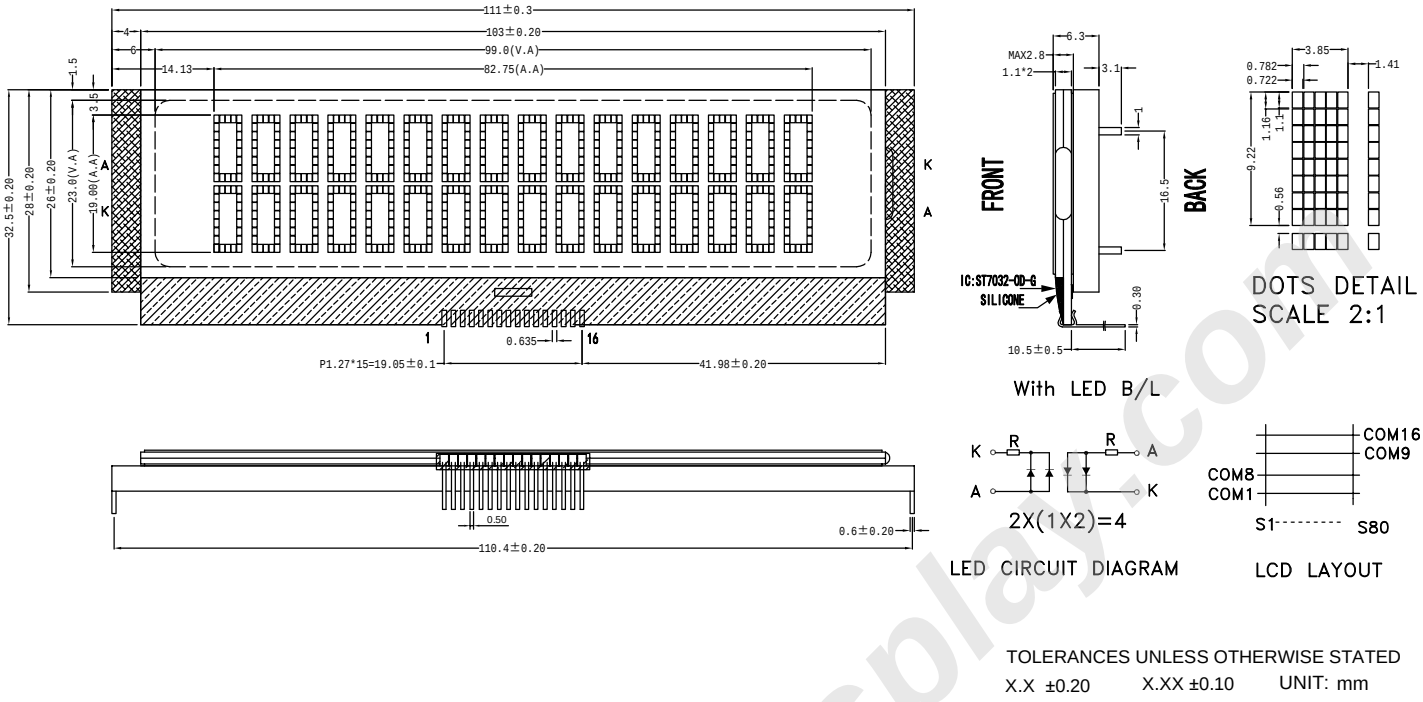
# E-SHINE DISPLAY CO., LTD. EX1602S9

## Dimension Drawing




TOLERANCES UNLESS OTHERWISE STATED
X.X ±0.20 X.XX ±0.10 UNIT: mm

## Feature:

1. 2-line x16 characters display; 5x8 dots with cursor
2. Built-in controller ST7032
3. +5V power supply
4. 1/16 Duty cycle
5. STN or FSTN Mode
6. Match all kind colors of LED back light
7. ROHS compliant

## Interface Pin Connections

| PIN NO. | Symbol | Function |
|---|---|---|
| 1 | XRESET | External reset pin. |
| 2 | RS | H/L Register select signal |
| 3 | CSB | Chip select in parallel mode and serial interface |
| 4 | R/W | H/L Read/Write signal |
| 5 | E | H/L Enable signal |
| 6 | DB0 | H/L Data bus line |
| 7 | DB1 | H/L Data bus line |
| 8 | DB2 | H/L Data bus line |
| 9 | DB3 | H/L Data bus line |
| 10 | DB4 | H/L Data bus line |
| 11 | DB5 | H/L Data bus line |
| 12 | DB6 | H/L Data bus line |
| 13 | DB7 | H/L Data bus line |
| 14 | VSS | GND |
| 15 | VDD | +5V or +3.3V |
| 16 | V0 | Contrast adjustment |

## Mechanical Data

| Item | Standard | Unit |
|---|---|---|
| Module dimension | 111.0 x 32.5 | mm |
| Viewing area | 99.0 x 23.0 | mm |
| Character size | 3.85 x 9.22 | mm |
| Dots size | 0.722 x 1.1 | mm |

## Absolute Maximum Rating

| Item | Symbol | Standard | | | Unit |
|---|---|---|---|---|---|
| | | Min | Typ | Max | |
| Power supply | VDD-VSS | -0.3 | --- | 7.0 | V |
| Input voltage | VI | -0.3 | --- | VDD+0.3 | |

## Electronical Characteristics

| Item | Symbol | Condition | Standard | | | Unit |
|---|---|---|---|---|---|---|
| | | | Min | Typ | Max | |
| Input voltage | VDD | +5.0V | 4.5 | 5.0 | 5.5 | V |
| | | +3.3V | 2.7 | 3.3 | 4.5 | |
| Supply current | $I_{DD}$ | VDD=5V | ---- | 160 | 230 | uA |
| Recommended LCD driving voltage for normal temp version module | VDD-V0 (VDD=5V) | -20°C | 4.9 | 5.2 | 5.5 | V |
| | | 0°C | 4.5 | 4.8 | 5.1 | |
| | | 25°C | 4.1 | 4.5 | 4.8 | |
| | | 50°C | 3.8 | 5.0 | 4.4 | |
| | | 70°C | 3.5 | 4.2 | 5.5 | |
| LED forward voltage | VF | 25°C | ---- | 3.0 | 3.3 | V |
| LED forward current | IF | 25°C Edge | ---- | 60 | 80 | mA |

## Display Character Address Code:

| Display position | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DDRAM address | 00 | 01 | 02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0FH |
| DDRAM address | 40 | 41 | 42 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 4FH |

www.eshinedisplay.com