# BRIGHT LED ELECTRONICS CORP.

SINCE 1981

● Features:

1. Emitted Color : Super Orange Red

2. Lens Appearance : Water Clear

3. Mono-color type.

4. 1.0x0.5x0.4mm(0402) standard package

5. Suitable for all SMT assembly methods.

6. Compatible with infrared and vapor phase reflow solder process.

7. Compatible with automatic placement equipment.

8. This product doesn't contain restriction Substance, comply ROHS standard.

● Applications:

1. Automotive: Dashboards, stop lamps, turn signals.

2. Backlighting: LCDs, Key pads advertising.

3. Status indicators : Comsumer & industrial electronics.

4. General use.

●Package Dimensions:
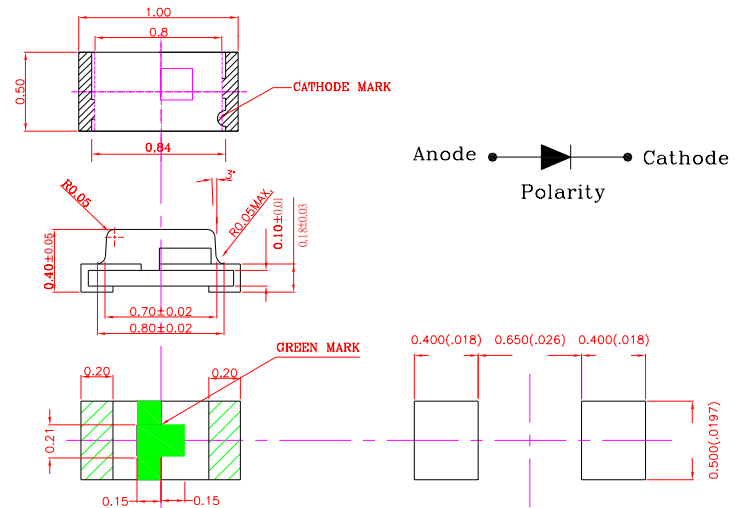
NOTES:
 1.All dimensions are in millimeters (inches).
 2.Tolerance is ± 0.10mm (0.004") unless otherwise specified.
 3.Specifications are subject to change without notice.
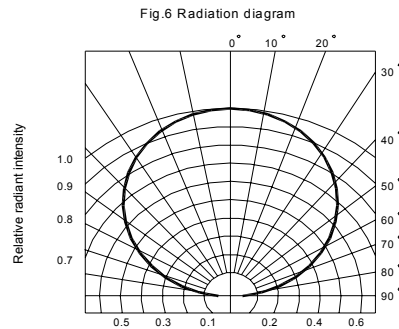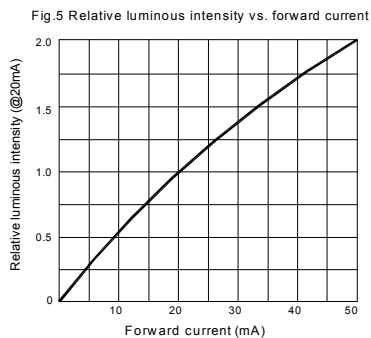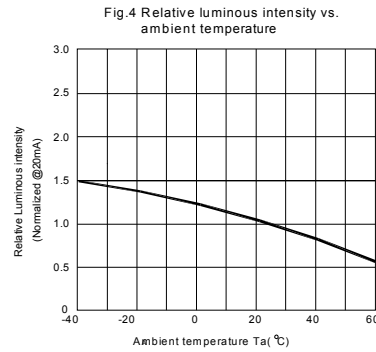
● Absolute Maximum Ratings(Ta=25℃)

Parameter	Symbol	Rating	Unit
Power Dissipation	Pd	52	mW
Forward Current	I_F	20	mA
Peak Forward Current ＊1	I_{FP}	100	mA
Reverse Voltage	V_R	5	V
Operating Temperature	Topr	-40℃~85℃	-
Storage Temperature	Tstg	-40℃~85℃	-
Soldering Temperature	Tsol	See Page 6	-

＊1 Condition for IFp is pulse of 1/10 duty and 0.1msec width.

