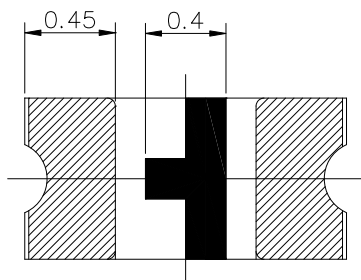
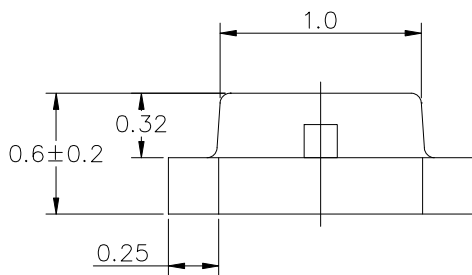
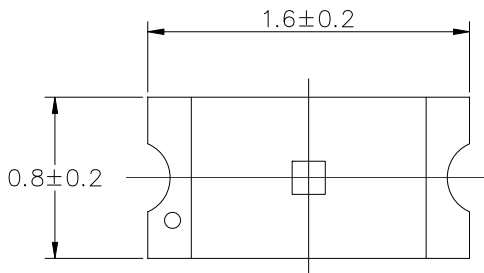


SURFACE MOUNT LED LAMPS

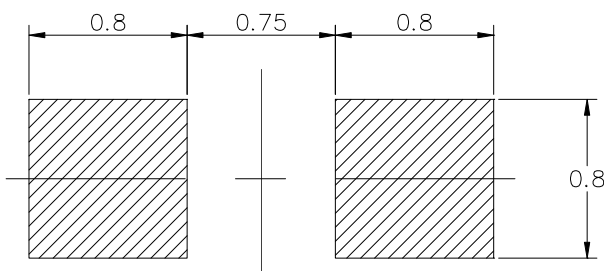
0603 Package Yellow SMD Chip LED Lamps (0.6mm Height)

Part Number: AL-HKB36A

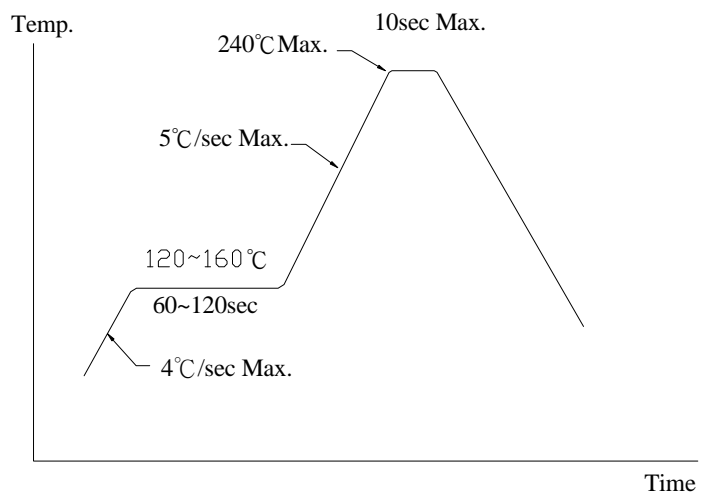
Package outlines & Re-flow Profile



Recommend Pad Layout



■ 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:

1. All dimensions are in millimeters (inches);
2. Tolerances are $\pm 0.1\text{mm}$ (0.004inch) unless otherwise noted.
3. Soldering terminal may shift in x, y direction.
4. Polarity referring on to the Cathode mark is reversed on the red.

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SURFACE MOUNT LED LAMPS

Part Number: AL-HKB36A

ELECTRO-OPTICAL CHARACTERISTICS (T_A=25°C)

| Parameter | Test Condition | Symbol | Value | | | Unit |
|---|----------------------|-----------------|-------|------|------|------|
| | | | MIN. | TYP. | MAX. | |
| Viewing angle at 50% I _v | I _F =20mA | 2 θ 1/2 | 130 | | | Deg |
| Forward voltage | I _F =20mA | V _F | 1.8 | 2.0 | 2.6 | V |
| Luminous intensity | I _F =20mA | I _v | – | 45 | – | mcd |
| Dominant Wavelength | I _F =20mA | λ d | – | 590 | – | nm |
| Peak Emission Wavelength | I _F =20mA | λ p | – | 585 | – | 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 | 10 | μA |
| Power Dissipation | P _D | 62 | mW |
| Operating temperature range | Top | -30 ~+80 | °C |
| Storage temperature range | Tstg | -40 ~+90 | °C |

