NAN YA PLASTICS CORPORATION

SPECIFICATION OF

LCD MODULE

PRODUCT NO.: LCBA7T211_14

SPEC. NO.: LM211-14-④

CUSTOMER
APPROVED BY
DATE :

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 : Jun. 08. 2006

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

RECORDS OF REVISION

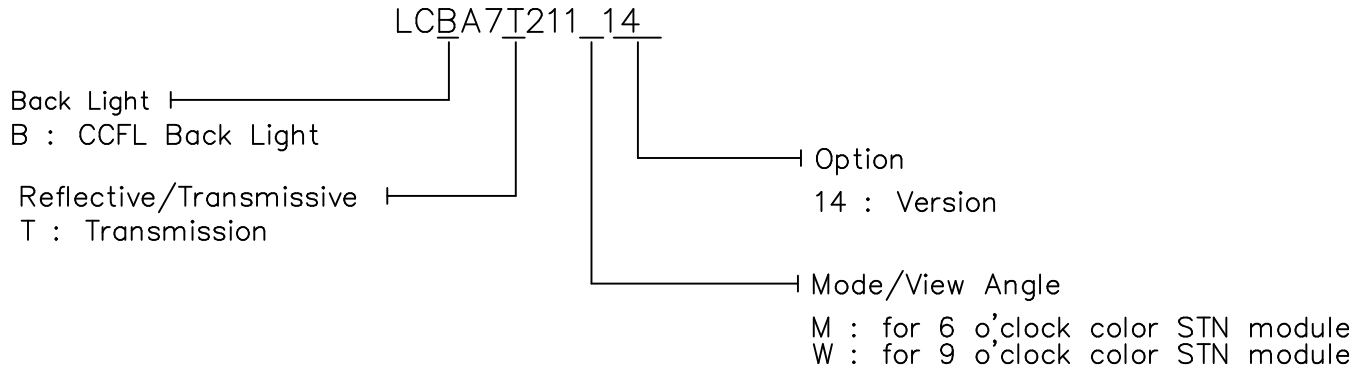
SPEC. NO : LM211-14

DATE	REVISED NO.	REF. PAGE	SUMMARY	DESIGN	CHECK
08.22.'02	0	27/27	First Issue	C.H.SHU	Louis Lee
12.11.'02	1	4/27	Characteristics Modified	C.H.HSU	Louis Lee
		5-1/27	Add Characteristics of Reommend Inverter		
		12/27	Reommend Inverter Modified		
11.17.'03	2	1/27	Add T-M Mode	W.R.HSU	Louis Lee
		3/27	Characteristics Modified		
		6/27	Add T-M Mode & Characteristics Modified		
		27/27	Add Black Tape		
12.23.'05	3	4/27	Lamp Characteristics Modified	W.R.HSU	Louis Lee
		5-1/27	Reommend Inverter Characteristics Modified		
		12/27	DIM Recommended Value Modified		
06.08.'06	4	3/27	Surface Luminance of LCM Characteristics Modified	W.R.HSU	
		4/27	Lamp Characteristics Modified		
		7/27	Rx Characteristics Modified		
		27-1/27	ADD P/N : LCBA7T211W14		

1. MECHANICAL DATA

(1) Product No.		LCBA7T211_14
(2) Module Size		76.8 (W)mm x 103.7 (H)mm x 7.8(D)mm
(3) Dot Size		0.234 (W)mm x 0.068 (H)mm
(4) Dot Pitch		0.249 (W)mm x 0.083 (H)mm
(5) Number of Dots		240 (W) x (320 xRGB (H)) Dots
(6) Duty		1/240
(7) LCD Display Mode	STN:	Color Mode
	REAR POLARIZER:	Transmission
(8) Viewing Direction		☐ 6 O'clock ☐ 9 O'clock
(9) Backlight		CCFL
(10) Controller		Excluded
(11) DC/DC Converter		Excluded
(12) Weight		79.0 g(approx.)

Note :



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	
Power Supply for LCD Drive	VEE−VSS	0	30.0	V	
Input Voltage	VI	−0.3	VDD+0.3	V	
Static Electricity	−	−	−	−	Note 1

(2) ENVIRONMENTAL ABSOLUTE MAXIMUM RATINGS

ITEM	NORMAL TEMP.			
	OPERATING		STORAGE	
	MIN.	MAX.	MIN.	MAX.
Ambient Temperature	5	50	−20	60
Humidity (Without Condensation)	Note 2,4		Note 3,4	

Note 1 LCM should be grounded during handling LCM.

Note 2 Ta ≦ 50°C : 85%RH max
Ta > 50°C : Absolute humidity must be lower than the humidity of 85%RH at 50°C

Note 3 Ta at −20°C will be < 48 hrs, at 60°C will be < 120 hrs

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

3. ELECTRICAL CHARACTERISTICS

3-1. ELECTRICAL CHARACTERISTICS OF LCM

LCD

ITEM		SYMBOL	CONDITION		MIN.	TYP.	MAX.	UNIT
Logic Circuit Power Supply		VDD-VSS	Ta= 25°C		3.0	3.3	3.6	V
Input Voltage		VIH	H level		0.8VDD	–	VDD	V
		VIL	L level		0	–	0.2VDD	V
Recommended LCD Driving Voltage (Normal Temp. LCM)		VEE-VSS	Duty=1/240 Bias=1/14 VDD=3.3V	5°C	24.6	24.9	25.2	V
				25°C	23.2	23.5	23.8	
				50°C	22.3	22.6	22.9	
Supply Current for Logic		IDD	VDD-VSS = 3.3V VEE-VSS = 23.5V Ta= 25°C PATTERN: □ ■ □ ■ □ ■ □ ■ ■ □ ■ □ ■ □ ■ □		–	0.4	0.8	mA
Supply Current for LCD		IEE			–	2.9	4.3	mA
LCM	Surface Luminance	L	VDD-VSS=3.3V VEE-VSS=23.5V Ta= 25°C I_L=2.5mArms	PATTERN: Dots All On (White)	50.0	72.0	–	cd/m²
				PATTERN: Dots All Off (Black)	–	3.1	8.0	cd/m²

3-2.ELECTRICAL CHARACTERISTICS OF BACKLIGHT

Used Lamp Rating

Temp.=25°C

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT	REMARK
Lamp Voltage	V_L	–	309	–	Vrms	–
Lamp current	I_L	–	2.5	–	mArms	–
Lamp power consumption	P_L	–	0.78	–	W	(*1)
Starting voltage	V_S	–	–	608	Vrms	Ta=25°C
		–	–	760	Vrms	Ta=0°C
Lamp life time	L_L	–	20000	–	hrs	at I_L =2.5 mArms Ta=25°C (*2)

(*1) Power consumption excluded inverter loss .

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

3-3.CHARACTERISTICS OF TOUCH SCREEN

Used Touch screen Rating Temp.=25°C

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Applied Rating Voltage	V_R	–	–	–	7.0	V
Operating Temperature	T_{OPR}	20%~85% R.H. Max. Avoid Dew Condensation at Any Time	0	–	50	°C
Storage Temperature	T_{STO}		-20	–	70	
Resistance of Terminal Electrodes	R_{ETD}	X Electrode	350	650	950	Ω
		Y Electrode	250	550	850	
Linearity	L	–	–	–	1.5	%
Insulation Resistance	R_{OFF}	V_{DC} =25V	20	–	–	MΩ
Transparency	T	According to JIS-K7015	–	80	–	%
Surface Hardness	S_H	According to JIS-K5400	3	–	–	H

Test condition : T/P is placed horizonally in a vessel and no power is supplied to T/P.
Normal state is temperature : 25±10°C, relative humidity : 60±25%

3-4.ELECTRICAL CHARACTERISTICS OF RECOMMENDED INVERTER TDK TAD695

3-4-1 GENERAL SPECIFICATIONS

OPERATION TEMPERATURE : 0°C~50°C
STORAGE TEMPERATURE : -20°C~60°C
DIMENSION : 62.0(L)mm x 10.0(W)mm x MAX 7.0(H)mm

3-4-2 PIN ASSIGNMENTS

INPUT (CN1) CONNECTOR :
E&T 1604-005-05

NO.	FUNCTION
1	VIN
2	VIN
3	DIM
4	GND
5	GND

OUTPUT (CN2) CONNECTOR :
JST SM02B-BHSS-1-TB

NO.	FUNCTION
1	HV
2	LV

3-4-3 RELATIONSHIP BETWEEN VDIM & TUBE CURRENT

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT	REMARK
Input Voltage	VIN	3	-	5	V	
Tube Current Control Voltage	DIM	-	1.8	-	V	
Tube Current	IL	-	2.5	-	mA	

4. OPTICAL CHARACTERISTICS

4-1 Optical Char. of Normal Temp. Mode

AT Vop

ITEM / MODE		Cr(Contrast Ratio)						θ(Viewing Angle)		φ(Viewing Angle)	
		5℃		25℃		50℃		25℃		25℃	
		MIN.	TYP.	MIN.	TYP.	MIN.	TYP.	MIN.	TYP.	MIN.	TYP.
T	W	23	28	25	30	6.0	8.0	–	48-48	–	>60-38
T	M	23	28	25	30	6.0	8.0	–	>60-38	–	48-48
NOTE		NOTE 6						NOTE 5			

note:

T: TRANSMISSION

W: 9 O'CLOCK COLOR STN MODULE
M: 6 O'CLOCK COLOR STN MODULE

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

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	NOTE
Response Time (rise)	Tr	5℃	580	730	1100	ms	NOTE 2
		25℃	110	220	330		
		50℃	95	120	180		
Response Time (fall)	Tf	5℃	250	310	460	ms	NOTE 2
		25℃	60	75	110		
		50℃	45	60	90		