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● Electrical and optical characteristics(Ta=25℃)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward Voltage	Vf	I_F=20mA	-	2.0	2.6	V
Luminous Intensity	lv	I_F=20mA	63	100	-	mcd
Reverse Current	I_R	V_R=5V	-	-	100	μA
Peak Wave Length	λp	I_F=20mA	-	630	-	nm
Dominant Wave Length	λd	I_F=20mA	615	-	625	nm
Spectral Line Half-width	Δλ	I_F=20mA	-	17	-	nm
Viewing Angle	$2\theta_{1/2}$	I_F=20mA	-	120	-	deg

● Typical Electro-Optical Characteristics Curves

Fig.1 Relative intensity vs. wavelength

Fig.2 Forward current derating curve vs. ambient temperature

Fig.3 Forward current vs. forward voltage

Fig.4 Relative luminous intensity vs. ambient temperature

Fig.5 Relative luminous intensity vs. forward current

Fig.6 Radiation diagram
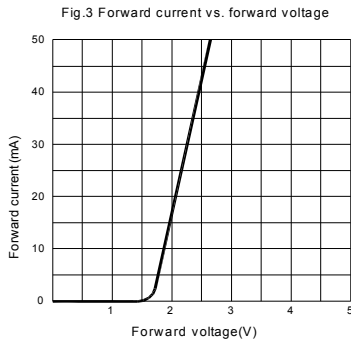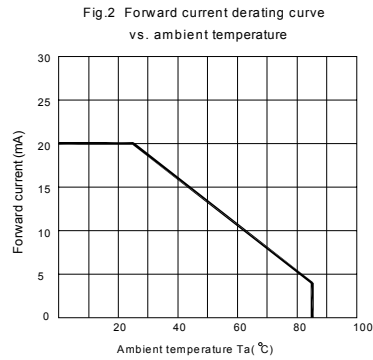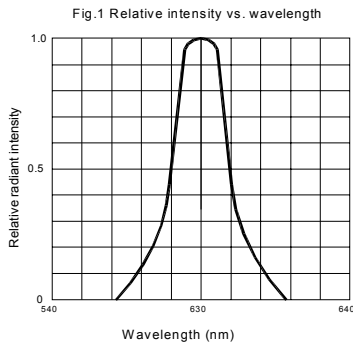
● **Tapping and packaging specifications(Units: mm)**

Quantity:1000-3000PCS

USER DIRECTION OF FEED

0.60±0.05

START   END

0.50±0.05

1.1±0.05

ANODE

5.3±0.05

71.0±1

13.0±0.5

CATHODE

3.5±0.05

8.0±0.3

1.75±0.1

4.0±0.1   1.5! 00.1

4.0±0.1   2.0! 00.05

0.3

13.0±0.5

179±1

TRAILER

LEADER

FIXING TAPE

NOTE: 3000 pcs PER REEL
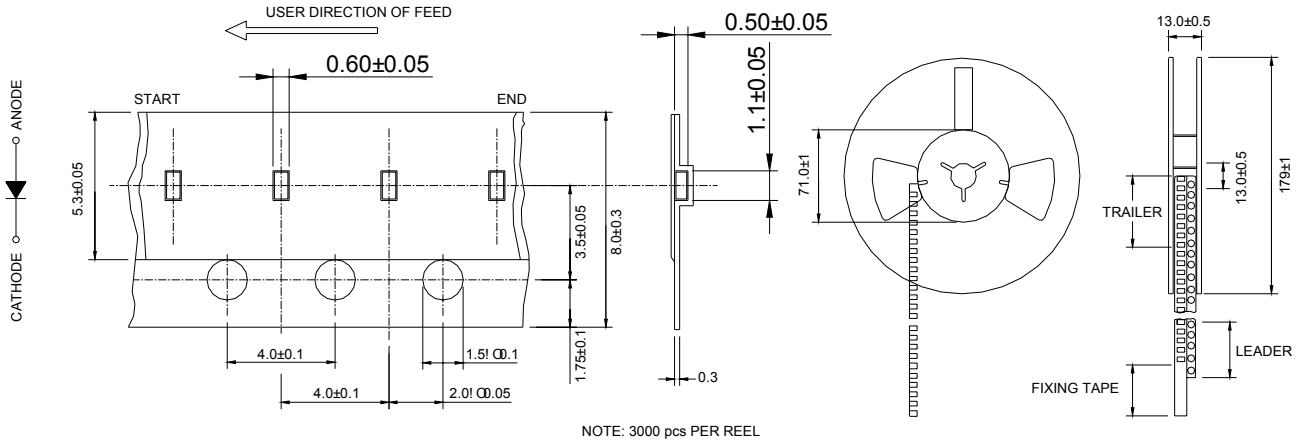
●**Package Method:(unit:mm)Vacuum**

