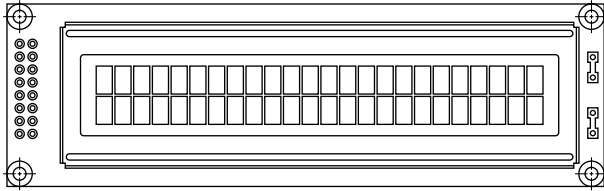


## 24 x 2 Character LCD



### FEATURES

- Type: Character
- Display format: 24 x 2 characters
- Built-in controller: KS 0066 (or equivalent)
- Duty cycle: 1/16
- 5 x 8 dots includes cursor
- + 5 V power supply (also available for + 3 V)
- LED can be driven by pin 1, pin 2, pin 15, pin 16 or A and K
- N.V. optional for + 3 V power supply
- Compliant to RoHS directive 2002/95/EC


**RoHS**  
COMPLIANT

| MECHANICAL DATA  |                |      |
|------------------|----------------|------|
| ITEM             | STANDARD VALUE | UNIT |
| Module Dimension | 118.0 x 36.0   | mm   |
| Viewing Area     | 94.5 x 16.0    |      |
| Dot Size         | 0.60 x 0.65    |      |
| Dot Pitch        | 0.70 x 0.65    |      |
| Mounting Hole    | 113.0 x 31.0   |      |
| Character Size   | 3.2 x 5.55     |      |

| ABSOLUTE MAXIMUM RATINGS |                      |                |      |          |      |
|--------------------------|----------------------|----------------|------|----------|------|
| ITEM                     | SYMBOL               | STANDARD VALUE |      |          | UNIT |
|                          |                      | MIN.           | TYP. | MAX.     |      |
| Power Supply             | $V_{DD}$ to $V_{SS}$ | - 0.3          | -    | 7.0      | V    |
| Input Voltage            | $V_I$                | - 0.3          | -    | $V_{DD}$ |      |

**Note**

- $V_{SS} = 0$  V,  $V_{DD} = 5.0$  V

| ELECTRICAL CHARACTERISTICS   |                   |   |                |      |      |      |
|--|-------------------|---|----------------|------|------|------|
| ITEM   | SYMBOL            | CONDITION                               | STANDARD VALUE |      |      | UNIT |
|  |                   |   | MIN.           | TYP. | MAX. |      |
| Input Voltage  | $V_{DD}$          | $V_{DD} = + 5$ V                        | 4.7            | 5.0  | 5.3  | V    |
|  |                   | $V_{DD} = + 3$ V                        | 2.7            | 3.0  | 5.3  |      |
| Supply Current   | $I_{DD}$          | $V_{DD} = + 5$ V                        | -              | 0.8  | 1.1  | mA   |
| Recommended LC Driving Voltage for Normal Temperature Version Module | $V_{DD}$ to $V_0$ | - 20 °C                                 | 5.1            | 5.3  | 5.7  | V    |
|  |                   | 0 °C                                    | 4.6            | 4.9  | 5.2  |      |
|  |                   | 25 °C                                   | 4.1            | 4.5  | 4.7  |      |
|  |                   | 50 °C                                   | 3.9            | 4.2  | 4.5  |      |
| LED Forward Voltage  | $V_F$             | 25 °C                                   | -              | 4.2  | 4.6  | V    |
| LED Forward Current  | $I_F$             | 25 °C                                   | -              | 190  | 380  | mA   |
| EL Power Supply Current  | $I_{EL}$          | $V_{EL} = 110$ V <sub>AC</sub> , 400 Hz | -              | -    | 5.0  | mA   |

| OPTIONS       |          |            |          |          |           |           |     |    |      |
|---------------|----------|------------|----------|----------|-----------|-----------|-----|----|------|
| PROCESS COLOR |          |            |          |          |           | BACKLIGHT |     |    |      |
| TN            | STN Gray | STN Yellow | STN Blue | FSTN B&W | STN Color | None      | LED | EL | CCFL |
| x             | x        | x          | x        |          |           | x         | x   | x  |      |

For detailed information, please see the "Product Numbering System" document.

