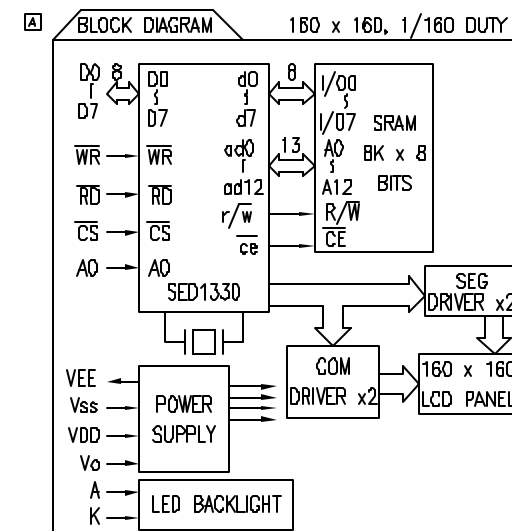
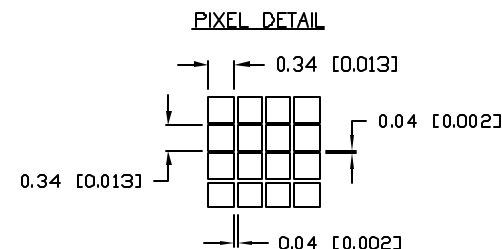
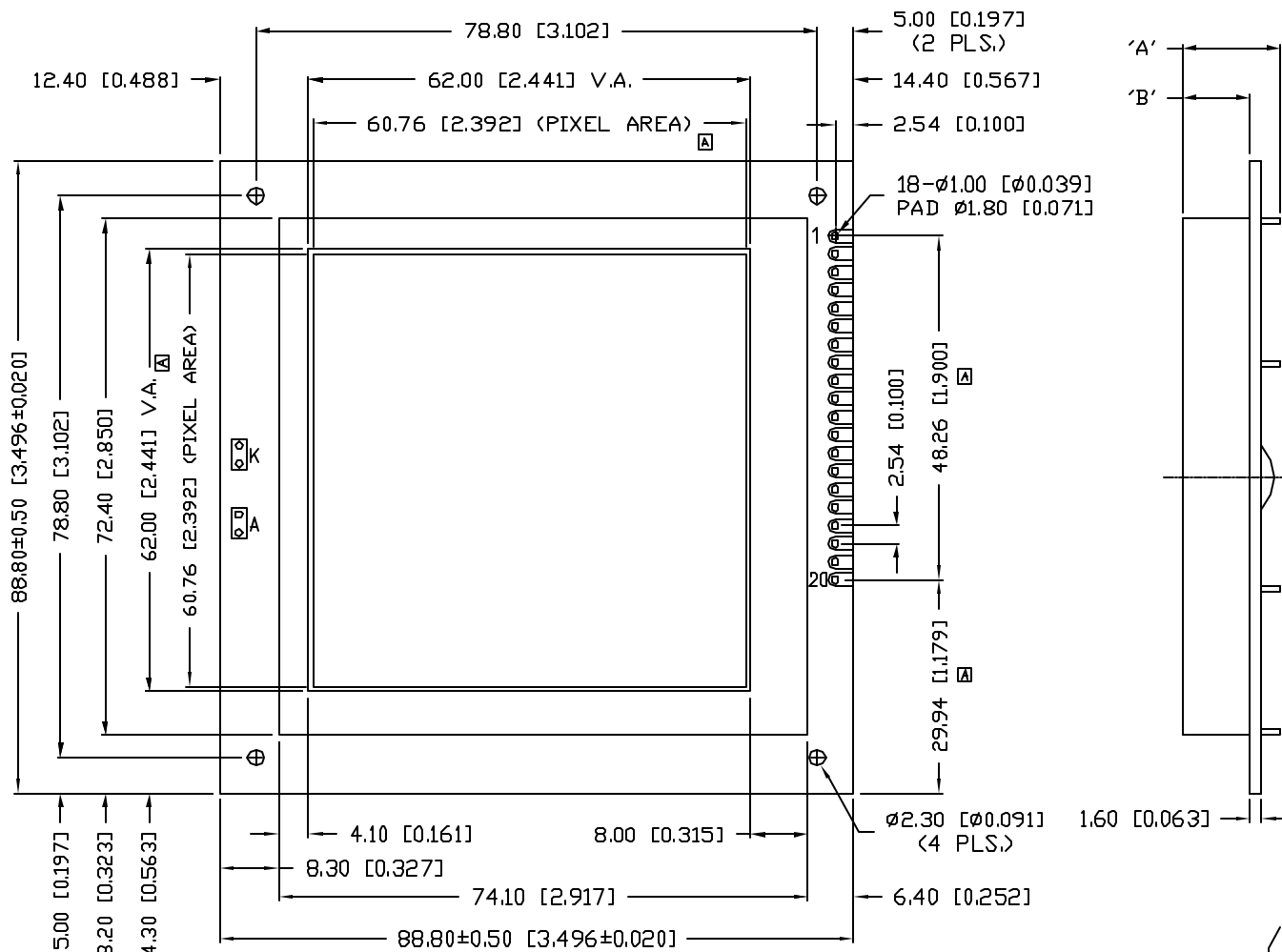


