| Messrs. | | | | | |
|---|---|---|---|---|---|
| Product Specification | Model: | NMTG-F32240NFWHSGW-09C | Rev. No. | Issued Date. | Page. |
| | | | A | May. 22, 05 | 1 / 22 |

# 32344-OP

## Liquid Crystal Display Module
## Model: NMTG-F32240NFWHSGW-09C

| Acceptance |
|---|
| **Closest Version To NMTG-F32240PFWHSGW** |

*Microtips Technology Inc.*
*12F. No.31 Lane 169, Kang Ning St.,*
*His-Chih, Taipei Hsien, Taiwan, R.O.C.*
*FAX: 886-2-26958625*

| Approved and Checked by |
|---|
| |

| Approved by | Checked by | | Made by |
|---|---|---|---|
| 微 端<br>2007/05/22<br>李 剛 | 微 端<br>2007/05/22<br>趙 長 慶 | 微 端<br>2007/05/22<br>蔡 宜 夢 | 微 端<br>2007/05/22<br>陳 雅 靖 |

Microtips Technology Inc.

Revise Records

| Rev. | Date | Contents | Written | Approved |
|---|---|---|---|---|
| A | 2007/05/22 | Initial Edition | Sherry Chen | Steele Lee |
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Special Notes

| | |
|---|---|
| Note1. | The LCD module is compliant with RoHS. |
| Note2. | |
| Note3. | |
| Note4. | |
| Note5. | |
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# CONTENTS

**The Microtips Customized LCD module, model: NMTG-F32240NFWHSGW-09C is compliant with RoHS**

## 1. General Specifications

| | | |
|---|---|---|
| Operating Temperature | : | Min. -20°C ～ Max. 70°C |
| Storage Temperature | : | Min. -30°C ～ Max. 80°C |
| Dot Pixels | : | 320 (W) x 240 (H) dots |
| Dot Size | : | 0.34 (W) x 0.34 (H) mm |
| Dot Pitch | : | 0.36 (W) x 0.36 (H) mm |
| Viewing Area | : | 122.0 (W) x 91.0 (H) mm (T/P view area) |
| Outline Dimensions | : | 167.1* (W) x 109.0 (H) x 11.0** max. (D)mm |
| | | * Without Connector Cable |
| | | ** Without B/L and FFC Cable |
| Weight | : | N/A |
| LCD Type | : | FSTN/ Positive-mode / Transflective |
| Viewing Direction | : | 6:00 |
| Data Transfer | : | 8-bit parallel data transfer |
| Controller LSI | : | RA8835 |
| Backlight | : | Edge LED (White) |
| Drawings | : | As attached drawings |

## 2. Electrical Specifications

### 2.1 Absolute Maximum Ratings

$V_{SS}$ = 0V

| Parameter | Symbol | Conditions | Min. | Max. | Units |
|---|---|---|---|---|---|
| Supply Voltage (Logic) | $V_{DD}$ - $V_{SS}$ | -- | - 0.3 | 7.0 | V |
| Supply Voltage (LCD Drive) | $V_{LCD}$ - $V_{SS}$ | -- | 0 | 35.0 | V |
| Input Voltage | $V_I$ | -- | - 0.3 | $V_{DD}$ + 0.3 | V |

### 2.2 DC Characteristics

Ta = 25°C, $V_{SS}$ = 0V

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|---|
| Supply Voltage (Logic) | $V_{DD}$ - $V_{SS}$ | -- | 4.5 | 5.0 | 5.5 | V |
| Supply Voltage (LCD Drive) | $V_{DD}$ - $V_{EE}$ | -- | 6.0 | -- | 28.0 | V |
| | $V_{DD}$ - $V_O$ | Shown in 3.1 | | | | V |
| High Level (Input Voltage) | $V_{IH}$ | -- | 0.8x$V_{DD}$ | -- | $V_{DD}$ | V |
| Low Level (Input Voltage) | $V_{IL}$ | -- | $V_{SS}$ | -- | 0.2x$V_{DD}$ | V |
| High Level (Output Voltage) | $V_{OH}$ | $I_{OH}$ = -0.5mA | 2.4 | -- | -- | V |
| Supply Current | $I_{DD}$ | $V_{DD}$ = 5.0V | -- | 20 | 30 | mA |
| | $I_{EE}$ | $V_{DD}$ =5.0V | -- | 3.0 | 5.0 | mA |
| Frame | $f_F$ | Duty = 50% | 32 | 64 | 128 | Hz |

