

SUNLIKE DISPLAY

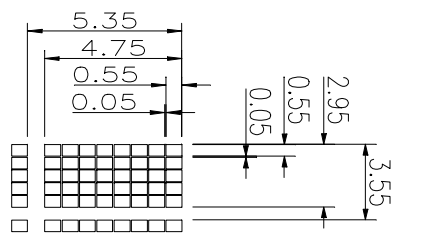
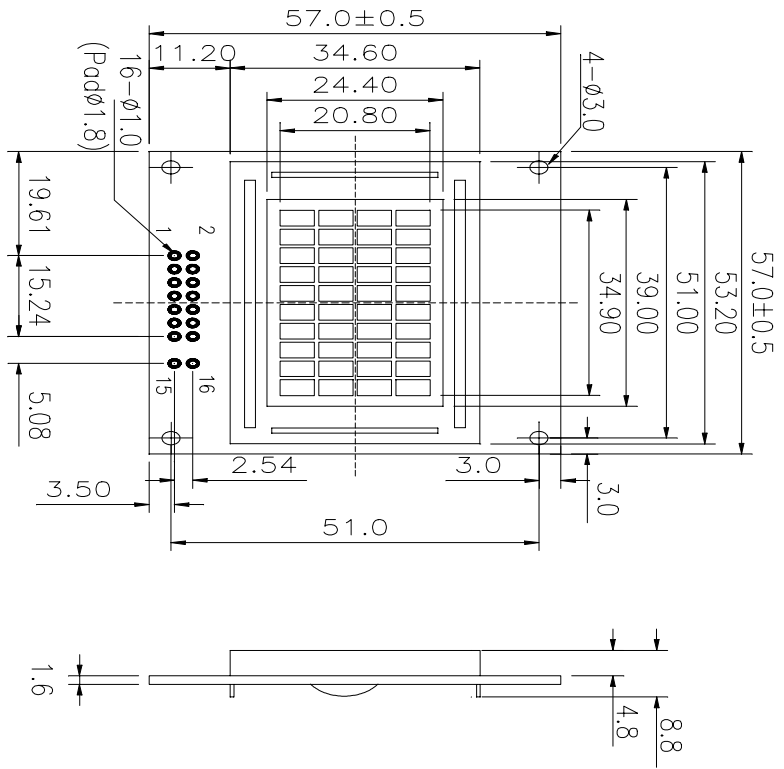
Model No: SC1004A

GENERAL SPECIFICATION

| TIEM | DESCRIPTION | | | | |
|-------------------|---|--|--|--|-------------------------------------|
| Product No | SC1004ASLB-XH-GB | | | | |
| LCD Type | <input checked="" type="checkbox"/> STN Gray Positive | <input type="checkbox"/> STN Yellow Green Positive | | <input type="checkbox"/> STN Blue Negative | |
| | <input type="checkbox"/> TN Negative | | <input type="checkbox"/> TN Positive | | |
| | <input type="checkbox"/> FSTN Negative White & Black | | <input type="checkbox"/> FSTN Positive Black & White | | |
| Rear Polarizer | <input type="checkbox"/> Reflective | | <input checked="" type="checkbox"/> Transflective | <input type="checkbox"/> Transmissive | |
| Backlight Type | <input type="checkbox"/> NO B/L | <input checked="" type="checkbox"/> LED | <input type="checkbox"/> CCFL | | <input type="checkbox"/> EL |
| Backlight Color | <input checked="" type="checkbox"/> Yellow Green | <input type="checkbox"/> Green | <input type="checkbox"/> Amber | <input type="checkbox"/> White | <input type="checkbox"/> Blue Green |
| View Direction | <input checked="" type="checkbox"/> 6 O'clock | | <input type="checkbox"/> 12 O'clock | | |
| Temperature Range | <input checked="" type="checkbox"/> Normal | | <input type="checkbox"/> Wide | | |
| Frame | <input checked="" type="checkbox"/> Black | | <input type="checkbox"/> Silver | | |

TO BE VERY CAREFUL !

