

NAN YA PLASTICS CORP.
ELEC. MATERIALS DIV.
LCD DEPARTMENT

SPECIFICATION

SPEC. NO. : LT245-0
DATE : Feb,26, 1999
SHEET NO. : 1/19

U.S. MARKETING ARM:

MARK PRODUCTS CORPORATION
800 N. EDGEWOOD AVENUE
WOOD DALE, IL 60191
TEL: 630-787-9089
FAX: 630-787-9015

SPECIFICATION OF
16x2 COG LCD MODULE
PRODUCT NO.: LTK62R245A__

SPEC. NO.: LT245-0-~~0~~[△]

| |
|-------------|
| CUSTOMER |
| |
| APPROVED BY |
| |
| DATE: |

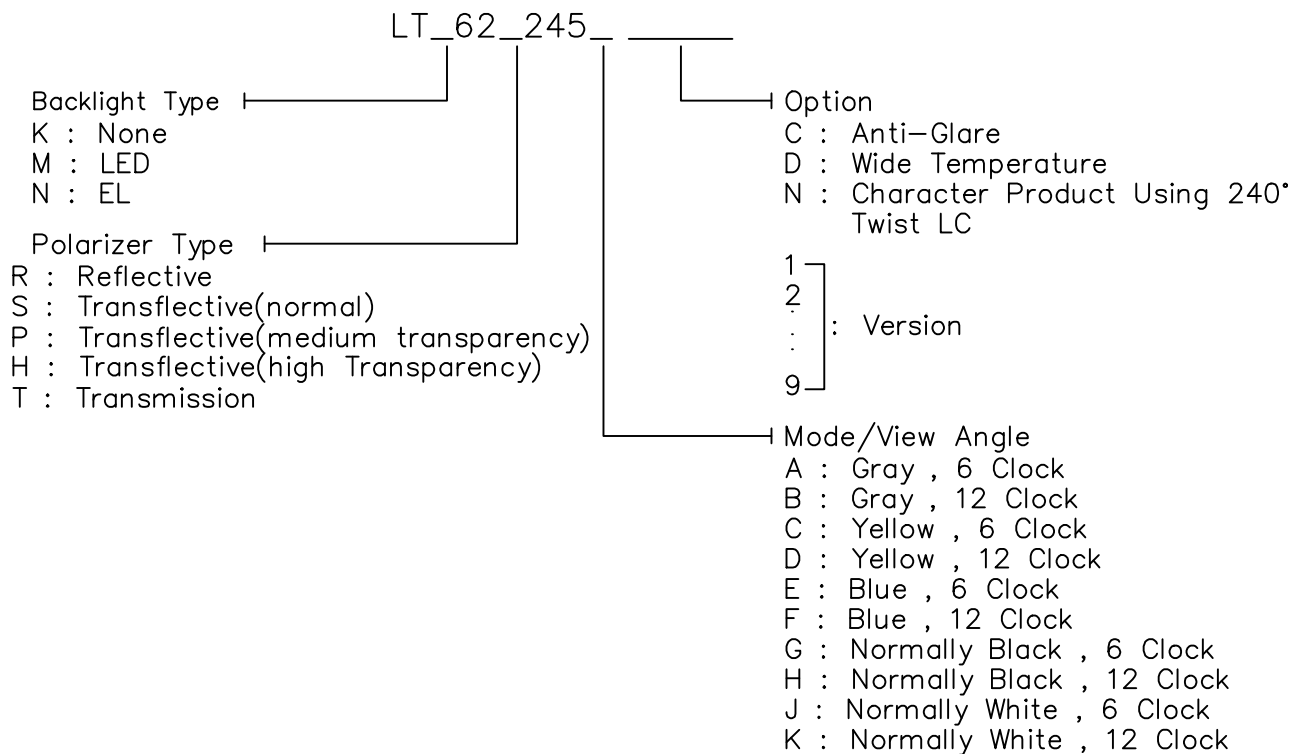
| SALE MANAGER | TECHNICAL APPROVE | DESIGN MANAGER | DESIGN CHECK | DESIGNER |
|-----------------|----------------------|-------------------|-----------------|----------|
| | | | | |

| | | | | | | | | |
|----------|------------------|--|--|--|--|-----|-----|----|
| REV/DATE | R0/ 02.26.99' | | | | | APP | CHK | BY |
|----------|------------------|--|--|--|--|-----|-----|----|

1. MECHANICAL DATA

- (1) Product No. LTK62R245_ _____
- (2) Module Size 65.0 (W)mm x 27.7 (H)mm x MAX2.0 (D)mm
(W/O B.L.)
- (3) Dot Size 0.55 (W)mm x 0.60 (H)mm
- (4) Dot Pitch 0.60 (W)mm x 0.65 (H)mm
- (5) Number of Characters 16 (W) x 2 (H)Characters
- (6) Character Format 5 (W) x 8 (H)Dots
- (7) Duty 1/16
- (8) LCD Display Mode STN: Gray Mode
FSTN: Black and White(Normal White/Positive Image)
 Black and White(Normal Black/Negative Image)
Rear Polarizer: Reflective Transflective Transmissive
- (9) Viewing Direction 6 O'clock
- (10) Backlight W/O
- (11) Weight Approx. 6.5 g
- (12) Controller(COG) FCS2314AK

Note :



| | | | | | | | | |
|----------|------------------|--|--|--|--|-----|-----|----|
| REV/DATE | R0/ 02.26.99' | | | | | APP | CHK | BY |
|----------|------------------|--|--|--|--|-----|-----|----|

2. ABSOLUTE MAXIMUM RATINGS

(1) ELECTRICAL ABSOLUTE RATINGS

VSS=0V

| | SYMBOL | MIN | MAX | UNIT | COMMENT |
|------------------------|---------|------|-----|------|---------|
| Power Supply for Logic | VDD-VSS | -0.3 | 5.5 | V | |
| Input Voltage | VI | -0.3 | VDD | V | |
| Static Electricity | - | - | - | - | Note 1 |

Note 1 LCM should be grounded during handling LCM.