## 2.3 AC Characteristics

### 2.3.1 8080 family interface timing

Ta=-20 to 75°C

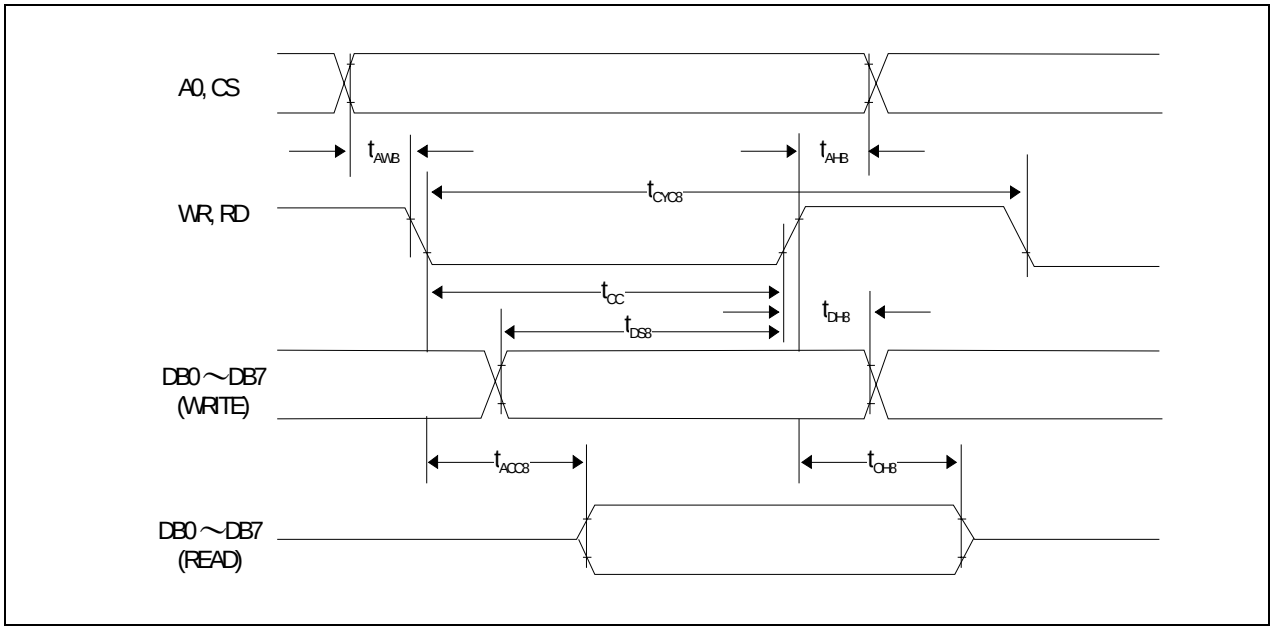
| Signal | Symbol | Parameter | $V_{DD}$ = 4.5 to 5.5 | | $V_{DD}$ = 2.7 to 4.5 | | Units | Condition |
|---|---|---|---|---|---|---|---|---|
| | | | Min. | Max. | Min. | Max. | | |
| A0, CS | $t_{AH8}$ | Address hold time | 10 | – | 10 | – | ns | CL=100pF |
| | $t_{AW8}$ | Address setup time | 0 | – | 0 | – | ns | |
| WR, RD | $t_{CYC8}$ | System cycle time | See note | – | See note | – | ns | |
| | $t_{CC}$ | Strobe pulse width | 120 | – | 150 | – | ns | |
| DB0 to DB7 | $t_{DS8}$ | Data setup time | 120 | – | 120 | – | ns | |
| | $t_{DH8}$ | Data hold time | 5 | – | 5 | – | ns | |
| | $t_{ACC8}$ | RD access time | – | 50 | – | 80 | ns | |
| | $t_{OH8}$ | Output disable time | 10 | 50 | 10 | 55 | ns | |

Note: For memory control and system control commands:

$t_{CYC8} = 2t_C + t_{CC} + t_{CEA} + 75 > t_{ACV} + 245$

For all other commands:

$t_{CYC8} = 2t_C + t_{CC} + 30$



2.3.2 6800 family interface timing

Ta=-20 to 75°C

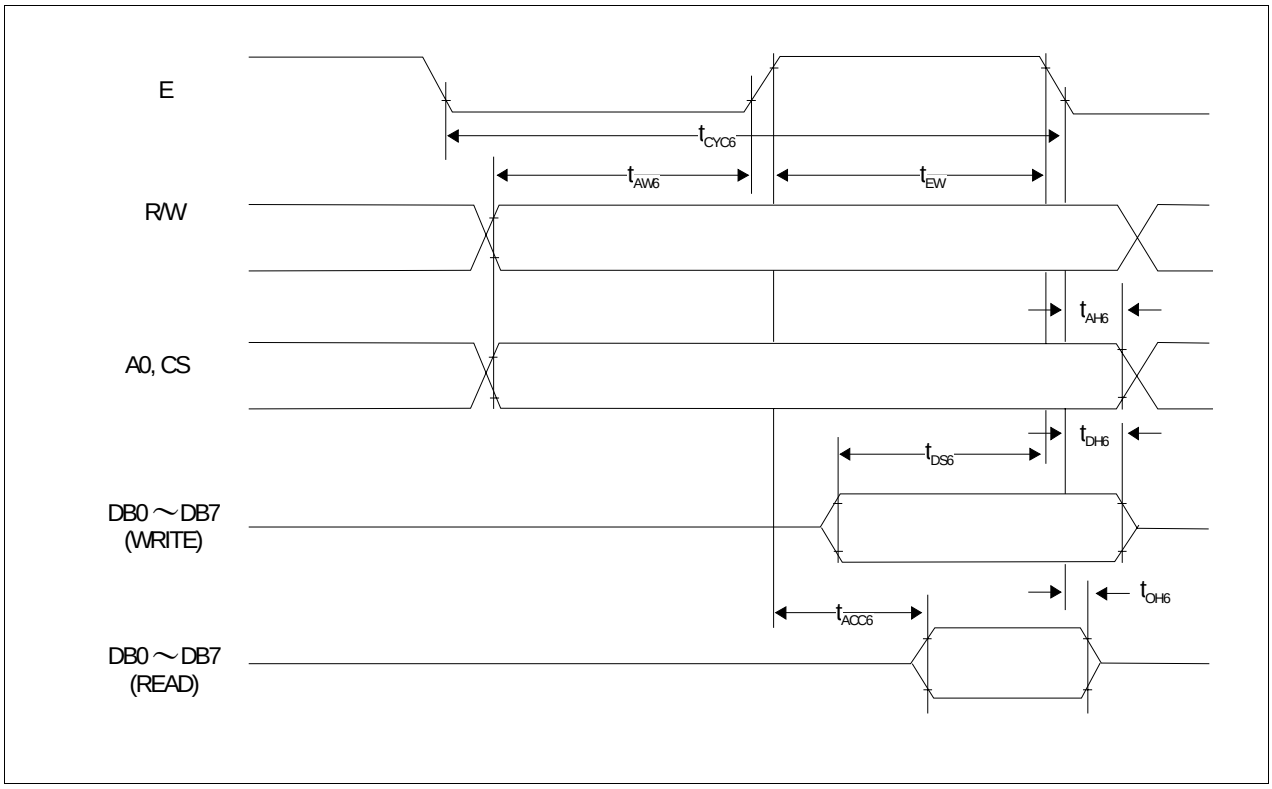
| Signal | Symbol | Parameter | $V_{DD}$ = 4.5 to 5.5 | | $V_{DD}$ = 2.7 to 4.5 | | Units | Condition |
|---|---|---|---|---|---|---|---|---|
| | | | Min. | Max. | Min. | Max. | | |
| A0, CS, R/W | $t_{CYC6}$ | System cycle time | See note | – | See note | – | ns | CL=100pF |
| | $t_{AW6}$ | Address setup time | 0 | – | 10 | – | ns | |
| | $t_{AH6}$ | Address hold time | 0 | – | 0 | – | ns | |
| DB0 to DB7 | $t_{DS6}$ | Data setup time | 100 | – | 120 | – | ns | |
| | $t_{DH6}$ | Data hold time | 0 | – | 0 | – | ns | |
| | $t_{OH6}$ | Output disable time | 10 | 50 | 10 | 75 | ns | |
| | $t_{ACC6}$ | Access time | – | 85 | – | 130 | ns | |
| WR, RD | $t_{EW}$ | Enable pulse width | 120 | – | 150 | – | ns | |

