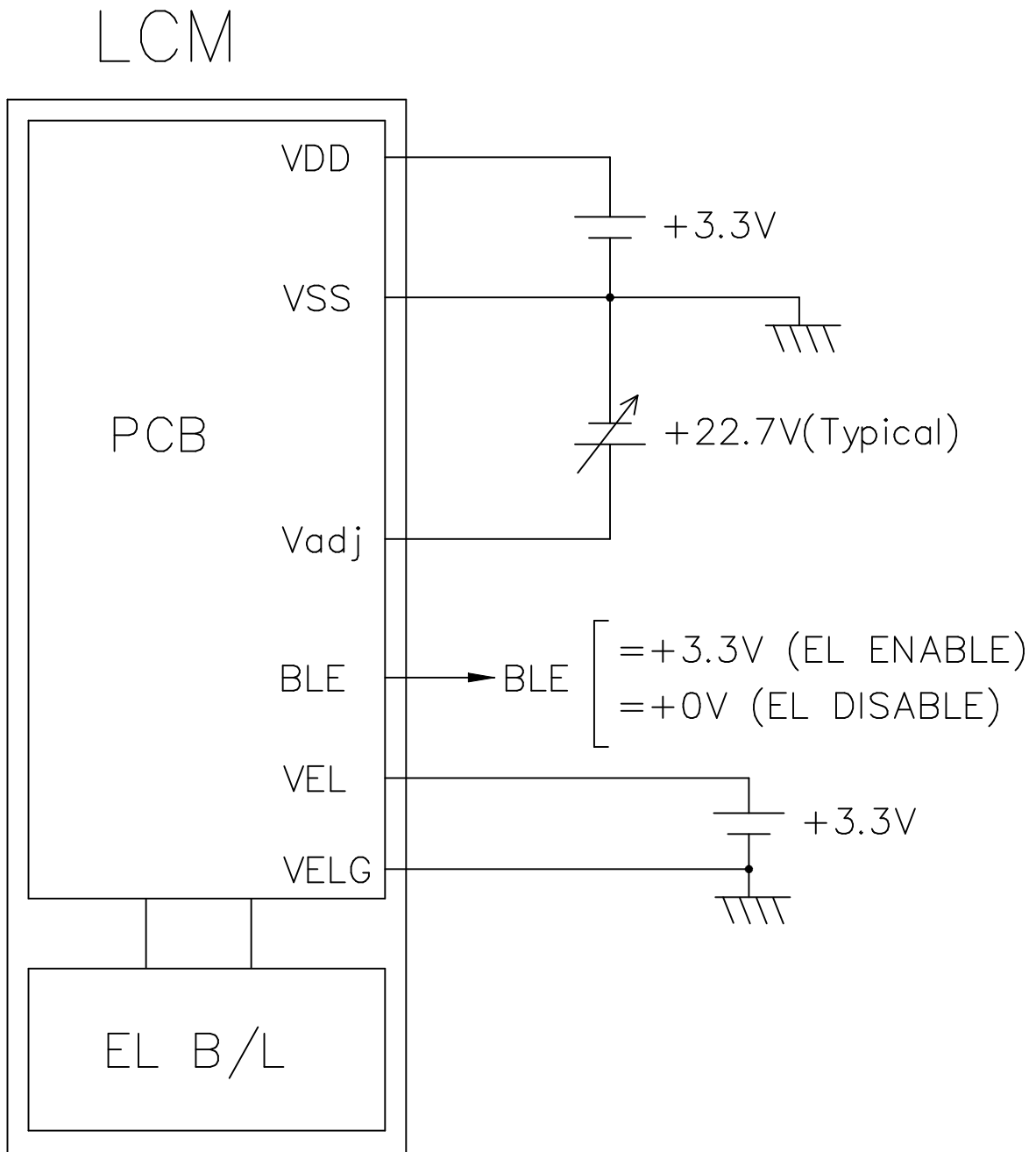
USED CABLE(CN1) :

FFC,N18,PITCH=1.0mm,THICKNESS=0.3mm

MATING CONNECTOR :

