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| EXAMINED BY: <i>Jony Chen</i> | mitsutech INTERNATIONAL CORPORATION | FILE NO . CAS-10053 |
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| | | VERSION : 3 |

CUSTOMER ACCEPTANCE SPECIFICATIONS

MODEL NO. :

16240(REFLECTIVE TYPES)

FOR MESSRS :

CUSTOMER'S APPROVAL

DATE :

BY :

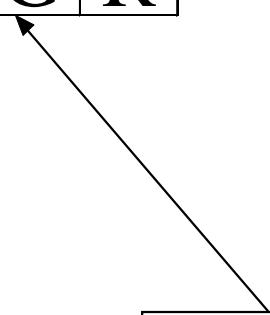
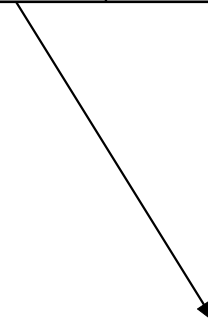
| | |
|-------------------------|---------|
| MODEL NO. | VERSION |
| 16240(REFLECTIVE TYPES) | 3 |

NUMBERING SYSTEM

| Polarizer Mode | Backlight | Code value |
|----------------|-----------|------------|
| Reflective | — | R |

E W 16 2 40 G R

| LCD type + color | Code Value |
|--------------------|------------|
| STN + Yellow-Green | Y |
| STN + Gray | G |



| | |
|--------------------------------------|--------------|
| MODEL NO. 16240(REFLECTIVE TYPES) | VERSION 3 |
|--------------------------------------|--------------|

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1. GENERAL SPECIFICATIONS

1.1 GENERAL SPECIFICATIONS

PLEASE REFER TO :

CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS :

E U - 0 0 2 A

1.2 APPLICATION NOTES FOR CONTROLLER / DRIVER : KS0066

PLEASE REFER TO :

CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS :

E U - K S 0 0 6 6

1.3 THIS INDIVIDUAL SPECIFICATIONS IS PRIOR TO GENERAL SPECIFICATIONS .

2. MECHANICAL SPECIFICATIONS

- | | | |
|-------------------------|-------|----------------------------------|
| (1) NUMBER OF CHARACTER | ----- | 16 CH * 2 LINES |
| (2) MODULE SIZE | ----- | 122.0W * 44.0H * 10.5D (max.) mm |
| (3) EFFECTIVE AREA | ----- | 99.0W * 24.0H mm |
| (4) CHARACTER FONT | ----- | 5 * 7 DOTS + CURSOR |
| (5) CHARACTER SIZE | ----- | 4.84W * 9.66H mm |
| (6) CHARACTER PITCH | ----- | 6.0W * 10.34H mm |
| (7) DOT SIZE | ----- | 0.92W * 1.10H mm |
| (8) DOT PITCH | ----- | 0.98W * 1.16H mm |
| (9) LCD TYPE * | | |
| (10) DRIVING METHOD | ----- | 1 / 16 DUTY MULTIPLEX DRIVE |

* PLEASE REFER TO NUMBERING SYSTEM

3. ABSOLUTE MAXIMUM RATINGS

3.1 ELECTRICAL ABSOLUTE MAXIMUM RATINGS . (AT Ta = 25 °C)

| PARAMETER | SYMBOL | MIN . | MAX . | UNIT | REMARK |
|----------------------------|-----------|-------|-------|------|----------|
| POWER SUPPLY FOR LOGIC | VDD - VSS | 0 | 7.0 | V | |
| POWER SUPPLY FOR LCD DRIVE | VDD - VO | 0 | 13.0 | V | |
| INPUT VOLTAGE | VI | VSS | VDD | V | |
| STATIC ELECTRICITY | — | — | 100 | V | NOTE (1) |

NOTE (1) : TEST METHOD AND CONDITIONS :
 AFTER CHARGING UP 200 PF CAPACITOR BY STATED VOLTAGE ,
 THE CAPACITOR IS CONNECTED WITH INTERFACE PINS OF THE
 MODULE .

