

HITACHI

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FOR MESSRS. _____

DATE. Nov.20,2002

CUSTOMER'S ACCEPTANCE SPECIFICATIONS

SP10Q002-Z1 CONTENTS

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* When product will be discontinued , customer will be informed
by HITACHI with twelve months prior announcement.

ACCEPTED BY: _____

PROPOSED BY: H. Ogawa

| | | | | |
|---|-----------|---------------------------|------|-------|
| KAOHSIUNG HITACHI ELECTRONICS CO.,LTD. | Sh No. | 7B64PS 2701-SP10Q002-Z1-2 | PAGE | 1-1/1 |
|---|-----------|---------------------------|------|-------|

RECORD OF REVISION

| DATE | SHEET No. | SUMMARY | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------|---|---|------|--------|------|---------|---------|------|---------|-----------|----|----|----|----|-----|---------|------|--------|------|------|------|------|---------|-----------|----|----|----|----|-----|---------|
| Nov.20,02 | 7B64PS-2705 SP10Q002-Z1-2 Page 5-2/2 | 5.2 Electrical Characteristics of Backlight <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <thead> <tr> <th>ITEM</th> <th>SYMBOL</th> <th>MIN.</th> <th>TYP.</th> <th>MAX.</th> <th>UNIT</th> <th>COMMENT</th> </tr> </thead> <tbody> <tr> <td>Frequency</td> <td>fL</td> <td>30</td> <td>70</td> <td>85</td> <td>kHz</td> <td>Ta=25°C</td> </tr> </tbody> </table> <div style="text-align: center; margin: 10px 0;"> Changed </div> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>ITEM</th> <th>SYMBOL</th> <th>MIN.</th> <th>TYP.</th> <th>MAX.</th> <th>UNIT</th> <th>COMMENT</th> </tr> </thead> <tbody> <tr> <td>Frequency</td> <td>fL</td> <td>40</td> <td>70</td> <td>85</td> <td>kHz</td> <td>Ta=25°C</td> </tr> </tbody> </table> | ITEM | SYMBOL | MIN. | TYP. | MAX. | UNIT | COMMENT | Frequency | fL | 30 | 70 | 85 | kHz | Ta=25°C | ITEM | SYMBOL | MIN. | TYP. | MAX. | UNIT | COMMENT | Frequency | fL | 40 | 70 | 85 | kHz | Ta=25°C |
| | ITEM | SYMBOL | MIN. | TYP. | MAX. | UNIT | COMMENT | | | | | | | | | | | | | | | | | | | | | | | |
| Frequency | fL | 30 | 70 | 85 | kHz | Ta=25°C | | | | | | | | | | | | | | | | | | | | | | | | |
| ITEM | SYMBOL | MIN. | TYP. | MAX. | UNIT | COMMENT | | | | | | | | | | | | | | | | | | | | | | | | |
| Frequency | fL | 40 | 70 | 85 | kHz | Ta=25°C | | | | | | | | | | | | | | | | | | | | | | | | |
| | 7B64PS- 2709 SP10Q002-Z1-2 Page 9-3/3 | I/F function revise : FRAME → FLM LOAD → CL1 CP → CL2 <hr style="width: 100%; border: 0.5px solid black; margin: 5px 0;"/> DISP OFF → DOFF | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

3. GENERAL SPECIFICATIONS

| | |
|----------------------------|--|
| (1) Part Name | SP10Q002-Z1 |
| (2) Module Size | 120.0(W)mm×80.0(H)mm×7.0(D)mm |
| (3) Effective Display Area | 88.1 mm min. × 60.0 mm min. |
| (4) Dot Size | 0.335(W)mm × 0.335(H)mm |
| (5) Dot Pitch | 0.35(W)mm × 0.35(H)mm |
| (6) Number of Dots | 240 (W) × 160 (H)dots |
| (7) Duty | 1/160 |
| (8) LCD | Film type back/white (Negative type) The upper polarizer is anti-glare type. (Hardness : 3H) The bottom polarizer is transmissive type. |
| (9) Viewing Direction | 6 O'clock |
| (10) Backlight | Cold cathode fluorescent lamp. |
| (11) Weight | (80g) |

4. ABSOLUTE MAXIMUM RATINGS

4.1 ELECTRICAL ABSOLUTE MAXIMUM RATINGS.

VSS=0V:STANDARD

| ITEM | SYMBOL | MIN. | MAX. | UNIT | COMMENT |
|---------------------------|---------|------|---------|------|---------|
| Power Supply for Logic | VDD-VSS | 0 | 6.5 | V | |
| Power Supply for LC Drive | VDD-VEE | 0 | 27.5 | V | |
| Input Voltage | V_i | -0.3 | VDD+0.3 | V | Note 1 |
| Input Current | I_i | 0 | 1 | A | |
| Static Electricity | - | - | 100 | V | Note 2 |

Note 1. $\overline{\text{DOFF}}$, FLM, CL1,CL2, D0~D3.

Note 2. Make certain you are grounded when handling LCM.

4.2 ENVIRONMENTAL ABSOLUTE MAXIMUM RATINGS.

| ITEM | OPERATING | | STORAGE | | COMMENT |
|---------------------|----------------|---------------------------------|----------------|---|--------------------------|
| | MIN. | MAX. | MIN. | MAX. | |
| Ambient Temperature | 0°C Note 6 | 40°C | -20°C | 60°C | Note 2,3 |
| HUMIDITY | Note 1 | | Note 1 | | Without Condensation |
| Vibration | - | 2.45m/s ² (0.25G) | - | 11.76m/s ² (1.2G) Note 5 | Note 4 |
| Shock | - | 29.4m/s ² (3 G) | - | 490.0m/s ² (50 G) | XYZ Directions Note 5 |
| Corrosive Gas | Not Acceptable | | Not Acceptable | | |

Note 1 $T_a \leq 40^\circ\text{C}$: 85%RH max.

$T_a > 40^\circ\text{C}$: Absolute humidity must be lower.

Than the humidity of 85% RH at 40°C.

Note 2 T_a at $-20^\circ\text{C} < 48\text{h}$, at $60^\circ\text{C} < 168\text{h}$.

Note 3 Background color changes slightly depending on ambient temperature.
This phenomenon is reversible.

Note 4 5Hz~100Hz (Except resonance frequency and X,Y,Z each direction within 1h)

Note 5 The module should be operated normally after finish the test.

Note 6 Higher starting voltage of CFL and higher LCD driving voltage are needed while operating at 0°C.

The life time of CFL will be reduced while operating at 0°C need to make sure of value of IL and characteristics of inverter.

Also the response time at 0°C will be slower.

5. ELECTRICAL CHARACTERISTICS

5.1 ELECTRICAL CHARACTERISTICS

| ITEM | SYMBOL | CONDITION | MIN. | TYP. | MAX. | UNIT |
|--|---------|--------------------------|--------|-------|--------|------|
| Power Supply Voltage For Logic | VDD-VSS | - | 4.75 | 5.0 | 5.25 | V |
| | | | 3.0 | 3.3 | 3.6 | |
| Power Supply Voltage For Lc Driving | VEE-VSS | - | -23.1 | -22.0 | -20.9 | V |
| Input Voltage Note 1 | VI | H Level | 0.8VDD | - | VDD | V |
| | | L Level | 0 | - | 0.2VDD | V |
| Power Supply Current For Logic Note 2 | IDD | Note 2 | - | 1.9 | - | mA |
| Power Supply Current For LC Driving Note 2 | IEE | Note 2 | - | 1.5 | - | mA |
| Recommended LC LC Driving Voltage Note 3 | VDD-VEE | Ta= 0°C , $\phi=0^\circ$ | - | 22.4 | - | V |
| | | Ta=25°C , $\phi=0^\circ$ | - | 20.5 | - | V |
| | | Ta=40°C , $\phi=0^\circ$ | - | 19.2 | - | V |
| Frame Frequency Note 4 | fFLM | - | 70 | 75 | 140 | Hz |

Note 1 $\overline{\text{DOFF}}$, fFLM, CL1, CL2 , D0~D3.

