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	SPECIFICATION	

DEVICE SPECIFICATION for
Passive Matrix Color LCD Module
(1 024×768 dots)

Model No.

LM15X771

☐CUSTOMER'S APPROVAL

DATE

BY

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SHARP

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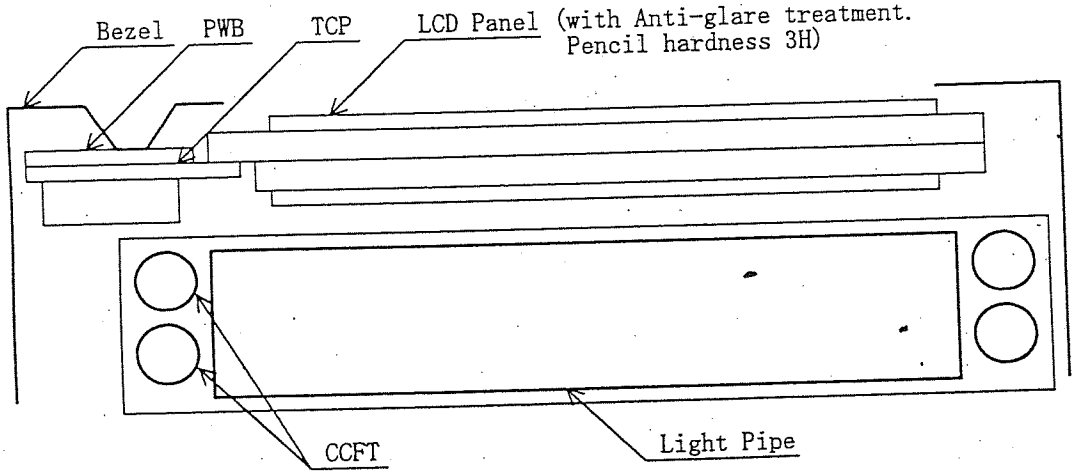
SHARP

1. Application

This data sheet is to introduce the specification of LM15X771, Passive matrix type color LCD module.

2. Construction and Outline

Construction: 1 024×768 dots color display module consisting of an LCD panel, PWB (printed wiring board) with electric components mounted onto, TCP (tape carrier package) to connect the LCD panel and PWB electrically, and plastic chassis with CCFT backlight and bezel to fix them mechanically.
Signal ground (V_{SS}) is connected with the metal bezel.
DC/DC converter is built in.



Outline : See Fig. 13

Connection : See Fig. 13 and Table 6, 7

3. Mechanical Specifications

Table 1

Parameter	Specifications	Unit
Outline dimensions	355+0.5,-1(W) × 261±0.5(H) × 16.5Max(D)	mm
Effective viewing area	308.1(W) × 232.1(H)	mm
Display format	1 024(W) × 768(H) full dots	—
Dot size	0.076 × RGB(W) × 0.274(H)	mm
Dot spacing	0.023	mm
*1 Base color	Normally black *2	—
Weight	Approx. 1 550	g

*1 Due to the characteristics of the LC material, the colors vary with environmental temperature.

*2 Negative-type display

Display data "H" : ON → transmission

Display data "L" : OFF → light isolation

4. Absolute Maximum Ratings

4-1 Electrical absolute maximum ratings

Table 2

Parameter	Symbol	Min.	Max.	Unit	Remark
Supply voltage (Logic)	V_{DD}-V_{SS}	0	6	V	Ta=25 ℃
Input voltage	V_{IN}	-0.3	V_{DD}+0.3	V	Ta=25 ℃

4-2 Environmental conditions

Table 3

Item	Tstg		Topr		Remark
	Min.	Max.	Min.	Max.	
Ambient temperature	-25 ℃	+60 ℃	0 ℃	+40 ℃	Note 4
Humidity	Note 1		Note 1		No condensation
Vibration	Note 2		Note 2		3 directions (X/Y/Z)
Shock	Note 3		Note 3		6 directions (±X±Y±Z)

Note 1) Ta ≦ 40 ℃ · · · 95 % RH MAX.

Ta > 40 ℃ · · · Absolute humidity shall be less than Ta=40 ℃ / 95 % RH.

Note 2)

Table 4

Frequency	10 Hz～57 Hz	57 Hz～500 Hz
Vibration level	—	9.8 m/s^2
Vibration width	0.075 mm	—
Interval	10 Hz～500 Hz～10 Hz/11.0 min.	

2 hours for each direction of X/Y/Z (6 hours as total)

Note 3) Acceleration : 490 m/s^2

Pulse width : 11 ms

3 times for each direction of ±X/±Y/±Z

Note 4) Care should be taken so that the LCD module may not be subjected to the temperature out of this specification.

5. Electrical Specifications

5-1 Electrical characteristics

Table 5

Ta=25 ℃, V_{DD}=5.0 V±10 %, 1/tFRM=120 Hz

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Supply voltage (Logic)	$V_{DD}-V_{SS}$	Ta=0～40 ℃, Note 1)	4.5	5	5.5	V
Contrast adjust voltage	Vcon-V_{SS}	Ta=0～40 ℃, Note 4), 5)	0.8	1.95	2.8	V
Input signal voltage	V_{IN}	"H" level	0.8V_{DD}	—	V_{DD}	V
		"L" level	0	—	0.2V_{DD}	V
Input leakage current	I_{IL}	"H" level	—	—	1	μA
		"L" level	-1	—	—	μA
Supply current (Logic)	I_{DD}(Typ.)	V_{DD}=5.0 V, Note 2)	—	230	340	mA
	I_{DD}(Max.)	V_{DD}=5.0 V, Note 3)	—	340	510	mA
Rush current (Logic)	Irush	Ta=25 ℃	3.0 A(pk)×30 ms+1.5 A(pk)×50 μs			
Power consumption	Pd(Typ.)	V_{DD}=5.0 V, Note 2)	—	1 150	1 700	mW
	Pd(Max.)	V_{DD}=5.0 V, Note 3)	—	1 700	2 550	mW

Note 1) Under the following conditions. ;

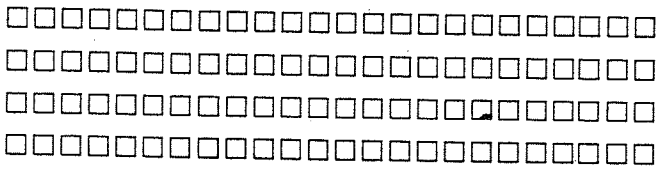
①Immediately after the rise of V_{DD}. : 3 A(pk)×30 ms

②Under the situation that DISP signal is on and kept steady. : 1.5 A(pk)×50 μs

Note 2) Under the following conditions. ;

Frame frequency = 120 Hz, Vcon-V_{SS} = 1.95 V,

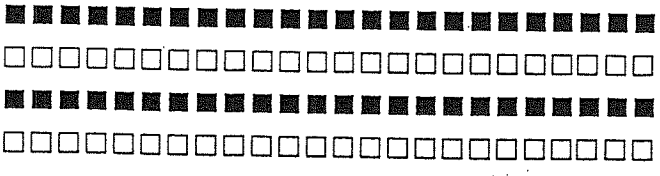
Display pattern = all digits white pattern.



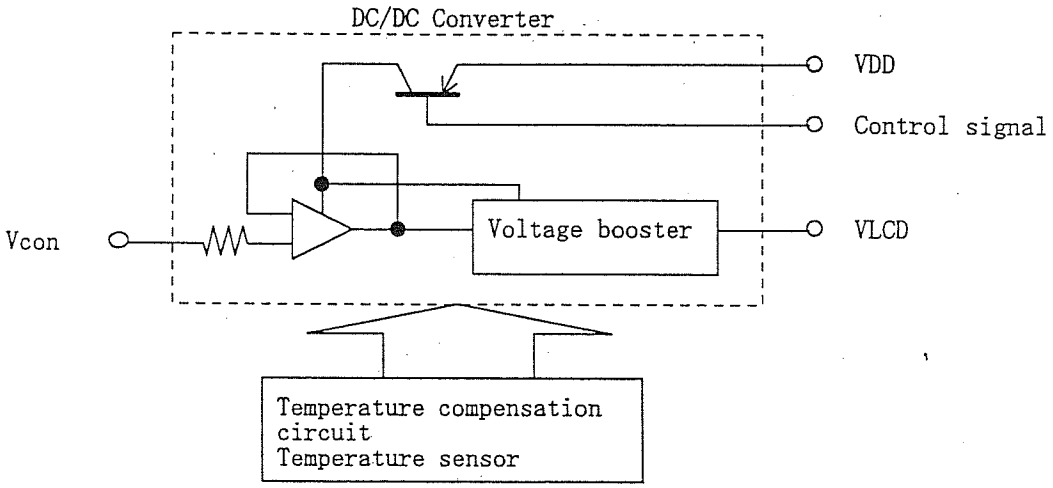
Note 3) Under the following conditions. ;

Frame frequency = 120 Hz, Vcon-V_{SS} = 1.95 V,

Display pattern = black/white stripe pattern.



Note 4) Contrast adjustment voltage "Vcon-V_{SS}" is transformed into the LCD driving voltage "V_{LCD}" by following circuit built in the LCD module.
LCD driving voltage "V_{LCD}" is adjusted automatically according to the change of ambient temperature range by the temperature compensation circuit.



Note 5) Temperature compensation circuit built in LCD module have been set obtain the optimum contrast under following driving condition ;
Take care that voltage for optimum contrast is changed under the different condition.
Frame frequency : 120 Hz , Duty ratio : 1/384 (an odd number frame), Ta = 25 ℃
1/422 (an even number frame)

* The above is the condition of the module setting, not the electrical characteristics.