3.2 ENVIRONMENTAL ABSOLUTE MAXIMUM RATINGS .

| I T E M | OPERATING | | STORAGE | | REMARK |
|---------------------|----------------|---------------------------------|----------------|----------------------------------|-------------------------|
| | MIN . | MAX . | MIN . | MAX . | |
| AMBIENT TEMPERATURE | - 20 °C | 70 °C | - 30 °C | 80 °C | NOTE (2) , (3) |
| HUMIDITY | — | 90 % RH | — | 90 % RH | WITHOUT CONDENSATION |
| VIBRATION | — | 4.9 m/s ² (0.5 G) | — | 19.6 m/s ² (2 G) | |
| SHOCK | — | 29.4 m/s ² (3 G) | — | 490.0 m/s ² (50 G) | XYZ DIRECTIONS |
| CORROSIVE GAS | NOT ACCEPTABLE | | NOT ACCEPTABLE | | |

NOTE (2) : Ta AT -30°C: 48HR MAX .
 80°C: 168HR MAX .

NOTE (3) : BACKGROUND COLOR CHANGES SLIGHTLY DEPENDING ON AMBIENT
 TEMPERATURE THIS PHENOMENON IS REVERSIBLE .

4. ELECTRICAL CHARACTERISTICS

Ta = 25°C

VDD = 5.0 ± 0.25 V

| PARAMETER | SYMBOL | CONDITION | MIN. | TYP. | MAX. | UNIT |
|---------------------------------|---|---------------|------|------|------|------|
| H LEVEL INPUT VOLTAGE | VIH | — | 2.2 | — | — | V |
| L LEVEL INPUT VOLTAGE | VIL | — | — | — | 0.6 | V |
| H LEVEL OUTPUT VOLTAGE | VOH | -IOH = 0.2 mA | 2.4 | — | — | V |
| L LEVEL OUTPUT VOLTAGE | VOL | IOL = 1.2 mA | — | — | 0.4 | V |
| POWER SUPPLY CURRENT (LOGIC) | IDD | VDD = 5.0 V | — | 1.0 | 3.0 | mA |
| RECOMMENDED LCD DRIVING VOLTAGE | VDD - VO ∅ = 10° θ = 0° DUTY = 1/16 | Ta = -20 °C | — | 4.4 | — | V |
| | | Ta = 25 °C | — | 4.4 | — | V |
| | | Ta = 70 °C | — | 4.4 | — | V |
| CLOCK OSCILLATION FREQUENCY | FOSC | Ta = 25 °C | — | 270 | — | KHZ |

