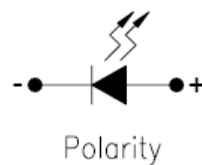
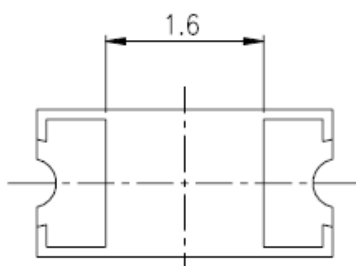
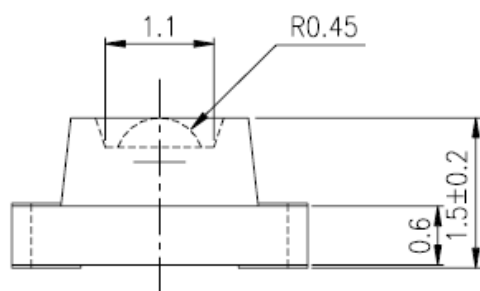
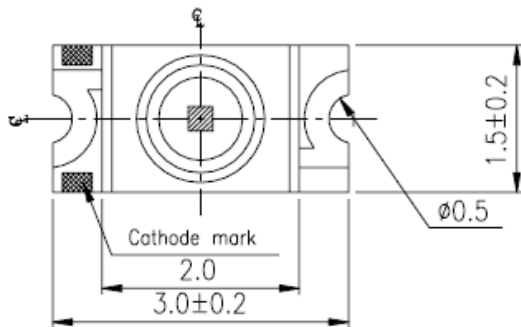


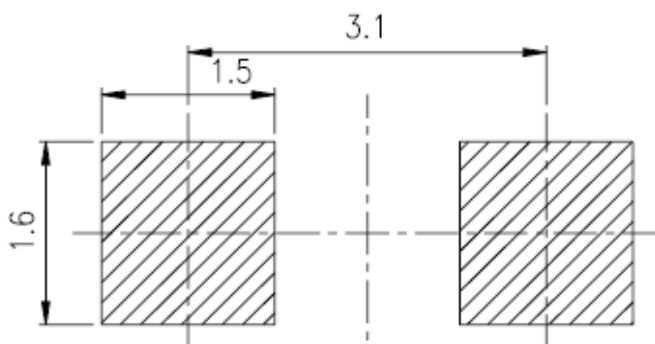
SURFACE MOUNT CHIP LED LAMPS

1206 Inner Lens Yellow SMD Chip LED Lamps

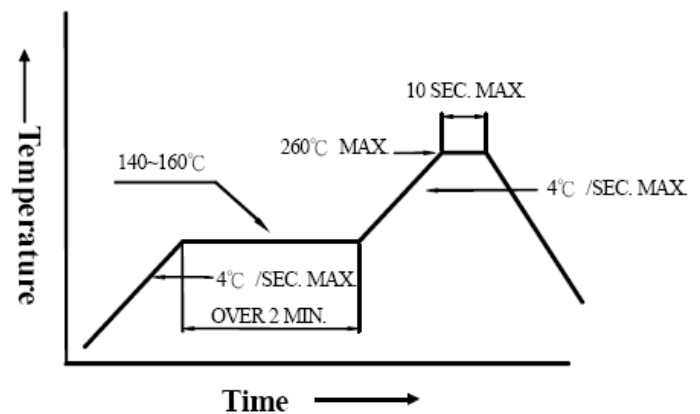
Part Number: AL-HKB33A

Package outlines & Re-flow Profile

For Reflow Soldering



■ Reflow Temp/Time



■ Soldering iron

Basic spec is $\leq 5\text{sec}$ when 260°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°C .

| ITEM | MATERIALS |
|-----------------------|-------------|
| Resin (mold) | Epoxy |
| Lens color | Water Clear |
| Printed circuit board | BT |
| Dice | AlGaInP |
| Emitted color | Yellow |

NOTES:

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

SURFACE MOUNT CHIP LED LAMPS

Part Number: AL-HKB33A

ELECTRO-OPTICAL CHARACTERISTICS**(T_A=25°C)**

| Parameter | Test Condition | Symbol | Value | Unit | |
|---|----------------------|-----------------|--------|------|---|
| Viewing angle at 50% I _v | I _F =10mA | 2 θ 1/2 | 60 | Deg | |
| Forward voltage | I _F =20mA | V _F | (Typ.) | 2.10 | V |
| | | | (Max.) | 2.60 | |
| Luminous intensity | I _F =20mA | I _v | 100.0 | mcd | |
| Wavelength | I _F =20mA | λ _p | 590 | nm | |
| | | λ _d | 587±5 | | |
| Spectral Line Half-Width | I _F =20mA | Δλ | 30 | nm | |
| Peak pulsing current (1/10 duty f=1kHz) | | I _{FP} | 100 | mA | |

