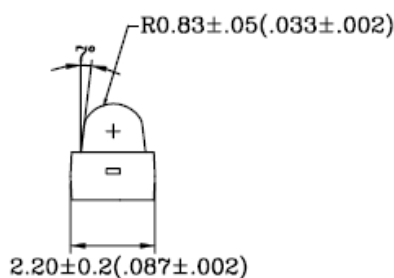
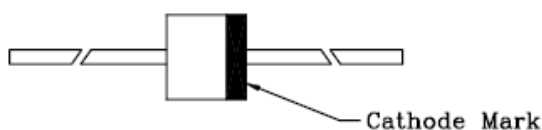
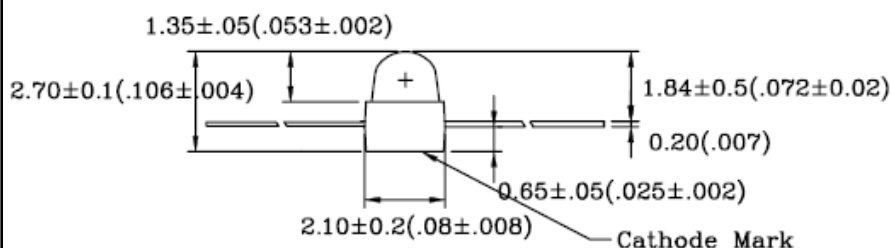
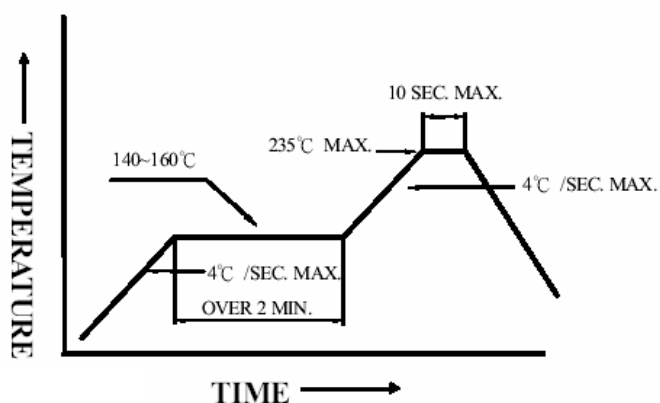
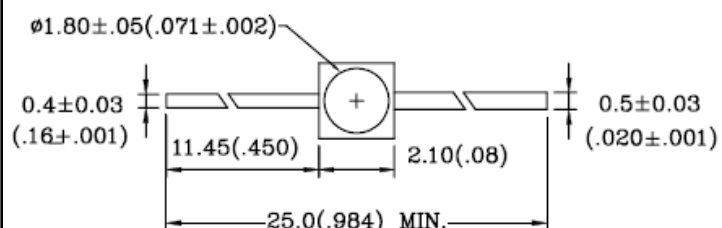


**AXIAL LED LAMPS****Super Red Axial LED Lamps****Part Number: AL-XD0361****Package outlines & Re-flow Profile****■Reflow Temp/Time****■Soldering iron**

Basic spec is  $\leq 5\text{sec}$  when  $260^{\circ}\text{C}$ . If temperature is higher, time should be shorter ( $+10^{\circ}\text{C} \rightarrow -1\text{sec}$ ). Power dissipation of iron should be smaller than 15W, and temperatures should be controllable. Surface temperature of the device should be under  $230^{\circ}\text{C}$ .

| ITEM                  | MATERIALS   |
|-----------------------|-------------|
| Resin (mold)          | Epoxy       |
| Lens color            | Water Clear |
| Printed circuit board | BT          |
| Dice                  | GaAlAs/GaAs |
| Emitted color         | Super Red   |

**NOTES:**

1. All dimensions are in millimeters (inches);
2. Tolerances are  $\pm 0.1\text{mm}$  ( $0.004\text{inch}$ ) unless otherwise noted.

**AXIAL LED LAMPS****Part Number: AL-XD0361****ELECTRO-OPTICAL CHARACTERISTICS****(T<sub>A</sub>=25°C)**

| Parameter                               | Test Condition       | Symbol          | Value | Unit |
|-----------------------------------------|----------------------|-----------------|-------|------|
| Viewing angle at 50% I <sub>v</sub>     | I <sub>F</sub> =10mA | 2 θ 1/2         | 35    | Deg  |
| Forward voltage (Typ.)                  | I <sub>F</sub> =20mA | V <sub>F</sub>  | 1.80  | V    |
| (Max.)                                  |                      |                 | 2.60  |      |
| Luminous intensity (Min.)               | I <sub>F</sub> =20mA | I <sub>v</sub>  | 28.0  | mcd  |
| (Typ.)                                  |                      |                 | 75.0  |      |
| Wavelength                              | I <sub>F</sub> =20mA | λ p             | 660   | nm   |
|                                         |                      | λ d             | 643±5 |      |
| Spectral Line Half-Width                | I <sub>F</sub> =20mA | △λ              | 30    | nm   |
| Peak pulsing current (1/10 duty f=1kHz) |                      | I <sub>FP</sub> | 100   | mA   |