Note: For memory control and system control commands:

$t_{CYC6} = 2t_C + t_{EW} + t_{CEA} + 75 > t_{ACV} + 245$

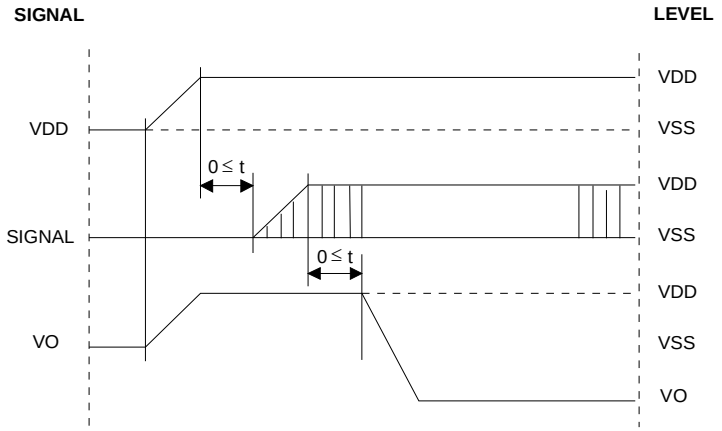
For all other commands:

$t_{CYC6} = 4t_C + t_{EW} + 30$

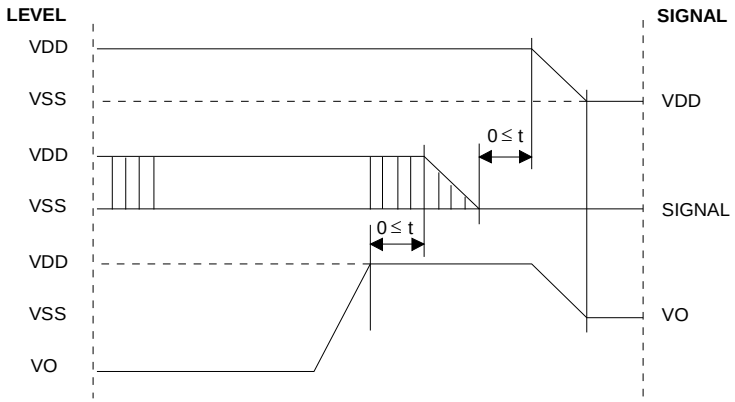


## 2.4 Power Supply ON/OFF Sequence

### 2.4.1 ON Sequence




### 2.4.2 OFF Sequence




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

## 2.5 Spec. for LED back-light

### 2.5.1 Absolute Maximum Ratings

| Parameter | Symbol | Conditions | Max | Units |
|---|---|---|---|---|
| Forward Current | $I_F$ | -- | 140 | mA |
| Reverse Voltage | $V_R$ | -- | 5.0 | V |
| LED Power Dissipation | $P_D$ | -- | 0.56 | W |

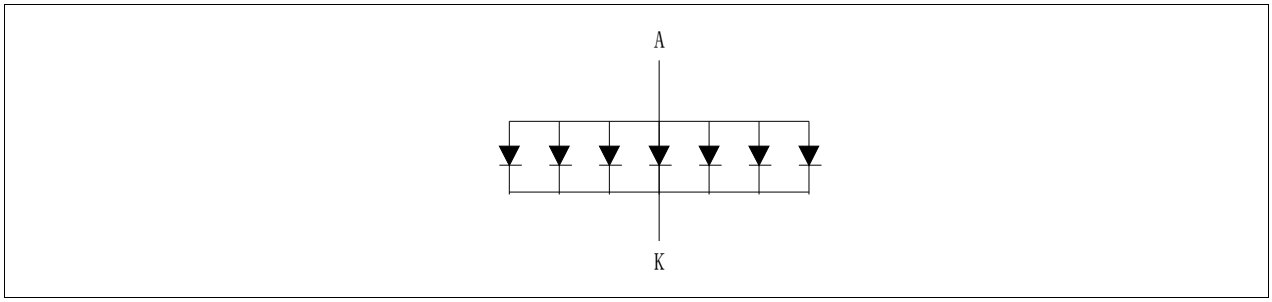
### 2.5.2 Operating Characteristics

Ta = 25°C

| Parameter | Symbol | Conditions | Min | Typ. | Max | Units |
|---|---|---|---|---|---|---|
| Forward Voltage* | $V_F$ | $I_F$=140mA | -- | 3.6 | 4.0 | V |
| Reverse Current | $I_R$ | $V_R$=5.0V | -- | -- | 0.7 | mA |
| Luminance of Backlight Surface | L | $I_F$=140mA | 95 | 145 | -- | cd/m$^2$ |
| Uniformity** | -- | | 60 | 70 | -- | % |
| AVG. x of 1931 C.I.E. | X | | 0.27 | 0.30 | 0.33 | -- |
| | Y | | 0.27 | 0.30 | 0.33 | -- |

*Measured between A,K (see the figure below)
**Uniformity = (Min./Max.) x 100%

### 2.5.3 Schematics Related




## 2.6 Spec. for touch panel

Not Installed

## 3. Optical Specifications

### 3.1 LCD Driving Voltage

| Parameter | Symbol | Conditions | Min. | Typ. | Max | Units |
|---|---|---|---|---|---|---|
| LCD Driving Voltage Note 1 | $V_{DD}$-$V_O$ | Ta = -20 °C | 24.0 | 24.5 | 25.0 | V |
| | | Ta = 25 °C | 23.3 | 23.8 | 24.3 | V |
| | | Ta = 70 °C | 22.9 | 23.4 | 23.9 | V |

Note 1 : Voltage (Applied actual waveform to LCD Module) for the best contrast. The range of minimum and maximum shows tolerance of the operating voltage. The specified contrast ratio and response time are not guaranteed over the entire range.

