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NAN YA PLASTICS CORPORATION

SPECIFICATION OF
LCD MODULE
PRODUCT NO.: LCBHB_B61_

SPEC. NO.: LMB61-0-△3

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 : NOV.20, 2001

DESIGN MANAGER	DESIGN CHECK	DESIGNER
		J.Y. Lin

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RECORDS OF REVISION

SPEC. NO : LMB61-0

DATE	REVISED NO.	REF. PAGE	SUMMARY	DESIGN	CHECK
05.25.01'	0	1~25/25	First Issue(QVGA Color Standard Product)	J.Y.Lin	Louis Lee
07.10.01'	1	3/25	Added Logic Power Supply Voltage 3.0v Electrical Characteristics	J.Y.Lin	Louis Lee
		5/25	Added Polerizer Z,V Mode Optical Characteristics		
		11/25	Added Logic Power Supply Voltage 3.0v		
		12/25	Added Logic Power Supply Voltage 3.0v Timing Characteristics		
09.19.01'	2	5/25	Modified Optical Characteristics	J.Y.Lin	Louis Lee
11.20.01'	3	1/25	Added "C" Mode Polarizer Issue	J.Y.Lin	
		5/25	Added Polerizer with Anti-glare Mode Optical Characteristics		

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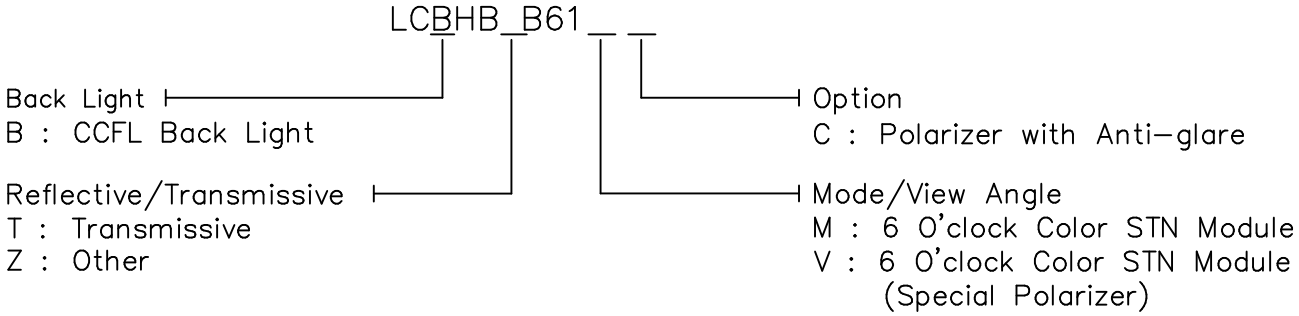
NAN YA PLASTICS CORP. ELEC. MATERIALS DIV. LCD DEPARTMENT	SPECIFICATION	SPEC. NO. : LMB61-0 DATE : May. 25, 2001 SHEET NO. : 1/25

1. MECHANICAL DATA

(1) Product No.		LCBHB_B61_
(2) Module Size		168.0 (W)mm x 111.0 (H)mm x 7.4(D)mm
(3) Dot Size		0.09 (W)mm x 0.33 (H)mm
(4) Dot Pitch		0.12 (W)mm x 0.36 (H)mm
(5) Number of Dots		320 xRGB(W) x 240 (H)Dots
(6) Duty		1/240
(7) LCD Display Mode	FSTN:	Color STN Module
	REAR POLARIZER:	Color Transmissive Type
(8) Viewing Direction		6 O'clock
(9) Backlight		CCFL
(10) Controller		Excluded
(11) DC/DC Converter		Excluded
(12) Weight		280 g(approx.)

Note :



REV/DATE	R0/ 05.25.01'	R3/ 11.20.01'				BY J.Y. LIN

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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	VLCD−VSS	0	42.0	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	0	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 color will change slightly depending on ambient temperature. That phenomenon is reversible.

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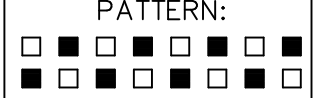
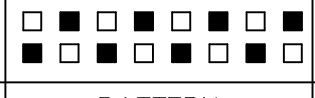
3. ELECTRICAL CHARACTERISTICS

3-1. CHARACTERISTICS OF LCM

ITEM		SYMBOL	CONDITION		MIN.	TYP.	MAX.	UNIT
Logic Circuit Power Supply		VDD-VSS	Ta= 25°C		4.5	5.0	5.5	V
Logic Circuit Power Supply		VDD-VSS	Ta= 25°C		2.7	3.0	3.3	V
Input Voltage		VIH	H level		0.8VDD	-	VDD	V
		VIL	L level		0	-	0.2VDD	
Recommended LCD Driving Voltage (Normal Temp. LCM)		VLCD-VSS	Duty=1/240 Bias=1/13 VDD=5.0V	0°C	23.2	23.6	24.0	V
				25°C	22.2	22.6	23.0	
				50°C	21.0	21.4	21.8	
Recommended LCD Driving Voltage (Normal Temp. LCM)		VLCD-VSS	Duty=1/240 Bias=1/13 VDD=3.0V	0°C	23.2	23.6	24.0	V
				25°C	22.2	22.6	23.0	
				50°C	21.0	21.4	21.8	
Supply Current for Logic		IDD	VDD-VSS = 5.0V VLCD-VSS = 22.6V Ta= 25°C PATTERN: 		-	1.0	6.0	mA
Supply Current for LCD		ILCD			-	11.0	15.0	
Supply Current for Logic		IDD	VDD-VSS = 3.0V VLCD-VSS = 22.6V Ta= 25°C PATTERN: 		-	2.0	6.0	mA
Supply Current for LCD		ILCD			-	9.5	15.0	
LCM	Surface Luminance	L	PATTERN: (Dots All On of White Color)		-	67.5	-	cd/m²
			PATTERN: (Dots All Off)		-	2.7	-	
Recommended Frame Frequency for Optimum Coctrast		FLM	-		115	120	125	Hz

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3-2.ELECTRICAL CHARACTERISTICS OF BACKLIGHT

Used lamp : Rating

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	REMARK
Lamp Voltage	V_L	–	320	–	Vrms	Ta =25°C
Lamp current	I_L	4	5	6	mArms	(*1) Ta =25°C
Lamp power consumption	P_L	–	1.6	–	W	(*2) Ta =25°C
Lamp frequcncy	F_L	20	35	50	KHz	Ta =25°C
Starting voltage	Vs	–	455	–	Vrms	Ta =0°C
		–	350	–	Vrms	Ta =25°C
Lamp life time	L_L	–	20000	–	hrs	I_L=5mArms,Ta=25°C

(*1) It is recommended that I_L be not more than 5.0 mArms so that heat radiation of CCFT backlight may least affect the display quality .

