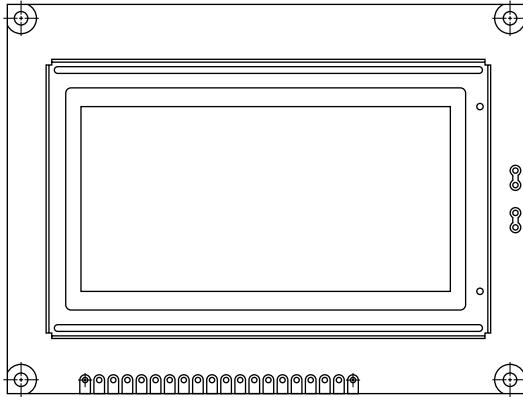


## 128 x 64 Graphic LCD



### FEATURES

- Type: Graphic
- Display format: 128 x 64 dots
- Built-in controller: Samsung KS 0107/KS 0108 (or equivalent)
- Duty cycle: 1/64
- + 5 V power supply
- N.V. built-in
- Compliant to RoHS directive 2002/95/EC


**RoHS**  
COMPLIANT

| MECHANICAL DATA  |                |      |
|------------------|----------------|------|
| ITEM             | STANDARD VALUE | UNIT |
| Module Dimension | 93.0 x 70.0    | mm   |
| Viewing Area     | 72.0 x 40.0    |      |
| Dot Size         | 0.48 x 0.48    |      |
| Dot Pitch        | 0.52 x 0.52    |      |
| Mounting Hole    | 88.0 x 65.0    |      |
| Character Size   | N/a            |      |

| ABSOLUTE MAXIMUM RATINGS |                      |                |      |          |      |
|--------------------------|----------------------|----------------|------|----------|------|
| ITEM                     | SYMBOL               | STANDARD VALUE |      |          | UNIT |
|                          |                      | MIN.           | TYP. | MAX.     |      |
| Power Supply             | $V_{DD}$ to $V_{SS}$ | 4.75           | 5.0  | 5.25     | V    |
| Input Voltage            | $V_I$                | - 0.3          | -    | $V_{DD}$ |      |

