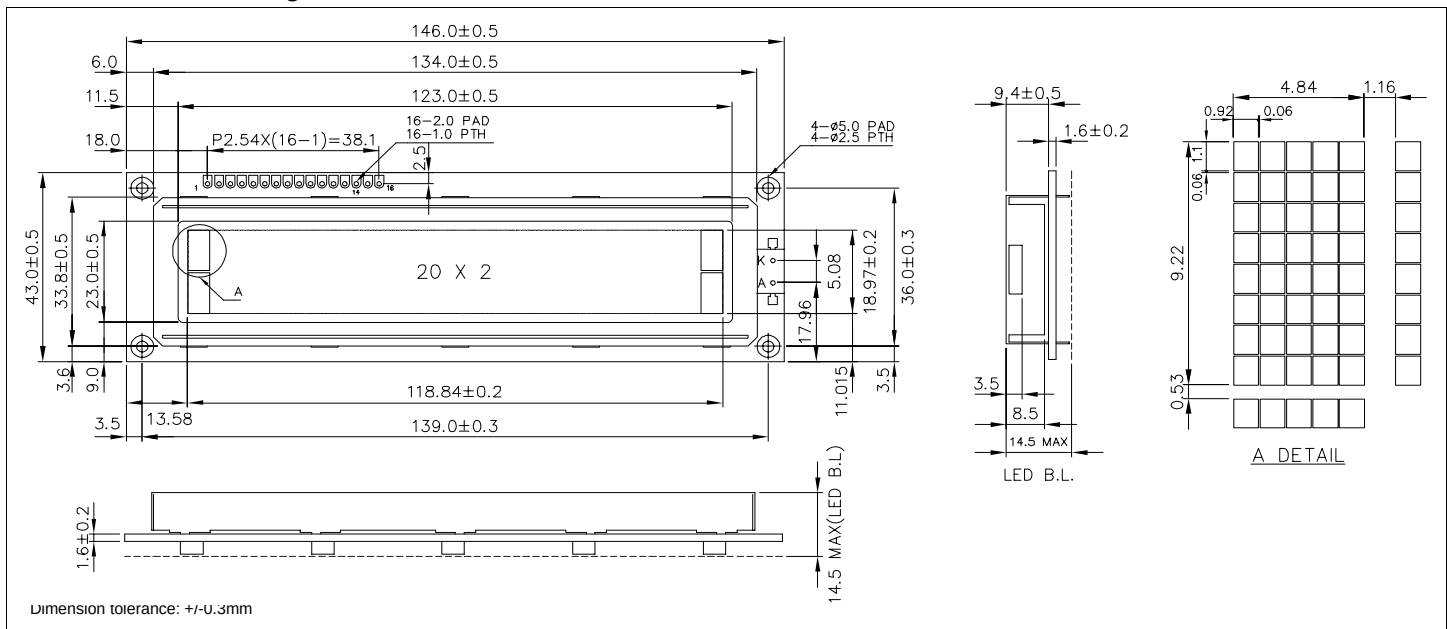


## Dimensional Drawing

20 Character x 2 Lines, Large Character, LED Backlight



## Features

Character Format .....5x7 Dots with Cursor  
Backlight.....LED  
Options....TN/Gray STN/Yellow STN, 12 o'Clock/6 o'Clock View  
Normal/Extended Temperature  
Normal/Negative Displays

## Physical Data

|                        |                           |
|------------------------|---------------------------|
| Module Size.....       | 146.0W x 43.0H x 14.5T mm |
| Viewing Area Size..... | 123.0W x 23.0H mm         |
| Weight.....            | 81g                       |