(*2) Power consumption excluded inverter loss .

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4. OPTICAL CHARACTERISTICS

4-1. Optical Char. of Normal Temp. Mode

AT Vop

ITEM / MODE		Cr(Contrast Ratio)						θ(Viewing Angle)		φ(Viewing Angle)	
		0℃		25℃		50℃		25℃		25℃	
		MIN.	TYP.	MIN.	TYP.	MIN.	TYP.	MIN.	TYP.	MIN.	TYP.
T	M	–	25	–	35	–	5	–	90	–	±53
T	MC	–	25	–	35	–	5	–	90	–	±53
Z	V	–	25	–	35	–	5	–	90	–	±65
NOTE		NOTE 6						NOTE 5			

note:

T: TRANSMISSIVE
Z: other
M: FOR 6 O'CLOCK STN MODULE
MC: FOR 6 O'CLOCK STN MODULE,POLARIZER with Anti-Glare
V: FOR 6 O'CLOCK STN MODULE(SPECIAL POLARIZER)

AT φ=0° θ=0°

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	NOTE
Response Time (rise)	Tr	0℃	–	550	750	ms	NOTE 2
		25℃	–	230	330		
		50℃	–	100	140		
Response Time (fall)	Tf	0℃	–	270	370	ms	NOTE 2
		25℃	–	80	110		
		50℃	–	60	85		

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4-2.Color of CIE Coordinate

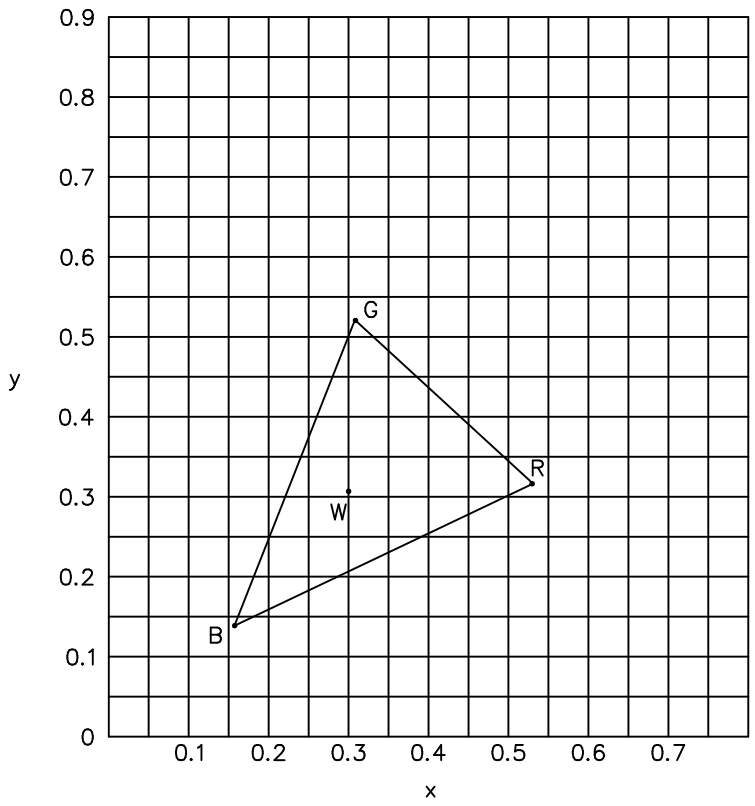
Ta = 25°C

ITEM		SYMBOL	CONDITION	VALUE	BRIGHTNESS (cd/m²)	NOTE
Color of CIE Coordinate	Red	X	$\phi=0°$, $\theta=0°$	0.531	21.0	Note※
		y		0.318		
	Green	X		0.305	50.0	
		y		0.521		
	Blue	X		0.163	18.0	
		y		0.139		
	White	X		0.302	75.0	
		y		0.311		

Tolerance : ±0.05

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

Fig.1



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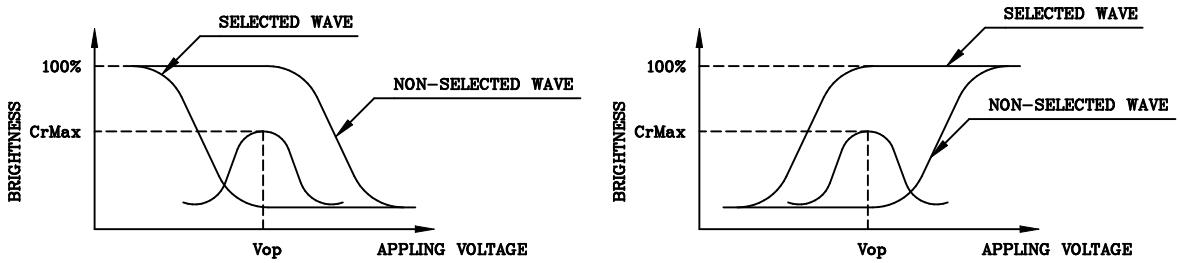
(NOTE 1)

Definition of Operation Voltage(Vop)



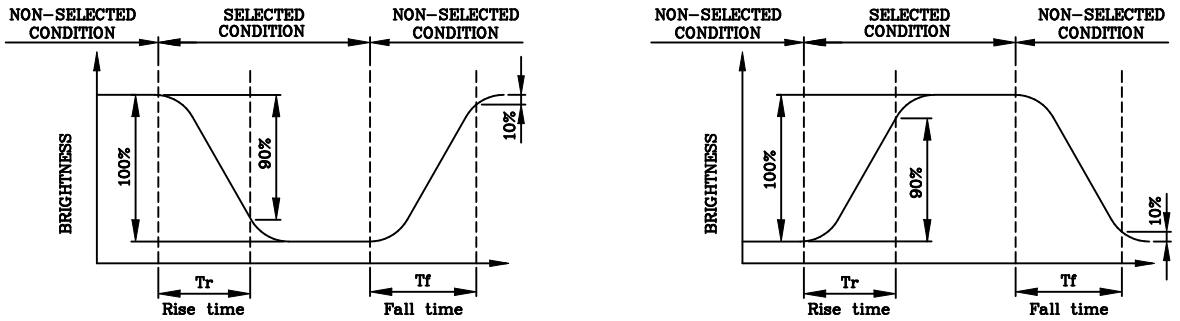
(positive type) (negative type)

*Conditions

Viewing Angle : 0
Frame Frequency : 120Hz
Appling Waveform : I/N duty 1/a bias

(NOTE 2)

Definition of Response Time(Tr,Tf)



