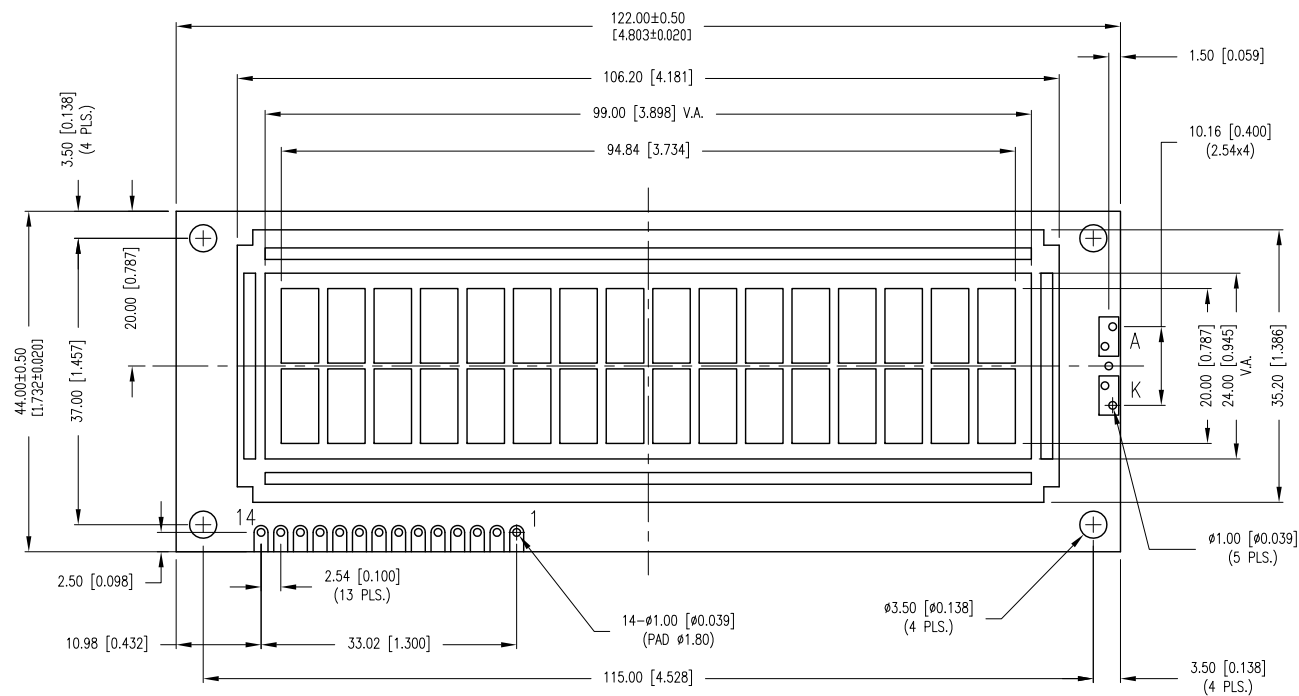
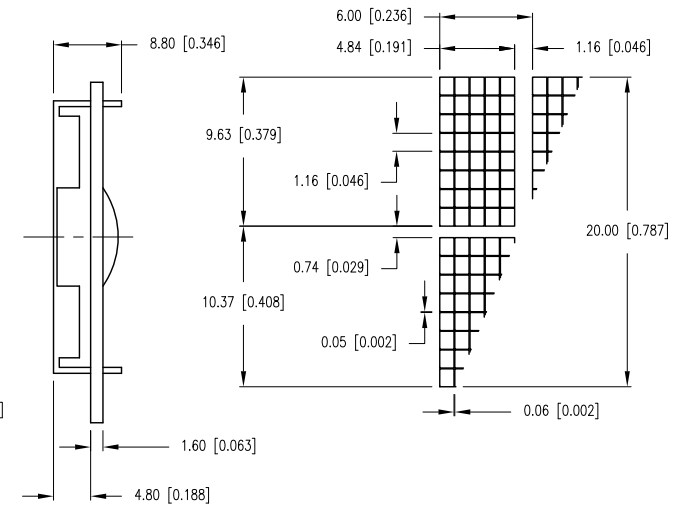




CAUTION: STATIC SENSITIVE DEVICE  
FOLLOW PROPER E.S.D. HANDLING PROCEDURES  
WHEN WORKING WITH THIS PART.

## CHARACTER DETAIL



\*UNLESS OTHERWISE SPECIFIED TOLERANCES PER DECIMAL PRECISION ARE: X=±1 (±0.039), X.X=±0.5 (±0.020), X.XX=±0.25 (±0.010), X.XXX=±0.127 (±0.005). LEAD SIZE=±0.05 (±0.002), LEAD LENGTH=±0.75 (±0.030). MIN=  $\begin{matrix} +\text{DECIMAL PRECISION} \\ -0.00 \end{matrix}$  MAX=  $\begin{matrix} +0.00 \\ -\text{DECIMAL PRECISION} \end{matrix}$

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9.63mm CHARACTER HEIGHT, 16x2 CHARACTERS, 5x8 DOT MATRIX LCD MODULE, 1/16 DUTY, 1/5 BIAS, STN REFLECTIVE.