5-2 Interface signals

○ LCD

Table 6

Pin No.	Symbol	Description	Level
1	V_{SS}	Ground potential	—
2	V_{SS}	Ground potential	—
3	XCK	Data input clock signal	"H" → "L"
4	V_{SS}	Ground potential	—
5	V_{SS}	Ground potential	—
6	Vcon	Contrast adjust voltage	—
7	LP	Input data latch signal	"H" → "L"
8	V_{DD}	Power supply for logic and LCD	—
9	YD	Scan start-up signal	"H"
10	V_{DD}	Power supply for logic and LCD	—
11	V_{SS}	Ground potential	—
12	V_{SS}	Ground potential	—
13	DISP	Display control signal	H (ON), L (OFF)
14	V_{SS}	Ground potential	—
15	DL11	Display data signal (Lower)	H (ON), L (OFF)
16	DU11	Display data signal (Upper)	H (ON), L (OFF)
17	DL10	Display data signal (Lower)	H (ON), L (OFF)
18	DU10	Display data signal (Upper)	H (ON), L (OFF)
19	DL9	Display data signal (Lower)	H (ON), L (OFF)
20	DU9	Display data signal (Upper)	H (ON), L (OFF)
21	DL8	Display data signal (Lower)	H (ON), L (OFF)
22	DU8	Display data signal (Upper)	H (ON), L (OFF)
23	DL7	Display data signal (Lower)	H (ON), L (OFF)
24	DU7	Display data signal (Upper)	H (ON), L (OFF)
25	DL6	Display data signal (Lower)	H (ON), L (OFF)
26	DU6	Display data signal (Upper)	H (ON), L (OFF)
27	DL5	Display data signal (Lower)	H (ON), L (OFF)
28	DU5	Display data signal (Upper)	H (ON), L (OFF)
29	DL4	Display data signal (Lower)	H (ON), L (OFF)
30	DU4	Display data signal (Upper)	H (ON), L (OFF)
31	DL3	Display data signal (Lower)	H (ON), L (OFF)
32	DU3	Display data signal (Upper)	H (ON), L (OFF)
33	DL2	Display data signal (Lower)	H (ON), L (OFF)
34	DU2	Display data signal (Upper)	H (ON), L (OFF)
35	DL1	Display data signal (Lower)	H (ON), L (OFF)
36	DU1	Display data signal (Upper)	H (ON), L (OFF)
37	DL0	Display data signal (Lower)	H (ON), L (OFF)
38	DU0	Display data signal (Upper)	H (ON), L (OFF)
39	V_{SS}	Ground potential	—
40	V_{SS}	Ground potential	—

○ CCFT

Table 7

Pin No.	Symbol	Description	Level
1	HOT	High voltage lineal (from Inverter)	—
2	NC	—	—
3	HOT	High voltage lineal (from Inverter)	—
4	NC	—	—
5	NC	—	—
6	GND	Ground line (from Inverter)	—

○ LCD

Used connector : SD-53505-4090 (MOLEX)

Correspondence connector : SD-51127-4005 (MOLEX)

○ CCFT

Used connector : M63M83-06 (MITSUMI)

Correspondence connector : M61M73-06 series (MITSUMI)

Except above connector shall be out of guaranty.

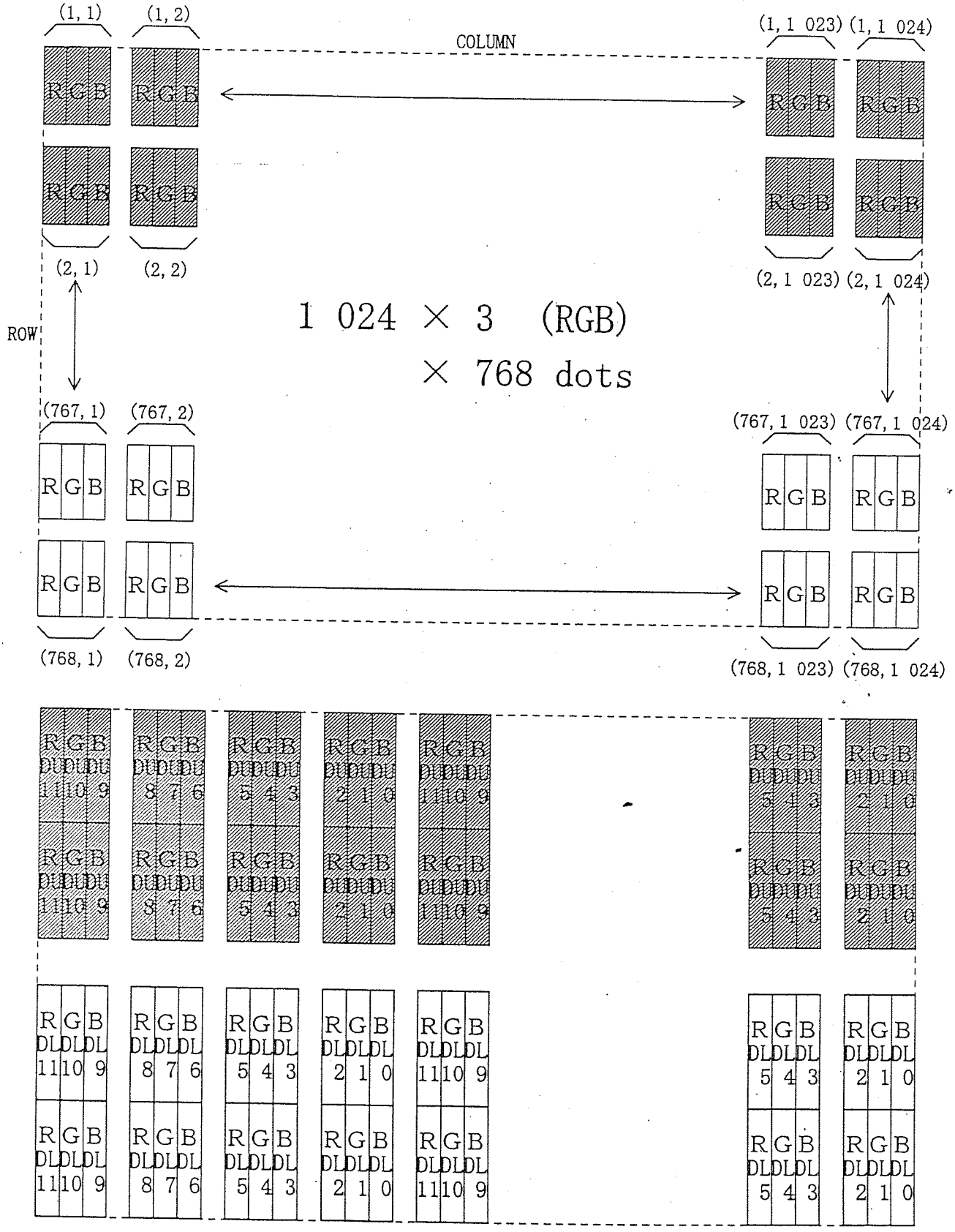
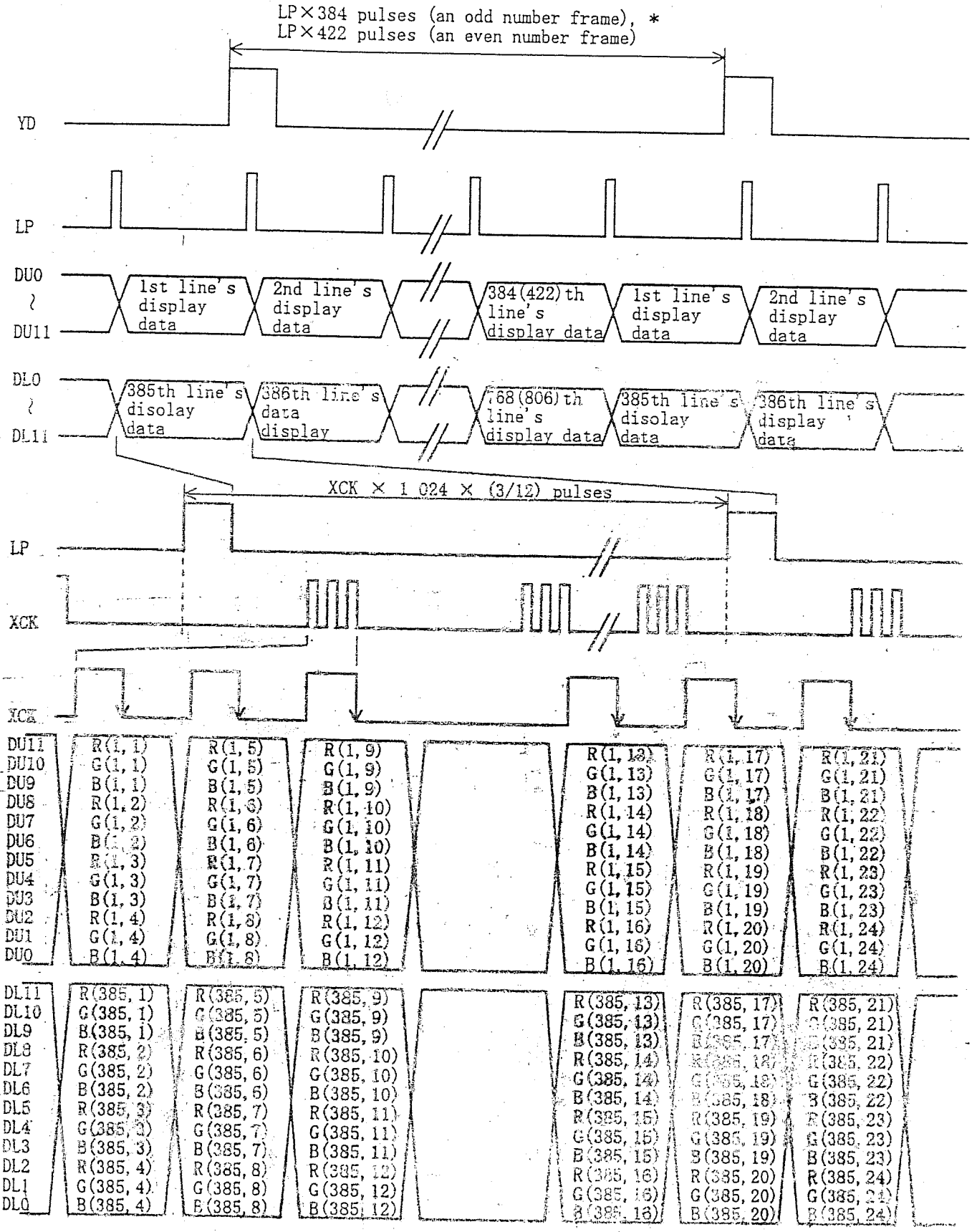


Fig. 1 Dot chart of display area



* The above is the condition of the module setting, not the electrical characteristics.