# UNCONTROLLED DOCUMENT

| P/N PREFIX/SUFFIX TABLE |     |                                     |
|-------------------------|-----|-------------------------------------|
| LCM-X                   | GXX | DESCRIPTION                         |
| STANDARD                | S   | SR STN, REFLECTIVE                  |
| HIGH TEMP.              | H   | SF STN, TRANSFLECTIVE(W/ BACKLIGHT) |

| TYPE           | QIM. | A    | B   |
|----------------|------|------|-----|
| WITH BACKLIGHT |      | 13.8 | 9.4 |
| NO BACKLIGHT   |      | 9.7  | 4.8 |

| PART NUMBER    |                                     | REV.    |
|----------------|-------------------------------------|---------|
| LCM-X160160GXX |                                     | A       |
| REV.           | E.C.N. NUMBER AND REVISION COMMENTS | DATE    |
| A              | E.C.N. #10738. & #10BRDR.           | 5.21.01 |



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

# UNCONTROLLED DOCUMENT

\*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.= +DECIMAL PRECISION MAX.= +0.00 -DECIMAL PRECISION

|                                                                                    |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                       |                                                                                                                             |  |  |  |             |
|------------------------------------------------------------------------------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|--|--|--|-------------|
| REV.                                                                               | PART NUMBER    | <p>CONFIDENTIAL INFORMATION</p> <p>THE INFORMATION CONTAINED IN THIS DOCUMENT IS THE PROPERTY OF LUMEX INC. EXCEPT AS SPECIFICALLY AUTHORIZED IN WRITING BY LUMEX INC., THE HOLDER OF THIS DOCUMENT SHALL KEEP ALL INFORMATION CONTAINED HEREIN CONFIDENTIAL AND SHALL PROTECT SAME IN WHOLE OR IN PART FROM DISCLOSURE AND DISSEMINATION TO ALL THIRD PARTIES.</p> <p>RELIABILITY NOTE</p> <p>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.</p> |  | 290 E. HELEN ROAD<br>PALATINE, IL 60067-6976<br>PHONE: +1.847.359.2790<br>US WEB: www.lumex.com<br>TW WEB: www.lumex.com.tw |  |  |  |             |
| A                                                                                  | LCM-X160160GXX |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                       | DRAWN BY: SA/CT                                                                                                             |  |  |  | CHECKED BY: |
| 160 x 160 DOT MATRIX GRAPHIC MODULE,<br>1/160 DUTY, STN WITH NEGATIVE CHARGE PUMP. |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                       |                                                                                                                             |  |  |  |             |