4-2.Color of CIE Coordinate

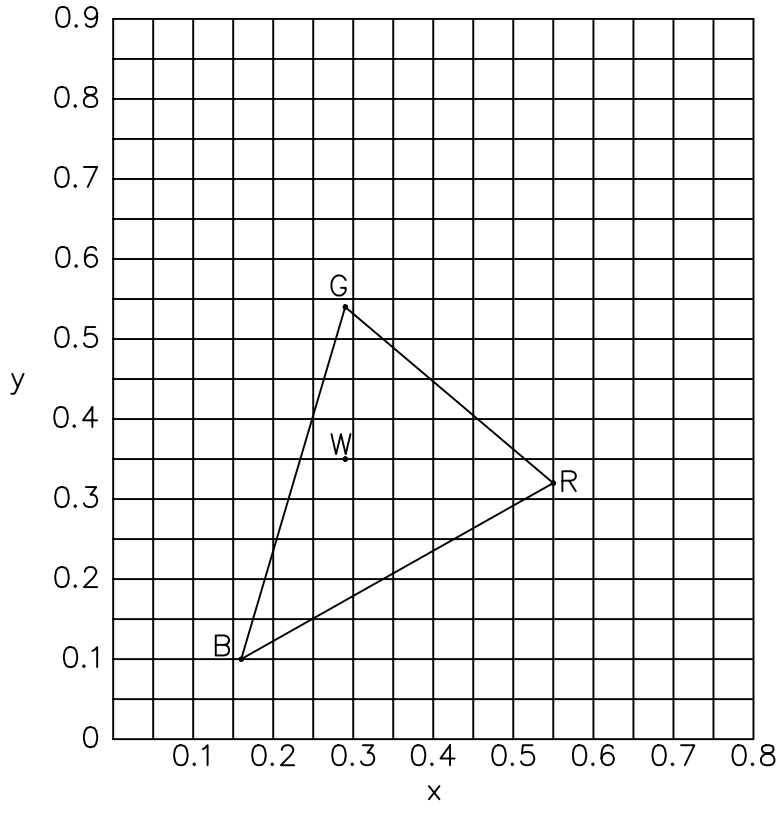
Ta = 25°C

ITEM		SYMBOL	CONDITION	VALUE	NOTE
Color of CIE Coordinate	Red	X	$\phi=0°$, $\theta=0°$	0.55	Note※
		y		0.32	
	Green	X	$\phi=0°$, $\theta=0°$	0.29	
		y		0.54	
	Blue	X	$\phi=0°$, $\theta=0°$	0.16	
		y		0.15	
	White	X	$\phi=0°$, $\theta=0°$	0.29	
		y		0.35	

Tolerance : ±0.05

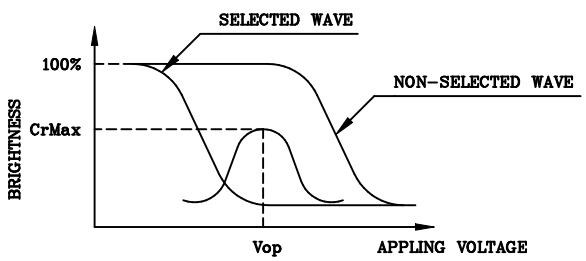
Note※ Measuring at position 3 on Fig.1
CIE chromaticity diagram

Fig.1

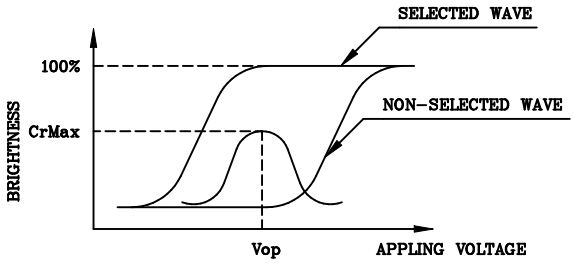


(NOTE 1)

Definition of Operation Voltage(Vop)



(positive type)



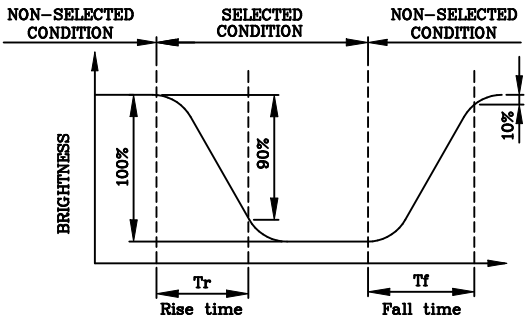
(negative type)

*Conditions

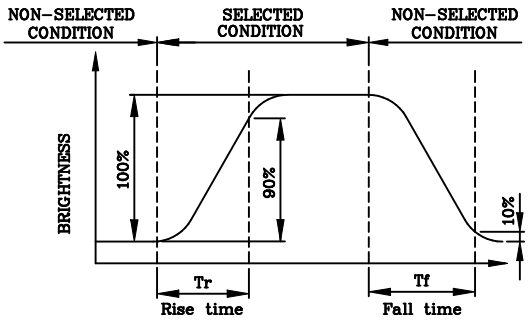
Viewing Angle : 0
Frame Frequency : 70Hz
Appling Waveform : I/N duty 1/a bias

(NOTE 2)

Definition of Response Time(Tr,Tf)



(positive type)



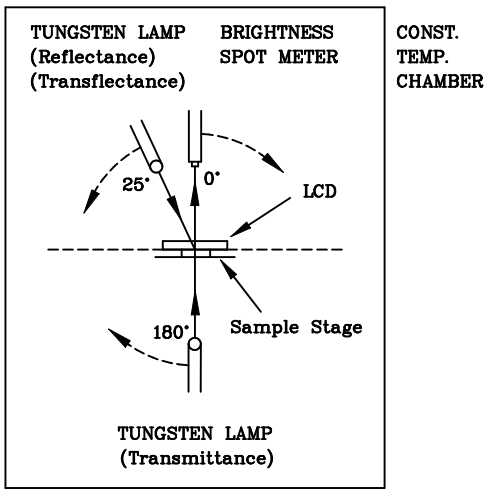
(negative type)

*Conditions

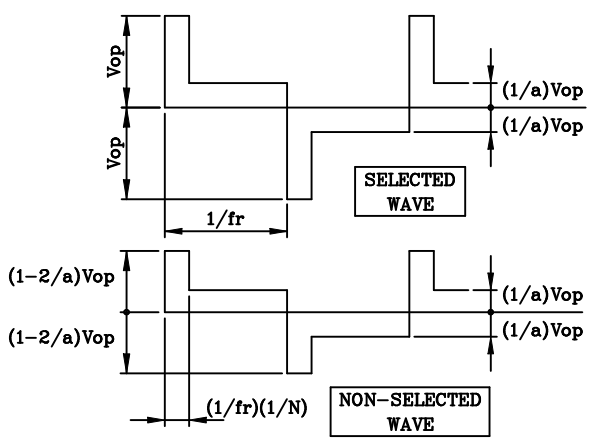
Operating Voltage : Vop
Viewing Angle (θ,ϕ) : (0,0)
Frame Frequency : 70Hz
Appling Waveform : I/N duty 1/a bias

(NOTE 3)

Description of Measuring Equipment and Driving Waveforms

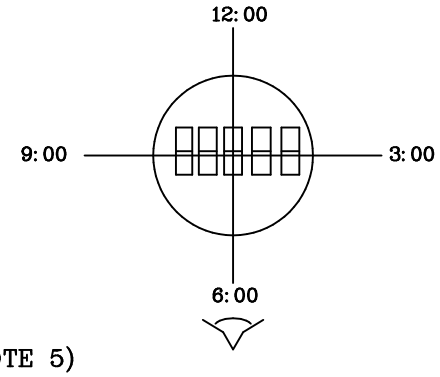


Multiplex Driving (I/N duty 1/a bias)



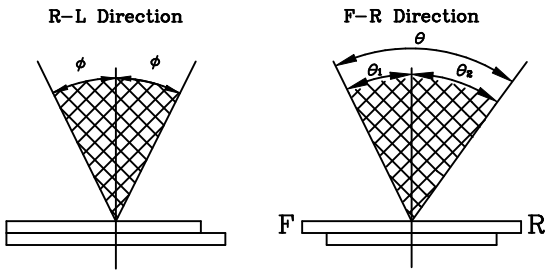
(NOTE 4)

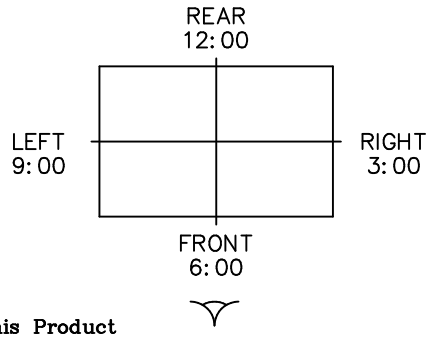
Definition of Viewing Direction



(NOTE 5)

Definition of Viewing Angle





*For This Product

The Viewing Direction Is 6 O'clock

So $\theta_1 > \theta_2$

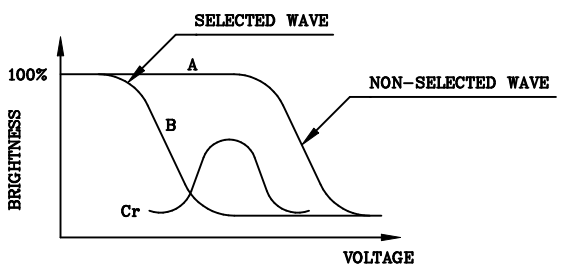
$$\theta = \theta_1 + \theta_2$$

*Conditions

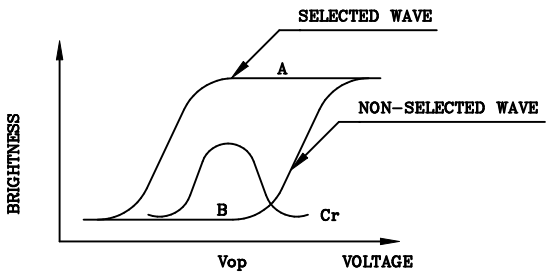
Operating Voltage : Vop
Frame Frequency : 70Hz
Appling Waveform : 1/N duty 1/a bias
Contrast Ratio : larger than 2

