



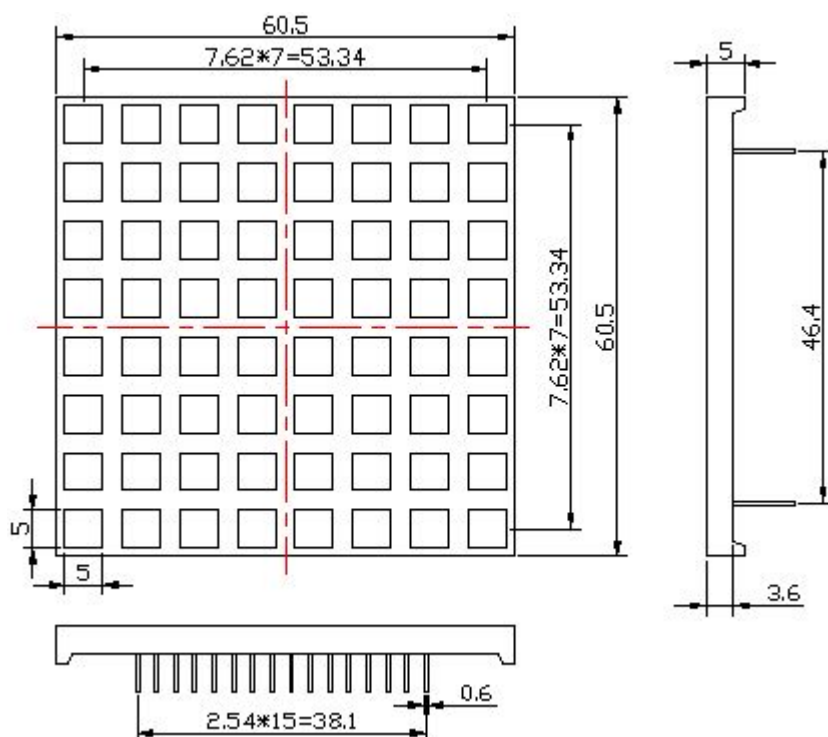
■ Features:

1. 8×8 dot matrix display.
2. Dot Size: 5.0mm.
3. Low power consumption.
4. Lens Color : black face and white segments.
5. Categorized for luminous intensity.
6. RoHS compliant

■ Device Selection Guide :

| Model No. | Description | Chip | |
|----------------|--------------|----------|----------------|
| | | Material | Emitting Color |
| HL-M2388BRGB-1 | Common Anode | AlGaInP | Red |
| | | InGaN | Green |
| | | InGaN | Blue |

■ Mechanical Dimensions:

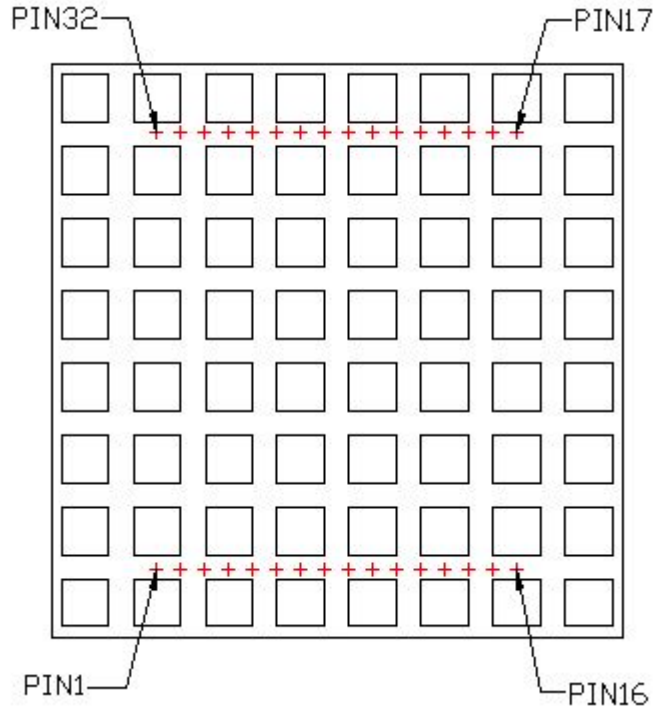


Notes:

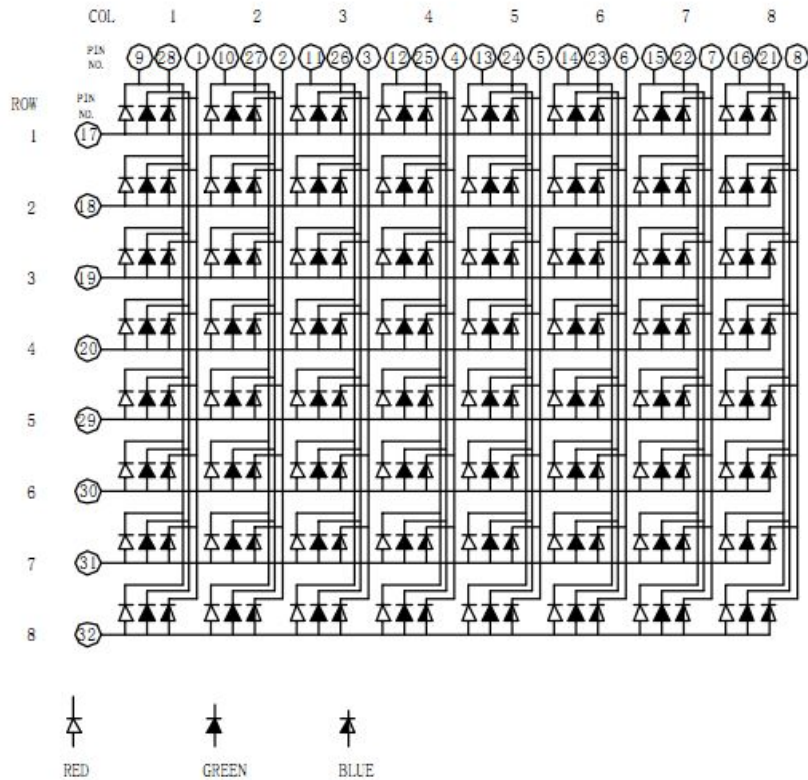
- 1.All dimensions are in millimeters(inches).
- 2.Tolerance is $\pm 0.25\text{mm}(.01\text{'})$ unless otherwise specified.
- 3.Specifications are subject to change without notice.



