

NAN YA PLASTICS CORPORATION

SPECIFICATION OF
LCD MODULE
PRODUCT NO.: LMBGANA32S48CK_

SPEC. NO.: LMA32-48-△

CUSTOMER
APPROVED BY
DATE:

LCD DEPARTMENT
ELECTRONIC MATERIALS DIVISION
NAN YA PLASTICS CORPORATION
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EDITED ON : SEP. 12, 2002

DESIGN MANAGER	DESIGN CHECK	DESIGNER
		C.F.SU

2. ABSOLUTE MAXIMUM RATINGS

(1) ELECTRICAL ABSOLUTE RATINGS

VSS=0V

ITEM	SYMBOL	MIN	MAX	UNIT	COMMENT
Power Supply for Logic	VDD-VSS	-0.3	7.0	V	
Input Voltage	VI	-0.3	VDD+0.3	V	
Static Electricity	-	-	-	-	Note 1

Note 1 LCM should be grounded during handling LCM.

(2) ENVIRONMENTAL ABSOLUTE MAXIMUM RATINGS

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

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

3-1. ELECTRICAL CHARACTERISTICS

(VDD = 4.5V±5%)

ITEM		SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	
Power Supply for Logic		VDD-VSS	-	4.23	4.5	4.73	V	
Recommended LC Driving Voltage (High Contrast Ratio LC LCM)		VDD-VO	Duty=1/240 Bias=1/13	-20°C	25.3	25.6	25.9	V
				0°C	23.7	24.0	24.3	
				25°C	22.8	23.1	23.4	
				50°C	21.4	21.7	22.0	
				70°C	20.4	20.7	21.0	
Input Voltage		VIH	H level	0.7VDD	-	VDD	V	
		VIL	L level	0	-	0.3VDD	V	
Power Supply Current		IDD	OSCILLATOR=10MHz FLM = 99.27 Hz VDD=4.5 V VEE=-23 V VDD-VO=23.1 V PATTERN : CHECKER	-	28.3	43.0	mA	
		IEE	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	-	3.4	5.1	mA	
LCM	Surface Luminance	L	ALL ON	-	155.2	-	cd/m ²	
			ALL OFF	-	31.3	-		

3-2.ELECTRICAL CHARACTERISTICS OF BACKLIGHT

Used CCFL Rating

Temp.=25°C

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT	REMARK
Lamp voltage	V _L	-	260	-	Vrms	-
Lamp current	I _L	4	5	6	mArms	-
Lamp power consumption	P _L	-	1.3	-	W	(*1)
Starting voltage	V _S	-	-	420	Vrms	-
Lamp frequency	F _L	-	35	-	KHz	-
Lamp life time	L _L	-	20000	-	hrs	IL = 5 mArms (*2)

(*1) Power consumption excluded inverter loss .

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

4. OPTICAL CHARACTERISTICS

AT V_{OP}

ITEM MODE		Cr(Contrast Ratio)										θ(Viewing Angle)		φ(Viewing Angle)	
		-20℃		0℃		25℃		50℃		70℃		25℃		25℃	
		MIN.	TYP.	MIN.	TYP.	MIN.	TYP.	MIN.	TYP.	MIN.	TYP.	MIN.	TYP.	MIN.	TYP.
N	S	2.5	4.0	3.5	5.0	4.0	5.5	3.0	4.5	2.0	3.0	-	67	-	±32
NOTE		NOTE 6										NOTE 5			

NOTE :

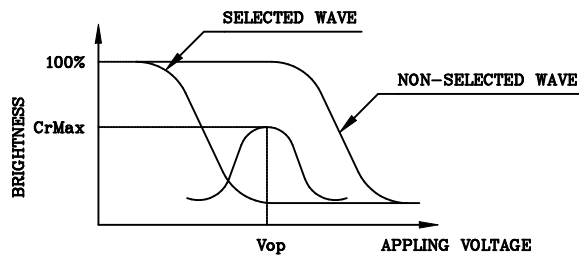
N : TRANSMISSION
S : BLUE

AT φ=0° θ=0°

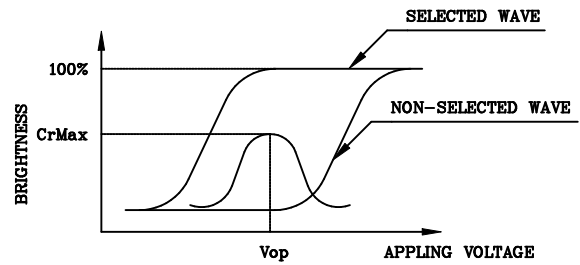
ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	NOTE
Response Time (rise)	Tr	-20℃	3200	4000	6000	ms	NOTE 2
		0℃	240	300	450		
		25℃	100	120	180		
		50℃	65	80	120		
		70℃	45	60	90		
Response Time (fall)	Tf	-20℃	1600	2000	3000	ms	NOTE 2
		0℃	350	450	670		
		25℃	110	140	210		
		50℃	45	60	90		
		70℃	40	50	75		

(FIG 1)

Definition of Operation Voltage(Vop)



(positive type)



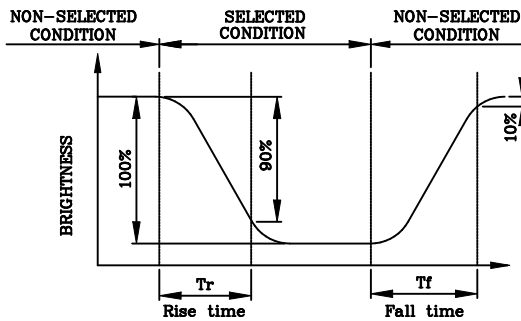
(negative type)

*Conditions

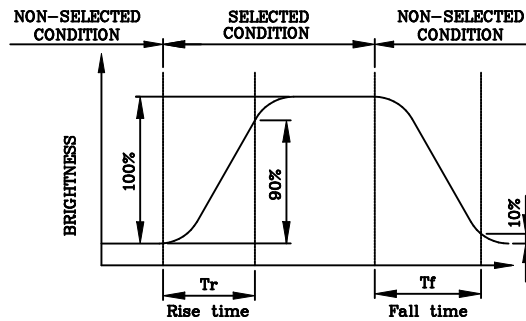
Viewing Angle : 0
 Frame Frequency : 70Hz
 Applying Waveform : 1/N duty 1/a bias

(FIG 2)

Definition of Response Time(Tr,Tf)



(positive type)



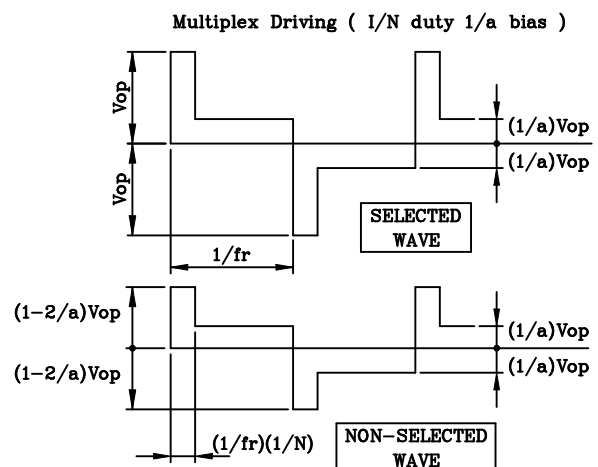
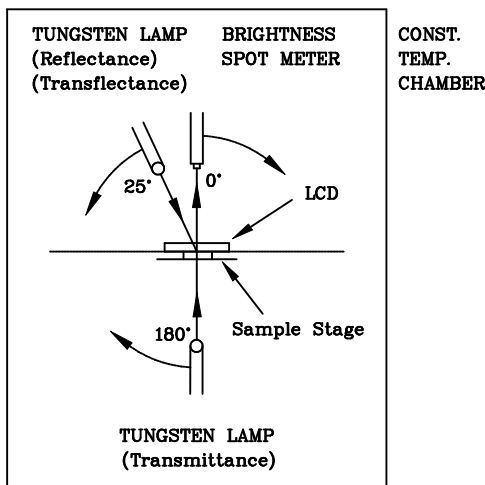
(negative type)