(NOTE 6)

Definition of Contrast Ratio (Cr)



(positive type)



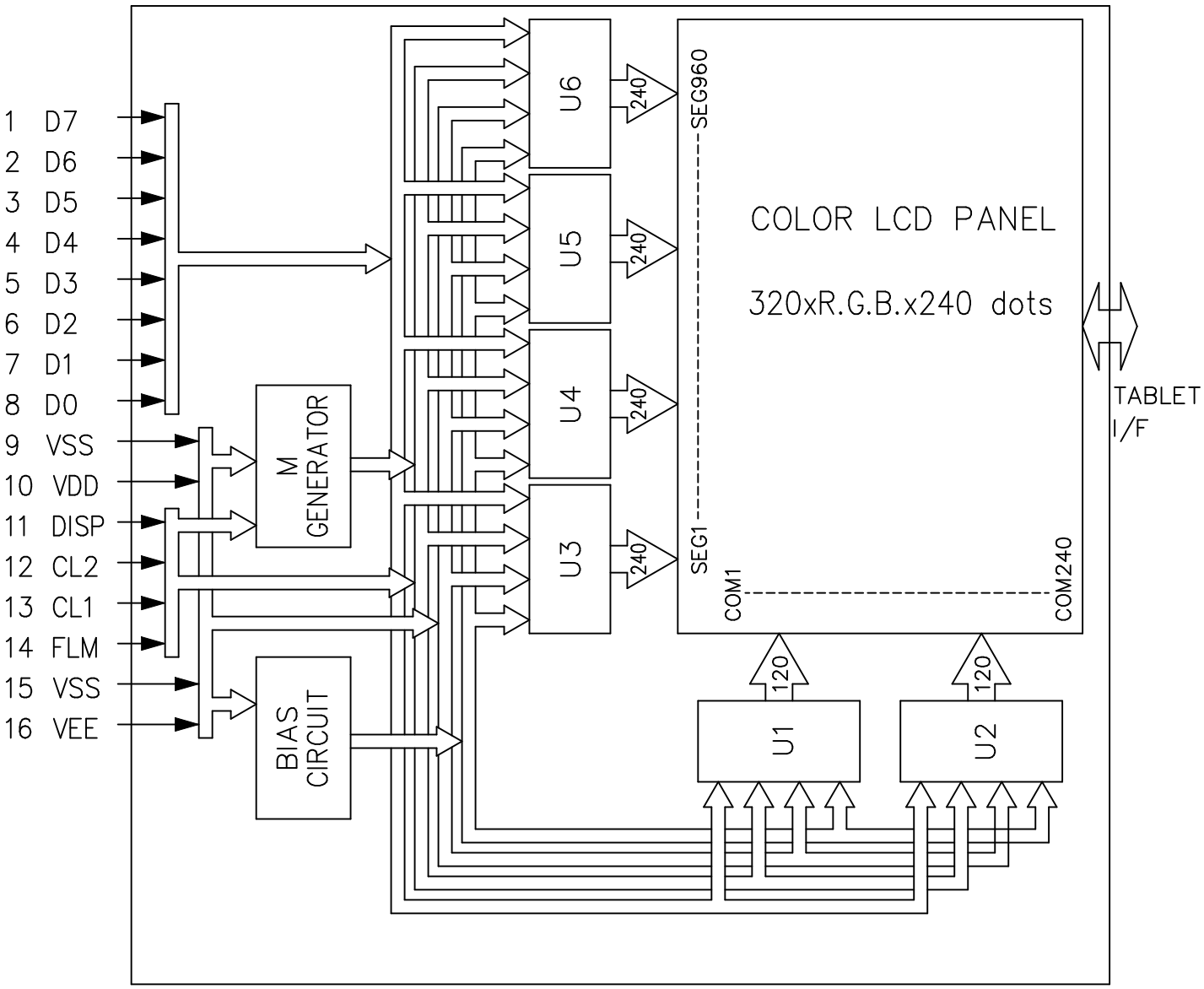
(negative type)

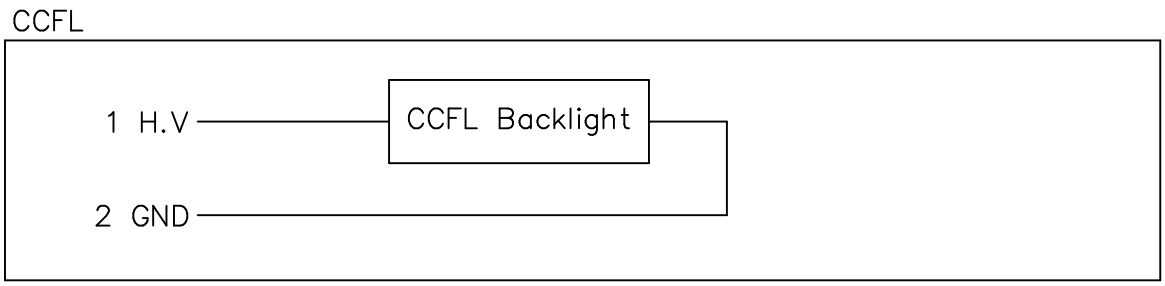
Contrast Ratio : Cr=A/B

*Conditions

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

5. BLOCK DIAGRAM





6. INTERNAL PIN CONNECTION

LCD

Pin No.	Symbol	Level	Function
1	D7	H/L	Display Data
2	D6	H/L	Display Data
3	D5	H/L	Display Data
4	D4	H/L	Display Data
5	D3	H/L	Display Data
6	D2	H/L	Display Data
7	D1	H/L	Display Data
8	D0	H/L	Display Data
9	VSS	–	GND
10	VDD	–	Power Supply for Logic
11	DISP	H/L	Display Control Signal, H : Display on L : Display off
12	CL2	H/L	Data input clock
13	CL1	H/L	Input data latch signal
14	FLM	H/L	Scan start-up signal
15	VSS	H/L	Power Supply (0V,GND)
16	VEE	–	Power Supply for LCD

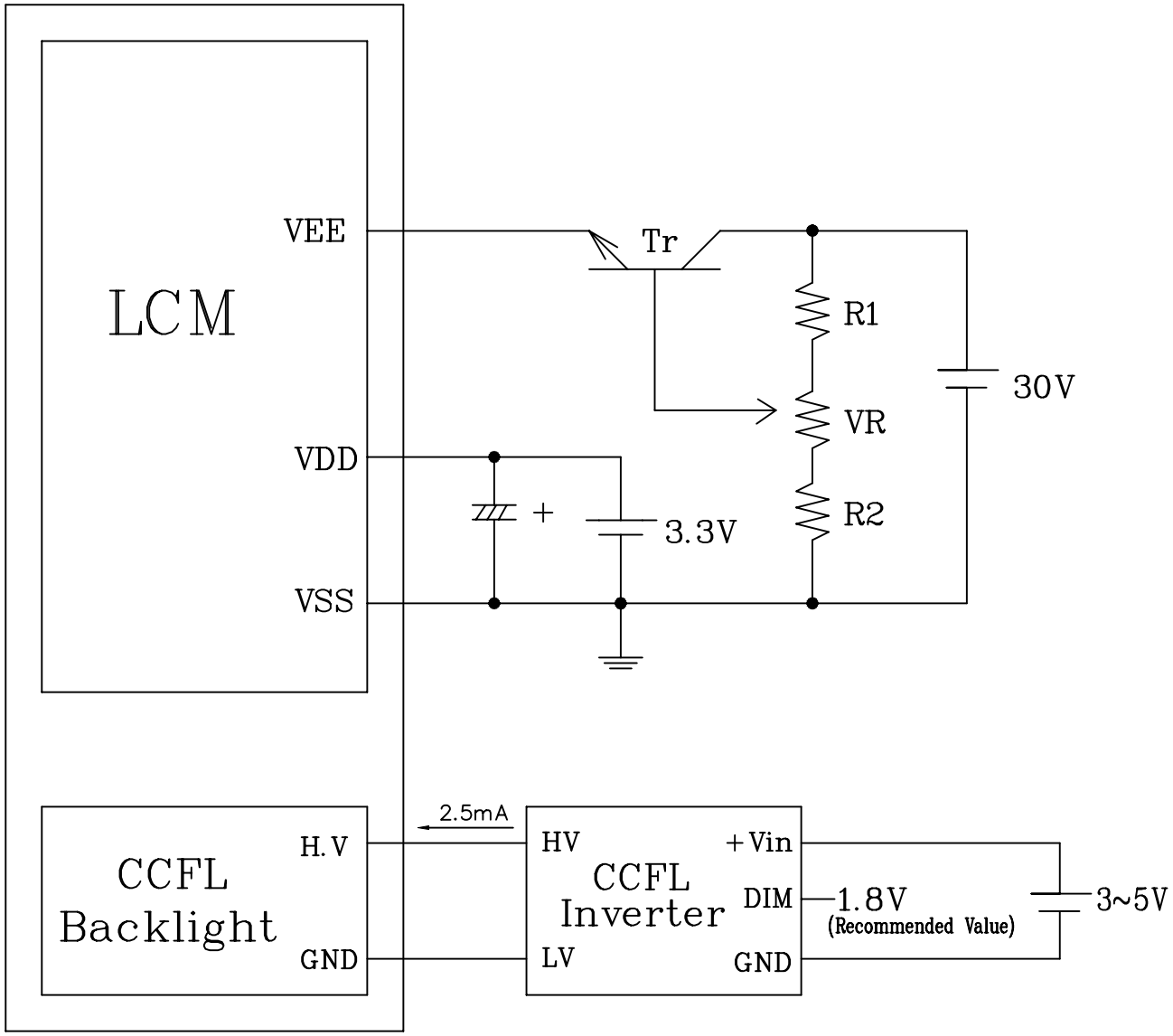
CCFL

Pin No.	Symbol	Level	Function
1	H.V	–	Power Supply for CFL
2	GND	–	CFL GND

LCD INTERFACE CONNECTOR
FH12-16S-0.5SV (HIROSE)/Suitable FFC : pitch 0.5mm , width 8.5mm

