

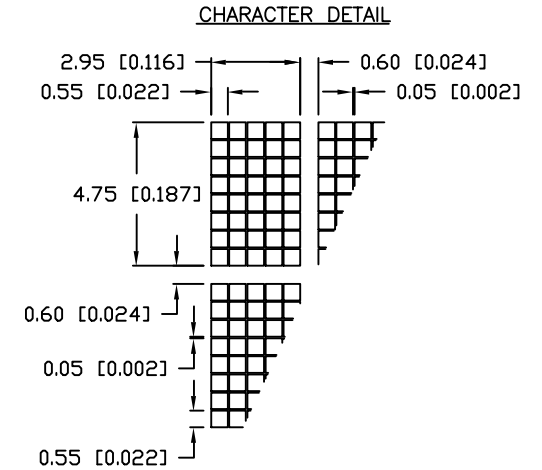
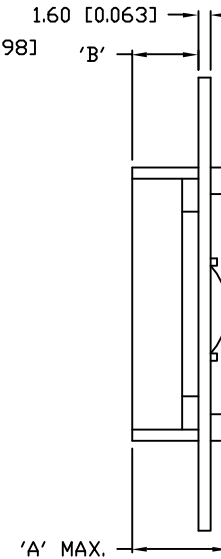
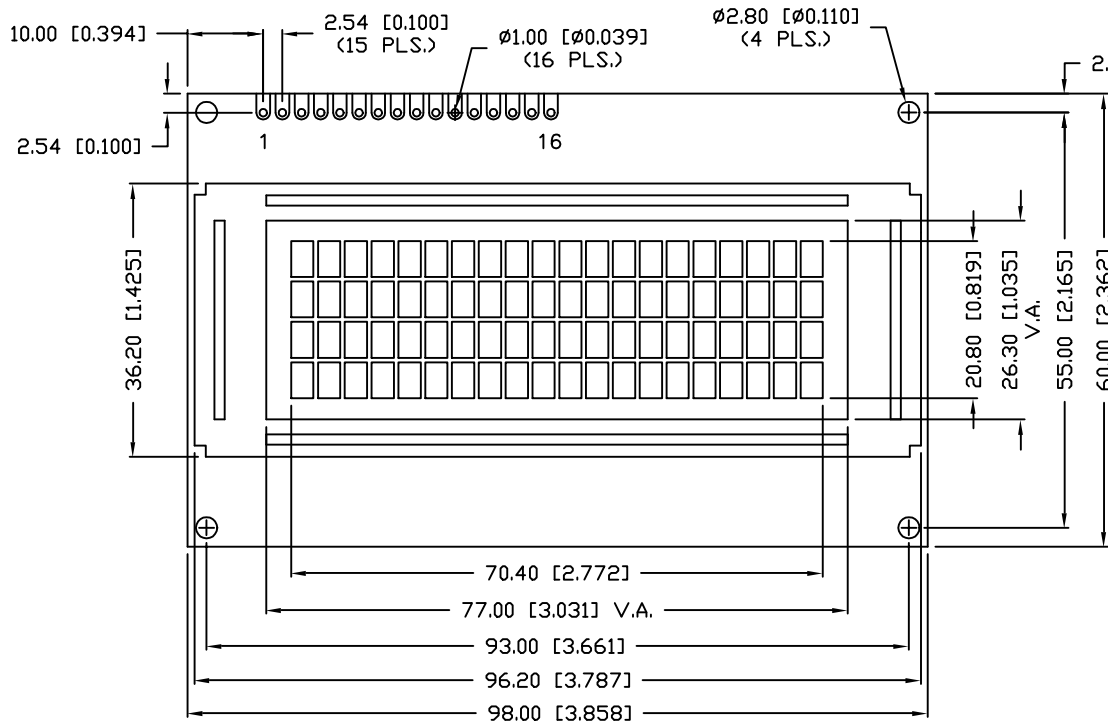
UNCONTROLLED DOCUMENT

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

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

| | | |
|---------------|-------------------------------------|--------|
| PART NUMBER | | REV. |
| LCM-X02004DXX | | A |
| REV. | E.C.N. NUMBER AND REVISION COMMENTS | DATE |
| A | E.C.N. #10BRDR. & REDRAWN. | 9-1-98 |

| TYPE | DIM. | A | B |
|----------------|------|------|-----|
| WITH BACKLIGHT | | 12.7 | 8.7 |
| NO BACKLIGHT | | 8.8 | 4.8 |



UNCONTROLLED DOCUMENT

*UNLESS OTHERWISE SPECIFIED TOLERANCE IS $\pm 0.25\text{mm}$ ($\pm 0.010''$)

| | |
|---|---------------|
| REV. | PART NUMBER |
| A | LCM-X02004DXX |
| 4.75mm CHARACTER HEIGHT, 5 x 8 DOT MATRIX, 20 x 4 LCD MODULE, 1/16 DUTY, 1/5 BIAS. | |

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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.