(2) ENVIRONMENTAL ABSOLUTE MAXIMUM RATINGS

| ITEM | NORMAL TEMP. | | | | WIDE TEMP. | | | |
|---------------------------------|--------------|------|----------|------|------------|------|----------|------|
| | OPERATING | | STORAGE | | OPERATING | | STORAGE | |
| | MIN. | MAX. | MIN. | MAX. | MIN. | MAX. | MIN. | MAX. |
| Ambient Temperature | 0 | 50 | -20 | 70 | -20 | 70 | -30 | 80 |
| Humidity (Without Condensation) | Note 2,4 | | Note 3,4 | | Note 4,5 | | Note 4,6 | |

Note 2 $T_a \leq 50^\circ\text{C}$: 85%RH max

$T_a > 50^\circ\text{C}$: Absolute humidity must be lower
than the humidity of 85%RH at 50°C

Note 3 T_a at -20°C will be < 48hrs, at 70°C will be < 120hrs

Note 4 Background color will change slightly depending on ambient temperature.
at phenomenon is reversible.

Note 5 $T_a \leq 70^\circ\text{C}$: 75%RH max

$T_a > 70^\circ\text{C}$: Absolute humidity must be lower
than the humidity of 75%RH at 70°C

Note 6 T_a at -30°C will be < 48hrs, at 80°C will be < 120hrs

| | | | | | | | | |
|----------|------------------|--|--|--|--|-----|-----|----|
| REV/DATE | R0/ 02.26.99' | | | | | APP | CHK | BY |
|----------|------------------|--|--|--|--|-----|-----|----|

3. ELECTRICAL CHARACTERISTICS

(VDD= 5V ± 10%)

| ITEM | SYMBOL | CONDITION | MIN. | TYP. | MAX. | UNIT | |
|--|------------------|---|--------|------|--------|------|---|
| Input Voltage | VIH | H level | 0.8VDD | - | VDD | V | |
| | VIL | L level | 0 | - | 0.2VDD | V | |
| Recommended LCD Driving Voltage (NORMAL TEMP. LCM) | VDD-V5 (VLCD) | FRM= 70Hz DUTY= 1/16 Bias= 1/5 | 0℃ | 4.3 | 4.7 | 5.1 | V |
| | | | 25℃ | 4.1 | 4.5 | 4.9 | |
| | | | 50℃ | 4.0 | 4.4 | 4.8 | |
| Recommended LCD Driving Voltage (WIDE TEMP. LCM) | VDD-V5 (VLCD) | FRM= 70Hz DUTY= 1/16 Bias= 1/5 | -20℃ | - | - | - | V |
| | | | 0℃ | - | - | - | |
| | | | 25℃ | - | - | - | |
| | | | 50℃ | - | - | - | |
| | | | 70℃ | - | - | - | |
| Power Supply Current | IDD | VDD = 5.0V | - | 0.82 | - | mA | |

4. OPTICAL CHARACTERISTICS

(FOR NORMAL TEMPERATURE MODE LCM)

AT V_{OP}

| ITEM MODE | | Cr(Contrast Ratio) | | θ (Viewing Angle) | | ϕ (Viewing Angle) | |
|--------------|---|--------------------|------|--------------------------|------|------------------------|------|
| | | 25 τ | | 25 τ | | 25 τ | |
| | | MIN. | TYP. | MIN. | TYP. | MIN. | TYP. |
| R | A | - | - | - | - | - | - |
| | C | - | - | - | - | - | - |
| | J | - | - | - | - | - | - |
| S | A | - | 4.0 | - | 50 | - | 40 |
| | C | - | 8.0 | - | 80 | - | 50 |
| | J | - | - | - | - | - | - |
| T | E | - | - | - | - | - | - |
| | D | - | 4.0 | - | 85 | - | 38 |
| NOTE | | NOTE6 | | NOTE5 | | | |

NOTE :

R: REFLECTIVE
S: TRANFLECTIVE
T: TRANSMISSIVE
A/B: GRAY

C/D: YELLOW
E/F: BLUE
G/H: NORMALLY BLACK
J/K: NORMALLY WHITE

AT $\phi=0^\circ \theta=0^\circ$

| ITEM | SYMBOL | CONDITION | MIN. | TYP. | MAX. | UNIT | NOTE |
|----------------------|--------|-----------|------|------|------|------|--------|
| Response Time (rise) | Tr | 0 τ | - | 700 | 1100 | ms | NOTE 2 |
| | | 25 τ | - | 170 | 260 | | |
| | | 50 τ | - | 100 | 150 | | |
| Response Time (fall) | Tf | 0 τ | - | 400 | 600 | ms | NOTE 2 |
| | | 25 τ | - | 120 | 180 | | |
| | | 50 τ | - | 50 | 80 | | |

4-1.OPTICAL CHARACTERISTICS

(FOR WIDE TEMPERATURE MODE LCM)

AT Vop

| MODE | ITEM | Cr(Contrast Ratio) | | θ (Viewing Angle) | | ϕ (Viewing Angle) | |
|------|------|--------------------|------|--------------------------|------|------------------------|------|
| | | 25℃ | | 25℃ | | 25℃ | |
| | | MIN. | TYP. | MIN. | TYP. | MIN. | TYP. |
| R | A | - | - | - | - | - | - |
| | C | - | - | - | - | - | - |
| | J | - | - | - | - | - | - |
| S | A | - | - | - | - | - | - |
| | C | - | - | - | - | - | - |
| | J | - | - | - | - | - | - |
| T | E | - | - | - | - | - | - |
| | G | - | - | - | - | - | - |
| NOTE | | NOTE6 | | NOTE5 | | | |

NOTE :

R: REFLECTIVE
S: TRANSFLECTIVE
T: TRANSMISSIVE
A/B: GRAY

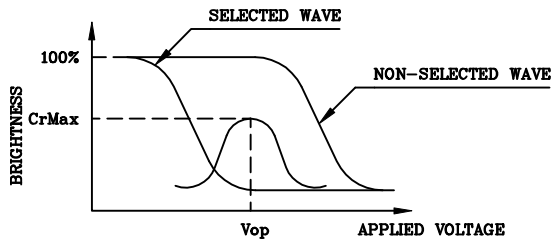
C/D: YELLOW
E/F: BLUE
G/H: NORMALLY BLACK
J/K: NORMALLY WHITE