CCFL CONNECTOR :
BHSR -02VS-1 (JST)/Suitable Connector : SM02B-BHSS-1-TB (JST)

7. POWER SUPPLY



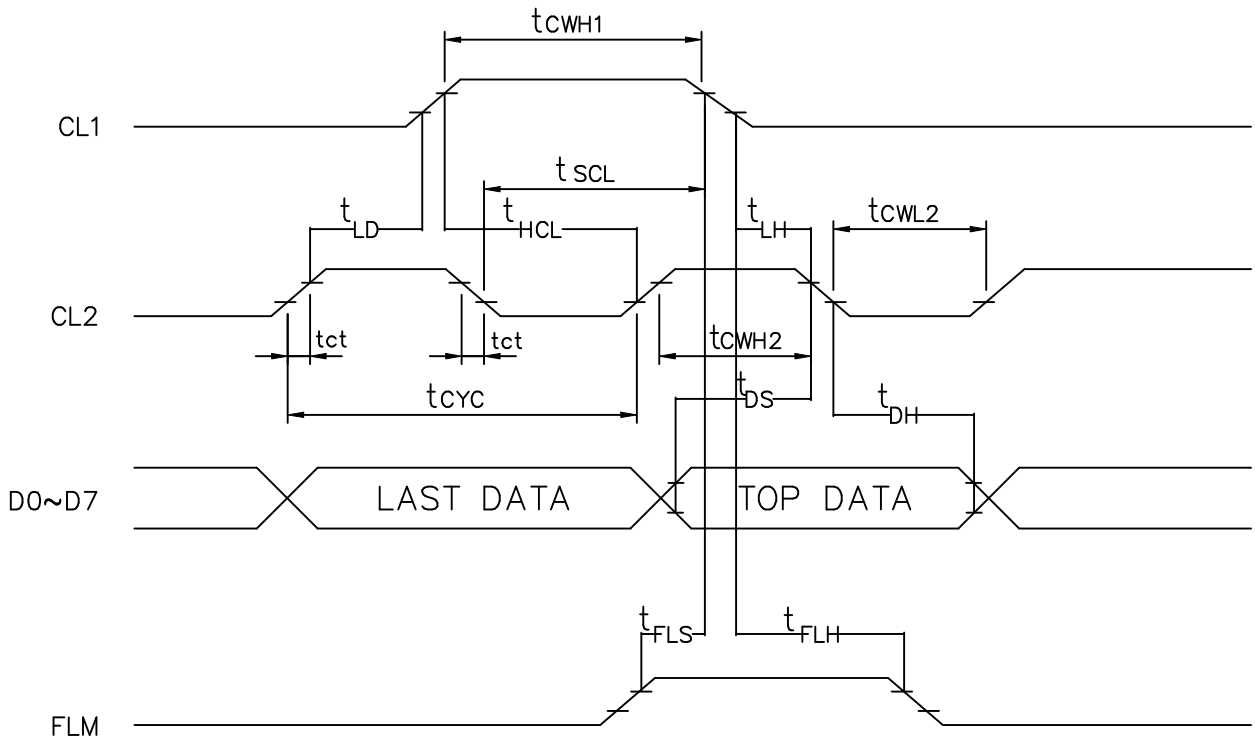
1. R1+R2+VR=10~20KΩ
2. RECOMMENDED CCFL INVERTER :
   TDK TAD695

8. TIMING CHARACTERISTICS

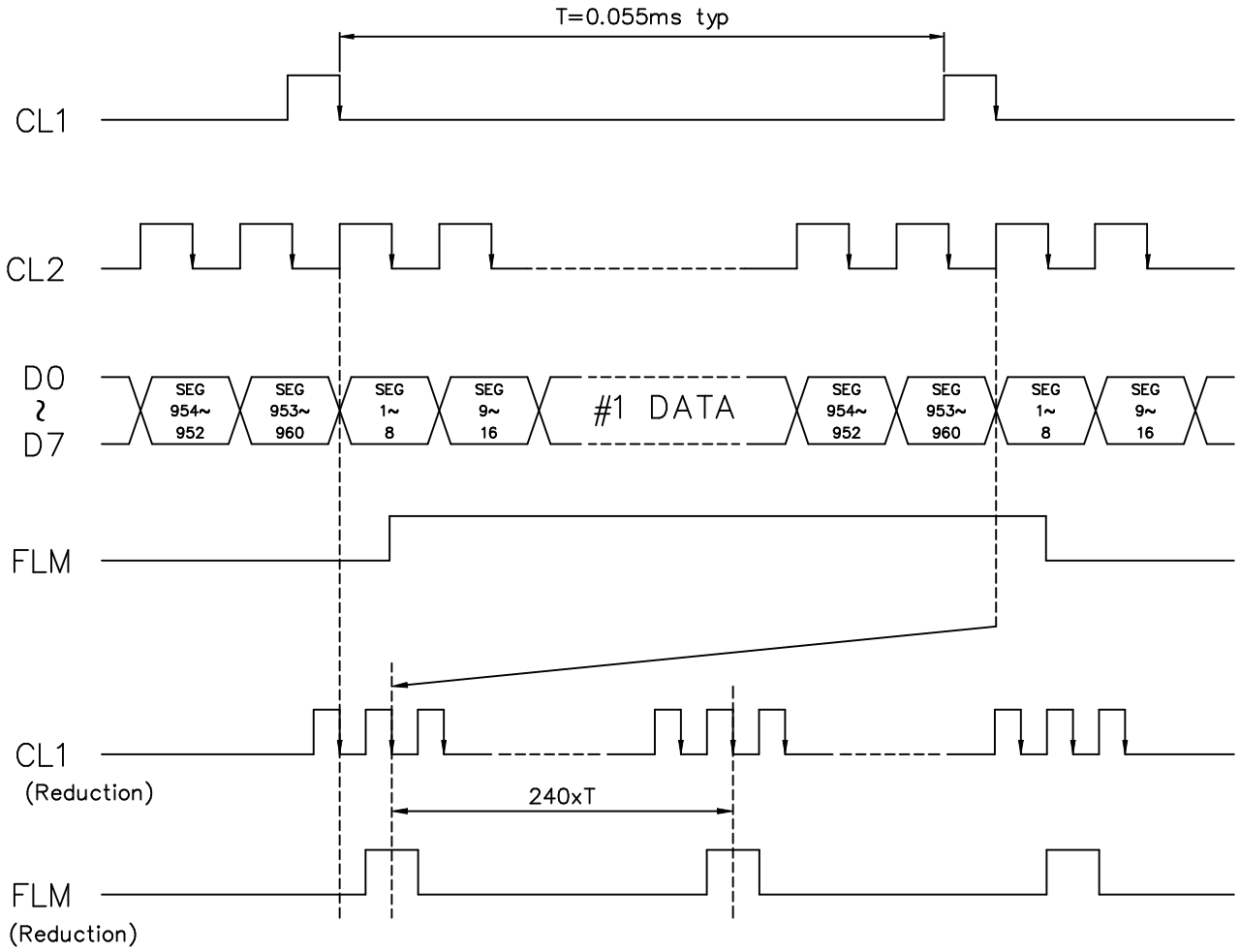
8-1 INTERFACE TIMING

VDD=3.3V ± 10%

Parameter	SYMBOL	MIN.	MAX.	UNIT
CLOCK CYCLE TIME	t_{CYC}	66	–	ns
CL2 HIGH LEVEL WIDTH	t_{CWH2}	23	–	ns
CL2 LOW LEVEL WIDTH	t_{CWL2}	23	–	ns
CL1 HIGH LEVEL WIDTH	t_{CWH1}	30	–	ns
CL2 SETUP TIME	t_{SCL}	30	–	ns
CL2 HOLD TIME	t_{HCL}	30	–	ns
CL2 – CL1 RISE TIME	t_{LD}	10	–	ns
CL1 – CL2 FALL TIME	t	30	–	ns
CLOCK RISE / FALL TIME	t_{ct}	5	–	ns
DATA SETUP TIME	t_{DS}	10	–	ns
DATA HOLD TIME	t_{DH}	25	–	ns
FLM SETUP TIME	t_{FLS}	30	–	ns
DATA HOLD TIME	t_{FLH}	50	–	ns

