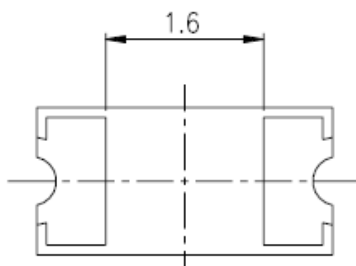
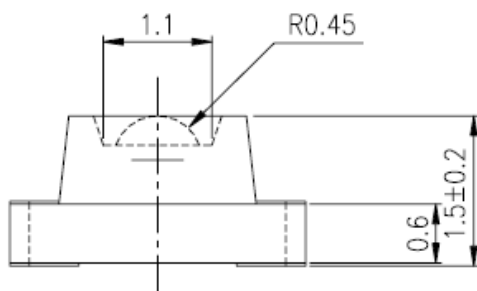
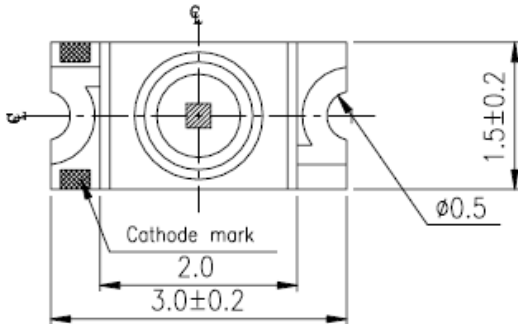


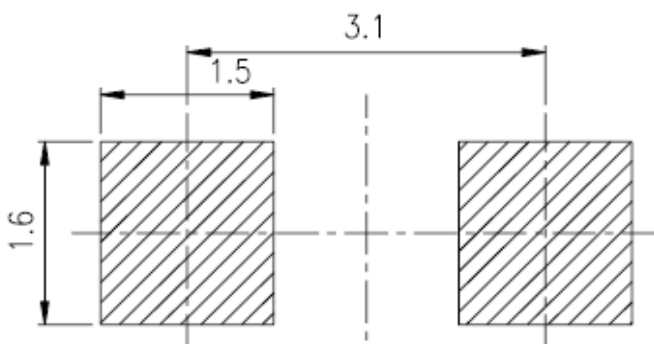
SURFACE MOUNT CHIP LED LAMPS

1206 Inner Lens Yellow SMD Chip LED Lamps

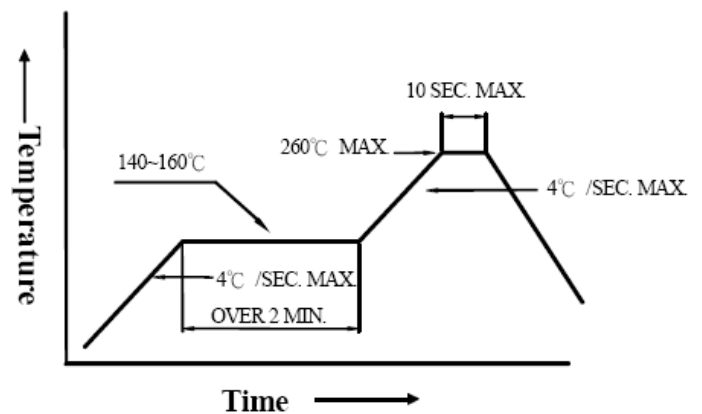
Part Number: AL-HKB33A

Package outlines & Re-flow Profile

For Reflow Soldering

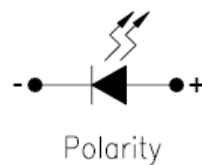


■ Reflow Temp/Time



■ 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 (Typ.)	I _F =20mA	V _F	2.10	V
(Max.)			2.60	
Luminous intensity (Typ.)	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