## DISPLAY CHARACTER ADDRESS CODE

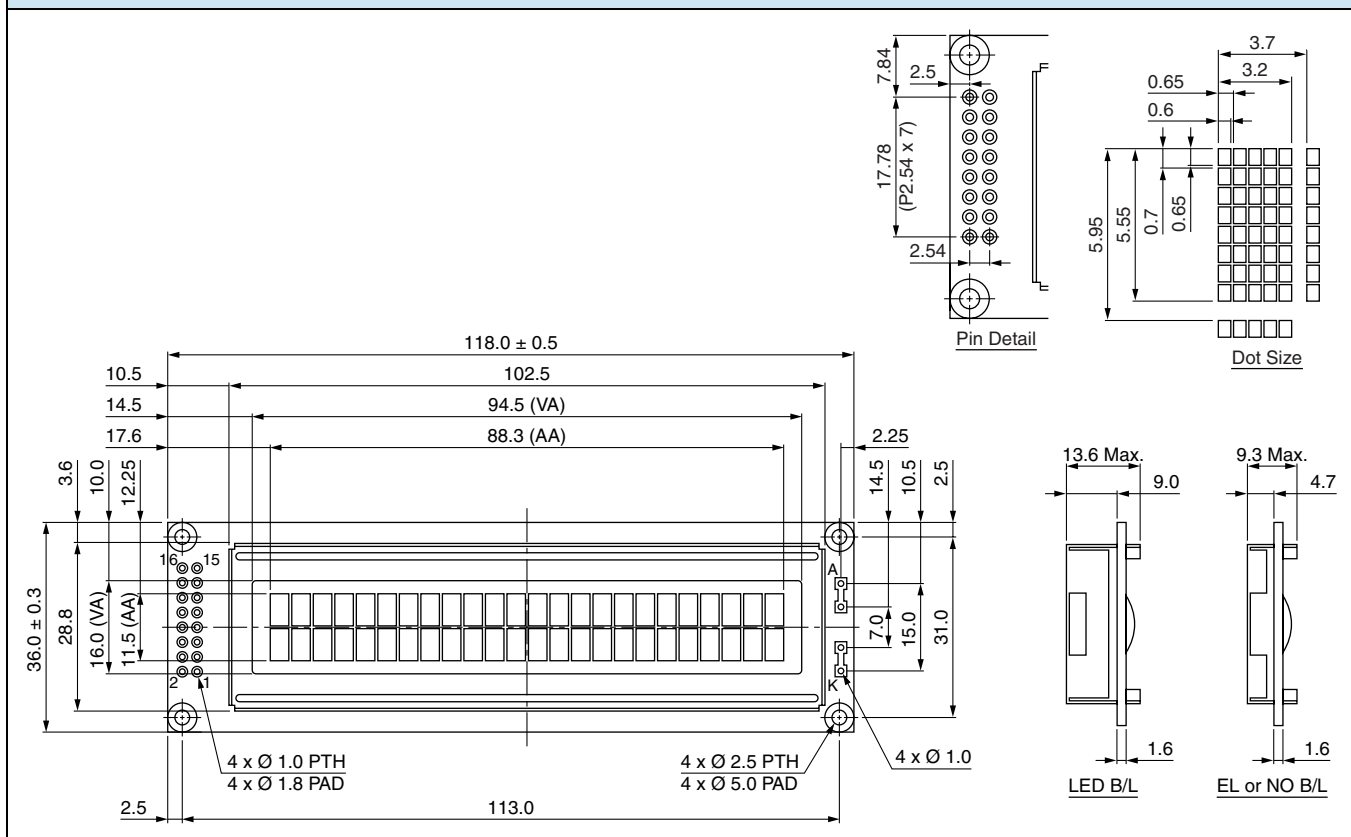
Display Position

|                |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|----------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
|                | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| DD RAM Address | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 0A | 0B | 0C | 0D | 0E | 0F | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| DD RAM Address | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 4A | 4B | 4C | 4D | 4E | 4F | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 |

## INTERFACE PIN FUNCTION

| PIN NO. | SYMBOL            | FUNCTION   |
|---------|-------------------|--|
| 1       | V <sub>SS</sub>   | Ground   |
| 2       | V <sub>DD</sub>   | + 3 V or + 5 V   |
| 3       | V <sub>0</sub>    | Contrast adjustment  |
| 4       | RS                | H/L register select signal                                     |
| 5       | R/W               | H/L read/write signal  |
| 6       | E                 | H → L enable signal  |
| 7       | DB0               | H/L data bus line  |
| 8       | DB1               | H/L data bus line  |
| 9       | DB2               | H/L data bus line  |
| 10      | DB3               | H/L data bus line  |
| 11      | DB4               | H/L data bus line  |
| 12      | DB5               | H/L data bus line  |
| 13      | DB6               | H/L data bus line  |
| 14      | DB7               | H/L data bus line  |
| 15      | A/V <sub>EE</sub> | + 4.2 V for LED (R <sub>A</sub> = 0 Ω)/negative voltage output |
| 16      | K                 | Power supply for B/L (0 V)                                     |

## DIMENSIONS in millimeters





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