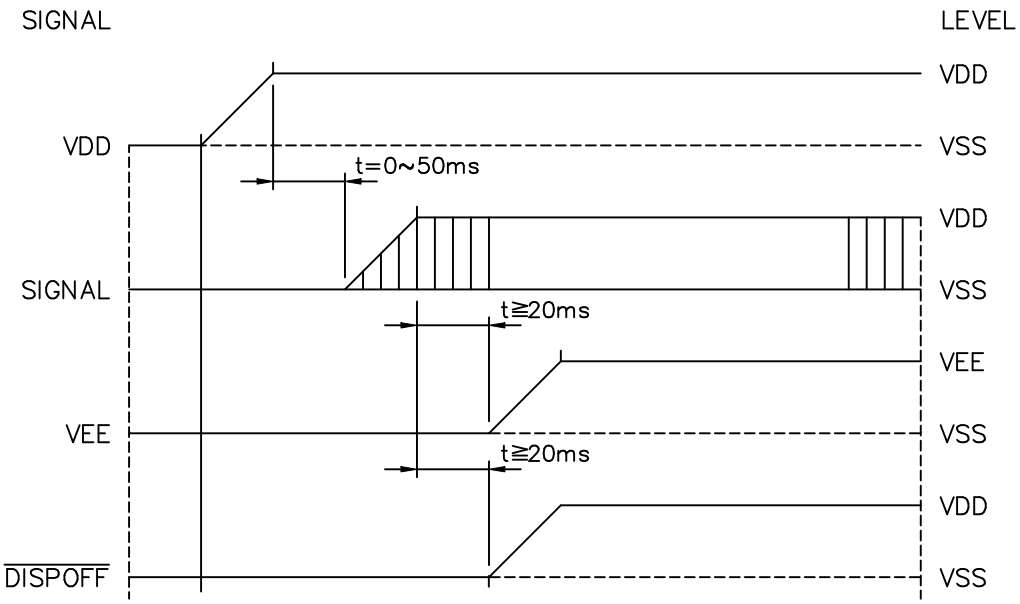


8-2 TIMING CHART OF INPUT SIGNAL

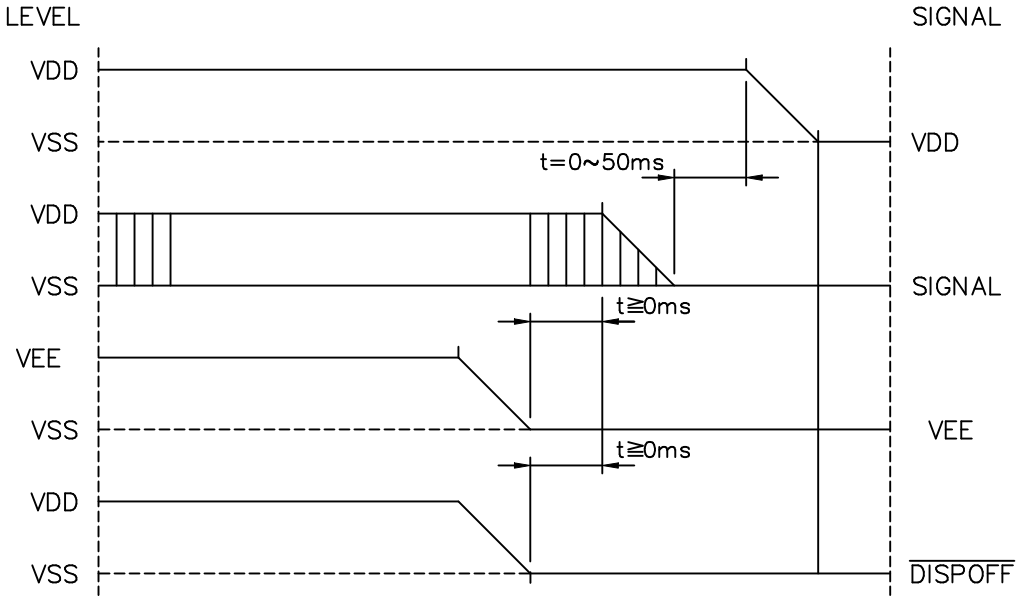


8-3 POWER ON/OFF TIMING

ON SEQUENCE

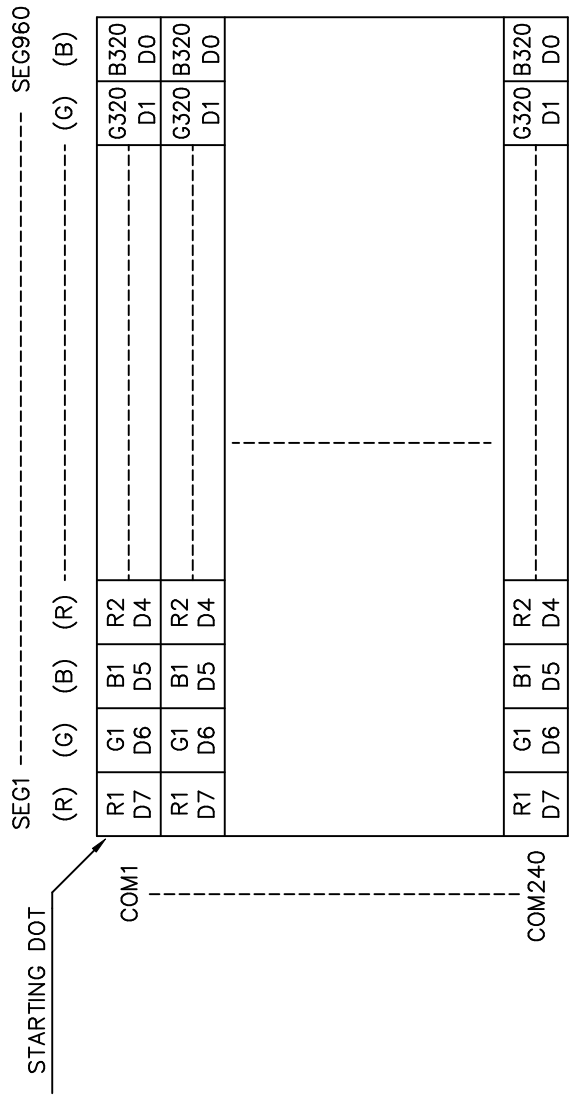


OFF SEQUENCE



Please maintain the above sequence when turning on and off the power supply of the module. If $\overline{\text{DISPOFF}}$ is supplied to the module while internal alternate signal for LCD driving(M) is unstable, DC component will be supplied to the LCD panel. This may cause damage the LCD module.

8-4 DISPLAY PATTERN



D0~D7 are 8 bits transmitted data, where D0 is LSB and D7 is MSB.

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

Inspection Provision

1.Purpose

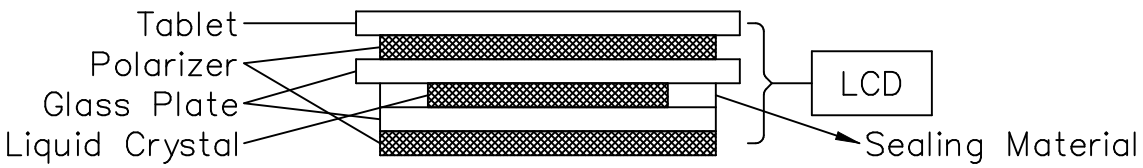
The NAN YA inspection provision provides outgoing inspection provision and its expected quality level based on our outgoing inspection of NAN YA LCD produces.

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

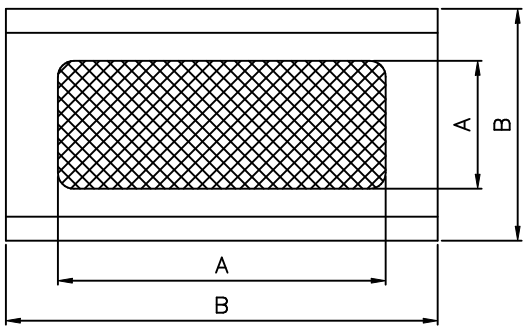
	Item		AQL(%)	Remarks
Major Defect	Dots	Opens Shorts Erroneous operation	0.4	faults which substantially lower the practicality and the initial purpose difficult to achieve.
	Solder appearance	Shorts Loose		
	Cracks	Display surface cracks		
	Tablet contact resistance			
	Tablet input load			

	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.	CCFL backlight turn on/off	Within Specified value

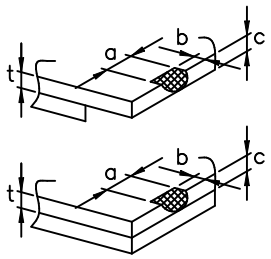
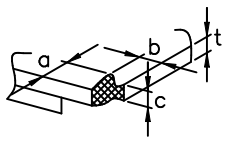
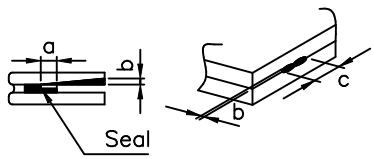
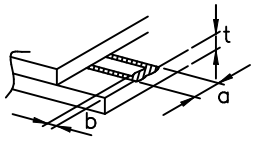
5-2 External Appearance Defect

<table>
<tr><th>NO.</th><th>Item</th><th>Criterion</th></tr>
<tr><td>1.</td><td>Black spots, foreign matter, and white spots (Including light leakage due to pinholes of polarizing plates, etc.)</td><td>
(1)-1-Spots(At non lighting condition)
<table>
<tr><th>Average Diameter(mm): D</th><th>Number of pieces permitted</th><th>Minimum Space</th></tr>
<tr><td>D≦0.2
0.2<D≦0.3
0.3<D≦0.4
0.4<D</td><td>Ignore
2
0
0</td><td>–
30mm</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-Spots(At lighting condition)
<table>
<tr><th>Average Diameter(mm): D</th><th>Number of pieces permitted</th><th>Minimum Space</th></tr>
<tr><td>D≦0.15
0.15<D≦0.3
0.3<D</td><td>Ignore
2
0</td><td>–
30mm</td></tr>
</table>
Number of total pieces is set to within 5 pieces.