### 3.2 Optical Characteristics

Ta=25 °C, 1/240 Duty, 1/17 Bias, $V_{DD}$ = 5.0V (Note 4), θ = 0°, ϕ =0°

| Parameter | | Symbol | Conditions | Min. | Typ. | Max | Units |
|---|---|---|---|---|---|---|---|
| Contrast Ratio Note 1 | | C | θ = 0°, ϕ = 0° | 2.8 | 4.0 | 5.2 | -- |
| Viewing Angle (Shown in 3.3) ( CR≥2) | | Front-Back | $\theta_f$- $\theta_b$, ϕ = 0° | 40 | to | 30 | deg. |
| | | Left-Right | $\theta_l$- $\theta_r$, ϕ = 0° | 35 | to | 35 | deg. |
| Response Time | Rise Note 2 | $T_{ON}$ | -- | 145 | 180 | 270 | ms |
| | Decay Note 3 | $T_{OFF}$ | -- | 200 | 260 | 390 | ms |

Note 1 : Contrast ratio is defined as follows.
CR = $L_{OFF}$ / $L_{ON}$
$L_{ON}$ : Luminance of the ON segments, $L_{OFF}$ : Luminance of the OFF segments

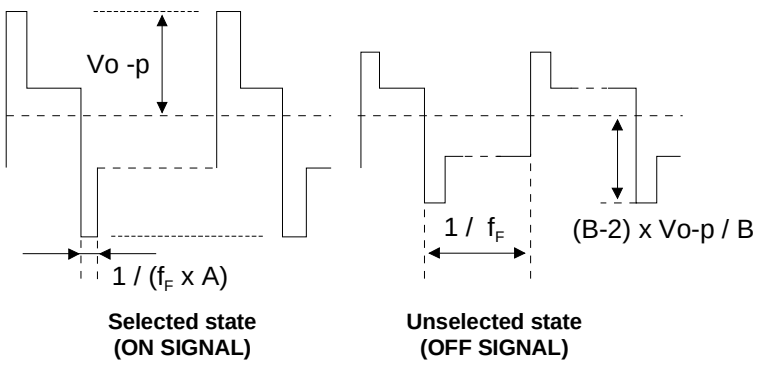
Note 2 : The time that the luminance level reaches 90% of the saturation level from 0% when ON signal is applied.

Note 3 : The time that the luminance level reaches 10% of the saturation level from 100% when OFF signal is applied.

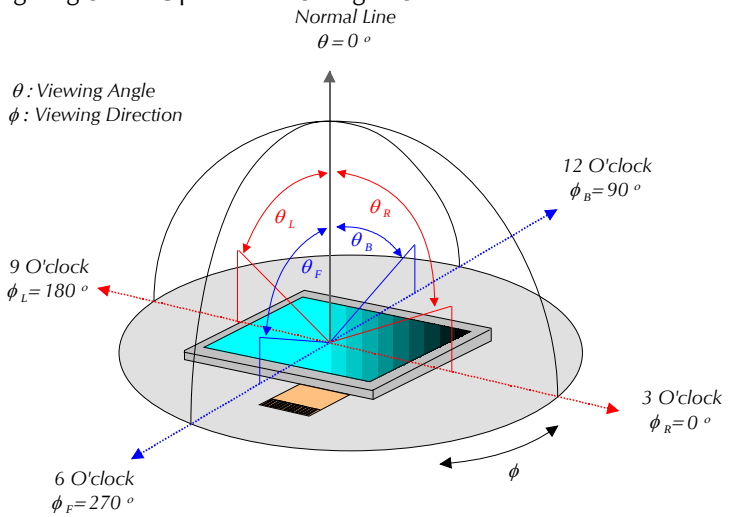
Note 4 : Definition of Driving Voltage $V_D$. Assuming that the typical driving waveforms shown below are applied to the LCD Panel at /A Duty - 1/B Bias ( A : Duty Number, B : Bias Number ). Driving voltage $V_D$ is defined s follows: $V_D$ = (Vth1+Vth2) / 2

Vth1 : The voltage VO-P that should provide 50% of the saturation level in the luminance at the segment which the ON signal is applied to.

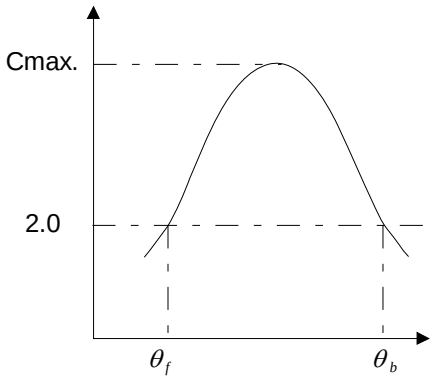
Vth2 : The voltage VO-P that should provide 50% of the saturation level in the luminance at the segment which the OFF signal is applied to.



3.3 Definition of Viewing Angle and Optimum Viewing Area



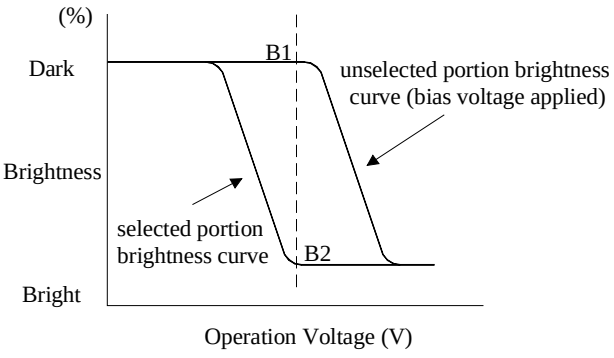

3.4 Definition of Viewing Angle $\theta_f$ and $\theta_b$




*Viewing angles θ ( ϕ fixed)*

Optimum viewing angle with the naked eye and viewing angle θ at Cmax. Above are not always the same.

