

SPECIFICATIONS

CUSTOMER : _____

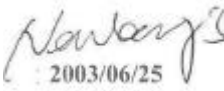
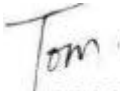

SAMPLE CODE : _____

(This Code will be changed while mass production)

MASS PRODUCTION CODE : **PC1602LRS-IWA-B
(VER.A)**

Customer Approved

Date:

| Sales Sign | QC Confirmed | Checked By | Designer |
|------------|--------------|---|---|
| | |  2003/06/25  2003/06/25 |  2003/06/25 |

Approval For Specifications Only.

* This specification is subject to change without notice.

Please contact Powertip or it's representative before designing your product based on this specification.

Approval For Specifications and Sample.

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RECORDS OF REVISION

| Date | Rev. | Description | Note | Page |
|------------|------|-------------------------------------|------|------|
| 2003/05/09 | 0 | Revised Contents | | |
| 2003/06/25 | A | Update Storage Humidity(max)=90 %RH | | 4 |
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Note : For detailed information please refer to IC data sheet : **ST7066U,KS0065B**

1. SPECIFICATIONS

1.1 Features

| Item | Standard Value |
|-------------------|--|
| Display Type | 16*2 Characters |
| LCD Type | STN Gray Positive Transflective Normal Temp. |
| Driver Condition | LCD Module : 1/16 Duty , 1/5 Bias |
| Viewing Direction | 6 O' clock |
| Backlight | YG LED B/L |
| Weight | 34 g |
| Interface | - |
| Other | - |

1.2 Mechanical Specifications

| Item | Standard Value | Unit |
|-------------------|----------------------------------|------|
| Outline Dimension | 85.0(L) * 32.6(w) * 13.7(H)(Max) | mm |
| Viewing Area | 61.0(L) * 15.8(w) | mm |
| Active Area | 56.21(L) * 11.5(w) | mm |
| Dot Size | 0.56(L) * 0.66(w) | mm |
| Dot Pitch | 0.60(L) * 0.70(w) | mm |

Note : For detailed information please refer to LCM drawing

1.3 Absolute Maximum Ratings

| Item | Symbol | Condition | Min. | Max. | Unit |
|---------------------------|------------------|--------------|-----------------------|----------------------|------|
| Power Supply Voltage | V _{DD} | - | -0.3 | 7.0 | V |
| LCD Driver Supply Voltage | V _{LCD} | - | V _{DD} -10.0 | V _{DD} +0.3 | V |
| Input Voltage | V _{IN} | - | -0.3 | V _{DD} +0.3 | V |
| Operating Temperature | T _{OP} | Excluded B/L | 0 | 50 | |
| Storage Temperature | T _{ST} | Excluded B/L | -20 | 70 | |
| Storage Humidity | H _D | Ta < 40 | - | 90 | %RH |

1.4 DC Electrical Characteristics

$V_{DD} = 5.0 \text{ V} \pm 10\%$, $V_{SS} = 0\text{V}$, $T_a = 25$

| Item | Symbol | Condition | Min. | Typ. | Max. | Unit |
|----------------------|----------|---------------------------|--------------|------|----------|------|
| Logic Supply Voltage | V_{DD} | - | 4.5 | 5.0 | 5.5 | V |
| “H” Input Voltage | V_{IH} | - | $0.7 V_{DD}$ | - | V_{DD} | V |
| “L” Input Voltage | V_{IL} | - | -0.3 | - | 0.6 | V |
| “H” Output Voltage | V_{OH} | $I_{OH} = -0.1\text{mA}$ | 3.9 | - | V_{DD} | V |
| “L” Output Voltage | V_{OL} | $I_{OL} = 0.1\text{mA}$ | - | - | 0.4 | V |
| Supply Current | I_{DD} | $V_{DD} = 5.0 \text{ V}$ | - | 1.5 | - | mA |
| LCM Driver Voltage | V_{OP} | $V_{DD} - V_O (0^\circ)$ | - | - | - | V |
| | | $V_{DD} - V_O (25^\circ)$ | - | 4.5 | - | |
| | | $V_{DD} - V_O (50^\circ)$ | - | - | - | |

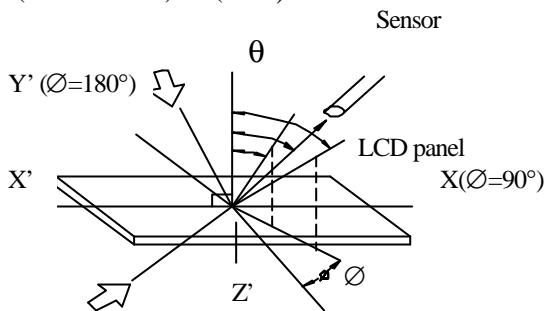
1.5 Optical Characteristics

LCD Panel : 1/16 Duty , 1/4 Bias , $V_{LCD} = 4.2\text{V}$, $T_a = 25$

| Item | Symbol | Conditions | Min. | Typ. | Max. | Reference |
|---------------------|----------|---|------------|--------|------|-------------|
| View Angle | θ | $C \geq 2.0, \varnothing = 0^\circ$ | 40° | - | - | Notes 1 & 2 |
| Contrast Ratio | C | $\theta = 5^\circ, \varnothing = 0^\circ$ | 5 | 7 | - | Note 3 |
| Response Time(rise) | t_r | $\theta = 5^\circ, \varnothing = 0^\circ$ | - | 150 ms | - | Note 4 |
| Response Time(fall) | t_f | $\theta = 5^\circ, \varnothing = 0^\circ$ | - | 300 ms | - | Note 4 |

