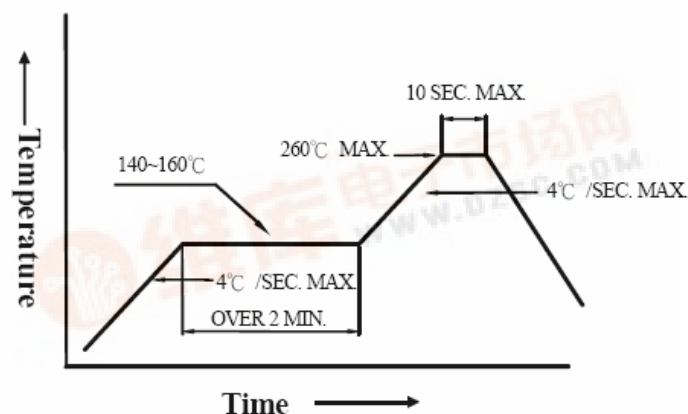
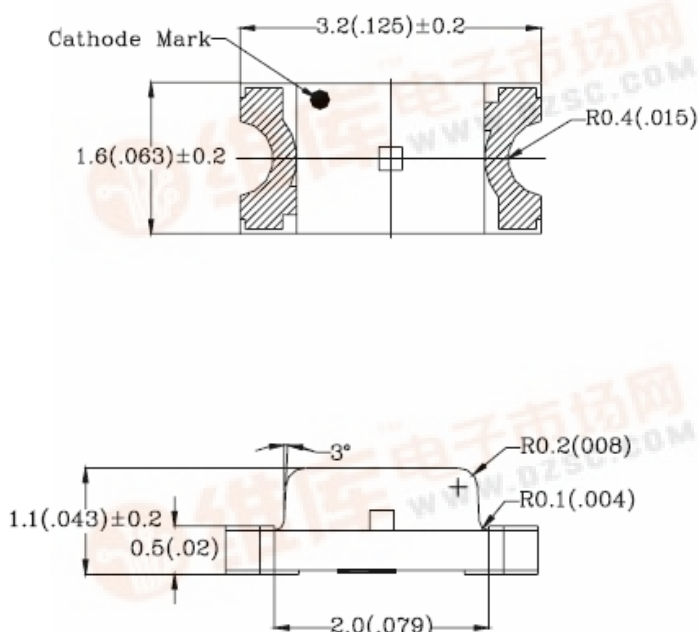


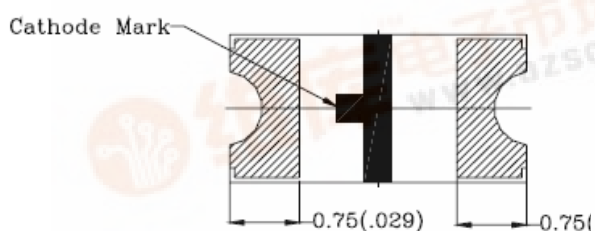
A-BRIGHT**A-BRIGHT INDUSTRIAL CO., LTD.****SURFACE MOUNT CHIP LED LAMPS****1206 Package Super Red SMD Chip LED Lamps****Part Number: AL-HUB33****Package outlines & Re-flow Profile**

■ Reflow Temp/Time

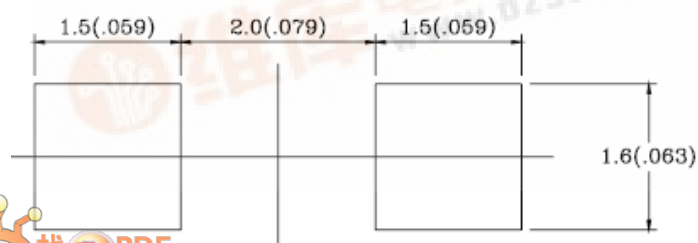


■ Soldering iron

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 .



For Reflow Soldering



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

NOTES:

- All dimensions are in millimeters (inches);
- Tolerances are $\pm 0.1\text{mm}$ (0.004inch) unless otherwise noted.