MOLEX 52207-1890 or COMPATIBLE

7. POWER SUPPLY



8. TIMING CHARACTERISTICS

8-1 INTERFACE TIMING

@ VDD=3.3V±10%, T_a=-20~70 °C

Item	Symbol	Test condition	Min.	Typ.	Max.	Unit
Clock Cycle	t _C	Fig.a	500	-	-	ns
SCP Pulse Width	t _{SWH} ,t _{SWL}	Fig.a	240	-	-	ns
Data Set Up Time	t _{DSU}	Fig.a , Fig.b	240	-	-	ns
Data Hold Time	t _{DHD}	Fig.a , Fig.b	240	-	-	ns
SCP Rise/Fall Time	t _r ,t _f	Fig.a , Fig.b	-	-	50	ns
LP Rise Time	t _{LRP}	Fig.a	240	-	-	ns
LP Fall Time	t _{LFP}	Fig.a	240	-	-	ns
LP Pulse Width	t _{LW}	Fig.a	240	-	-	ns
SCP To LP Delay Time	t _{SL}	Fig.a	50	-	-	ns
LP To SCP Delay Time	t _{LS}	Fig.a	100	-	-	ns
LP "H" Pulse Width	t _{CWH}	Fig.b	40	-	-	ns
LP "L" Pluse Width	t _{CWL}	Fig.b	170	-	-	ns

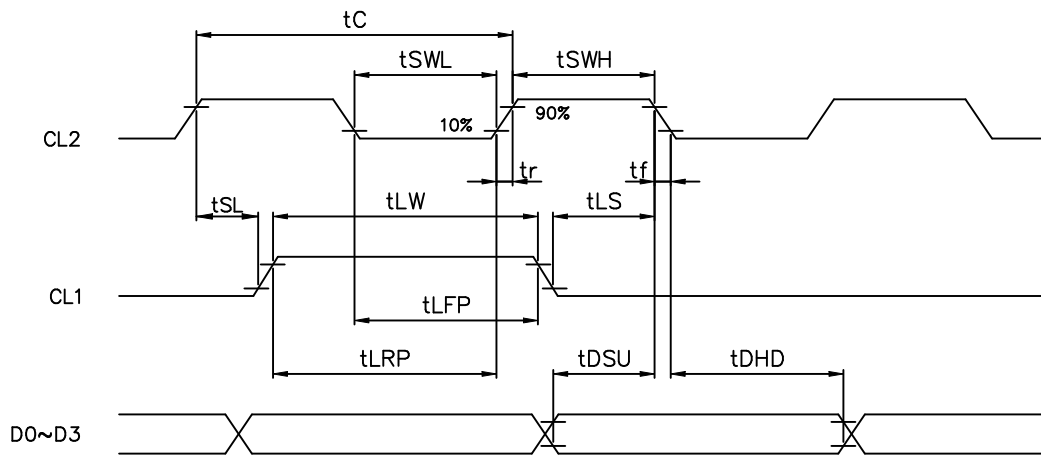


Fig . a Interface timing (SEGMENT)