The LCD driver ICs are made by CMOS process, which are very easy to be damaged by static charge, make sure the user is grounded when handling the LCM.



SCALE 4/1

Unit:mm

Unless Classified : The Tolerance ± 0.3 mm

| PNM NO. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---------|-----|-----|----|----|-----|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SIGNAL | VSS | VDD | Vo | RS | R/W | E | DB0 | DB1 | DB2 | DB3 | DB4 | DB5 | DB6 | DB7 | EL1 | EL2 |

| | |
|-----------------|-----------------------|
| C | |
| B | |
| A | |
| SUNLIKE DISPLAY | |
| MODEL NAME | SC1004A |
| TITLE | COUNTER DRAWING |
| DRAWN NO. | |
| SCALE | APPROVE/CHECKER DRAWN |
| 1/1 | |

ABSOLUTE MAXIMUM RATING

(1) Electrical Absolute Ratings

| Item | Symbol | Min. | Max. | Unit | Note |
|------------------------|-----------------|------|----------|------|------|
| Power Supply for Logic | $V_{DD}-V_{SS}$ | -0.3 | 7.0 | Volt | |
| Power Supply for LCD | $V_{DD}-V_O$ | -0.3 | 12.0 | Volt | |
| Input Voltage | V_I | -0.3 | V_{DD} | Volt | |
| LED Power Dissipation | P_{AD} | - | 150 | mW | |
| LED Forward current | I_{AF} | - | 30 | mA | |
| LED Reverse Voltage | V_R | - | 8 | V | |

(2) Environmental Absolute Maximum Ratings

| Item | Normal Temperature | | | | Wide Temperature | | | |
|--------------------------------|--------------------|-------|----------|-------|------------------|-------|----------|-------|
| | Operating | | Storage | | Operating | | Storage | |
| | Min, | Max. | Min, | Max. | Min, | Max. | Min, | Max. |
| Ambient Temperature | 0°C | +50°C | -20°C | +70°C | -20°C | +70°C | -30°C | +80°C |
| Humidity(without condensation) | Note 2,4 | | Note 3,5 | | Note 4,5 | | Note 4,6 | |

Note 2 $T_a \leq 50^\circ\text{C}$: 80% 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 when humidity is higher than 70%.

Note 4 Background color changes slightly depending on ambient temperature. This phenomenon is reversible.

Note 5 $T_a \leq 70^\circ\text{C}$: 75RH 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 when humidity is higher than 70%.

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ELECTRICAL CHARACTERISTICS

| Item | Symbol | Condition | Min. | Typ | Max. | Unit | note |
|--|-----------------|------------------------------------|------|-----|----------|------|------|
| Power Supply for Logic | $V_{DD}-V_{SS}$ | - | 4.5 | 5.0 | 5.5 | Volt | |
| Input Voltage | V_{IL} | L level | 0 | - | 0.6 | Volt | |
| | V_{IH} | H level | 2.2 | - | V_{DD} | Volt | |
| LCM Recommend LCD Module Driving Voltage | $V_{DD}-V_O$ | Ta=0°C | - | - | - | Volt | |
| | | Ta=25°C | 4.2 | 4.5 | 4.8 | | |
| | | Ta=50°C | - | - | - | | |
| Power Supply Current for LCM | I_{DD} | $V_{DD}=5.0V$ $V_{DD}-V_O=4.5V$ | - | 2.0 | 3.0 | mA | |
| LED Forward Voltage | V_F | If=20 mA | - | 4.2 | 4.6 | Volt | |
| LED Forward Current | I_F | - | - | 20 | - | mA | |
| LED Reverse Current | I_R | VR=8V | - | - | 0.2 | mA | |