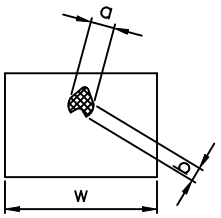
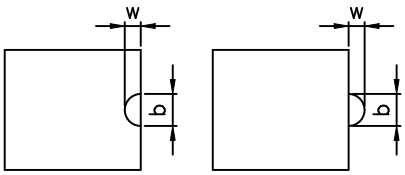
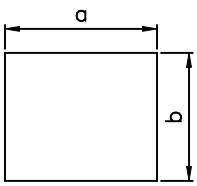
Note that when there are 2 pieces or more, they are not to be concentrated.
Set as: Average diameter = (Long diameter + Short diameter)/2
</td></tr>
</table>

<table>
<tr><td>1.</td><td>Black spots, foreign matter, and white spots (Including light leakage due to pinholes of polarizing plates, etc.)</td><td>(1)-1 Spots(At non lighting condition)
<table><tr><th>Width(mm): W</th><th>Length(mm): L</th><th>Number of pieces permitted</th></tr><tr><td>W≦0.03</td><td>Ignore</td><td>Ignore</td></tr><tr><td>0.03<W≦0.08</td><td>L≦4</td><td>2</td></tr><tr><td>0.08<W≦0.1</td><td>L≦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 Spots(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≦0.03</td><td>Ignore</td><td>Ignore</td></tr><tr><td>0.03<W≦0.08</td><td>L≦3</td><td>2</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.</td></tr>
<tr><td>2.</td><td>Scratches(Glass, reflection plates, and polarizing plates)</td><td>In accordance with black spots.
(At non lighting condition)</td></tr>
<tr><td>3.</td><td>Color irregular</td><td>Not remarkable color irregular.</td></tr>
</table>

<table>
<tr><td>4.</td><td>Air bubbles polarizing plates, and reflection plates</td><td colspan="2">
<table>
<tr><th>Average Diameter (mm): D</th><th>Number of pieces permitted</th></tr>
<tr><td>D≦0.3</td><td>Ignore</td></tr>
<tr><td>0.3<D</td><td>0</td></tr>
</table>
Average diameter = (Long diameter + Short diameter)/2
Note that when there are 4 pieces or more, they are not to be concentrated.
</td></tr>
<tr><td rowspan="5">5.</td><td rowspan="5">Cracks</td><td>(1)General crack
 
</td><td>a≦5
b≦2
c≦t
Where, a and b are ignored when less that or equal 0.5. The numbers of pieces are set at up to 5 pieces.</td></tr>
<tr><td>(2)Corner crack
 
</td><td>a≦2.5
b≦2.5
c≦t
a+b≦4</td></tr>
<tr><td>(3)Seal portion crack
 
</td><td>a≦The seal widthx1/3
b≦tx2/3
c≦5
The numbers of pieces are set at up to 5 pieces.</td></tr>
<tr><td>(4)ITO Pin crack
 
</td><td>a≦5
b≦1/3 pin length
c≦t</td></tr>
<tr><td>(5)Progressive cracks</td><td>All taken to be unacceptable.</td></tr>
</table>

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	 Dot display a and b are each ≦0.2mm 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 ≦0.2mm The overall total is taken to be with in 10 units.
3.	Thick and thin display	 Taken to be within±1.5% of display character width(a) and height(b).

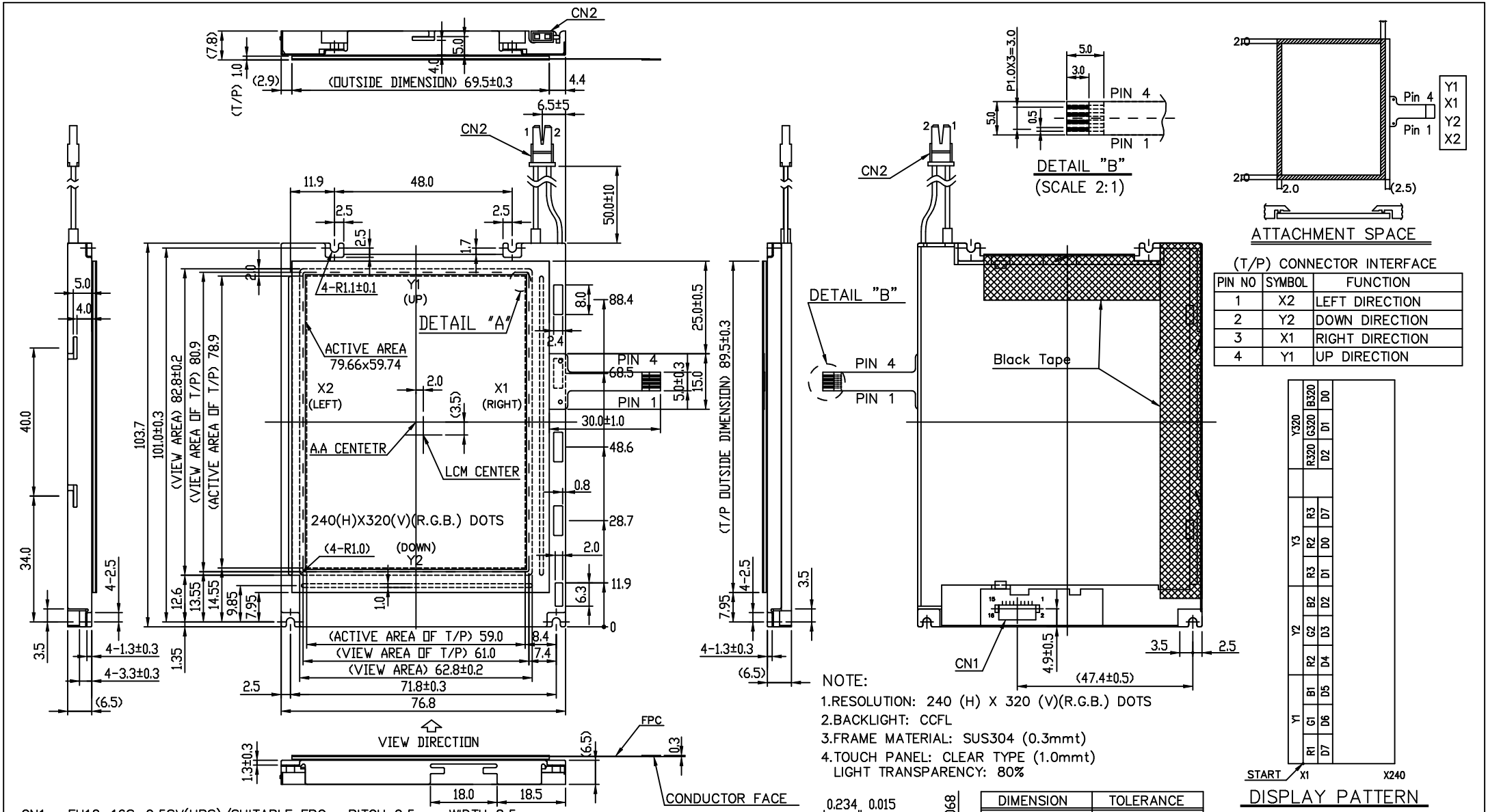
(2) NOTE:

- 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°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.



(T/P) CONNECTOR INTERFACE

PIN NO	SYMBOL	FUNCTION
1	X2	LEFT DIRECTION
2	Y2	DOWN DIRECTION
3	X1	RIGHT DIRECTION
4	Y1	UP DIRECTION

NOTE:
1. RESOLUTION: 240 (H) X 320 (V)(R.G.B.) DOTS
2. BACKLIGHT: CCFL
3. FRAME MATERIAL: SUS304 (0.3mmt)
4. TOUCH PANEL: CLEAR TYPE (1.0mmt)
   LIGHT TRANSPARENCY: 80%

CN1 : FH12-16S-0.5SV(HRS)/SUITABLE FPC : PITCH 0.5mm WIDTH 8.5mm

PIN NO	SYMBOL	FUNCTION
1	D7	DISPLAY DATA
2	D6	DISPLAY DATA
3	D5	DISPLAY DATA
4	D4	DISPLAY DATA
5	D3	DISPLAY DATA
6	D2	DISPLAY DATA
7	D1	DISPLAY DATA
8	D0	DISPLAY DATA
9	Vss	GROUND
10	VDD	LOGIC SUPPLY VOLTAGE

PIN NO	SYMBOL	FUNCTION
11	$\overline{DISPOFF}$	DISPLAY CONTROL L: OFF H: ON
12	CL2	DATA INPUT CLOCK
13	CL1	INPUT DATA LATCH SIGNAL
14	FLM	SCAN START-UP SIGNAL
15	Vss	GROUND
16	VEE	POWER SUPPLY FOR LCD

SUITABLE CONNECTOR : SM02B-BHSS-1-TB (JST)
CN2 : BHSR-02VS-1(JST) (PIN1-HOT;PIN2-GND)

1	H.V	POWER SUPPLY VOLTAGE FOR CCFL
2	GND	CCFL GND

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)