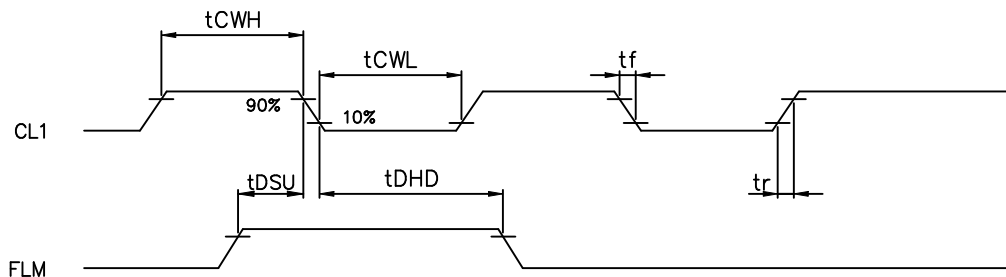
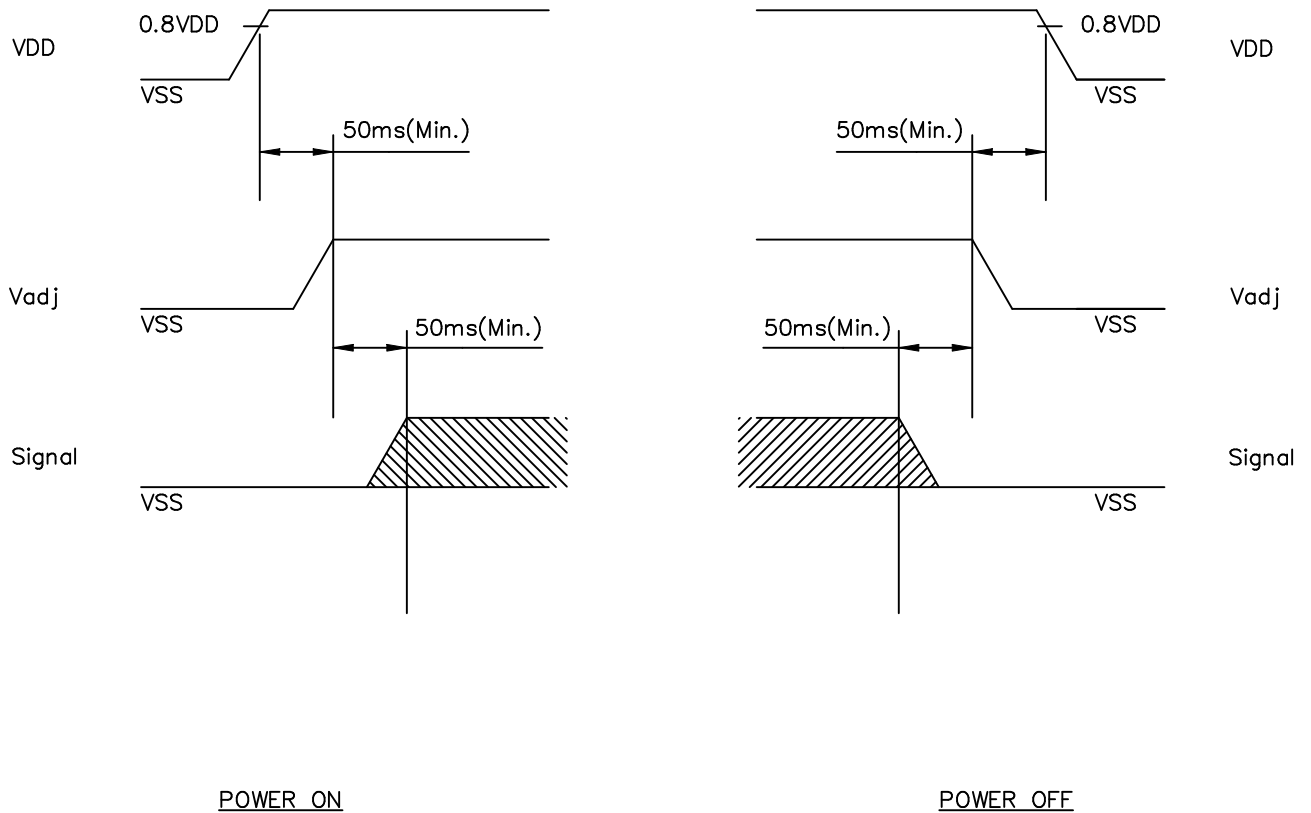