Note 2 fFLM =75Hz, Test pattern is all "Q".
VDD-VEE=20.5V, Ta=25°C

Note 3 Recommended LC driving voltage fluctuate about $\pm 1.0\text{V}$ by each module.
Test pattern is all "Q"

Note 4 Need to make sure of flicking and rippling of display when setting the FLM frequency in your set.

5.2 ELECTRICAL CHARACTERISTICS OF BACKLIGHT

| ITEM | SYMBOL | MIN. | TYP. | MAX. | UNIT | COMMENT |
|----------------------------|--------------|--------|------|------|------|---------|
| Lamp Voltage | VL | - | 300 | - | V | Ta=25°C |
| Frequency | fL | 40 | 70 | 85 | kHz | Ta=25°C |
| Lamp Current | IL | 4 | 4.5 | 5 | mA | Ta=25°C |
| Starting Discharge Voltage | VS Note 2 | (1000) | - | - | V | Ta=25°C |

Note 1 : Please certainly inform HITACHI before designing lamp drive circuit according to the above specifications.

Note 2 : Starting discharge voltage is increased when LCM is operating at lower temperature.
Please check the characteristics of inverter before applying to your set.

Note 3 : Average life time of CFL will be decreased when LCM is operating at lower temperature.

Note 4 : Under lower driving frequency of the inverter, a certain backlight (From CFL & CFL reflection sheet) may generate sound noise. Before designing the inverter, please consider driving frequency and check sound noise from the backlight system.

Note 5 : CFL life time.
MTBF=About 20K Hours at 25°C IL=4.5mA
Please note that MTBF is not a guaranteed value.
This is a target value for LCM design.

Note 6 : Recommend inverter is INVC445(12V) and INVC473(5V).

6. OPTICAL CHARACTERISTICS

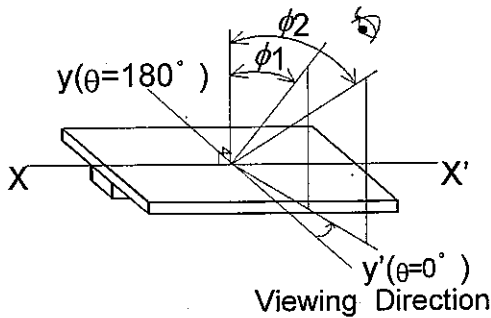
6.1 OPTICAL CHARACTERISTICS

Ta=25°C(BACKLIGHT ON)

| ITEM | SYMBOL | CONDITIONAL | MIN. | TYP. | MAX. | UNIT | NOTE |
|----------------------|-------------------|------------------------------------|------|------|------|------|------|
| Viewing Angle | $\phi_2 - \phi_1$ | $K \geq 2.0$ | - | 40 | - | Deg. | 1,2 |
| Contrast Ratio | K | $\phi = 0^\circ, \theta = 0^\circ$ | - | 20 | - | - | 3 |
| Response Time (Rise) | tr | $\phi = 0^\circ, \theta = 0^\circ$ | - | 160 | - | ms | 4 |
| Response Time (Fall) | tf | $\phi = 0^\circ, \theta = 0^\circ$ | - | 110 | - | ms | 4 |

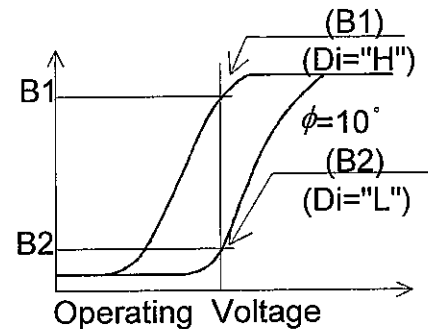
(Measure Condition By HITACHI)

Note 1. Definition of θ and ϕ
(Normal)

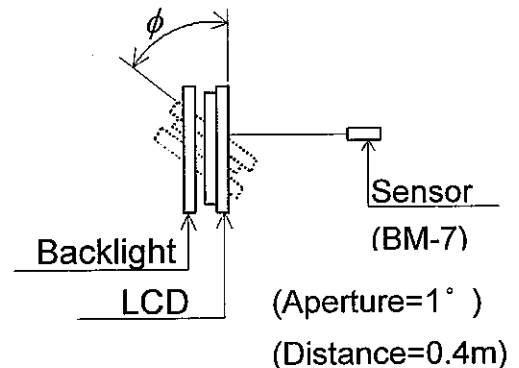
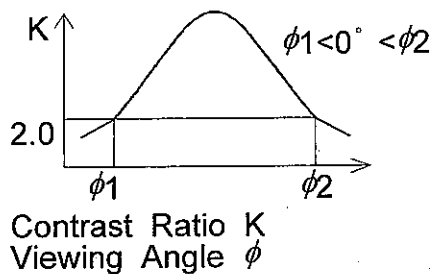


Note 3. Definition of contrast "K"

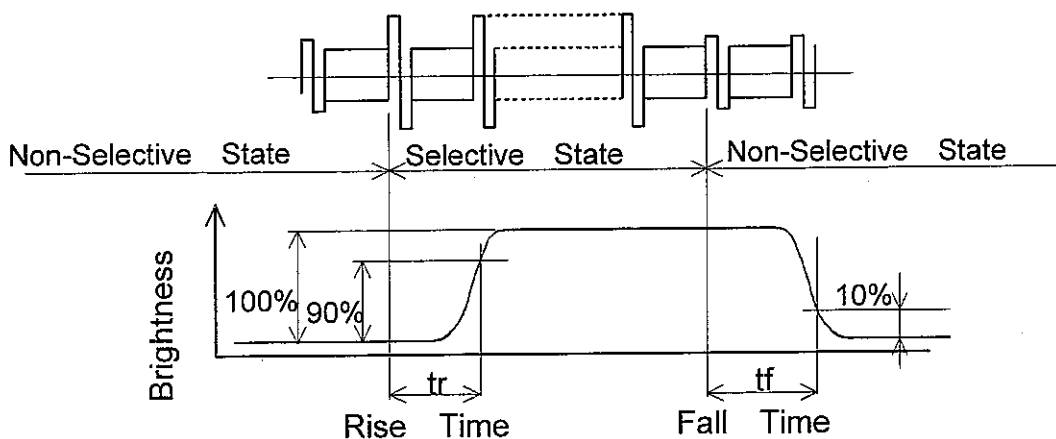
$$K = \frac{\text{Brightness on selected dot (B1)}}{\text{Brightness on non-selected dot (B2)}}$$



Note 2. Definition of viewing angle
 ϕ_1 and ϕ_2 :



Note 4. Definition of optical response



6.2 OPTICAL CHARACTERISTICS OF BACKLIGHT

(LCM, BACKLIGHT ON, Ta=25°C)