*Conditions

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

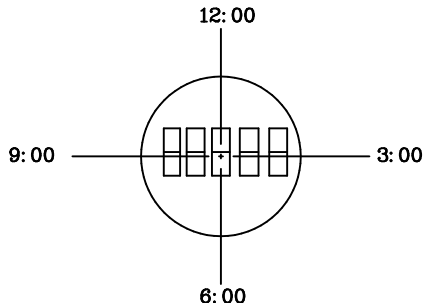
(FIG 3)

Description of Measuring Equipment and Driving Waveforms



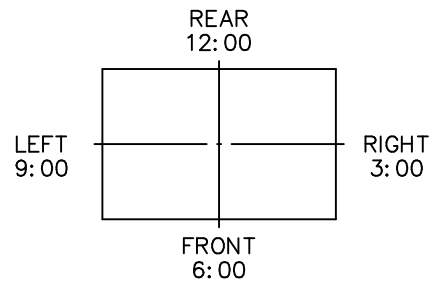
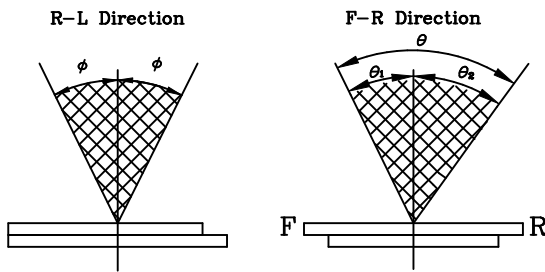
(FIG 4)

Definition of Viewing Direction



(FIG 5)

Definition of Viewing Angle



*For This Product

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

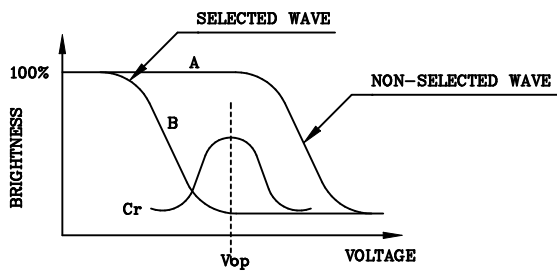
$$\theta = \theta_1 + \theta_2$$

*Conditions

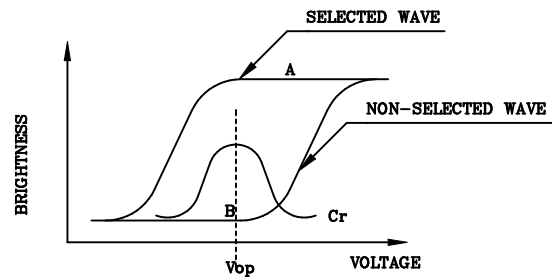
- Operating Voltage : V_{op}
- Frame Frequency : 70Hz
- Applying Waveform : 1/N duty 1/a bias
- Contrast Ratio : larger than 2

(FIG 6)

Definition of Contrast Ratio (Cr)



(positive type)



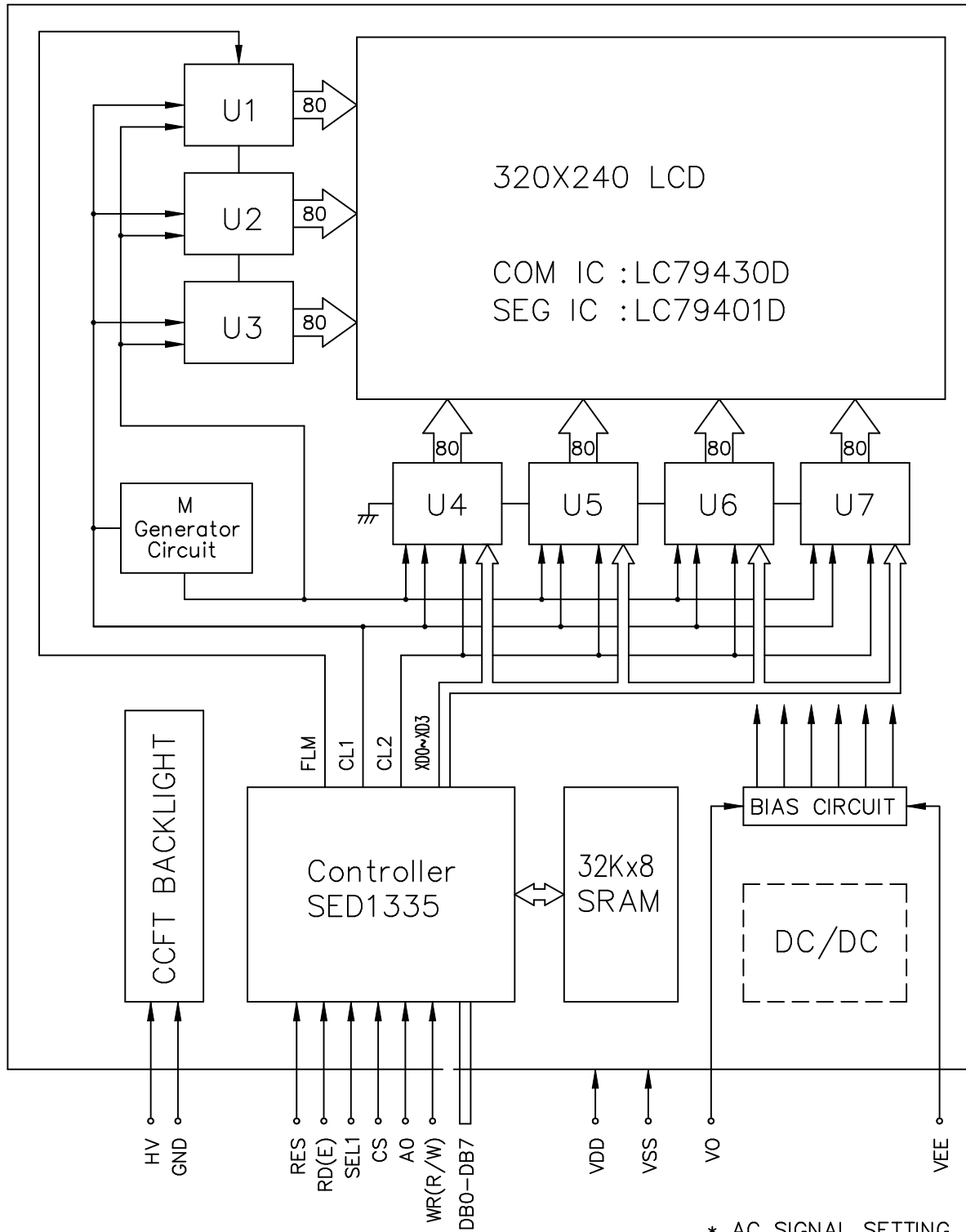
(negative type)