\*\*THE SPECIFICATIONS MAY CHANGE AT ANY TIME WITHOUT NOTICE DUE TO NEW MATERIALS OR PRODUCT IMPROVEMENT.\*\*

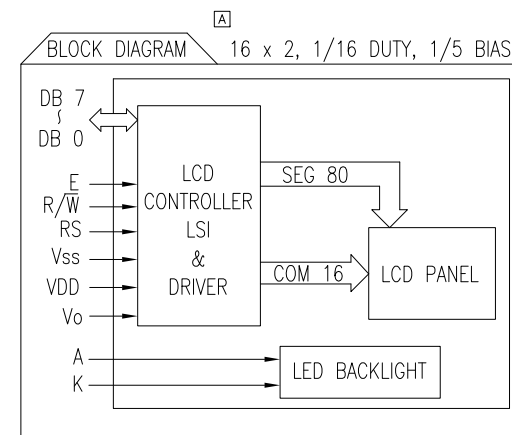
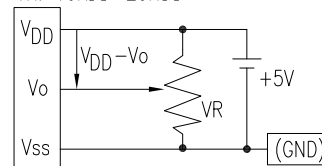
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|        |           |           |    |
|--------|-----------|-----------|----|
| DATE:  | 01.28.11  | DRAWN BY: | AB |
| PAGE:  | 1 OF 2    | CHKD BY:  | YA |
| SCALE: | NTS       | APRVD BY: | BC |
| UNIT:  | mm [INCH] |           | Ⓟ  |

## PIN CONFIGURATION

| PIN NO. | SYMBOL          | LEVEL  | FUNCTION                                                        |               |
|---------|-----------------|--------|-----------------------------------------------------------------|---------------|
| 1       | V <sub>SS</sub> | -      | POWER SUPPLY                                                    | GND (0V)      |
| 2       | V <sub>DD</sub> | -      |                                                                 | 5V            |
| 3       | V <sub>O</sub>  | -      |                                                                 | FOR LCD DRIVE |
| 4       | RS              | H/L    | REGISTER SELECT SIGNAL<br>H: DATA INPUT<br>L: INSTRUCTION INPUT |               |
| 5       | R/W             | H/L    | H: DATA READ (MODULE-->MPU)<br>L: DATA WRITE (MODULE<--MPU)     |               |
| 6       | E               | H,H->L | ENABLE                                                          |               |
| 7~14    | DB0~DB7         | H/L    | DATA BUS--SOFTWARE SELECTABLE 4 OR 8 BIT MODE.                  |               |
| 15      | A               | -      | ANODE                                                           | LED BACKLIGHT |
| 16      | K               | -      | CATHODE                                                         | LED BACKLIGHT |

V<sub>DD</sub>-V<sub>O</sub>: LCD DRIVING VOLTAGE  
VR: 10KΩ-20KΩ



## ELECTRICAL CHARACTERISTICS

<sup>[A]</sup> V<sub>DD</sub>=4.7V to 5.3V, T<sub>A</sub>=25°C

| ITEM                     |                   | SYMBOL                           | CONDITION             | STANDARD VALUE |      |      | UNIT              |
|--------------------------|-------------------|----------------------------------|-----------------------|----------------|------|------|-------------------|
|                          |                   |                                  |                       | MIN.           | TYP. | MAX. |                   |
| SUPPLY VOLTAGE FOR LOGIC |                   | V <sub>DD</sub> -V <sub>SS</sub> | -                     | -              | 5.0  | -    | V                 |
| SUPPLY CURRENT FOR LOGIC |                   | I <sub>DD</sub>                  | V <sub>DD</sub> =5V   | -              | 2.0  | 3.0  | mA                |
| INPUT VOLTAGE            | HIGH              | V <sub>IH</sub>                  | -                     | 2.2            | -    | 4.7  | V                 |
|                          | LOW               | V <sub>IL</sub>                  | -                     | 0              | -    | 0.6  | V                 |
| OUTPUT VOLTAGE           | HIGH              | V <sub>OH</sub>                  | -                     | 2.4            | -    | -    | V                 |
|                          | LOW               | V <sub>OL</sub>                  | -                     | -              | -    | 0.4  | V                 |
| *LED BACKLIGHT           | VOLTAGE           | V <sub>f</sub>                   | I <sub>f</sub> =220mA | -              | 4.2  | 4.6  | V                 |
|                          | CURRENT           | I <sub>f</sub>                   | -                     | -              | 220  | 480  | mA                |
|                          | POWER CONSUMPTION | PD                               | -                     | -              | 924  | -    | mW                |
|                          | LUMINOUS          | L                                | I <sub>f</sub> =220mA | 70             | -    | -    | cd/m <sup>2</sup> |
|                          | COLOR             | -                                | -                     | -              | -    | -    | nm                |

\*ONLY APPLIES TO MODULES WITH BACKLIGHT

## ABSOLUTE MAXIMUM RATINGS

| ITEM                         | SYMBOL                           | TEST CONDITION       | STANDARD VALUE  |                 | UNIT |
|------------------------------|----------------------------------|----------------------|-----------------|-----------------|------|
|                              |                                  |                      | MIN             | MAX             |      |
| SUPPLY VOLTAGE FOR LOGIC     | V <sub>DD</sub> -V <sub>SS</sub> | T <sub>a</sub> =25°C | 4.7             | 5.3             | V    |
| SUPPLY VOLTAGE FOR LCD DRIVE | V <sub>DD</sub> -V <sub>O</sub>  | -                    | 4.2V@50°C       | 4.8@0°C         | V    |
| INPUT VOLTAGE                | V <sub>r</sub>                   | T <sub>a</sub> =25°C | V <sub>SS</sub> | V <sub>DD</sub> | V    |
| OPERATING TEMPERATURE        | T <sub>opr</sub>                 | LCM-S                | 0               | 50              | °C   |
|                              |                                  | LCM-H                | -20             | 70              | °C   |
| STORAGE TEMPERATURE          | T <sub>stg</sub>                 | LCM-S                | -20             | 70              | °C   |
|                              |                                  | LCM-H                | -30             | 85              | °C   |

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