

## LED ARRAY



Lead-Free Parts

## LA193B/H-PF

# DATA SHEET

DOC. NO : QW0905-LA193B/H-PF

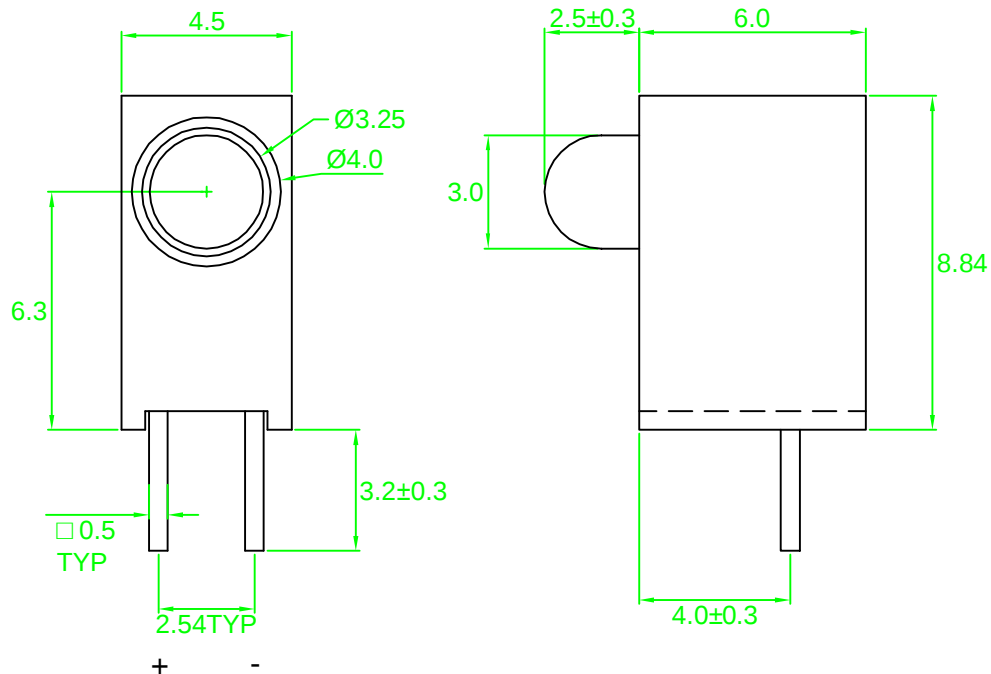
REV. : B

DATE : 11 - Apr. - 2007

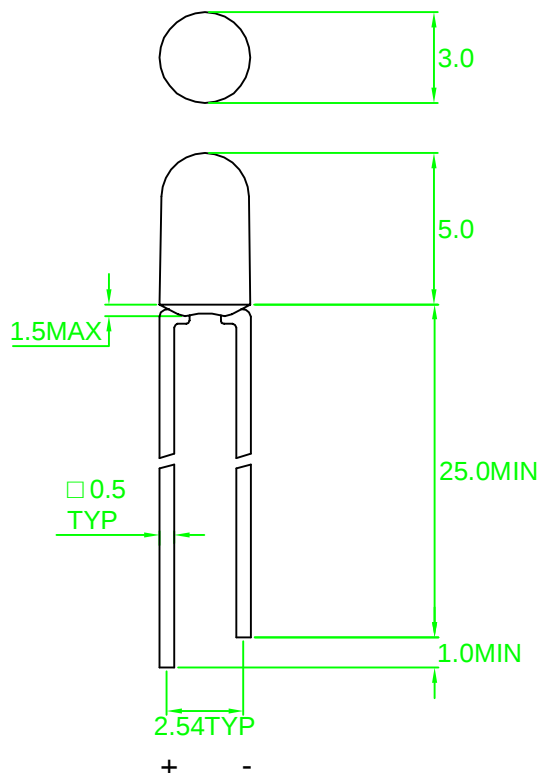
PART NO. LA193B/H-PF

Page 1/5

## Package Dimensions



## LH2340-1-PF



Note : 1.All dimension are in millimeter tolerance is  $\pm 0.25\text{mm}$  unless otherwise noted.  
 2.Specifications are subject to change without notice.

## Absolute Maximum Ratings at Ta=25

| Parameter                               | Symbol           | Absolute Maximum Ratings | UNIT |
|-----------------------------------------|------------------|--------------------------|------|
|                                         |                  | H                        |      |
| Forward Current                         | I <sub>F</sub>   | 15                       | mA   |
| Peak Forward Current<br>Duty 1/10@10KHz | I <sub>FP</sub>  | 60                       | mA   |
| Power Dissipation                       | PD               | 40                       | mW   |
| Reverse Current @5V                     | I <sub>r</sub>   | 10                       | μ A  |
| Operating Temperature                   | T <sub>opr</sub> | -40 ~ +85                |      |
| Storage Temperature                     | T <sub>stg</sub> | -40 ~ +100               |      |

## Typical Electrical & Optical Characteristics (Ta=25 )

| PART NO     | MATERIAL | COLOR   |              | Peak wave length<br>λ Pnm | Spectral halfwidth<br>λ nm | Forward voltage<br>@20mA(V) |      | Luminous intensity<br>@10mA(mcd) |      | Viewing angle<br>2θ 1/2 (deg) |
|-------------|----------|---------|--------------|---------------------------|----------------------------|-----------------------------|------|----------------------------------|------|-------------------------------|
|             |          | Emitted | Lens         |                           |                            | Min.                        | Max. | Min.                             | Typ. |                               |
| LA193B/H-PF | GaP      | Red     | Red Diffused | 697                       | 90                         | 1.7                         | 2.6  | 1.8                              | 3.0  | 80                            |

Note : 1.The forward voltage data did not including ±0.1V testing tolerance.  
2. The luminous intensity data did not including ±15% testing tolerance.