3.5 Definition of Contrast C, *C= Brightness of selected dot (B1 )/ Brightness of unselected dot (B2)*



## 4. I/O Terminal

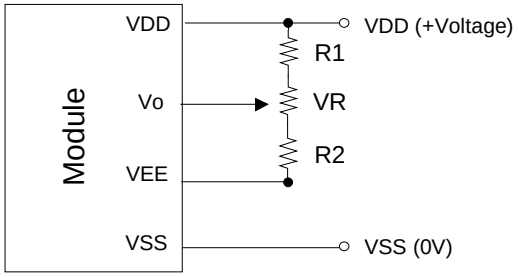
4.1 Pin Assignment

LCD (CN1)

| Pin No. | Symbol | Level | Function |
|---|---|---|---|
| 1 | $V_{SS}$ | – | Power supply (0V, GND) |
| 2 | $V_{DD}$ | – | Power supply for logic |
| 3 | VO | – | Voltage level for LCD contrast adjustment |
| 4 | A0 | H/L | Command/Data select |
| 5 | /WR | H/L | VRAM write signal, 8080 family：Write signal<br>6800 family：R/W signal |
| 6 | /RD | H/L | VRAM read signal, 8080 family：Read signal<br>6800 family：Enable clock |
| 7 | DB0 | H/L | Display data 10K resistor pulled down |
| 8 | DB1 | H/L | Display data 10K resistor pulled down |
| 9 | DB2 | H/L | Display data |
| 10 | DB3 | H/L | Display data |
| 11 | DB4 | H/L | Display data |
| 12 | DB5 | H/L | Display data |
| 13 | DB6 | H/L | Display data |
| 14 | DB7 | H/L | Display data |
| 15 | /CS | H/L | Chip Select, This active-LOW input enables the RA8835. It is usually connected to the output of an address decoder device that maps the RA8835 into the memory space of the controlling microprocessor. |
| 16 | /RST (/RES) | H/L | Reset, This active-LOW input performs hardware reset on the RA8835. It is a Schmitt-trigger input for enhanced noise immunity; however, care should be taken to ensure that it is not triggered if the supply voltage is lowered. |
| 17 | $V_{EE}$ | – | Power Supply for LCD Drive |
| 18 | SEL1 | Input | SEL1 / Interface / A0 / RD / WR / CS<br>0 / 8080 family / A0 / RD / WR / CS<br>1 / 6800 family / A0 / E / R/W / CS |
| 19 | DCLK | – | External Clock Input. This clock runs the SAR conversion process and synchronizes serial data I/O. |
| 20 | /CS-T | – | Chip Select input. Controls conversion timing and enables the serial input/output register. |
| 21 | DIN | – | Serial Data Input. If CS is LOW, data is latched on rising edge of DCLK. |
| 22 | DOUT | – | Serial Data Output. Data is shifted on the falling edge of DCLK. This output is high impedance when CS is HIGH. |
| 23 | PEN | – | Pen interrupt |
| 24 | PEN1 | – | Pen interrupt setting |
| 25 | IN3 | – | Auxiliary Input 1. ADC Input Channel 3. |
| 26 | IN4 | – | Auxiliary Input 2. ADC Input Channel 4. |