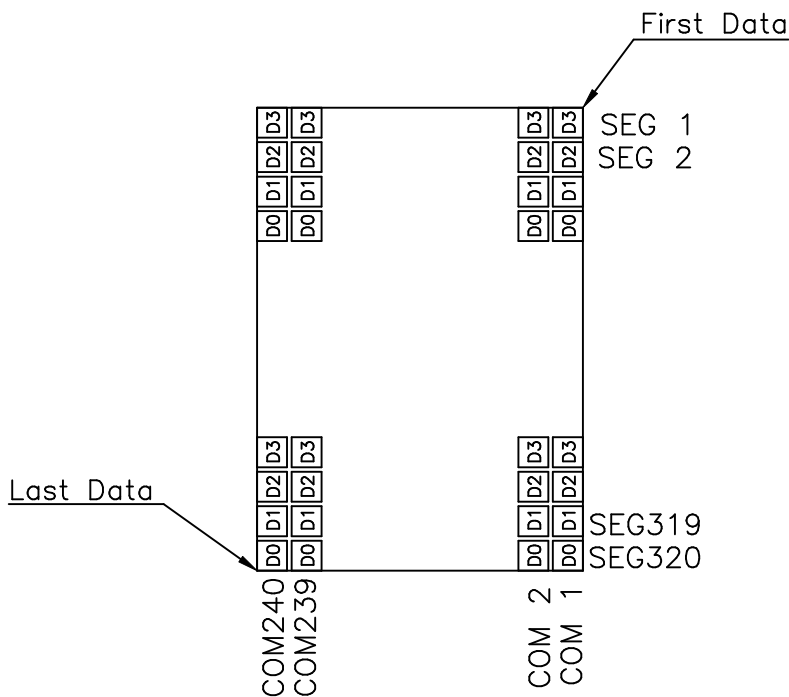
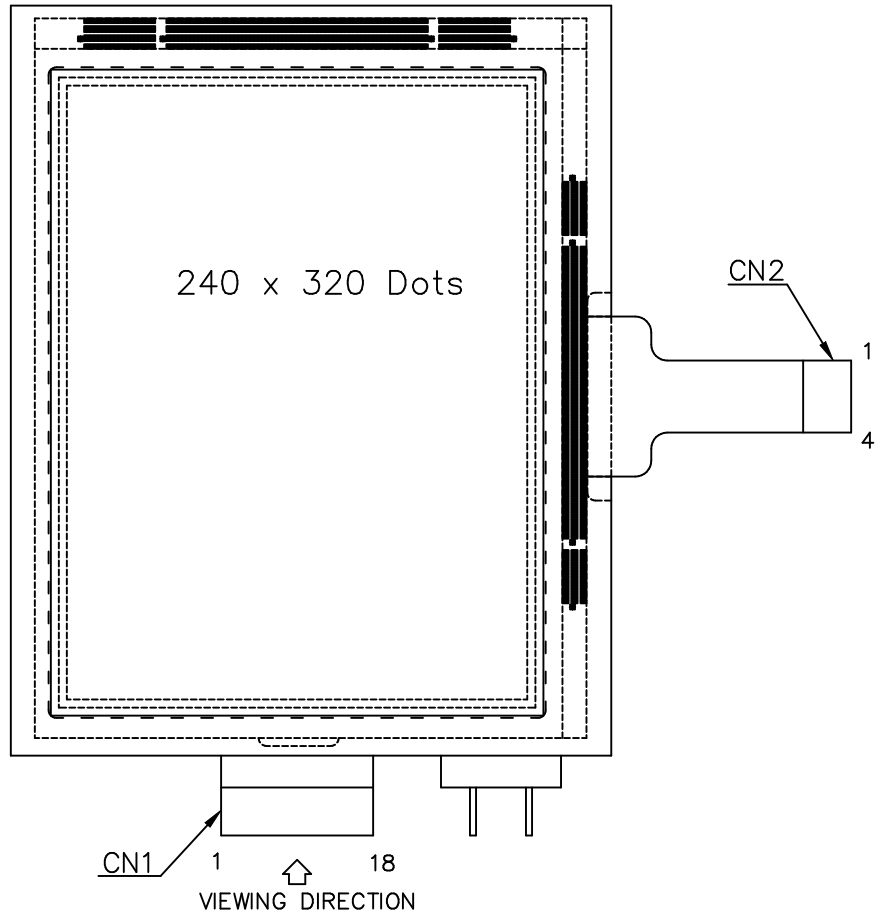
Fig . b Interface timing (COMMON)

