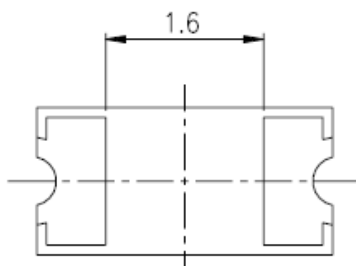
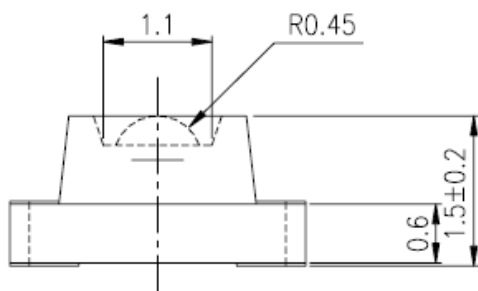
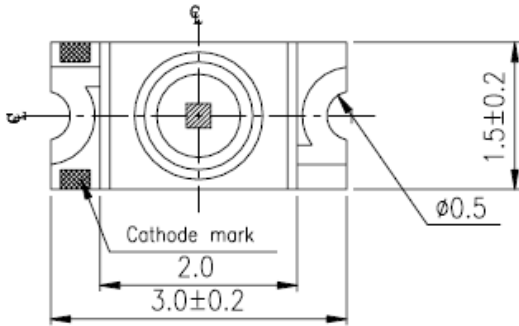


## SURFACE MOUNT CHIP LED LAMPS

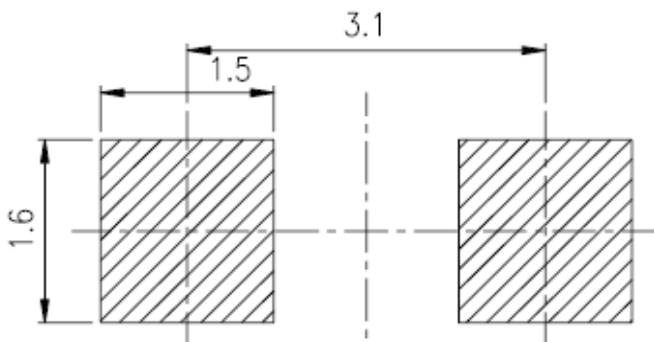
1206 Inner Lens Yellow SMD Chip LED Lamps

Part Number: AL-HKB33A

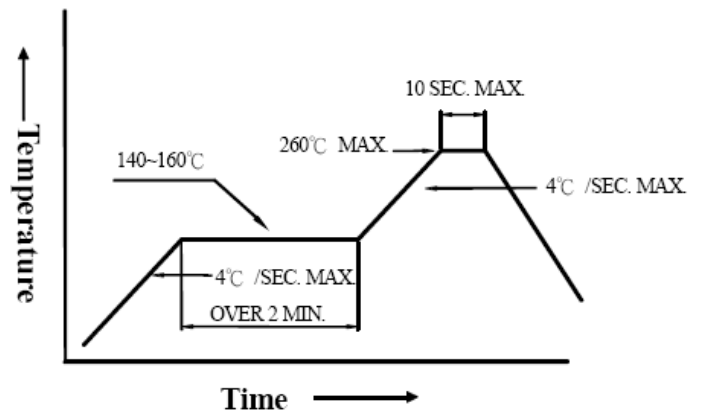
### Package outlines & Re-flow Profile



For Reflow Soldering



#### Reflow Temp/Time



#### Soldering iron

Basic spec is  $\leq 5\text{sec}$  when  $260^\circ\text{C}$ . 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	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<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	60	Deg
Forward voltage	I <sub>F</sub> =20mA	V <sub>F</sub>	(Typ.) 2.10	V
			(Max.) 2.60	
Luminous intensity	I <sub>F</sub> =20mA	I <sub>v</sub>	100.0	mcd
Wavelength	I <sub>F</sub> =20mA	λ <sub>p</sub>	590	nm
		λ <sub>d</sub>	587±5	
Spectral Line Half-Width	I <sub>F</sub> =20mA	Δλ	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>	100	mW
Operating temperature range	Top	-25 ~+80	°C
Storage temperature range	Tstg	-30 ~+85	°C
Lead soldering temperature	260°C For 5 Seconds		