**Note**

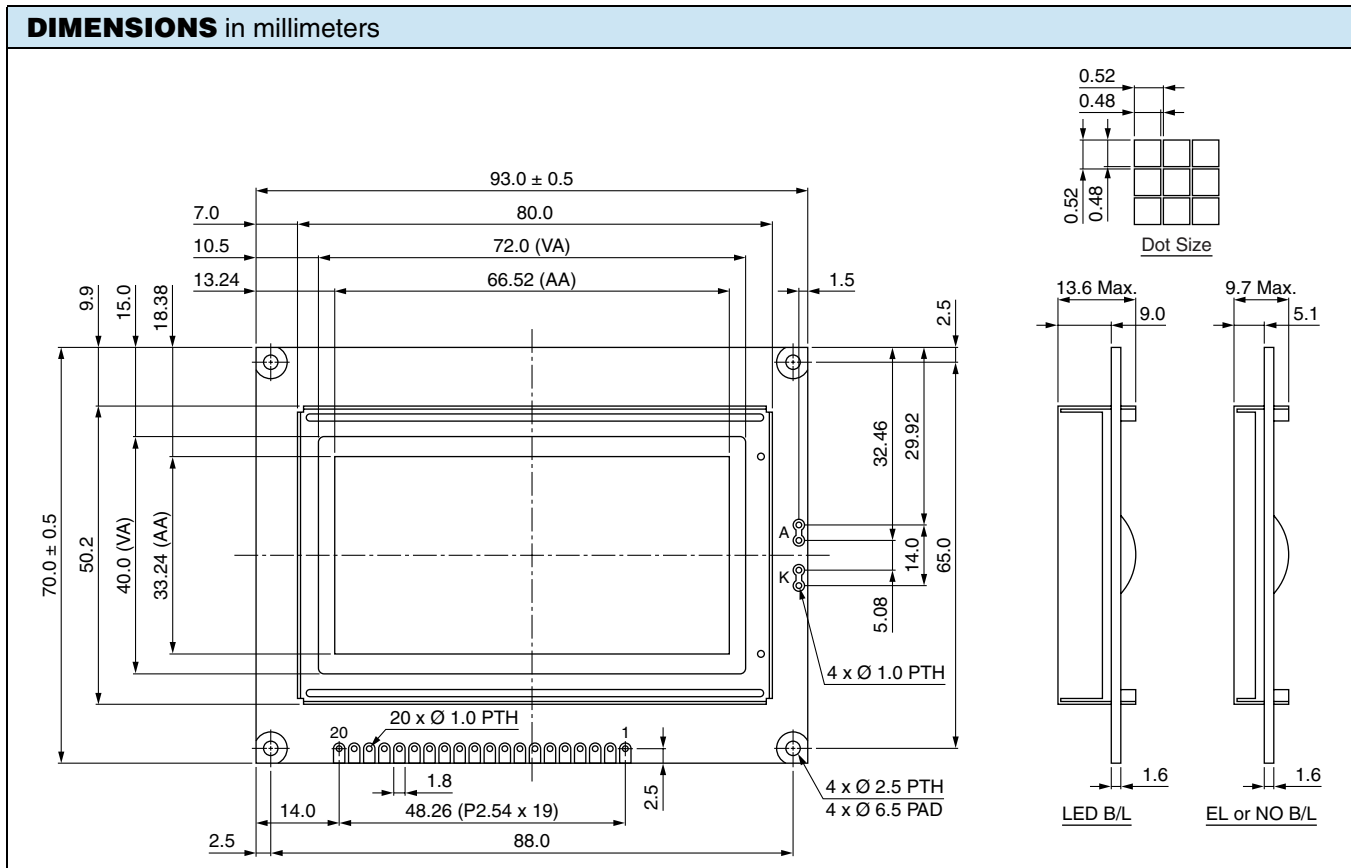
- $V_{SS} = 0$  V,  $V_{DD} = 5.0$  V

| ELECTRICAL CHARACTERISTICS   |                   |   |                |      |              |      |
|--|-------------------|---|----------------|------|--------------|------|
| ITEM   | SYMBOL            | CONDITION                               | STANDARD VALUE |      |              | UNIT |
|  |                   |   | MIN.           | TYP. | MAX.         |      |
| Input Voltage  | $V_{DD}$          | L level                                 | $0.7 V_{DD}$   | -    | $V_{DD}$     | V    |
|  | $V_{IO}$          | H level                                 | 0              | -    | $0.3 V_{DD}$ |      |
| Supply Current   | $I_{DD}$          | $V_{DD} = +5$ V                         | -              | 2.5  | 7.5          | mA   |
| Recommended LC Driving Voltage for Normal Temperature Version Module | $V_{DD}$ to $V_0$ | - 20 °C                                 | 9.9            | 10.4 | 10.9         | V    |
|  |                   | 0 °C                                    | 9.7            | 10.2 | 10.7         |      |
|  |                   | 25 °C                                   | 8.9            | 9.4  | 9.9          |      |
|  |                   | 50 °C                                   | 8.6            | 9.1  | 9.6          |      |
|  |                   | 70 °C                                   | 8.4            | 8.9  | 9.4          |      |
| LED Forward Voltage  | $V_F$             | 25 °C                                   | -              | 4.2  | 4.6          | V    |
| LED Forward Current - Array  | $I_F$             | 25 °C                                   | -              | 330  | 660          | mA   |
| LED Forward Current - Edge   |                   |   | -              | 120  | 240          |      |
| EL Power Supply Current  | $I_{EL}$          | $V_{EL} = 110$ V <sub>AC</sub> , 400 Hz | -              | -    | 5.0          | mA   |

| OPTIONS       |          |            |          |          |           |           |     |    |      |
|---------------|----------|------------|----------|----------|-----------|-----------|-----|----|------|
| PROCESS COLOR |          |            |          |          |           | BACKLIGHT |     |    |      |
| TN            | STN Gray | STN Yellow | STN Blue | FSTN B&W | STN Color | None      | LED | EL | CCFL |
|               | x        | x          | x        | x        |           | x         | x   | x  |      |

For detailed information, please see the "Product Numbering System" document.

| INTERFACE PIN FUNCTION |                  |         |  |
|------------------------|------------------|---------|--|
| PIN NO.                | SYMBOL           | PIN NO. | FUNCTION   |
| 1                      | $V_{SS}$         |         | Ground   |
| 2                      | $V_{DD}$         |         | Power supply (+ 5 V)                             |
| 3                      | $V_0$            |         | Contrast adjustment                              |
| 4                      | D/I              |         | Data/instruction                                 |
| 5                      | R/W              |         | Data read/write                                  |
| 6                      | E                |         | H → L enable signal                              |
| 7                      | DB0              |         | Data bus line                                    |
| 8                      | DB1              |         | Data bus line                                    |
| 9                      | DB2              |         | Data bus line                                    |
| 10                     | DB3              |         | Data bus line                                    |
| 11                     | DB4              |         | Data bus line                                    |
| 12                     | DB5              |         | Data bus line                                    |
| 13                     | DB6              |         | Data bus line                                    |
| 14                     | DB7              |         | Data bus line                                    |
| 15                     | CS1              |         | Chip select for IC1                              |
| 16                     | CS2              |         | Chip select for IC1                              |
| 17                     | $\overline{RST}$ |         | Reset  |
| 18                     | $V_{EE}$         |         | Negative voltage output                          |
| 19                     | A                |         | Power supply for LED (+ 4.2 V), $R_A = 0 \Omega$ |
| 20                     | K                |         | Power supply for LED (0 V)                       |





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