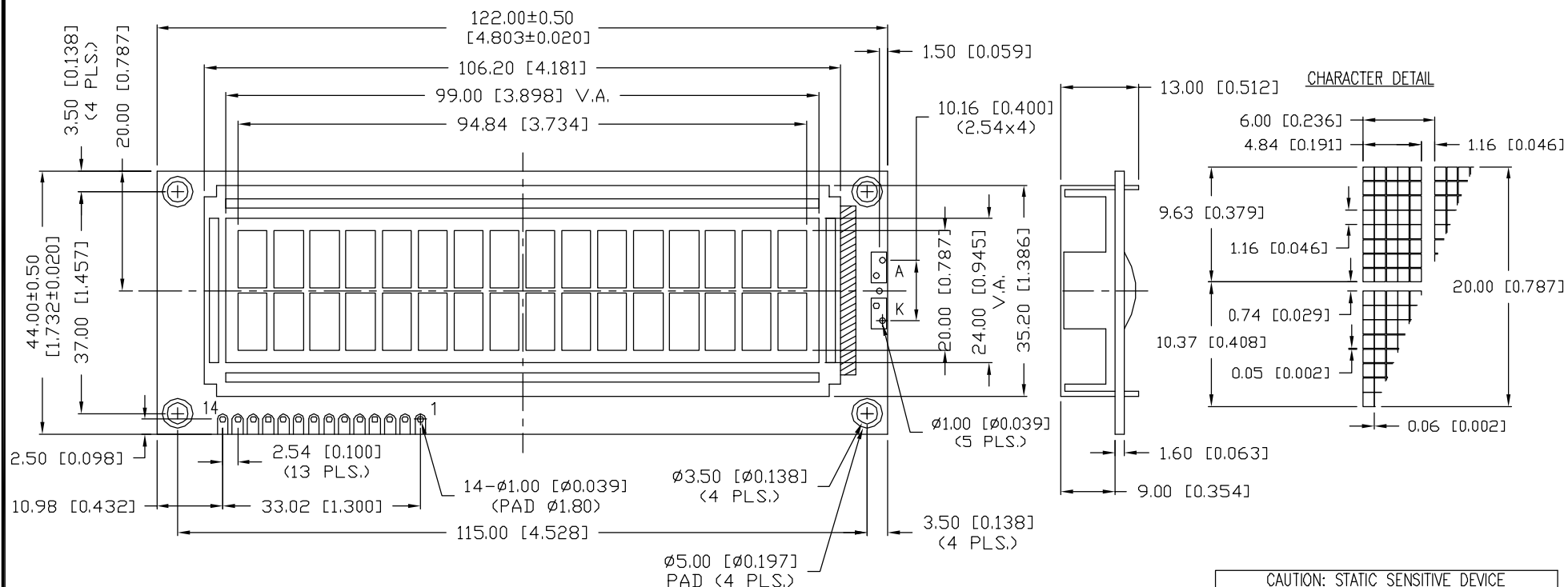




CAUTION: STATIC SENSITIVE DEVICE  
FOLLOW PROPER E.S.D. HANDLING PROCEDURES  
WHEN WORKING WITH THIS PART.

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

REV.

PART NUMBER

LCM-S01602DSF/D-W

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## RELIABILITY NOTE

OUR MANY YEARS OF EXPERIENCE DATA ACCUMULATION INDICATE THAT SOLDER HEAT IS A MAJOR CAUSE OF EARLY AND FUTURE FAILURE. PLEASE PAY ATTENTION TO YOUR SOLDERING PROCESS.



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DATE: 7.2.04

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PAGE: 1 OF 2

SCALE: N/A

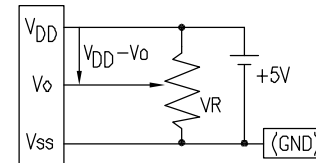
9.63mm CHARACTER HEIGHT, 16 x 2 CHARACTERS,  
5 x 8 DOT MATRIX LCD MODULE, STN, TRANSFLECTIVE,  
1/16 DUTY, 1/5 BIAS, WHITE LED BACKLIGHT.

## PIN CONFIGURATION

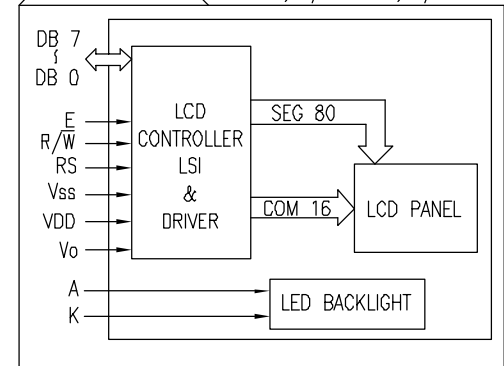
| PIN NO. | SYMBOL          | LEVEL  | FUNCTION                                                        |
|---------|-----------------|--------|-----------------------------------------------------------------|
| 1       | V <sub>SS</sub> | -      | POWER SUPPLY<br>GND (0V)                                        |
| 2       | V <sub>DD</sub> | -      |                                                                 |
| 3       | V <sub>O</sub>  | -      |                                                                 |
| 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.                  |
|         | A               | -      | ANODE<br>LED BACKLIGHT                                          |
|         | K               | -      | CATHODE<br>LED BACKLIGHT                                        |

V<sub>DD</sub>-V<sub>O</sub>: LCD DRIVING VOLTAGE

VR: 10KΩ-20KΩ



## 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                  | -    | 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<br>BACKLIGHT        | VOLTAGE           |                                  | V <sub>f</sub>      | I <sub>f</sub> =40mA | -    | 3.4  | 3.6  | V                 |
|                          | CURRENT           |                                  | I <sub>f</sub>      | -                    | -    | 40   | -    | mA                |
|                          | POWER CONSUMPTION |                                  | P <sub>D</sub>      | -                    | -    | 136  | -    | mW                |
|                          | LUMINOUS          |                                  | L                   | I <sub>f</sub> =40mA | 15   | 20   | -    | cd/m <sup>2</sup> |
|                          | COLOR             |                                  |                     | WHITE                | -    | 0.31 | -    | X                 |
| -                        |                   |                                  |                     |                      | 0.32 | -    | Y    |                   |

\*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   |
| STORAGE TEMPERATURE          | T <sub>stg</sub>                 | LCM-S                | -20             | 70              | °C   |

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