Fig. 2 Data input timing chart

Table 8 Interface timing ratings

Ta=25 ℃, V_{DD}=5.0 V±10 %

Item	Symbol	Rating			Unit
		Min.	Typ.	Max.	
Frame cycle *1	tFRM	8.33		16.94	ms
YD signal "H" level set up time	tHYS	100			ns
"H" level hold time	tHYH	100			ns
"L" level set up time	tLYS	100			ns
"L" level hold time	tLYH	40			ns
LP signal "H" level pulse width	tWLPH	100			ns
XCK signal clock cycle	tCK	50			ns
"H" level clock width	tWCKH	25			ns
"L" level clock width	tWCKL	25			ns
Data set up time	tDS	20			ns
hold time	tDH	25			ns
LP↑ allowance time from XCK↓	tLS	200			ns
XCK↑ allowance time from LP↓	tLH	200			ns
Input signal rise/fall time *2	tr, tf			13.5	ns

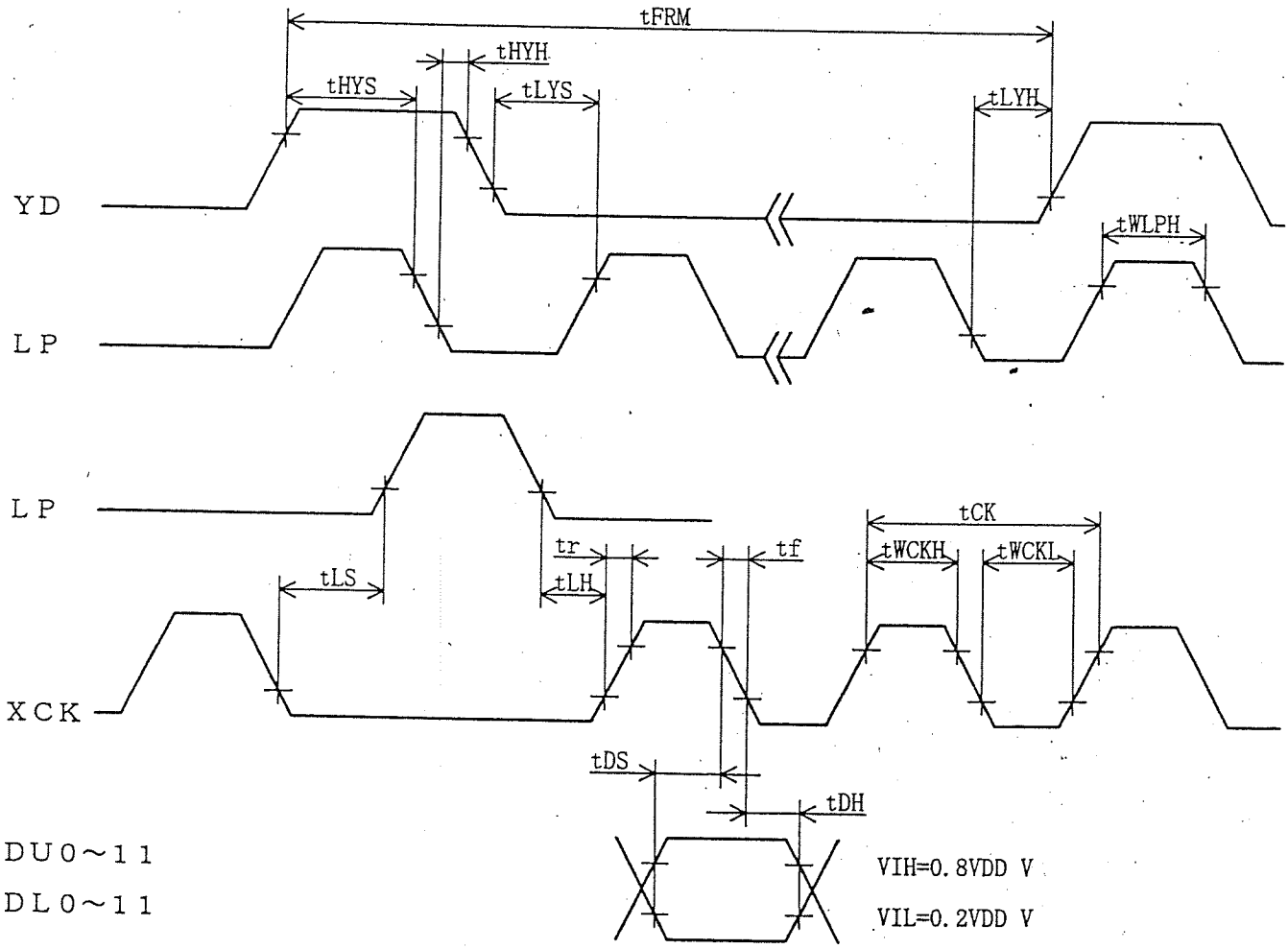


Fig. 3 Interface timing chart

*1 LCD module functions at the minimum frame cycle of 8.33 ms (Maximum frame frequency of 120 Hz)
Owing to the characteristics of LCD module, "shadowing" will become more eminent as frame frequency goes up, while flicker will be reduced.

Since judgment of display quality is subjective and display quality such as "shadowing" is pattern dependent, it is recommended that decision of frame frequency, to which power consumption of the LCD module is proportional, should be made based on your own through testing on the LCD module with every possible patterns displayed on it.

* The intervals of one LP fall and the next must be always the same, and LPs must be input continuously.
The interval must be 70 μs max.

*2 When LCD module is operated by high speed of XCK (shift clock), (tCK-tWCKH-tWCKL)/2 is maximum.

6. Module Driving Method

6-1 Circuit configuration
Fig. 9 shows the block diagram of the module's circuitry.

6-2 Display face configuration
The display consists of 1 024×3(R, G, B)×768 dots as shown in Fig. 1.
The interface is single panel with double drive to be driven at 1/384(1/422) duty ratio.

6-3 Input data and control signal

The LCD driver is 240 bits LSI, consisting of shift registers, latch circuits and LCD driver circuits. Input data for each row (1 024×3 R, G, B) will be sequentially transferred in the form of 12 bit parallel data through shift registers from top left of the display together with clock signal (XCK).

When input of one row (1 024×3 R, G, B) is completed, the data will be latched in the form of parallel data corresponding to the signal electrodes by the falling edge of latch signal (LP) then, the corresponding drive signals will be transmitted to the 1 024×3 lines of column electrodes of the LCD panel by the LCD drive circuits.
At this time, scan start-up signal (YD) has been transferred from the scan signal driver to the 1st row of scan electrodes, and the contents of the data signals are displayed on the 1st row of the display face according to the combinations of voltages applied to the scan and signal electrodes of the LCD. While the data of 1st row are being displayed, the data of 2nd row are entered. When data for 1 024×3 dots have been transferred, they will be latched by the falling edge of LP, switching the display to the 2nd row.

Such data input will be repeated up to the 384(422)th row of each display segment, from upper row to lower rows, to complete one frame of display by time sharing method.

Simultaneously the same scanning sequence occur at the lower panel.
Then data input proceeds to the next display frame.

YD generates scan signal to drive horizontal electrodes.

Since DC voltage, if applied to LCD panel, causes chemical reaction in LC materials, causing deterioration of the materials, drive wave-form shall be inverted at every display frame to prevent the generation of such DC voltage. Control signal M plays such a role.

Because of the characteristics of the CMOS driver LSI, the power consumption of the display module goes up with the clock frequency of XCK.
To minimize data transfer speed of XCK clock the LSI has the system of transferring 12 bit parallel data through the 12 lines of shift registers.
Thanks to this system the power consumption of the display module is minimized.

In this circuit configuration, 12 bit display data shall input to data input pins of DU0-11 and DL0-11.

Furthermore, the display module has bus line system for data input to minimize the power consumption with data input terminals of each driver LSI being activated only when relevant data input is fed.

Data input for column electrodes and chip select of driver LSI are made as follows:

The driver LSI at the left end of the display face is first selected, and the adjacent driver LSI right next side is selected when data of 240 dot (20XCK) is fed. This process is sequentially continued until data is fed to the driver LSI at the right end of the display face. This process is followed simultaneously both at the top and bottom column drivers LSI's.

Thus data input will be made through 12 bit bus line sequentially from the left end of the display face.

Since this display module contains no refresh RAM, it requires the above data and timing pulse inputs even for static display.

The timing chart of input signals are shown in fig. 3 and Table 8.

7. Optical Characteristics

Following spec are based upon the electrical measuring conditions, on which the contrast of perpendicular direction ($\theta_X=\theta_Y=0^\circ$) will be MAX.

Table 9

Ta=25 ℃, V_{DD}=5.0 V, Vcon=Vmax.

		Symbol	Condition		Min.	Typ.	Max.	Unit	Remark
Contrast ratio		Co	$\theta_X=\theta_Y=0^\circ$		15	25	—	—	Note 2
Viewing angle range		θ_X	Co>5.0	$\theta_Y=0^\circ$	-30	—	30	dgr.	Note 1
		θ_Y		$\theta_X=0^\circ$	-15	—	25	dgr.	
Response time	Rise	τr	$\theta_X=\theta_Y=0^\circ$		—	220	330	ms	Note 3
	Decay	τd	$\theta_X=\theta_Y=0^\circ$		—	80	120	ms	
Module chomaticity		X	$\theta_X=\theta_Y=0^\circ$		—	0.275	—	—	
		Y	$\theta_X=\theta_Y=0^\circ$		—	0.327	—	—	

Note 1) The viewing angle range is defined as shown Fig. 4.

Note 2) Contrast ratio is defined as follows:

Co= Luminance (brightness) all pixels "white" at Vmax. / Luminance (brightness) all pixels "dark" at Vmax.

