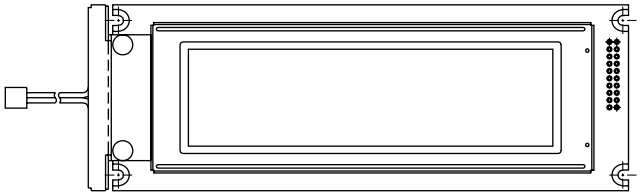
# 240 x 64 Graphic LCD



## FEATURES

- Type: Graphic
- Display format: 240 x 64 dots
- Built-in controller: Toshiba T6963C (or equivalent)
- Duty cycle: 1/64
- + 5 V power supply
- Built-in N.V.
- Compliant to RoHS directive 2002/95/EC

Pb-free RoHS COMPLIANT

## MECHANICAL DATA

| ITEM | STANDARD VALUE | UNIT |
|---|---|---|
| Module Dimension | 180.0 x 65.0 | mm |
| Viewing Area | 133.0 x 39.0 | |
| Dot Size | 0.49 x 0.49 | |
| Dot Pitch | 0.53 x 0.53 | |
| Mounting Hole | 176.0 x 54.0 | |
| Character Size | N/a | |

## ABSOLUTE MAXIMUM RATINGS

| ITEM | SYMBOL | STANDARD VALUE | | | UNIT |
|---|---|---|---|---|---|
| | | MIN. | TYP. | MAX. | |
| Power Supply | $V_{DD}$ to $V_{SS}$ | 4.75 | 5.0 | 5.25 | 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 | $V_{DD}$ | L level | 0.7 $V_{DD}$ | - | $V_{DD}$ | V |
| | $V_{IO}$ | H level | 0 | - | 0.3 $V_{DD}$ | |
| Supply Current | $I_{DD}$ | $V_{DD}$ = + 5 V | - | 18.5 | 21.0 | mA |
| Recommended LC Driving Voltage for Normal Temperature Version Module | $V_{DD}$ to $V_0$ | - 20 °C | 13.0 | 13.5 | 14.1 | V |
| | | 0 °C | 12.5 | 13.1 | 13.7 | |
| | | 25 °C | 12.1 | 12.7 | 13.3 | |
| | | 50 °C | 11.1 | 12.2 | 13.0 | |
| | | 70 °C | 9.1 | 11.6 | 12.8 | |
| LED Forward Voltage | $V_F$ | 25 °C | - | 4.2 | 4.6 | V |
| LED Forward Current | $I_F$ | 25 °C | - | 450 | 900 | mA |
| CCFL Forward Voltage | $V_F$ | 25 °C | - | 215 | 650 | $V_{RMS}$ |
| CCFL Forward Current | $I_F$ | 25 °C | - | - | 5.0 | mA |
| EL Power Supply Current | $I_{EL}$ | $V_{EL}$ = 110 $V_{AC}$, 400 Hz | - | - | 5.0 | mA |