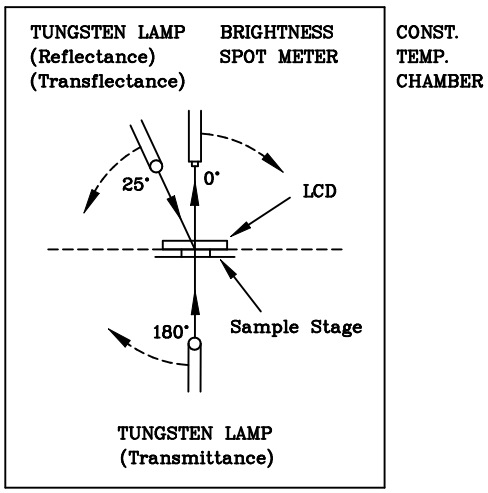
(positive type) (negative type)

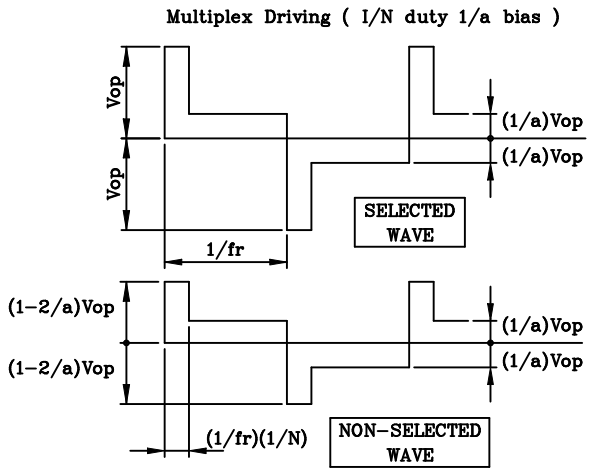
*Conditions

Operating Voltage : Vop
Viewing Angle (θ,ϕ) : (0,0)
Frame Frequency : 120Hz
Appling Waveform : I/N duty 1/a bias

(NOTE 3)

Description of Measuring Equipment and Driving Waveforms





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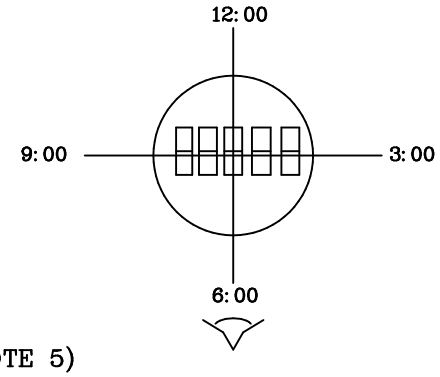
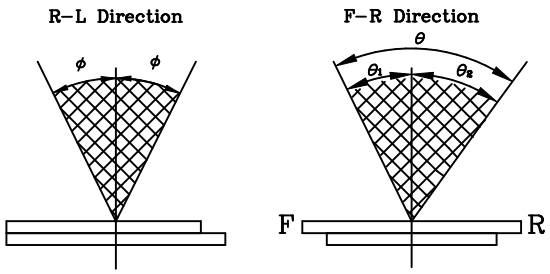
(NOTE 4)

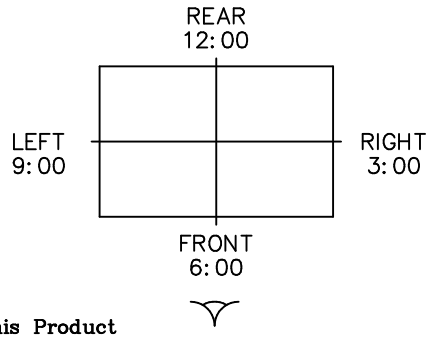
Definition of Viewing Direction



(NOTE 5)

Definition of Viewing Angle





*For This Product

The Viewing Direction Is 6 O'clock

So $\theta 1 > \theta 2$

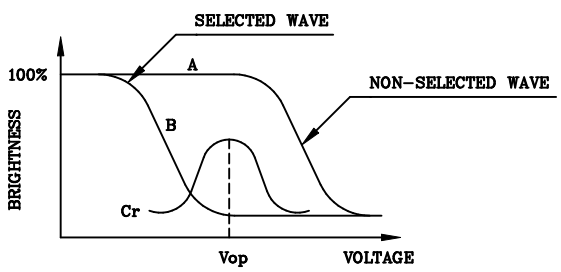
$$\theta = \theta_1 + \theta_2$$

*Conditions

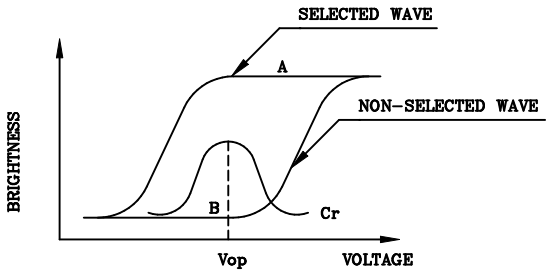
Operating Voltage : Vop
Frame Frequency : 120Hz
Appling Waveform : 1/N duty 1/a bias
Contrast Ratio : larger than 2

(NOTE 6)

Definition of Contrast Ratio (Cr)



(positive type)



(negative type)