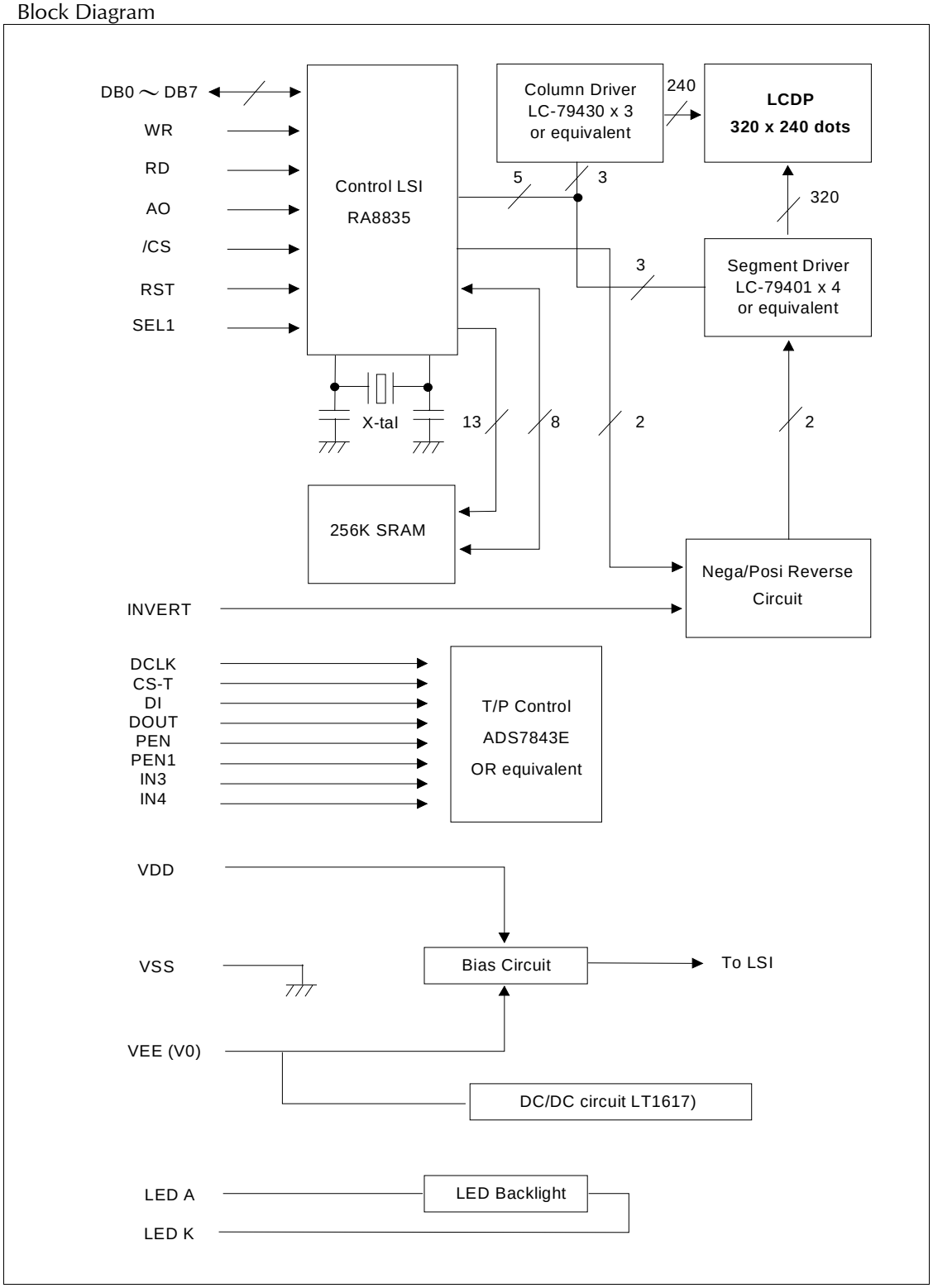
4.2 Example of Power Supply

It is recommended to apply a potentiometer for the contrast adjust due to the tolerance of the driving voltage and its temperature dependence.




R1+R2+VR=10 ～ 20KΩ

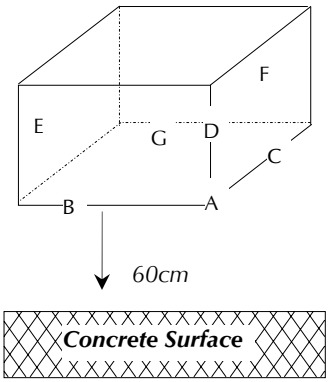
4.3 Block Diagram



## 5. Reliability Test

5.1 Test Item

No change on display and in operation under the following test condition.

| No. | Test Item | Description | Condition | Note |
|---|---|---|---|---|
| 1. | High Temperature (Operation) | Durability test under long time high temperature with electrical stress (voltage, current) | 70°C ± 2°C 96hrs | |
| 2. | High Temperature (Storage) | Durability test under long time high temperature storage | 80°C ± 2°C 96hrs | 4 |
| 3. | Low Temperature (Operation) | Durability test under long time low temperature with electrical stress (voltage, current) | -20°C ± 2°C, 96hrs | 3 |
| 4. | Low Temperature (Storage) | Durability test under long time low temperature storage | -30°C ± 2°C, 96hrs | 3, 4 |
| 5. | Damp Proof Test | Durability test under long time high temperature and high humidity | 40°C± 2°C, 90～95% RH 96hrs | 3 , 4 |
| 6. | Vibration Test | Total fixed amplitude: 1.5mm<br>Vibration frequency: 10～55Hz<br>One cycle 60 seconds to 3 directions of X, Y, Z for each 15 minutes | - - | 5 |
| 7. | Drop Test | To be measured after dropping from 60cm high on the concrete surface in packing state.<br>  <br>*Dropping method corner dropping*<br>*A corner: once*<br>*Edge dropping*<br>*B, C, D edge: once*<br>*Face dropping*<br>*E, F, G face: once* | | |

Note 1: Unless otherwise specified, tests will be conducted under the following condition,
Temperature : 25°C ± 2°C
Humidity : 65% ± 5%
Note 2: Unless otherwise specified, tests will be not conducted under functioning state.
Note 3: No dew condensation to be observed.
Note 4: The function test shall be conducted after 4 hours storage at the normal temperature and humidity after removed from the test chamber.
Note 5: Vibration test will be conducted to the product itself without putting it in a container.

5.2 Judgment Standard

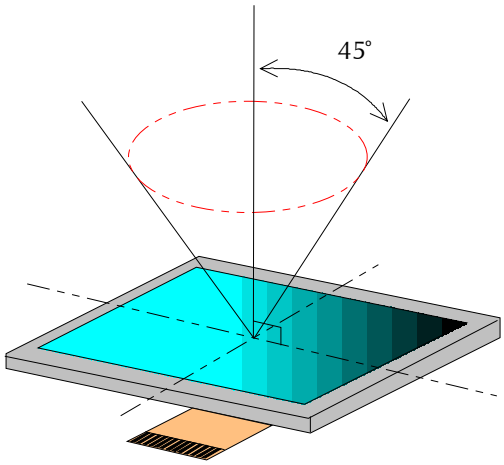
| Failure Mode | Test Item | | | | | | | Judgment Standard |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| Orientation | * | * | * | * | * | | | No remarkable degradation of appearance under bias/ non-bias condition |
| Current Value (IAC) | * | * | * | * | * | | | No remarkable increase |
| Contrast | * | | * | * | * | | | No remarkable poor contrast |
| Domain | * | * | * | * | * | | | Less than 20% of all dots have reverse tilt of more than on third of one dot area. |
| Bubble (Inside Cell) | * | * | * | * | * | * | | As per "Appearance Standard" (Note. In-cluding one which disappear after 25°C 2H) |
| Polarizer | * | | | | * | * | | As per "Appearance Standard" no remarkable appearance change |
| Glass Damage | | | | | | | * | As per "Appearance Standard" |

Note.1. * is strong linkage between Failure Mode and Test Item.
2. Number of Test Item should be referred to former page.
3. Judgment and Standard value should be fixed by other inspection standard and criteria samples.

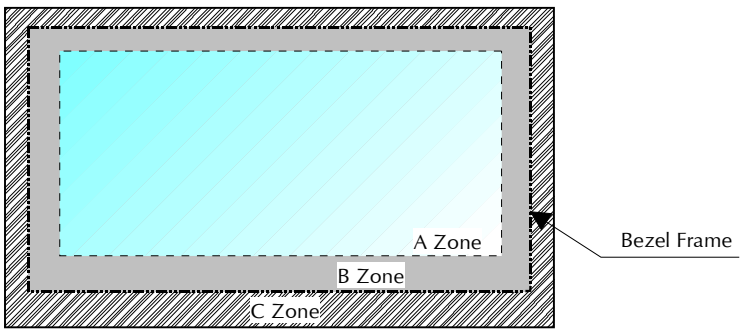
## 6. Appearance Standards

### 6.1 Inspection Conditions

The LCD shall be inspected under 40W white fluorescent light. The distance between the eyes and the sample shall be more than 30cm. All directions for inspecting the sample should be within 45° against perpendicular line.