12 bag/box

3000 pcs/reel

Bar Code Label

245

220

Aluminum Foil Bag

200

185   220

645

6 box/carton

210

470
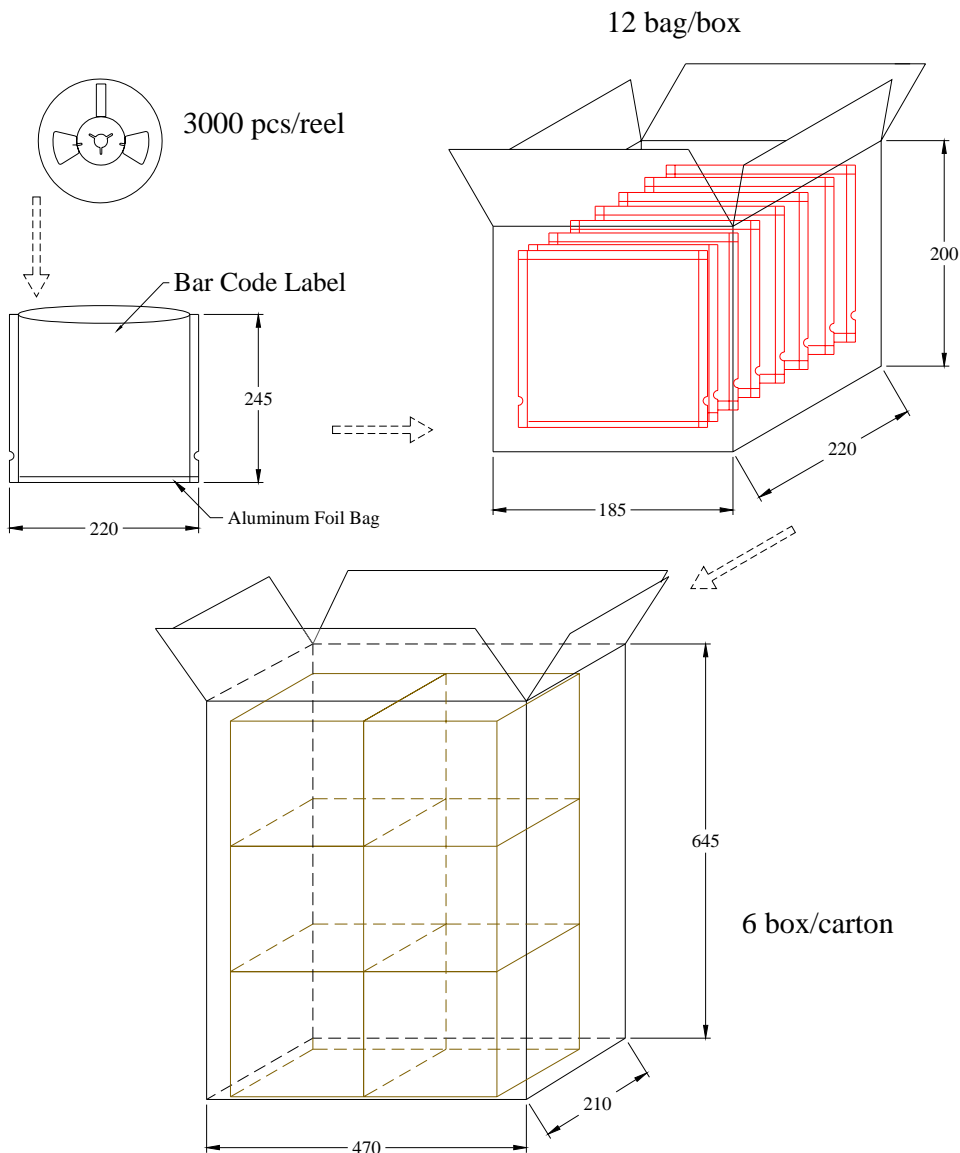
● **Bin Limits**

Intensity Bin Limits (At 20mA)

BIN CODE	Min. (mcd)	Max. (mcd)
P	63	94
Q	94	140
R	140	210
S	210	317

Tolerance for each Bin limit is ±15%.