AT $\phi=0^\circ$ $\theta=0^\circ$

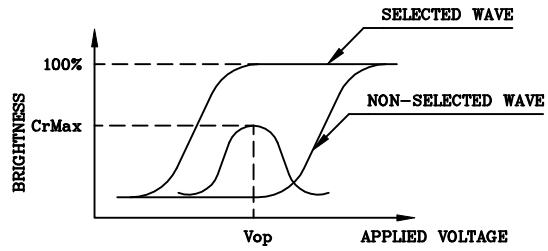
| ITEM | SYMBOL | CONDITION | MIN. | TYP. | MAX. | UNIT | NOTE |
|----------------------|--------|-----------|------|------|------|------|--------|
| Response Time (rise) | Tr | -20℃ | - | - | - | ms | NOTE 2 |
| | | 0℃ | - | - | - | | |
| | | 25℃ | - | - | - | | |
| | | 50℃ | - | - | - | | |
| | | 70℃ | - | - | - | | |
| Response Time (fall) | Tf | -20℃ | - | - | - | ms | NOTE 2 |
| | | 0℃ | - | - | - | | |
| | | 25℃ | - | - | - | | |
| | | 50℃ | - | - | - | | |
| | | 70℃ | - | - | - | | |

(NOTE 1)

Definition of Operation Voltage(Vop)



(positive type)



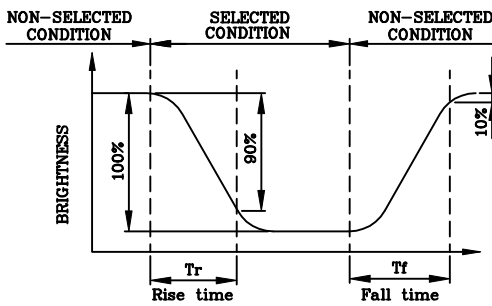
(negative type)

*Conditions

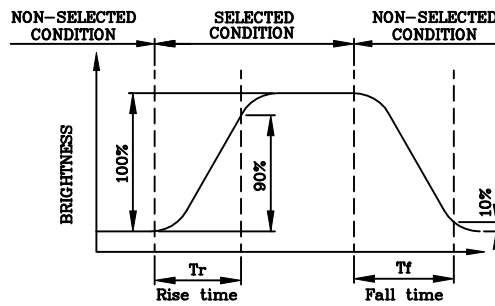
Viewing Angle : 0
Frame Frequency : 70Hz
Applied Waveform : 1/N duty, 1/a bias

(NOTE 2)

Definition of Response Time(Tr,Tf)



(positive type)



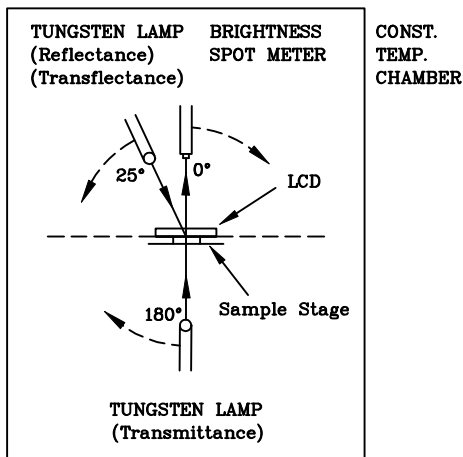
(negative type)

*Conditions

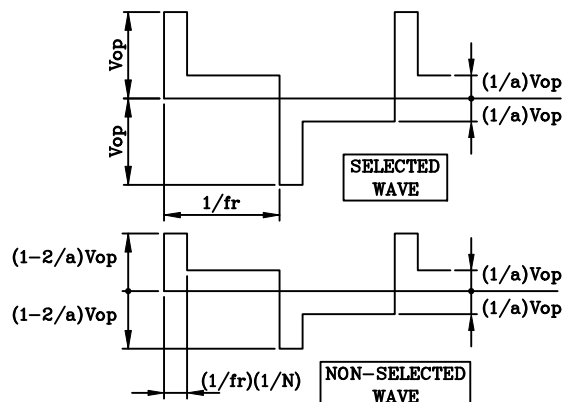
Operating Voltage : Vop
Viewing Angle (θ,φ) : (0,0)
Frame Frequency : 70Hz
Applied Waveform : 1/N duty, 1/a bias

(NOTE 3)

Description of Measuring Equipment and Driving Waveforms

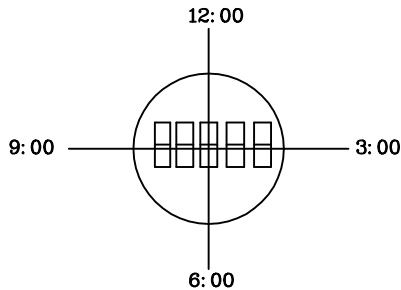


Multiplex Driving (1/N duty, 1/a bias)



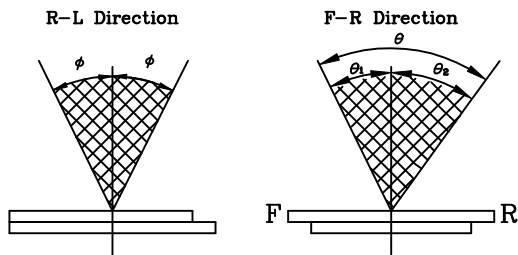
(NOTE 4)

Definition of Viewing Direction



(NOTE 5)

Definition of Viewing Angle



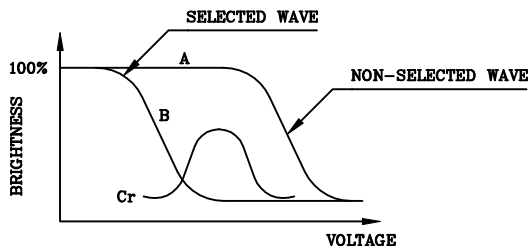
$$\theta = \theta_1 + \theta_2$$

*Conditions

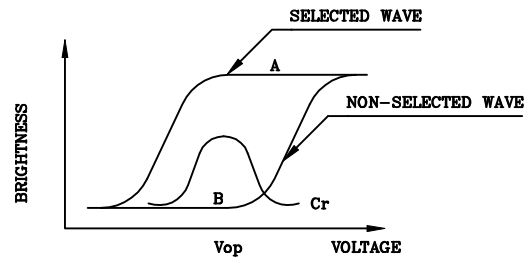
Operating Voltage : V_{op}
 Frame Frequency : 70Hz
 Applied Waveform : 1/N duty, 1/a bias
 Contrast Ratio : larger than 2