## Typical Electro-Optical Characteristics Curve

H CHIP

Fig.1 Forward current vs. Forward Voltage

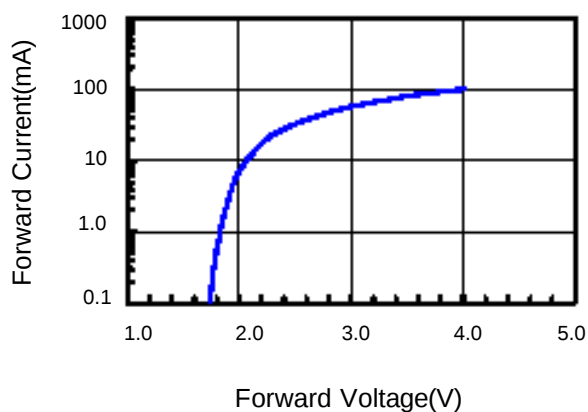


Fig.2 Relative Intensity vs. Forward Current

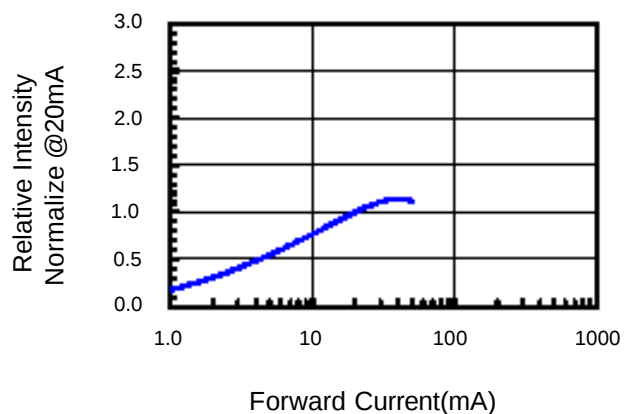


Fig.3 Forward Voltage vs. Temperature

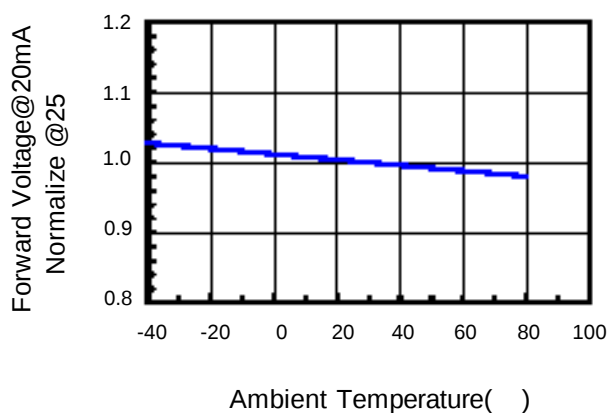


Fig.4 Relative Intensity vs. Temperature

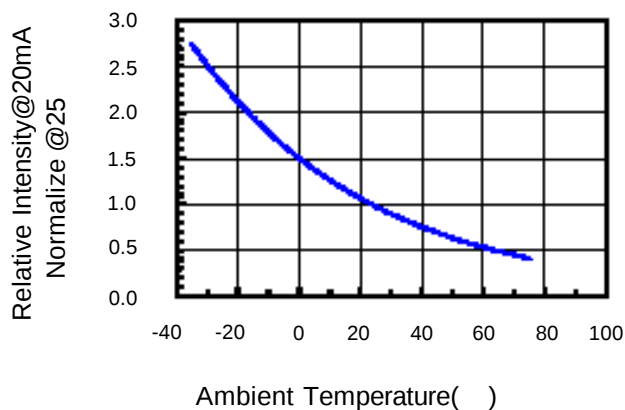
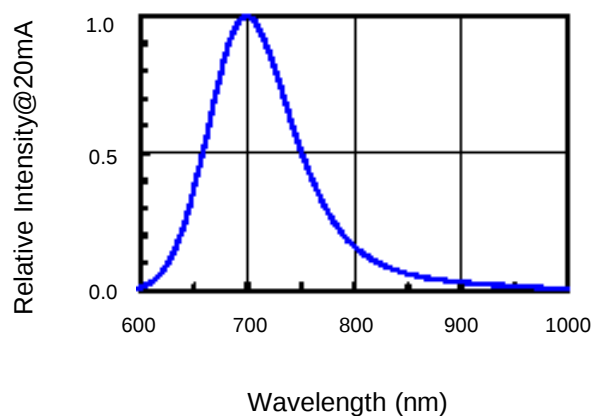