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

*Conditions

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

5. BLOCK DIAGRAM



* AC SIGNAL SETTING

J0	J1	J2	J3	J4	J5	J6	J7
L	H	H	L	L	L	L	L

6. INTERNAL PIN CONNECTION

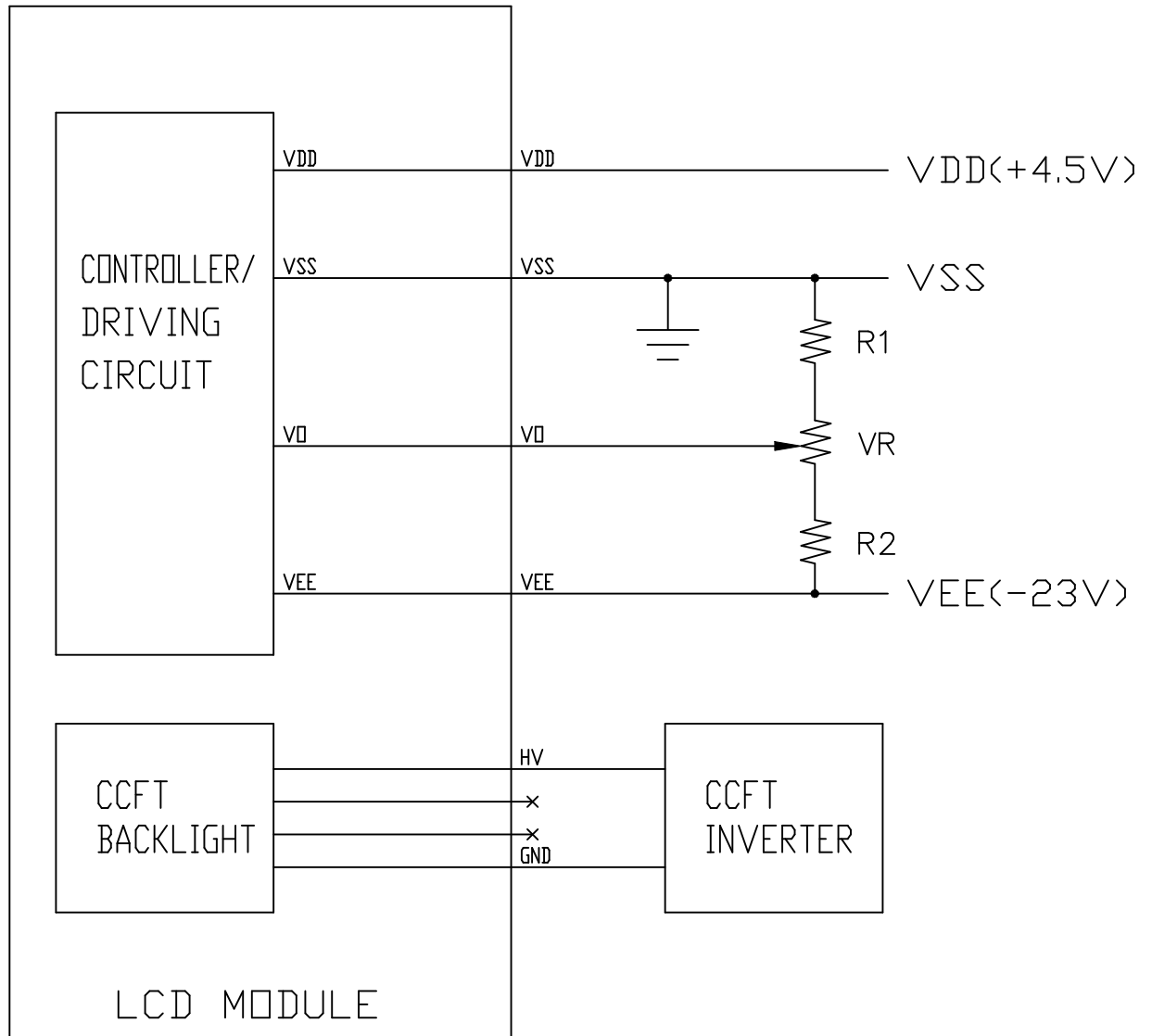
CN1: Pitch 1.25mm

Pin No.	Symbol	Function
1	VSS	Ground
2	VDD	Power supply for Logic
3	V0	Negative voltage power supply
4	A0	Data type select
5	WR (R/W)	8080 Family : Write signal 6800 Family : R/W signal
6	RD(E)	8080 Family : Read signal 6800 Family : Enable clock
7 S 14	DB0 S DB7	3-State I/O data bus
15	CS	Chip select
16	RES	This active Low input performs hardware reset on the SED 1335F
17	VEE	Supply voltage for LCD panel
18	SEL1	'0' FOR 8080 Family MPU , '1' for 6080 family MPU
19 S 22	N.C.	No connection

CN2 : J.A.E./IL-G-4S-S3C2

Pin No.	Symbol	Function
1	HV	Power supply for CCFT
2	NC	-
3	NC	-
4	GND	Ground line (from inverter)

7. POWER SUPPLY



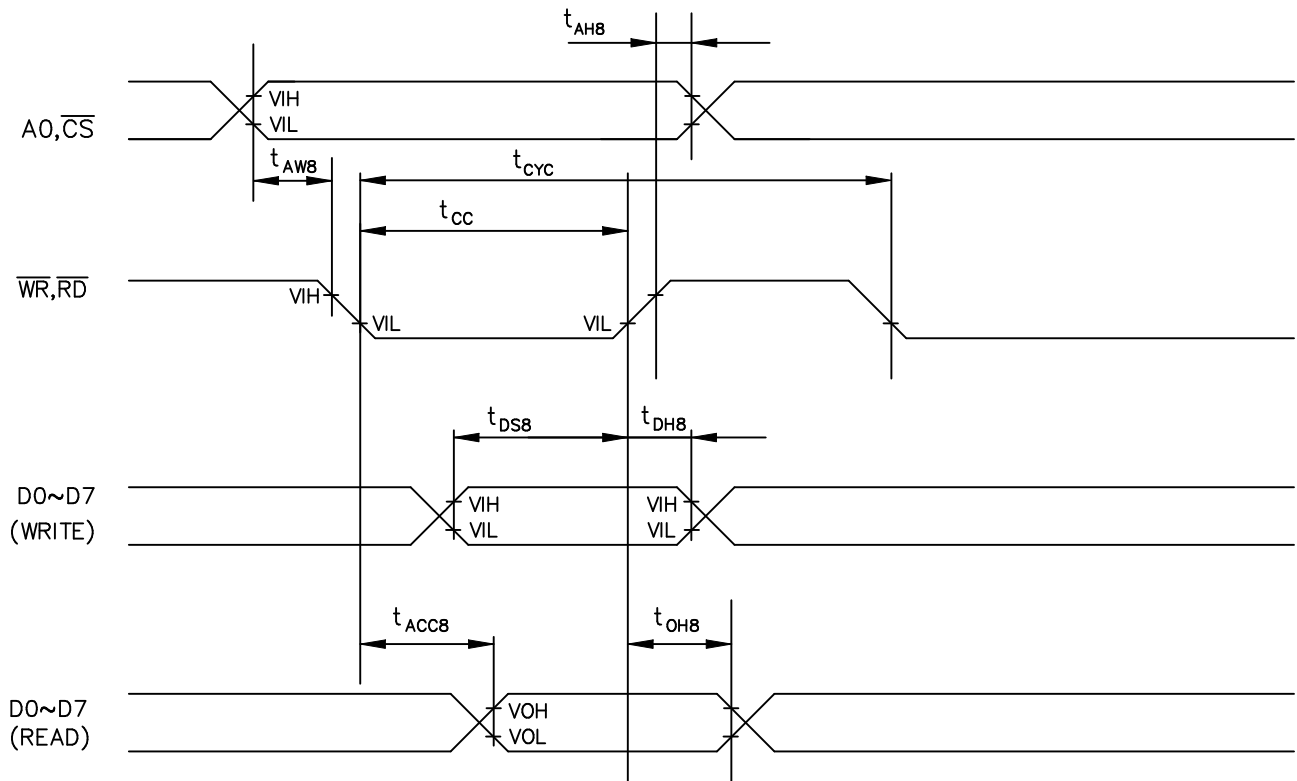
1. $R1 + VR + R2 = 10K\Omega \sim 20K\Omega$
2. RECOMMENDED CCFT INVERTER: CXA-L10L(TDK)
 (OPERATING TEMP. $-10^{\circ}C \sim 60^{\circ}C$)