(NOTE 6)

Definition of Contrast Ratio (Cr)



(positive type)



(negative type)

$$\text{Contrast Ratio} : Cr = A/B$$

*Conditions

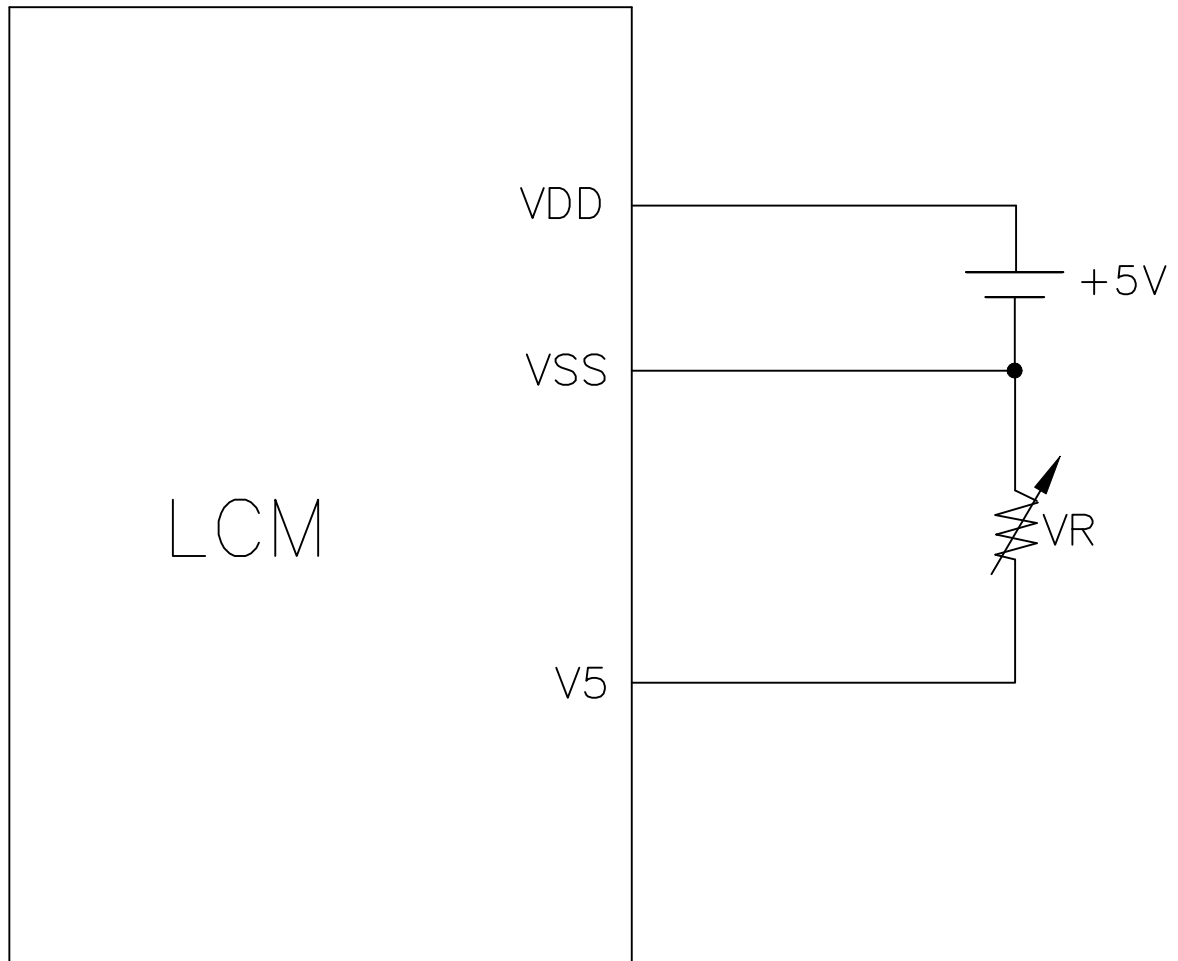
Viewing Angle : 0
 Frame Frequency : 70Hz
 Applied Waveform : 1/N duty, 1/a bias

| | | | | | | | | |
|----------|------------------|--|--|--|--|-----|-----|----|
| REV/DATE | R0/ 02.26.99' | | | | | APP | CHK | BY |
|----------|------------------|--|--|--|--|-----|-----|----|

