

**ATTENTION**  
OBSERVE PRECAUTIONS  
FOR HANDLING  
ELECTROSTATIC  
DISCHARGE  
SENSITIVE  
DEVICES

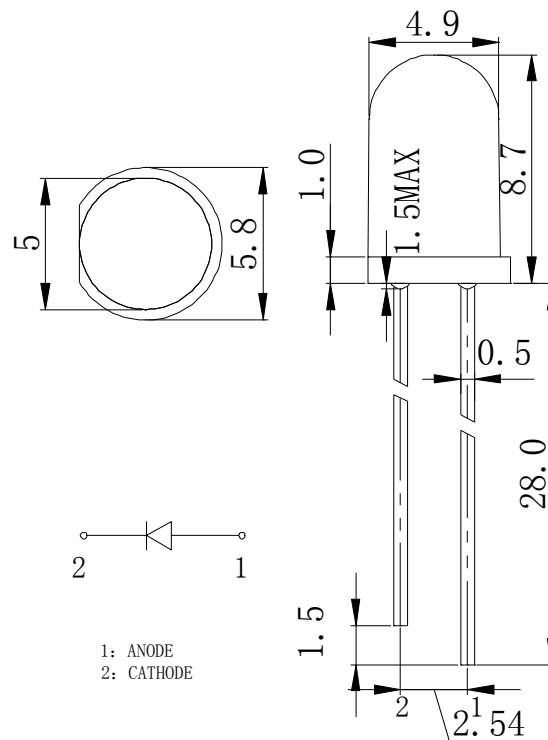
HL-503S42FC



### Features

- $\phi$  5 LAMP LED
- LOW POWER CONSUMPTION.
- CABINED VIEWING ANGLE.
- IDEAL FOR BACKLIGHT AND INDICATOR.
- PACKAGE: 1000PCS / BAG.

### Package Dimensions



### Description

This devices are made with GaAs..

| Tolerance<br>Grade | Dimension Tolerance (UNIT:mm) |             |           |           |
|--------------------|-------------------------------|-------------|-----------|-----------|
|                    | 0.5~3                         | 3~6         | 6~30      | 30~120    |
|                    | $\pm 0.1$                     | $\pm 0.2$   | $\pm 0.3$ | $\pm 0.5$ |
| Chip               |                               | Lens Color  |           |           |
| Material           | Emitting Color                | Water Clear |           |           |
| GaAs.              | Red                           |             |           |           |

**■ Absolute Maximum Rating**

| Item                         | Symbol    | Value                    | Unit |
|------------------------------|-----------|--------------------------|------|
| Forward Current              | $I_F$     | 20                       | mA   |
| Peak Forward Current*        | $I_{FP}$  | 100                      | mA   |
| Reverse Voltage              | $V_R$     | 5                        | V    |
| Power Dissipation            | $P_D$     | 80                       | mW   |
| Electrostatic discharge(HBM) | $E_{SD}$  | 6                        | KV   |
| Operation Temperature        | $T_{opr}$ | -30~+80                  | °C   |
| Storage Temperature          | $T_{stg}$ | -30~+80                  | °C   |
| Lead Soldering Temperature*  | $T_{sol}$ | Max. 260°C for 5sec Max. |      |