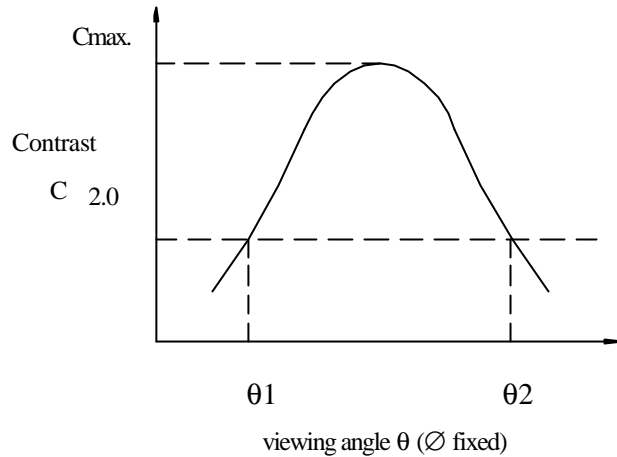
Note 1: Definition of angles θ and \varnothing

Light (when reflected) z ($\theta=0^\circ$)



Light (when transmitted) Y ($\varnothing=0^\circ$)
($\theta=90^\circ$)

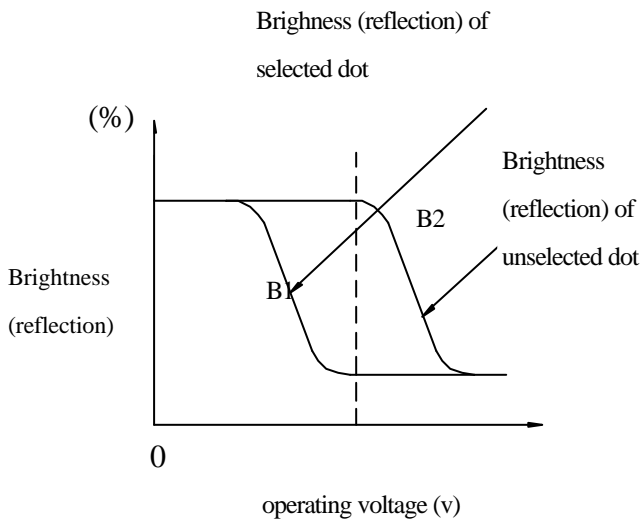
Note 2: Definition of viewing angles θ_1 and θ_2



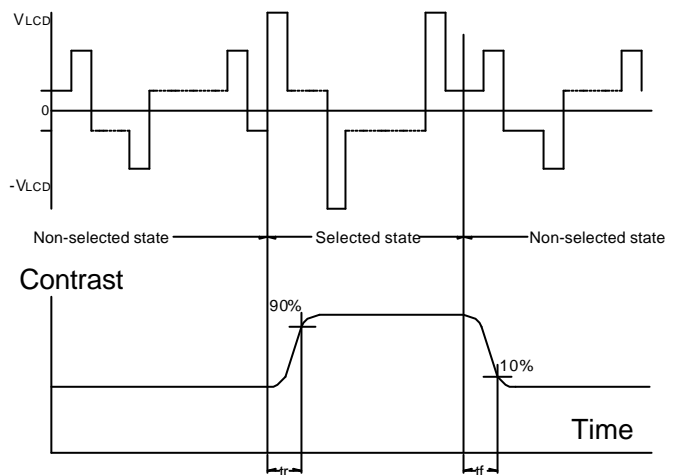
Note : Optimum viewing angle with the naked eye and viewing angle θ at C_{max} . Above are not always the same

Note 3: Definition of contrast C

$$C = \frac{\text{Brightness (reflection) of unselected dot (B2)}}{\text{Brightness (reflection) of selected dot (B1)}}$$



Note 4: Definition of response time



Note: Measured with a transmissive LCD panel which is displayed 1 cm^2

V_{LCD} : Operating voltage f_{FRM} : Frame frequency
 t_r : Response time (rise) t_f : Response time (fall)

1.6 Backlight Characteristics

LCD Module with LED Backlight

Maximum Ratings

| Item | Symbol | Conditions | Min. | Max. | Unit |
|---------------------------|-----------------|------------|------|------|------|
| Forward Current | IF | Ta =25 | - | 300 | mA |
| Reverse Voltage | VR | Ta =25 | - | 8 | V |
| Power Dissipation | PO | Ta =25 | - | 2.4 | W |
| Operating Temperature | T _{OP} | - | -20 | 70 | |
| Storage Temperature | T _{ST} | - | -40 | 80 | |
| Solder Temp. for 3 Second | - | - | - | 260 | |

