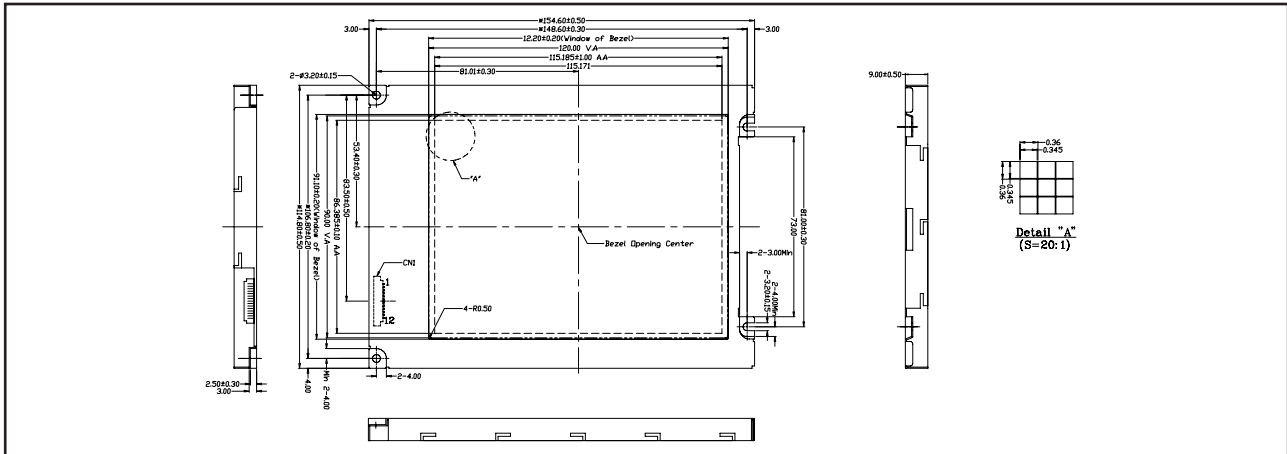


## STANDARD TAB MODULES YMS 320240-68

320 X 240 DOTS, 1/240 DUTY, 1/13 BIAS

### EXTERNAL DIMENSION AND DISPLAY PATTERN



### MECHANICAL DATA

| ITEM                    | SPECIFICATION       | UNIT |
|-------------------------|---------------------|------|
| Module Size (W x H x T) | 154.6 x 114.8 x 9.0 | mm   |
| Viewing Area (W x H)    | 120.0 x 90.0        | mm   |
| Number of Dots          | 320 x 240           | dots |
| Dot Pitch (W x H)       | 0.36 x 0.36         | mm   |
| Dot Size (W x H)        | 0.345 x 0.345       | mm   |

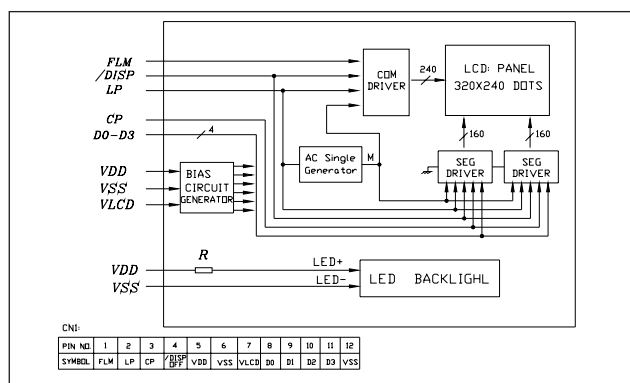
### ABSOLUTE MAXIMUM RATINGS

| PARAMETER  | SYMBOL   | MIN.       | MAX.           | UNIT |
|--|----------|------------|----------------|------|
| Supply Voltage 1   | $V_{DD}$ | -0.3       | 7.0            | V    |
| Supply Voltage 2: $V_{0L}$ , $V_{0R}$  | $V_0$    | -0.3       | 40.0           | V    |
| Supply Voltage 2: $V_{12L}$ , $V_{12R}$  | $V_{12}$ | -0.3       | $V_0 + 0.3$    | V    |
| Supply Voltage 2: $V_{34L}$ , $V_{34R}$  | $V_{34}$ | -0.3       | $V_0 + 0.3$    | V    |
| Supply Voltage 2: $V_{5L}$ , $V_{5R}$  | $V_5$    | -0.3       | $V_0 + 0.3$    | V    |
| Input Voltage: $D_{i1}$ , $D_{i7}$ , XCL, LPFR, MD, S/C, $E_{i01}$ , $E_{i02}$ , /DISPOFF, TEST <sub>1</sub> , TEST <sub>2</sub> | $V_i$    | -0.3       | $V_{DD} + 0.3$ | V    |
| Operating Temperature  |          | See page 8 |                |      |
| Storage Temperature  |          |            |                |      |

