



**WINSTAR Display Co.,Ltd.**  
**華凌光電股份有限公司**

## SPECIFICATION

**MODULE NO.: WG12864K**

### General Specification

| Item             | Dimension                 | Unit |
|------------------|---------------------------|------|
| Number of dots   | 128 x 64                  | —    |
| Module dimension | 113.0 x 53.0 x 13.6 (MAX) | mm   |
| View area        | 72.0 x 40.0               | mm   |
| Active area      | 66.52 x 33.24             | mm   |
| Dot size         | 0.48 x 0.48               | mm   |
| Dot pitch        | 0.52 x 0.52               | mm   |
| Duty             | 1/64                      |      |
| Backlight Type   | LED                       |      |
| IC               | NT7107, NT7108            |      |
| Interface        | 68 series                 |      |

# Absolute Maximum Ratings

| Item                     | Symbol          | Min          | Typ | Max          | Unit |
|--------------------------|-----------------|--------------|-----|--------------|------|
| Operating Temperature    | $T_{OP}$        | -20          | —   | +70          | °C   |
| Storage Temperature      | $T_{ST}$        | -30          | —   | +80          | °C   |
| Supply Voltage For Logic | $V_{DD}-V_{SS}$ | -0.3         | —   | 7.0          | V    |
| Driver Supply Voltage    | $V_{LCD}$       | $V_{EE}-0.3$ | —   | $V_{DD}+0.3$ | V    |