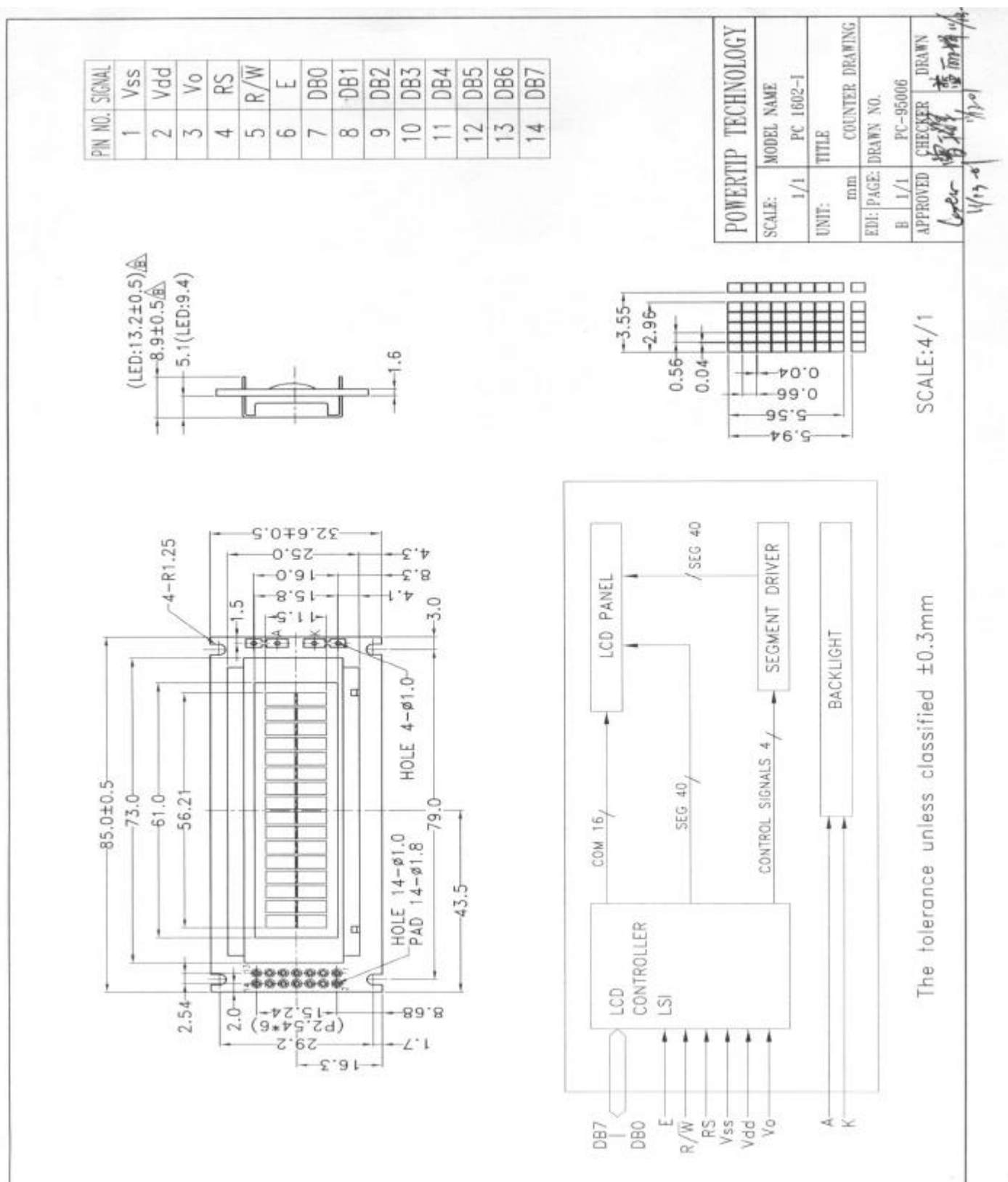
Electrical / Optical Characteristics

Ta =25

| Item | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|-------------------------------------|--------------|------------|------|------|------|-------------------|
| Forward Voltage | VF | IF= 120 mA | - | 4.2 | 4.8 | V |
| Reverse Current | IR | VR= 8 V | - | - | 0.2 | mA |
| Average Brightness (with LCD) | IV | IF= 120 mA | - | - | - | cd/m ² |
| Wavelength | p | IF= 120 mA | 571 | - | 576 | nm |
| Luminous Intensity (without LCD) | IV | IF=120 mA | 120 | 150 | - | cd/m ² |
| Color | Yellow-green | | | | | |