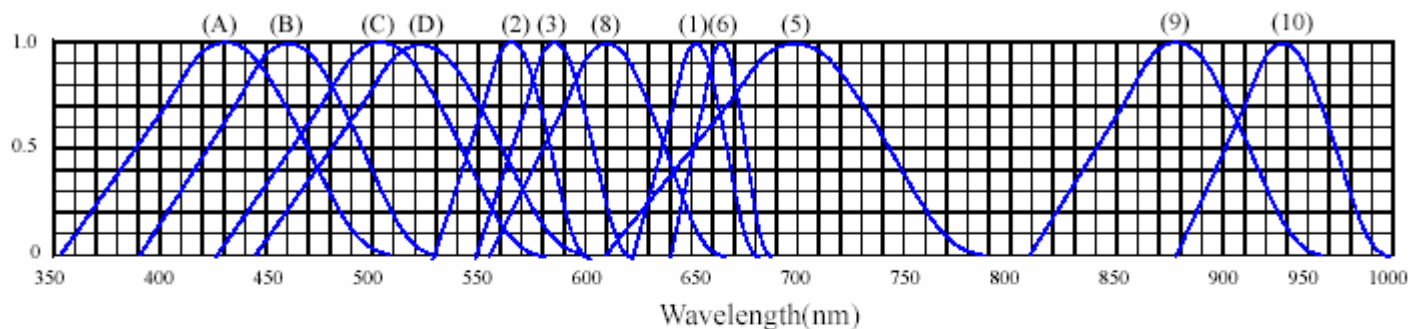
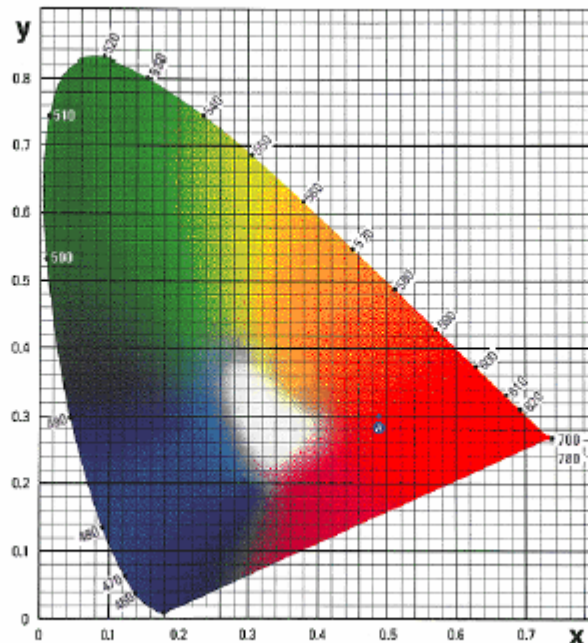
**Absolute maximum ratings****(T<sub>A</sub>=25°C)**

| Parameter                   | Symbol              | Value    | Unit |
|-----------------------------|---------------------|----------|------|
| Forward current             | I <sub>F</sub>      | 30       | mA   |
| Reverse voltage             | V <sub>R</sub>      | 5        | V    |
| Reverse current             | I <sub>R</sub>      | 100      | μA   |
| Power Dissipation           | P <sub>D</sub>      | 120      | mW   |
| Operating temperature range | Top                 | -25 ~+80 | °C   |
| Storage temperature range   | Tstg                | -30 ~+85 | °C   |
| Lead soldering temperature  | 260°C For 5 Seconds |          |      |

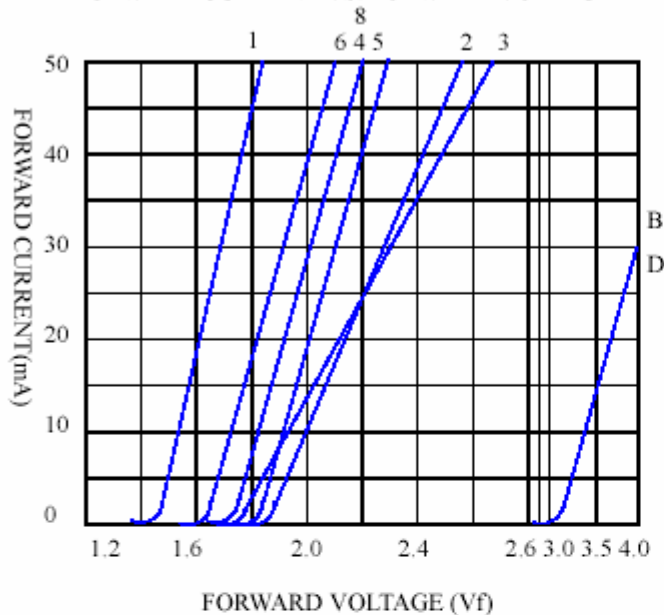
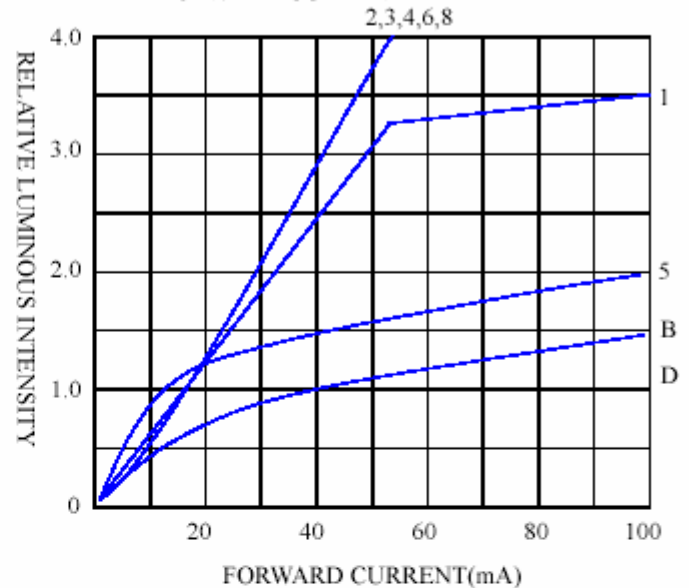
**AXIAL LED LAMPS****Part Number: AL-XD0361****Test items and results of reliability**

