



### ABSOLUTE MAXIMUM RATINGS

| Item                  | Symbol                            | Min. | Max.                  | Unit |
|-----------------------|-----------------------------------|------|-----------------------|------|
| Supply Voltage(Logic) | V <sub>DD</sub> - V <sub>SS</sub> | -0.3 | 7.0                   | V    |
| Supply Voltage(LCD)   | V <sub>DD</sub> - V <sub>O</sub>  | -0.3 | 10.0                  | V    |
| Input Voltage         | V <sub>I</sub>                    | -0.3 | V <sub>DD</sub> + 0.3 | V    |
| Operating Temp.       | T <sub>opr</sub>                  | -20  | 70                    | °C   |
| Storage Temp.         | T <sub>stg</sub>                  | -30  | 80                    | °C   |

### MECHANICAL DATA

| Item                      | Nominal Dimensions | Unit |
|---------------------------|--------------------|------|
| Module Size ( W x H x T ) | 40.0 x 35.4 x 8.0  | mm   |
| Viewing Area ( W x H )    | 30.4 x 13.9        | mm   |
| Character Size ( W x H )  | 2.95 x 4.75        | mm   |
| Dot Size ( W x H )        | 0.55 x 0.55        | mm   |
| Weight                    | Approx. 12         | g    |

### ELECTRICAL CHARACTERISTICS ( V<sub>DD</sub> = 5V ± 0.25V )

| Item                | Symbol                           | Test Condition           | Min. | Typ. | Max.            | Unit |
|---------------------|----------------------------------|--------------------------|------|------|-----------------|------|
| Input High Voltage  | V <sub>IH</sub>                  | --                       | 2.5  | --   | V <sub>DD</sub> | V    |
| Input Low Voltage   | V <sub>IL</sub>                  | --                       | -0.3 | --   | 0.6             | V    |
| Output High Voltage | V <sub>OH</sub>                  | I <sub>OH</sub> = -0.1mA | 2.4  | --   | V <sub>DD</sub> | V    |
| Output Low Voltage  | V <sub>OL</sub>                  | I <sub>OL</sub> = 0.1mA  | 0    | --   | 0.4             | V    |
| Supply Current      | I <sub>DD</sub>                  | V <sub>DD</sub> = 5.0V   | --   | 1.8  | 2.2             | mA   |
| LCD Driving Voltage | V <sub>DD</sub> - V <sub>O</sub> | T <sub>a</sub> = 25°C    | --   | 4.4  | --              | V    |

### PIN CONNECTIONS

| Pin | Symbol          | Level  | Function  |
|-----|-----------------|--------|---|
| 1   | V <sub>SS</sub> | 0V     | GND   |
| 2   | V <sub>DD</sub> | +5V    | Power supply for logic  |
| 3   | V <sub>O</sub>  | --     | Operating voltage for LCD   |
| 4   | RS              | H/L    | H : Data<br>L : Instruction code  |
| 5   | R/W             | H/L    | H : Read<br>L : Write   |
| 6   | E               | H, H→L | Enable signal<br>Read data when E is high<br>Write data at falling edge of E  |
| 7   | DB0             | H/L    | In 8-bit bus mode, used as low order bidirectional data bus.<br>In 4-bit bus mode, open these pins.                           |
| 8   | DB1             | H/L    |   |
| 9   | DB2             | H/L    |   |
| 10  | DB3             | H/L    |   |
| 11  | DB4             | H/L    | In 8-bit bus mode, used as high order bidirectional data bus.<br>In 4-bit bus mode, used as both high and low order data bus. |
| 12  | DB5             | H/L    |   |
| 13  | DB6             | H/L    |   |
| 14  | DB7             | H/L    |   |

### BLOCK DIAGRAM