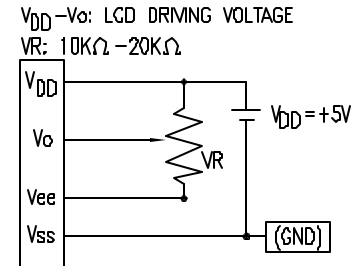
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|------|-------------------------------------|---------|
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## PIN CONFIGURATION

| PIN NO. | SYMBOL          | LEVEL | FUNCTION                                 |
|---------|-----------------|-------|------------------------------------------|
| 1       | V <sub>SS</sub> | 0V    | GND                                      |
| 2       | V <sub>DD</sub> | 5V    | SUPPLY VOLTAGE FOR LOGIC                 |
| 3       | V <sub>O</sub>  | —     | CONTRAST VOLTAGE FOR LCD DRIVE(VARIABLE) |
| 4       | R <sub>D</sub>  | L     | READ SIGNAL                              |
| 5       | W <sub>R</sub>  | L     | WRITE SIGNAL                             |
| 6       | C <sub>S</sub>  | L     | CHIP SELECT                              |
| 7       | A <sub>D</sub>  | H/L   | DATA TYPE SELECT                         |
| 8~15    | DB0~DB7         | H/L   | DATA BUS                                 |
| 16      | RES             | L     | RESET SIGNAL (NOTE 1)                    |
| 17      | VEE             | —     | POWER SUPPLY VOLTAGE FOR LCD             |
| 18      | A               | 4.2V  | ANODE LED BACKLIGHT                      |
| 19      | K               | —     | CATHODE LED BACKLIGHT                    |
| 20      | (N/C)           | —     | NO CONNECTION                            |

## NOTES:

1. RES IS A SCHMITT TRIGGER INPUT. THE PULSEWIDTH ON RES MUST BE AT LEAST 200 $\mu$ s. PULSES OF MORE THAN A FEW SECONDS WILL CAUSE DC VOLTAGES TO BE APPLIED TO THE LCD PANEL.



## ELECTRICAL CHARACTERISTICS

V<sub>DD</sub>=4.75V to 5.25V, 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> | —               | 4.75                    | 5.0  | 5.25            | V                 |
| SUPPLY VOLTAGE FOR LCD DRIVE | V <sub>DD</sub> -V <sub>EE</sub> | —               | —                       | 18.2 | —               | V                 |
| SUPPLY CURRENT FOR LOGIC     | I <sub>DD</sub>                  | —               | —                       | —    | 20              | mA                |
| INPUT VOLTAGE                | HIGH                             | V <sub>IH</sub> | 0.2                     | —    | V <sub>DD</sub> | V                 |
|                              | LOW                              | V <sub>IL</sub> | 0                       | —    | 0.8             | V                 |
| OUTPUT VOLTAGE               | HIGH                             | V <sub>OH</sub> | I <sub>OH</sub> =-3.0mA | 2.4  | —               | V                 |
|                              | LOW                              | V <sub>OL</sub> | I <sub>OL</sub> =3.0mA  | —    | 0.4             | V                 |
| *LED BACKLIGHT               | VOLTAGE                          | V <sub>f</sub>  | I <sub>f</sub> =560mA   | 4.2  | 4.5             | V                 |
|                              | CURRENT                          | I <sub>f</sub>  | —                       | 560  | —               | mA                |
|                              | POWER CONSUMPTION                | P <sub>D</sub>  | —                       | 2.8  | —               | W                 |
|                              | LUMINOUS                         | L               | I <sub>f</sub> =560mA   | 60   | —               | cd/m <sup>2</sup> |
|                              | COLOR                            | —               | —                       | 570  | —               | nm                |

## 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 | 0               | 7.0             | V    |
| SUPPLY VOLTAGE FOR LCD DRIVE | V <sub>DD</sub> -V <sub>EE</sub> | —                    | 17.2040°C       | 19.200°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-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   |

\*ONLY APPLIES TO MODULES WITH BACKLIGHT

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REV.

A

PART NUMBER

LCM-X160160GXX

160 x 160 DOT MATRIX GRAPHIC MODULE,  
1/160 DUTY, STN WITH NEGATIVE CHARGE PUMP.

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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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