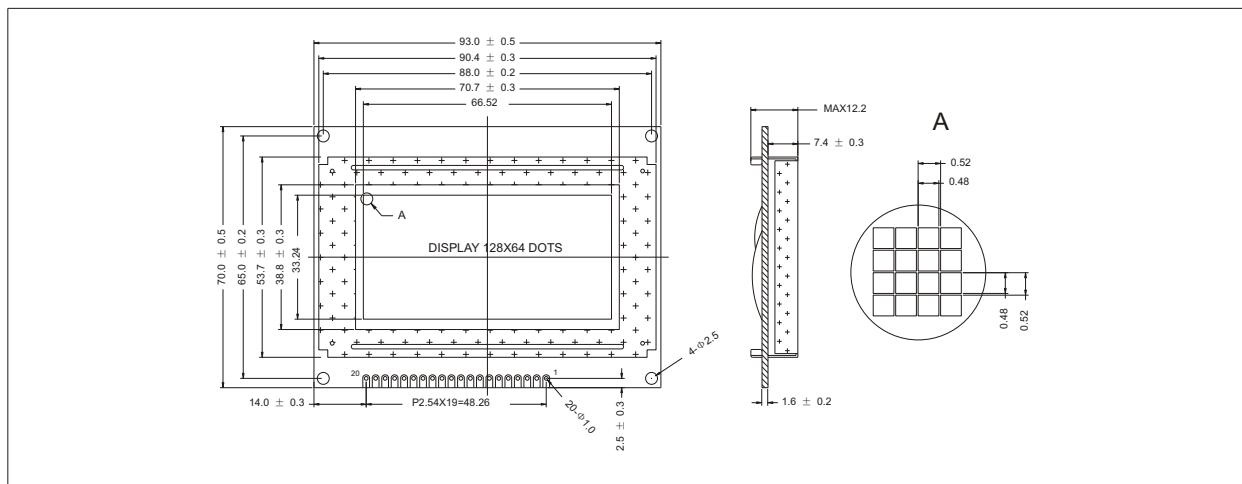


# YMS12864-01

128 x 64 DOTS  
1/64 DUTY, 1/9 BIAS

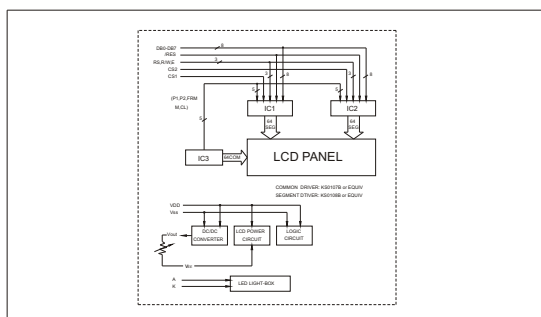
## 1 EXTERNAL DIMENSION AND DISPLAY PATTERN



## 2 MECHANICAL DATA

| ITEM                | SPECIFICATION      | UNIT |
|---------------------|--------------------|------|
| Module Size(WXHT)   | 93.0 x 70.0 x 12.2 | mm   |
| Viewing Area(WXH)   | 70.7 x 38.8        | mm   |
| Number of Dots(WXH) | 128 x 64           | dots |
| Dot Pitch(WXH)      | 0.52 x 0.52        | mm   |
| Dot Size(WXH)       | 0.48 x 0.48        | mm   |

## 3 BLOCK DIAGRAM



## 4 PIN CONFIGURATION

| PIN | SYMBOL           | LEVEL | SIGNAL DESCRIPTION                      |
|-----|------------------|-------|-----------------------------------------|
| 1   | V <sub>SS</sub>  | 0V    | Ground                                  |
| 2   | V <sub>DD</sub>  | +5V   | Supply Voltage for Logic And LCD        |
| 3   | V <sub>EE</sub>  | -     | Operating Voltage for LCD (Variable)    |
| 4   | RS               | H/L   | H:Data, L:Instruction Code              |
| 5   | R/W              | H/L   | H:Read(Module-MPU), L:Write(MPU-Module) |
| 6   | E                | H,H-L | Chip Enable Signal                      |
| 7   | DB0              | H/L   | Data Bit 0                              |
| 8   | DB1              | H/L   | Data Bit 1                              |
| 9   | DB2              | H/L   | Data Bit 2                              |
| 10  | DB3              | H/L   | Data Bit 3                              |
| 11  | DB4              | H/L   | Data Bit 4                              |
| 12  | DB5              | H/L   | Data Bit 5                              |
| 13  | DB6              | H/L   | Data Bit 6                              |
| 14  | DB7              | H/L   | Data Bit 7                              |
| 15  | CS1              | H/L   | Chip Select Signal for IC 1             |
| 16  | CS2              | H/L   | Chip Select Signal for IC 2             |
| 17  | /RES             | H,H-L | Reset Signal                            |
| 18  | V <sub>out</sub> | -     | Power Supply Voltage for LCD            |
| 19  | A                | -     | Anode of LED Unit                       |
| 20  | K                | -     | Cathode of LED Unit                     |