Absolute maximum ratings**(T_A=25°C)**

| Parameter | Symbol | Value | Unit |
|-----------------------------|---------------------|----------|------|
| Forward current | I _F | 30 | mA |
| Reverse voltage | V _R | 5 | V |
| Reverse current | I _R | 100 | μA |
| Power Dissipation | P _D | 100 | mW |
| Operating temperature range | Top | -25 ~+80 | °C |
| Storage temperature range | T _{stg} | -30 ~+85 | °C |
| Lead soldering temperature | 260°C For 5 Seconds | | |

SURFACE MOUNT CHIP LED LAMPS

Part Number: AL-HKB33A

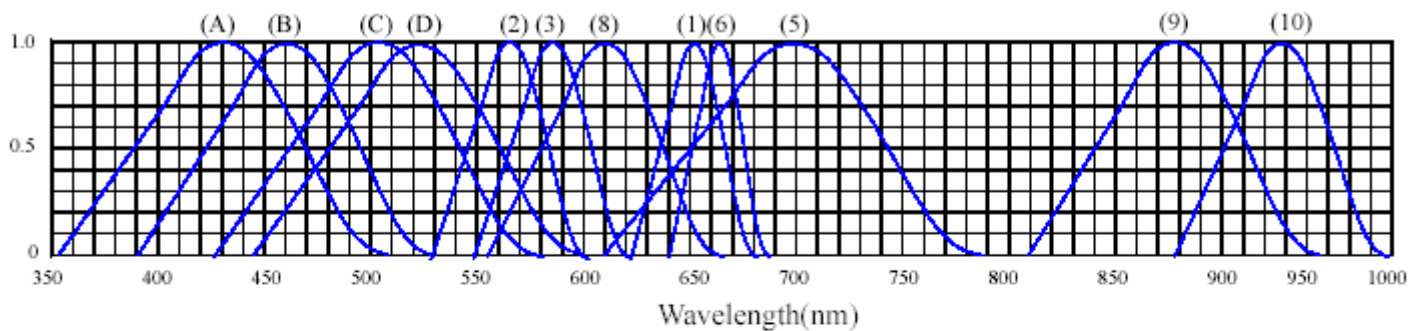
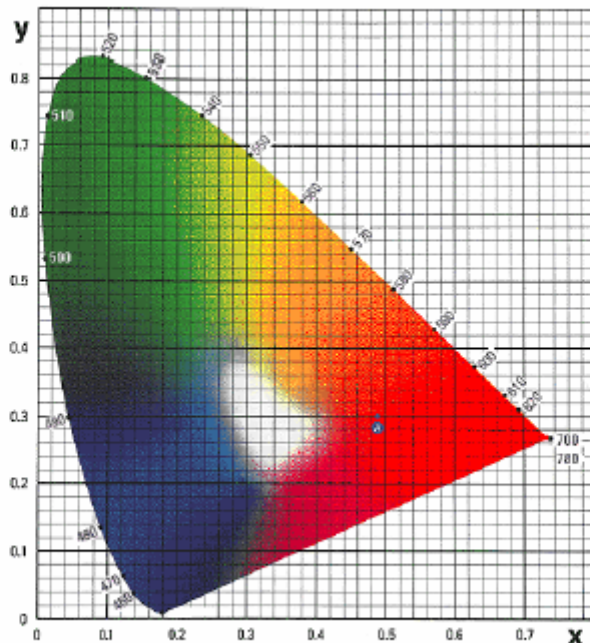
Test items and results of reliability

| No. | Items | Test Condition | Test Hours/Cycles | Sample Size | Ac/Re |
|-----|----------------------------------|--|-------------------|-------------|-------|
| 1 | Reflow Soldering | Temp. : 260°C±5°C Min. 5sec. | 6 Min. | 22 PCS. | 0/1 |
| 2 | Temperature Cycle | H : +100°C 15min ∫ 5 min L : -40°C 15min | 300 Cycles | 22 PCS. | 0/1 |
| 3 | Thermal Shock | H : +100°C 5min ∫ 10 sec L : -10°C 5min | 300 Cycles | 22 PCS. | 0/1 |
| 4 | High Temperature Storage | Temp. : 100°C | 1000 Hrs. | 22 PCS. | 0/1 |
| 5 | Low Temperature Storage | Temp. : -40°C | 1000 Hrs. | 22 PCS. | 0/1 |
| 6 | DC Operating Life | IF = 20 mA | 1000 Hrs. | 22 PCS. | 0/1 |
| 7 | High Temperature / High Humidity | 85°C/ 85%RH | 1000 Hrs. | 22 PCS. | 0/1 |