5. OPTICAL CHARACTERISTICS .

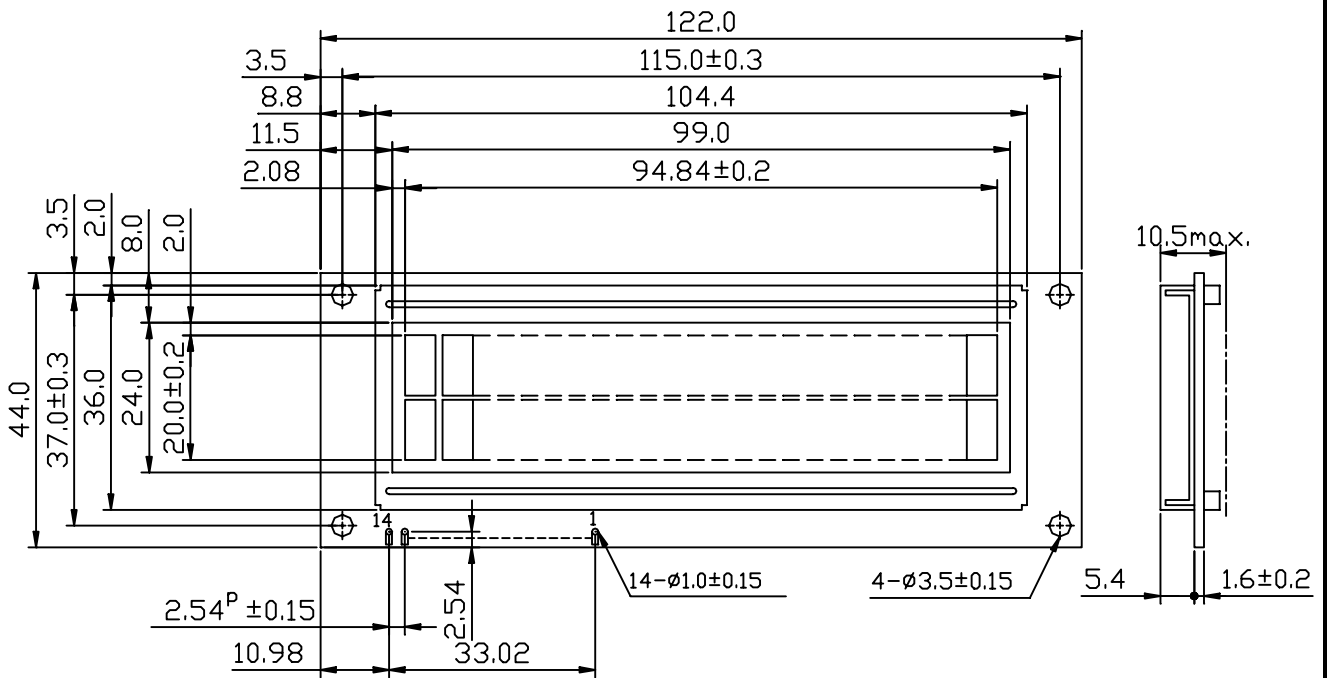
Ta = 25 °C

VDD = 5.0 V

| I T E M | SYMBOL | CONDITION | MIN. | TYP. | MAX. | UNIT | NOTE | |
|----------------|-------------|-------------------|------------|------|------|------|------|---|
| VIEWING AREA | ∅ 2 - ∅ 1 | K ≥ 1.4 | 30 | — | — | deg. | 1 | |
| CONTRAST RATIO | K | ∅ = 10° θ = 0° | 5 | — | — | — | 1 | |
| RESPONSE TIME | tr (rise) | ∅ = 10° θ = 0° | Ta = -20°C | — | 5538 | — | ms | 1 |
| | | | Ta = 25°C | — | 228 | — | | |
| | | | Ta = 70°C | — | 104 | — | | |
| | tf (fall) | | Ta = -20°C | — | 2316 | — | | |
| | | | Ta = 25°C | — | 174 | — | | |
| | | | Ta = 70°C | — | 85 | — | | |

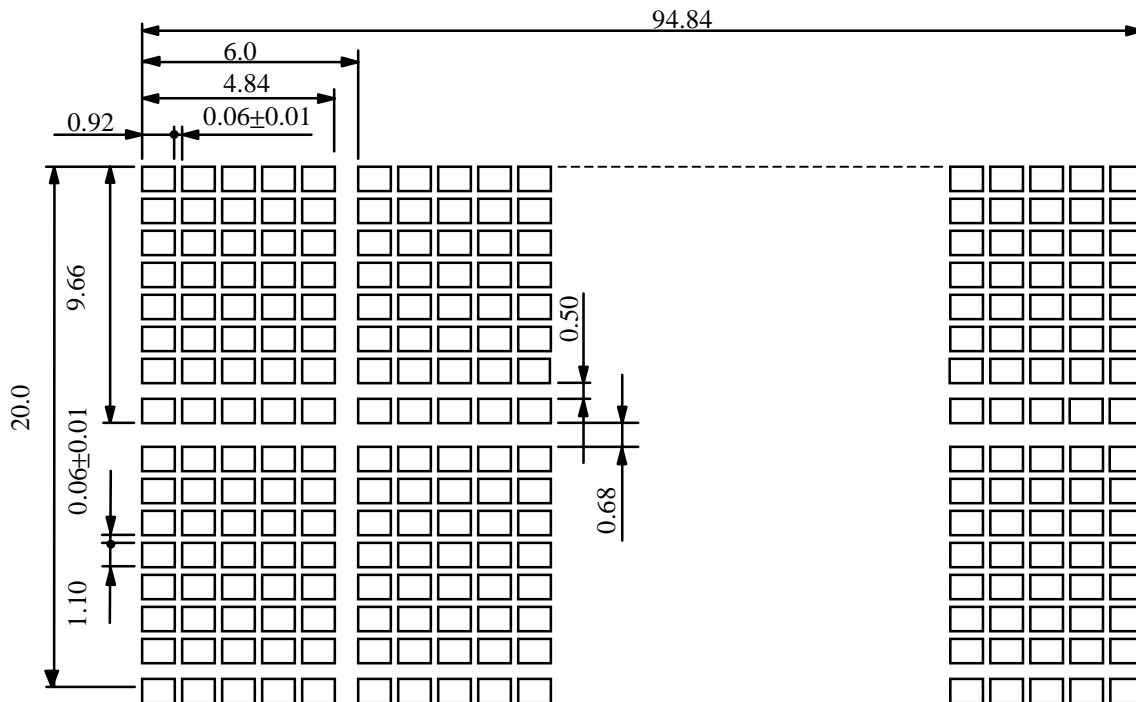
NOTE (1): PLEASE REFER TO :
CUSTOMER ACCEPTANCE STANDARD SPECIFICATION : EU-002A

