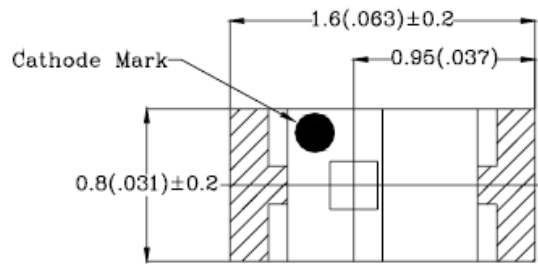


SURFACE MOUNT CHIP LED LAMPS

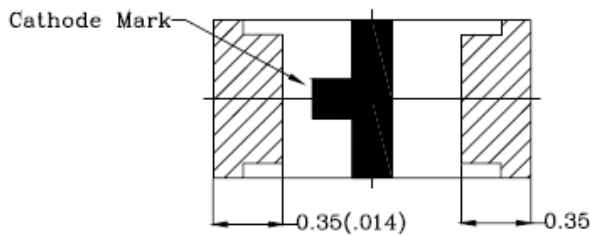
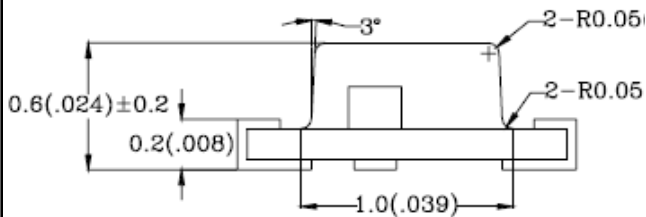
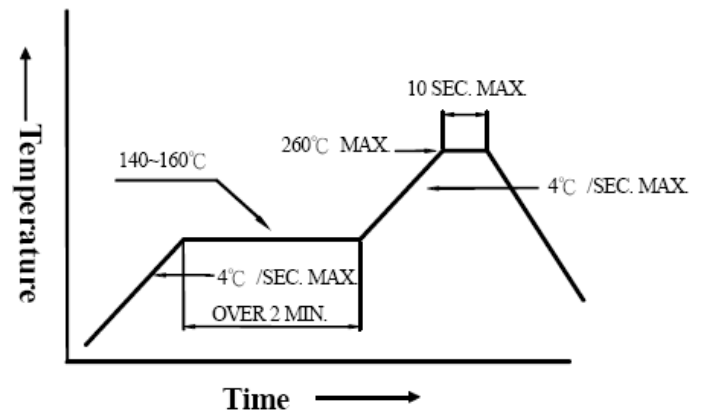
0603 Package Super Yellow SMD Chip LED Lamps (0.6mm Height)

Part Number: AL-HKB36A

Package outlines & Re-flow Profile



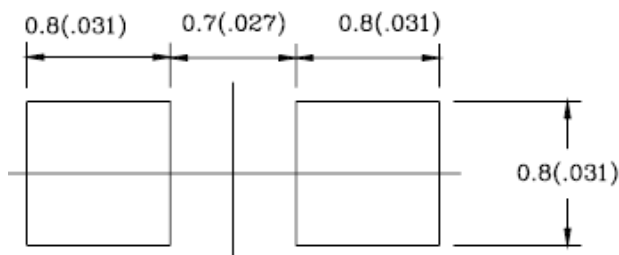
Reflow Temp/Time



Soldering iron

Basic spec is ≤ 5 sec when 260°C. If temperature is higher, time should be shorter (+10°C → -1sec). Power dissipation of iron should be smaller than 15W, and temperatures should be controllable. Surface temperature of the device should be under 230°C.

For Reflow Soldering



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

NOTES:

- All dimensions are in millimeters (inches);
- Tolerances are ± 0.1 mm (0.004inch) unless otherwise noted.

SURFACE MOUNT CHIP LED LAMPS

Part Number: AL-HKB36A

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 | 120 | Deg |
| Forward voltage (Typ.) | I _F =20mA | V _F | 2.10 | V |
| (Max.) | | | 2.60 | |
| Luminous intensity (Min.) | I _F =20mA | I _v | 28.0 | mcd |
| (Typ.) | | | 45.0 | |
| Wavelength | I _F =20mA | λ _p | 590 | nm |
| | | λ _d | 587±5 | |
| Spectral Line Half-Width | I _F =20mA | △λ | 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 | Tstg | -30 ~+85 | °C |
| Lead soldering temperature | 260°C For 5 Seconds | | |