| Classification     | Test Item                              | Reference Standard                                                          | Test Conditions                                                                                                                                 | Result |
|--------------------|----------------------------------------|-----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| Endurance Test     | Operation Life                         | MIL-STD-750:1026<br>MIL-STD-883:1005<br>JIS C 7021 :B-1                     | Connect with a power $I_f=20\text{mA}$<br>$T_a$ =Under room temperature<br>Test time=1,000hrs                                                   | 0/20   |
|                    | High Temperature High Humidity Storage | MIL-STD-202:103B<br>JIS C 7021 :B-11                                        | $T_a=+65^{\circ}\text{C}\pm 5^{\circ}\text{C}$<br>$\text{RH}=90\%-95\%$<br>Test time=240hrs                                                     | 0/20   |
|                    | High Temperature Storage               | MIL-STD-883:1008<br>JIS C 7021 :B-10                                        | High $T_a=+85^{\circ}\text{C}\pm 5^{\circ}\text{C}$<br>Test time=1,000hrs                                                                       | 0/20   |
|                    | Low Temperature Storage                | JIS-C-7021 :B-12                                                            | Low $T_a=-35^{\circ}\text{C}\pm 5^{\circ}\text{C}$<br>Test time=1,000hrs                                                                        | 0/20   |
| Environmental Test | Temperature Cycling                    | MIL-STD-202:107D<br>MIL-STD-750:1051<br>MIL-STD-883:1010<br>JIS C 7021 :A-4 | $-35^{\circ}\text{C} \sim +25^{\circ}\text{C} \sim +85^{\circ}\text{C} \sim +25^{\circ}\text{C}$<br>60min 20min 60min 20min<br>Test Time=5cycle | 0/20   |
|                    | Thermal Shock                          | MIL-STD-202:107D<br>MIL-STD-750:1051<br>MIL-STD-883:1011                    | $-35^{\circ}\text{C}\pm 5^{\circ}\text{C} \sim +85^{\circ}\text{C}\pm 5^{\circ}\text{C}$<br>20min 20min<br>Test Time=10cycle                    | 0/20   |
|                    | Solder Resistance                      | MIL-STD-202:201A<br>MIL-STD-750:2031<br>JIS C 7021 :A-1                     | Preheating :<br>140°C -160°C ,within 2 minutes.<br>Operation heating :<br>235°C(Max.), within 10seconds. (Max.)                                 | 0/20   |

\* Refer to reliability test standard specification for in this line.

**AXIAL LED LAMPS****Part Number: AL-XD0361****Typical Optical-Electrical Characteristic Curves**◆ **TYPICAL ELECTRICAL-OPTICAL CHARACTERISTICS CURVES**RELATIVE INTENSITY VS. WAVELENGTH( $\lambda_p$ )

- |                                         |                                  |
|-----------------------------------------|----------------------------------|
| (1) GaAsP/GaAs 655nm/Red                | (9)- GaAlAs 880nm                |
| (2) GaP 568nm/ Yellow Green             | (10)-GaAs/GaAs&GaAlAs/GaAs 940nm |
| (3) GaAsP/GaP 585nm/Yellow              | (A)- GaN 430nm/Blue              |
| (4) GaAsP/GaP 635nm/Orange & Hi-Eff Red | (B)- InGaN 470nm/Blue            |
| (5) GaP 700nm/Bright Red                | (C)- InGaN 502nm/Ultra Green     |
| (6) GaAlAs/GaAs 660nm/Super Red         | (D)- InGaN 523nm/Ultra Green     |
| (8) GaAsP/GaP 610nm/Super Red           |                                  |

**AXIAL LED LAMPS****Part Number: AL-XD0361****Typical Optical-Electrical Characteristic Curves****◆ CHARACTERISTICS DIAGRAMS****FORWARD CURRENT VS. FORWARD VOLTAGE****RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT****FORWARD CURRENT VS. AMBIENT TEMPERATURE**