8. TIMING CHARACTERISTICS

8-1. READ/WRITE CHARACTERISTICS(8080 FAMILY MPU)

VDD=5.0V±5%

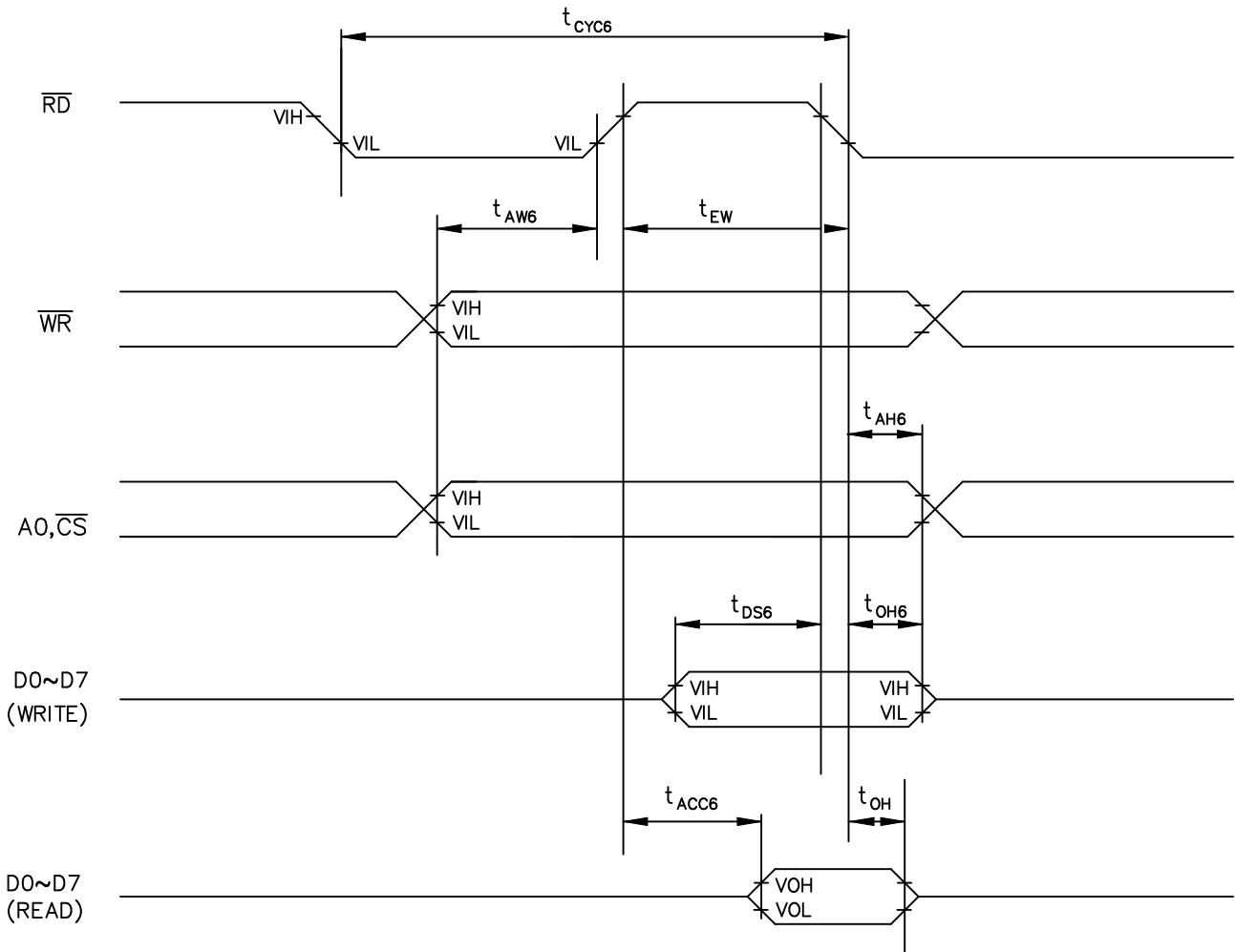
ITEM	ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT
A0, \overline{CS}	ADDRESS HOLD TIME	t_{AH8}	10	-	-	ns
	ADDRESS SETUP TIME	t_{AW8}	0	-	-	ns
$\overline{WR}, \overline{RD}$	SYSTEM CYCLE TIME	t_{CYC8}	1	-	-	ns
	STROBE PULSE WIDTH	t_{CC}	120	-	-	ns
D0 to D7	DATA HOLD TIME	t_{DH8}	5	-	-	ns
	DATA SETUP TIME	t_{DS8}	120	-	-	ns
	\overline{RD} ACCESS TIME	t_{ACC8}	-	-	50	ns
	OUTPUT DISABLE TIME	t_{OH8}	10	-	50	ns



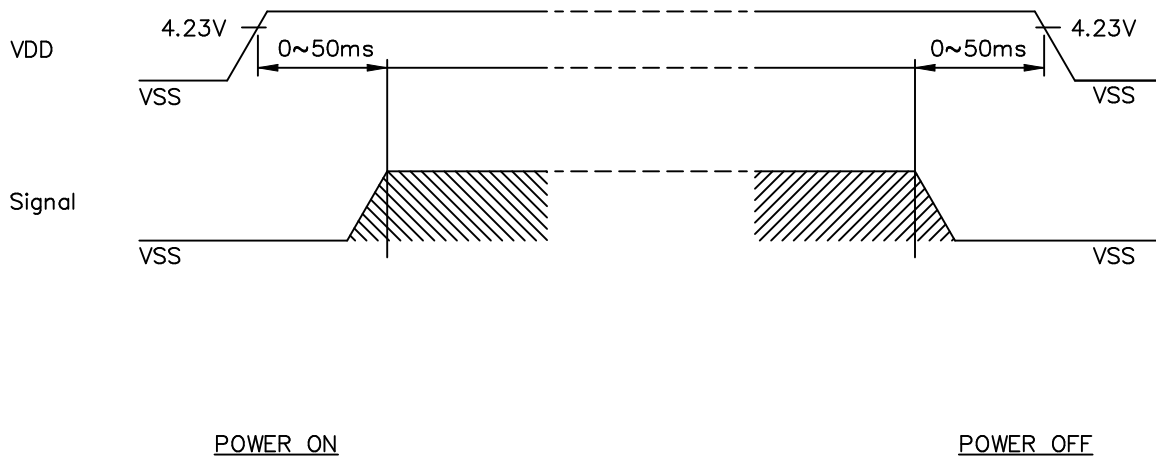
8-2.READ/WRITE CHARACTERISTICS(6800 FAMILY MPU)