2. MODULE STRUCTURE

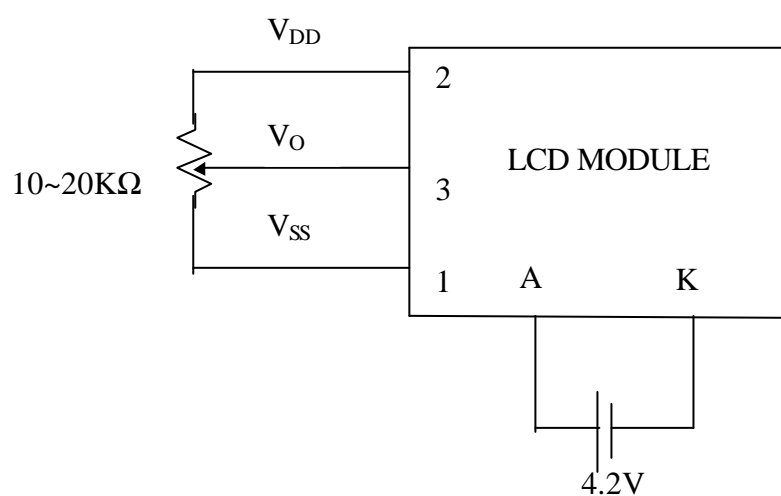
2.1 Counter Drawing



2.2 Interface Pin Description

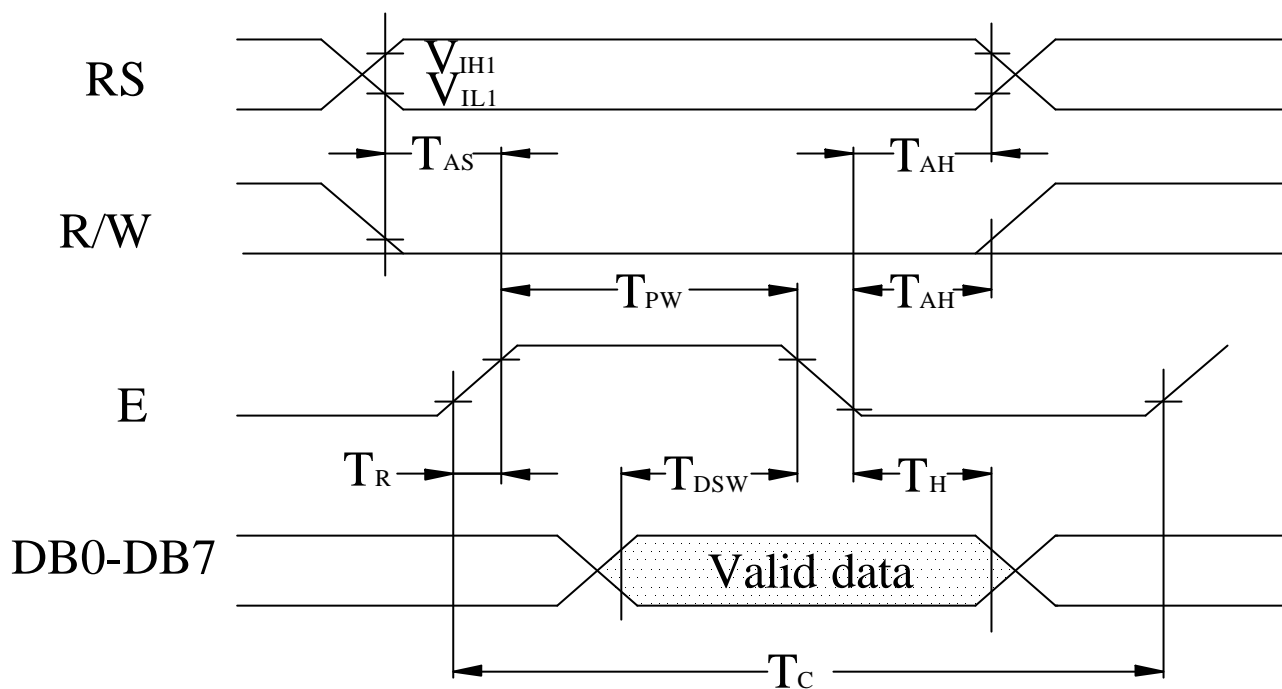
| Pin No. | Symbol | Signal Description |
|---------|------------------|--|
| 1 | V_{SS} | Power Supply ($V_{SS}=0$) |
| 2 | V_{DD} | Power Supply ($V_{DD}>V_{SS}$) |
| 3 | V_O | Operating voltage (LCD Driver) |
| 4 | RS | Register Selection input High = Data register Low = Instruction register (for write) Busy flag address counter (for read) |
| 5 | $\overline{R/W}$ | Read/Write signal input is used to select the read/write mode High = Read mode, Low = Write mode |
| 6 | E | Start enable signal to read or write the data |
| 7~10 | DB0 ~ DB3 | Four low order bi-directional three-state data bus lines. Use for data transfer between the MPU and the LCD module. These four are not used during 4-bit operation. |
| 11~14 | DB4~DB7 | Four high order bi-directional three-state data bus lines. Used for data transfer between the MPU and the LCD module. DB7 can be used as a busy flag. |

Contrast Adjust

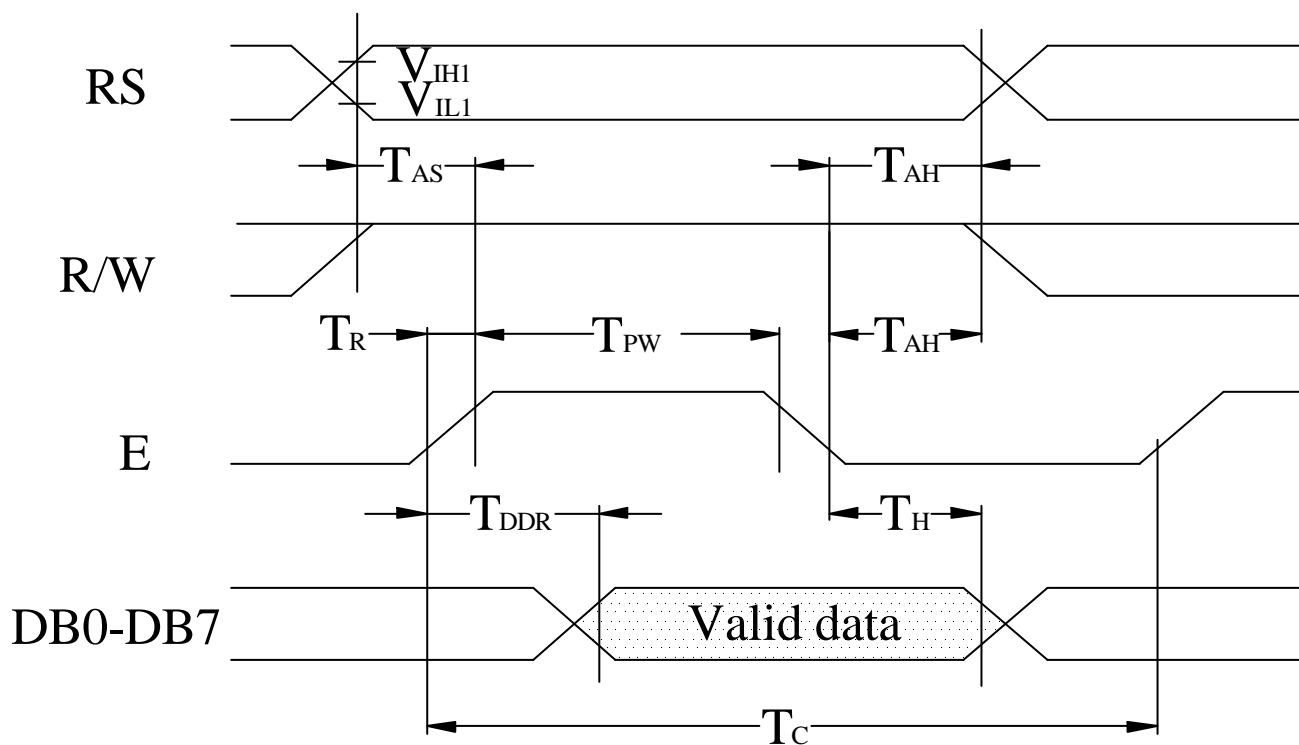


2.3 Timing Characteristics

- Writing data from MPU to ST7066U



- Reading data from ST7066U to MPU



• Write Mode (Writing data from MPU to ST7066U)