OPTICAL CHARACTERISTICS

| Item | Symbol | Condition | Min. | Typ | Max. | Unit | note |
|-----------------------------|-----------------------|------------------------------|------|-----|------|-------------------|------|
| Viewing angle range | Φf (12 o'clock) | When Cr \geq 1.4 | - | 10 | - | Degree | 9,10 |
| | Φb (6 o'clock) | | - | 30 | - | | |
| | Φl (9 o'clock) | | - | 30 | - | | |
| | Φr (3 o'clock) | | - | 30 | - | | |
| Rise Time | Tr | $V_{DD}-V_O=4.5V$ Ta=25°C | | 200 | - | mS | |
| Fall Time | Tf | | | 250 | - | | |
| Frame frequency | Frm | | - | 64 | - | Hz | |
| Contrast | Cr | - | - | 3.0 | - | | 7 |
| The Brightness Of Backlight | L | IF=20 mA | 70 | 90 | - | cd/m ² | |
| Peak Emission Wavelength | λP | | - | 570 | - | nm | |

MECHANICAL SPECIFICATION

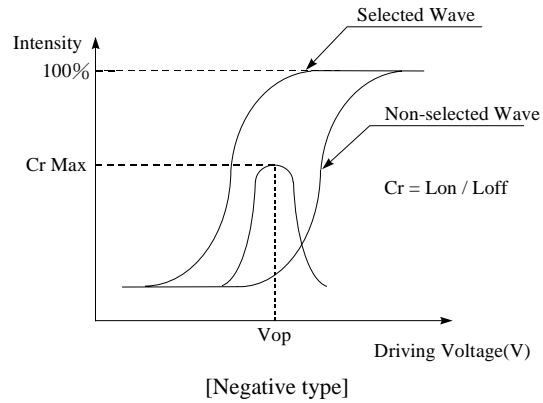
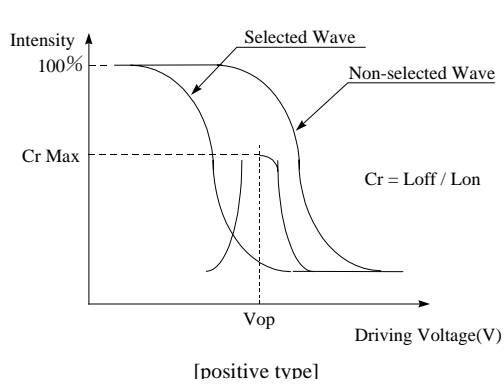
| ITEM | DESCRIPTION |
|----------------|-------------------------------|
| Product No. | SC1004A |
| Module Size | 57.0(W)×57.0(H)×12.7 max(D) |
| Viewing Area | 39.0(W)mm×24.4(H)mm |
| Dot Size | 0.55(W)mm×0.55(H)mm |
| Dot Pitch | 0.60(W)mm×0.60(H)mm |
| Display Format | 10 characters (W)×4 lines (H) |
| Duty Ratio | 1/16 Duty |
| Controller | KS0066 or Equivalent |

