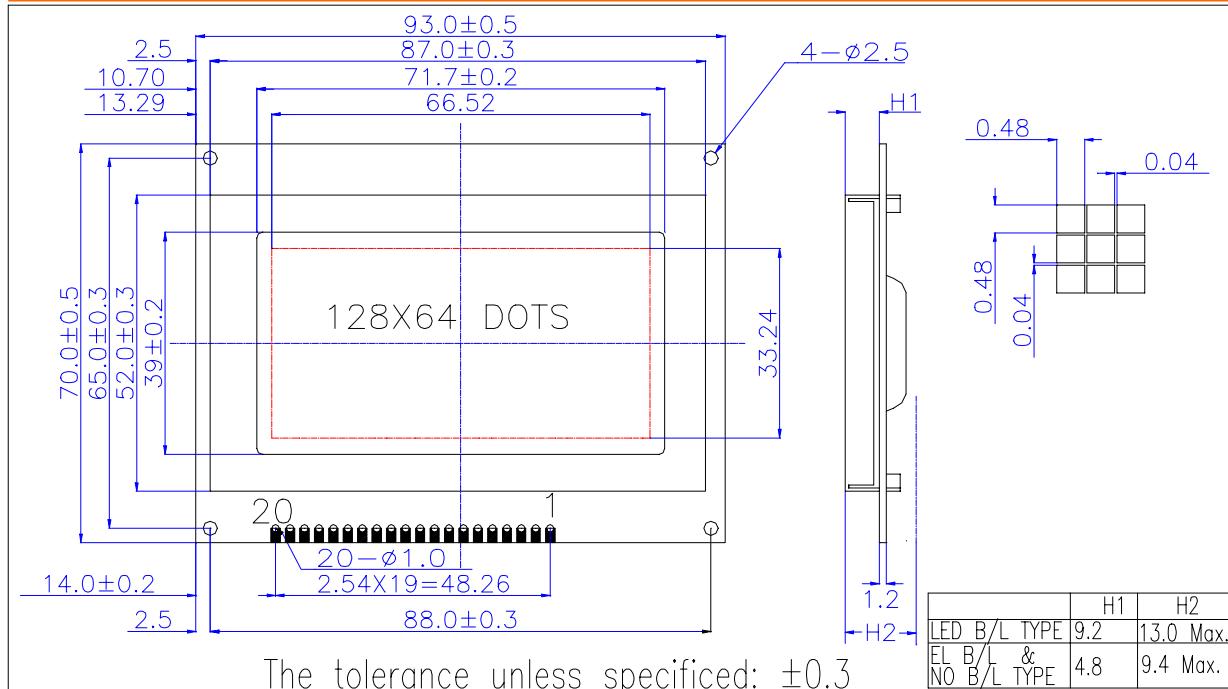


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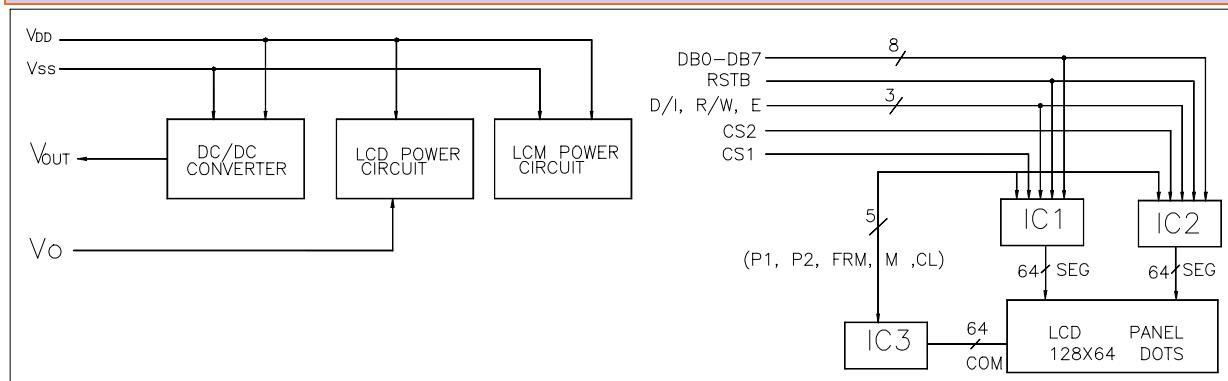
1/64 DUTY, 1/9 BIAS

( 128 × 64 Dots )

