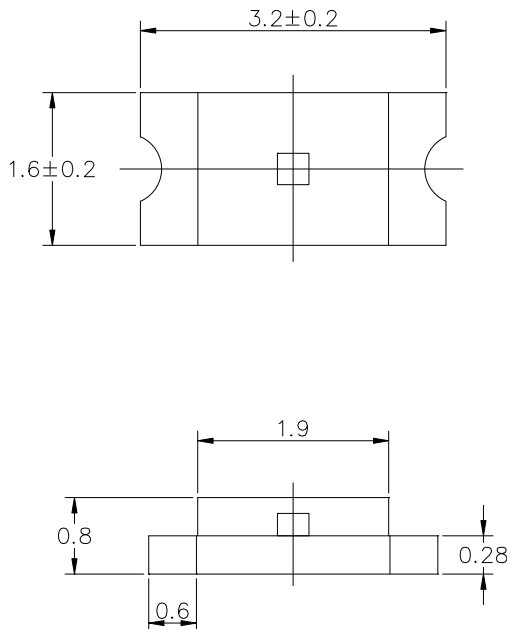


SURFACE MOUNT LED LAMPS

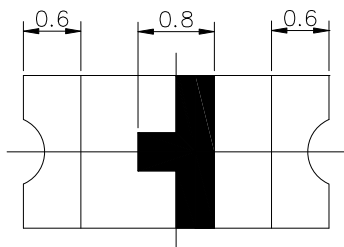
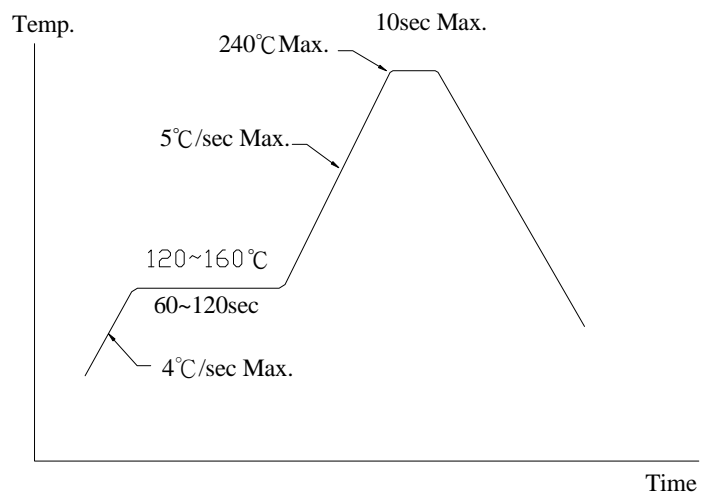
1206 Package Red SMD Chip LED Lamps

Part Number: AL-HUB33

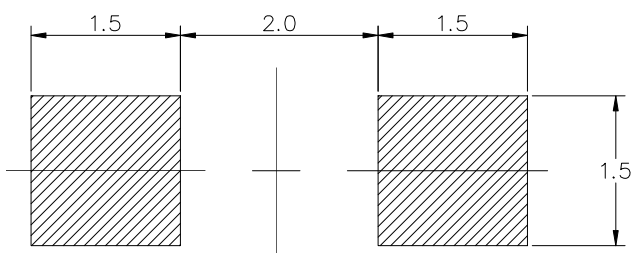
Package outlines & Re-flow Profile



■ Reflow Temp./Time



RECOMMEND PAD LAYOUT



■ 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	Red

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-HUB33

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	–	40	–	mcd
Dominant Wavelength	I _F =20mA	λ _d	–	630	–	nm
Peak Emission Wavelength	I _F =20mA	λ _p	–	625	–	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-HUB33

Test items and results of reliability

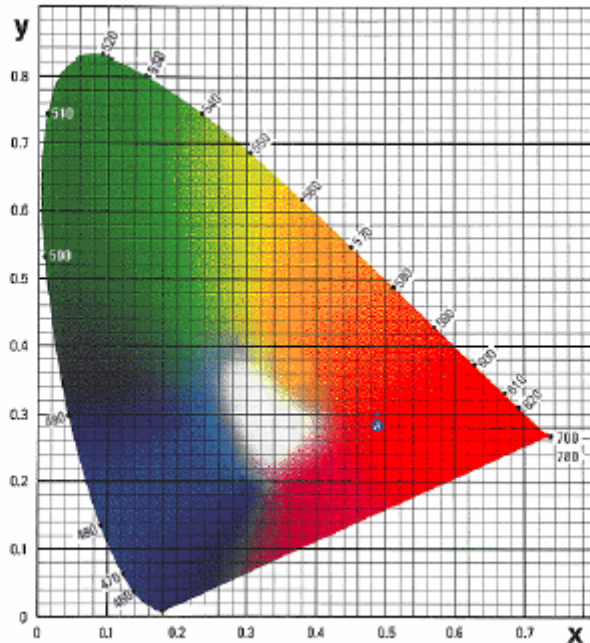
No.	Items	Test Condition	Test Hours/Cycles	Sample Size
1	Solder Heat	TEMP : 260°C±5°C	5 sec	48 pcs
2	Temperature Cycle	90°C ~ 25°C ~ -30°C ~ 25°C 30m 5m 30m 5m	300Cycles	48 pcs
3	Thermal Shick	100°C ~ -55°C 10m 10m	100Cycles	48 pcs
4	Operation Life	I _F =20mA	1000 Hrs	48 pcs
5	High Temperature Storage	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-HUB33