VDD=5.0V±5%

ITEM	ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT
A0, \overline{CS} , \overline{WR}	ADDRESS HOLD TIME	t_{AH6}	0	-	-	ns
	ADDRESS SETUP TIME	t_{AW6}	0	-	-	ns
	SYSTEM CYCLE TIME	t_{CYC6}	1	-	-	ns
D0 to D7	DATA HOLD TIME	t_{DH6}	0	-	-	ns
	DATA SETUP TIME	t_{DS6}	100	-	-	ns
	ACCESS TIME	t_{ACC6}	-	-	85	ns
	OUTPUT DISABLE TIME	t_{OH6}	10	-	50	ns
\overline{RD}	ENABLE PULSE WIDTH	t_{RDW}	120	-	50	ns



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

#001	D3	D2	D1	D0	D3		D0	D3	D2	D1	D0
#002	D3	D2	D1	D0	D3		D0	D3	D2	D1	D0
<p>Data Input: Terninal : Dots (Row) on Display</p> <p>D0 : dot 4, dot 8 dot 316, dot 320 D1 : dot 3, dot 7 dot 315, dot 319 D2 : dot 2, dot 6 dot 314, dot 318 D3 : dot 1, dot 5 dot 313, dot 317</p>											
#239	D3	D2	D1	D0	D3		D0	D3	D2	D1	D0
#240	D3	D2	D1	D0	D3		D0	D3	D2	D1	D0
	d1	d2	d3	d4	d5		d316	d317	d318	d319	d320

240 dots

320 dots

9. RELIABILITY TEST

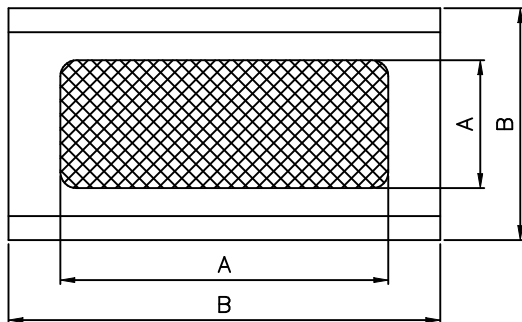
NO	ITEM	CONDITION			STANDARD	NOTE
1	High Temp. Storage	70°C	120HR		Appearance without defect	
2	Low Temp. Storage	-20°C	120HR		Appearance without defect	
3	High Temp. & High Humi. Storage	40°C 90%RH	120HR		Appearance without defect	
4	Thermal Shock	-20°C, 30min → 25°C, 5min → 70°C, 30min → 25°C, 5min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

	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)

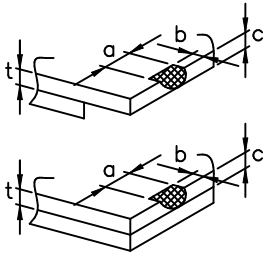
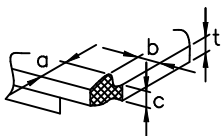
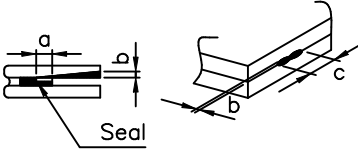
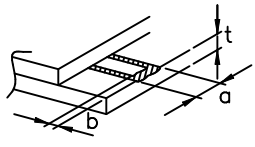
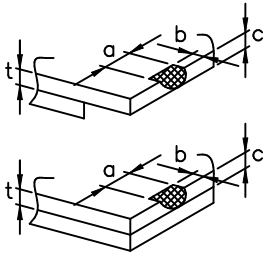
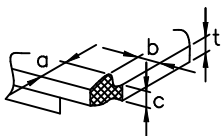
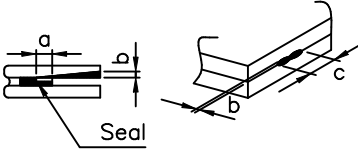
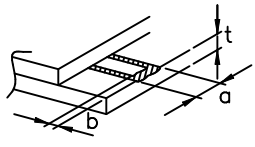
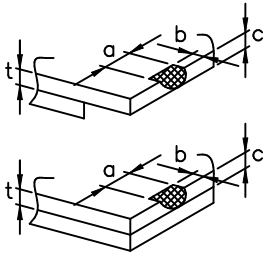
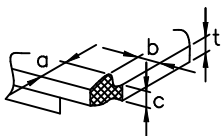
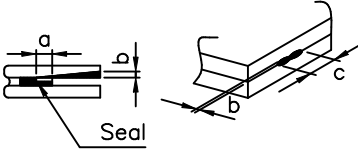
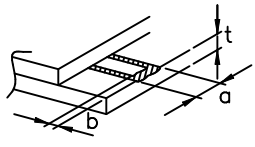
5.Specification for quality check
 5-1 Electrical characteristics

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.	CCFT backlight turn on/off	Within Specified value

5-2 External Appearance Defect

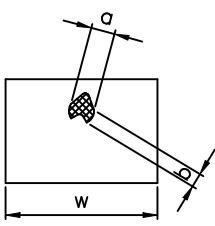
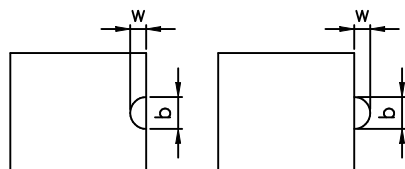
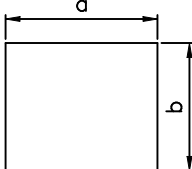
NO.	Item	Criterion																		
1.	Black spots, foreign matter, and white spots (Including light leakage due to pinholes of polarizing plates, etc.)	<p>(1)-1-Spots(At non lighting condition)</p> <table border="1" data-bbox="711 477 1356 763"> <thead> <tr> <th>Average Diameter(mm):D</th> <th>Number 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="711 1187 1356 1426"> <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																			
$0.2 < D \leq 0.3$	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																			

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="711 427 1453 712"> <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="711 1016 1453 1301"> <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.																								