8-2 POWER ON/OFF TIMING



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

8-3 DISPLAY PATTERN



DATA SEQUENCE

9. RELIABILITY TEST

NO	ITEM	CONDITION			STANDARD	NOTE
1	High Temp. Storage	70°C	120HR		Appearance without defect	
2	Low Temp. Storage	-25°C	120HR		Appearance without defect	
3	High Temp. & High Humi. Storage	40°C 90%RH	120HR		Appearance without defect	
4	Thermal Shock	-20°C, 30min → 25°C.5min → 70°C, 30min → 25°C.5min (1cycle)			Appearance without defect	5 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 Provision

Outgoing inspection is according to the product inspection manual.
(Per 1-1, 1-2 & 1-3)

4-1 Inspection Method

MIL-STD-105D Level II Regular inspection

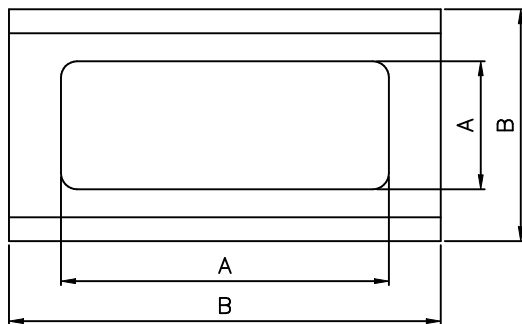
4-2 Inspection Standard

	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		
	Tablet contact resistance			
	Tablet input load			

	Tablet lineality		0.4	
	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 Out Line

*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 a sample to be 30cm to 50cm.

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

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

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

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

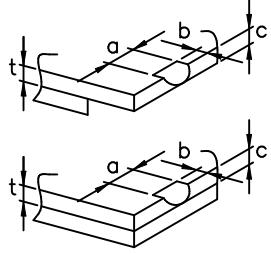
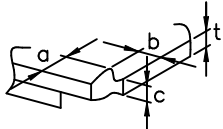
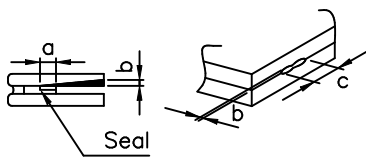
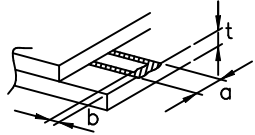
5.Specification for quality check
5-1 Electrical characteristics

NO.	Item	Criterion
1.	Non operational	Fail
2.	Miss operating	Fail
3.	Missing dot	Fail
4.	Contrast irregular	Not allowable
5.	Response time	Within Specified value
6.	Tablet contact resistance	Within Specified value
7.	Tablet input load	Within Specified value
8.	Tablet lineality	Within Specified value
9.	EL backlight turn on/off	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.)	<p>(1)-1-Spots(At non lighting condition)</p> <table border="1" data-bbox="703 490 1348 779"> <thead> <tr> <th>Average Diameter(mm):D</th> <th>Number of pieces permitted</th> </tr> </thead> <tbody> <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> </tbody> </table> <p>Number of total pieces is set to within 5 pieces.</p> <p>Note that when there are 2 pieces or more, they are not to be concentrated. Set as: Average diameter = (Long diameter + Short diameter)/2</p> <p>(1)-2-Spots(At lighting condition)</p> <table border="1" data-bbox="703 1200 1348 1440"> <thead> <tr> <th>Average Diameter(mm):D</th> <th>Number of pieces permitted</th> </tr> </thead> <tbody> <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> </tbody> </table> <p>Number of total pieces is set to within 5 pieces.</p> <p>Note that when there are 2 pieces or more, they are not to be concentrated. Set as: Average diameter = (Long diameter + Short diameter)/2</p>	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																			
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$0.3 < D$	0																			
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$D \leq 0.3$	Ignore																			
$0.3 < D \leq 0.75$	5																			
$0.75 < D$	0																			