(V_{cc} = +5V, Ta=25°C)

| Symbol | Characteristics | Test Condition | Min. | Typ. | Max. | Unit |
|---------------------------------|-------------------------|-----------------|------|------|------|------|
| T _C | Enable Cycle Time | Pin E | 1200 | - | - | ns |
| T _{PW} | Enable Pulse Width | Pin E | 140 | - | - | ns |
| T _R , T _F | Enable Rise / Fall Time | Pin E | - | - | 25 | ns |
| T _{AS} | Address Setup Time | Pins: RS , RW,E | 0 | - | - | ns |
| T _{AH} | Address Hold Time | Pins :RS,RW,E | 10 | - | - | ns |
| T _{DSW} | Data Setup Time | Pins:DB0~DB7 | 40 | - | - | ns |
| T _H | Data Hold Time | Pins:DB0~DB7 | 10 | - | - | ns |

• Read Mode (Reading data from ST7066U to MPU)

(V_{cc} = +5V, Ta=25°C)

| Symbol | Characteristics | Test Condition | Min. | Typ. | Max. | Unit |
|---------------------------------|-------------------------|-----------------|------|------|------|------|
| T _C | Enable Cycle Time | Pin E | 1200 | - | - | ns |
| T _{PW} | Enable Pulse Width | Pin E | 140 | - | - | ns |
| T _R , T _F | Enable Rise / Fall Time | Pin E | - | - | 25 | ns |
| T _{AS} | Address Setup Time | Pins: RS , RW,E | 0 | - | - | ns |
| T _{AH} | Address Hold Time | Pins :RS,RW,E | 10 | - | - | ns |
| T _{DDR} | Data Setup Time | Pins:DB0~DB7 | - | - | 100 | ns |
| T _H | Data Hold Time | Pins:DB0~DB7 | 10 | - | - | ns |

2.4 Display Command

| Instructions | Instruction Code | | | | | | | | | | Description | Description Time (270KHz) |
|-------------------------|------------------|-----|---------|---------|---------|---------|---------|---------|---------|---------|---|------------------------------|
| | RS | R/W | DB 7 | DB 6 | DB 5 | DB 4 | DB 3 | DB 2 | DB 1 | DB 0 | | |
| Clear Display | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | Write "20H" to DDRAM. and set DDRAM address to "00H" from AC. | 1.52ms |
| Return Home | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | × | Set DDRAM address to "00H" from AC and return cursor to it's original position if shifted. The contents of DDRAM are not changed. | 1.52ms |
| Entry Mode Set | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | I/D | S | Sets cursor move direction and specifies display shift. These operations are performed during data write and read . | 37μs |
| Display ON/OFF | 0 | 0 | 0 | 0 | 0 | 0 | 1 | D | C | B | D=1 : entire display on C=1 : cursor on B=1 : cursor position on | 37μs |
| Cursor or Display Shift | 0 | 0 | 0 | 0 | 0 | 1 | S/C | R/L | × | × | Set cursor moving and display shift control bit, and the direction, without changing of DDRAM data. | 37μs |
| Function Set | 0 | 0 | 0 | 0 | 1 | DL | N | F | × | × | DL: interface data is 8/4 bits NL: number of line is 2/1 F: font size is 5×11/5×8 | 37μs |
| Set CGRAM Address | 0 | 0 | 0 | 1 | AC 5 | AC 4 | AC 3 | AC 2 | AC 1 | AC 0 | Set CGRAM address in address counter. | 37μs |
| Set DDRAM Address | 0 | 0 | 1 | AC 6 | AC 5 | AC 4 | AC 3 | AC 2 | AC 1 | AC 0 | Set DDRAM address in address counter. | 37μs |

| | | | | | | | | | | | | |
|----------------------------|---|---|----|------|------|------|------|------|------|------|--|------------|
| Read Busy Flag and Address | 0 | 1 | BF | AC 6 | AC 5 | AC 4 | AC 3 | AC 2 | AC 1 | AC 0 | Whether during internal operation or not can be known by reading BF. The contents of address counter can also be read. | 0 μ s |
| Write Data to RAM | 1 | 0 | D7 | D6 | D5 | D4 | D3 | D2 | D1 | D0 | Write data into internal RAM (DDRAM/CGRAM). | 37 μ s |
| Read Data from RAM | 1 | 1 | D7 | D6 | D5 | D4 | D3 | D2 | D1 | D0 | Read data from internal RAM (DDRAM/CGRAM). | 37 μ s |

Note:

Be sure the ST7066U is not in the busy state (BF=0) before sending an instruction from the MPU to the ST7066.

If an instruction is sent without checking the busy flag , the time between the first instruction and next instruction will take much longer than the instruction time itself.

Refer to Instruction Table for the list of each instruction execution time .

