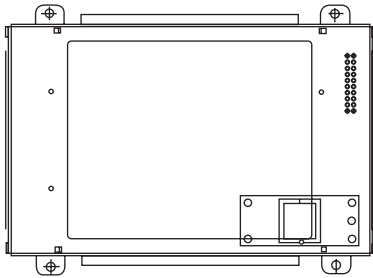


## 160 x 128 Dots Graphic LCD



### FEATURES

- Built in controller TOSHIBA-(T6963C or equivalent)
- + 5V power supply
- 1/28 duty cycle
- N.V. optional
- Built in CCFL inverter

| MECHANICAL DATA  |                |      |
|------------------|----------------|------|
| ITEM             | STANDARD VALUE | UNIT |
| Module Dimension | 150.0 x 112.0  | mm   |
| Viewing Area     | 101.0 x 82.0   | mm   |
| Dot Size         | 0.54 x 0.54    | mm   |
| Dot Pitch        | 0.58 x 0.58    | mm   |
| Mounting Hole    | 118.0 x 105.0  | mm   |

| ABSOLUTE MAXIMUM RATING |         |                |      |      |      |
|-------------------------|---------|----------------|------|------|------|
| ITEM                    | SYMBOL  | STANDARD VALUE |      |      | UNIT |
|                         |         | MIN.           | TYP. | MAX. |      |
| Power Supply            | VDD-VSS | 4.75           | 5.0  | 5.25 | V    |
| Input Voltage           | VI      | - 0.3          | -    | VDD  | V    |

**NOTE:** VSS = 0 Volt, VDD = 5.0 Volt

| ELECTRICAL SPECIFICATIONS                                      |          |           |                |      |             |      |
|--|----------|-----------|----------------|------|-------------|------|
| ITEM   | SYMBOL   | CONDITION | STANDARD VALUE |      |             | UNIT |
|  |          |           | MIN.           | TYP. | MAX.        |      |
| Input Voltage  | VDD      | L level   | $0.7V_{DD}$    | -    | $V_{DD}$    | V    |
|  | VIO      | H level   | 0              | -    | $0.3V_{DD}$ | V    |
| Supply Current   | IDD      | VDD = 5V  | -              | 45   | 50          | mA   |
| Recommended LC Driving Voltage for Normal Temp. Version Module | VDD - V0 | - 20 °C   | 19.9           | 21.0 | 22.1        | V    |
|  |          | 0 °C      | 19.0           | -    | 21.2        |      |
|  |          | 25 °C     | 18.6           | 19.1 | 19.6        |      |
|  |          | 50 °C     | 16.2           | 16.5 | 16.8        |      |
|  |          | 70 °C     | 11.6           | 9.1  | 12.8        |      |
| CCFL Forward Voltage   | VF       | 25 °C     | -              | 256  | 560         | V    |
| CCFL Forward Current   | IF       | 25 °C     | -              | -    | 5.0         | mA   |

| PIN NUMBER | SYMBOL             | FUNCTION                    |
|------------|--------------------|-----------------------------|
| 1          | FG                 | Frame Ground                |
| 2          | Vss                | Power Supply (GND)          |
| 3          | Vdd                | Power Supply (+ 5V)         |
| 4          | Vadj               | Contrast Adjustment         |
| 5          | Vee                | Negative Voltage Output     |
| 6          | $\overline{WR}$    | Data Write                  |
| 7          | $\overline{RD}$    | Data Read                   |
| 8          | $\overline{CE}$    | Chip Enable                 |
| 9          | C/D                | Command/Data Read/Write     |
| 10         | $\overline{HALT}$  | Clock Operating Stop Signal |
| 11         | $\overline{Reset}$ | Reset Signal                |
| 12         | DB0                | Data Bus Line               |
| 13         | DB1                | Data Bus Line               |
| 14         | DB2                | Data Bus Line               |
| 15         | DB3                | Data Bus Line               |
| 16         | DB4                | Data Bus Line               |
| 17         | DB5                | Data Bus Line               |
| 18         | DB6                | Data Bus Line               |
| 19         | DB7                | Data Bus Line               |
| 20         | NC                 | No Connection               |

## DIMENSIONS in millimeters