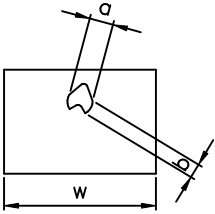
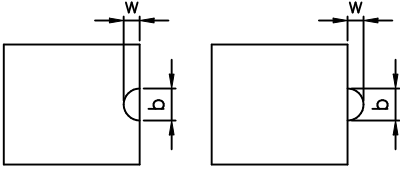
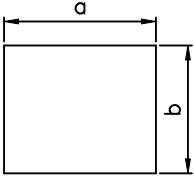
1.	Black spots, foreign matter, and white spots (Including light leakage due to pinholes of polarizing plates, etc.)	<p>(1)-1 Spots(At non lighting condition)</p> <table border="1" data-bbox="703 443 1445 728"> <thead> <tr> <th>Width(mm): W</th> <th>Length(mm): L</th> <th>Number of pieces permitted</th> </tr> </thead> <tbody> <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> </tbody> </table> <p>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.</p> <p>(1)-2 Spots(At lighting condition)</p> <table border="1" data-bbox="703 1032 1445 1317"> <thead> <tr> <th>Width(mm): W</th> <th>Length(mm): L</th> <th>Number of pieces permitted</th> </tr> </thead> <tbody> <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> </tbody> </table> <p>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.</p>	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 border="1" data-bbox="703 394 1220 683"> <tr> <th data-bbox="703 394 963 539">Average Diameter (mm): D</th> <th data-bbox="963 394 1220 539">Number of pieces permitted</th> </tr> <tr> <td data-bbox="703 539 963 584">$D \leq 0.3$</td> <td data-bbox="963 539 1220 584">Ignore</td> </tr> <tr> <td data-bbox="703 584 963 683">$0.3 < D$</td> <td data-bbox="963 584 1220 683">0</td> </tr> </table> <p data-bbox="1220 394 1466 683">Average diameter = (Long diameter + Short diameter)/2</p> <p data-bbox="703 701 1466 792">Note that when there are 4 pieces or more, they are not to be concentrated.</p>		Average Diameter (mm): D	Number of pieces permitted	$D \leq 0.3$	Ignore	$0.3 < D$	0
Average Diameter (mm): D	Number of pieces permitted								
$D \leq 0.3$	Ignore								
$0.3 < D$	0								
5.	Cracks	<p data-bbox="651 792 1056 840">(1)General crack</p> 	<p data-bbox="1056 792 1466 840">$a \leq 5$</p> <p data-bbox="1056 840 1466 884">$b \leq 2$</p> <p data-bbox="1056 884 1466 929">$c \leq t$</p> <p data-bbox="1056 929 1466 1182">Where, a and b are ignored when less than or equal 0.5. The numbers of pieces are set at up to 5 pieces.</p>						
		<p data-bbox="651 1182 1056 1229">(2)Corner crack</p> 	<p data-bbox="1056 1182 1466 1229">$a \leq 2.5$</p> <p data-bbox="1056 1229 1466 1274">$b \leq 2.5$</p> <p data-bbox="1056 1274 1466 1319">$c \leq t$</p> <p data-bbox="1056 1319 1466 1375">$a + b \leq 4$</p>						
		<p data-bbox="651 1375 1056 1422">(3)Seal portion crack</p> 	<p data-bbox="1056 1375 1466 1422">$a \leq \text{The seal width} \times 1/3$</p> <p data-bbox="1056 1422 1466 1467">$b \leq t \times 2/3$</p> <p data-bbox="1056 1467 1466 1512">$c \leq 5$</p> <p data-bbox="1056 1512 1466 1646">The numbers of pieces are set at up to 5 pieces.</p>						
		<p data-bbox="651 1646 1056 1693">(4)ITO Pin crack</p> 	<p data-bbox="1056 1646 1466 1693">$a \leq 5$</p> <p data-bbox="1056 1693 1466 1738">$b \leq 1/3 \text{ pin length}$</p> <p data-bbox="1056 1738 1466 1783">$c \leq t$</p>						
		<p data-bbox="651 1888 1056 1977">(5)Progressive cracks</p>	<p data-bbox="1056 1888 1466 1977">All taken to be unacceptable.</p>						

SPECIFICATION

6.	Outer dimensions	Should be with in the tolerance.
7.	Newton ring	Orbicular of interference fringes. To be non. In case of doubtful judgenemt, agreement shall be reachment.
8.	Soldering	Should be no defective soldering such as shorting, loose terminal cold solder, peeling of printed circuit board pattern, improper mouting position, etc.