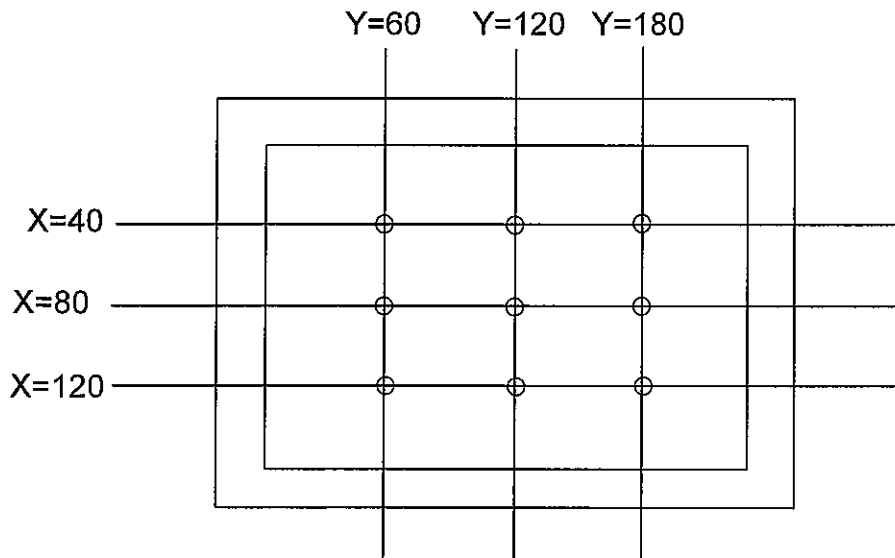
| ITEM | MIN. | TYP. | MAX. | UNIT | NOTE |
|-----------------------|------|-------|------|-------------------|-----------------------------|
| Brightness | 80.0 | 120.0 | - | cd/m ² | IL=4.5mA Note 1,2 |
| Rise Time | - | 5 | - | Minute | IL=4.5mA Brightness 80% |
| Brightness Uniformity | - | - | ±30 | % | Under mentioned Note 1,3 |

CFL : Initial, Ta=25°C, VDD-VEE=20.5V
Display data should be all "ON".

Note 1. Measurement after 10 minutes of CFL operating.

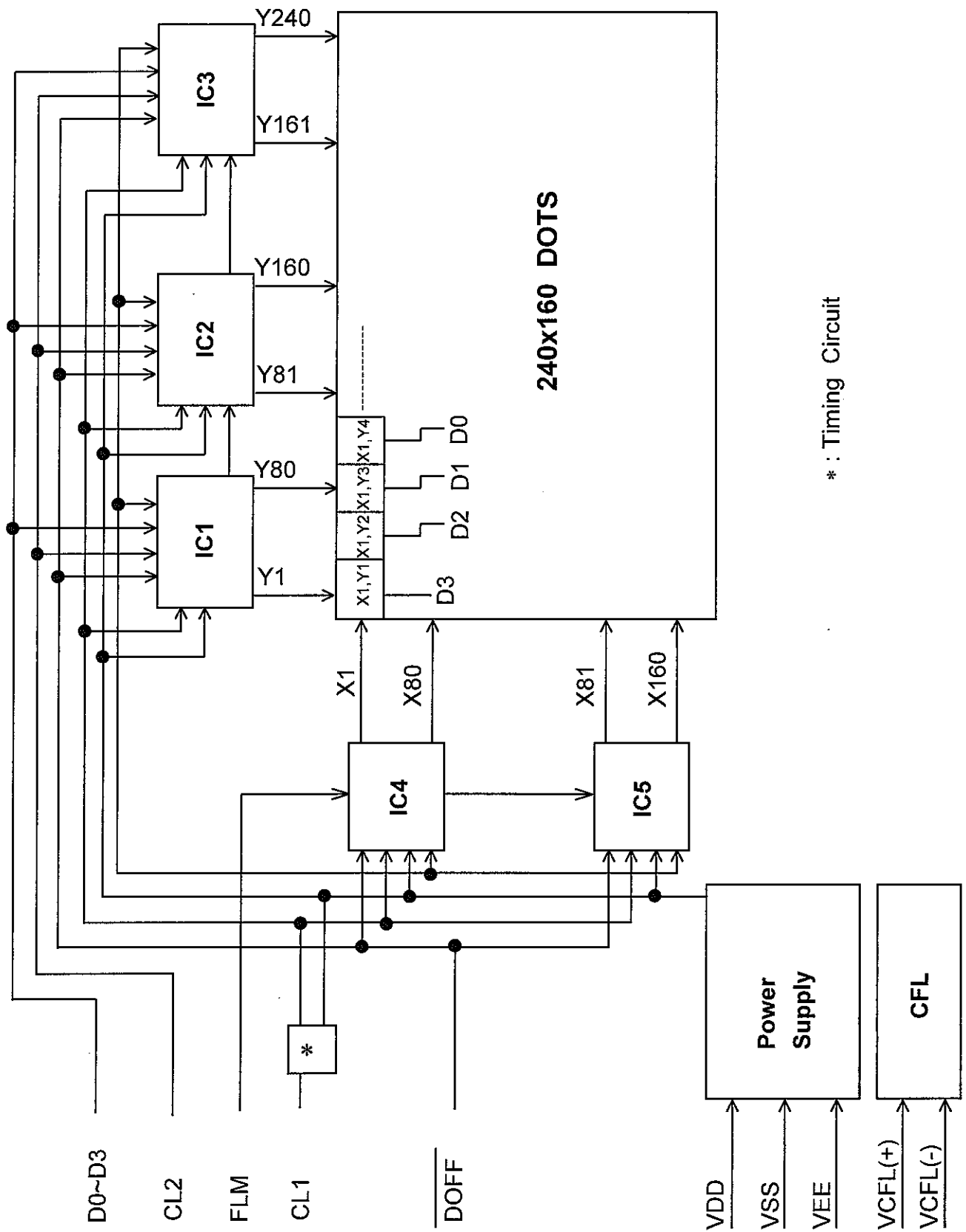
Note 2. Brightness control : 100%

Note 3. Measurement of the following 9 places on the display.
Definition of the brightness tolerance.



$$\left(\frac{\text{Max or min brightness} - \text{Average brightness}}{\text{Average brightness}} \right) \times 100\%$$