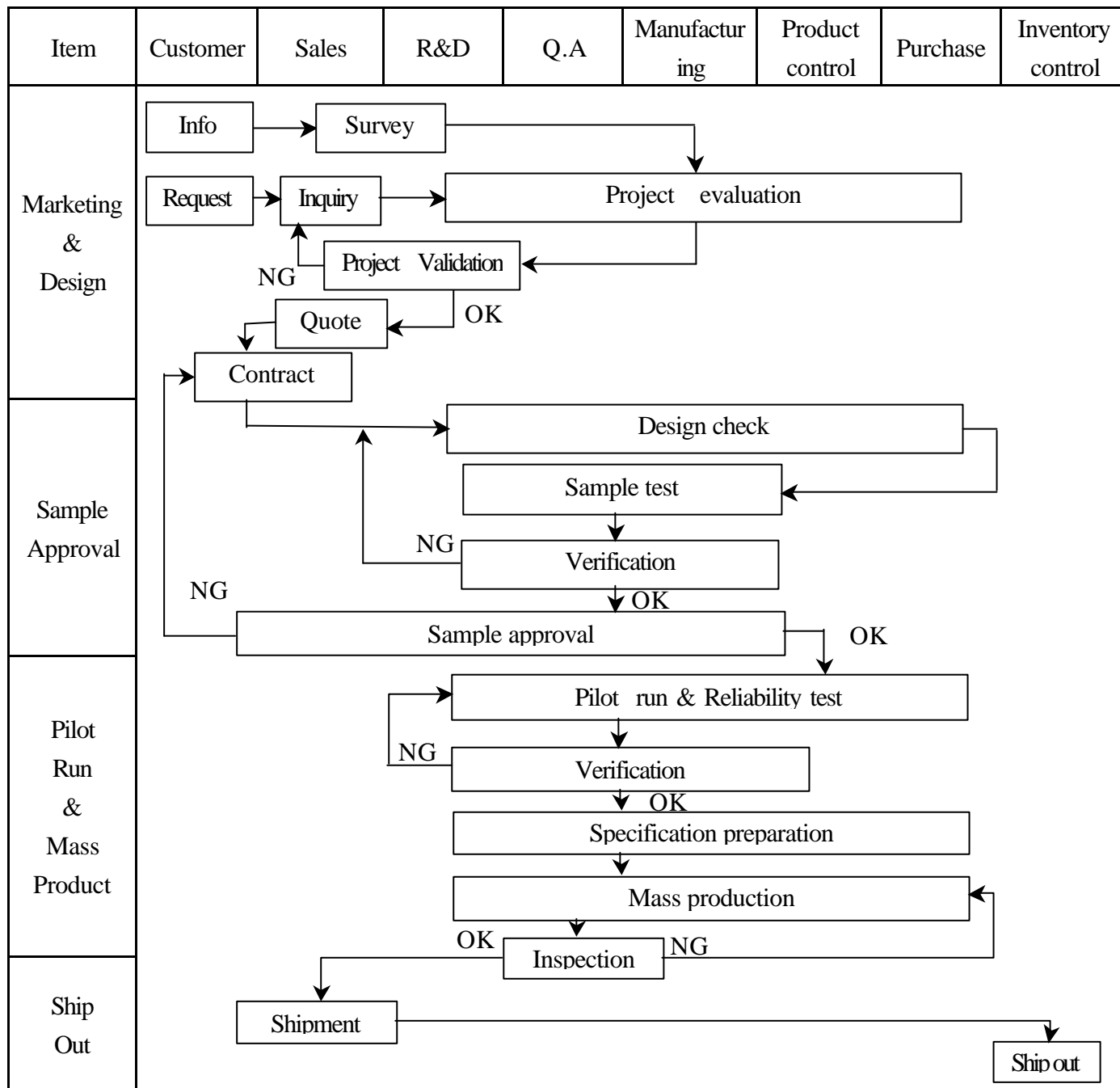
2.5 Character Pattern

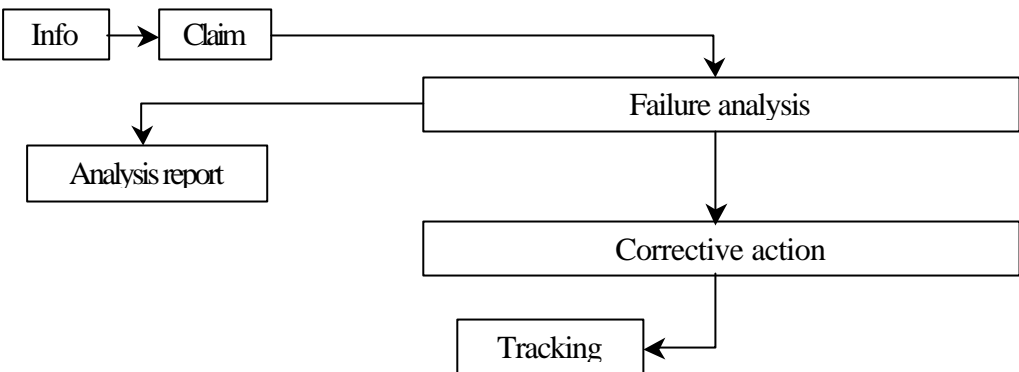
■ CHARACTER PATTERN(SO/HO/EA,WA)