5-3 Dot Appearance Defect

NO.	Item	Criteria
1.	Pinhole	 <p>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.</p>
2.	Missing	 <p>Dot display a and b are each $\leq 0.2\text{mm}$ The overall total is taken to be with in 10 units.</p>
3.	Thick and thin display	 <p>Taken to be within $\pm 1.5\%$ of display character width(a) and height(b).</p>

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 with a soft cloth soaked with a cleaning naphtha solvent.

• STORAGE

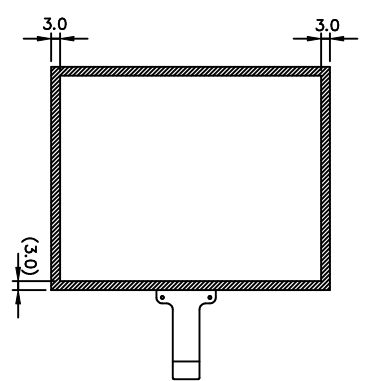
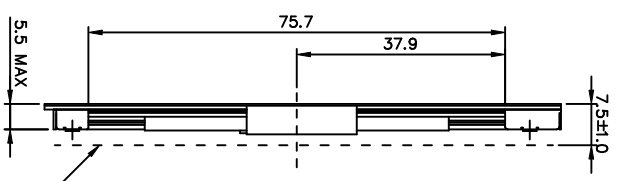
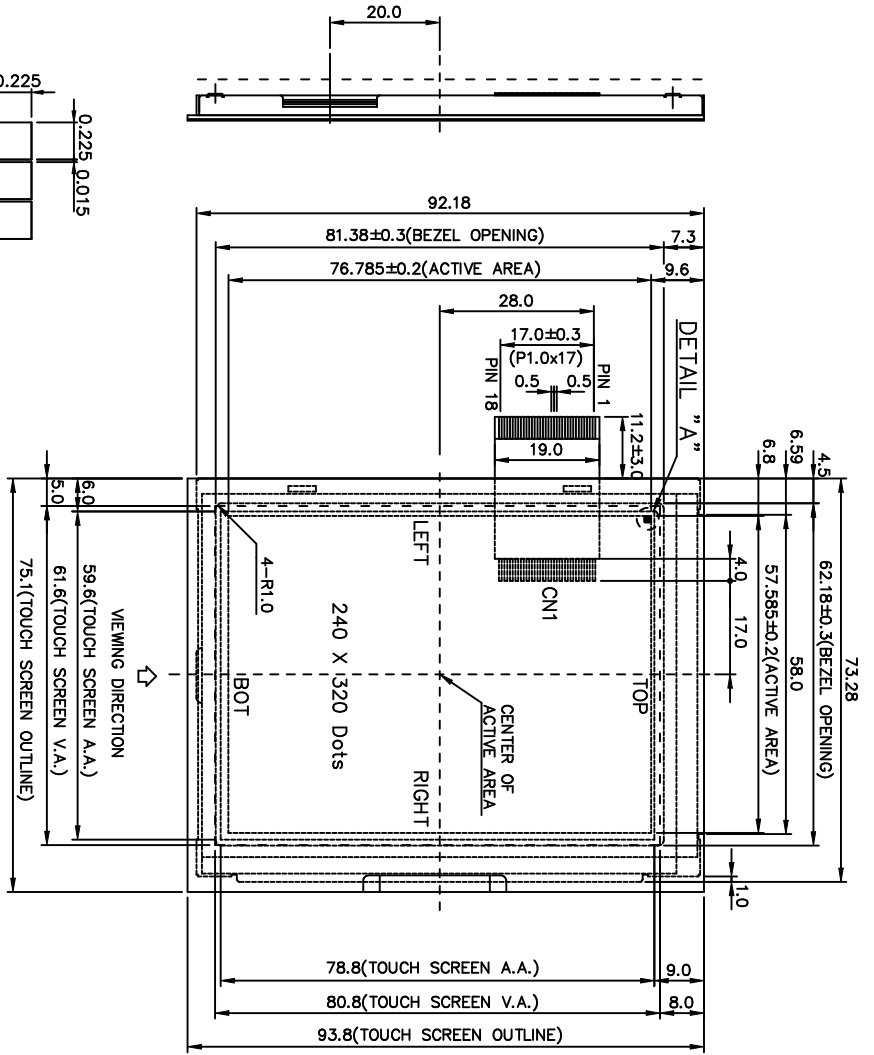
- 1.Store the panel or module in a dark place where the temperature is $25^{\circ}\text{C}\pm 5^{\circ}\text{C}$ and the humidity is below 65% RH.
- 2.Do not place the module near organics solvents or corrosive gases.
- 3.Do not crush, shake, or jolt the module.