\* $I_{FP}$  Conditions: Pulse Width  $\leq 10\text{msec}$

\* $T_{sol}$  Conditions: 3mm from the base of the epoxy bulb

**■ Typical Optical/ Electrical Characteristics  $T_a=25^\circ\text{C}$** 

■ The percentage of ESD approved is 90%

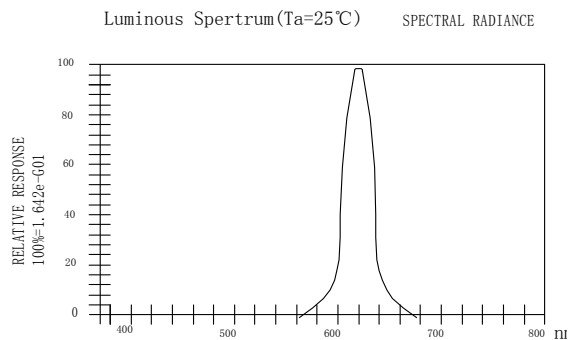
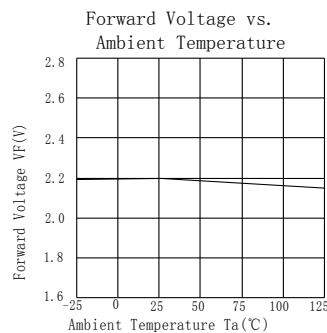
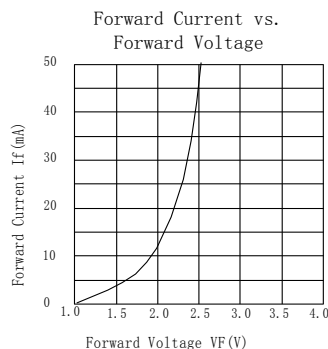
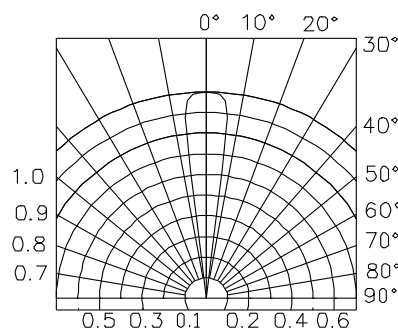
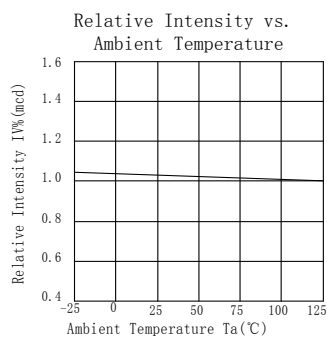
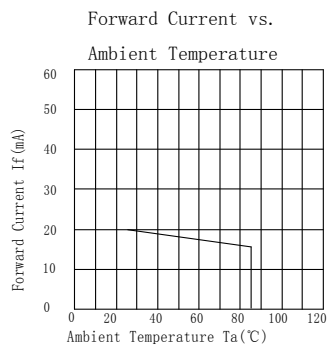
| Item                      | Symbol            | Condition         | Rank | Min. | Typ. | Max.  | Unit |
|---------------------------|-------------------|-------------------|------|------|------|-------|------|
| Luminous Intensity        | $I_v$             | $I_F=20\text{mA}$ | Y    | 4900 |      | 6370  | mcd  |
|                           |                   |                   | Z    | 6370 |      | 8280  | mcd  |
|                           |                   |                   | Z1   | 8280 |      | 10750 | mcd  |
| Forward Voltage           | $V_F$             |                   |      | 1.8  | 2.2  | 2.6   | V    |
| Viewing Angle             | $2\theta$ 1/2     |                   |      | --   | 15   | --    | deg  |
| DominateWavelength        | $\lambda_D$       |                   |      | 620  | --   | 630   | nm   |
| Recommend Forward Current | $I_F(\text{rec})$ | --                |      | --   | --   | 20    | mA   |
| Reverse Current           | $I_R$             | $V_R=5\text{V}$   |      | --   | --   | 20    | uA   |

Notes:

Tolerance :  $V_F \pm 0.1\text{V}$ ,  $\lambda_d \pm 2\text{ nm}$ ,  $I_V(\phi\text{ V}) \pm 15\%$ ,  $2\theta\ 1/2 \pm 15\%$

# Reliability Performance Test Items And Result

| Test Classification | Test Item                               | Test Conditions                                                                                                   | Test Duration | Sample Size | AC/RE |
|---------------------|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------|---------------|-------------|-------|
| Life Test           | Room Temperature DC Operating Life Test | $T_a=25^{\circ}\text{C}\pm 5^{\circ}\text{C}$ , $I_F=20\text{mA}$                                                 | 1000 hrs      | 22 pcs      | 0/1   |
| Environment Test    | Thermal Shock Test                      | $100^{\circ}\text{C}\pm 5^{\circ}\text{C}$ 5min<br>↑ ↓<br>$-40^{\circ}\text{C}\pm 5^{\circ}\text{C}$ 5min.        | 100 cycles    | 22 pcs      | 0/1   |
|                     | Temperature Cycle Test                  | $100^{\circ}\text{C}\pm 5^{\circ}\text{C}$ 30min<br>↑ ↓ 5min<br>$-40^{\circ}\text{C}\pm 5^{\circ}\text{C}$ 30min. | 100 cycles    | 22 pcs      | 0/1   |
|                     | High Temperature & High Humidity Test   | $85^{\circ}\text{C}\pm 5^{\circ}\text{C}/85\%\text{RH}$<br>$I_F=5\text{mA}$                                       | 1000 hrs      | 22 pcs      | 0/1   |
|                     | High Temperature Storage                | $T_a=100^{\circ}\text{C}\pm 5^{\circ}\text{C}$                                                                    | 1000 hrs      | 22 pcs      | 0/1   |
|                     | Low Temperature Storage                 | $T_a=-40^{\circ}\text{C}\pm 5^{\circ}\text{C}$                                                                    | 1000 hrs      | 22 pcs      | 0/1   |
| Mechanical Test     | Resistance to Soldering Heat            | Temp= $260^{\circ}\text{C}$ max<br>T=5sec max                                                                     | 1times        | 22 pcs      | 0/1   |
|                     | Lead Integrity                          | Load 2.5N(0.25kgf)<br>$0^{\circ} \sim 90^{\circ} \sim 0^{\circ}$                                                  | 3times        | 22 pcs      | 0/1   |





## Soldering:

### 1. Manual Of Soldering

The temperature of the iron tip should not be higher than 300°C and Soldering within 3 seconds per solder-land is to be observed.

### 2. DIP soldering (Wave Soldering):

Preheating: 120°C~150°C, within 120~180 sec.

Operation heating: 245°C ± 5°C within 5 sec. 260°C (Max)

Gradual Cooling (Avoid quenching).