Contrast Ratio : Cr=A/B

*Conditions

Viewing Angle : 0
Frame Frequency : 120Hz
Appling Waveform : 1/N duty 1/a bias

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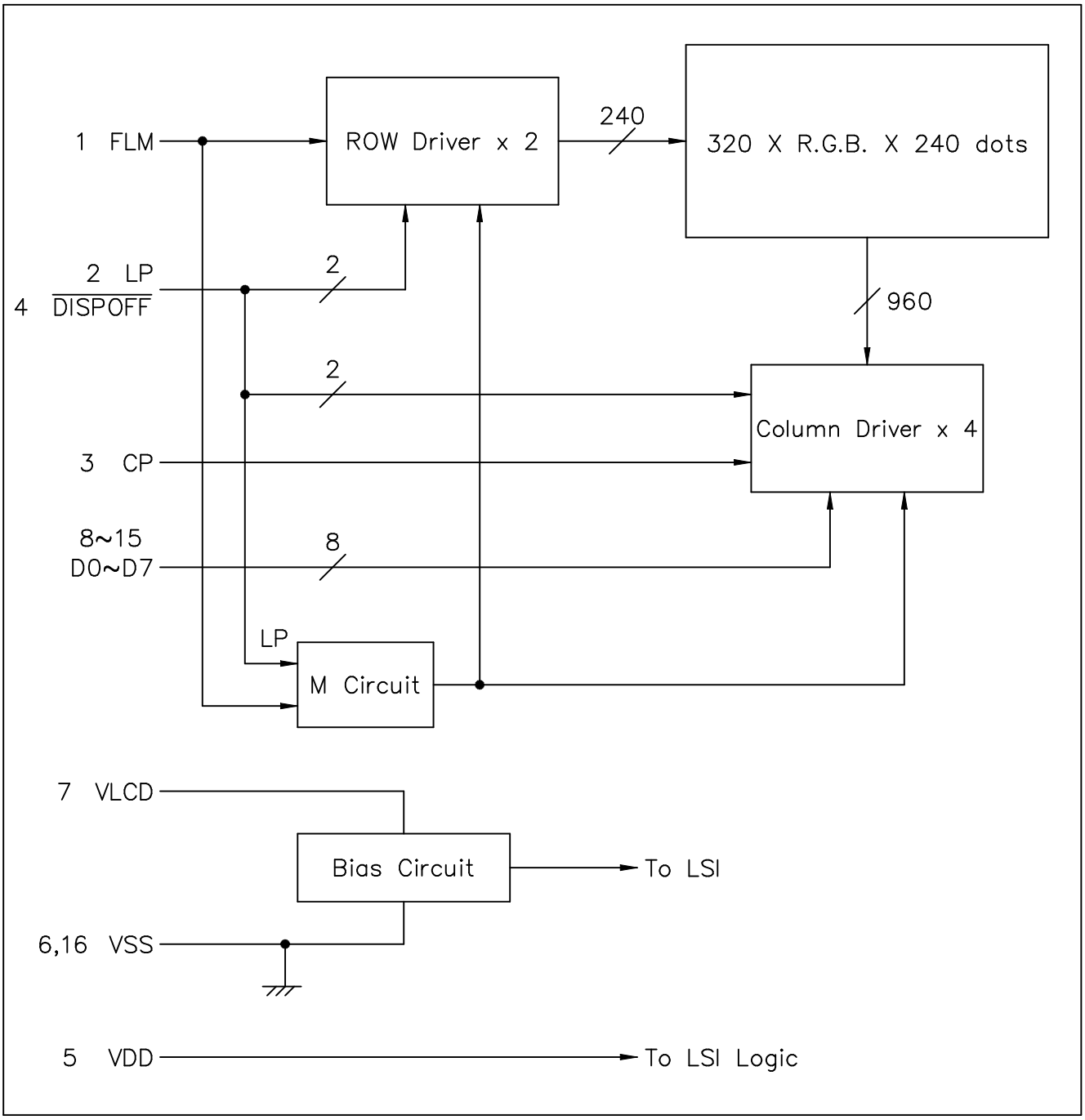
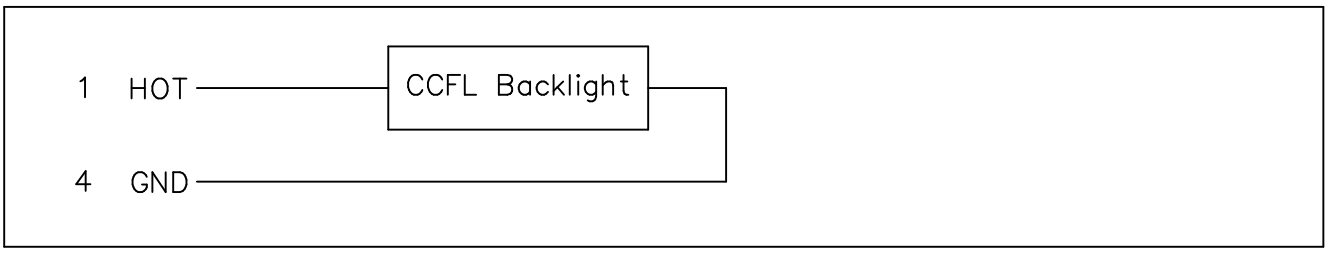
5. BLOCK DIAGRAM

LCD



CCFL



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6. INTERNAL PIN CONNECTION

LCD

Pin No.	Symbol	Level	Function
1	FLM	H/L	First Line Marker
2	LP	H→L	Data Latch Signal
3	CP	H→L	Clock Signal for Shifting Data
4	$\overline{\text{DISPOFF}}$	H/L	Display Control Signal, H :Display on L :Display off
5	VDD	–	Power Supply for Logic
6	VSS	–	Power Supply (0V,GND)
7	VLCD	–	Power Supply for LCD Drive
8	D0	H/L	Display Data
9	D1	H/L	Display Data
10	D2	H/L	Display Data
11	D3	H/L	Display Data
12	D4	H/L	Display Data
13	D5	H/L	Display Data
14	D6	H/L	Display Data
15	D7	H/L	Display Data
16	VSS	–	Power Supply (0V,GND)

CCFL

Pin No.	Symbol	Level	Function
1	HOT	–	Power Supply for CCFL(HOT)
2	NC	–	Non-connection
3	NC	–	Non-connection
4	GND	–	Power Supply for CCFL(GND)

LCD INTERFACE CABLE :
FFC,N16,Pitch 1.0 mm (Thickness = 0.3 mm)
CORRESPONDABLE LCD CONNECTOR :
MOLEX 52207-1690 or COMPATIBLE
CCFL CONNECTOR :
M63M83-04 (MITSUMI)
CORRESPONDABLE CCFL CONNECTOR :
M60-04-30-134P or M60-04-30-114P or M61M73-04 (MITSUMI)