5. INTERNAL PIN CONNECTION

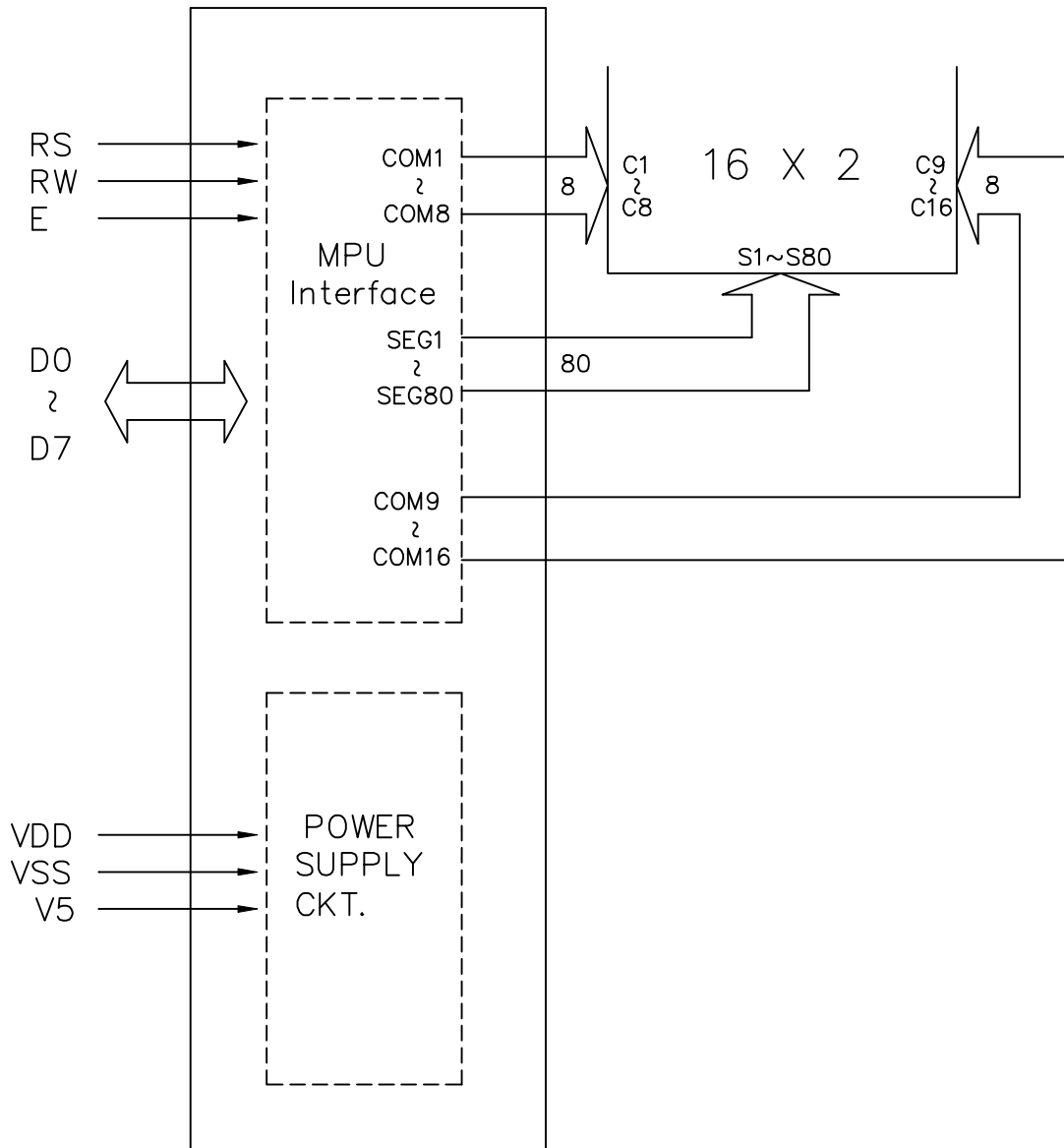
| PinNo. | Symbol | Function |
|--------|--------|--|
| 1 | RS | Selects registers L: Instruction register(for write) Busy flag/Address counter (for read) H: Data register(for read/write) |
| 2 | RW | L : write H : read |
| 3 | E | Starts data for read/write |
| 4 | D0 | Data Bus |
| 5 | D1 | |
| 6 | D2 | |
| 7 | D3 | |
| 8 | D4 | |
| 9 | D5 | |
| 10 | D6 | |
| 11 | D7 | |
| 12 | VSS | 0V(GND) |
| 13 | VDD | 5.0V(LOGIC) |
| 14 | V5 | Adjust contrast of LCM |

6. POWER SUPPLY



VR : 5K Ω

7. MPU INTERFACE/BLOCK DIAGRAM



8. COMMAND

| Instruction | Code | | | | | | | | | | Description | Execution Time |
|----------------------------|------|-----|------|-----|-----|-----|-----|-----|---------------------------------|---|--|----------------|
| | RS | R/W | DB7 | DB6 | DB5 | DB4 | DB3 | DB2 | DB1 | DB0 | | |
| Clear display | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | Clears entire display and sets DDRAM address 0 in address counter. | 1.64ms |
| Cursor home | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | — | Sets DDRAM address 0 in address counter. Also returns display from being shifted to original position. DDRAM contents remain unchanged. | 1.64ms |
| 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. | 40us |
| Display on/off control | 0 | 0 | 0 | 0 | 0 | 0 | 1 | D | C | B | D: Sets entire display on/off C: Sets cursor on/off B: Sets blinking of cursor position | 40us |
| Cursor display shift | 0 | 0 | 0 | 0 | 0 | 1 | S/C | R/L | — | — | Moves cursor and shifts display without changing DDRAM contents. S/C: 1=display 0=cursor shift R/L: 1=right 0=left | 40us |
| Function set | 0 | 0 | 0 | 0 | 1 | DL | N | SD1 | SD2 | CD | DL: Sets interface data length (1=8bit 0=4bit) N: Line number (0:1-line, 1:2-lines) SD1,2: SEG data transfer direction* CD: COM data transfer direction (1=COM16-1 0=COM1-16) | 40us |
| Set CGRAM address | 0 | 0 | 0 | 1 | ACG | | | | | | Sets CGRAM address | 40us |
| Set DDRAM address | 0 | 0 | 1 | ADD | | | | | | Sets DDRAM address | 40us | |
| Read busy flag and address | 0 | 1 | BF | AC | | | | | | BF: Indicating internal operation (1=active 0=non active) AC: Address counter contents | 0us | |
| Write data | 1 | 0 | DATA | | | | | | Write data into CGRAM, or DDRAM | 40us | | |
| Read data | 1 | 1 | DATA | | | | | | Read data from CGRAM, or DDRAM | 40us | | |

Note: Execution time is when oscillation frequency is 270kHz.

9. TIMING CHARACTERISTICS

| Item | Symbol | Test Condition | Min. | Typ. | Max. | Unit |
|------------------------|------------------|----------------|------|------|------|------|
| Enable cycle time | t_{cyc} | Fig.a, Fig.b | 500 | - | - | ns |
| Enable pulse width | PW_{EH} | Fig.a, Fig.b | 230 | - | - | ns |
| Enable rise/fall time | t_{Er}, t_{Ef} | Fig.a, Fig.b | - | - | 20 | ns |
| RS, R/W set up time | t_{AS} | Fig.a, Fig.b | 40 | - | - | ns |
| RS, R/W hold time | t_{H1} | Fig.a, Fig.b | 10 | - | - | ns |
| Data set up time | t_{DSW} | Fig.a | 60 | - | - | ns |
| Data output delay time | t_{DDR} | Fig.b | - | - | 120 | ns |
| Data write hold time | t_{H2} | Fig.a | 10 | - | - | ns |
| Data read hold time | t_{H2} | Fig.b | 5 | - | - | ns |