### 6.2 Definition of Applicable Zones

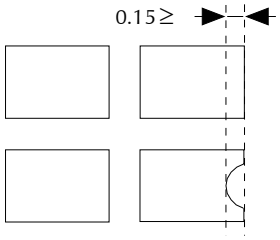
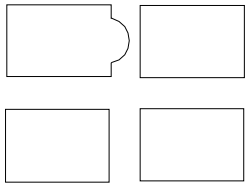
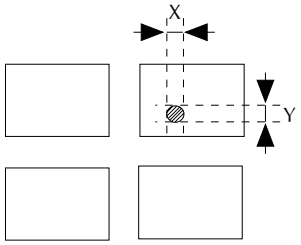
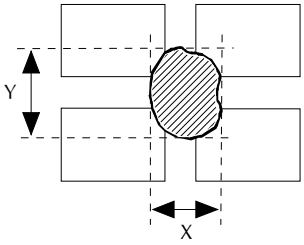



A Zone : Active display area
B Zone : Area from outside of "A Zone" to validity viewing area
C Zone : Rest parts
A Zone + B Zone = Validity viewing area

6.3 Standards

<table>
<tr><th>No.</th><th>Parameter</th><th>Criteria</th></tr>
<tr><td>1.</td><td>Black and White Spots, Foreign Substances</td><td>
(1) Round Shape
<table>
<tr><th rowspan="2">Zone / Dimension (mm)</th><th colspan="3">Acceptable Number</th></tr>
<tr><th>A</th><th>B</th><th>C</th></tr>
<tr><td>D ≤ 0.2</td><td>*</td><td>*</td><td>*</td></tr>
<tr><td>0.2 < D ≤ 0.3</td><td>3</td><td>5</td><td>*</td></tr>
<tr><td>0.3 < D ≤ 0.4</td><td>2</td><td>3</td><td>*</td></tr>
<tr><td>0.4 < D ≤ 0.5</td><td>0</td><td>1</td><td>*</td></tr>
<tr><td>0.5 < D</td><td>0</td><td>0</td><td>*</td></tr>
</table>
D = (Long + Short)/2 *: Disregard<br>
(2) Line Shape
<table>
<tr><th rowspan="2">Zone X (mm)</th><th rowspan="2">Zone Y (mm)</th><th colspan="3">Acceptable Number</th></tr>
<tr><th>A</th><th>B</th><th>C</th></tr>
<tr><td>--</td><td>0.03 ≥ W</td><td>*</td><td>*</td><td>*</td></tr>
<tr><td>2.0 ≥ L</td><td>0.05 ≥ W</td><td>3</td><td>3</td><td>*</td></tr>
<tr><td>1.0 ≥ L</td><td>0.1 ≥ W</td><td>3</td><td>3</td><td>*</td></tr>
<tr><td>--</td><td>0.1 < W</td><td colspan="3">In the same way (1)</td></tr>
</table>
X : Length Y: Width *: Disregard<br>
Total defects shall not exceed 5.
</td></tr>
<tr><td>2.</td><td>Air Bubbles (between glass & polarizer)</td><td>
<table>
<tr><th rowspan="2">Zone / Dimension (mm)</th><th colspan="3">Acceptable Number</th></tr>
<tr><th>A</th><th>B</th><th>C</th></tr>
<tr><td>D ≤ 0.3</td><td>*</td><td>*</td><td>*</td></tr>
<tr><td>0.3 < D ≤ 0.4</td><td>3</td><td>*</td><td>*</td></tr>
<tr><td>0.4 < D ≤ 0.6</td><td>2</td><td>3</td><td>*</td></tr>
<tr><td>0.6 < D</td><td>0</td><td>0</td><td>*</td></tr>
</table>
*: Disregard<br>
Total defects shall not exceed 3.
</td></tr>
</table>

To be continued.....

| No. | Parameter | Criteria |
|---|---|---|
| 3. | The Shape of Dot | (1) Dot Shape (with Dent)<br>  <br><br>As per the sketch of left hand.<br>(2) Dot Shape (with Projection)<br>  <br>Should not be connected to next dot.<br>(3) Pin Hole<br>  <br><br>(X+Y)/2 ≤ 0.2mm (Less than 0.1mm is no counted.)<br>(4) Deformation<br>  <br><br>(X+Y)/2 ≤ 0.2mm<br>Total acceptable number: 1/dot, 5/cell<br>(Defect number of (4): 1pc.) |
| 4. | Polarizer Scratches | Not to be conspicuous defects. |
| 5. | Polarizer Dirts | I f the stains are removed easily from LCDP surface, the module is not defective. |
| 6. | Complex Foreign Substance Defects | Black spots, line shaped foreign substance or air bubbles between glass & polarizer should be 5pcs maximum in total. |
| 7. | Distance between different Foreign Substance defects | D ≤ 0.2 : 20mm or more<br>0.2 < D : 40mm or more |

## 7. Handling and Precautions

Inspection Conditions

The Following precautions will guide you in handling our product correctly.

1. Liquid crystal display devices

1.1 The liquid crystal display device panel used in the liquid crystal display module is made of plate glass. Avoid any strong mechanical shock. Should the glass break handle it with care.
1.2 The polarizer adhering to the surface of the LCD is made of a soft material. Guard against scratching it.

2. Care of the liquid crystal display module against static electricity discharge.

2.1 When working with the module, be sure to ground your body and any electrical equipment you may be using. We strongly recommend the use of anti static mats ( made of rubber ), to protect work tables against the hazards of electrical shock.
2.2 Avoid the use of work clothing made of synthetic fibers. We recommend cotton clothing or other conductivity-treated fibers.
2.3 Slowly and carefully remove the protective film from the LCD module, since this operation can generate static electricity.

3. When the LCD module alone must be stored for long periods of time:

3.1 Protect the modules from high temperature and humidity.
3.2 Keep the modules out of direct sunlight or direct exposure to ultra-violet rays.
3.3 Protect the modules from excessive external forces.

4 Use the module with a power supply that is equipped with an over current protector circuit, since the module is not provided with this protective feature.