SURFACE MOUNT CHIP LED LAMPS**Part Number: AL-HKB36A****Test items and results of reliability**

| Classification | Test Item | Reference Standard | Test Conditions | Result |
|--------------------|----------------------------------------|-----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|--------|
| Endurance Test | Operation Life | MIL-STD-750:1026 MIL-STD-883:1005 JIS-C-7021 :B-1 | Connect with a power $I_f=20\text{mA}$ T_a =Under room temperature Test time=1,000hrs | 0/20 |
| | High Temperature High Humidity Storage | MIL-STD-202:103B JIS-C-7021 :B-11 | $T_a=+65^\circ\text{C}\pm 5^\circ\text{C}$ RH=90%-95% Test time=240hrs | 0/20 |
| | High Temperature Storage | MIL-STD-883:1008 JIS-C-7021 :B-10 | High $T_a=+85^\circ\text{C}\pm 5^\circ\text{C}$ Test time=1,000hrs | 0/20 |
| | Low Temperature Storage | JIS-C-7021 :B-12 | Low $T_a=-35^\circ\text{C}\pm 5^\circ\text{C}$ Test time=1,000hrs | 0/20 |
| Environmental Test | Temperature Cycling | MIL-STD-202:107D MIL-STD-750:1051 MIL-STD-883:1010 JIS-C-7021 :A-4 | $-35^\circ\text{C} \sim +25^\circ\text{C} \sim +85^\circ\text{C} \sim +25^\circ\text{C}$ 60min 20min 60min 20min Test Time=5cycle | 0/20 |
| | Thermal Shock | MIL-STD-202:107D MIL-STD-750:1051 MIL-STD-883:1011 | $-35^\circ\text{C}\pm 5^\circ\text{C} \sim +85^\circ\text{C}\pm 5^\circ\text{C}$ 20min 20min Test Time=10cycle | 0/20 |
| | Solder Resistance | MIL-STD-202:201A MIL-STD-750:2031 JIS-C-7021 :A-1 | Preheating : 140°C -160°C, within 2 minutes. Operation heating : 260°C (Max.), within 10seconds. (Max.) | 0/20 |

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

SURFACE MOUNT CHIP LED LAMPS**Part Number: AL-HKB36A****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 | |

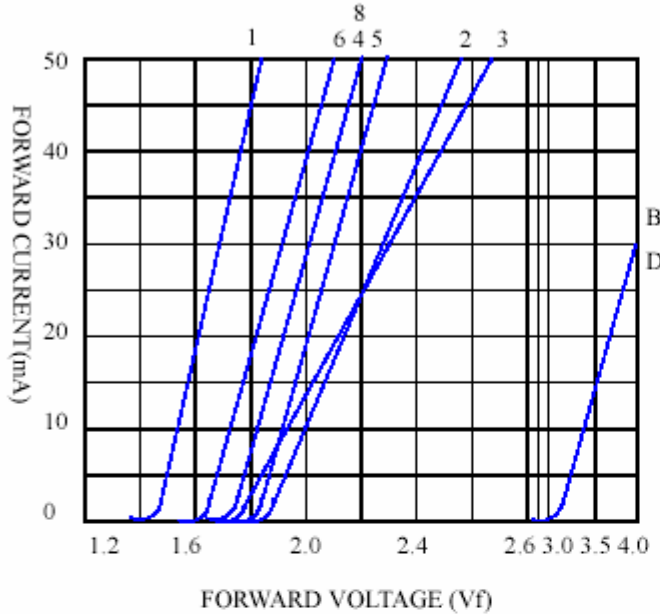
SURFACE MOUNT CHIP LED LAMPS

Part Number: AL-HKB36A

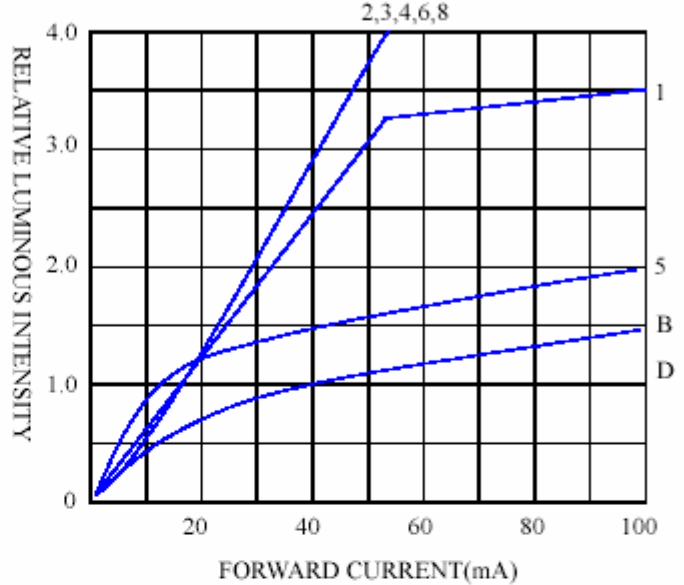
Typical Optical-Electrical Characteristic Curves

◆ **CHARACTERISTICS DIAGRAMS**

FORWARD CURRENT VS. FORWARD VOLTAGE



RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT



FORWARD CURRENT VS. AMBIENT TEMPERATURE