| Upper 4 Bits Lower 4 Bits | | 0000 | 0001 | 0010 | 0011 | 0100 | 0101 | 0110 | 0111 | 1000 | 1001 | 1010 | 1011 | 1100 | 1101 | 1110 | 1111 |
|------------------------------------|------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| xxxx0000 | CG RAM (1) | | | 0 | a | P | ` | P | | | | | — | 9 | 3 | o | p |
| xxxx0001 | (2) | | ! | 1 | A | Q | a | 4 | | | = | 7 | + | 4 | 3 | g | |
| xxxx0010 | (3) | | " | 2 | B | R | b | r | | | " | i | w | / | P | e | |
| xxxx0011 | (4) | | # | 3 | C | S | c | s | | | ! | o | t | e | e | ∞ | |
| xxxx0100 | (5) | | * | 4 | D | T | d | t | | | \ | E | t | t | P | a | |
| xxxx0101 | (6) | | % | 5 | E | U | e | u | | | . | * | * | 1 | 3 | 0 | |
| xxxx0110 | (7) | | & | 6 | F | V | f | v | | | 9 | h | = | 3 | P | Σ | |
| xxxx0111 | (8) | | ' | 7 | G | W | g | w | | | 7 | + | 7 | 9 | g | π | |
| xxxx1000 | (1) | | < | 8 | H | X | h | x | | | 4 | o | * | 1 | 7 | Σ | |
| xxxx1001 | (2) | | > | 9 | I | Y | i | y | | | 9 | 7 | 1 | u | - | Y | |
| xxxx1010 | (3) | | * | : | J | Z | j | z | | | π | o | n | l | j | * | |
| xxxx1011 | (4) | | + | : | K | L | k | l | | | * | 9 | h | o | * | π | |
| xxxx1100 | (5) | | , | < | L | * | 1 | 1 | | | h | 3 | 7 | 7 | o | π | |
| xxxx1101 | (6) | | — | = | M | J | m | j | | | u | Σ | ^ | o | * | + | |
| xxxx1110 | (7) | | . | > | N | ^ | n | + | | | 9 | h | o | * | π | | |
| xxxx1111 | (8) | | / | ? | O | _ | o | + | | | u | 1 | 7 | π | o | π | |

3. QUALITY ASSURANCE SYSTEM

3.1 Quality Assurance Flow Chart



| Item | Customer | Sales | R&D | Q.A | Manufacturing | Product control | Purchase | Inventory control |
|---------------|---|-------|-----|-----|---------------|-----------------|----------|-------------------|
| Sales Service |  <pre> graph TD Info[Info] --> Claim[Claim] Claim --> Failure[Failure analysis] Claim --> Report[Analysis report] Failure --> Action[Corrective action] Action --> Tracking[Tracking] </pre> | | | | | | | |
| Q.A Activity | <div> 1. ISO 9001 Maintenance Activities 3. Equipment calibration 5. Standardization Management </div> <div> 2. Process improvement proposal 4. Education And Training Activities </div> | | | | | | | |

3.2 Inspection Specification

Inspection Standard : MIL-STD-105E Table Normal Inspection Single Sampling Level .

Equipment : Gauge、MIL-STD、Powertip Tester、Sample。

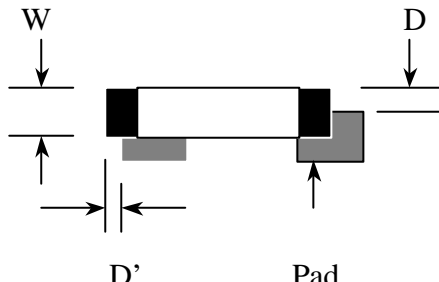
IQC Defect Level : Major Defect AQL 0.4; Minor Defect AQL 1.5。

FQC Defect Level : 100% Inspection。

OUT Going Defect Level : Sampling。

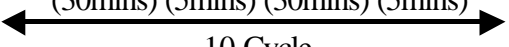
Specification :

| NO | Item | Specification | Judge | Level |
|----|---|--|-------|-------|
| 1 | Part Number | The part number is inconsistent with work order of production | N.G. | Major |
| 2 | Quantity | The quantity is inconsistent with work order of production | N.G. | Major |
| 3 | Electronic characteristics of LCM $A = (L + W) \div 2$ | The display lacks of some patterns. | N.G. | Major |
| | | Missing line. | N.G. | Major |
| | | The size of missing dot, A is $> 1/2$ Dot size | N.G. | Major |
| | | There is no function. | N.G. | Major |
| | | Output data is error | N.G. | Major |
| 4 | Appearance of LCD $A = (L + W) \div 2$ Dirty particle (Including scratch、bubble) | Material is different with work order of production | N.G. | Major |
| | | LCD is assembled in inverse direction | N.G. | Major |
| | | Bezel is assembled in inverse direction | N.G. | Major |
| | | Shadow is within LCD viewing area + 0.5 mm | N.G. | Major |
| | | The diameter of dirty particle, A is > 0.4 mm | N.G. | Minor |
| | | Dirty particle length is > 3.0 mm, and 0.01 mm $<$ width 0.05mm | N.G. | Minor |
| | | Display is without protective film | N.G. | Minor |
| | | Conductive rubber is over bezel 1mm | N.G. | Minor |
| | | Polarizer exceeds over viewing area of LCD | N.G. | Minor |
| | | Area of bubble in polarizer, A > 1.0 mm, the number of bubble is > 1 piece. | N.G. | Minor |
| | | 0.4 mm $<$ Area of bubble in polarizer, A < 1.0 mm, the number of bubble is > 4 pieces. | N.G. | Minor |
| 5 | Appearance of PCB $A = (L + W) \div 2$ | Burned area or wrong part number is on PCB | N.G. | Major |
| | | The symbol, character, and mark of PCB are unidentifiable. | N.G. | Minor |
| | | The stripped solder mask , A is > 1.0 mm | N.G. | Minor |
| | | 0.3 mm $<$ stripped solder mask or visible circuit, A < 1.0 mm, and the number is 4 pieces | N.G. | Minor |
| | | There is particle between the circuits in solder mask | N.G. | Minor |
| | | The circuit is peeled off or cracked | N.G. | Minor |
| | | There is any circuits risen or exposed. | N.G. | Minor |
| | | 0.2 mm $<$ Area of solder ball, A is 0.4mm | N.G. | Minor |
| | | The number of solder ball is 3 pieces | N.G. | Minor |
| | | The magnitude of solder ball, A is > 0.4 mm. | N.G. | Minor |