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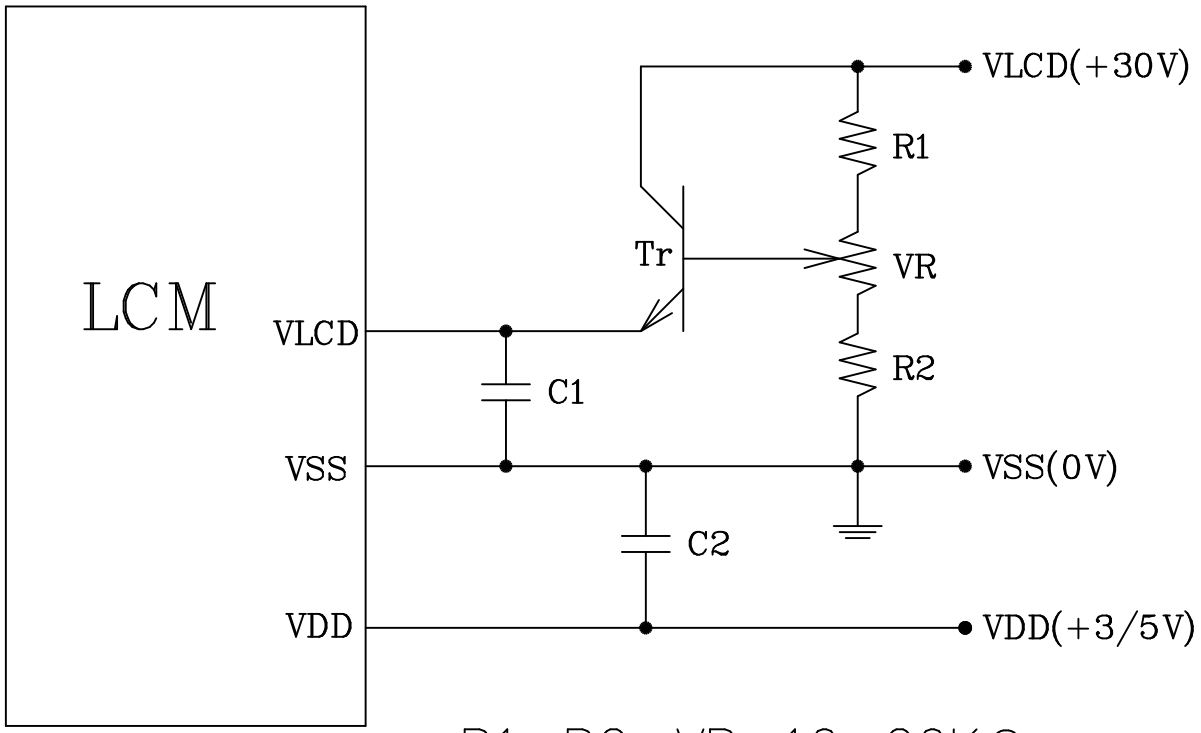
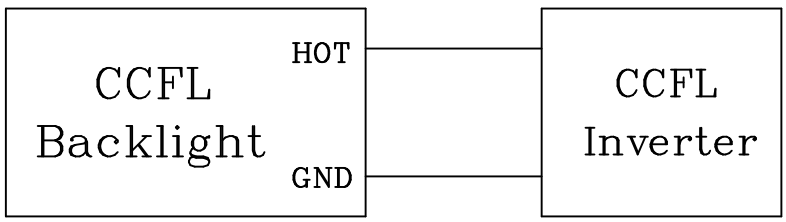
7. POWER SUPPLY



R1+R2+VR=10~20KΩ
C1,C2=10μF



Recommended CCFL Inverter : TDK CXA-L10L
TDK CXA-M10L-L

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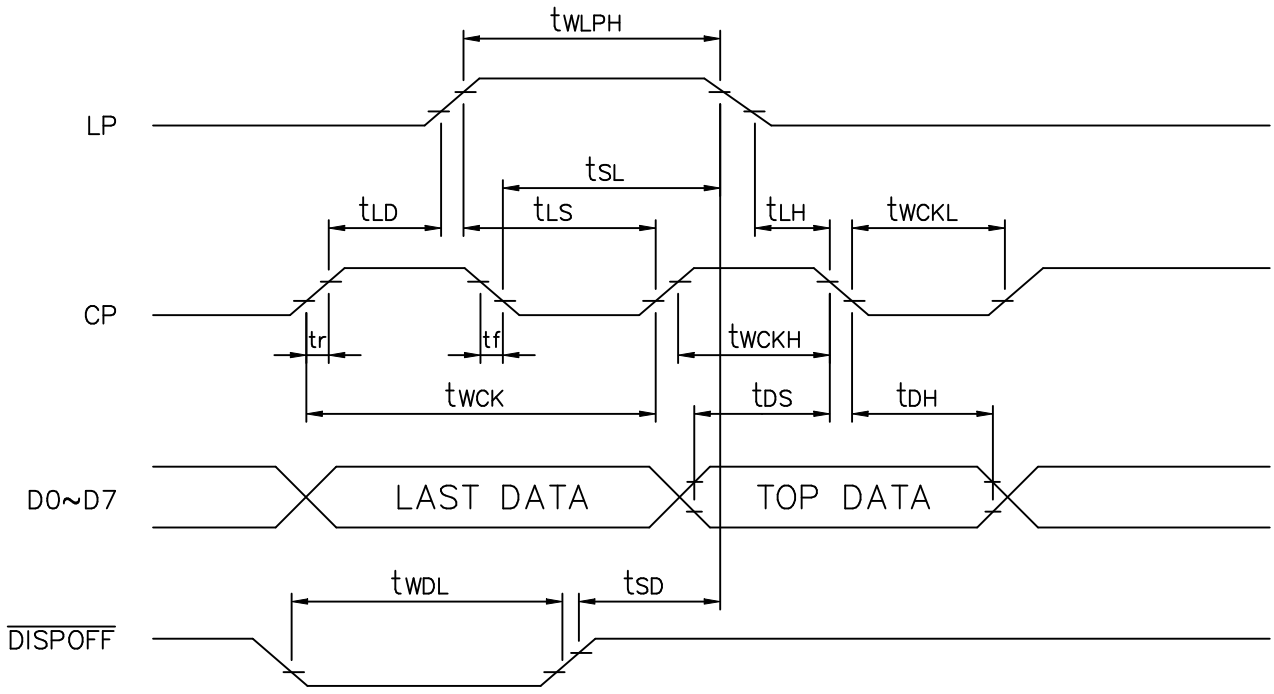
8. TIMING CHARACTERISTICS

8-1. INTERFACE TIMING

VDD=3.0/5.0V ± 10%

Parameter	SYMBOL	MIN.	MAX.	UNIT
CLOCK PULSE CYCLE TIME	t_{WCK}	66/40	–	ns
CLOCK PULSE HIGH LEVEL WIDTH	t_{WCKH}	23/12	–	ns
CLOCK PULSE LOW LEVEL WIDTH	t_{WCKL}	23/14	–	ns
LATCH PULSE HIGH LEVEL WIDTH	t_{WLPH}	30/15	–	ns
CP→LP RISE TIME	t_{LD}	10/5	–	ns
CP→LP FALL TIME	t_{SL}	30/25	–	ns
LP→CP RISE TIME	t_{LS}	30/25	–	ns
LP→CP FALL TIME	t_{LH}	30/25	–	ns
CLOCK PULSE RISE/FALL TIME	t_r , t_f	–	50	ns
DATA SETUP TIME	t_{DS}	10/5	–	ns
DATA HOLD TIME	t_{DH}	25/15	–	ns
$\overline{\text{DISPOFF}}$ LOW LEVEL WIDTH	t_{WDL}	1.2	–	μs
$\overline{\text{DISPOFF}}$ CANCELLATION TIME	t_{SD}	100	–	ns



