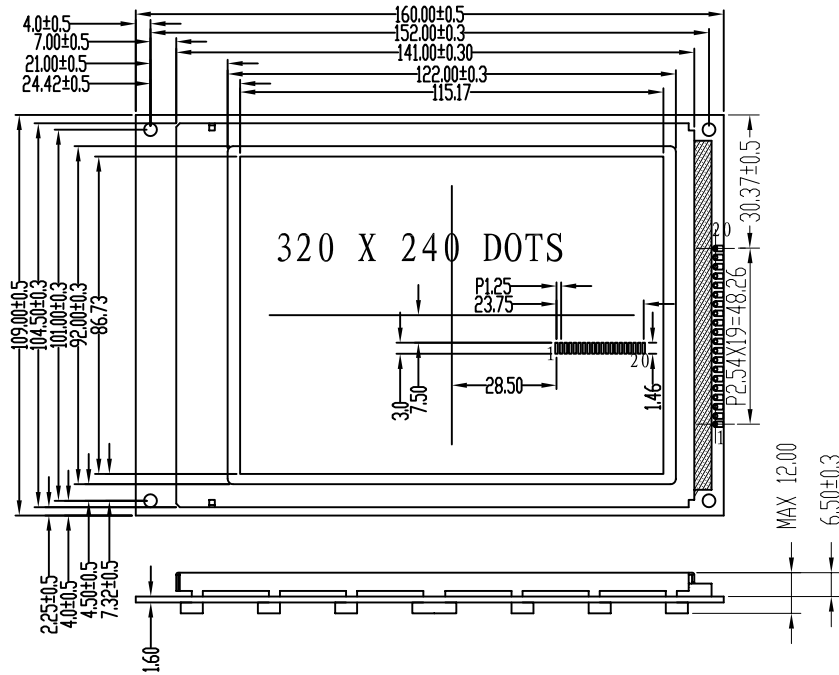
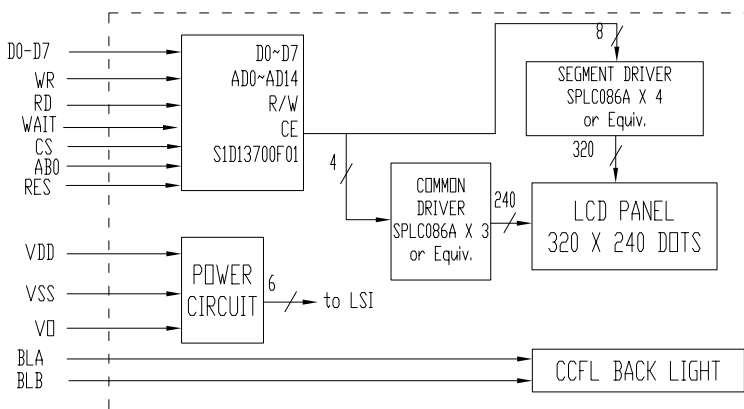


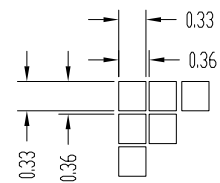
OUTLINE DIMENSION



BLOCK DIAGRAM



DISPLAY PATTERN



MECHANICAL SPECIFICATION

| Item         | Dimensions(W) X (H) | Unit |
|--------------|---------------------|------|
| Overall Size | 167 X 109           | MM   |
| View Area    | 122 X 92.0          | MM   |
| Dot Size     | 0.33 X 0.33         | MM   |
| Dot Pitch    | 0.36 X 0.36         | MM   |

PIN ASSIGNMENT

| CN1 AND CN2 |       |                                   |
|-------------|-------|-----------------------------------|
| 1           | VSS   | Ground                            |
| 2           | VDD   | Supply voltage for LOGIC          |
| 3           | VEE   | Supply voltage for LCD            |
| 4           | VD    | Supply cathode voltage for module |
| 5           | /WR   | Write signal                      |
| 6           | /RD   | Read signal                       |
| 7           | /CS   | Chip selected                     |
| 8           | WAIT  | Wait output MPU interface         |
| 9           | /RES  | Reset signal                      |
| 10          | ABO   | Command or parameter              |
| 11~18       | D0~D7 | Data bit 0~7                      |
| 19          | BLA   | Supply voltage for LED            |
| 20          | BLB   | Supply voltage for LED            |

ABSOLUTE MAXIMUM RATING

| Item                       | Symbol | Condition | Min. | Max.    | Unit |
|----------------------------|--------|-----------|------|---------|------|
| Supply for logic voltage   | VDD    | 25°C      | -0.3 | 7.0     | V    |
| LCD driving supply voltage | VDD-VD | 25°C      | -0.3 | 30      | V    |
| Input voltage              | VI     | 25°C      | -0.3 | VDD+0.3 | V    |

ELECTRICAL CHARACTERISTICS

| Item                      | Symbol | Condition | Min.   | Typical | Max.   | Unit |
|---------------------------|--------|-----------|--------|---------|--------|------|
| Supply voltage for logic  | VDD    | ---       | 2.7    | 5.0     | 5.5    | V    |
| Supply current for logic  | IDD    | ---       | ---    | 16.4    | 29     | mA   |
| Operation voltage for LCD | VDD-VD | 0°C       | 22.0   | 23.2    | 24.4   | V    |
|                           |        | 25°C      | 21.6   | 22.3    | 23.0   | V    |
|                           |        | 50°C      | 20.2   | 21.4    | 22.6   | V    |
| Input voltage "H" level   | VIH    | ---       | 0.7VDD | ---     | VDD    | V    |
| Input voltage "L" level   | VIL    | ---       | 0      | ---     | 0.3VDD | V    |
| Supply voltage for LED    | VF     | ---       | ---    | 4.0     | 4.2    | V    |
| Supply current for LED    | IF     | VF=4.0V   | ---    | 160     | ---    | mA   |

REMARKS:

- LCD options: stn, tn, fstn.
- Back light Options: EL Back light feature, other Specs not available on catalog is under request.