INTERFACE PIN ASSIGNMENT

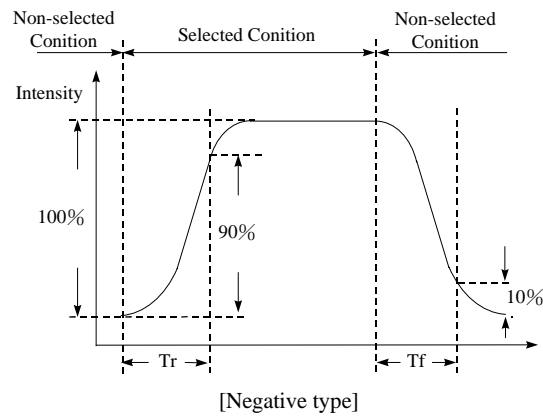
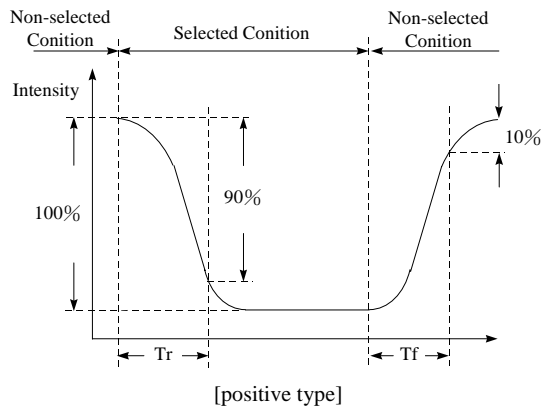
| Pin No. | Pin Out | Level | Description |
|---------|---------|-------|----------------------|
| 1 | VSS | 0V | Power Supply Ground |
| 2 | VDD | 5V | Power Supply Voltage |
| 3 | Vo | --- | Contrast Adj |
| 4 | RS | H/L | Register Select |
| 5 | R/W | H/L | Read / Write |
| 6 | E | H,H→L | Enable Signal |
| 7 | DB0 | H/L | Data Bit 0 |
| 8 | DB1 | H/L | Data Bit 1 |
| 9 | DB2 | H/L | Data Bit 2 |
| 10 | DB3 | H/L | Data Bit 3 |
| 11 | DB4 | H/L | Data Bit 4 |
| 12 | DB5 | H/L | Data Bit 5 |
| 13 | DB6 | H/L | Data Bit 6 |
| 14 | DB7 | H/L | Data Bit 7 |
| 15 | A | 4.2V | LED Power Supply (+) |

| | | | |
|----|---|----|----------------------|
| 16 | K | 0V | LED Power Supply (-) |
|----|---|----|----------------------|

[Note 7] Definition of Operation Voltage (Vop)



[Note 8] Definition of Response Time (Tr, Tf)



Conditions:

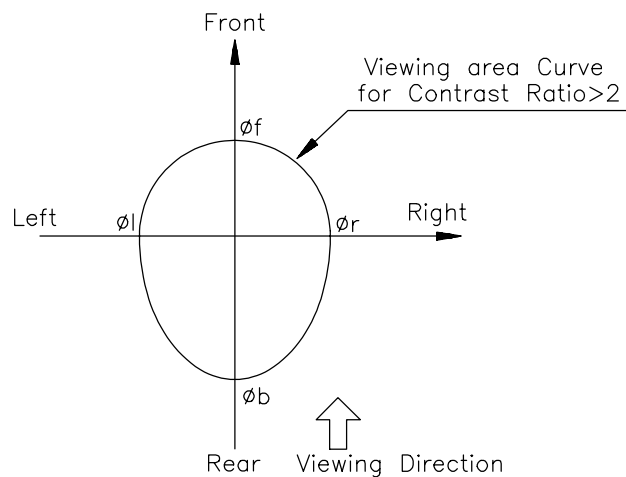
Operating Voltage : Vop

Frame Frequency : 64 Hz

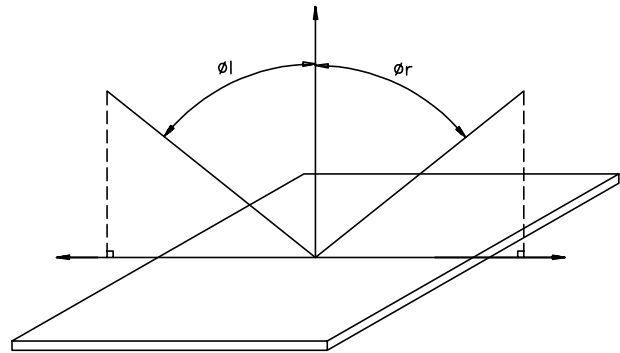
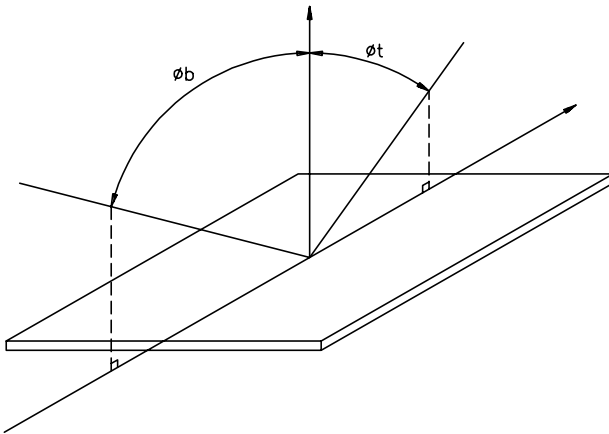
Viewing Angle (θ, φ): $0^\circ, 0^\circ$