• TERMS OF WARRANT

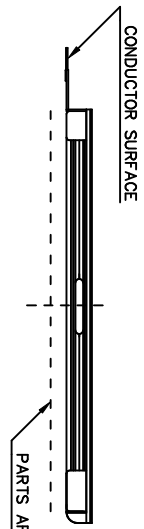
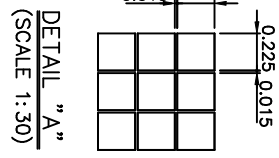
- 1.Acceptance inspection period
The period is within one month after the arrival of contracted commodity at the buyer's factory site.
- 2.Applicable warrant period
The period is within twelve months since the date of shipping out under normal using and storage conditions.

• THE OPERATING LIFE TIME OF BACK LIGHT

- EL : 2000hrs for AC 65Vrms, 250Hz, 20°C, 60%RH
(Operating life time is defined as follows : The final brightness is at 50% of original brightness.)



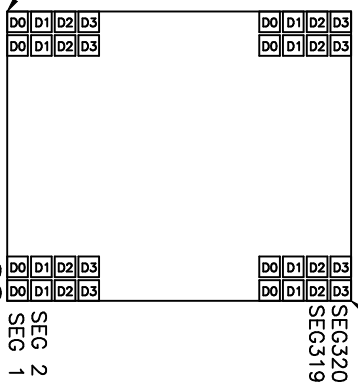
ATTACHMENT SPACE



INTERFACE CONNECTION(CN1)

Pin No.	Symbol	Function	Pin No.	Symbol	Function
1	CL2	Data Shift Clock Signal	10	VDD	Power Supply for Logic (+)
2	CL1	Data Latch Signal	11	VSS	Power Supply for Logic (GND,0V)
3	FLM	First Line Marker	12	BLE	H:EL Enable L:EL Disable
4	N.C.	No Connection	13	VELG	Power Supply for EL(GND,0V)
5	D0	Display Data	14	VEL	Power Supply for EL(+)
6	D1		15	LEFT	Touch Panel Connection
7	D2		16	TOP	
8	D3		17	RIGHT	
9	Vadj	Contrast adjust voltage	18	BOT	

First Data



DATA SEQUENCE

TOLERANCE LIST(S)

DIMENSION	TOLERANCE
L ≤ 6	±0.25
6 < L ≤ 18	±0.3
18 < L ≤ 50	±0.4
50 < L ≤ 125	±0.5
125 < L	±0.6

- NOTE :
1. Resolution : 240x320 DOTS FSTN
 2. Backlight : EL B/L (BLUE GREEN)
 3. Hitachi HI-FAS low power
TCP IC HD66130/131
 4. FRAME MATERIAL : SPCC (0.3 mm)

REV. NO.	DESCRIPTION	DATE	DESIGN	CHECK	APPROVE	DWG NO.
1	COM					M298-D5A
2	COM					
3	COM					
4	COM					

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

LTD79SS298J5GK

APPROVE: [Signature] DATE: [] THIRD ANGLE P.

CHECK: [Signature]

DESIGN: C. J. CHEN 89.03.07 SCALE: 1/1 UNIT: mm

DRAWN: C. J. CHEN 89.03.07

SHEET NO.: 23/23