<p>4. Air bubbles polarizing plates, and reflection plates</p>	<table border="1" data-bbox="710 376 1225 667"> <tr> <th data-bbox="710 376 970 521">Average Diameter (mm):D</th> <th data-bbox="970 376 1225 521">Number of pieces permitted</th> <th data-bbox="1225 376 1476 667" rowspan="2">Average diameter = (Long diameter + Short diameter)/2</th> </tr> <tr> <td data-bbox="710 521 970 667">D ≤ 0.3 0.3 < D</td> <td data-bbox="970 521 1225 667">Ignore 0</td> </tr> </table> <p data-bbox="710 683 1476 779">Note that when there are 4 pieces or more, they are not to be concentrated.</p>		Average Diameter (mm):D	Number of pieces permitted	Average diameter = (Long diameter + Short diameter)/2	D ≤ 0.3 0.3 < D	Ignore 0					
Average Diameter (mm):D	Number of pieces permitted	Average diameter = (Long diameter + Short diameter)/2										
D ≤ 0.3 0.3 < D	Ignore 0											
<p>5. Cracks</p>	<table border="1" data-bbox="662 779 1476 1964"> <tr> <td data-bbox="662 779 1066 1169"> <p>(1)General crack</p>  </td> <td data-bbox="1066 779 1476 1169"> <p>a ≤ 5 b ≤ 2 c ≤ t</p> <p>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> </td> </tr> <tr> <td data-bbox="662 1169 1066 1361"> <p>(2)Corner crack</p>  </td> <td data-bbox="1066 1169 1476 1361"> <p>a ≤ 2.5 b ≤ 2.5 c ≤ t a + b ≤ 4</p> </td> </tr> <tr> <td data-bbox="662 1361 1066 1630"> <p>(3)Seal portion crack</p>  </td> <td data-bbox="1066 1361 1476 1630"> <p>a ≤ The seal width × 1/3 b ≤ t × 2/3 c ≤ 5</p> <p>The numbers of pieces are set at up to 5 pieces.</p> </td> </tr> <tr> <td data-bbox="662 1630 1066 1870"> <p>(4)ITO Pin crack</p>  </td> <td data-bbox="1066 1630 1476 1870"> <p>a ≤ 5 b ≤ 1/3 pin length c ≤ t</p> </td> </tr> <tr> <td data-bbox="662 1870 1066 1964"> <p>(5)Progressive cracks</p> </td> <td data-bbox="1066 1870 1476 1964"> <p>All taken to be unacceptable.</p> </td> </tr> </table>		<p>(1)General crack</p> 	<p>a ≤ 5 b ≤ 2 c ≤ t</p> <p>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>(2)Corner crack</p> 	<p>a ≤ 2.5 b ≤ 2.5 c ≤ t a + b ≤ 4</p>	<p>(3)Seal portion crack</p> 	<p>a ≤ The seal width × 1/3 b ≤ t × 2/3 c ≤ 5</p> <p>The numbers of pieces are set at up to 5 pieces.</p>	<p>(4)ITO Pin crack</p> 	<p>a ≤ 5 b ≤ 1/3 pin length c ≤ t</p>	<p>(5)Progressive cracks</p>	<p>All taken to be unacceptable.</p>
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<p>(4)ITO Pin crack</p> 	<p>a ≤ 5 b ≤ 1/3 pin length c ≤ t</p>											
<p>(5)Progressive cracks</p>	<p>All taken to be unacceptable.</p>											

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.	Plinhole	 <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>

NOTE:

• 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

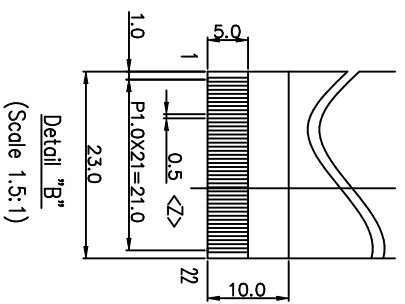
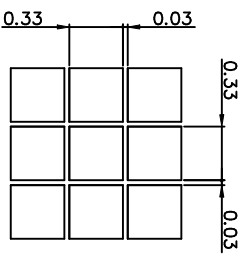
- 1.Avoid static electricity which can damage the CMOS LSI.
- 2.Do not remove the panel or frame from the module.
- 3.The polarizing plate of the display is very fragile. So, please handle it very carefully.
- 4.Do not wipe the polarizing plate with a dry cloth, as it may easily scratch the surface of plate.
- 5.Do not use ketonics solvent & Aromatic solvent, use with a soft cloth soaked with a cleaning naphtha solvent.

• STORAGE

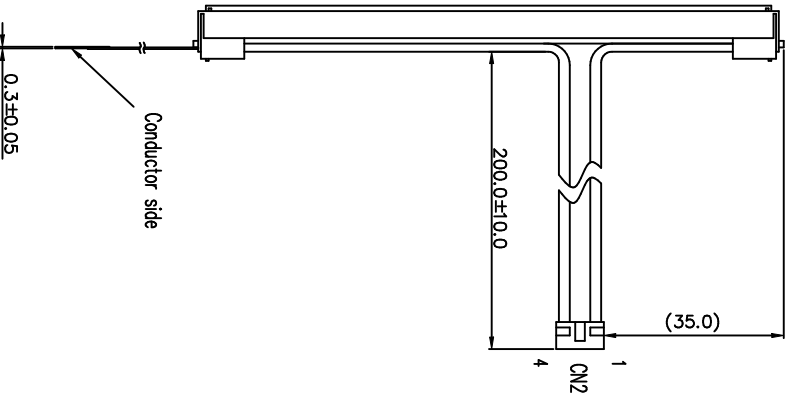
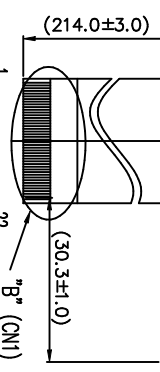
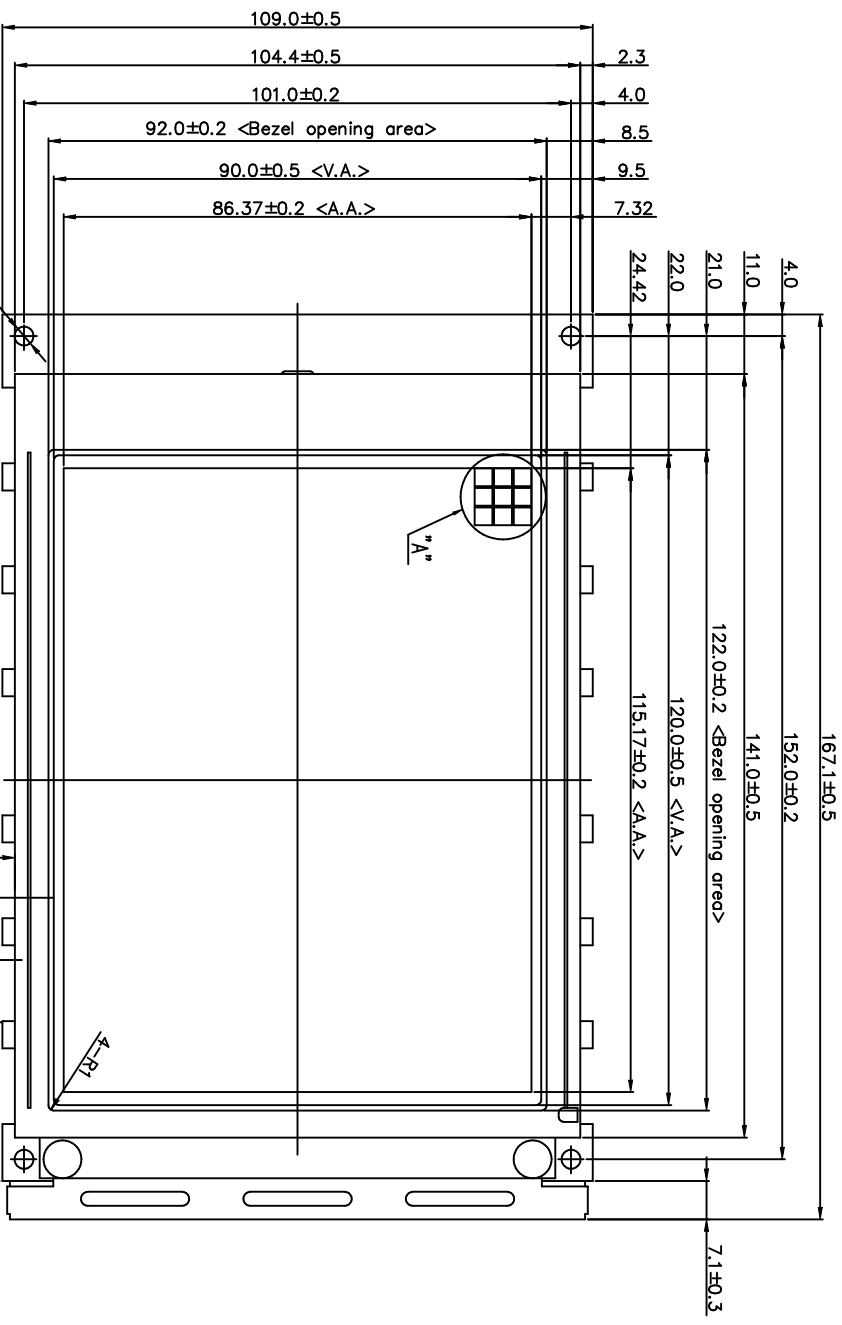
- 1.Store the panel or module in a dark place where the temperature is $25^{\circ}\text{C}\pm 5^{\circ}\text{C}$ and the humidity is below 65% RH.
- 2.Do not place the module near organics solvents or corrosive gases.
- 3.Do not crush, shake, or jolt the module.