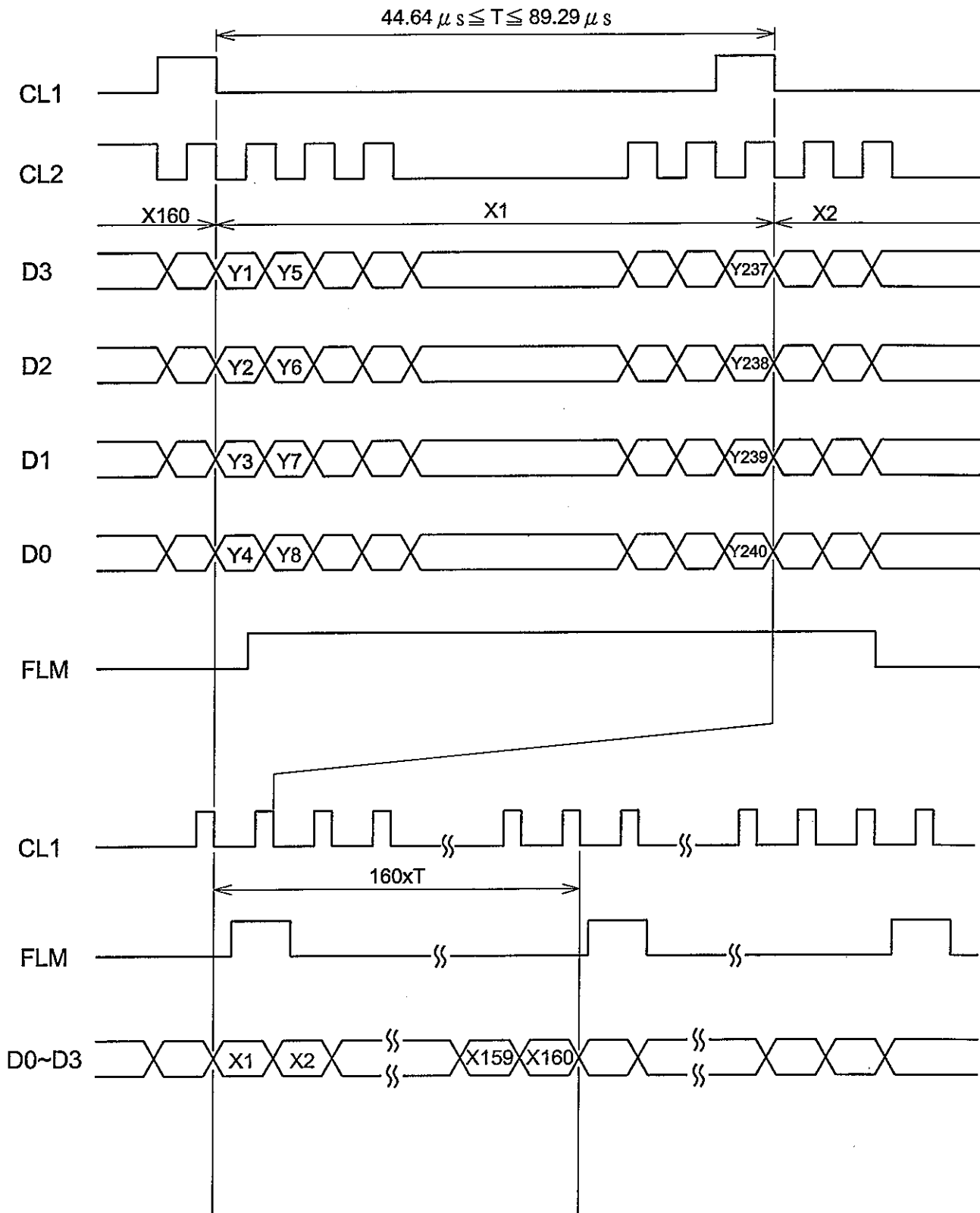
7. BLOCK DIAGRAM



* : Timing Circuit

8. INTERFACE TIMING

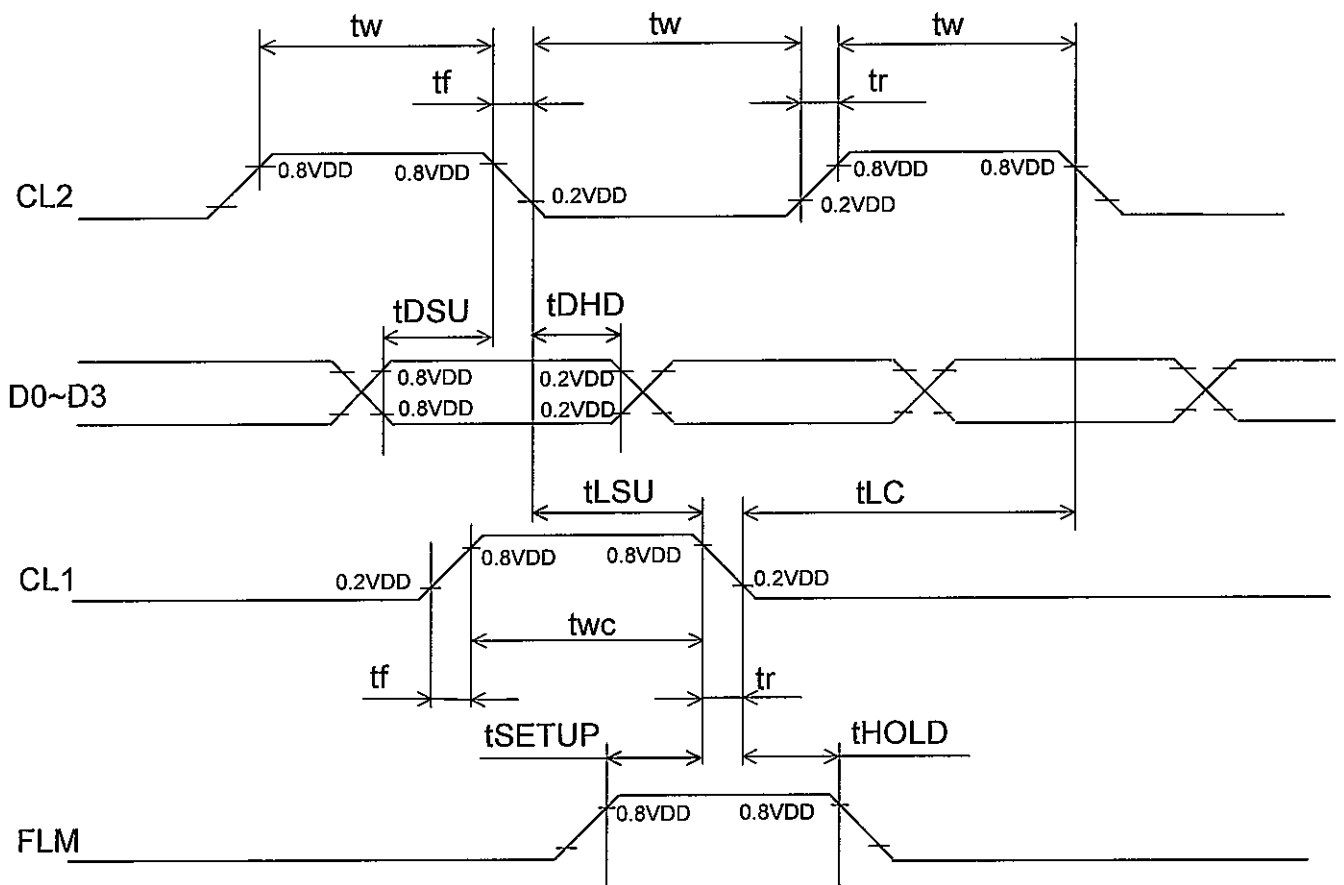
8.1 TIMING CHART



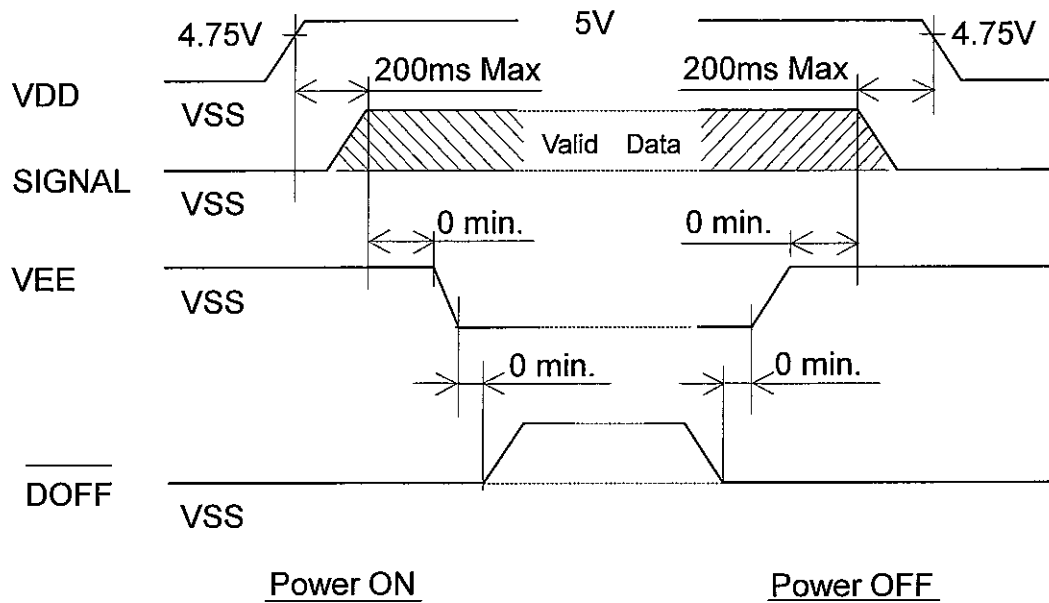
8.2 TIMING CHARACTERISTICS

$0^{\circ}\text{C} \leq T_a \leq 40^{\circ}\text{C}, V_{DD} = 5\text{V} \pm 5\%$

| ITEM | SYMBOL | MIN. | TYP. | MAX. | UNIT |
|---------------------|---------------------------------|------|------|------|------|
| CL2 Frequency | f _{CP} | - | - | 6.5 | MHz |
| CL2 Pulse Width | t _w | 63 | - | - | ns |
| CL2 Rise, Fall Time | t _r , t _f | - | - | 20 | ns |
| Data Set Up Time | t _{DSU} | 50 | - | - | ns |
| Data Hold Time | t _{DHD} | 50 | - | - | ns |
| CL1 Set Up Time | t _{LSU} | 80 | - | - | ns |
| CL1 → CL2 Time | t _{LC} | 80 | - | - | ns |
| "FLM" Set Up Time | t _{SETUP} | 100 | - | - | ns |
| "FLM" Hold Time | t _{HOLD} | 100 | - | - | ns |
| "CL1" Pulse Width | t _{WC} | 125 | - | - | ns |