**SURFACE MOUNT CHIP LED LAMPS**

Part Number: AL-HKB33A

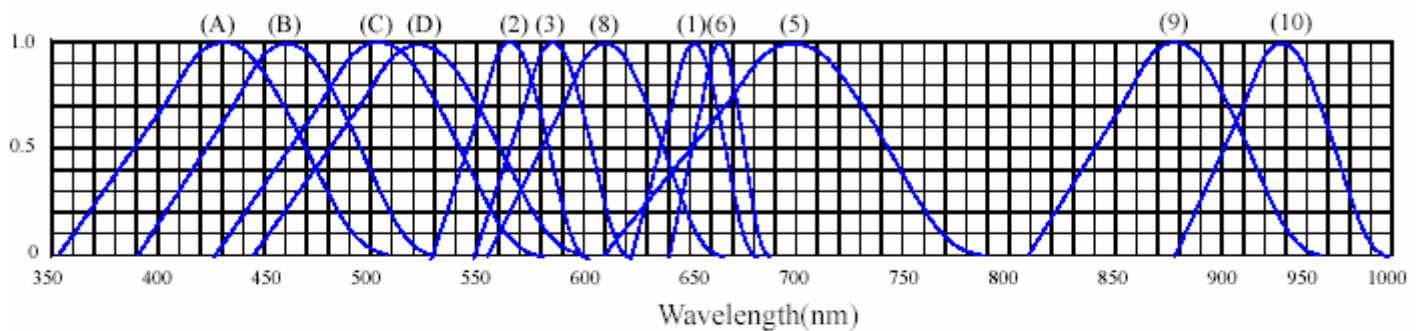
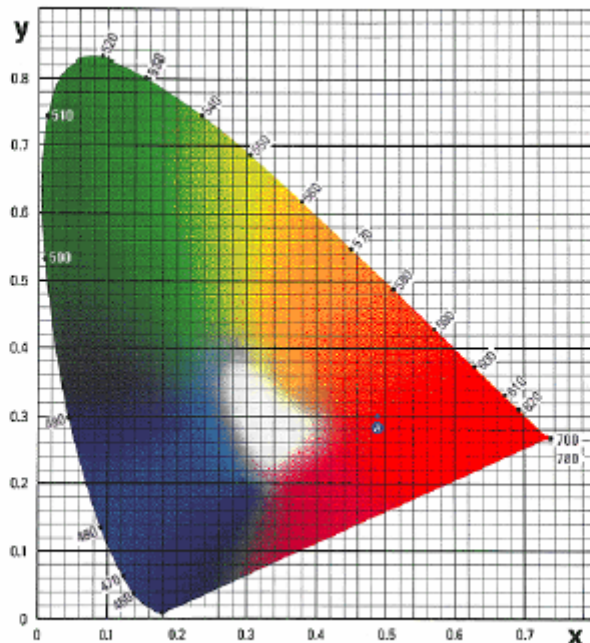
**Test items and results of reliability**

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( $\lambda_p$ )

- |   |                                  |
|---|----------------------------------|
| (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           |                                  |

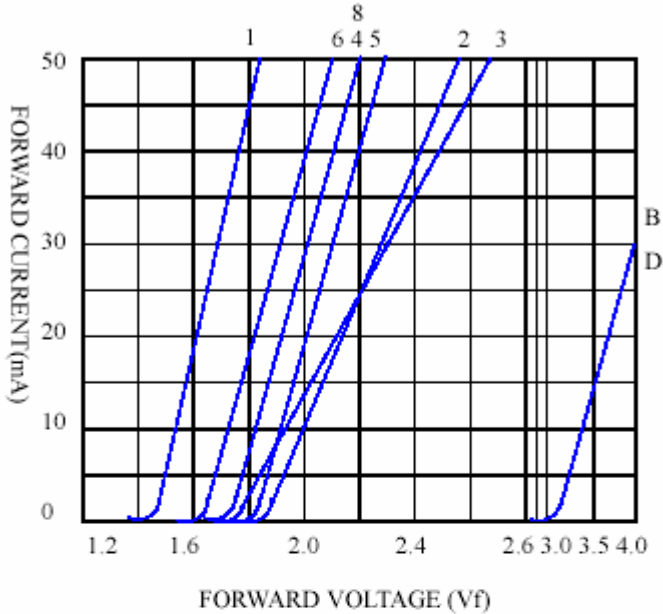
**SURFACE MOUNT CHIP LED LAMPS**

Part Number: AL-HKB33A

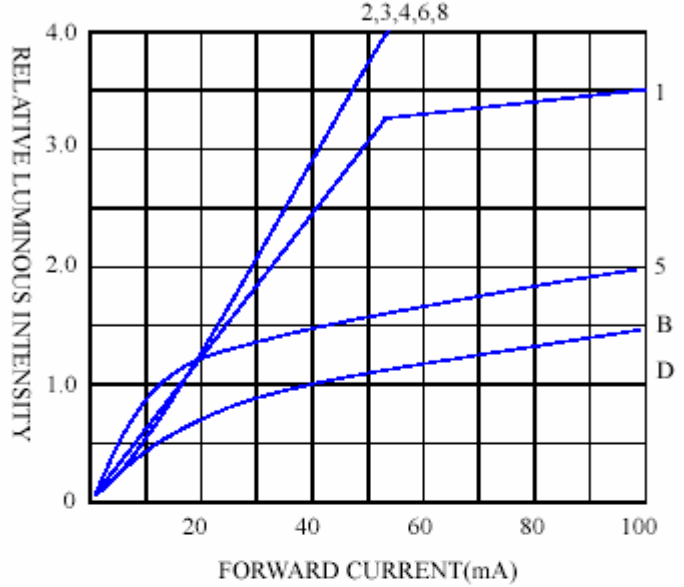
**Typical Optical-Electrical Characteristic Curves**

◆ CHARACTERISTICS DIAGRAMS

FORWARD CURRENT VS. FORWARD VOLTAGE



RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT



FORWARD CURRENT VS. AMBIENT TEMPERATURE