• 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.



Pin No.	Symbol	Function
1	VSS	Ground
2	VDD	Power supply for Logic
3	V0	Negative voltage power supply
4	A0	Data type select
5	WR	8080 Family : Write signal
6	R/W	8080 Family : R/W signal
7	RD(E)	8080 Family : Read signal
8	DB0	8080 Family : Enable clock
9	S	3-State I/O data bus
10	DB7	
11	CS	Chip select
12	RES	This active Low input performs hardware reset on the SED 1335F
13	VEE	Supply voltage for LCD panel
14	SEL1	'0' FOR 8080 Family MPU , '1' for 6080 family MPU
15	N.C.	No connection



Pin No.	Symbol	Level	Function
1	HV	-	Power supply for CCFI
2	NC	-	-
3	NC	-	-
4	GND	-	Ground line (from inverter)

CN2 : J.A.E./L-G-4S-S332

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)

- Notes :
- Resolution : 320 x 240 Dots
 - Backlight : CCFL
 - Frame : SUS 304

APPROVE	CHECK	DESIGN	DRAWN	DWG NO.	DATE	DESIGN	CHECK	APPROVE
				MA32-D48A	91.06.17			

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

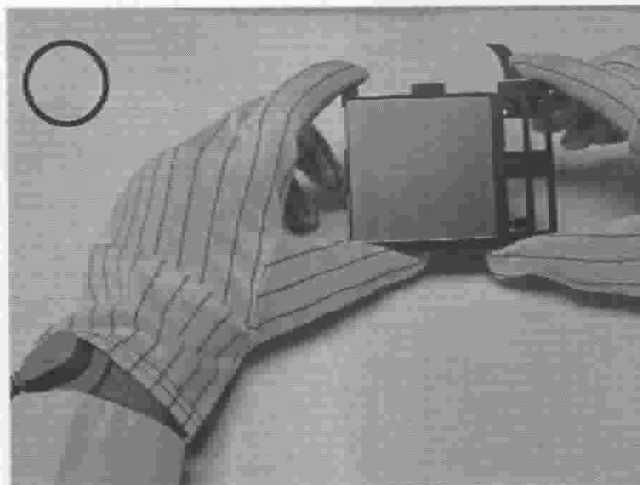
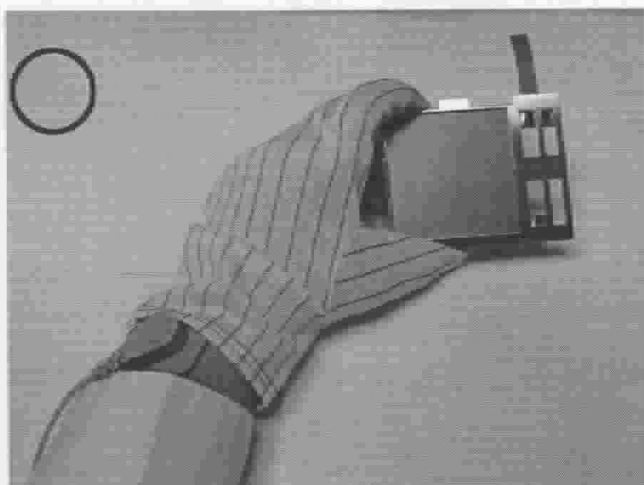
製品圖
LMBGANAS2S48CK

THE NOTES OF LCM USING

LCM is easy to damage.

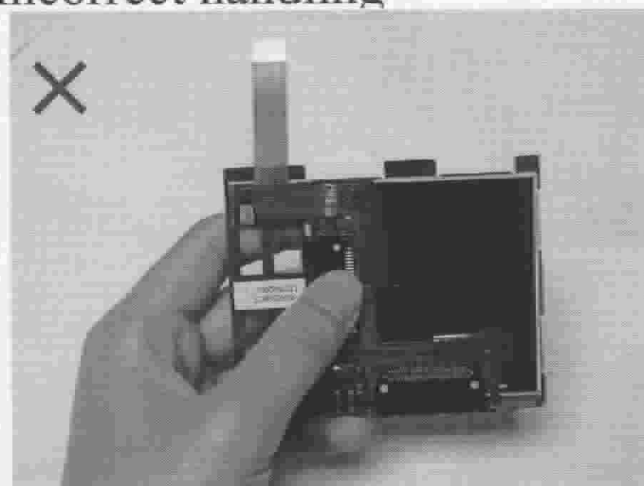
Please follow the notes as bellows, and be careful of handling!

Correct handling

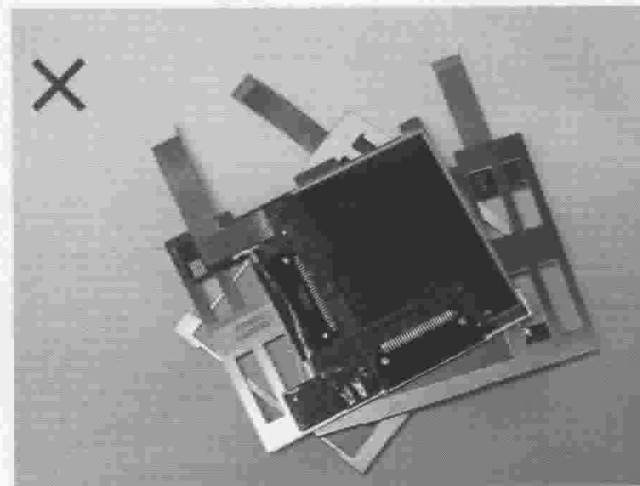


As above picture, please handle with glove by LCM edges and full EOS/ESD protection.

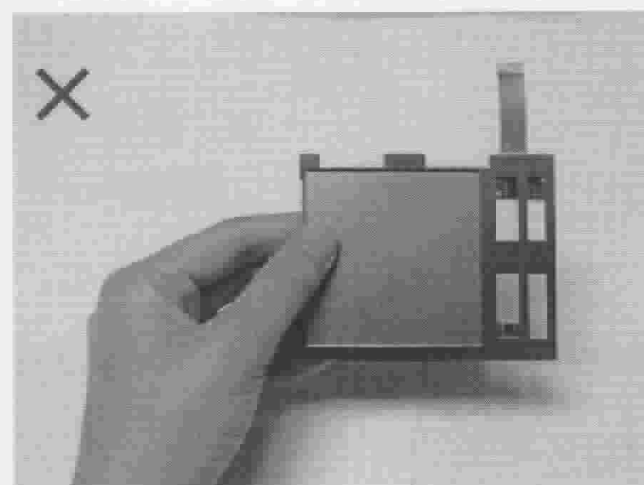
Incorrect handling



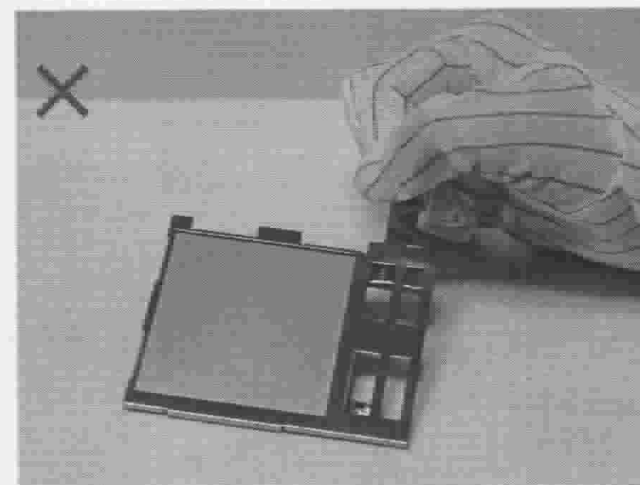
Please don't touch IC directly.