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

SURFACE MOUNT CHIP LED LAMPS

Part Number: AL-HKB33A

Typical Optical-Electrical Characteristic Curves◆ **TYPICAL ELECTRICAL-OPTICAL CHARACTERISTICS CURVES**RELATIVE INTENSITY VS. WAVELENGTH(λ_p)

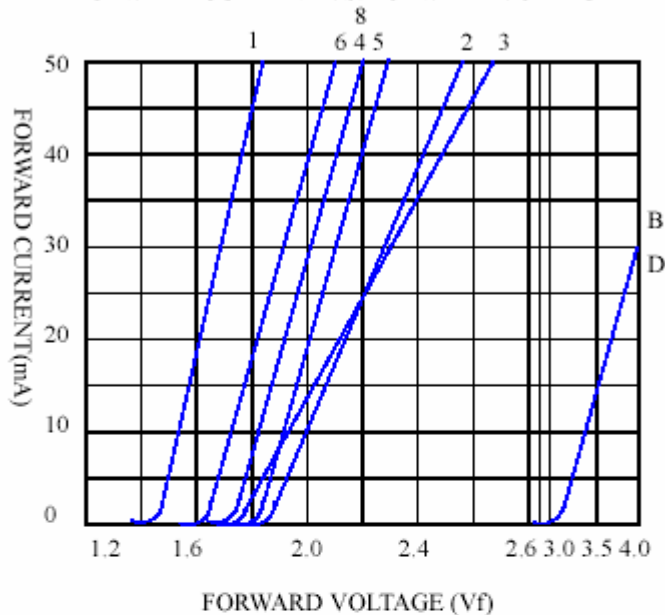
- | | |
|---|----------------------------------|
| (1) GaAsP/GaAs 655nm/Red | (9)- GaAlAs 880nm |
| (2) GaP 568nm/ Yellow Green | (10)-GaAs/GaAs&GaAlAs/GaAs 940nm |
| (3) GaAsP/GaP 585nm/Yellow | (A)- GaN 430nm/Blue |
| (4) GaAsP/GaP 635nm/Orange & Hi-Eff Red | (B)- InGaN 470nm/Blue |
| (5) GaP 700nm/Bright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

SURFACE MOUNT CHIP LED LAMPS

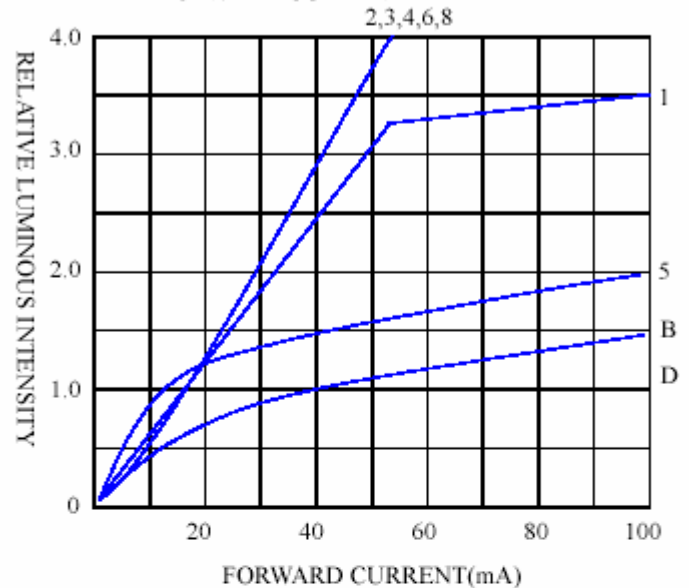
Part Number: AL-HKB33A

Typical Optical-Electrical Characteristic Curves◆ **CHARACTERISTICS DIAGRAMS**

FORWARD CURRENT VS. FORWARD VOLTAGE



RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT



FORWARD CURRENT VS. AMBIENT TEMPERATURE