◆ TYPICAL ELECTRICAL-OPTICAL CHARACTERISTICS CURVES



RELATIVE INTENSITY VS. WAVELENGTH(λ_p)

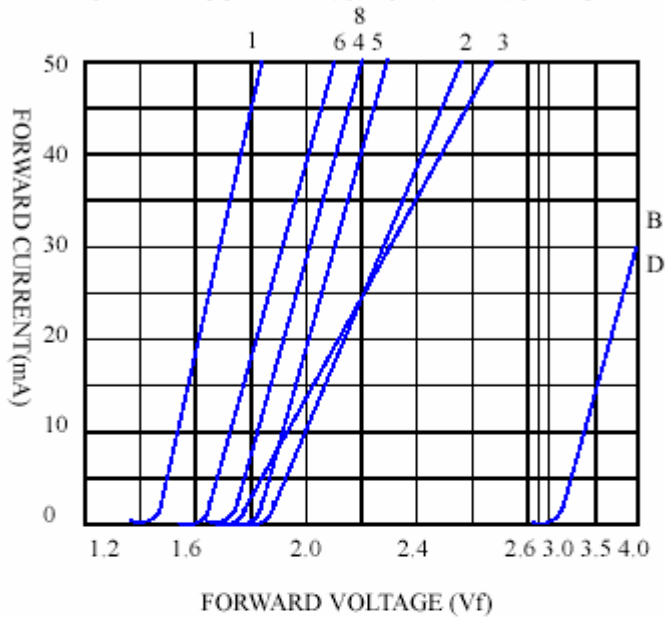
- | | |
|---|----------------------------------|
| (1) GaAsP/GaAs 655nm/Red | (9)- GaAlAs 880nm |
| (2) GaP 568nm/ Yellow Green | (10)-GaAs/GaAs&GaAlAs/GaAs 940nm |
| (3) GaAsP/GaP 585nm/Yellow | (A)- GaN 430nm/Blue |
| (4) GaAsP/GaP 635nm/Orange & Hi-Eff Red | (B)- InGaN 470nm/Blue |
| (5) GaP 700nm/Bright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

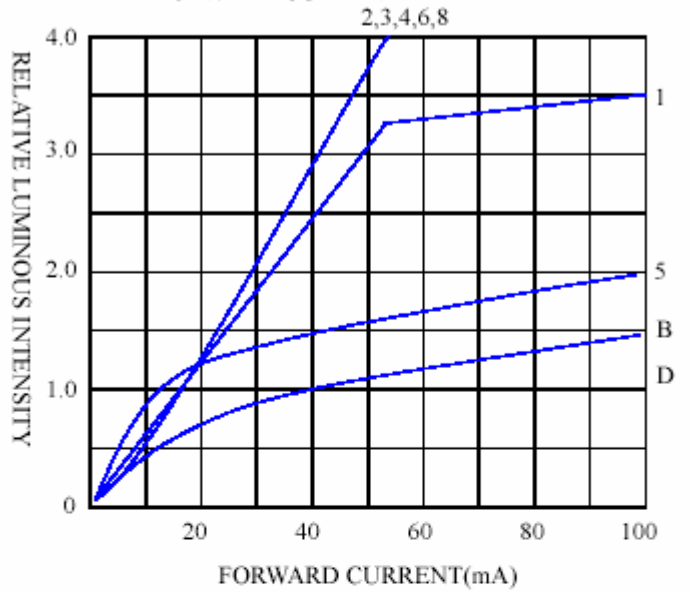
Part Number: AL-HUB33

◆ CHARACTERISTICS DIAGRAMS

FORWARD CURRENT VS. FORWARD VOLTAGE



RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT



FORWARD CURRENT VS. AMBIENT TEMPERATURE