Vmax. is defined in Fig. 6

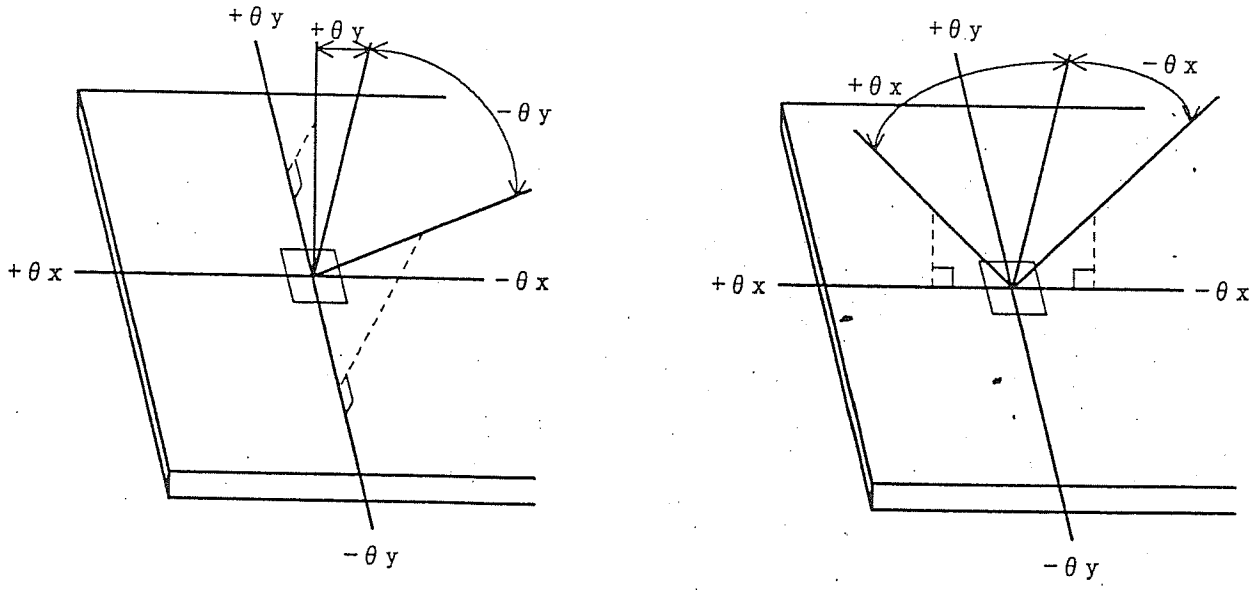
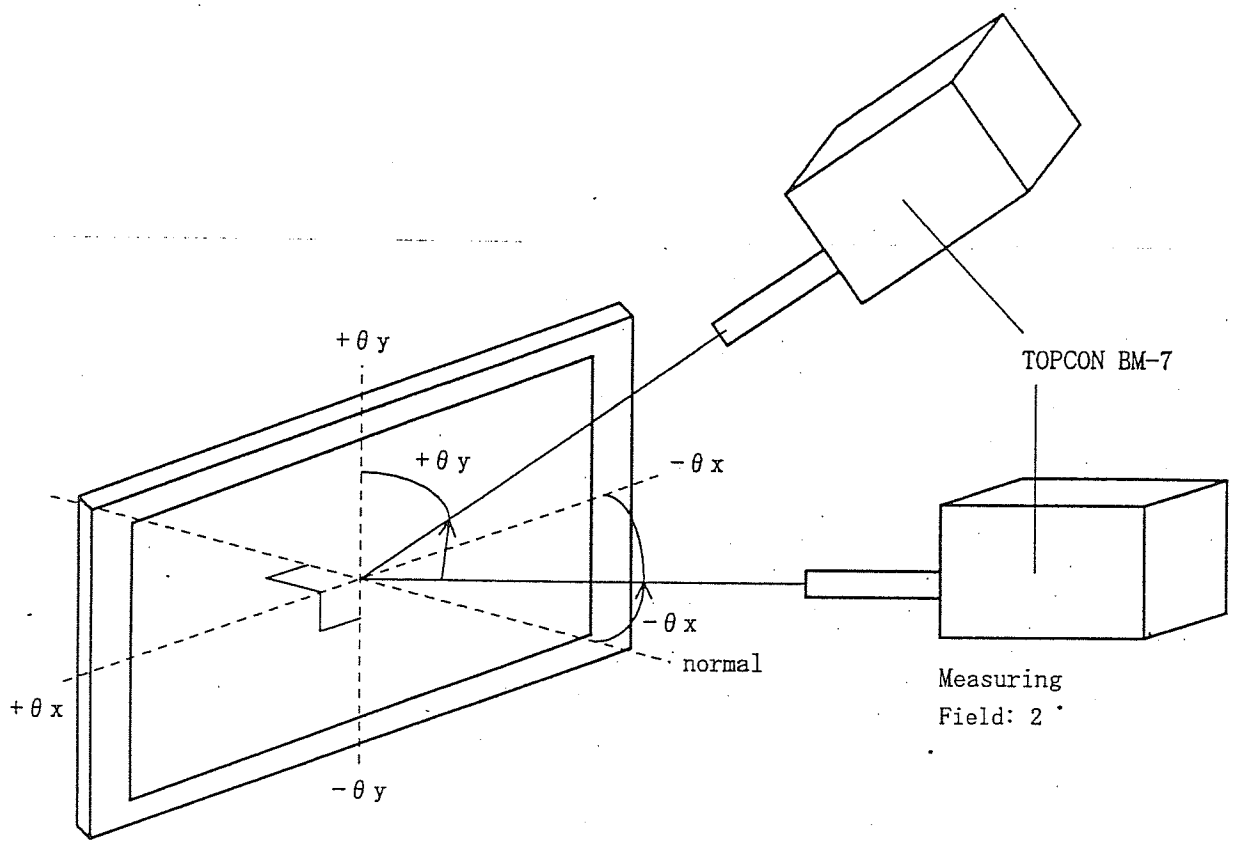


Fig. 4 Definition of Viewing Angle

Note 3) The response characteristics of photo-detector output are measured as shown in Fig. 8, assuming that input signals are applied so as to select and deselect the dots to be measured, in the optical characteristics test method shown in Fig. 7.



Measurement Spot Size: 10 mm ϕ

θ x: Angle from "normal" to viewing surface rotated about the horizontal axis.

θ y: Angle from "normal" to viewing surface rotated about the vertical axis.