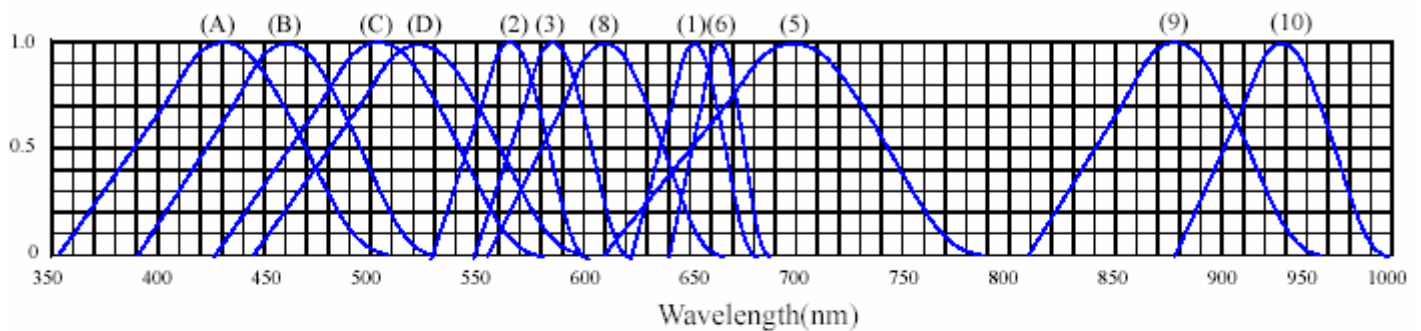
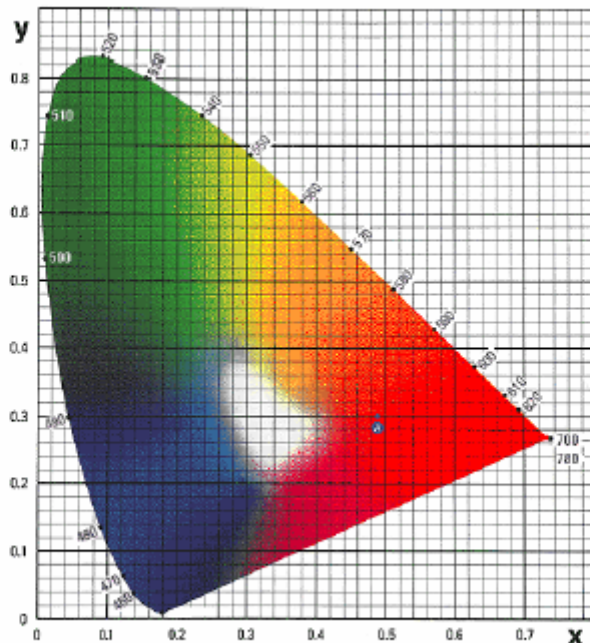
Test items and results of reliability

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 | |

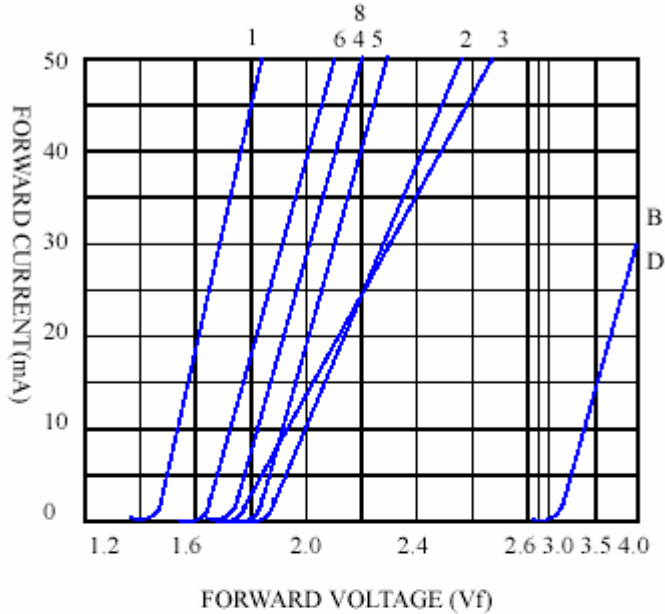
SURFACE MOUNT CHIP LED LAMPS

Part Number: AL-HKB33A

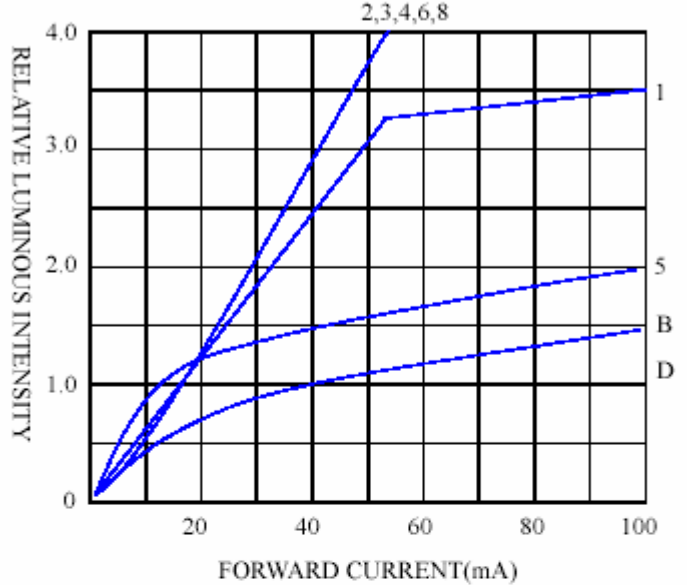
Typical Optical-Electrical Characteristic Curves

◆ CHARACTERISTICS DIAGRAMS

FORWARD CURRENT VS. FORWARD VOLTAGE



RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT



FORWARD CURRENT VS. AMBIENT TEMPERATURE