Fig.5 Relative Intensity vs. Wavelength



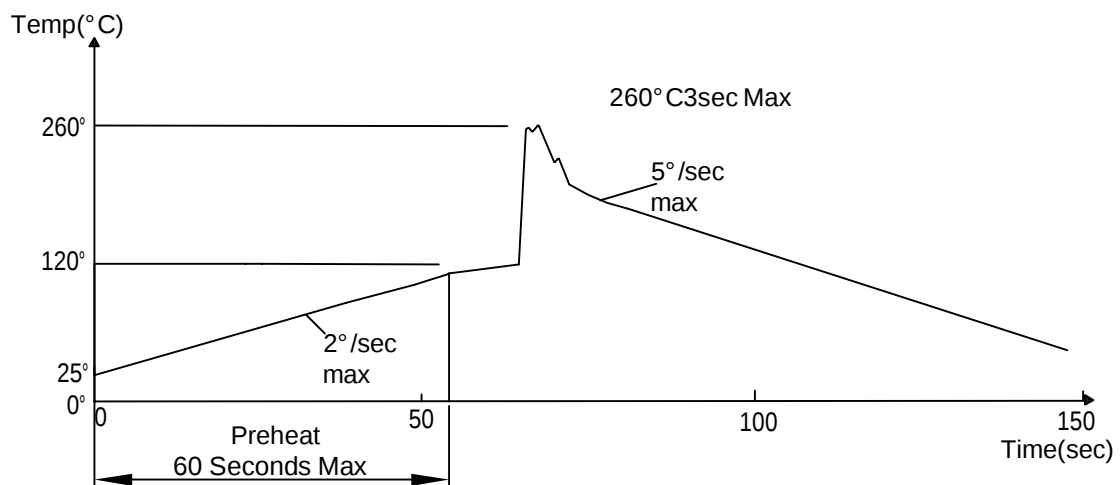
## Soldering Condition(Pb-Free)

### 1.Iron:

Soldering Iron:30W Max  
Temperature 350°C Max  
Soldering Time:3 Seconds Max(One time only)  
Distance:2mm Min(From solder joint to case)

### 2.Wave Soldering Profile

Dip Soldering  
Preheat: 120°C Max  
Preheat time: 60seconds Max  
Ramp-up  
2° C/sec(max)  
Ramp-Down:-5° C/sec(max)  
Solder Bath:260°C Max  
Dipping Time:3 seconds Max  
Distance:2mm Min(From solder joint to case)



Note: 1.Wave solder should not be made more than one time.  
2.You can just only select one of the soldering conditions as above.

## Reliability Test:

| Test Item                           | Test Condition                                                         | Description                                                                                                                                                             | Reference Standard                                                             |
|-------------------------------------|------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| Operating Life Test                 | 1.Under Room Temperature<br>2.If=20mA<br>3.t=1000 hrs (-24hrs, +72hrs) | This test is conducted for the purpose of detemining the resistance of a part in electrical and themal stressed.                                                        | MIL-STD-750: 1026<br>MIL-STD-883: 1005<br>JIS C 7021: B-1                      |
| High Temperature Storage Test       | 1.Ta=105 ±5<br>2.t=1000 hrs (-24hrs, +72hrs)                           | The purpose of this is the resistance of the device which is laid under condition of high temperature for hours.                                                        | MIL-STD-883:1008<br>JIS C 7021: B-10                                           |
| Low Temperature Storage Test        | 1.Ta=-40 ±5<br>2.t=1000 hrs (-24hrs, +72hrs)                           | The purpose of this is the resistance of the device which is laid under condition of low temperature for hours.                                                         | JIS C 7021: B-12                                                               |
| High Temperature High Humidity Test | 1.Ta=65 ±5<br>2.RH=90 %~95%<br>3.t=240hrs ±2hrs                        | The purpose of this test is the resistance of the device under tropical for hours.                                                                                      | MIL-STD-202:103B<br>JIS C 7021: B-11                                           |
| Thermal Shock Test                  | 1.Ta=105 ±5 & -40 ±5<br>(10min) (10min)<br>2.total 10 cycles           | The purpose of this is the resistance of the device to sudden extreme changes in high and low temperature.                                                              | MIL-STD-202: 107D<br>MIL-STD-750: 1051<br>MIL-STD-883: 1011                    |
| Solder Resistance Test              | 1.T.Sol=260 ±5<br>2.Dwell time= 10 ±1sec.                              | This test intended to determine the thermal characteristic resistance of the device to sudden exposures at extreme changes in temperature when soldering the lead wire. | MIL-STD-202: 210A<br>MIL-STD-750: 2031<br>JIS C 7021: A-1                      |
| Solderability Test                  | 1.T.Sol=230 ±5<br>2.Dwell time=5 ±1sec                                 | This test intended to see soldering well performed or not.                                                                                                              | MIL-STD-202: 208D<br>MIL-STD-750: 2026<br>MIL-STD-883: 2003<br>JIS C 7021: A-2 |