## $160 \times 32$ Dots Graphic LCD



## FEATURES

- Available for external oscilation 2 KHz
- Epson-SED 1520, or equivalent
- 1/32 duty cycle
- N.V. optional for + 3V power supply

| MECHANICAL DATA |  |  |
| :--- | :---: | :---: |
| ITEM | STANDARD VALUE | UNIT |
| Module Dimension | $85.2 \times 55.0$ | mm |
| Viewing Area | $72.0 \times 22.0$ | mm |
| Mounting Hole | $80.2 \times 46.7$ | mm |
| Dot Pitch | $0.44 \times 0.61$ | mm |

ABSOLUTE MAXIMUM RATING

| ITEM | SYMBOL | STANDARD VALUE |  |  | UNIT |
| :--- | :---: | :---: | :---: | :---: | :---: |
|  |  | MIN. | TYP. | MAX. |  |
| Power Supply | VDD-VSS | 4.75 | 5.0 | 5.52 | 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 | $V D D=+5 \mathrm{~V}$ | 4.5 | 5.0 | 5.5 | V |
| Supply Current | IDD | $V D D=5 \mathrm{~V}$ | - | 1.0 | 1.4 | mA |
| Recommended LC Driving <br> Voltage for Normal Temp. <br> Version Module | VDD-V0 | - 2 | 5.8 | 6.0 | 6.2 | V |
|  |  | $25^{\circ} \mathrm{C}$ | 5.3 | 5.5 | 5.7 |  |
|  |  | + 7 | 4.8 | 5.0 | 5.2 |  |
| LED Forward Voltage | VF | $25^{\circ} \mathrm{C}$ | - | 4.2 | 4.6 | V |
| LED Forward Current | IF | $25^{\circ} \mathrm{C}$ | - | 180 | 360 | mA |
| EL Power Supply Current | IEL | $\mathrm{Vel}=110 \mathrm{VAC} ; 400 \mathrm{~Hz}$ | - | - | 5.0 | mA |


| PIN NUMBER | SYMBOL | FUNCTION |
| :---: | :---: | :---: |
| 1 | Vss | GND |
| 2 | Vdd | (+5V) |
| 3 | Vo | Contrast Adjustment |
| 4 | Ao | H $\rightarrow$ Data L $\rightarrow$ Instruction |
| 5 | CS1 | CS1 $=0, \mathrm{CS2}=0$ Select U1 |
| 6 | CS2 | CS1 $=0, \mathrm{CS} 2=1$ Select U3 |
| 7 | CL | External Clock 2KHz |
| 8 | E | Enable Signal |
| 9 | R/W | H: Read Data L: Write Data |
| 10 | DB0 | Data Bus Line |
| 11 | DB1 | Data Bus Line |
| 12 | DB2 | Data Bus Line |
| 13 | DB3 | Data Bus Line |
| 14 | DB4 | Data Bus Line |
| 15 | DB5 | Data Bus Line |
| 16 | DB6 | Data Bus Line |
| 17 | DB7 | Data Bus Line |
| 18 | RES | H $\rightarrow$ L Reset the LCM |
| 19 | A | Power Supply forLED B/L (+ 4.2V) |
| 20 | K | Power Supply forLED B/L (0V) |

## DIMENSIONS in millimeters



LED B/L
EL or NO B/L

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