6. OUTLINE DIMENSION



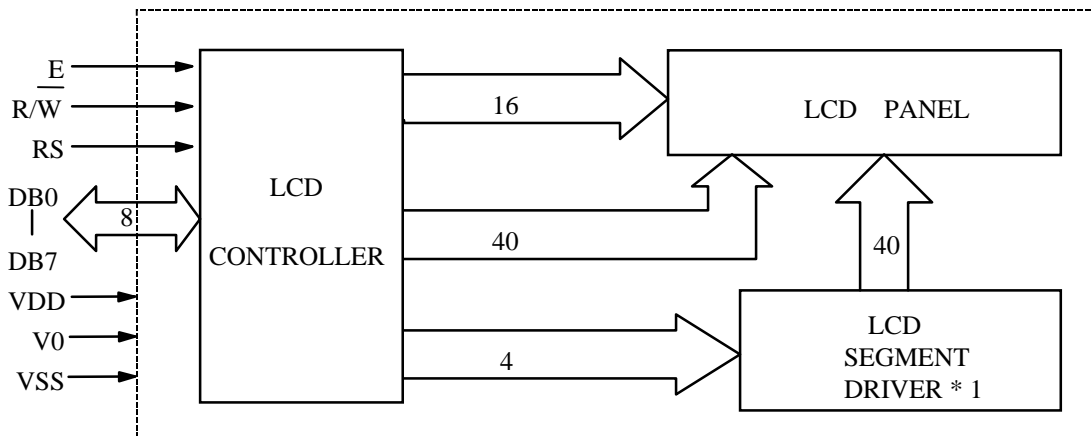
UNIT : mm
 SCALE : NTS
 NOT SPECIFIED TOLERANCE IS ±0.5mm

7. DETAIL DRAWING OF DOT MATRIX



UNIT : mm
 SCALE : NTS
 NOT SPECIFIED TOLERANCE IS ± 0.1

8. BLOCK DIAGRAM

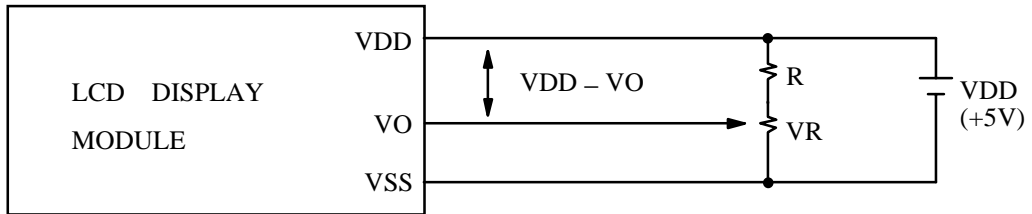


9. INTERFACE SIGNALS

| PIN NO. | SIGNAL | DESCRIPTION | FUNCTION |
|---------|------------------|---------------------------------------|---|
| 1 | VSS | GROUND | 0 V (GND) |
| 2 | VDD | POWER SUPPLY FOR LOGIC CIRCUIT | +5V |
| 3 | VO | LCD CONTRAST ADJUSTMENT | |
| 4 | RS | INSTRUCTION / DATA REGISTER SELECTION | RS = 0 : INSTRUCTION REGISTER RS = 1 : DATA REGISTER |
| 5 | $\overline{R/W}$ | READ / WRITE SELECTION | $\overline{R/W} = 0$: REGISTER WRITE $\overline{R/W} = 1$: REGISTER READ |
| 6 | E | ENABLE INPUT | |
| 7~14 | DB0~DB7 | DATA INPUT / OUTPUT LINES | 4 BIT / 8 BIT SELECTABLE 4 BIT : DB4 – DB7 8 BIT : DB0 – DB7 |

10. POWER SUPPLY

10.1 POWER SUPPLY FOR LCD MODULE



VDD - VO : LCD DRIVING VOLTAGE

VR : 10KΩ ~ 20KΩ

RECOMMENDED RESISTOR R : $VDD - VO \geq 1.5 V$

11. DISPLAY DATA RAM ADDRESS

| CHARACTER | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|-----------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| LINE 1 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 8A | 8B | 8C | 8D | 8E | 8F |
| LINE 2 | C0 | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 | CA | CB | CC | CD | CE | CF |