Fig. 5 Optical Characteristics Test Method I

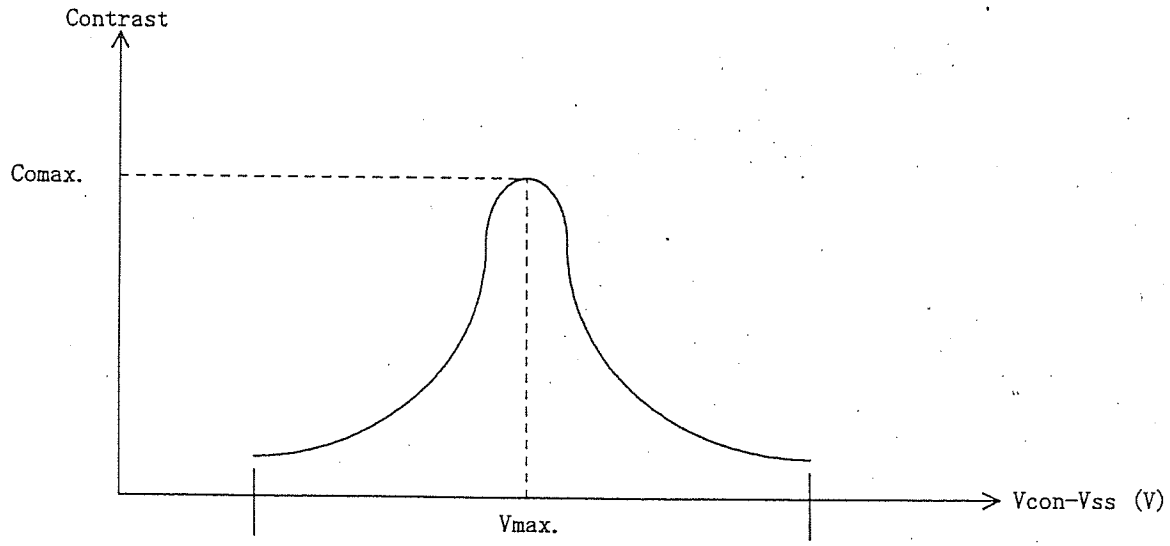


Fig. 6 Definition of V_{MAX}

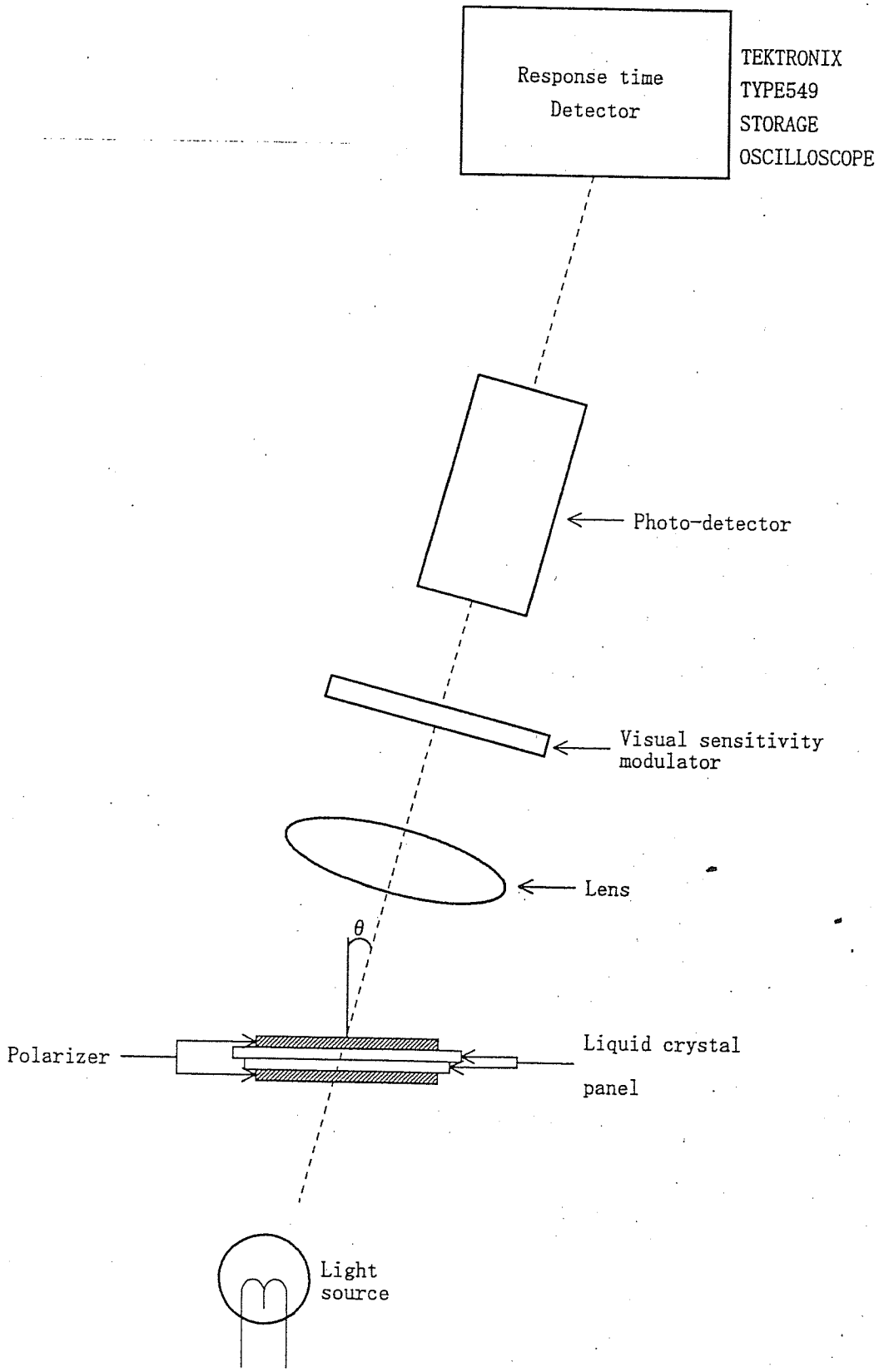
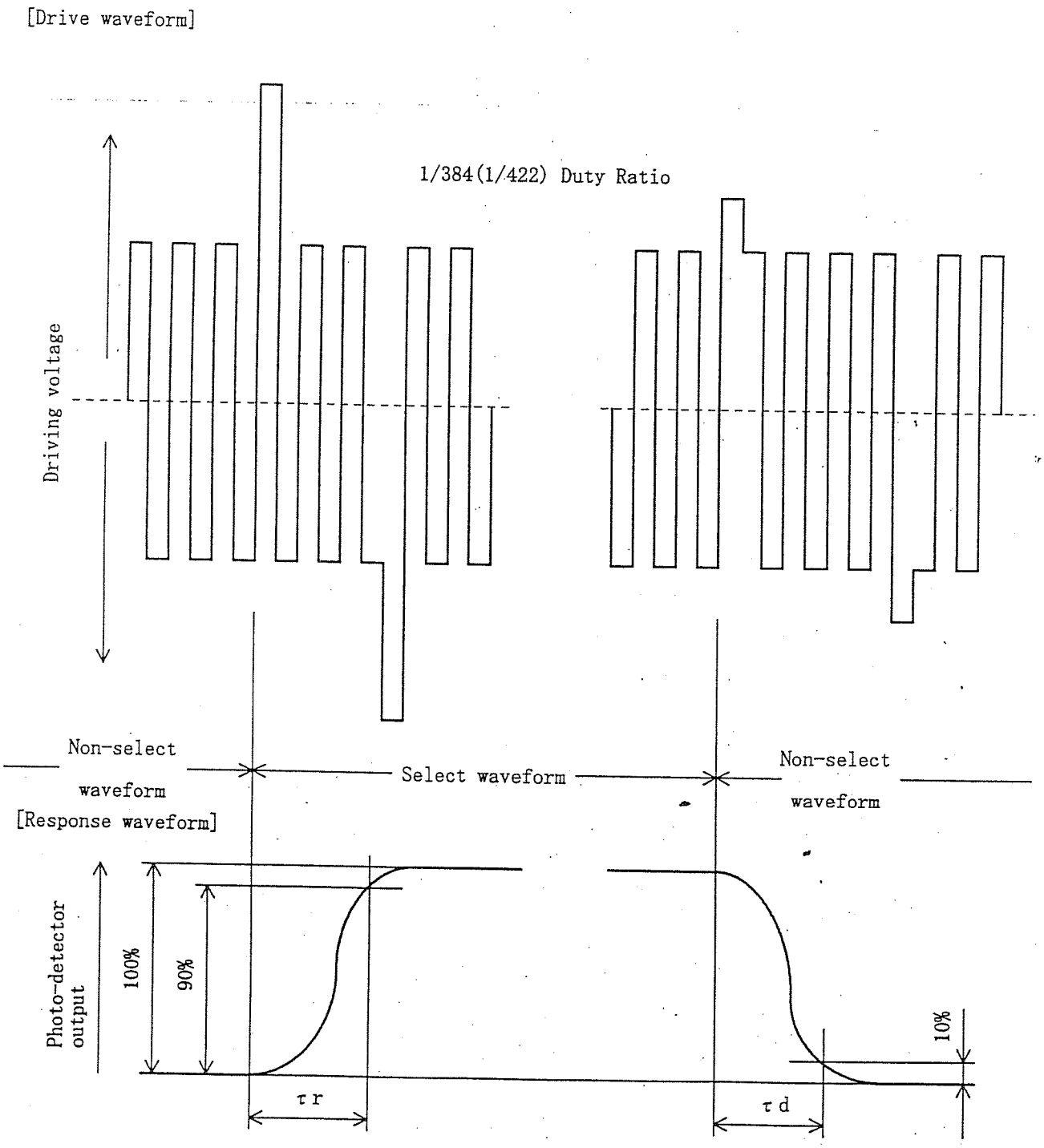


Fig. 7 Optical Characteristics Test Method II



τr: Rise time

τd: Decay time

Fig. 8 Definition of Response Time

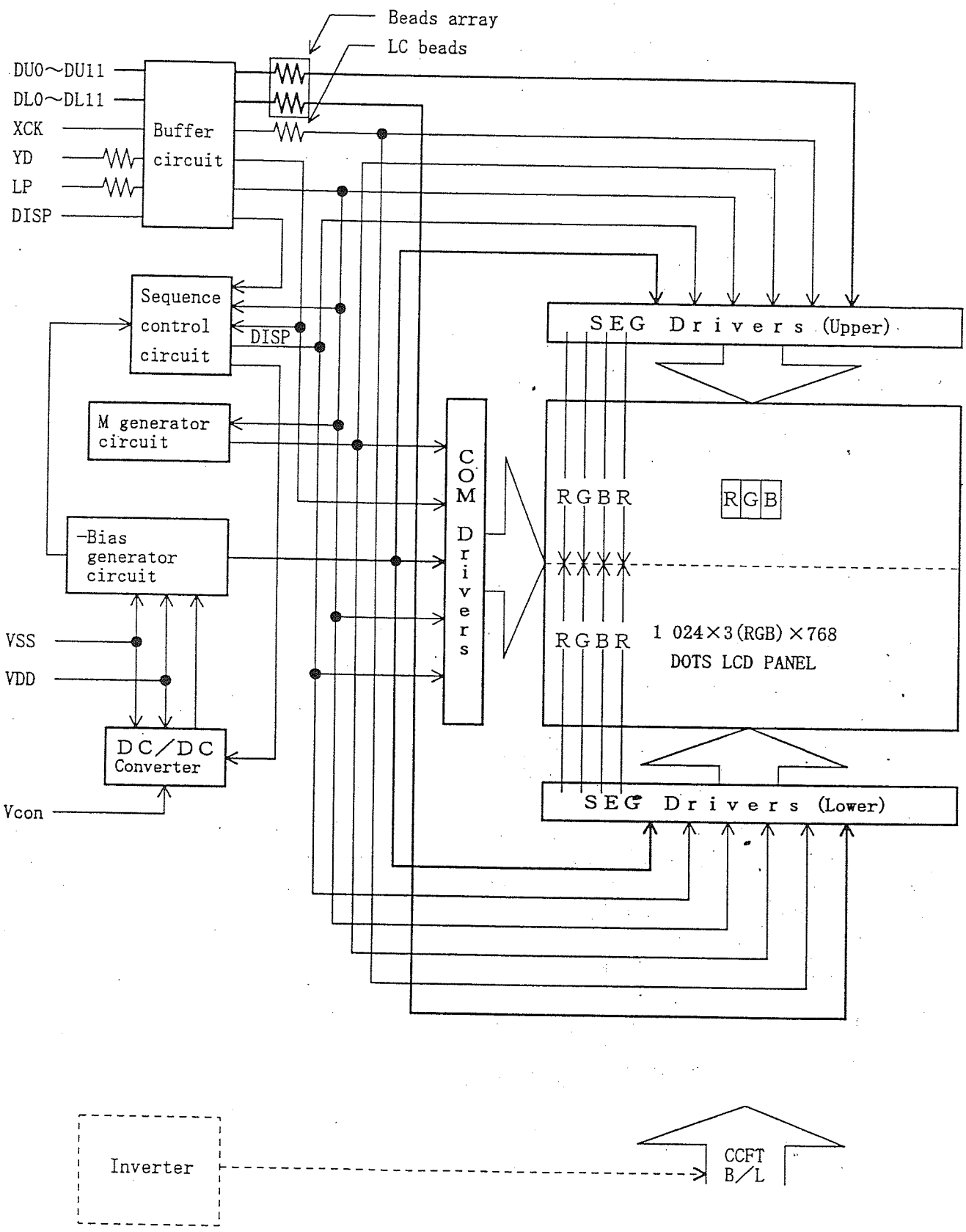


Fig. 9 Circuit block diagram

8. Characteristics of Backlight

The brightness are given on condition that the following conditions are satisfied.

8-1 Brightness (Note)

Table 10

Parameter	Min.	Typ.	Max.	Unit
Brightness	100	150	—	cd/m^2

The values above is defined as the average brightness inside the viewing area.

8-2 Measurement circuit: CXA-M10L (TDK) (at IL=6.0 mArms/pc)

8-3 Measurement equipment: BM-7 (TOPCON corporation)

8-4 Measurement conditions

8-4-1 Measurement circuit voltage: DC13.5 V, at primary side

8-4-2 LCD : All digits white, V_{DD}=5.0 V, Vcon-V_{SS}=Vmax.
DU0～11="H" (white), DL0～11="H" (white)
Frame frequency = 120 Hz

8-4-3 Ambient temperature : 25 ℃
Measurement shall be executed 30 minutes after turning on.

8-5 Used lamp: HMBTK24D83W242NLS/AXZ (HARISON ELECTRIC.,LTD) : 4pcs

8-5-1 Electrical characteristics (1pc)

Table 11

Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
Lamp voltage	V_L	—	530	—	Vrms	—
Lamp current	I_L	4	6	6.5	mArms	Note (1)
Lamp power consumption	P_L	—	3.18	—	W	Note (2)
Lamp frequency	F_L	20	—	50	kHz	—
Kick-off voltage	V_S	—	—	1 100	Vrms	Ta=25 ℃
		—	—	1 300	Vrms	Ta= 0 ℃ , Note (3)
Lamp life time	L_L	15 000	25 000	—	h	Note (4), (5)

Within no conductor closed (CCFT only)

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

Note (2) Power consumption excluded inverter loss.

Note (3) The circuit voltage (V_S) of the inverter should be designed to have some margin, because V_S may be increased due to the leak current in case of the LCD module.

Note(4) The lamp life time is measured at maximum lamp current.

Note(5) Average life time of CCFT will be decreased when LCD is operating at lower temperature.

8-5-2 Operating life

The operating life time is 15 000 hours more at 6.0 mA.
(Operating life with CXA-M10L or equivalent.)
The inverter should meet the following conditions to keep the specified life time of used lamp. ;
-Sine, symmetric waveform without spike in positive and negative.
-Output frequency range : 20 kHz ～ 50 kHz.
Make sure the operating conditions by executing the burn-in enough time.

The operating life time is defined as having ended when any of the following conditions occur. ; 25±1 ℃
-When the voltage required for initial discharge has reached 110 % of the initial value.
-When the illuminance or quantity of light has decreased to 50 % of the initial value.

(Note) Rating are defined as the average brightness inside the viewing area specified in Fig. 10.