| NO | Item | Specification | Judge | Level |
|----|--|--|-------|-------|
| 6 | Appearance of molding $A = (L + W) \div 2$ | The shape of modeling is deformed by touching. | N.G. | Major |
| | | Insufficient epoxy: Circuit or pad of IC is visible | N.G. | Minor |
| | | Excessive epoxy: Diameter of modeling is $> 20\text{mm}$ or height is $> 2.5\text{mm}$ | N.G. | Minor |
| | | The diameter of pinhole in modeling, A is $> 0.2\text{mm}$. | N.G. | Minor |
| 7 | Appearance of frame $A = (L + W) \div 2$ | The folding angle of frame must be $> 45^\circ + 10^\circ$ | N.G. | Minor |
| | | The area of stripped electroplate in top-view of frame, A is $> 1.0\text{mm}$. | N.G. | Minor |
| | | Rust or crack is (Top view only) | N.G. | Minor |
| | | The scratched width of frame is $> 0.06\text{mm}$. (Top view only) | N.G. | Minor |
| 8 | Electrical characteristic of backlight $A = (L + W) \div 2$ | The color of backlight is nonconforming | N.G. | Major |
| | | Backlight can't work normally. | N.G. | Major |
| | | The LED lamp can't work normally | N.G. | Major |
| | | The unsoldering area of pin for backlight, A is $> 1/2$ solder joint area. | N.G. | Minor |
| | | The height of solder pin for backlight is $> 2.0\text{mm}$ | N.G. | Minor |
| 10 | Assembly parts $A = (L + W) \div 2$ | The mark or polarity of component is unidentifiable. | N.G. | Minor |
| | | The height between bottom of component and surface of the PCB is floating $> 0.7\text{mm}$ | N.G. | Minor |
| | | $D > 1/4W$  | N.G. | Minor |
| | | End solder joint width, D' is $> 50\%$ width of component termination or width of pad | N.G. | Minor |
| | | Side overhang, D is $> 25\%$ width of component termination. | N.G. | Minor |
| | | Component is cracked, deformed, and burned, etc. | N.G. | Minor |
| | | The polarity of component is placed in inverse direction. | N.G. | Minor |
| | | Maximum fillet height of solder extends onto the component body or minimum fillet height is $< 0.5\text{mm}$. | N.G. | Minor |

4. RELIABILITY TEST

4.1 Reliability Test Condition

| NO | Item | Test Condition | |
|----|------------------------------------|---|---|
| 1 | High Temperature Storage | Storage at 80 ± 2 96~100 hrs Surrounding temperature, then storage at normal condition 4hrs | |
| 2 | Low Temperature Storage | Storage at -30 ± 2 96~100 hrs Surrounding temperature, then storage at normal condition 4hrs | |
| 3 | High Temperature /Humidity Storage | 1.Storage 96~100 hrs 60 ± 2 , 90~95%RH surrounding temperature, then storage at normal condition 4hrs. (Excluding the polarizer). or 2.Storage 96~100 hrs 40 ± 2 , 90~95%RH surrounding temperature, then storage at normal condition 4 hrs. | |
| 4 | Temperature Cycling | <div style="text-align: center;"> -20 25 70 25 (30mins) (5mins) (30mins) (5mins)  10 Cycle </div> | |
| 5 | Vibration | 10~55Hz (1 minute) 1.5mm X,Y and Z direction * (each 2hrs) | |
| 6 | ESD Test | Air Discharge: Apply 6 KV with 5 times discharge for each polarity +/- | Contact Discharge: Apply 250V with 5 times discharge for each polarity +/- |
| | | Testing location: Around the face of LCD | Testing location: 1.Apply to bezel. 2.Apply to Vdd, Vss. |
| 7 | Drop Test | Packing Weight (Kg) | Drop Height (cm) |
| | | 0 ~ 45.4 | 122 |
| | | 45.4 ~ 90.8 | 76 |
| | | 90.8 ~ 454 | 61 |
| | | Over 454 | 46 |

5. PRECAUTION RELATING PRODUCT HANDLING

5.1 SAFETY

- 5.1.1 If the LCD panel breaks , be careful not to get the liquid crystal to touch your skin.
- 5.1.2 If the liquid crystal touches your skin or clothes , please wash it off immediately by using soap and water.

5.2 HANDLING

- 5.2.1 Avoid any strong mechanical shock which can break the glass.
- 5.2.2 Avoid static electricity which can damage the CMOS LSI—When working with the module , be sure to ground your body and any electrical equipment you may be using.
- 5.2.3 Do not remove the panel or frame from the module.
- 5.2.4 The polarizing plate of the display is very fragile. So , please handle it very carefully ,do not touch , push or rub the exposed polarizing with anything harder than an HB pencil lead (glass , tweezers , etc.)
- 5.2.5 Do not wipe the polarizing plate with a dry cloth , as it may easily scratch the surface of plate.
- 5.2.6 Do not touch the display area with bare hands , this will stain the display area.
- 5.2.7 Do not use ketonics solvent & aromatic solvent. Use with a soft cloth soaked with a cleaning naphtha solvent.
- 5.2.8 To control temperature and time of soldering is 280 ± 10 and 3-5 sec.
- 5.2.9 To avoid liquid (include organic solvent) stained on LCM .

5.3 STORAGE

- 5.3.1 Store the panel or module in a dark place where the temperature is 25 ± 5 and the humidity is below 65% RH.
- 5.3.2 Do not place the module near organics solvents or corrosive gases.
- 5.3.3 Do not crush , shake , or jolt the module.

5.4 TERMS OF WARRANTY

5.4.1 Applicable warrant period

The period is within thirteen months since the date of shipping out under normal using and storage conditions.

5.4.2 Unaccepted responsibility

This product has been manufactured to your company' s specification 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 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.