A-BRIGHT INDUSTRIAL CO., LTD.

SURFACE MOUNT CHIP LED LAMPS

Part Number: AL-HUB33

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.)			50.0	
Wavelength	I _F =20mA	λ p	645	nm
		λ d	632±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		



A-BRIGHT INDUSTRIAL CO., LTD.

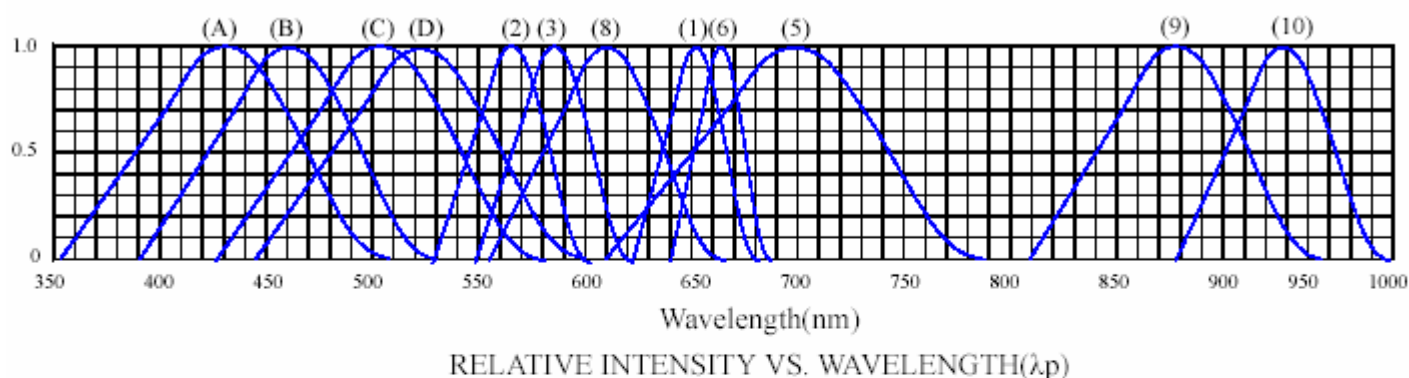
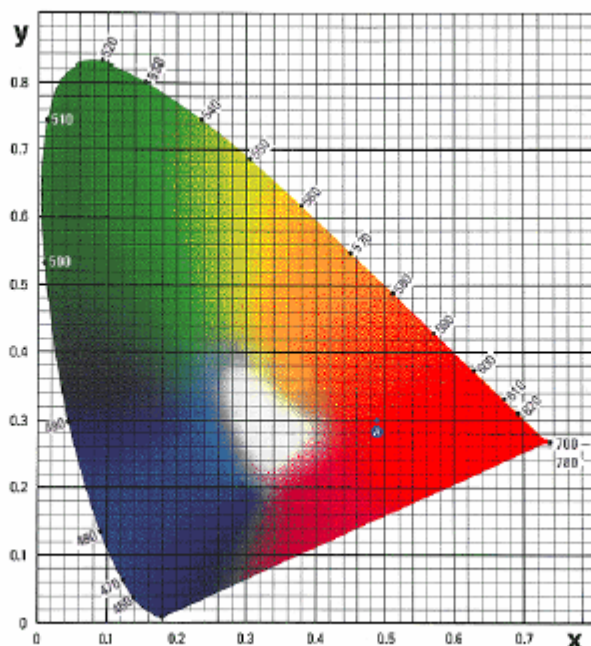
SURFACE MOUNT CHIP LED LAMPS

Part Number: AL-HUB33

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 : $140^{\circ}\text{C}-160^{\circ}\text{C}$, within 2 minutes. Operation heating : $260^{\circ}\text{C}(\text{Max.})$, within 10seconds. (Max.)	0/20

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

SURFACE MOUNT CHIP LED LAMPS**Part Number: AL-HUB33****Typical Optical-Electrical Characteristic Curves**◆ **TYPICAL ELECTRICAL-OPTICAL CHARACTERISTICS CURVES**