## 5 ABSOLUTE MAXIMUM RATINGS(Ta=25 °C )

| PARAMETER             | SYMBOL                                              | MIN. | MAX.                 | UNIT |
|-----------------------|-----------------------------------------------------|------|----------------------|------|
| Supply Voltage Logic  | V <sub>DD</sub> (V <sub>DD</sub> -V <sub>SS</sub> ) | -0.3 | 7.0                  | V    |
| Supply Voltage Driver | V <sub>DD</sub> -V <sub>EE</sub>                    | -0.3 | 18.0                 | V    |
| Input Voltage         | V <sub>IN</sub>                                     | -0.3 | V <sub>DD</sub> +0.3 | V    |

|                 |            |
|-----------------|------------|
| Operating Temp. | See page 9 |
| Storage Temp.   |            |

## 6 ELECTRICAL CHARACTERISTICS(Ta=25 °C )

| ITEM                     | SYMBOL                           | CONDITION                       | SPEC. VALUE               |      |                     | UNIT |
|--------------------------|----------------------------------|---------------------------------|---------------------------|------|---------------------|------|
|                          |                                  |                                 | MIN.                      | TYP. | MAX.                |      |
| Supply Voltage (Logic)   | V <sub>DD</sub> -V <sub>SS</sub> |                                 | 4.5                       | 5.0  | 5.5                 | V    |
| Supply Current (Logic)   | I <sub>DD</sub>                  | V <sub>DD</sub> =5V             | -                         | 3.0  | 4.5                 | mA   |
| Input Voltage            | "HIGH"                           | V <sub>H</sub>                  | 0.7 V <sub>DD</sub>       | -    | V <sub>DD</sub>     | V    |
|                          | "LOW"                            | V <sub>L</sub>                  | 0                         | -    | 0.3 V <sub>DD</sub> | V    |
| Output Voltage           | "HIGH"                           | V <sub>OH</sub>                 | I <sub>OH</sub> =-0.205mA | 2.4  | -                   | V    |
|                          | "LOW"                            | V <sub>OL</sub>                 | I <sub>OL</sub> =1.6mA    | -    | 0.4                 | V    |
| LCD Operating Voltage    | V <sub>DD</sub> -V <sub>EE</sub> | V <sub>DD</sub> =5V<br>Ta=25 °C | -                         | 13.5 | -                   | V    |
| Supply Current LCD Drive | I <sub>EE</sub>                  |                                 | -                         | 3.0  | 4.5                 | mA   |

Note(1): ( ) Value is high Reliability type.  
Note(2): Electro-Optical Characteristics: See page 6.

## 7 BACKLIGHT CHARACTERISTICS(Ta=25 °C )

| ITEM              | SYMBOL           | CONDITION | MIN. | TYP. | MAX. | UNIT              |
|-------------------|------------------|-----------|------|------|------|-------------------|
| Supply Voltage    | V <sub>LED</sub> | -         | 3.90 | 4.15 | 4.30 | V                 |
| Power Consumption | P <sub>LED</sub> | IF=180mA  | -    | 738  | -    | mW                |
| Luminous          | I <sub>v</sub>   | IF=180mA  | 51   | 69   | -    | cd/m <sup>2</sup> |

## 8 INTERFACE TIMING CHARACTERISTICS

| PARAMETER             | SYMBOL             | MIN. | MAX. | UNIT |
|-----------------------|--------------------|------|------|------|
| E Cycle Time          | t <sub>cycle</sub> | 1000 | -    | ms   |
| E High Level Width    | t <sub>EH</sub>    | 450  | -    | ms   |
| E Low Level Width     | t <sub>EL</sub>    | 450  | -    | ms   |
| E Rise Time           | t <sub>r</sub>     | -    | 25   | ms   |
| E Fall Time           | t <sub>f</sub>     | -    | 25   | ms   |
| Address Setup Time    | t <sub>AS</sub>    | 140  | -    | ms   |
| Address Hold Time     | t <sub>AH</sub>    | 10   | -    | ms   |
| Data Setup Time       | t <sub>DS</sub>    | 320  | -    | ms   |
| Data Delay Time       | t <sub>DD</sub>    | 10   | -    | ms   |
| Data Hold Time(Write) | t <sub>DH</sub>    | 25   | -    | ms   |