5 Do not ingest the LCD fluid itself should it leak out of a damaged LCD module. Should hands or clothing come in contact with LCD fluid, wash immediately with soap.

6 Conductivity is not guaranteed for models that use metal holders where solder connections between the metal holder and the PCB are not used. Please contact us to discuss appropriate ways to assure conductivity.

## 8. Warranty

This product has been manufactured to your company's specifications as a part for use in your company's general electronic products. It is guaranteed to perform according to delivery specifications. For any other use apart from general electronic equipment, we cannot take responsibility if the product is used in medical devices, nuclear power control equipment, aerospace equipment, fire and security systems, or any other applications in which there is a direct risk to human life and where extremely high levels of reliability are required. If the product is to be used in any of the above applications, we will need to enter into a separate product liability agreement.

1 We cannot accept responsibility for any defect, which may arise from additional manufacturing of the product (including disassembly and reassembly), after product delivery.

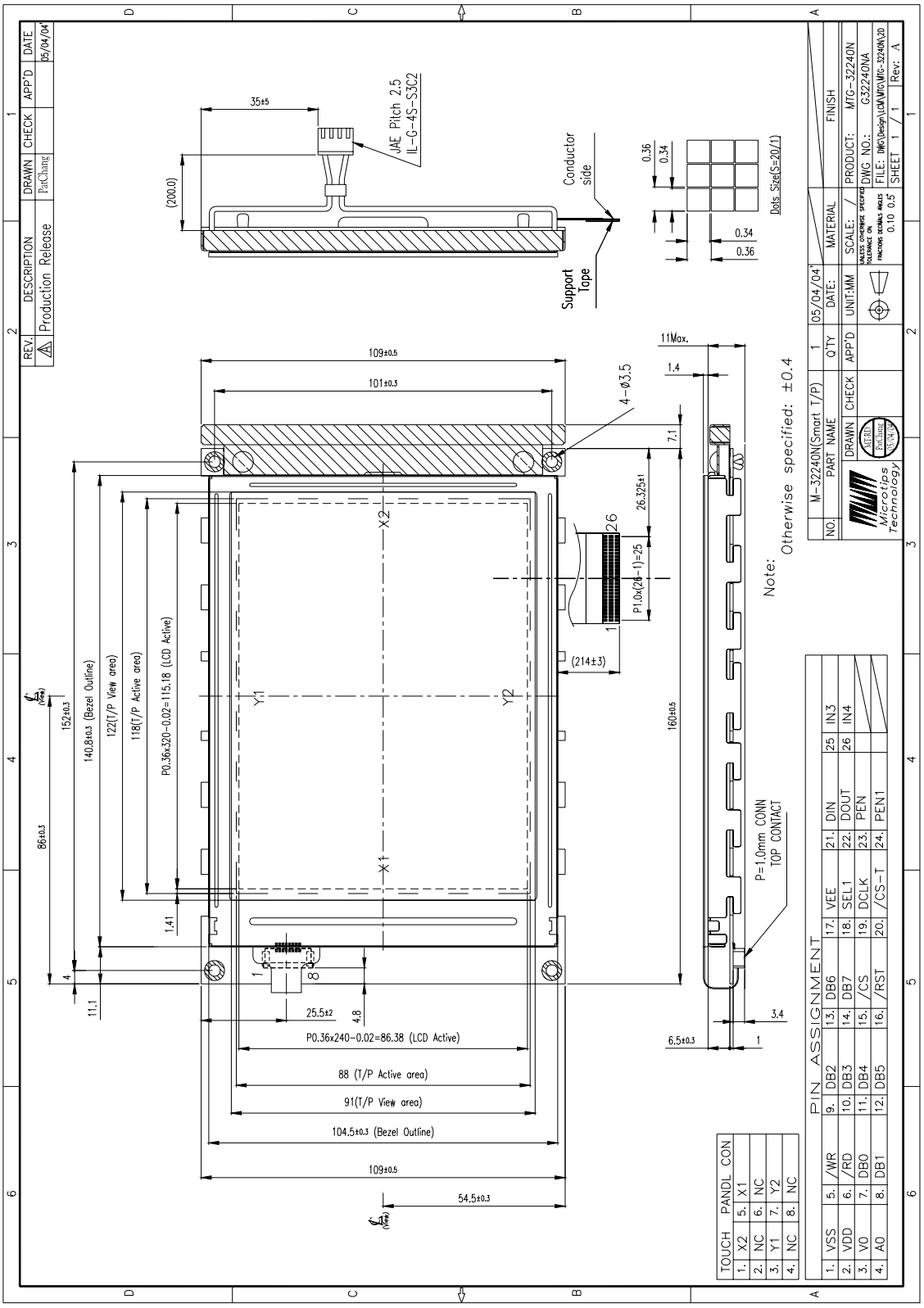
2 We cannot accept responsibility for any defect, which may arise after the application of strong external force to the product.

3 We cannot accept responsibility for any defect, which may arise due to the application of static electricity after the product has passed your company's acceptance inspection procedures.

4 We cannot accept responsibility for industrial property, which may arise through the use of your product, with exception to those issues relating directly to the structure or method of manufacturing of our product. Microtips-origin longer than one year from Microtips production.

## 9. Dimensional Outlines

- See the next page.....


JAE Pitch 2.5
IL-G-4S-S3C2
Conductor side
Support Tape
Dots Size(S=20/1)
Note: Otherwise specified: ±0.4
P=1.0mm CONN TOP CONTACT
P0.36x240-0.02=86.38 (LCD Active)
88 (T/P Active area)
91(T/P View area)
104.5±0.3 (Bezel Outline)
109±0.5
54.5±0.3
P0.36x320-0.02=115.18 (LCD Active)
140.8±0.3 (Bezel Outline)
122(T/P View area)
118(T/P Active area)
160±0.5
11Max.
4-Ø3.5
PIN ASSIGNMENT
TOUCH PANDL CON
M-32240N(Smart T/P)
MATERIAL
FINISH
SCALE: /
PRODUCT: MTG-32240N
DWG NO.: G32240NA
SHEET 1 / 1
Rev: A
Microtips Technology