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ROUND TYPE LED LAMP



Lead-Free Parts

LA2040-PF

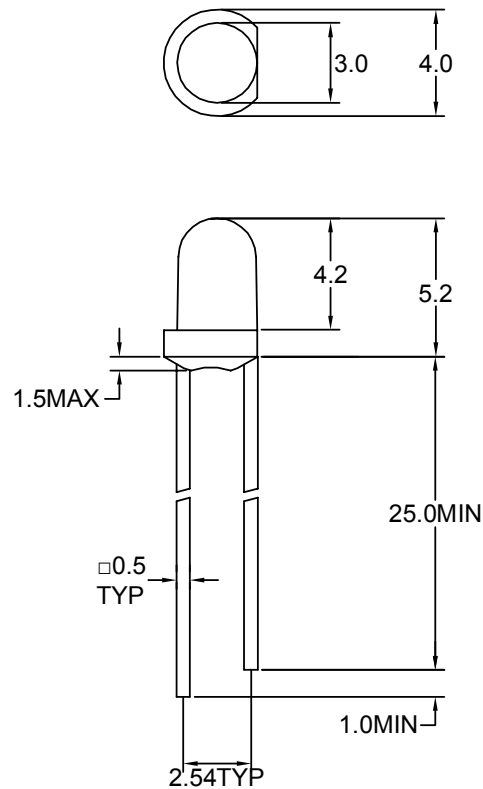
DATA SHEET

DOC. NO : QW0905-LA2040-PF

REV. : A

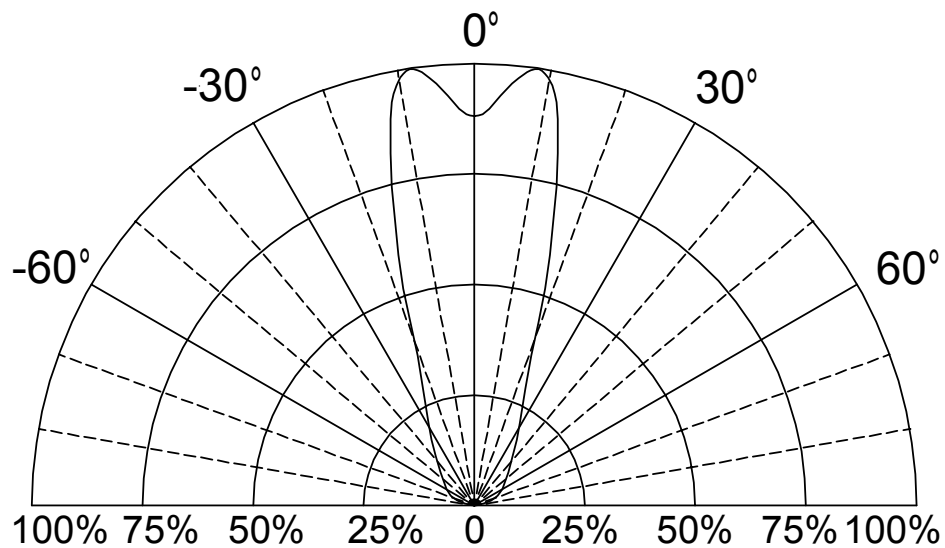
DATE : 26 - May - 2005

### Package Dimensions



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

### Directivity Radiation





## Absolute Maximum Ratings at Ta=25

| Parameter                               | Symbol | Absolute Maximum Ratings                 | UNIT |
|-----------------------------------------|--------|------------------------------------------|------|
|                                         |        | A                                        |      |
| Forward Current                         | IF     | 20                                       | mA   |
| Peak Forward Current<br>Duty 1/10@10KHz | IFP    | 80                                       | mA   |
| Power Dissipation                       | PD     | 60                                       | mW   |
| Reverse Current @5V                     | Ir     | 10                                       | μ A  |
| Operating Temperature                   | Topr   | -40 ~ +85                                |      |
| Storage Temperature                     | Tstg   | -40 ~ +100                               |      |
| Soldering Temperature                   | Tsol   | Max 260 for 5 sec Max<br>(2mm from Body) |      |