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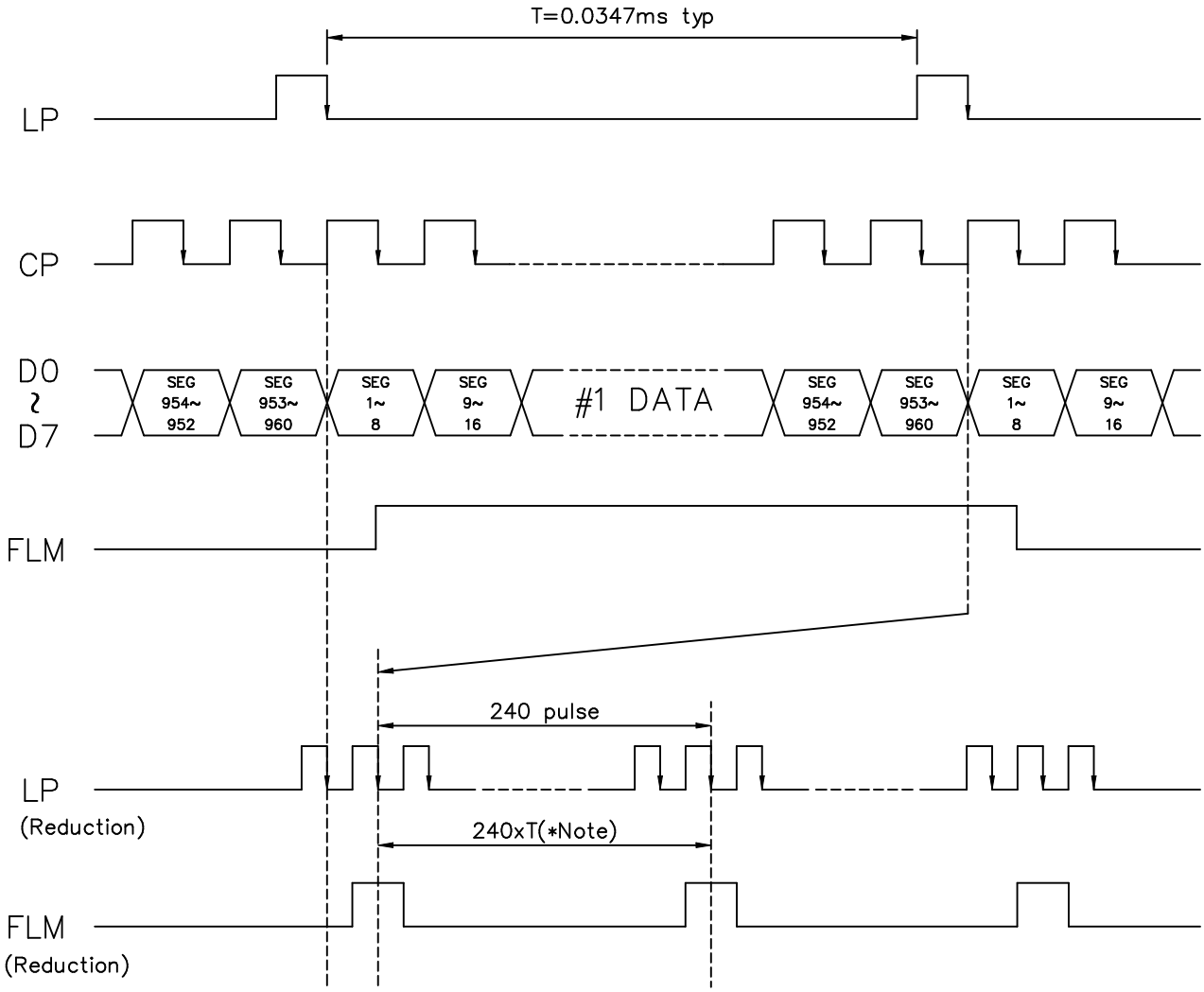
8-2. TIMING CHART OF INPUT SIGNAL



*Note :

If you have problem of display quality , you may modify the LP pulse to improve .

Method : 1.Increase one pulse of LP.
2.Check the display quality.
3.If display quality N.G. , redo iterm 1.
4.If you try many value (ex: 240~260) , you can't get the best quality . The display error may cause by others.

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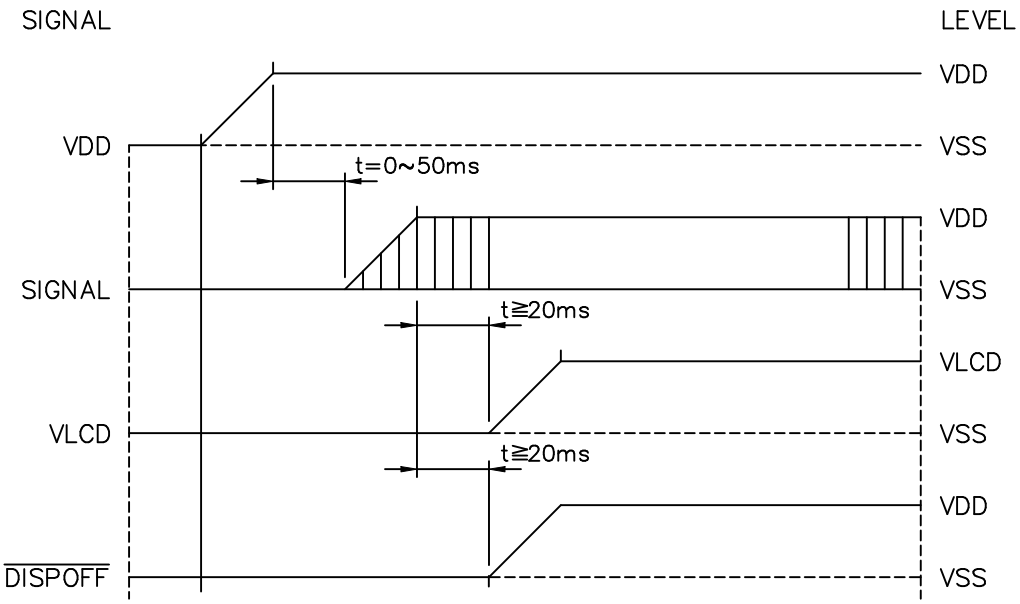
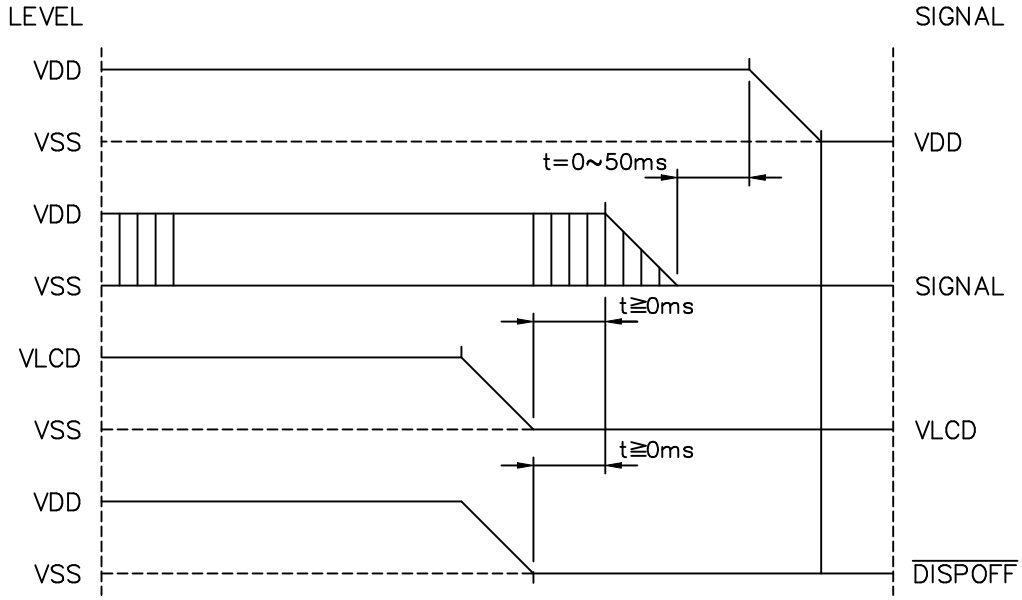
8-3.POWER ON/OFF TIMING