Color Bin Limits (At 20mA)

BIN CODE	Min. (nm)	Max. (nm)
*	615	625

Tolerance for each Bin limit is ± 1

Intensity Bin Limits (At 20mA)

BIN CODE	Min. (v)	Max. (v)
B	1.8	2.0
C	2.0	2.2
D	2.2	2.4
E	2.4	2.6

Tolerance for each Bin limit is ± 0.05

● BIN：x   x   x

V_F BIN CODE

Color BIN CODE

Intensity BIN CODE

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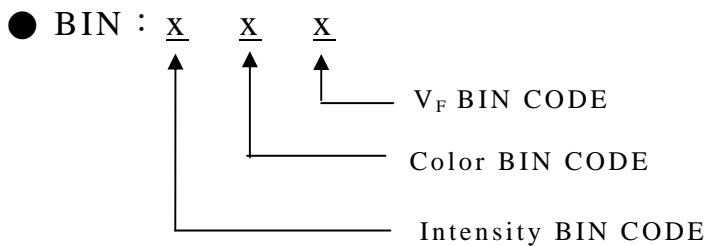
● **Reliability Test**

Classification	Test Item	Reference Standard	Test Conditions	Result
Endurance Test	Operation Life	MIL-STD-750D:1026 MIL-STD-883D:1005 JIS-C-7021　　:B-1	Ta: Under room temperature Test time:1,000hrs IF=Product Recommended IF	0/32
	High Temperature High Humidity Storage	MIL-STD-202F:103B JIS-C-7021　　:B-11	Ta:85±5℃ RH:90%-95% Test time:240hrs	0/32
	High Temperature Storage	MIL-STD-883:1008 JIS-C-7021　　:B-10	Ta:100±5℃ Test time:1,000hrs	0/32
	Low Temperature Storage	JIS-C-7021　　:B-11	Ta: -40±5℃ Test time=1,000hrs	0/32
Environmental Test	Temperature Cycling	MIL-STD-202F:107D MIL-STD-750D:1051 MIL-STD-883D:1010 JIS-C-7021　　:A-2	Ta:-35±5℃~25±5℃~85±5℃~25±5℃ 30min　　5min　　30min　　　5min	0/32
	Thermal Shock	MIL-STD-202F:107D(1980) MIL-STD-750D:1051(1995) MIL-STD-883D:1011(1991)	Ta:-40±5℃　~+85±5℃ 10min　　　　　10 min Time: 20min/cycle　　10cycle	0/32
	Wetting balance	MIL-STD-883:2003 MIL-STD-202F:208D MIL-STD-883D:2003	Ta:230±5℃ Time:5±0.5s	0/32
	Solder Resistance	MIL-STD-202F:210A MIL-STD-883D:1011 JIS-C-7021　　:A-1	Ta:260±10℃ Time:10±1s	0/32

● **Judgment criteria of failure for the reliability**

Measuring items	Symbol	Measuring conditions	Judgement criteria for failure
Forward voltage	V_F (V)	I_F=20mA	Initial Level*1.1
Reverse current	I_R(uA)	V_R=5V	Over U*2
Luminous intensity	Iv (mcd)	I_F=20mA	Initial Level*0.7

Note:　1.U means the upper limit of specified characteristics.

　　　　2.Measurment shall be taken between 2 hours and after the test pieces have been returned to

　　　　normal ambient conditions after completion of each test.
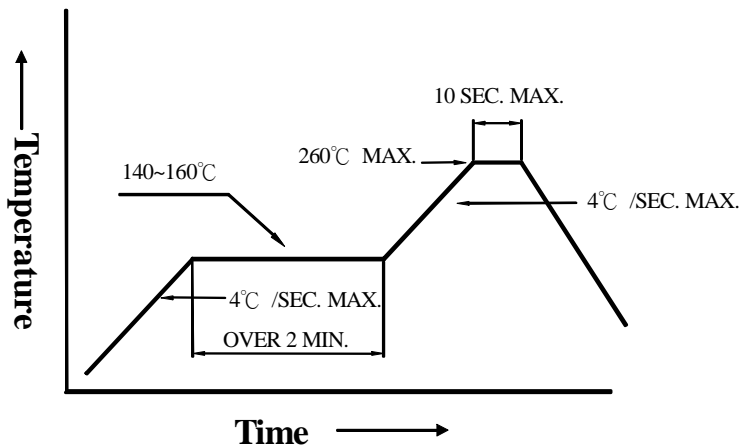
● **Soldering :**