SURFACE MOUNT LED LAMPS

Part Number: AL-HKB36A

Test items and results of reliability

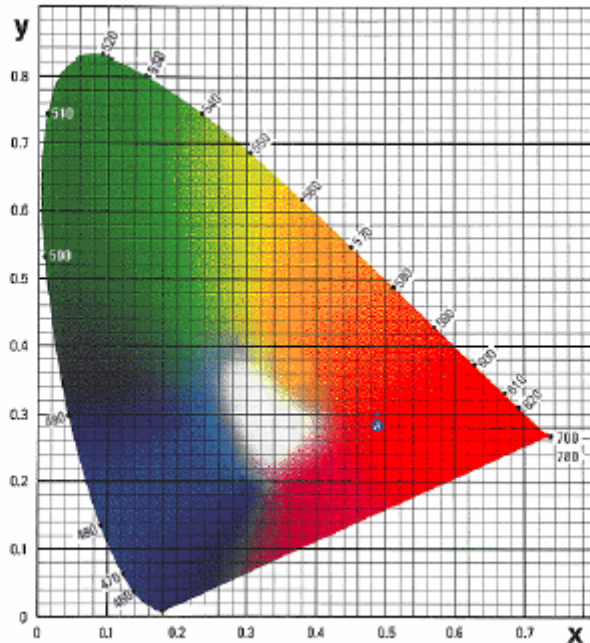
| No. | Items | Test Condition | Test Hours/Cycles | Sample Size |
|-----|-------------------------------------|---|-------------------|-------------|
| 1 | Solder Heat | TEMP : 260°C±5°C | 5 sec | 48 pcs |
| 2 | Temperature Cycle | 90°C ~ 25°C ~ -30°C ~ 25°C 30m 5m 30m 5m | 300Cycles | 48 pcs |
| 3 | Thermal Shick | 100°C ~ -55°C 10m 10m | 100Cycles | 48 pcs |
| 4 | Operation Life | I _F =20mA | 1000 Hrs | 48 pcs |
| 5 | High Temperature Storage | Temp : 90°C | 1000Hrs | 48 pcs |
| 6 | Low Temperature Storage | Temp : -30°C | 1000Hrs | 48 pcs |
| 7 | High Temperature / High Humidity | 80°C / R.H80% | 1000Hrs | 48 pcs |

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

SURFACE MOUNT LED LAMPS

Part Number: AL-HKB36A

◆ TYPICAL ELECTRICAL-OPTICAL CHARACTERISTICS CURVES



RELATIVE INTENSITY VS. WAVELENGTH(λ_p)

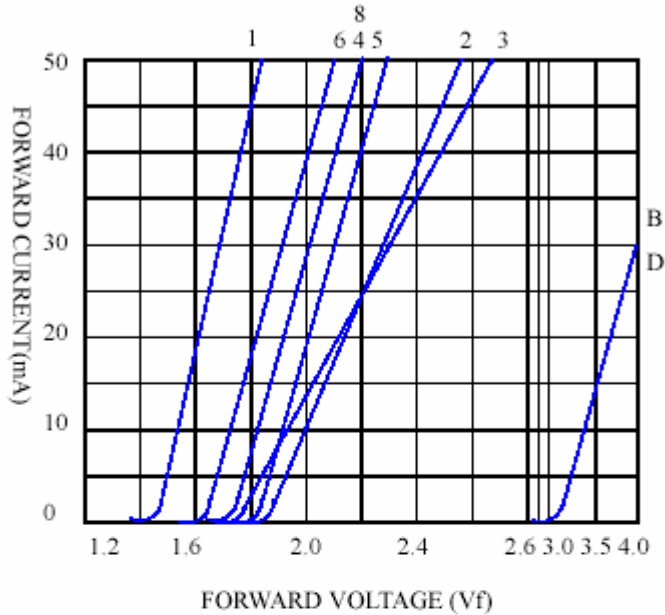
- | | |
|---|----------------------------------|
| (1) GaAsP/GaAs 655nm/Red | (9)- GaAlAs 880nm |
| (2) GaP 568nm/ Yellow Green | (10)-GaAs/GaAs&GaAlAs/GaAs 940nm |
| (3) GaAsP/GaP 585nm/Yellow | (A)- GaN 430nm/Blue |
| (4) GaAsP/GaP 635nm/Orange & Hi-Eff Red | (B)- InGaN 470nm/Blue |
| (5) GaP 700nm/Bright 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 LED LAMPS

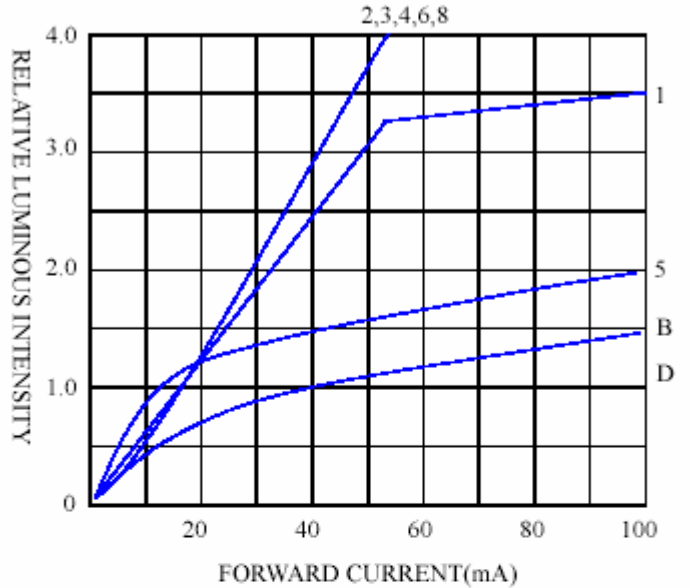
Part Number: AL-HKB36A

◆ CHARACTERISTICS DIAGRAMS

FORWARD CURRENT VS. FORWARD VOLTAGE



RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT



FORWARD CURRENT VS. AMBIENT TEMPERATURE