■ All Light On Segments Feature & Pin Position:



■ Internal Circuit Diagrams:





■ Absolute Maximum Ratings (Ta=25°C)

| Parameter | Symbol | Rating | Unit |
|-------------------------|-----------------|-----------|------|
| Pulse Forward Current*1 | Pd | 60 | mW |
| Forward Current | I _F | 30 | mA |
| Peak Forward Current | I _{FP} | 80 | mA |
| Reverse Volage | V _R | 5 | V |
| Operating Temperature | Topr | -40~ +105 | °C |
| Storage Temperature | Tstg | -40~ +105 | °C |
| Reflow Temperature*2 | Tsol | 260 | °C |
| Electrostatic Discharge | ESD | 2000 | V |

Note:

*1: I_{Fp} Conditions :Pulse Width ≤10msec.and Duty cycle≤1/10.

*2: Reflow time≤5 seconds.

■ Electrical and optical characteristics (Ta=25°C)

| Parameter | Symbol | Color | Condition | Min. | Typ. | Max. | Unit |
|----------------------------|----------------|-------|----------------------|------|------|------|------|
| Forward Voltage | V _f | Red | I _F =20mA | - | 2.0 | 2.5 | V |
| | | Green | I _F =20mA | - | 3.0 | 3.5 | |
| | | Blue | I _F =20mA | - | 3.0 | 3.5 | |
| Luminous Intensity/segment | I _v | Red | I _F =20mA | - | 80 | 100 | mcd |
| | | Green | I _F =20mA | - | 200 | 250 | |
| | | Blue | I _F =20mA | - | 70 | 110 | |
| Dominant Wave Length | λ _d | Red | I _F =20mA | 620 | - | 630 | nm |
| | | Green | I _F =20mA | 515 | - | 525 | |
| | | Blue | I _F =20mA | 460 | - | 470 | |
| Reverse Current | I _R | All | V _R =5V | - | - | 10 | μA |



■ Reliability test items:

| No. | Test Item | Test Condition | Time/Cycle | Judgment Criteria | Number Damaged |
|-----|-------------------------|-----------------------------------|------------|----------------------------|----------------|
| 1 | Reflow Soldering | TEMP: 260°C± 5°C MAX: 5sec | 6 Min | Iv≤Ivt*0.5 Vf≥U Vf≤L | 0/30 |
| 2 | Thermal shock | H: +100°C 5min L: -40°C 5min | 300 Cycles | | 0/30 |
| 3 | High temp storage | 100°C | 1000 Hrs | | 0/30 |
| 4 | Low temp storage | -40°C | 1000 Hrs | | 0/30 |
| 5 | Temperature cycle | H: +100°C 15min L: -40°C 15min | 300 Cycles | | 0/30 |
| 6 | High temp high humidity | 85°C,85%RH | 1000 Hrs | | 0/30 |

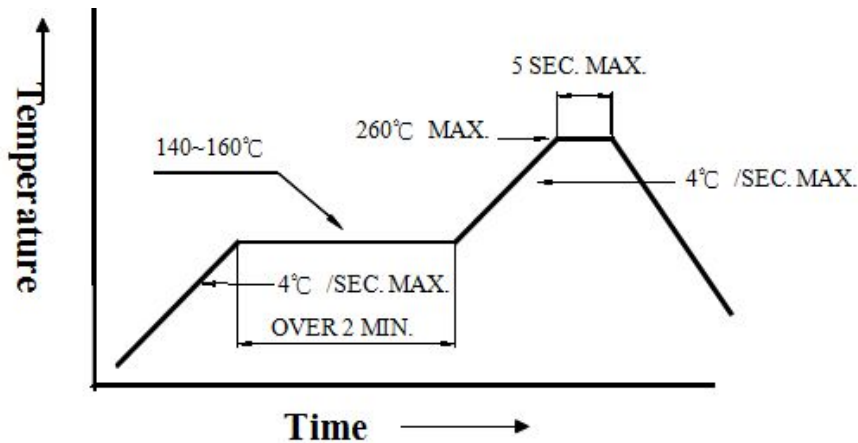
Note: Ivt: The test Iv value of the chip before the reliability test.

IV: The test value of the chip that has completed the reliability test.

U: Upper Specification Limit.

L: Lower Specification Limit.

■ IR Reflow temperature/Time:



■ Soldering Iron:

Ferrochromium soldering: power keep no more than 40W, tip temperature should not pass 260°C, soldering Time Within 3 second.