1. Manual Of Soldering
The temperature of the iron tip should not be higher than 300℃(572℉) and Soldering within 3 seconds per solder-land is to be observed.

2. Reflow Soldering
Preheating : 140℃~160℃±5℃,within 2 minutes.
Operation heating : 260℃(Max.) within 10 seconds.(Max)
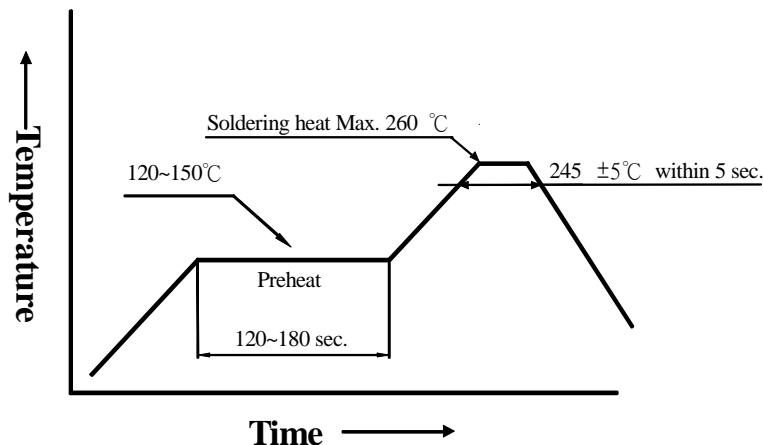Gradual Cooling (Avoid quenching).

3. DIP soldering (Wave Soldering) :
Preheating : 120℃~150℃,within 120~180 sec.
Operation heating : 245℃±5℃ within 5 sec.260℃ (Max)
Gradual Cooling (Avoid quenching).

● **Handling :**

Care must be taken not to cause to the epoxy resin portion of BRIGHT LEDs while it is exposed to high temperature.
Care must be taken not rub the epoxy resin portion of BRIGHT LEDs with hard or sharp article such as the sand blast and the metal hook**.**

● **Notes for designing:**

Care must be taken to provide the current limiting resistor in the circuit so as to drive the BRIGHT LEDs within the rated figures. Also, caution should be taken not to overload BRIGHT LEDs with instantaneous voltage at the turning ON and OFF of the circuit.
When using the pulse drive care must be taken to keep the average current within the rated figures. Also, the circuit should be designed so as be subjected to reverse voltage when turning off the BRIGHT LEDs.

● **Storage:**

In order to avoid the absorption of moisture, it is recommended to solder BRIGHT LEDs as soon as possible after unpacking the sealed envelope.

If the envelope is still packed, to store it in the environment as following:
(1) Temperature : 5℃-30℃(41℉)Humidity : RH 60% Max.
(2) After this bag is opened, devices that will be applied to infrared reflow, vapor-phase reflow, or equivalent soldering process must be:
a. Completed within 168 hours.
b. Stored at less than 30% RH.
(3) Devices require baking before mounting, if:
    (2) a or (2) b is not met.
(4) If baking is required, devices must be baked under below conditions:
    48 hours at 60℃±3℃.

● **Package and Label of Products:**

(1) Package: Products are packed in one bag of 3000 pcs (one taping reel) and a label is attached on each bag.
(2) Label:

佰鴻工業股份有限公司 **BRIGHT LED ELECTRONICS CORP.**	**BRIGHT LED LOGO**
Part No.:BL-Hxxxxx-TRB	**Part No.**
Quantity:xxxx **BIN:x**	**Quantity** **BIN.**
Sealing date:xxxxx	**Sealing Date**

X	XX	XX	XX
	Year	Month	Day

Manufacture Location