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

| PART NO   | MATERIAL  | COLOR   |                 | Dominant<br>wave<br>length<br>Dnm | Spectral<br>halfwidth<br>nm | Forward<br>voltage<br>@20mA(V) |      | Luminous<br>intensity<br>@10mA(mcd) |      | Viewing<br>angle<br>2 1/2<br>(deg) |
|-----------|-----------|---------|-----------------|-----------------------------------|-----------------------------|--------------------------------|------|-------------------------------------|------|------------------------------------|
|           |           | Emitted | Lens            |                                   |                             | Min.                           | Max. | Min.                                | Typ. |                                    |
| LA2040-PF | GaAsP/GaP | Yellow  | Orange Diffused | 592                               | 35                          | 1.7                            | 2.6  | 8.0                                 | 20   | 36                                 |

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



### Typical Electro-Optical Characteristics Curve

Y-A CHIP

Fig.1 Forward current vs. Forward Voltage

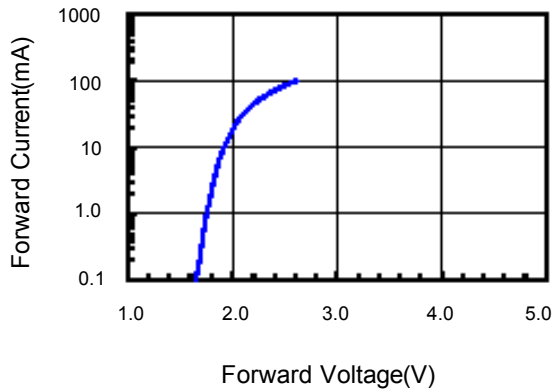


Fig.2 Relative Intensity vs. Forward Current

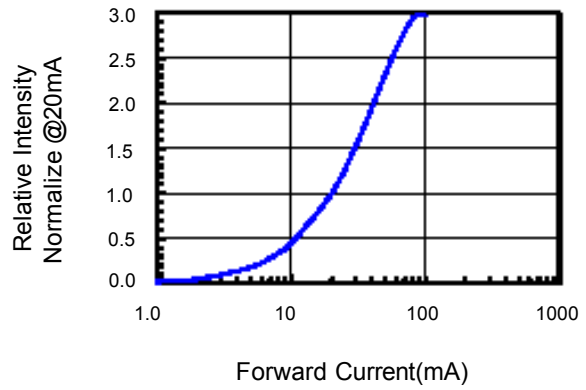


Fig.3 Forward Voltage vs. Temperature

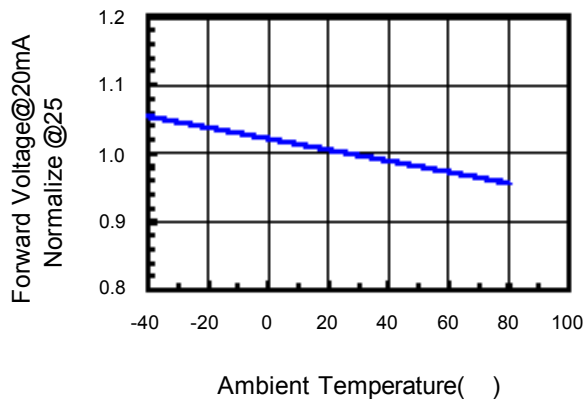