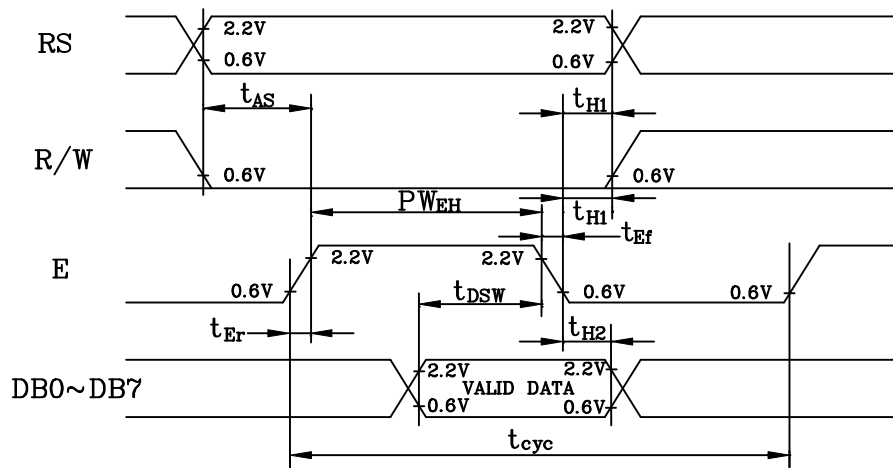


Fig.a Interface timing (data write)

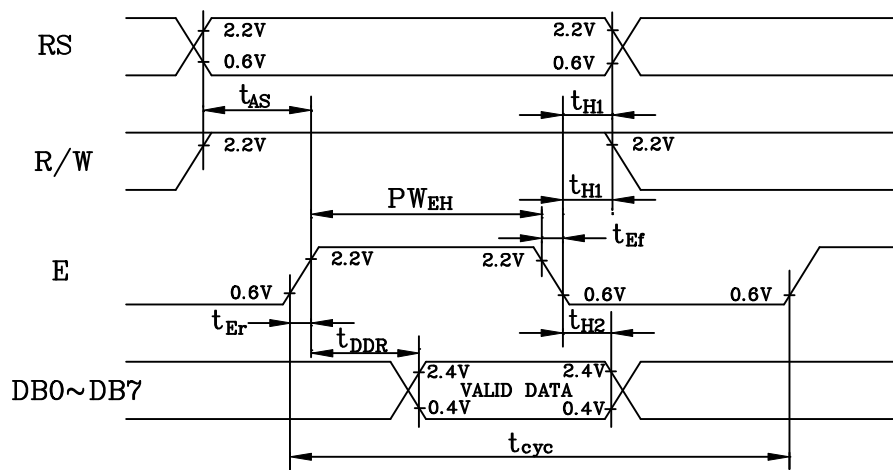
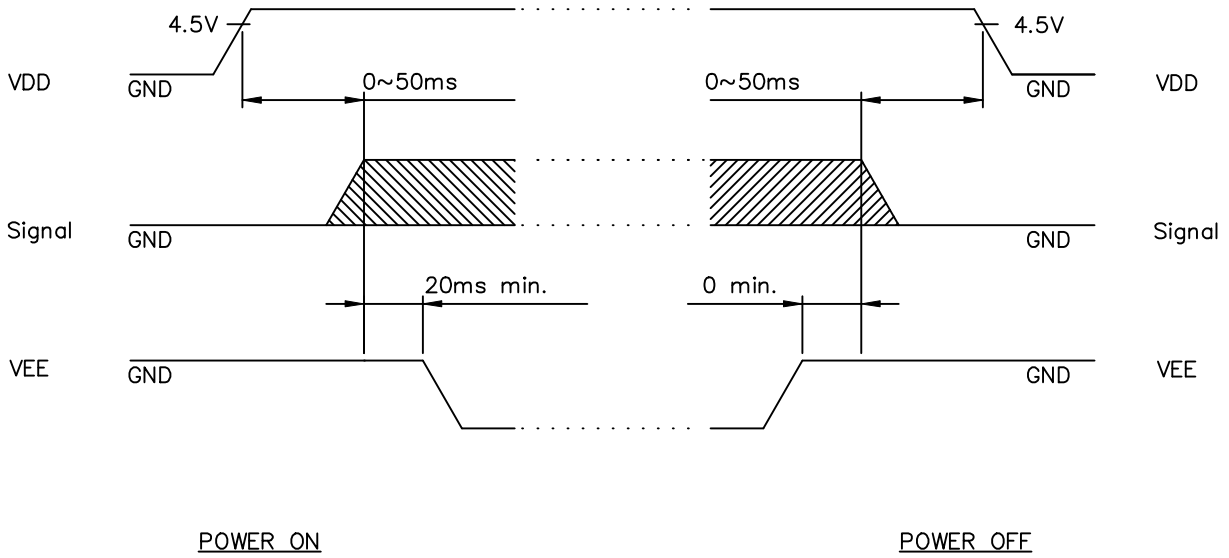


Fig.b Interface timing (data read)

9.1 POWER ON/OFF TIMING



The missing pixels may occur when the LCM is driven beyond above power interface timing sequence.

| | | | | | | | | |
|----------|------------------|--|--|--|--|-----|-----|----|
| REV/DATE | R0/ 02.26.99' | | | | | APP | CHK | BY |
|----------|------------------|--|--|--|--|-----|-----|----|

NAN YA PLASTICS CORP.
ELEC. MATERIALS DIV.
LCD DEPARTMENT

SPECIFICATION

SPEC. NO. : LT245-0
DATE : Feb,26, 1999
SHEET NO. : 15/19

11. PATTERN

REV/DATE

R0/
02.26.99'

APP

CHK

BY

10. RELIABILITY TEST

| NO | ITEM | CONDITION | | | STANDARD | NOTE |
|----|------------------------------------|--|-------|--|---------------------------|----------|
| | | | | | | |
| 1 | High Temp. Storage | 70°C | 120HR | | Appearance without defect | |
| 2 | Low Temp. Storage | -20°C | 120HR | | Appearance without defect | |
| 3 | High Temp. & High Humidity Storage | 40°C 90%RH | 120HR | | Appearance without defect | |
| 4 | Thermal Shock | -20°C,30min → 25°C,5min → 60°C,30min → 25°C,5min (= 1 cycle) | | | Appearance without defect | 5 cycles |