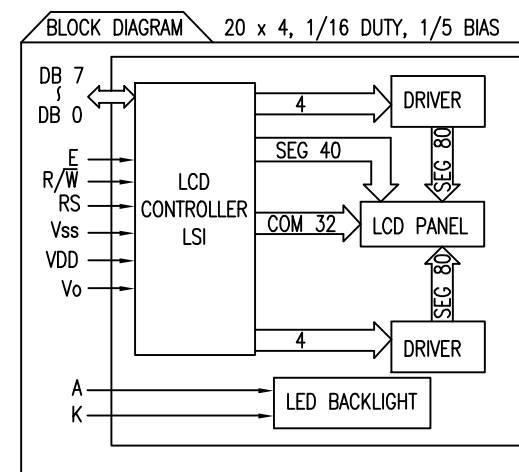
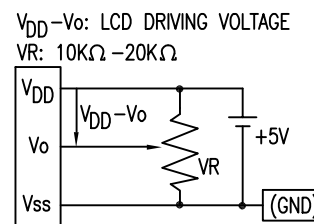
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| | | | |
|-----------|-------------|--------------|---------------|
| DRAWN BY: | CHECKED BY: | APPROVED BY: | DATE: 6-18-98 |
| SA/DU/BC | | | PAGE: 1 OF 2 |
| | | | SCALE: N/A |

| REV. | E.C.N. NUMBER AND REVISION COMMENTS | DATE |
|------|-------------------------------------|--------|
| A | E.C.N. #10BRDR. & REDRAWN. | 9-1-98 |

| PIN CONFIGURATION | | | |
|-------------------|-----------------|--------|---|
| PIN NO. | SYMBOL | LEVEL | FUNCTION |
| 1 | V _{SS} | - | POWER SUPPLY GND (0V) |
| 2 | V _{DD} | - | |
| 3 | V _O | - | |
| 4 | RS | H/L | REGISTER SELECT SIGNAL H: DATA INPUT L: INSTRUCTION INPUT |
| 5 | R/W | H/L | H: DATA READ (MODULE-->MPU) 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 |



| ELECTRICAL CHARACTERISTICS | | V _{DD} =4.7V to 5.3V, T _A =25°C | | | | |
|----------------------------|----------------------------------|---|---------------------------|------|------|---------------------|
| ITEM | SYMBOL | CONDITION | STANDARD VALUE | | | UNIT |
| | | | MIN. | TYP. | MAX. | |
| SUPPLY VOLTAGE FOR LOGIC | V _{DD} -V _{SS} | - | - | 5.0 | - | V |
| SUPPLY CURRENT FOR LOGIC | I _{DD} | V _{DD} =5V | - | 2.0 | 3.0 | mA |
| INPUT VOLTAGE | HIGH | V _{IH} | - | 2.2 | - | V _{DD} V |
| | LOW | V _{IL} | - | 0 | 0.6 | V |
| OUTPUT VOLTAGE | HIGH | V _{OH} | I _{OH} =-0.205mA | 2.4 | - | V |
| | LOW | V _{OL} | I _{OL} =1.6ma | - | - | 0.4 V |
| *LED BACKLIGHT | VOLTAGE | V _f | I _f =300mA | - | 4.2 | 4.5 V |
| | CURRENT | I _f | - | - | 300 | 600 mA |
| | POWER CONSUMPTION | PD | - | - | 1260 | - mW |
| | LUMINOUS | L | I _f =300mA | 70 | - | - cd/m ² |
| | COLOR | - | - | - | - | - |

*ONLY APPLIES TO MODULES WITH BACKLIGHT

| ABSOLUTE MAXIMUM RATINGS | | | | | |
|------------------------------|----------------------------------|----------------------|-----------------|-----------------|------|
| ITEM | SYMBOL | TEST CONDITION | STANDARD VALUE | | UNIT |
| | | | MIN | MAX | |
| SUPPLY VOLTAGE FOR LOGIC | V _{DD} -V _{SS} | T _a =25°C | 4.7 | 5.3 | V |
| SUPPLY VOLTAGE FOR LCD DRIVE | V _{DD} -V _O | - | 4.2@50°C | 4.8@0°C | V |
| INPUT VOLTAGE | V _I | T _a =25°C | V _{SS} | V _{DD} | V |
| OPERATING TEMPERATURE | T _{opr} | LCM-S | 0 | 50 | °C |
| | | LCM-H | -20 | 70 | °C |
| STORAGE TEMPERATURE | T _{stg} | LCM-S | -20 | 70 | °C |
| | | LCM-H | -30 | 85 | °C |

*UNLESS OTHERWISE SPECIFIED TOLERANCE IS ±0.25mm (±0.010")

| | |
|---|------------------------------|
| REV. A | PART NUMBER LCM-X02004DXX |
| 4.75mm CHARACTER HEIGHT, 5 x 8 DOT MATRIX, 20 x 4 LCD MODULE, 1/16 DUTY, 1/5 BIAS. | |

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| | | | PAGE: 2 OF 2 |
| | | | SCALE: N/A |