Fig.4 Relative Intensity vs. Temperature

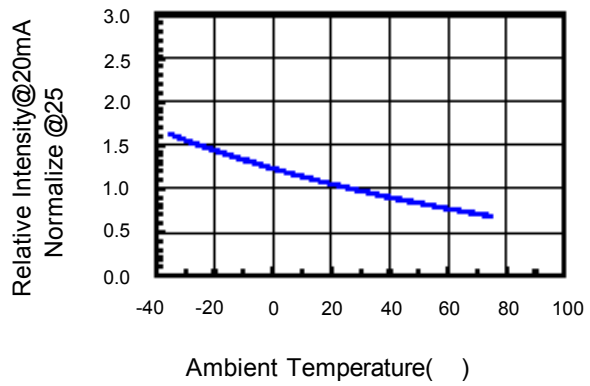
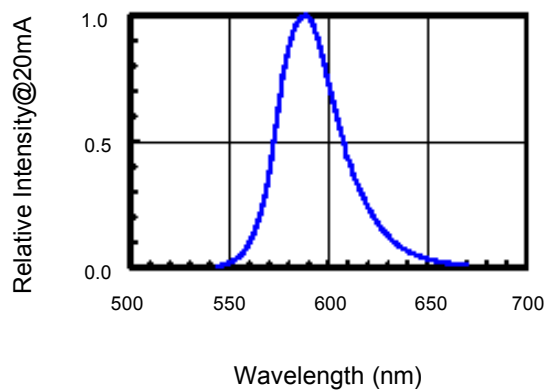
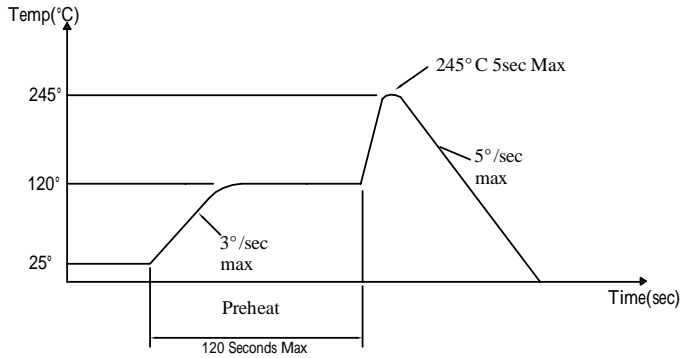


Fig.5 Relative Intensity vs. Wavelength





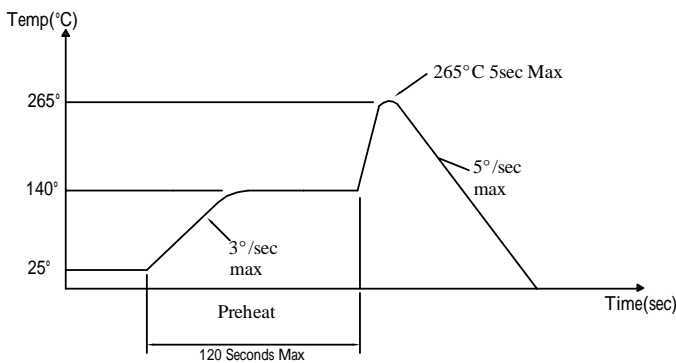
### Wave soldering Profile



**Soldering**  
 Soldering Iron:30W Max  
 Temperature 300 °C Max  
 Soldering Time:3 Seconds Max  
 Distance:2mm Min(From solder joint to case)

**Dip Soldering**  
 Preheat: 120 °C Max  
 Preheat time: 120 seconds Max  
 Ramp-up  
 3° C/sec(max)  
 Ramp-Down:-5 °C/sec(max)  
 Solder Bath:245 °C Max  
 Dipping Time:5 seconds Max  
 Distance:2mm Min(From solder joint to case)

### Wave Soldering Profile (Pb Free)



**Soldering**  
 Soldering Iron:30W Max  
 Temperature:350 °C Max  
 Soldering Time:3seconds Max  
 Distance:2mm Min(From solder joint to case)

**Dip Soldering**  
 Preheat: 140 °C Max  
 Preheat time: 120seconds Max  
 Ramp-up  
 3° C/sec(max)  
 Ramp-Down:-5 °C/sec(max)  
 Solder Bath:265 °C Max  
 Dipping Time:5 seconds Max  
 Distance:2mm Min(From solder joint to case)

**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 resisance 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 ondition 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 hous.                                                                                       | 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 |