## OPTIONS

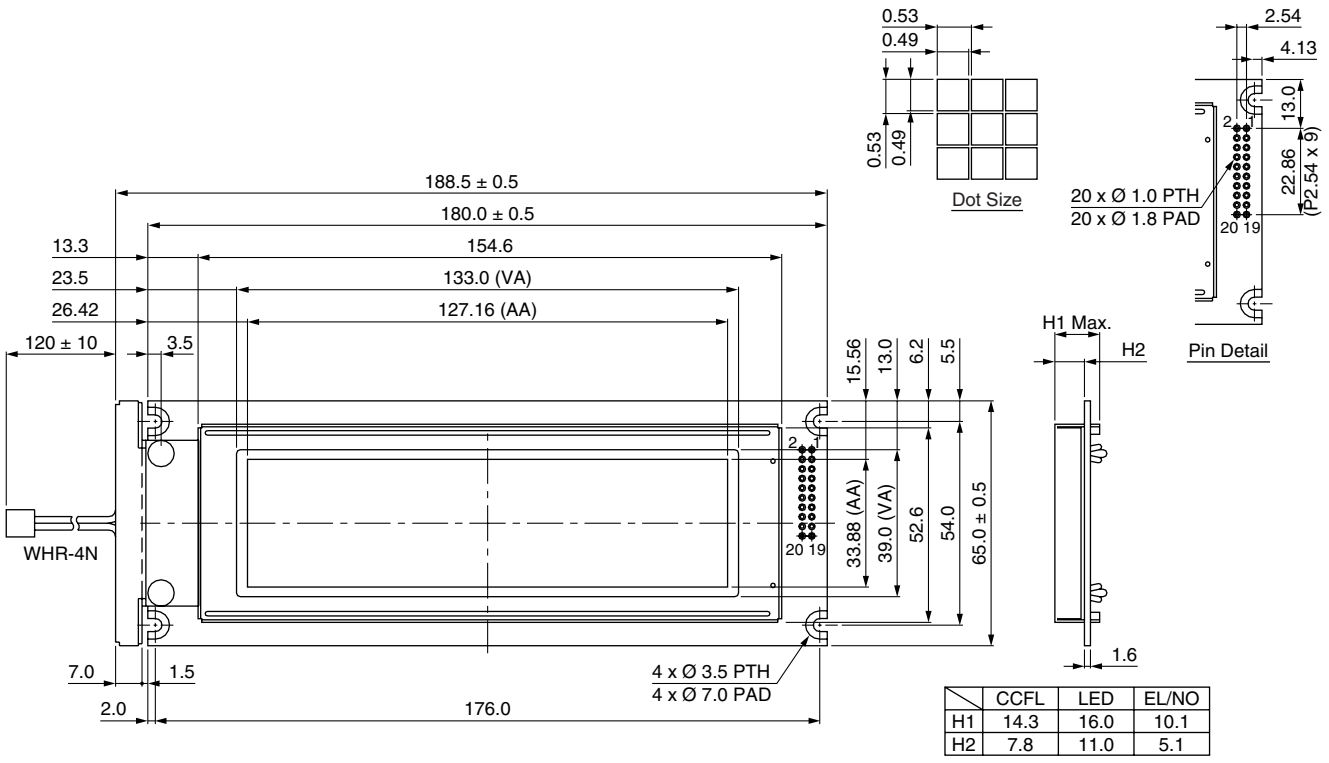
| PROCESS COLOR | | | | | | BACKLIGHT | | | |
|---|---|---|---|---|---|---|---|---|---|
| TN | STN Gray | STN Yellow | STN Blue | FSTN B&W | STN Color | None | LED | EL | CCFL |
| | x | x | x | x | | x | x | x | x |

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

## INTERFACE PIN FUNCTION

| PIN NO. | SYMBOL | FUNCTION |
|---|---|---|
| 1 | FG | Frame ground |
| 2 | $V_{SS}$ | Power supply (Ground) |
| 3 | $V_{DD}$ | Power supply (+ 5 V) |
| 4 | $V_0$ | Contrast adjustment |
| 5 | $\overline{WR}$ | Data write |
| 6 | $\overline{RD}$ | Data read |
| 7 | $\overline{CE}$ | Chip enable |
| 8 | C/$\overline{D}$ | Command/data read/write |
| 9 | $V_{EE}$ | Negative voltage output |
| 10 | $\overline{RESET}$ | Reset signal |
| 11 | DB0 | Data bus line |
| 12 | DB1 | Data bus line |
| 13 | DB2 | Data bus line |
| 14 | DB3 | Data bus line |
| 15 | DB4 | Data bus line |
| 16 | DB5 | Data bus line |
| 17 | DB6 | Data bus line |
| 18 | DB7 | Data bus line |
| 19 | FS | Font selection: FS = “H”, 6 x 8 character font, FS = “L”, 8 x 8 character font |
| 20 | NC | No connection |

## DIMENSIONS in millimeters




| | CCFL | LED | EL/NO |
|---|---|---|---|
| H1 | 14.3 | 16.0 | 10.1 |
| H2 | 7.8 | 11.0 | 5.1 |

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