11.LCD PRODUCT QUALITY STANDARD

(1) DISPLAY APPEARANCE

| NO | ITEM | C R I T E R I A | | | | | | | | | | | | | | | | | | | | | |
|----------------------|--|---|---|------------------|----------------|---------------|---------|----------------------|-------|------------|------|--------------|-------------|---------------|-----|---------------|---------|------------|----------------------|---|---------|------------|------|
| 1. | INCLUSIONS (BLACK SPOT , WHITE SPOT , DUST) | <p>(1) ROUND TYPE</p> <table border="1"> <thead> <tr> <th>DIAMETER mm (a*)</th> <th>NO. OF DEFECT*</th> </tr> </thead> <tbody> <tr> <td>$a \leq 0.20$</td> <td>NEGLECT</td> </tr> <tr> <td>$0.20 < a \leq 0.35$</td> <td>5 MAX</td> </tr> <tr> <td>$0.35 < a$</td> <td>NONE</td> </tr> </tbody> </table> <p>(2) LINEAR TYPE</p> <table border="1"> <thead> <tr> <th>LENGTH mm(L)</th> <th>WIDTH mm(W)</th> <th>NO. OF DEFECT</th> </tr> </thead> <tbody> <tr> <td>N A</td> <td>$W \leq 0.03$</td> <td>NEGLECT</td> </tr> <tr> <td>$L \leq 3$</td> <td>$0.03 < W \leq 0.08$</td> <td>6</td> </tr> <tr> <td>$3 < L$</td> <td>$0.08 < W$</td> <td>NONE</td> </tr> </tbody> </table> | | DIAMETER mm (a*) | NO. OF DEFECT* | $a \leq 0.20$ | NEGLECT | $0.20 < a \leq 0.35$ | 5 MAX | $0.35 < a$ | NONE | LENGTH mm(L) | WIDTH mm(W) | NO. OF DEFECT | N A | $W \leq 0.03$ | NEGLECT | $L \leq 3$ | $0.03 < W \leq 0.08$ | 6 | $3 < L$ | $0.08 < W$ | NONE |
| DIAMETER mm (a*) | NO. OF DEFECT* | | | | | | | | | | | | | | | | | | | | | | |
| $a \leq 0.20$ | NEGLECT | | | | | | | | | | | | | | | | | | | | | | |
| $0.20 < a \leq 0.35$ | 5 MAX | | | | | | | | | | | | | | | | | | | | | | |
| $0.35 < a$ | NONE | | | | | | | | | | | | | | | | | | | | | | |
| LENGTH mm(L) | WIDTH mm(W) | NO. OF DEFECT | | | | | | | | | | | | | | | | | | | | | |
| N A | $W \leq 0.03$ | NEGLECT | | | | | | | | | | | | | | | | | | | | | |
| $L \leq 3$ | $0.03 < W \leq 0.08$ | 6 | | | | | | | | | | | | | | | | | | | | | |
| $3 < L$ | $0.08 < W$ | NONE | | | | | | | | | | | | | | | | | | | | | |
| 2. | SCRATCH | <p>1.SCRATCH ON PROTECTIVE FILM IS PERMITTED . 2.SCRATCH ON POLARIZER SHALL BE AS FOLLOW: (1) ROUND TYPE</p> <table border="1"> <thead> <tr> <th>DIAMETER mm (a*)</th> <th>NO. OF DEFECT*</th> </tr> </thead> <tbody> <tr> <td>$a \leq 0.15$</td> <td>NEGLECT</td> </tr> <tr> <td>$0.15 < a \leq 0.20$</td> <td>2 MAX</td> </tr> <tr> <td>$0.20 < a$</td> <td>NONE</td> </tr> </tbody> </table> <p>(2) LINEAR TYPE BE JUDGED BY 1.-(2) LINEAR TYPE</p> | | DIAMETER mm (a*) | NO. OF DEFECT* | $a \leq 0.15$ | NEGLECT | $0.15 < a \leq 0.20$ | 2 MAX | $0.20 < a$ | NONE | | | | | | | | | | | | |
| DIAMETER mm (a*) | NO. OF DEFECT* | | | | | | | | | | | | | | | | | | | | | | |
| $a \leq 0.15$ | NEGLECT | | | | | | | | | | | | | | | | | | | | | | |
| $0.15 < a \leq 0.20$ | 2 MAX | | | | | | | | | | | | | | | | | | | | | | |
| $0.20 < a$ | NONE | | | | | | | | | | | | | | | | | | | | | | |
| 3. | DENT | DIAMETER < 1.5mm | | | | | | | | | | | | | | | | | | | | | |
| 4. | BUBBLE | NOT EXCEEDING 0.5mm AVERAGE DIAMETER IS ACCEPTABLE BETWEEN GLASS AND POLARIZING FILM. | | | | | | | | | | | | | | | | | | | | | |
| 5. | PIN HOLE | $(a+b)/2 \leq 0.15$ mm MAXIMUM NUMBER: IGNORED $0.15 < (a+b)/2 \leq 0.20$ MAXIMUM NUMBER: 10 | | | | | | | | | | | | | | | | | | | | | |
| 6. | DOT DEFECT | $(a+b)/2 \leq 0.20$ mm MAXIMUM NUMBER: IGNORED $0.20 < (a+b)/2 \leq 0.30$ MAXIMUM NUMBER: 5 x = WIDTH | | | | | | | | | | | | | | | | | | | | | |
| 7. | CONTRAST IRREGULARITY (SPOT) | DIAMETER SPEC. $a \leq 0.50$ mm $0.50 < a \leq 0.75$ $0.75 < a \leq 1.00$ $1.00 < a$ | NO. OF DEFECT* NEGLECT 5 3 NONE | | | | | | | | | | | | | | | | | | | | |
| 8. | DOT WIDTH | DESIGN WIDTH ±15% | | | | | | | | | | | | | | | | | | | | | |
| 9. | COLOR TONE AND UNIFORMITY | OBVIOUS UNEVEN COLOR IS NOT PERMITTED | | | | | | | | | | | | | | | | | | | | | |

(2) NOTE:

• SAFETY

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

• HANDLING

- 1.Prevent all contact with static electricity, which can damage the CMOS ICs. The module is packaged in a static-shielding bag to prevent damage during shipment, warehousing and removal from the shipping carton.
- 2.Do not remove the panel or frame from the module.
- 3.The polarizing plate on the front surface of the display is very fragile and easily scratched. The module is shipped with a protective liner which must be removed from the polarizing plate prior to assembly.
- 4.Do not wipe the polarizing plate with a dry cloth, as it may easily scratch the surface of polarizing plate.
- 5.Do not use ketonics solvent or aromatic solvent on the polarizing plate. Use a soft cloth soaked with plastic-lens cleaning solution.