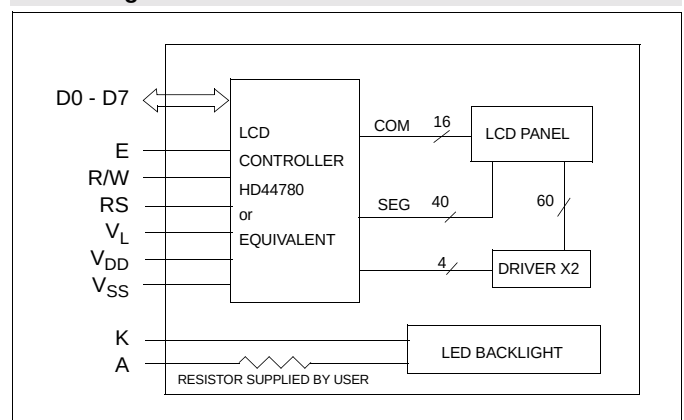
### Absolute Maximum Ratings

| PARAMETER              | SYMBOL          | MIN  | MAX      | UNIT |
|------------------------|-----------------|------|----------|------|
| SUPPLY VOLTAGE         | $V_{DD}-V_{SS}$ | 0    | 6.5      | V    |
| SUPPLY VOLTAGE FOR LCD | $V_{DD}-V_L$    | 0    | 13.5     | V    |
| INPUT VOLTAGE          | $V_{IN}$        | -0.3 | $V_{DD}$ | V    |
| OPERATING TEMPERATURE  | $T_{OP}$        | 0    | 50       | °C   |
| STORAGE TEMPERATURE    | $T_{STG}$       | -20  | 70       | °C   |

### Electrical Characteristics (VDD=5.0±0.25V 25°C)

| PARAMETER            | SYM          | CONDITION                               | MIN | TYP | MAX | UNIT |
|----------------------|--------------|-----------------------------------------|-----|-----|-----|------|
| INPUT HIGH VOLTAGE   | $V_{IH}$     | -                                       | 2.2 | -   | -   | V    |
| INPUT LOW VOLTAGE    | $V_{IL}$     | -                                       | -   | -   | 0.6 | V    |
| OUTPUT HIGH VOLTAGE  | $V_{OH}$     | $I_{OH}=0.2mA$                          | 2.4 | -   | -   | V    |
| OUTPUT LOW VOLTAGE   | $V_{OL}$     | $I_{OL}=1.2mA$                          | -   | -   | 0.4 | V    |
| POWER SUPPLY CURRENT | $I_{DD}$     | $V_{DD}=5.0V$                           | -   | -   | 2.0 | mA   |
| POWER SUPPLY FOR LCD | $V_{DD}-V_L$ | $T_A=25^{\circ}C$                       | 4.3 | 4.7 | 5.1 | V    |
| LED FORWARD VOLTAGE  | $V_F$        | $I_F=240mA$                             | 3.9 | 4.2 | 4.5 | V    |
| LED FORWARD CURRENT  | $I_F$        | $V_F=5.0V$ ,<br>$R_{BL}=3.3\text{ ohm}$ | -   | 240 | -   | mA   |
| DRIVE METHOD         | 1/16 Duty    |                                         |     |     |     |      |

### Block Diagram



## Pin Connections

| PIN NO. | SYMBOL          | LEVEL                                | FUNCTION                                   |              |
|---------|-----------------|--------------------------------------|--------------------------------------------|--------------|
| 1       | V <sub>SS</sub> | -                                    | 0V                                         | Power supply |
| 2       | V <sub>DD</sub> | -                                    | 5V                                         |              |
| 3       | V <sub>L</sub>  | -                                    | -                                          |              |
| 4       | RS              | H/L                                  | H: Data input<br>L: Instruction data input |              |
| 5       | R/W             | H/L                                  | H: Data read<br>L: Data write              |              |
| 6       | E               | H,H→L                                | Enable signal                              |              |
| 7       | D0              | H/L                                  | Data bus                                   |              |
| 8       | D1              | H/L                                  |                                            |              |
| 9       | D2              | H/L                                  |                                            |              |
| 10      | D3              | H/L                                  |                                            |              |
| 11      | D4              | H/L                                  |                                            |              |
| 12      | D5              | H/L                                  |                                            |              |
| 13      | D6              | H/L                                  |                                            |              |
| 14      | D7              | H/L                                  |                                            |              |
| 15      | A               | Anode connection for LED backlight   |                                            |              |
| 16      | K               | Cathode connection for LED backlight |                                            |              |