Please don't put one on another LCM.



Please don't hold the surface of LCM.



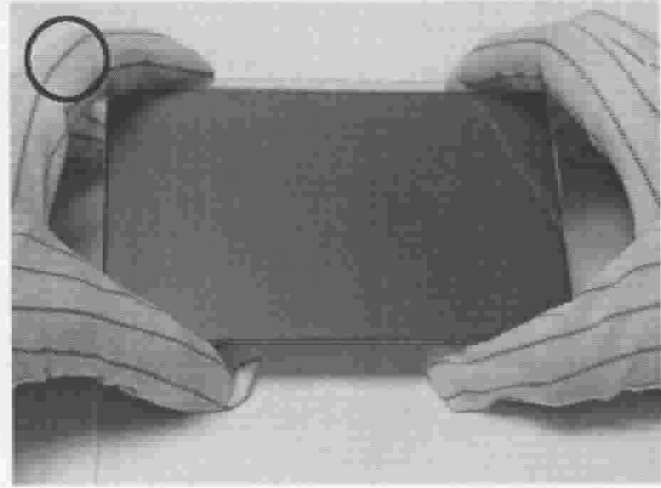
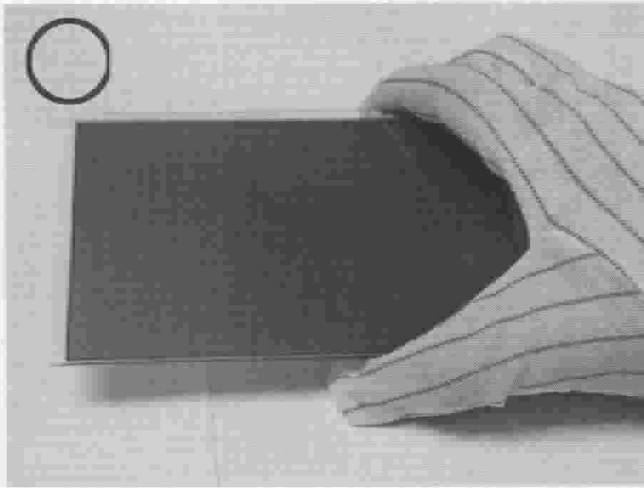
Please don't stretch interface of output.

THE NOTES OF LCD USING

LCD is easy damage.

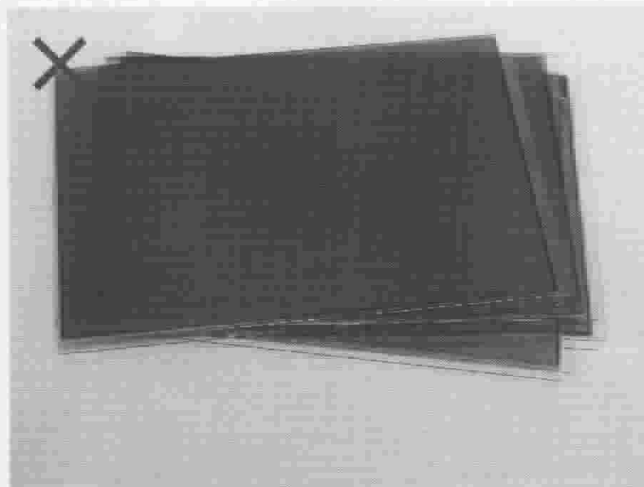
Please follow notes as bellows, and be careful of handling!

Correct handling

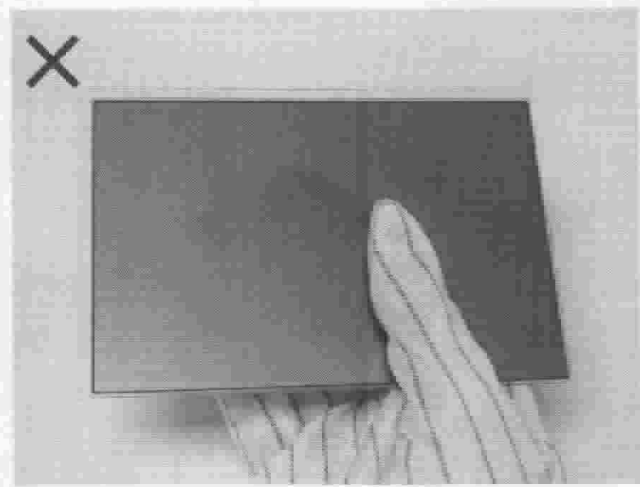


As above picture, please handle with glove by LCD edges and full EOS/ESD protection.

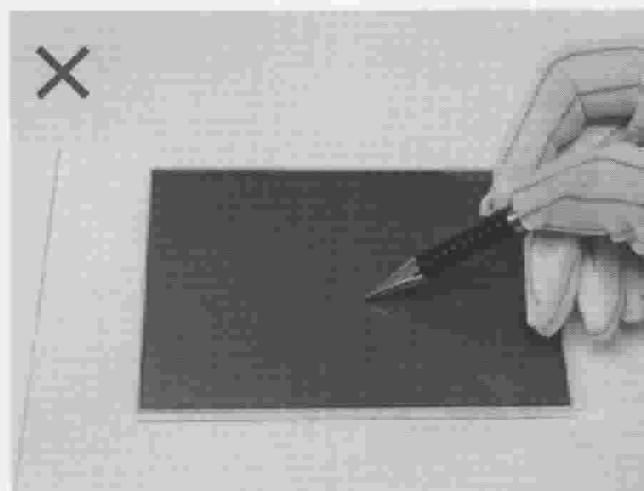
Incorrect handling



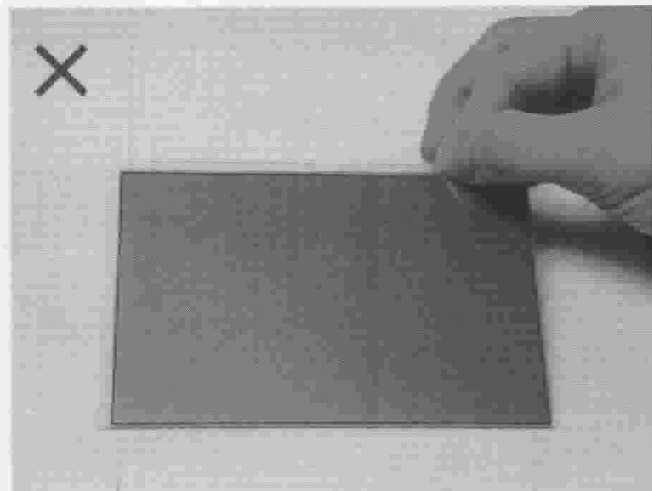
Please don't put one on another LCD.



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.