Driving Wave form : 1/N duty, 1/a bias

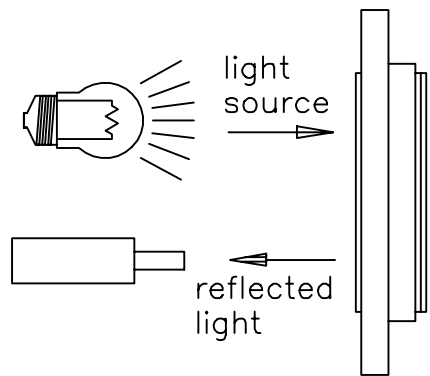
[Note 9] Definition of Viewing Direction



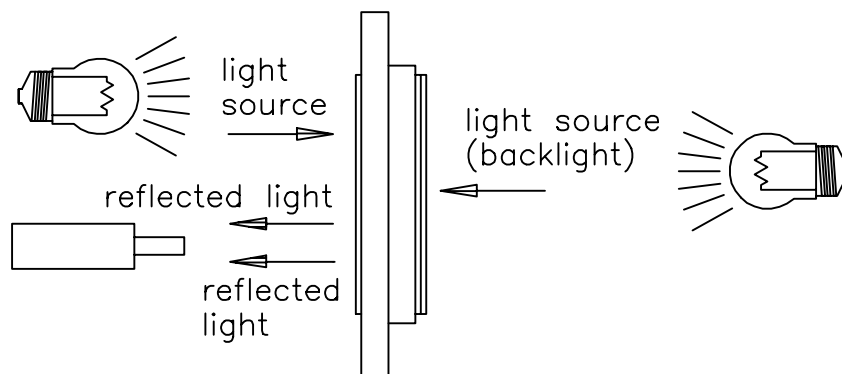
[Note 10] Definition of viewing angle



[Note 11] Description of Measuring Equipment



Reflective type

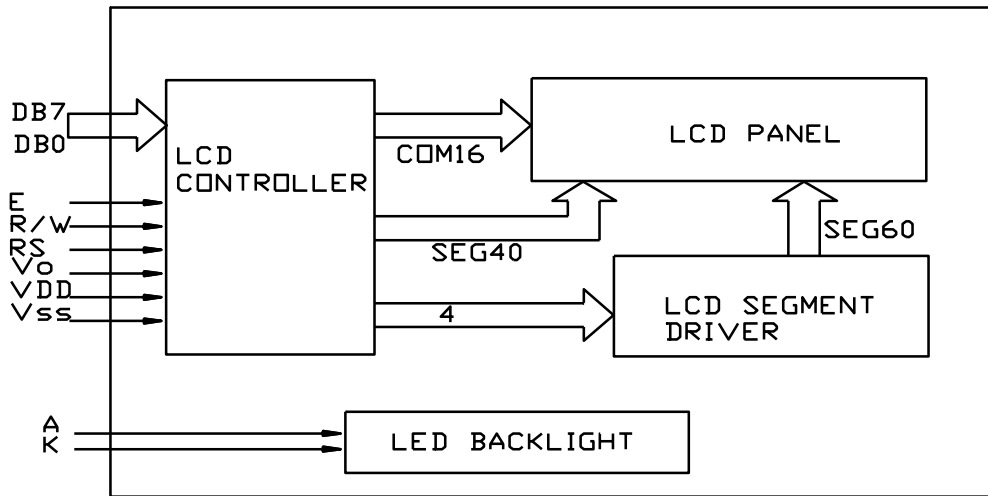


Transflective type

SUNLIKE DISPLAY

Model No: SC1004A

BLOCK DIAGRAM



POWER SUPPLY