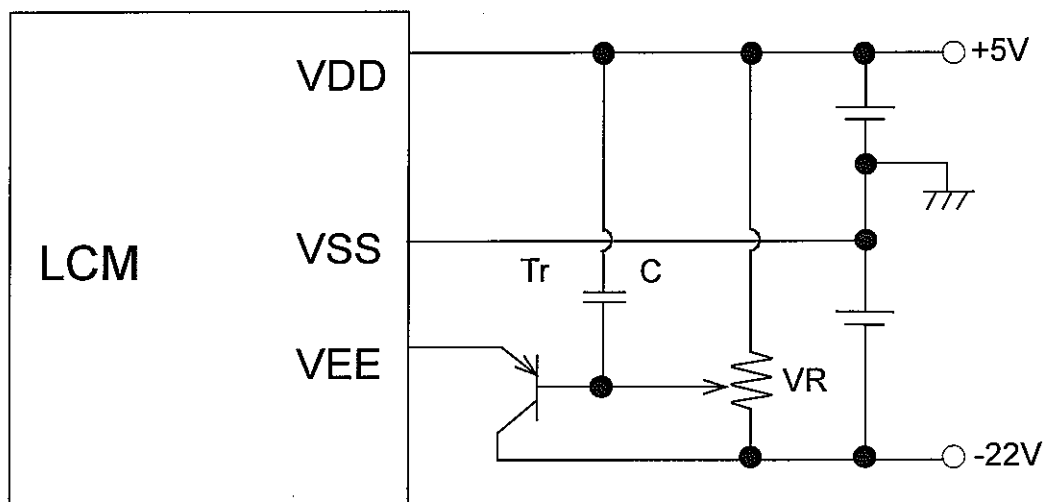


8.3 TIMING OF POWER SUPPLY AND INTERFACE SIGNAL



The missing pixels may occur when the lcm is driven except above power interface timing sequence.

8.4 POWER SUPPLY FOR LCM



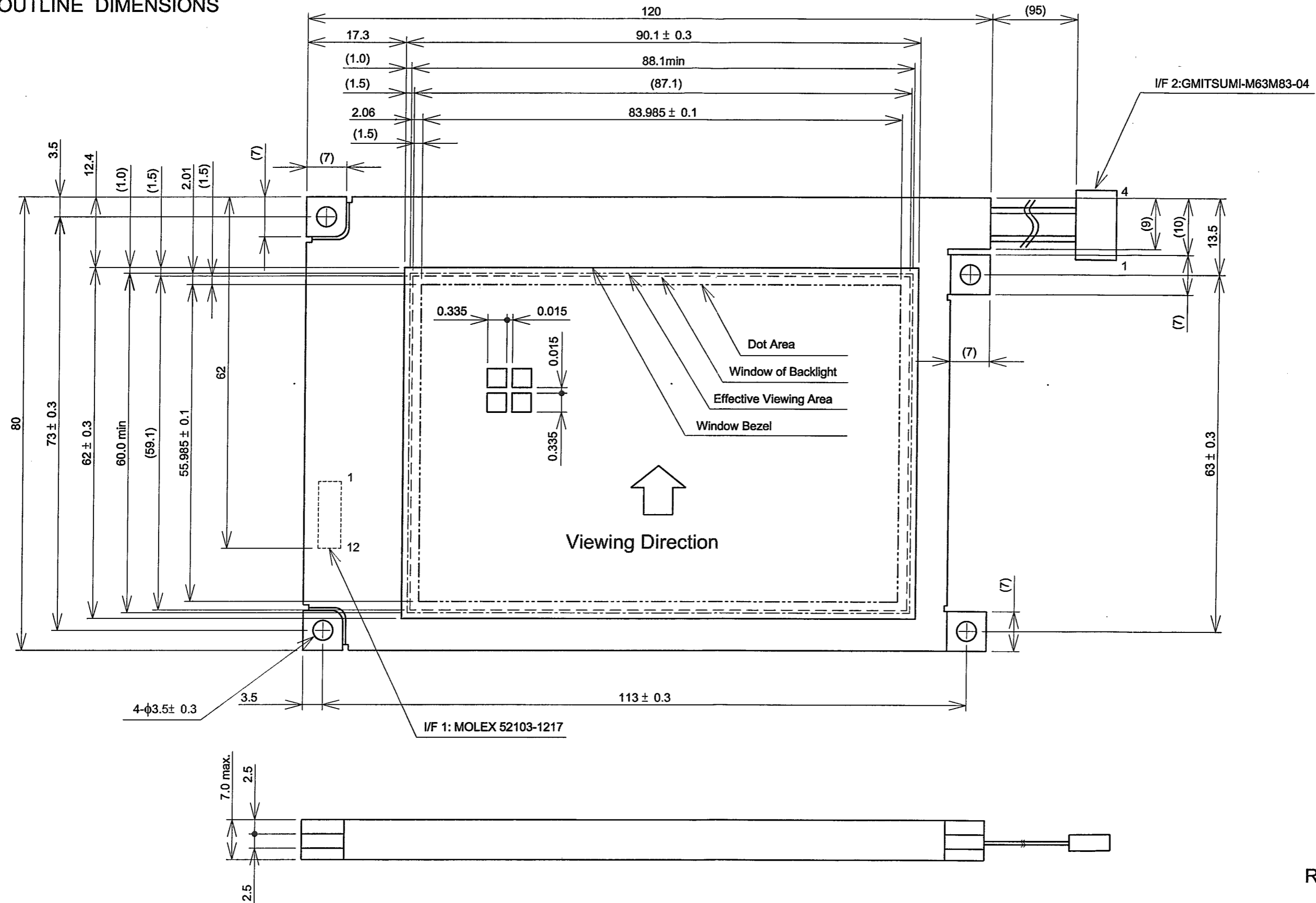
C : 3.3 μ F(Aluminum electrolytic capacitor)

VR:10~20k Ω

Tr:2SA673APKC(hFE=100,IC=500mA)or equivalent Tr.