- (1) GaAsP/GaAs 655nm/Red
- (2) GaP 568nm/ Yellow Green
- (3) GaAsP/GaP 585nm/Yellow
- (4) GaAsP/GaP 635nm/Orange & Hi-Eff Red
- (5) GaP 700nm/Bright Red
- (6) GaAlAs/GaAs 660nm/Super Red
- (8) GaAsP/GaP 610nm/Super Red

- (9)- GaAlAs 880nm
- (10)-GaAs/GaAs&GaAlAs/GaAs 940nm
- (A)- GaN 430nm/Blue
- (B)- InGaN 470nm/Blue
- (C)- InGaN 502nm/Ultra Green
- (D)- InGaN 523nm/Ultra Green



A-BRIGHT INDUSTRIAL CO., LTD.

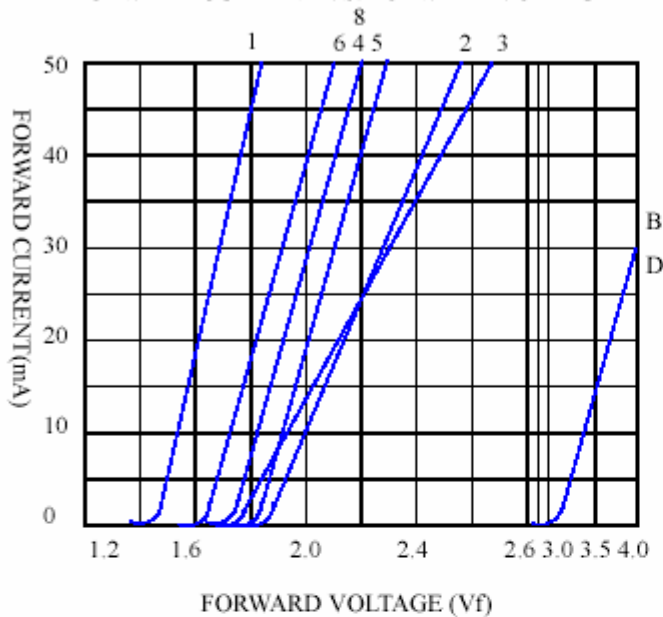
SURFACE MOUNT CHIP LED LAMPS

Part Number: AL-HUB33

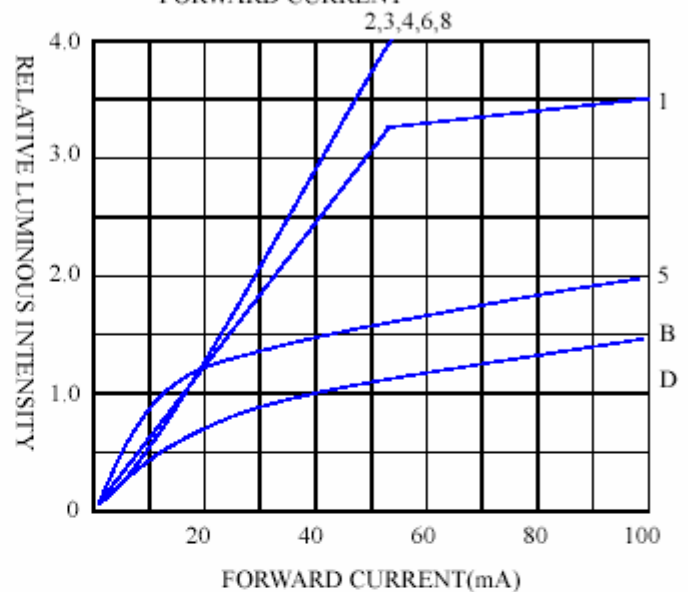
Typical Optical-Electrical Characteristic Curves

◆ CHARACTERISTICS DIAGRAMS

FORWARD CURRENT VS. FORWARD VOLTAGE



RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT



FORWARD CURRENT VS. AMBIENT TEMPERATURE