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 su-pplied to the LCD panel. This may cause damage the LCD module.

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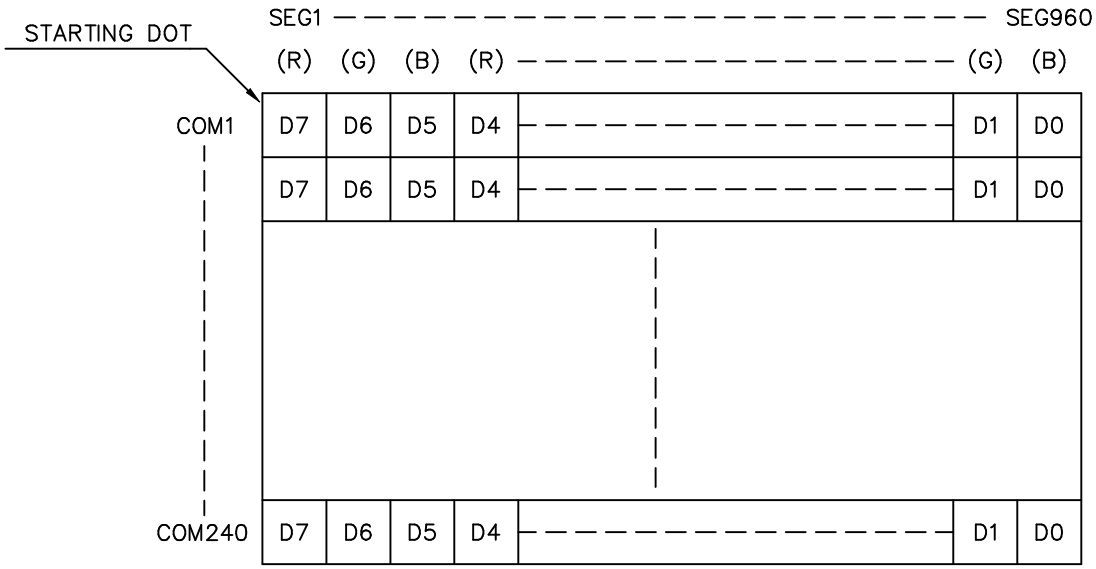
8-4.DISPLAY PATTERN



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

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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

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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		

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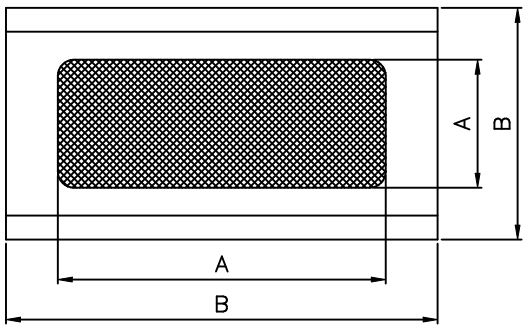
	Dimensions	External from Dimensions	0.4	
Minor Defect	Inside the glass	Black spots	0.65	faults which appear to pose almost no obstacle to the practicality, effective use, and operation.
	Polarizing plate	Scratches, foreign Matter, air bubbles, and peeling		
	Dots	Pinhole, deformation		
	Color tone	Color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

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*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

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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
<table>
<tr><th>Average Diameter(mm): D</th><th>Number of pieces permitted</th><th>Minimum Space</th></tr>
<tr><td>D≦0.2</td><td>Ignore</td><td>-</td></tr>
<tr><td>0.2<D≦0.3</td><td>5</td><td>10mm</td></tr>
<tr><td>0.3<D≦0.4</td><td>2</td><td>30mm</td></tr>
<tr><td>0.4<D</td><td>0</td><td></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≦0.3</td><td>Ignore</td></tr>
<tr><td>0.3<D≦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
</td></tr>
</table>

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<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
<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-Blurred 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>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.</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>

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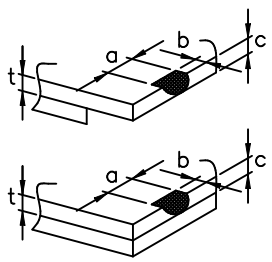
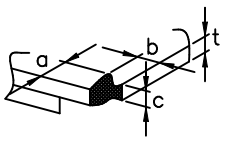
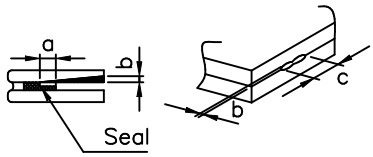
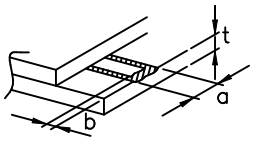
<table>
<tr><td>4.</td><td>Air bubbles polarizing plates, and reflection plates</td><td colspan="2">
<table>
<tr><th>Average Diameter (mm): D</th><th>Number of pieces permitted</th></tr>
<tr><td>D≦0.3</td><td>Ignore</td></tr>
<tr><td>0.3<D</td><td>0</td></tr>
</table>
Average diameter = (Long diameter + 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 width x1/3
b≦t x2/3
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>

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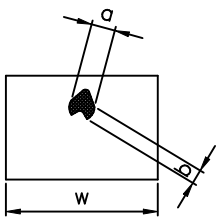
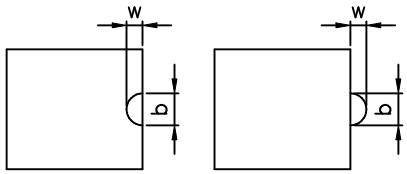
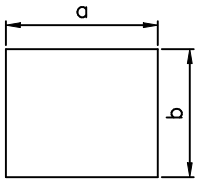
6.	Outer dimensions	Should be with in the tolerance.
7.	Newton ring	Orbicular of interference fringes. To be non. In case of doubtful judgenemt, agreement shall be reachment.
8.	Soldering	Should be no defective soldering such as shorting, loose terminal cold solder, peeling of printed circuit board pattern,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

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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°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.