9. OUTLINE DIMENSIONS

9.1 OUTLINE DIMENSIONS



Reference mark : ()

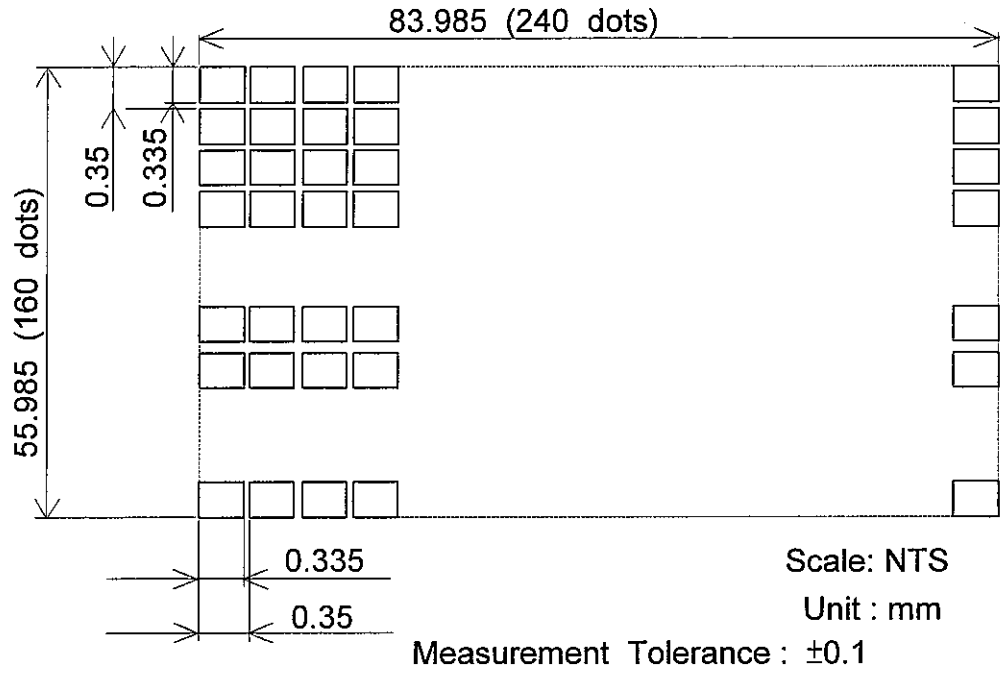
Unit : mm

Scale : NTS

Tolerance Not Specified : ± 0.5mm

| | | | | | | |
|---|------|-------------|------------|----------------------------|------|-------|
| KAOHSIUNG HITACHI ELECTRONICS CO.,LTD. | DATE | Nov.20,'02. | Sh. No. | 7B63PS 2709- SP10Q002-Z1-2 | PAGE | 9-1/3 |
|---|------|-------------|------------|----------------------------|------|-------|

9.2 DISPLAY PATTERN



9.3 INTERFACE PIN CONNECTION

I/F1 : Molex/52103-1217

(Suitable FPC : 1.0 Pitch , Pin, 0.3t)

| INTERFACE | PIN No. | SIGNAL | LEVEL | FUNCTION | |
|-----------|---------|--------|-------|----------|------------------------|
| LCM | I/F1 | 1 | FLM | H | First Line Marker |
| | | 2 | CL1 | H→L | Data Latch |
| | | 3 | CL2 | H→L | Data Shift |
| | | 4 | VDD | - | Power Supply For Logic |
| | | 5 | VSS | - | GND |
| | | 6 | VEE | - | Power Supply For LC |
| | | 7 | D0 | H/L | Display Data |
| | | 8 | D1 | | |
| | | 9 | D2 | | |
| | | 10 | D3 | | |
| | | 11 | DOFF | H/L | H:ON / L:OFF |
| | | 12 | GND | - | GND |

| INTERFACE | PIN No. | SIGNAL | LEVEL | FUNCTION | |
|-----------|-------------|--------|---------|----------|--------------------|
| LCM | CFL I/F2 | 1 | VCFL(+) | - | CFL Supply For CFL |
| | | 2 | N.C | - | |
| | | 3 | N.C | - | |
| | | 4 | VCFL(-) | - | CFL GND |

CFL I/F2 : Mitsumi/M63M83-04

Suitable Connector : Mitsumi M61M73-04

Mitsumi M60-04-30-1149(Straight)

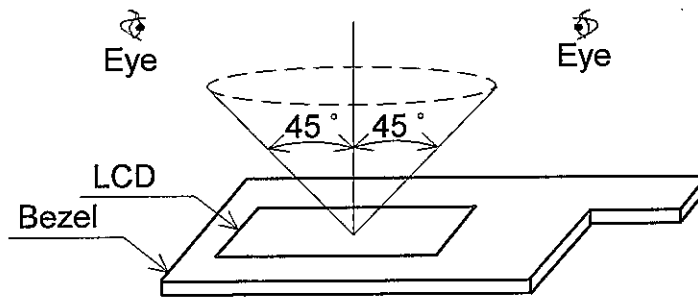
Mitsumi M60-04-30-1349(Angle)

10. APPEARANCE STANDARD

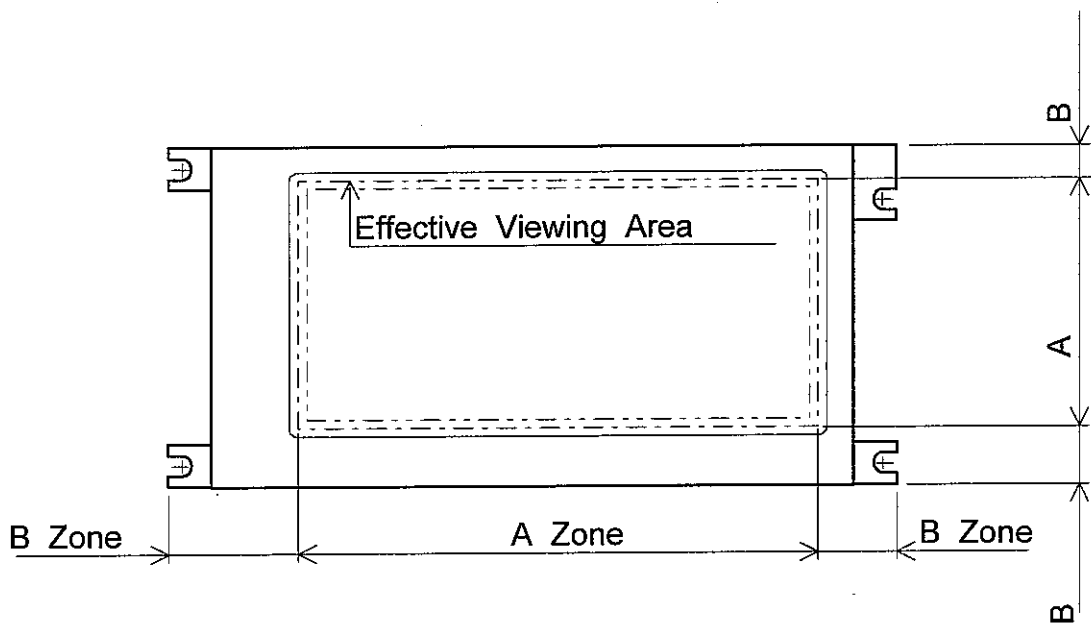
10.1 APPEARANCE INSPECTION CONDITION

Visual inspection should be done under the following condition.

- (1) In the dark room
- (2) With CFL panel lighted with prescribed inverter circuit.
- (3) With eyes 25cm distance from LCM.
- (4) Viewing angle within 45° from the vertical line to the center of LCD.