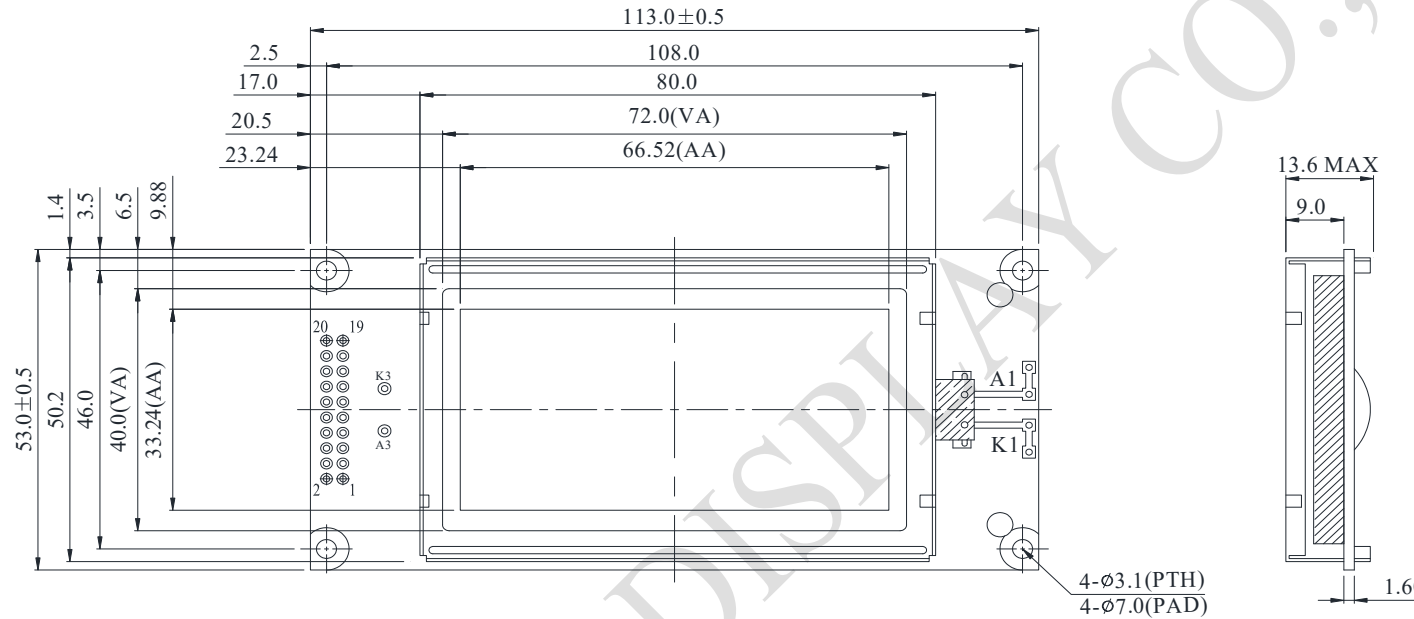
# Electrical Characteristics

| Item                     | Symbol          | Min                | Typ         | Max  | Unit     | Item |
|--------------------------|-----------------|--------------------|-------------|------|----------|------|
| Supply Voltage For Logic | $V_{DD}-V_{SS}$ | —                  | 4.5         | 5.0  | 5.5      | V    |
| Supply Voltage For LCD   | $V_{DD}-V_O$    | $T_a=-20^{\circ}C$ | —           | —    | 10.8     | V    |
|                          |                 | $T_a=25^{\circ}C$  | 8.5         | 8.75 | 9.0      | V    |
| *Note                    |                 | $T_a=70^{\circ}C$  | 7.5         | —    | —        | V    |
| Input High Volt.         | $V_{IH}$        | —                  | $0.7V_{DD}$ | —    | $V_{DD}$ | V    |
| Input Low Volt.          | $V_{IL}$        | —                  | 0           | —    | 0.8      | V    |
| Output High Volt.        | $V_{OH}$        | —                  | 2.4         | —    | —        | V    |
| Output Low Volt.         | $V_{OL}$        | —                  | —           | —    | 0.4      | V    |
| Supply Current           | $I_{DD}$        | $V_{DD}=5.0V$      | —           | 8.28 | —        | mA   |

# Interface Pin Function

| Pin No. | Symbol          | Level      | Description                                  |
|---------|-----------------|------------|--|
| 1       | V <sub>SS</sub> | 0V         | Ground                                       |
| 2       | V <sub>DD</sub> | 5.0V       | Supply voltage for logic                     |
| 3       | V <sub>o</sub>  | (Variable) | Operating voltage for LCD                    |
| 4       | D/I             | H/L        | H: Data , L : Instruction                    |
| 5       | R/W             | H/L        | H: Read (MPU←Module) , L: Write (MPU→Module) |
| 6       | E               | H          | Enable signal                                |
| 7       | DB0             | H/L        | Data bus line                                |
| 8       | DB1             | H/L        | Data bus line                                |
| 9       | DB2             | H/L        | Data bus line                                |
| 10      | DB3             | H/L        | Data bus line                                |
| 11      | DB4             | H/L        | Data bus line                                |
| 12      | DB5             | H/L        | Data bus line                                |
| 13      | DB6             | H/L        | Data bus line                                |
| 14      | DB7             | H/L        | Data bus line                                |
| 15      | CS1             | H          | Select Column 1~ Column 64                   |
| 16      | CS2             | H          | Select Column 65~ Column 128                 |
| 17      | /RES            | L          | Reset signal                                 |
| 18      | Vout            | —          | Negative Voltage output                      |
| 19      | A               | —          | Power Supply for LED backlight ( + )         |
| 20      | K               | —          | Power Supply for LED backlight ( - )         |

# Contour Drawing & Block Diagram



| PIN NO. | SYMBOL           |
|---------|------------------|
| 1       | V <sub>ss</sub>  |
| 2       | V <sub>dd</sub>  |
| 3       | V <sub>o</sub>   |
| 4       | D/I              |
| 5       | R/W              |
| 6       | E                |
| 7       | DB0              |
| 8       | DB1              |
| 9       | DB2              |
| 10      | DB3              |
| 11      | DB4              |
| 12      | DB5              |
| 13      | DB6              |
| 14      | DB7              |
| 15      | CS1              |
| 16      | CS2              |
| 17      | RES              |
| 18      | V <sub>out</sub> |
| 19      | A                |
| 20      | K                |

The non-specified tolerance of dimension is ±0.3mm.