- THE OPERATING LIFE TIME OF BACK LIGHT
  CCFT : 20,000hrs for lamp-current 5mA, 35KHz, 25°C
  (Operating life time is defined as follows : The final brightness is at 50% of original brightness.)

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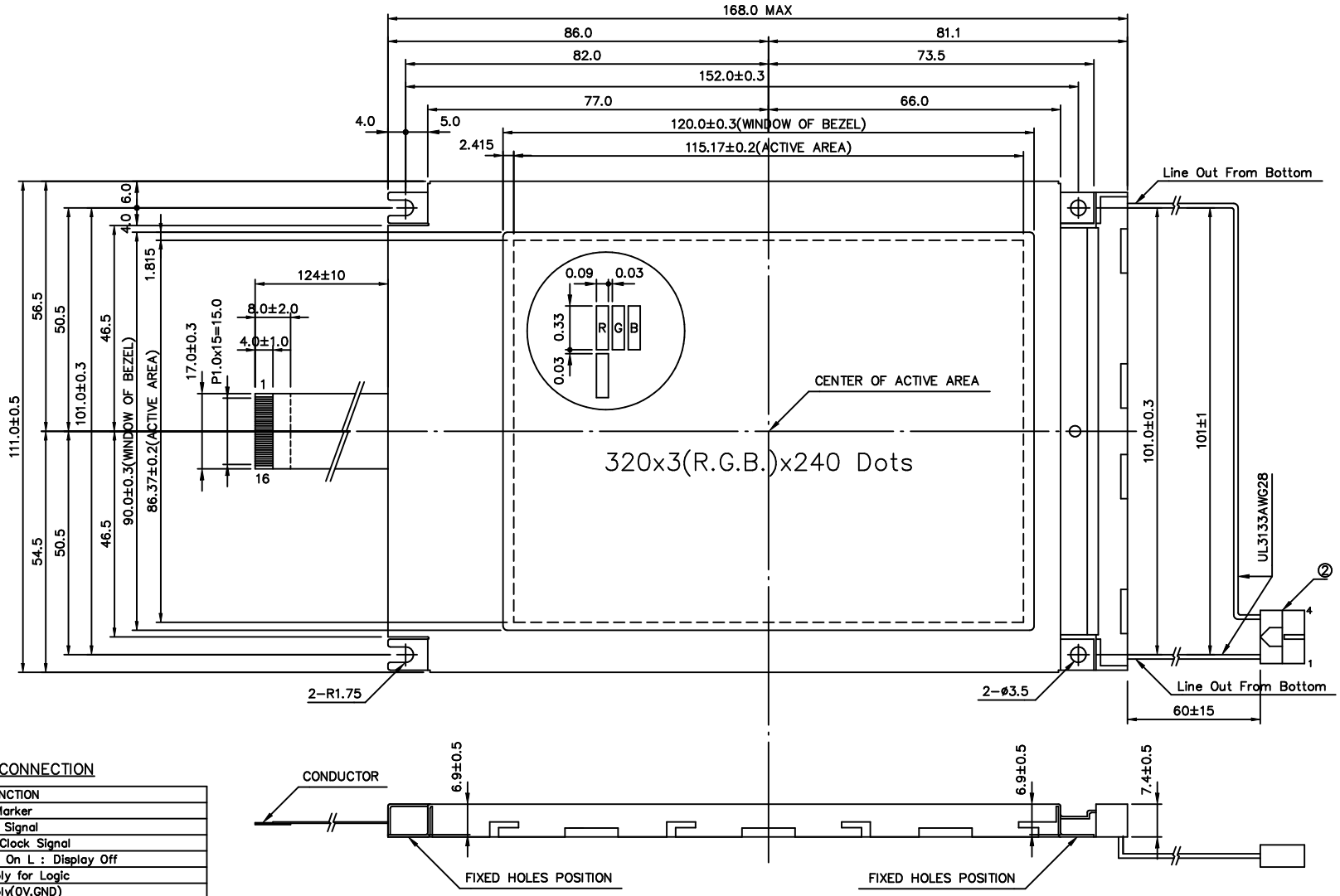

PIN ASSIGNMENT OF I/O CONNECTION

Pin No.	SYMBOL	LEVEL	FUNCTION
1	FLM	H/L	First Line Marker
2	LP	H→L	Data Latch Signal
3	CP	H→L	Data Shift Clock Signal
4	$\overline{DISPOFF}$	H/L	H : Display On L : Display Off
5	V_{DD}	–	Power Supply for Logic
6	Vss	–	Power Supply(0V,GND)
7	V_{LCD}	–	Power Supply for LCD Drive
8	D0	H/L	Display Data
9	D1	H/L	Display Data
10	D2	H/L	Display Data
11	D3	H/L	Display Data
12	D4	H/L	Display Data
13	D5	H/L	Display Data
14	D6	H/L	Display Data
15	D7	H/L	Display Data
16	Vss	–	Power Supply(0V,GND)

PIN ASSIGNMENT OF CCFL CONNECTION

Pin No.	SYMBOL	LEVEL	FUNCTION
1	HOT	–	Power Supply for CCFL(HOT)
2	NC	–	No Connection
3	NC	–	No Connection
4	GND	–	Power Supply for CCFL(GND)

NOTE :

1. RESOLUTION : 320 X 3(R.G.B.) X 240 DOTS
2. CONTROLLER : EXCLUDED
3. DC/DC CONVERTER : EXCLUDED
4. ① INTERFACE CONNECTOR
   FFC, N16 P1.0mm
   ② CCFT CONNECTOR
   M63M83-04(MITSUMI)
5. TOLERANCE NO SPECIFIED : ±0.5mm

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

LCBHB_B61_

	NAME	DATE	THIRD ANGLE P.
APPROVE			
CHECK			
DESIGN	J.Y.Lin	90.05.25	SCALE / UNIT
DRAWN	Ping Ping	90.05.25	– / mm

DWG NO. MB61-D0A ① A