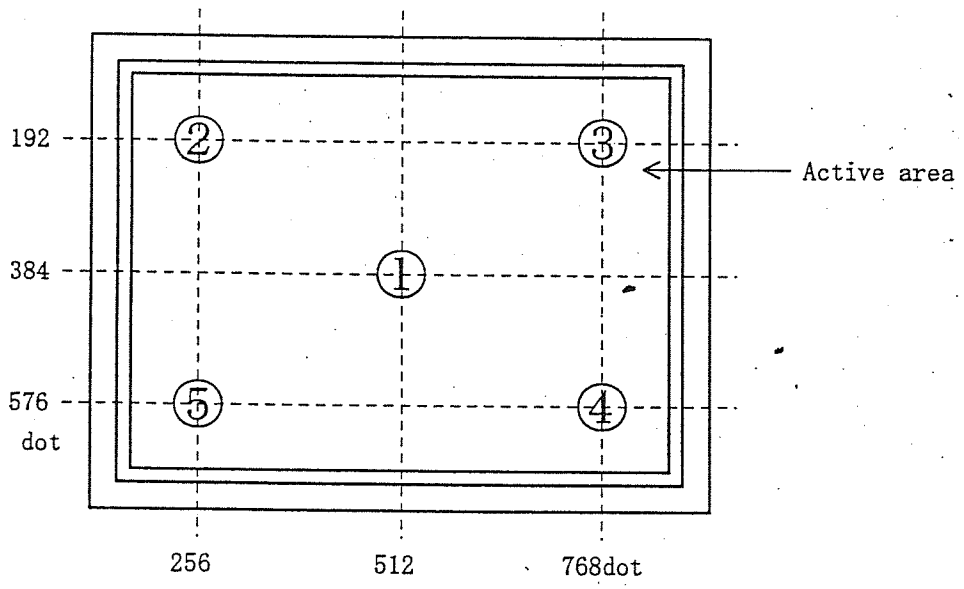


Fig. 10 Measuring points (1～5)

9. Precautions

1) Industrial (Mechanical) design of the product in which this LCD module will be incorporated must be made that the viewing angle characteristics of the LCD may be optimized.

This module's viewing angle is illustrated in Fig. 11.

θ y Min. < viewing angle < θ y Max.

(For the specific values of θ y Min. θ y Max. refer to the table 9.)

Please consider the optimum viewing conditions according to the purpose when installing the module.

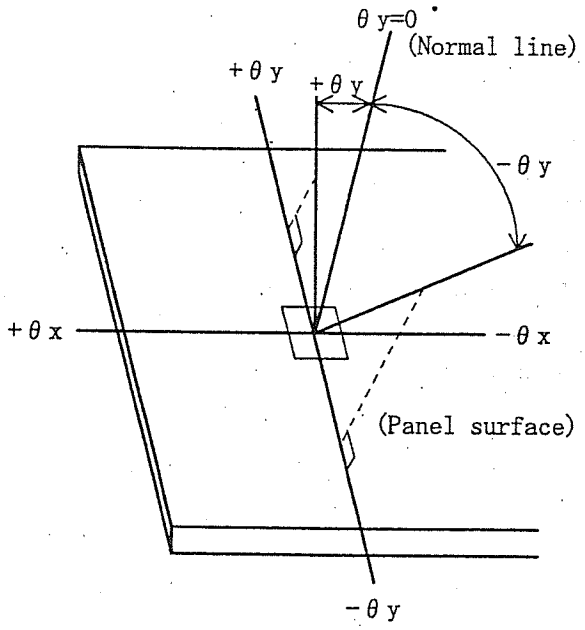


Fig. 11 Dot matrix LCD viewing angle

2) This module is installed using mounting holes metal PBC or bezel.
When installing the module, pay attention and handle carefully not to allow any undue stress such as twist or bend.
A transparent acrylic resin board or other type of protective panel should be attached to the front of the module to protect the polarizer, LCD cells, etc.

3) Since the front polarizer is easily damaged. Please pay attention not to scratch on its face.

4) If the surface of the LCD cells needs to be cleaned, wipe it swiftly with cotton or other soft cloth. If still not completely clear, blow on its and wipe.

5) Water droplets, etc., must be wiped off immediately since they may cause color changes, staining , etc., if remained for a long time.

6) Since LCD is made of glass plates, dropping the module or banging it against hard objects may cause cracking or fragmentation.

7) CMOS LSIs are equipped in this module, so care must be taken to avoid the electro static charge, by earthling human body or using ionizer, etc. Before connecting interface cable, static electricity must be discharged by earthling, the contact of the module and main system, because there is a case that the module itself is electrified.

8) The module should be driven according to the specified ratings to avoid malfunction of permanent damage. DC voltage drive leads to rapid deterioration of LC, so ensure that the drive is alternating waveform by continuous application of the signal M. Especially the power ON/OFF sequence shown on page. 24 is strongly recommended to avoid latch-up of drive LSIs and application of DC voltage to LCD panel.

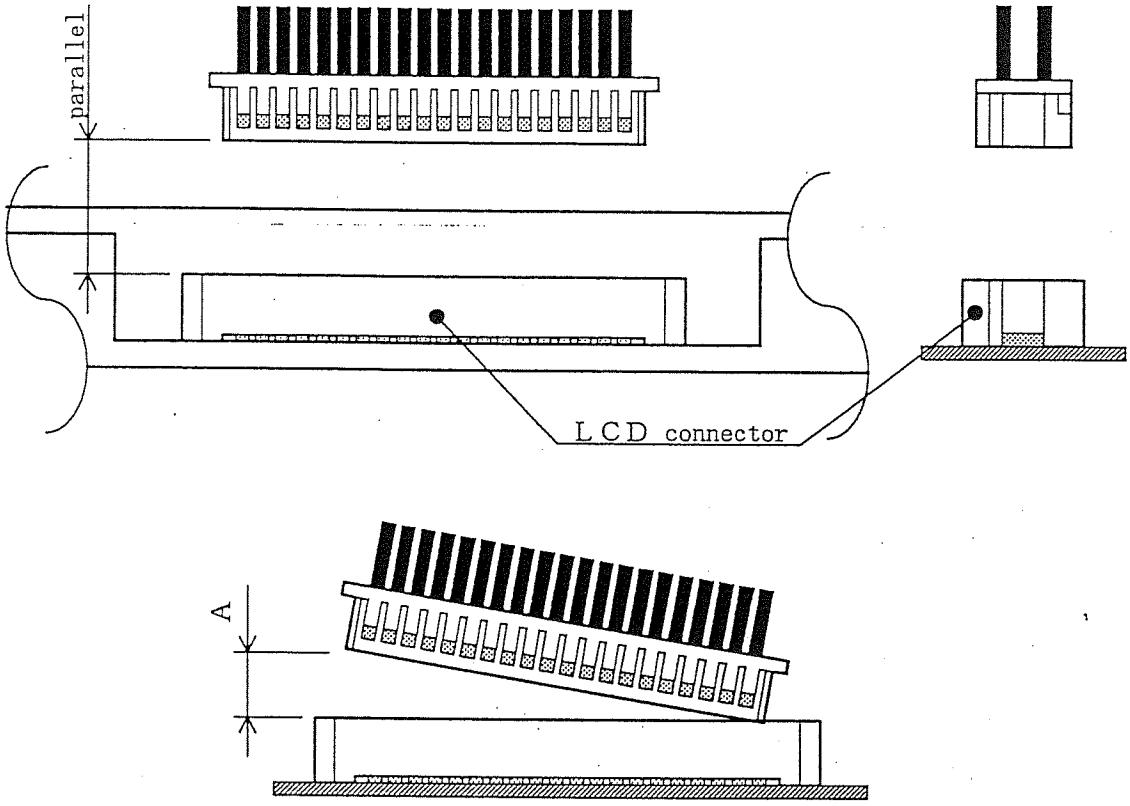
9) Since leakage current, which may be caused by routing of CCFT cables, etc., may affect the brightness of the display, the inverter has to be designed taking the leakage current into consideration. Thorough evaluation of the LCD module/inverter built into its host equipment shall be conducted, therefore, to ensure the specified brightness.

10) Avoid to expose the module to the direct sun-light, strong ultraviolet light, etc. for a long time.

11) If stored at temperatures below specified storage temperature, the LC may freeze and be deteriorated. If storage temperature exceed the specified rating, the molecular orientation of the LC may change to that of a liquid, and they may not revert to their original state. It should be stored at room temperature.

12) Disassembling the LCD module can cause permanent damage and should be strictly avoided.

13) How to insert interface connector.



When the interface connector is inserted, it should be parallel to the connector of LCD module and it should be inserted horizontally.
When the connector is attempted to be fixed to LCD connector, it should be inserted properly in order not to create a gap.
Please insert the connector as both edge is placed to the connect position of LCD connector.

14) It is a characteristic of LCD to maintain the displaying pattern when the pattern is applied for a long time. (Image retention)
To prevent image retention, please do not apply the fixed pattern for a long time by pre-installing such programs at your side.

15) This phenomena (image retention) is not deterioration of LCD. If it happens, you can remove it by applying different patterns.

16) CCFT backlight should be kept OFF during V_{DD} is "L" level.

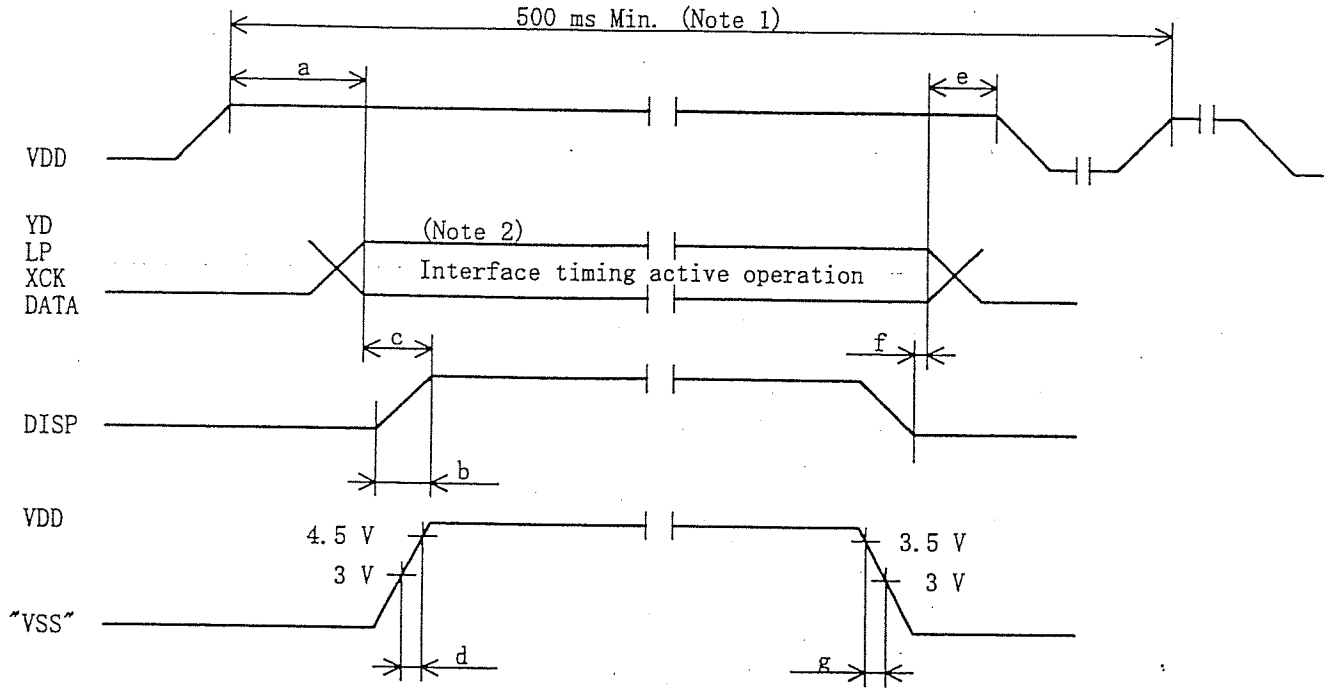


Fig. 12 Supply voltage sequence condition

Power ON		
Symbol	Allowable value	
a	0 ms Min.	1 s Max.
b	—	100 ns Max.
c	0 ms Min.	—
d	—	10 ms Max.