REV. NO.	DESCRIPTION	DATE	DESIGN	CHECK	APPROVE
5					
4					
3					
2					
1					

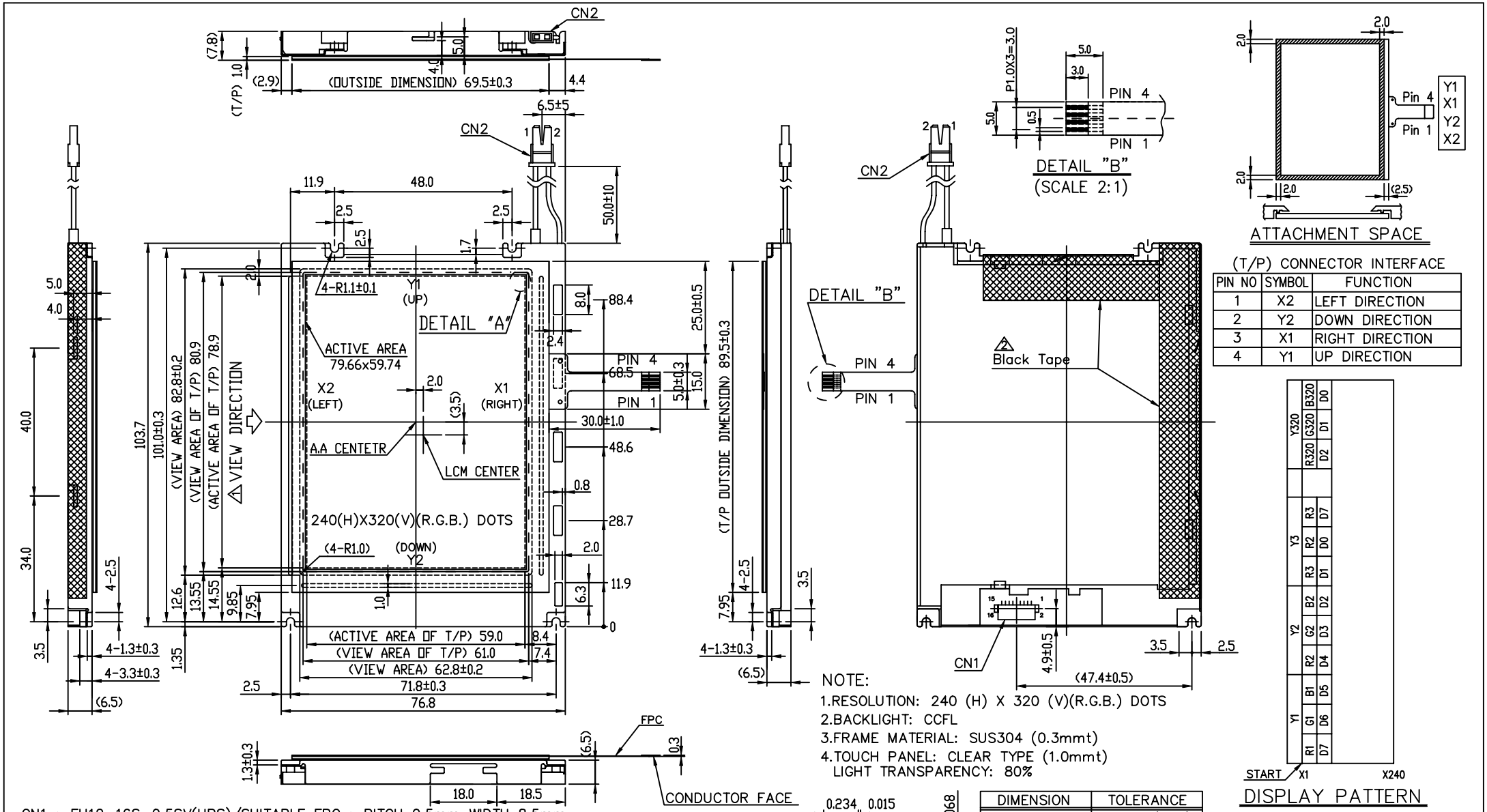
南亞塑膠工業股份有限公司
NAN YA PLASTICS CORPORATION

製品圖

LCBA7T211_14

	NAME	DATE	THIRD ANGLE P.
APPROVE			
CHECK			
DESIGN	Y. C. LIU	92.11.07	SCALE: 1/1
DRAWN	Y. C. LIU	92.11.07	UNIT: mm

DWG NO. M211AD14A ⑪ A0



(T/P) CONNECTOR INTERFACE

PIN NO	SYMBOL	FUNCTION
1	X2	LEFT DIRECTION
2	Y2	DOWN DIRECTION
3	X1	RIGHT DIRECTION
4	Y1	UP DIRECTION

NOTE:
1. RESOLUTION: 240 (H) X 320 (V)(R.G.B.) DOTS
2. BACKLIGHT: CCFL
3. FRAME MATERIAL: SUS304 (0.3mmt)
4. TOUCH PANEL: CLEAR TYPE (1.0mmt)
   LIGHT TRANSPARENCY: 80%

DISPLAY PATTERN

CN1 : FH12-16S-0.5SV(HRS)/SUITABLE FPC : PITCH 0.5mm WIDTH 8.5mm

PIN NO	SYMBOL	FUNCTION	PIN NO	SYMBOL	FUNCTION
1	D7	DISPLAY DATA	11	$\overline{DISPOFF}$	DISPLAY CONTROL L:OFF H:ON
2	D6	DISPLAY DATA	12	CL2	DATA INPUT CLOCK
3	D5	DISPLAY DATA	13	CL1	INPUT DATA LATCH SIGNAL
4	D4	DISPLAY DATA	14	FLM	SCAN START-UP SIGNAL
5	D3	DISPLAY DATA	15	Vss	GROUND
6	D2	DISPLAY DATA	16	VEE	POWER SUPPLY FOR LCD
7	D1	DISPLAY DATA	SUITABLE CONNECTOR : SM02B-BHSS-1-TB (JST)		
8	D0	DISPLAY DATA	CN2 : BHSR-02VS-1(JST) (PIN1-HOT;PIN2-GND)		
9	Vss	GROUND	1	H.V	POWER SUPPLY VOLTAGE FOR CCFL
10	VDD	LOGIC SUPPLY VOLTAGE	2	GND	CCFL GND

DETAIL "A"
(SCALE 40:1)

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)

REV. NO.	DESCRIPTION	DATE	DESIGN	CHECK	APPROVE
5					
4					
3					
2	ADDED BLACK TAPE	95.5.17	C.B.Lan		
1	MODIFIED VIEWING DIRECTION	91.8.9	C.B.Lan	Y.C.Liu	Tony Chou

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

製品圖

LCBA7T211W14

	NAME	DATE	THIRD ANGLE P.
APPROVE	TONY CHOU	91.07.12	
CHECK	Y. C. LIU	91.07.11	
DESIGN	C. B. LAN	91.07.10	SCALE: 1/1
DRAWN	C. B. LAN	91.07.10	UNIT: mm

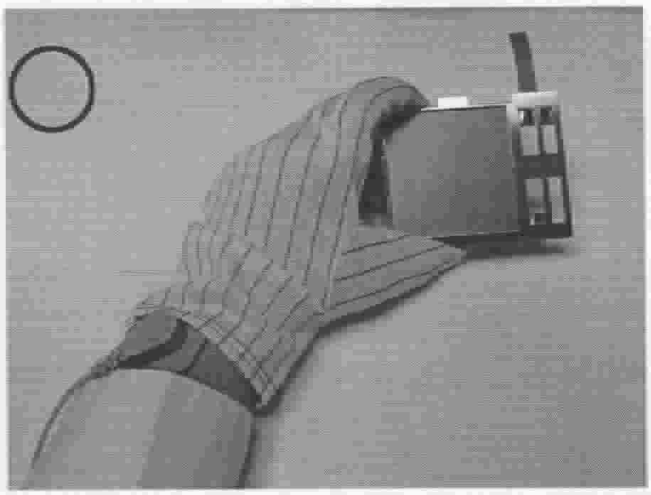
DWG NO. M211-D14A ① ②

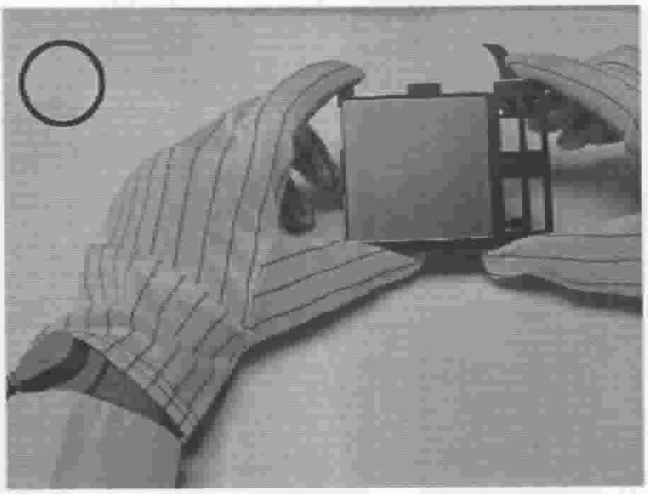
THE NOTES OF LCM USING

LCM is easy to damage.

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

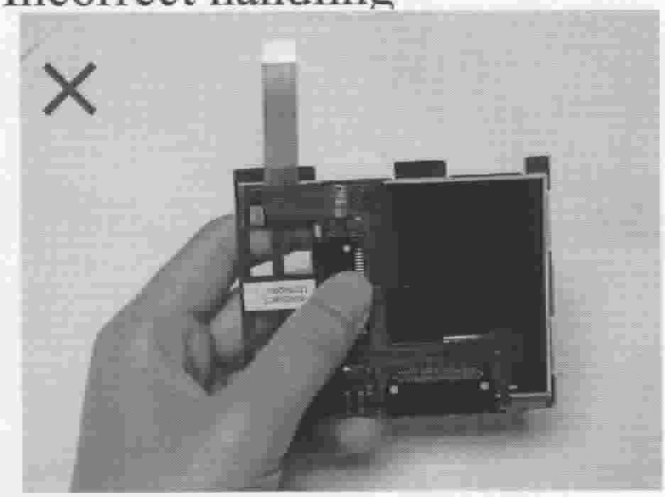
Correct handling



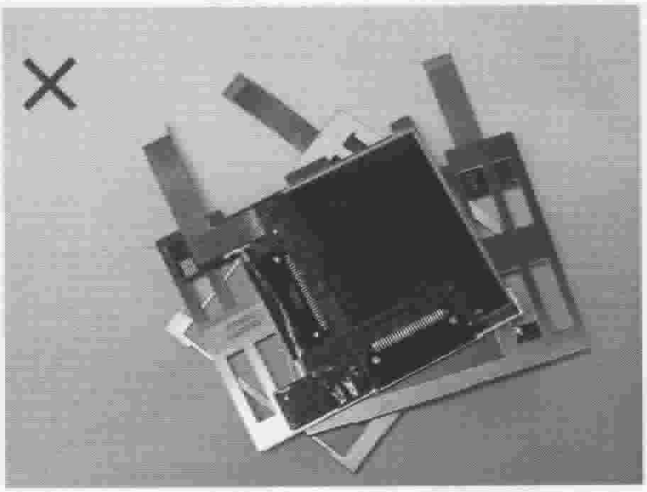


As above picture, please handle with glove by LCM edges and full EOS/ESD protection.