• STORAGE

- 1.Store the panel or module in a dark place where the temperature is $25^{\circ}\text{C}\pm 5^{\circ}\text{C}$ and the humidity is below 65% RH.
- 2.Do not place the module near organics solvents or corrosive gases.
- 3.Do not crush, shake, or jolt the module.

• TERMS OF WARRANTY

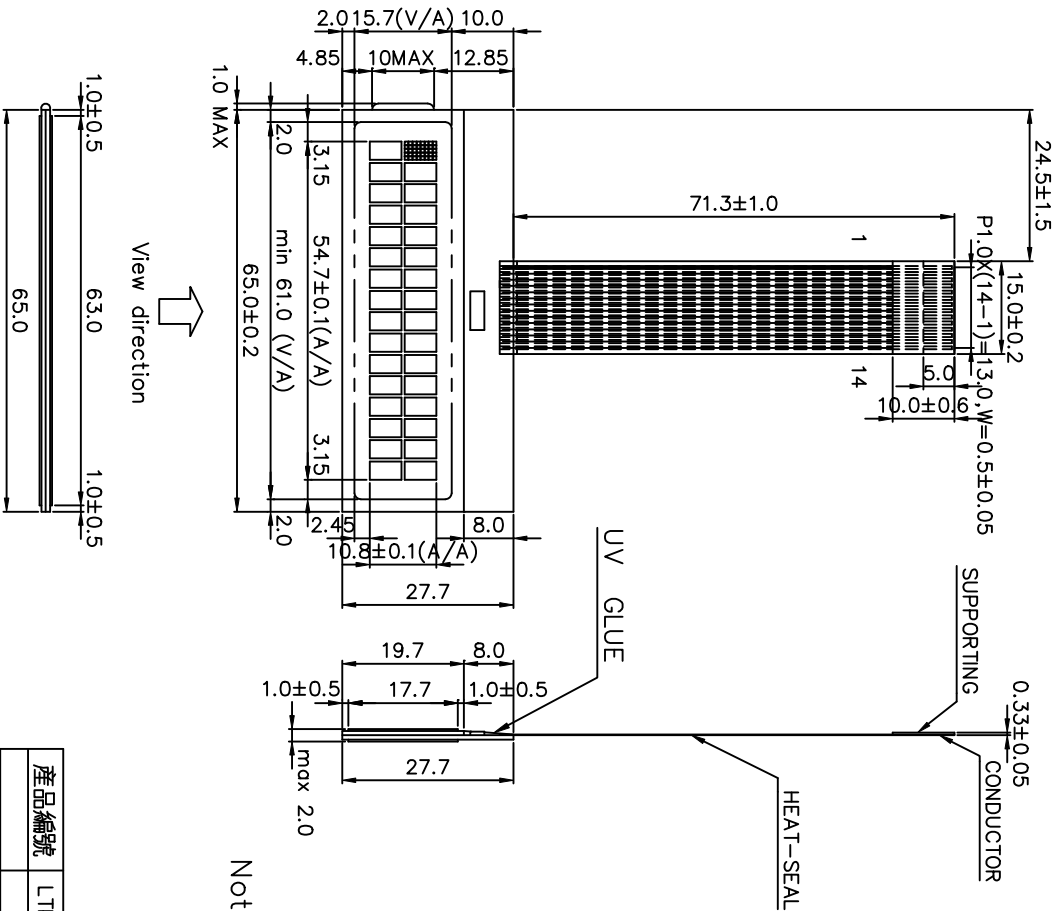
- 1.Acceptance inspection period
The inspection period is within one month after the arrival of the contracted goods at the buyer's factory site.
- 2.Applicable warranty period
The warranty period is within twelve months from the date of invoice under normal usage and storage conditions.

• TYPICAL OPERATING LIFETIME OF BACKLIGHT

- LED : 50,000HR
EL : 5,000HR
CCFT : 10,000HR

| | | | | | | | | |
|----------|------------------|--|--|--|--|-----|-----|----|
| REV/DATE | R0/ 02.26.99' | | | | | APP | CHK | BY |
|----------|------------------|--|--|--|--|-----|-----|----|

| PinNo. | Symbol | Function |
|--------|--------|--|
| 1 | RS | Selects registers L: Instruction register(for write) Busy flag/Address counter (for read) H: Data register(for read/write) |
| 2 | RW | L : write H : read |
| 3 | E | Starts data for read/write |
| 4 | D0 | Data Bus |
| 5 | D1 | |
| 6 | D2 | |
| 7 | D3 | |
| 8 | D4 | |
| 9 | D5 | Data Bus |
| 10 | D6 | |
| 11 | D7 | |
| 12 | VSS | 0V(GND) |
| 13 | VDD | 5.0V(LOGIC) |
| 14 | V5 | Adjust contrast of LCM |



Note:

- 1.General Tolerance: ±0.3mm
- 2.Glass Thickness : 0.7mm
- 3.16X2 Characters
- 4.COG IC:FCS2314AK

| | | |
|---------|------------|-----------------------------|
| 產品編號 | LTK62_245_ | 南亞塑膠工業股份有限公司 |
| DATE | | NAN YA PLASTICS CORPORATION |
| APPREVE | | 製器圖 |
| CHECK | | DWG-NO TKX245X |
| DESIGN | | Rev.0 |
| DRAW | KIKI | UNIT : mm |
| | 88.02.28 | SCALE : 0.85/1 |