Power OFF		
Symbol	Allowable value	
e	0 ms Min.	1 s Max.
f	0 ms Min.	1 s Max.
g	1 ms Min.	—

(Note 1) Power ON/OFF cycle time. All signals and power line shall be in accordance with above sequence in case of power ON/OFF.

(Note 2) Before DISP rises up, the signals of YD, LP, XCK, DATA must be input, and the above condition of "a" must be satisfied. After DISP rises up, the signals which comply with the interface timing in Fig. 2, Fig. 3, and Table 8, must be input.

10. Applicable Inspection Standard

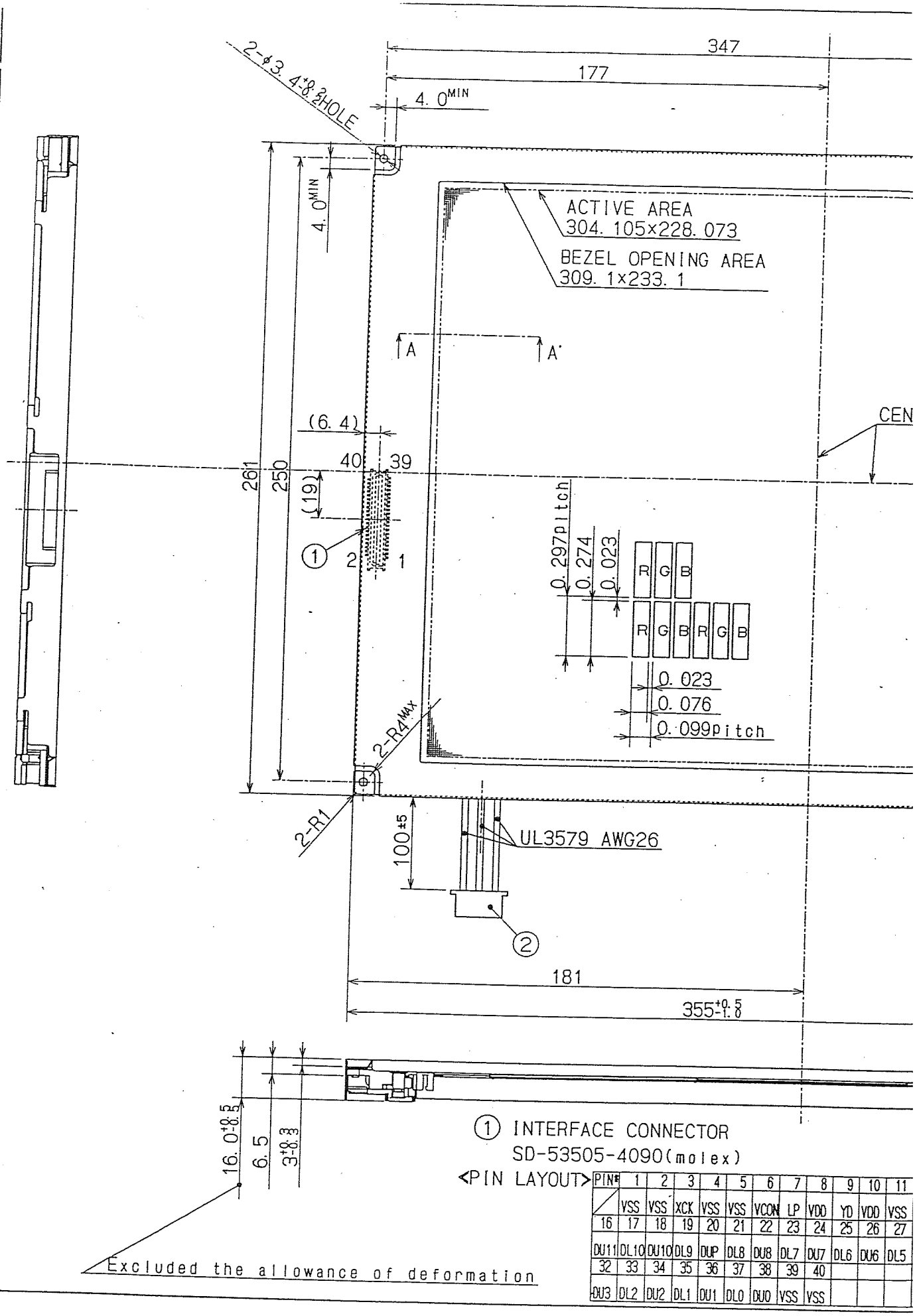
The LCD module shall meet the following inspection standard

:S-U-014

11. This specification describes display quality in case of no gray scale. Since display quality can be affected by gray scale methods, display quality shall be carefully evaluated for the usability of the LCD module in case gray scale is displayed on the LCD module.

WARNING

Don't use any materials which emit following gas from epoxy resin (amines' hardener) and silicone adhesive agent (dealcohol or deoxym) to prevent change polorizer color owing to gas.



① INTERFACE CONNECTOR
SD-53505-4090(molex)

<PIN LAYOUT>

PIN#	1	2	3	4	5	6	7	8	9	10	11
	VSS	VSS	XCK	VSS	VSS	VCOM	LP	VDD	YD	VDD	VSS
16	17	18	19	20	21	22	23	24	25	26	27
DU11	DL10	DU10	DL9	DUP	DL8	DU8	DL7	DU7	DL6	DU6	DL5
32	33	34	35	36	37	38	39	40			
DU3	DL2	DU2	DL1	DU1	DL0	DU0	VSS	VSS			

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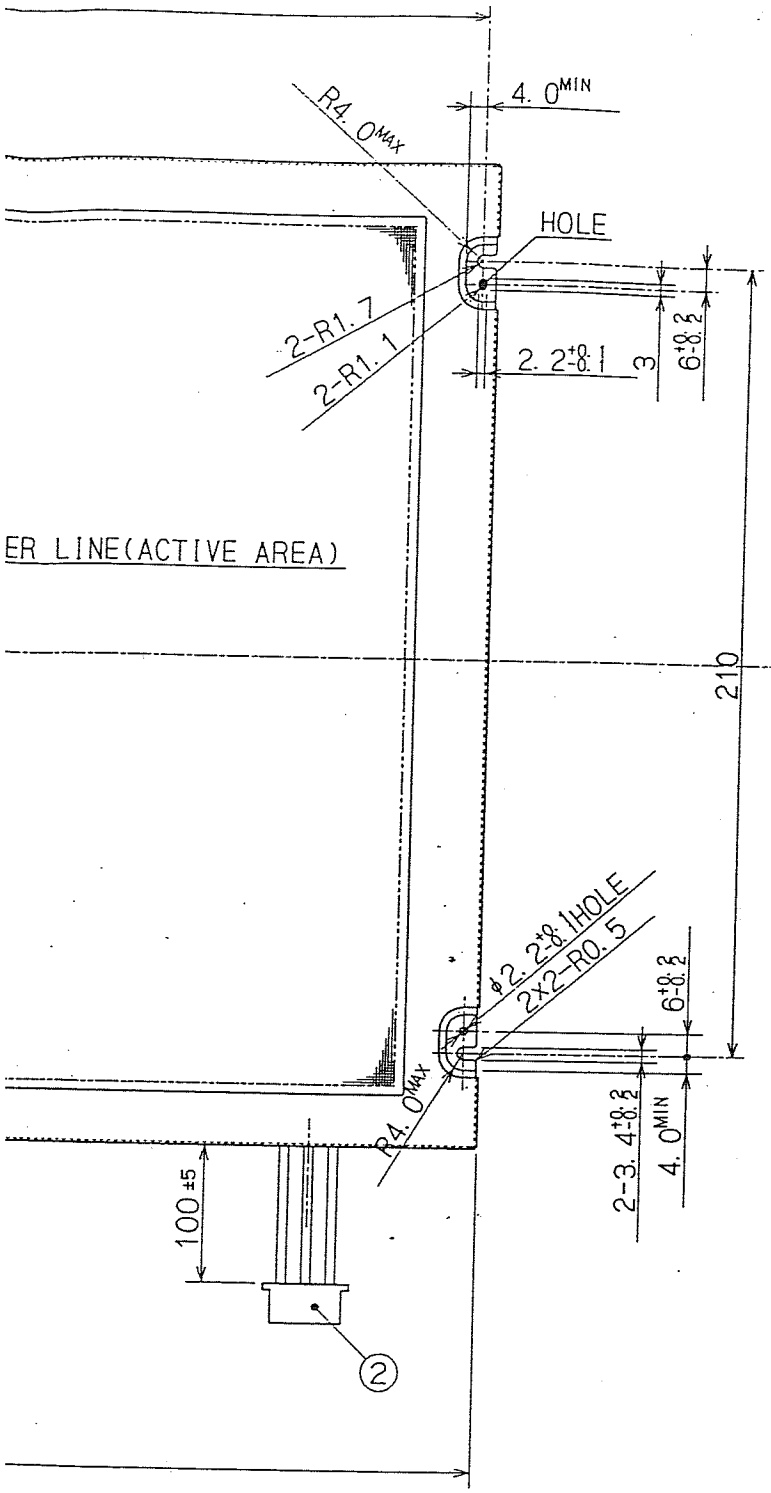
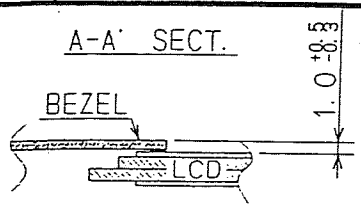


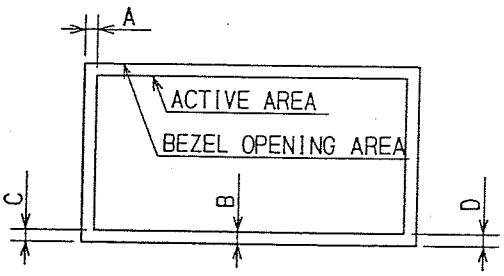
A-A' SECT.