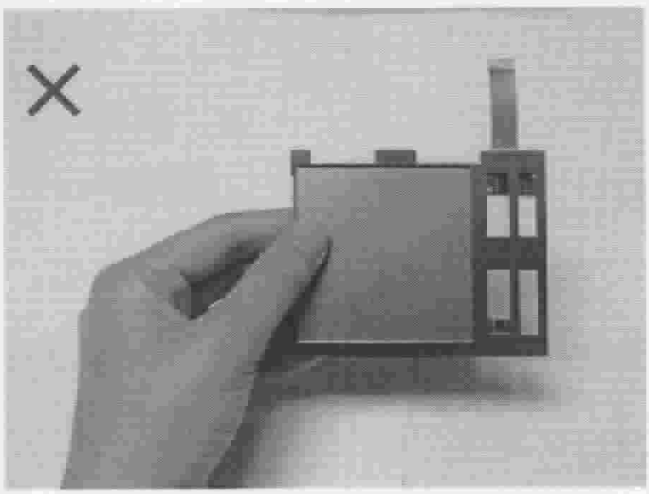
Incorrect handling



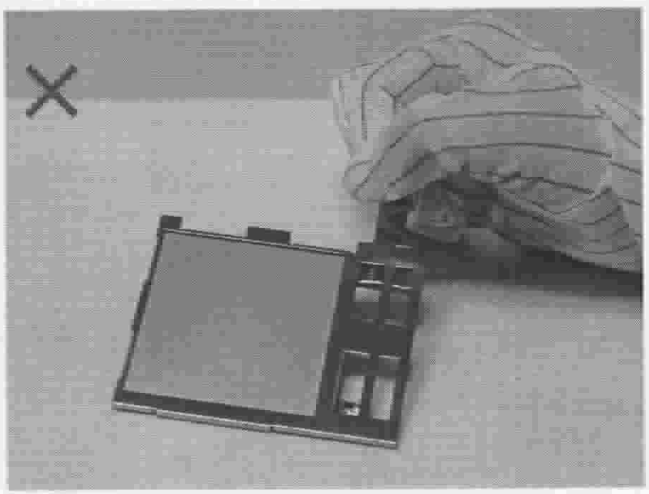
Please don't touch IC directly.



Please don't put one on another LCM.



Please don't hold the surface of LCM.

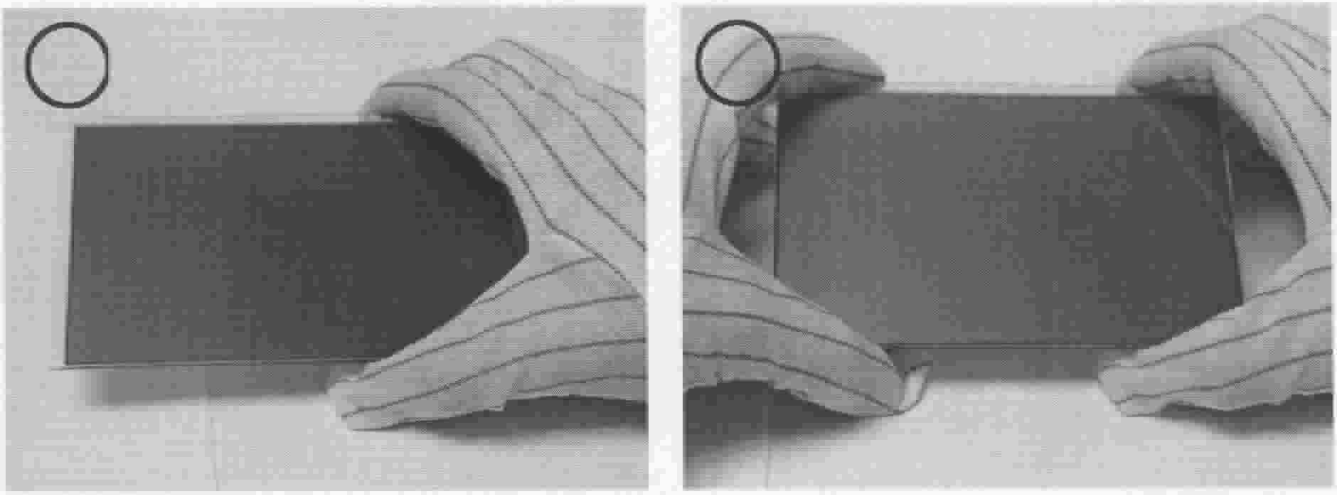


Please don't stretch interface of output.

THE NOTES OF LCD USING

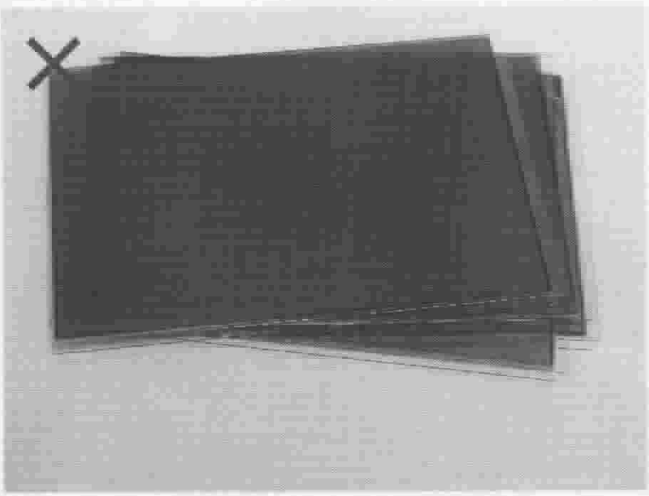
LCD is easy damage.
Please follow notes as bellows, and be careful of handling!

Correct handling

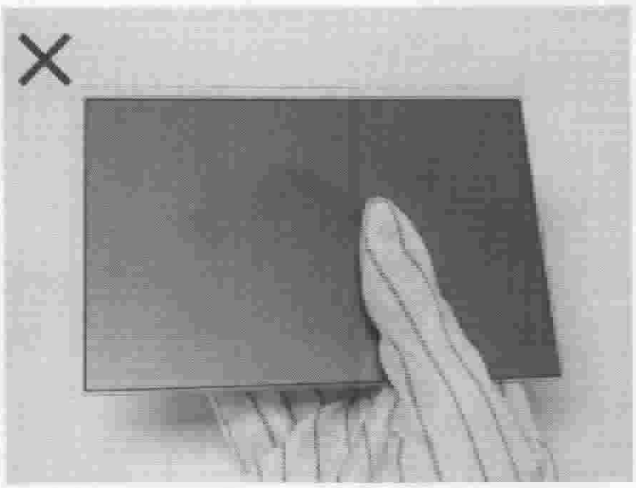


As above picture, please handle with glove by LCD edges and full EOS/ESD protection.

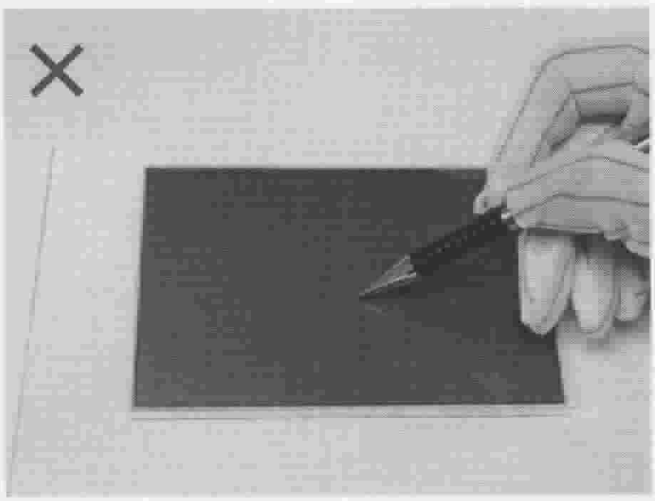
Incorrect handling



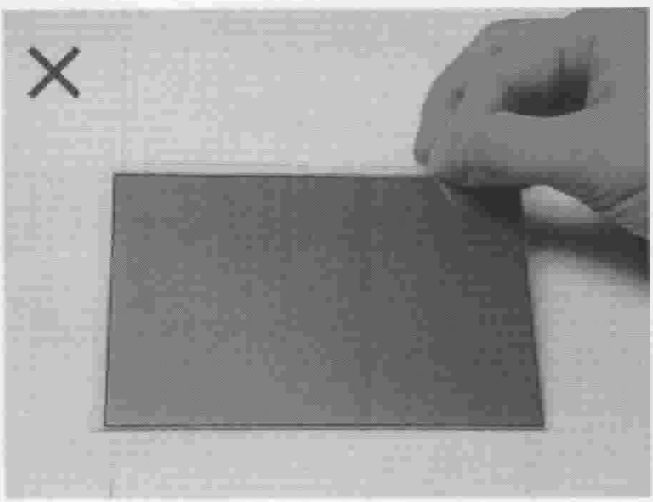
Please don't put one on another LCD.



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.