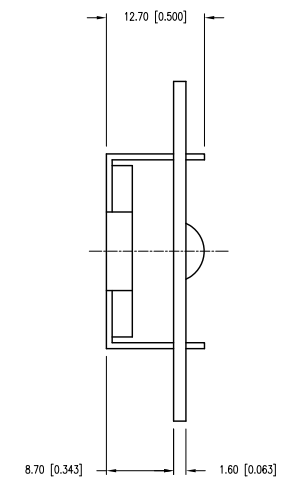
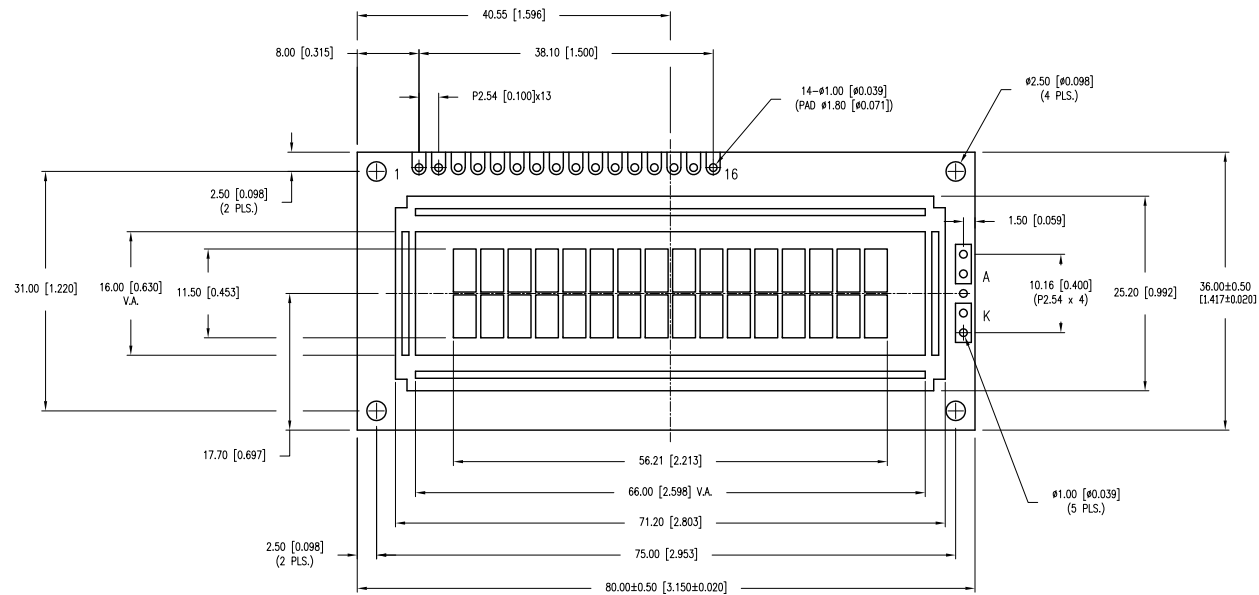
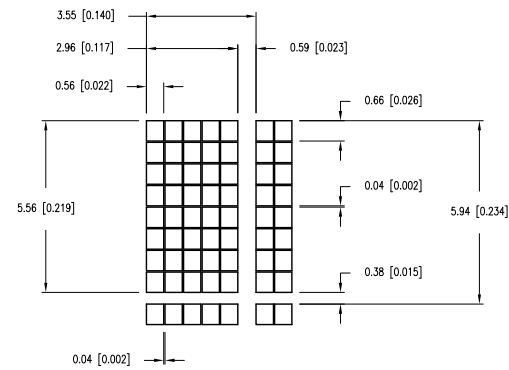


CAUTION: STATIC SENSITIVE DEVICE  
FOLLOW PROPER E.S.D. HANDLING PROCEDURES  
WHEN WORKING WITH THIS PART.

## 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= <sup>+DECIMAL PRECISION</sup> -0.00 MAX.= <sup>+0.00</sup> -DECIMAL PRECISION



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5.56mm CHARACTER HT,5x8 DOT MATRIX,STN,TRANSFLECTIVE W/LED BACKLIGHT,16 x 2 LCD MODULE,BLACK BEZEL.

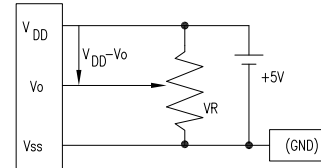
\*\*THE SPECIFICATIONS MAY CHANGE AT ANY TIME WITHOUT NOTICE DUE TO NEW MATERIALS OR PRODUCT IMPROVEMENT.\*\*

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|        |           |           |      |
|--------|-----------|-----------|------|
| DATE:  | 06.01.10  | DRAWN BY: | JH   |
| PAGE:  | 1 OF 2    | CHKD BY:  | BC   |
| SCALE: | N/A       | APRVD BY: | SA   |
| UNIT:  | mm [INCH] |           | (Pb) |

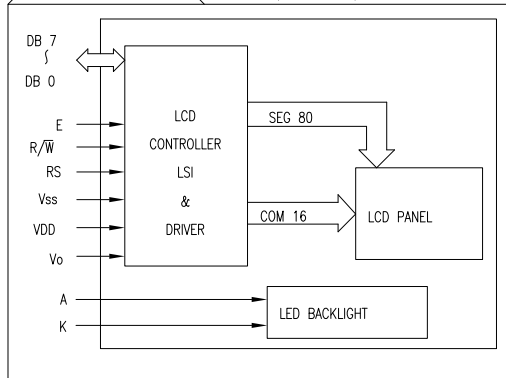
## PIN CONFIGURATION

| 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/ $\overline{W}$ | 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 VOLTAGEVR: 10K $\Omega$ ~20K $\Omega$ 

## BLOCK DIAGRAM

16 x 2, 1/16 DUTY, 1/5 BIAS



## ELECTRICAL CHARACTERISTICS

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            | —    | V <sub>DD</sub> | 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> =160mA | —              | 4.2  | 4.6             | V                 |
|                          | CURRENT           | I <sub>f</sub>                   | —                     | —              | 160  | —               | mA                |
|                          | POWER CONSUMPTION | PD                               | —                     | —              | 656  | —               | mW                |
|                          | LUMINOUS          | L                                | I <sub>f</sub> =160mA | 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>  | —                    | 4.2@50°C        | 4.8@0°C         | V    |
| INPUT VOLTAGE                | V <sub>I</sub>                   | T <sub>a</sub> =25°C | V <sub>SS</sub> | V <sub>DD</sub> | V    |
| OPERATING TEMPERATURE        | T <sub>opr</sub>                 | LCM-H                | -20             | 70              | °C   |
| STORAGE TEMPERATURE          | T <sub>stg</sub>                 | LCM-H                | -30             | 80              | °C   |

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