### PIN CONFIGURATION

| PIN | SYMBOL    | SIGNAL DESCRIPTION         |
|-----|-----------|----------------------------|
| 1   | FLM       | Scan Start-Up Signal       |
| 2   | LP        | Input Data Latch Signal    |
| 3   | CP        | Data Input Clock Signal    |
| 4   | /DOSPOFF  | Display Control Signal     |
| 5   | $V_{DD}$  | Power Supply for Logic     |
| 6   | $V_{SS}$  | Ground                     |
| 7   | $V_{LCD}$ | Power Supply for LCD Drive |
| 8   | $D_0$     | Display Data Signal        |
| 9   | $D_1$     | Display Data Signal        |
| 10  | $D_2$     | Display Data Signal        |
| 11  | $D_3$     | Display Data Signal        |
| 12  | $V_{SS}$  | Ground                     |

### BLOCK DIAGRAM



### BACKLIGHTING CHARACTERISTICS, $T_a = 25^\circ\text{C}$ , LED

| ITEM                    | SYMBOL       | CONDITION                        | SPEC. VALUE |      |        | UNIT              |
|-------------------------|--------------|----------------------------------|-------------|------|--------|-------------------|
|                         |              |                                  | MIN.        | TYP. | MAX.   |                   |
| Forward Voltage         | $V_f$        | $I_f = 300\text{mA}$             | 2.9         | 3.2  | 3.5    | V                 |
| Forward Current         | $I_f$        |                                  |             | 300  | 375    | mA                |
| Power Dissipation       | $P_d$        | $I_f = 300\text{mA}$             |             |      | 1.3125 | W                 |
| Reverse Voltage         | $V_r$        |                                  |             |      | 5.0    | V                 |
| Reverse Current         | $I_r$        | $V_r = 5.0\text{V}$              |             |      | 1.5    | mA                |
| Luminous Intensity      | $L_v$        | $I_f = 300\text{mA}$             | 1000        |      |        | cd/m <sup>2</sup> |
| Luminous Uniformity     | $\Delta L_v$ | $I_f = 300\text{mA}$             | 70          |      |        | %                 |
| Chromaticity Coordinate | X            | $I_f = 15\text{mA}$<br>each chip | 0.27        |      | 0.32   |                   |
|                         | Y            |                                  | 0.27        |      | 0.32   |                   |
|                         |              |                                  |             |      |        |                   |

Note (1): Operating Temperature Range  $T_{opr}$   $-20^\circ\text{C}$  to  $+70^\circ\text{C}$ ; Storage Temperature Range  $T_{stg}$   $-30^\circ\text{C}$  to  $+80^\circ\text{C}$ . Color: White. A Backlight is a kind of current device, it must connect a resistance for limiting current or it will be damaged.

### ELECTRICAL CHARACTERISTICS, $T_a = 25^\circ\text{C}$

| ITEM                   | SYMBOL                | CONDITION                 | SPEC. VALUE   |      |      | UNIT |
|------------------------|-----------------------|---------------------------|---------------|------|------|------|
|                        |                       |                           | MIN.          | TYP. | MAX. |      |
| Supply Voltage (Logic) | $V_{DD} - V_{SS}$     |                           |               | 5.0  |      | V    |
| LCD Operating Voltage  | $V_{LCD}$             | $T_a = +25^\circ\text{C}$ |               | 20.0 |      | V    |
| Response Time          | $T_{ON}$<br>$T_{OFF}$ |                           |               | 220  |      | ms   |
|                        |                       |                           |               | 164  |      |      |
| Contrast               | CR                    |                           | 2.0           |      |      |      |
| Viewing Angle          | 12H                   | $\theta_1$                | CR $\geq 2.0$ | 42   | Deg. |      |
|                        | 6H                    | $\theta_2$                |               | 55   |      |      |
|                        | 3H                    | $\theta_3$                |               | 50   |      |      |
|                        | 9H                    | $\theta_4$                |               | 50   |      |      |

Note (2): Value is high reliability type.

Note (3): Electro-Optical Characteristics: See page 5.

