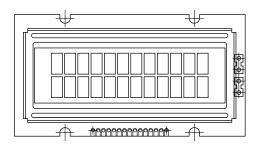




### 12 x 2 Character LCD



| r | EA | UK | E2 |
|---|----|----|----|
|   | _  | ٠. |    |

• Type: Character

• Display format: 12 x 2 characters

• Built-in controller: KS 0066 (or equivalent)

• Duty cycle: 1/16

• 5 x 8 dots includes cursor

• + 5 V power supply

• LED can be driven by pin 1, pin 2, or A and K

• Compliant to RoHS directive 2002/95/EC

| MECHANICAL DATA  |                |        |  |  |  |  |  |
|------------------|----------------|--------|--|--|--|--|--|
| ITEM             | STANDARD VALUE | UNIT   |  |  |  |  |  |
| Module Dimension | 55.7 x 32.0    |        |  |  |  |  |  |
| Viewing Area     | 46.0 x 14.5    |        |  |  |  |  |  |
| Dot Size         | 0.45 x 0.60    | mm     |  |  |  |  |  |
| Dot Pitch        | 0.55 x 0.70    | 111111 |  |  |  |  |  |
| Mounting Hole    | 31.2 x 30.0    |        |  |  |  |  |  |
| Character Size   | 2.65 x 5.50    |        |  |  |  |  |  |

| ABSOLUTE MAXIMUM RATINGS |                      |       |       |          |      |  |  |
|--------------------------|----------------------|-------|-------|----------|------|--|--|
| ITEM                     | SYMBOL               | STAN  | TILLE |          |      |  |  |
| IIEW                     | STIVIBUL             | MIN.  | TYP.  | MAX.     | UNIT |  |  |
| Power Supply             | $V_{DD}$ to $V_{SS}$ | - 0.3 | -     | 7.0      | V    |  |  |
| Input Voltage            | VI                   | - 0.3 | ı     | $V_{DD}$ | V    |  |  |

#### Note

• V<sub>SS</sub> = 0 V, V<sub>DD</sub> = 5.0 V

| ELECTRICAL CHARACTERISTICS     |                                   |                  |      |                |      |      |  |
|--------------------------------|-----------------------------------|------------------|------|----------------|------|------|--|
| ITEM                           | SYMBOL                            | CONDITION        | ST   | STANDARD VALUE |      |      |  |
| ITEM                           | STWBOL                            | CONDITION        | MIN. | TYP.           | MAX. | UNIT |  |
| Input Voltage                  | V <sub>DD</sub>                   | $V_{DD} = + 5 V$ | 4.7  | 5.0            | 5.3  | V    |  |
| Supply Current                 | I <sub>DD</sub>                   | $V_{DD} = + 5 V$ | -    | 1.3            | 1.5  | mA   |  |
|                                |                                   | - 20 °C          | 4.9  | 5.2            | 5.5  |      |  |
| Recommended LC Driving         |                                   | 0 °C             | 4.5  | 4.8            | 5.1  |      |  |
| Voltage for Normal Temperature | V <sub>DD</sub> to V <sub>0</sub> | 25 °C            | 4.1  | 4.4            | 4.7  | V    |  |
| Version Module                 |                                   | 50 °C            | 3.8  | 4.2            | 4.4  |      |  |
|                                |                                   | 70 °C            | 3.5  | 4.0            | 4.1  | 1    |  |
| LED Forward Voltage            | V <sub>F</sub>                    | 25 °C            | -    | 4.2            | 4.6  | V    |  |
| LED Forward Current            | I <sub>F</sub>                    | 25 °C            | -    | 40             | 80   | mA   |  |

| OPTIONS |               |               |             |             |              |      |     |           |      |  |  |
|---------|---------------|---------------|-------------|-------------|--------------|------|-----|-----------|------|--|--|
|         | PROCESS COLOR |               |             |             |              |      |     | BACKLIGHT |      |  |  |
| TN      | STN<br>Gray   | STN<br>Yellow | STN<br>Blue | FSTN<br>B&W | STN<br>Color | None | LED | EL        | CCFL |  |  |
| Х       | х             | х             | Х           |             |              | Х    | х   | х         |      |  |  |

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

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### 12 x 2 Character LCD

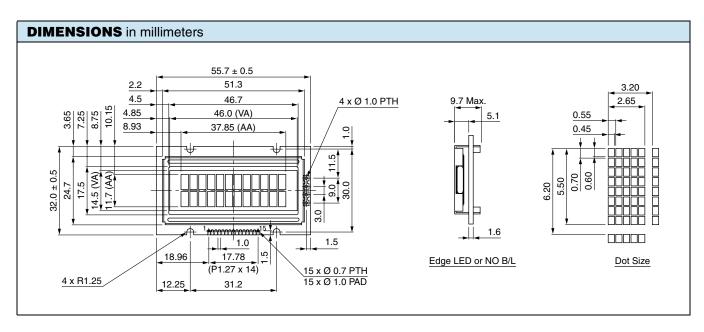


# **DISPLAY CHARACTER ADDRESS CODE**Display Position

DD RAM Address
DD RAM Address

| 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 |
|----|----|----|----|----|----|----|----|----|----|----|----|
| 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 0A | 0B | 0C |
| 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 4A | 4B | 4C |

| INTERFACE PIN FUNCTION |                   |  |  |  |  |  |
|------------------------|-------------------|--|--|--|--|--|
| PIN NO.                | SYMBOL            | FUNCTION   |  |  |  |  |
| 1                      | V <sub>SS</sub>   | Ground   |  |  |  |  |
| 2                      | V <sub>DD</sub>   | + 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                 | $	extsf{H}  ightarrow 	extsf{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 ( $R_A = 0 \Omega$ )/negative voltage output |  |  |  |  |



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