② CCFT CONNECTOR(2PCS)
M63M83-06(MITSUMI)
PIN RAYOUT

PIN#	1	2	3	4	5	6
	HOT	NC	HOT	NC	NC	GND

BEZEL/DISPLAY POSITION



1) TOLERANCE X-DIRECTION A:2.5±0.8
2) TOLERANCE Y-DIRECTION B:2.5±0.8
3) OBLIQUITY OF DISPLAY AREA |C-D|<0.8

指示なき寸法公差は ±0.5mm UNSPECIFIED TOL TO BE UNIT:mm

12	13	14	15											
S	DISP	VSS	DL11											
8	29	30	31											
5	DL4	DU4	DL3											

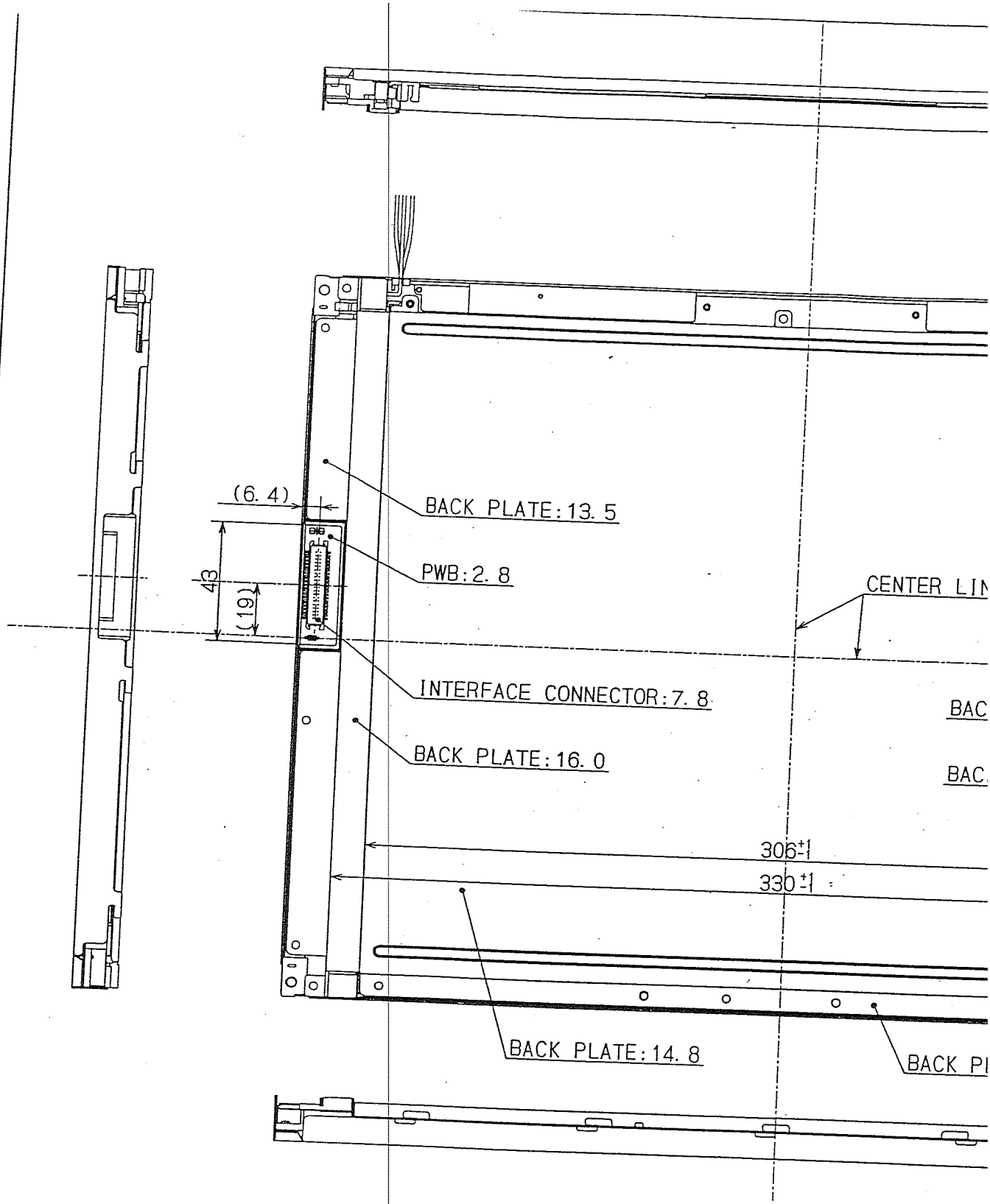
年月日 DATE	改定記事 RIVISE	設通 No	担当 PREPA	LM15X771 適用機種 MODEL	名称 NAME	LCD MODULE OUTLINE DIMENSIONS
材質 MATERIAL	板厚 THIKNESS	仕上 FINSH		尺度 SCALE 1/2	記号 SYMBOL	1024×R·G·B×768DOTS 1/384 DUTY
					部品コード PARTS CODE	

設計 DESIGN	写図 TRACE	検図 CHECK	検図 CHECK	承認 APPROVE
S. URATANI				

SHARP CORPORATION
シャープ株式会社 液晶奈良(事本)
発行部門 アユーティー開発センター第2技術部

作成日付 DATE 1996·9·12·

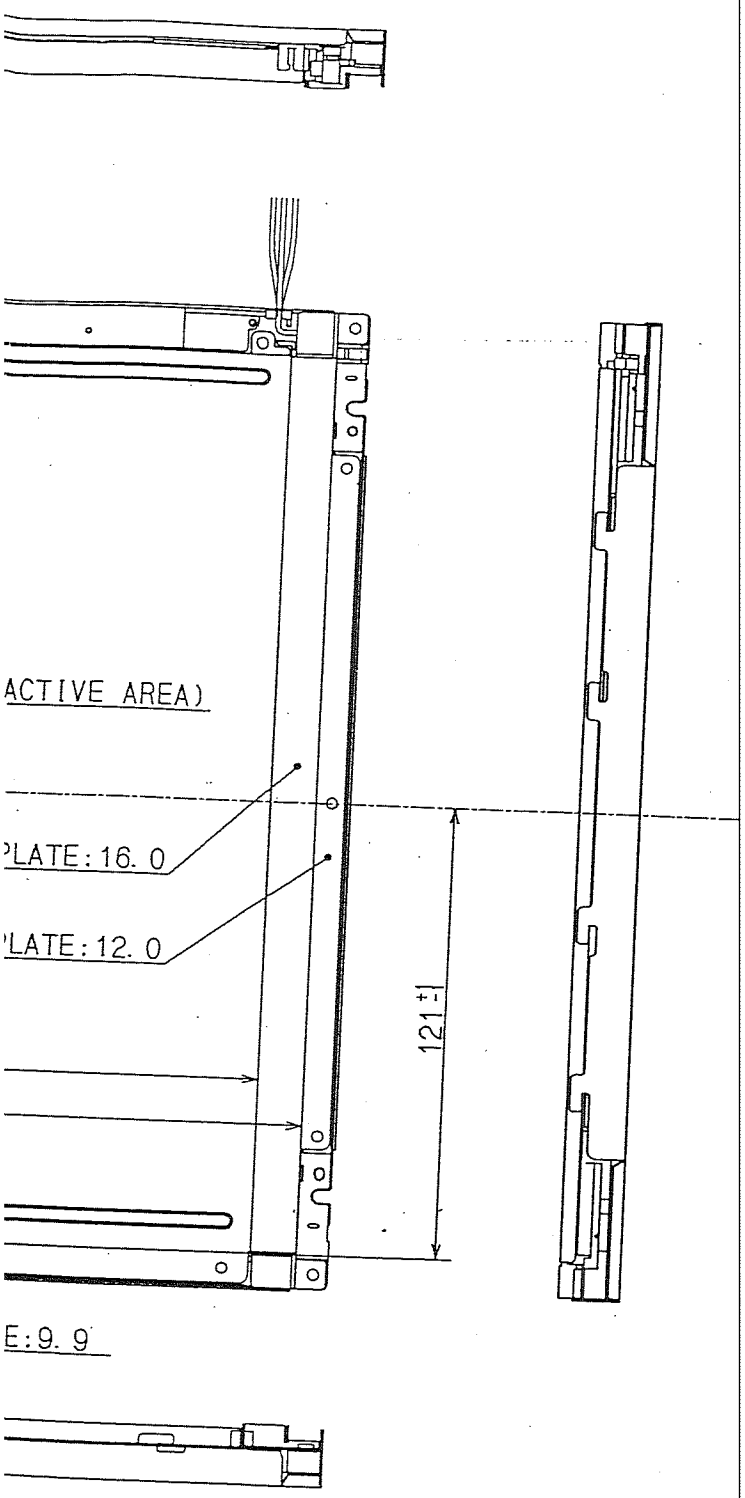
図番 DRAWING. No 0D15X77-8012



NOTE1:Height to be shown as typical value from display surface

26B

SPEC No.	MODEL No	PAGE
LC96804	LM15X771	26



指示なき寸法公差は UNSPECIFIED TOL TO BE ±0.5mm UNIT:mm

1						名称 NAME	LCD MODULE OUTLINE DIMENSIONS(BOTTOM)
2	年月日 DATE	改定記事 RIVISE	設通 No	担当 PREPA	LM15X771 適用機種 MODEL	記号 SYMBOL	1024xR·G·Bx768DOTS 1/384 DUTY
材質 MATERIAL	板厚 THIKNESS	仕上 FINSH			尺度 SCALE 1/2	部品コード PARTS CODE	
設計 DESIGN	写図 TRACE	検図 CHECK	検図 CHECK	承認 APPROVE	SHARP CORPORATION	作成日付 DATE	1996・9・12・
S. URATANI					シャープ株式会社 液晶奈良(事本)	図番 DRAWING. No	OD15X77B8020
					発行部門 アューティー開発センター第2技術部		