10.2 DEFINITION OF EACH ZONE



A Zone : effective viewing area (Refer to our drawing)

B Zone : except A zone

10.3 APPEARANCE SPECIFICATION

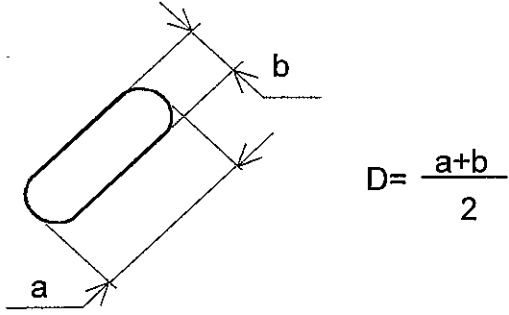
*) If the problem occurs about this item, the responsible person of both party (customer and HITACHI) will discuss more detail.

| No. | ITEM | CRITERIA | | A | B | |
|---------------------------------------|--|---|---------------------------|---------------------------|------|---|
| L C D | Scratches | Distinguished one is not acceptable (To be judged by HITACHI limit sample) | | * | - | |
| | Dent | Same as above | | * | - | |
| | Wrinkles in Polarizer | Same as above | | * | - | |
| | Bubbles | Average Diameter D(mm) | | Maximum Number Acceptable | | |
| | | D ≤ 0.2 | | Ignore | | |
| | | 0.2 < D ≤ 0.3 | | 12 | | |
| | | 0.3 < D ≤ 0.5 | | 3 | | |
| | | | 0.5 < D | | None | |
| | Stains, Foreign Materials Dark Spot | Filamentous | | | 0 | - |
| | | LENGTH L(mm) | WIDTH W(mm) | Maximum Number Acceptable | | |
| | | L ≤ 2.0 | W ≤ 0.03 | Ignore | | |
| | | L ≤ 3.0 | 0.03 < W ≤ 0.05 | 6 | | |
| | | - | 0.05 < W | None | | |
| | | Round | | | | |
| | | Average Dia-Meter D(mm) | Maximum Number Acceptable | Space | | |
| D < 0.2 | | IGNORE | - | | | |
| 0.2 ≤ D < 0.33 | | 8 | 10mm | | | |
| 0.33 ≤ D | | None | - | | | |
| The Whole Number | Filamentous + Round = 10 | | | | | |
| Those Wiped Out Easily Are Acceptable | | | 0 | 0 | | |
| Color Tone | To Be Judge By HITACHI Limit Sample | | 0 | - | | |
| Color Uniformity | Same As Above | | 0 | - | | |
| Pinhole | (a + b)/2 ≤ 0.15max. No .Acceptable Ignore | | 0 | - | | |
| | 0.15 < (a + b)/2 ≤ 0.3max. No .Acceptable ≤ 10 | | | | | |
| | C ≤ 0.03 Ignore | | | | | |

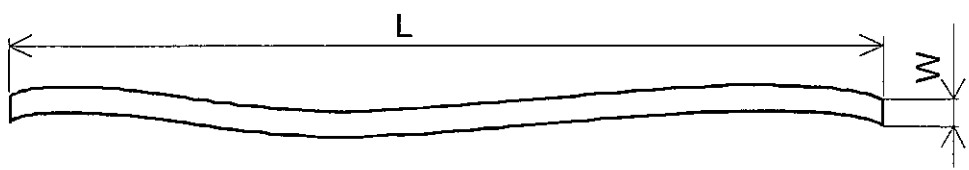
| No. | ITEM | CRITERIA | | | | A | B |
|------------------|-------------------------------------|------------------------|--------------------------------------|---------------------------|---------------|---|---|
| L C D | Contrast Irregularity (Spot) | Average Diameter D(mm) | Contrast | Maximum Number Acceptable | Minimum Space | 0 | - |
| | | $D \leq 0.25$ | To Be Judged By HITACHI Limit Sample | Ignore | - | | |
| | | $0.25 < D \leq 0.35$ | | ≤ 10 | 20mm | | |
| | | $0.35 < D \leq 0.5$ | | ≤ 4 | 20mm | | |
| | $0.5 < D$ | None | | - | | | |
| | Contrast Irregularity (Filamentous) | Width W(mm) | Length L(mm) | Maximum Number Acceptable | Minimum Space | 0 | - |
| | | $W \leq 0.25$ | $L \leq 1.2$ | ≤ 2 | 20mm | | |
| | | $W \leq 0.2$ | $L \leq 1.5$ | ≤ 3 | 20mm | | |
| | | $W \leq 0.15$ | $L \leq 2.0$ | ≤ 3 | 20mm | | |
| | | $W \leq 0.1$ | $L \leq 3.0$ | ≤ 4 | 20mm | | |
| The Whole Number | | | ≤ 6 | | | | |
| Rubbing Scratch | To Be Judged By HITACHI Standard | | | | 0 | - | |

NOTE

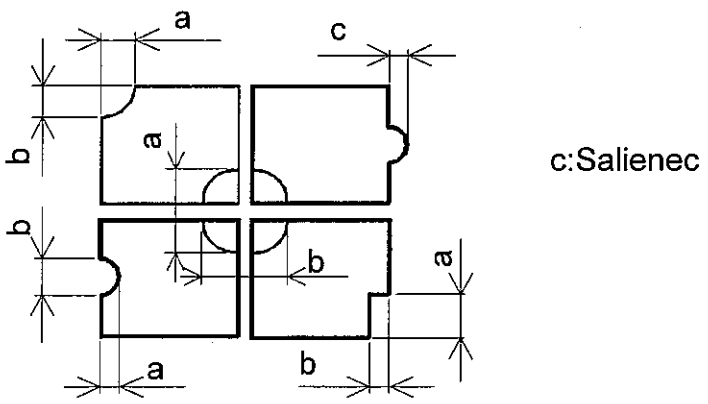
(1) Definition of average diameter D



(2) Definition of length L and width W



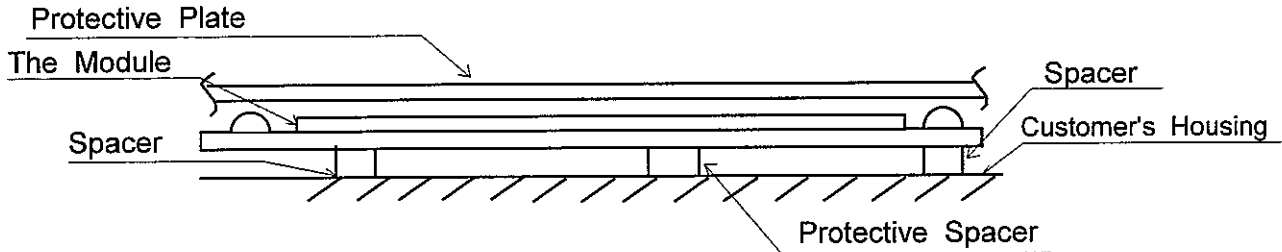
(3) Definition of pinhole



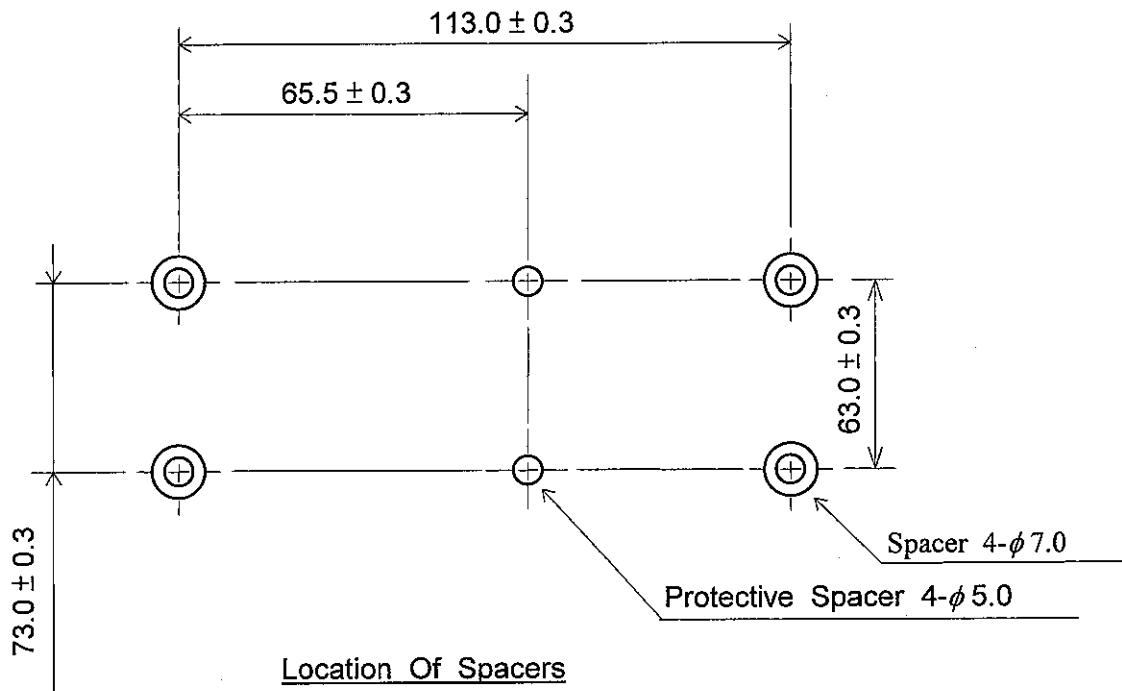
11. PRECAUTION IN DESIGN

11.1 Mounting Method

Since the module is so constructed as to be fixed by utilizing fitting holes in the printed circuit board as shown below, it is necessary to take consideration the following items on attachment to a frame.