## 1. DIMENSIONAL OUTLINE



## 2. BLOCK DIAGRAM



## 3. MECHANICAL SPECIFICATIONS

| ITEM                | SPECIFICATIONS                          | UNIT | REMARK                               |
|---------------------|---|------|--------------------------------------|
| DIMENSIONAL OUTLINE | 93.0 (W) × 70.0 (H) × 9.4/14.5 MAX. (T) | mm   | *REFERENCE<br>DIMENSIONAL<br>OUTLINE |
| VIEWING AREA        | 71.7 (W) × 39.0 (H)                     | mm   |                                      |
| EFFECTIVE V/AREA    | 66.52 (W) × 33.24 (H)                   | mm   |                                      |
| NUMBER OF DOTS      | 128 (W) × 64 (H)                        | —    |                                      |
| DOT PITCH           | 0.48 (W) × 0.48 (H)                     | mm   |                                      |
| DOT SIZE            | 0.52 (W) × 0.52 (H)                     | mm   |                                      |

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1/64 DUTY, 1/9 BIAS

( 128 × 64 Dots )

## 4. ABSOLUTE MAXIMUM RATINGS

| ITEM                     | SYMBOL           | CONDITION | STANDARD VALUE |                       | UNIT |
|--------------------------|------------------|-----------|----------------|-----------------------|------|
|                          |                  |           | MIN            | MAX.                  |      |
| SUPPLY VOLTAGE FOR LOGIC | V <sub>DD</sub>  | Ta=25°C   | -0.3           | 7.0                   | V    |
| SUPPLY VOLTAGE FOR LCD   | V <sub>LCD</sub> |           | -0.3           | 17.5                  |      |
| INPUT VOLTAGE            | V <sub>I</sub>   |           | -0.3           | V <sub>DD</sub> +0.3V |      |
| OPERATING TEMPERATURE    | T <sub>OP</sub>  | -         | -20            | 70                    | °C   |
| STORAGE TEMPERATURE      | T <sub>ST</sub>  | -         | -30            | 80                    | °C   |

## 5. ELECTRICAL CHARACTERISTICS (Ta=25°C)

| ITEM                               | SYMBOL                           | CONDITION               | MIN                 | TYPE | MAX.               | UNIT |
|------------------------------------|----------------------------------|-------------------------|---------------------|------|--------------------|------|
| LOGIC CIRCUIT POWER SUPPLY VOLTAGE | V <sub>DD</sub>                  | -                       | 4.5                 | 5.0  | 5.5                | V    |
| INPUT HIGH VOLTAGE                 | V <sub>IH</sub>                  | -                       | 0.8 V <sub>DD</sub> | -    | V <sub>DD</sub>    | V    |
| INPUT LOW VOLTAGE                  | V <sub>IL</sub>                  | -                       | GND                 | -    | 0.2V <sub>DD</sub> | V    |
| OUTPUT HIGH VOLTAGE                | V <sub>OH</sub>                  | I <sub>OH</sub> =-0.2mA | 2.4                 | -    | -                  |      |
| OUTPUT LOW VOLTAGE                 | V <sub>OL</sub>                  | I <sub>OL</sub> =0.2mA  | -                   | -    | 0.4                |      |
| LOGIC CIRCUIT POWER SUPPLY CURRENT | I <sub>DD</sub>                  | V <sub>DD</sub> =5.0V   | -                   | 9.0  | 15.0               | mA   |
| OPERATING VOLTAGE FOR LCD          | V <sub>DD</sub> - V <sub>O</sub> | -                       | -                   | 12.5 | -                  | V    |

## 6. INTERFACE PIN CONNECTIONS

| ITEM   | SYMBOL          | LEVEL | FUNCTIONS  |
|--------|-----------------|-------|--|
| 1      | GND             | -     | Power supply (GND)                                 |
| 2      | V <sub>DD</sub> | -     | Power supply                                       |
| 3      | V <sub>O</sub>  | -     | Contrast adjust                                    |
| 4      | D/I             | H/L   | Register selection H: Display data; L: Instruction |
| 5      | R/W             | H/L   | Read/Write selection H: Read; L: Write             |
| 6      | E               | H     | Enable signal                                      |
| 7 – 14 | DB0 – BD7       | H/L   | Data bus   |
| 15     | CS1             | H     | Chip select signal for IC1                         |
| 16     | CS2             | H     | Chip select signal for IC2                         |
| 17     | RST             | L     | Reset signal                                       |
| 18     | Vout            | -     | Negative voltage output                            |
| 19     | LED+            | -     | Power supply for LED                               |
| 20     | LED-            | -     | Power supply for LED                               |