Example Of Mounting



Location Of Spacers

- (1) Use of protective plate, made of an acrylic plate, etc. In order to protect a polarizer and LC cell.
- (2) To prevent the module cover from being pressed, The spacers between the module and the fitting plates should be longer than 0.5mm.
- (3) We recommend you to use protective spacer as figure for protecting LCD module from any kind of shock to your set.

11.2 LC driving voltage(V_{EE}) and viewing angle range.

Setting V_{EE} out of the recommended condition will be a cause for a change of viewing angle range.

11.3 CAUTION AGAINST STATIC CHARGE

As this module is provided with C-MOS LSIs, the care to take such a precaution as to grounding the operator's body is required when handling it.

11.4 POWER ON SEQUENCE

Input signals should not be applied to LCD module before power supply voltage is applied and reaches to specified voltage ($5 \pm 0.25V$) if above sequence is not kept, C-MOS LSIs of LCD modules may be damaged due to latch up problem.

11.5 PACKAGING

- (1) No. leaving products is preferable in the place of high humidity for a long period of time. For their storage in the place where temperature is $35^{\circ}C$ or higher, special care to prevent them from high humidity is required. A combination of high temperature and high humidity may cause them polarization degradation as well as bubble generation and polarizer peel-OFF. Please keep the temperature and humidity within the specified range for use and storing.
- (2) Since upper polarizers and lower aluminum plates tend to be easily damaged, they should be handled with full care so as not to get them touched, pushed or rubbed by a piece of glass. Tweezers and anything else which are harder than a pencil lead 3H.
- (3) As the adhesives used for adhering upper/lower polarizes and aluminum plates are made of organic substances which will be deteriorated by a chemical reaction with such chemicals as acetone, toluene ethanol and isopropyl-alcohol. The following solvents are recommended for use:

normal hexane

Please contact us when it is necessary for you to use chemicals other than the above.

- (4) Lightly wipe to clean the dirty surface with absorbent cotton waste or other soft material like chamois, soaked in the chemicals recommended without scrubbing it hardly.

To prevent the display surface from damage and keep the appearance in good state, it is sufficient, in general, to wipe it with absorbent cotton.

- (5) Immediately wipe off saliva or water drop attached on the display area because its long period adherence may cause deformation or faded color on the spot.
- (6) Foggy dew deposited on the surface and contact terminals due to coldness will be cause for polarizer damage, stain and dirt on product. When necessary to take out the products from some place at low temperature for test, etc. It is required them to be warmed up in a container once at the temperature higher than that of room.
- (7) Touching the display area and contact terminals with bare hands and contaminating them are prohibited, because the stain on the display area and poor insulation between terminals are often caused by being touched by bare hands.
(There are some cosmetics detrimental to polarizers.)
- (8) In general the quality of glass is fragile so that it tends to be cracked or chipped in handling , specially on its periphery down, etc.

11.6 CAUTION FOR OPERATION

- (1) It is an indispensable condition to drive LCD's within the specified voltage limit since the higher voltage than the limit causes the shorter LCD life.
An electrochemical reaction due to direct current causes LCD's undesirable deterioration, so that the use of direct current driver should be avoided.
- (2) Response time will be extremely delayed at lower temperature than the operating temperature range and on the other hand at higher temperature LCD's show dark blue color in hem.
However those phenomena do not mean malfunction or out of order with LCD's which will come back in the specified operating temperature range.
- (3) If the display area is pushed hard during operation , some font will be abnormally displayed but it resumes normal condition after turning off once.
- (4) A slight dew depositing on terminals is a cause for electrochemical reaction resulting in terminal open circuit.
Usage under the relative condition of 40°C 50%RH less is required.

11.7 STORAGE

In case of storing for a long period time (For instance, years)

For the purpose of replacement use , the following ways are recommended.

- (1) Storage in a polyethylene bag with the opening sealed so as not to enter fresh air outside in it , and with no desiccant.
- (2) Placing in a dark place where neither exposure to direct sunlight nor light is keeping temperature in the range for 0°C to 35°C.
- (3) Storing with no touch on polarizer surface by anything else.

(It is recommended to store them as they have been contained in the inner container at the time of delivery for us.)

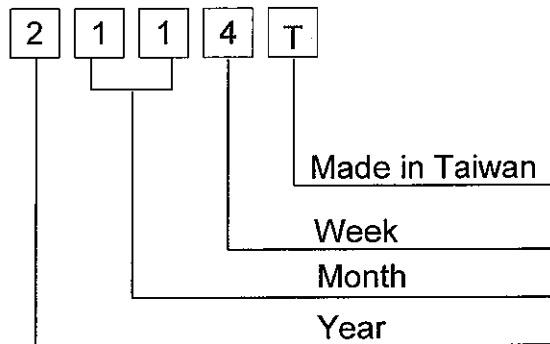
11.8 SAFETY

- (1) It is recommendable to crash damaged or unnecessary LCD's into pieces and wash off liquid crystal by either of solvents such as acetone and ethanol, which should up later.
- (2) When any liquid leaked out of a damaged glass cell in contact with your hands, please wash it off well with soap and water.

12. DESIGNATION OF LOT MARK

Lot mark

Lot mark is consisted of 4 digit number.



| YEAR | FIGURE IN LOT MARK |
|------|--------------------|
| 2002 | 2 |
| 2003 | 3 |
| 2004 | 4 |
| 2005 | 5 |
| 2006 | 6 |

Note 1. Some products have alphabet at the end or the first.

| MONTH | FIGURE IN LOT MARK | MONTH | FIGURE IN LOT MARK |
|-------|--------------------|-------|--------------------|
| Jan. | 01 | Jul. | 07 |
| Feb. | 02 | Aug. | 08 |
| Mar. | 03 | Sep. | 09 |
| Apr. | 04 | Oct. | 10 |
| May | 05 | Nov. | 11 |
| Jun. | 06 | Dec. | 12 |

| WEEK (DAY IN CALENDAR) | FIGURE IN LOT MARK |
|------------------------|--------------------|
| 01~07 | 1 |
| 08~14 | 2 |
| 15~21 | 3 |
| 22~28 | 4 |
| 29~31 | 5 |

Location of lot mark : On the back side of LCM

2114 T

13. PRECAUTION FOR USE

(1) A limit sample should be provided by the both parties on an occasion when the both parties agreed its necessity.

Judgment by a limit sample shall take effect after the limit sample has been established and confirmed by the both parties.

(2) On the following occasion, the handling of the problem should be decided through discussion and agreement between responsible persons of the both parties.

(1) When a question is arisen in the specifications.

(2) When a new problem is arisen which is not specified in this specifications.

(3) When an inspection specifications change or operating condition change in customer is reported to HITACHI, and some problem is arisen in this specification due to the change.

(4) When a new problem is arisen at the customer's operating set for sample evaluation in the customer site.

The precaution that should be observed when handling LCM have been explained above . If any points are unclear or if you have any requests , please contact HITACHI.