BRIGHT LED ELECTRONICS CORP.

SINCE 1981

Specification for Approval

SAMPLES ATTACHED AREA

- DEVICE NUMBER: BL-HKC39R-TRB
- CUSTOMER:

DATE \ PAGE	1	2	3	4	5	6	7				CONTENTS
2019/3/25	1.0	1.0	1.0	1.0	1.0	1.0	1.0				Original Released

FOR CUSTOMER'S APPROVAL STAMP OR SIGNATURE

APPROVED	PURCHASE	MANUFACTURE	QUALITY	ENGINEERING

佰鴻工業股份有限公司
BRIGHT LED ELECTRONICS CORP.
新北市板橋區和平路 19 號 3 樓
3F., No.19, He Ping Road,
Ban Qiao Dist., New Taipei City,
Taiwan
Tel: +886-2-29591090
Fax: +886-2-29547006/29558809
www.brtled.com

ISSUED	APPROVED	PREPARED
張孝嚴	謝皓翔	熊燦芬

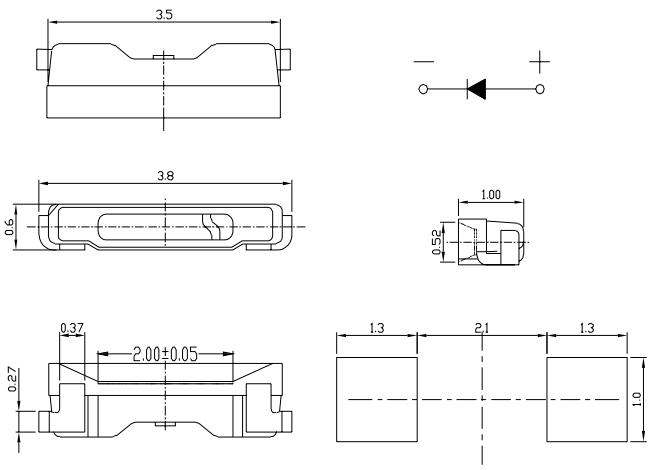
● Features:

1. Emitted Color: Super Yellow.
2. Lens Appearance: Water Clear.
3. 3.8x0.6x1.0mm standard package.
4. Suitable for all SMT assembly methods.
5. Compatible with infrared and vapor phase reflow solder process.
6. Compatible with automatic placement equipment.
7. This product doesn't contain restriction Substance, comply ROHS standard.

● Applications:

1. Automotive lighting.
2. Backlighting: LCDs, Key pads advertising.
3. Status indicators: Consumer & 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	78	mW
Forward Current	I_F	30	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 7	-

*1 Condition for I_{FP} is pulse of 1/10 duty and 3 msec width.

● 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	Iv	I_F=20mA	-	200	-	mcd
Peak Wavelength	λp	I_F=20mA	-	590	-	nm
Dominant Wavelength	λd	I_F=20mA	586	-	594	nm
Spectral Line Half-width	Δλ	I_F=20mA	-	15	-	nm
Reverse Current	I_R	V_R=5V	-	-	10	μA
Viewing Angle	$2\theta_{1/2}$	I_F=20mA	-	120	-	deg

● Typical Electro-Optical Characteristics Curves

Fig.1 RELATIVE INTENSITY VS. WAVELENGTH

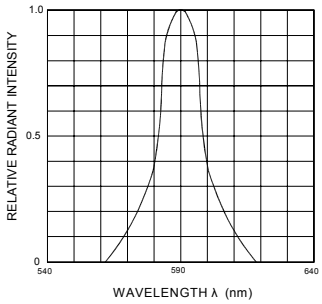


Fig.2 Forward current derating curve vs. ambient temperature

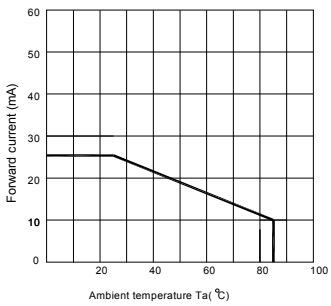


Fig.3 FORWARD CURRENT VS. FORWARD VOLTAGE

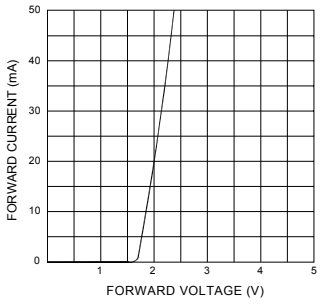


Fig.4 RELATIVE LUMINOUS INTENSITY VS. AMBIENT TEMPERATURE

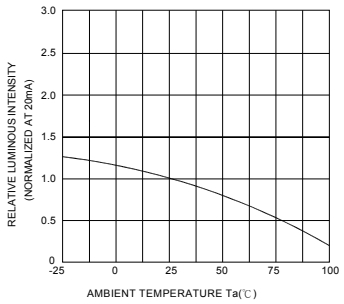
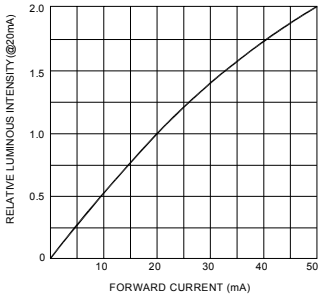
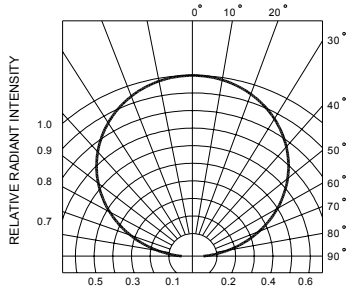


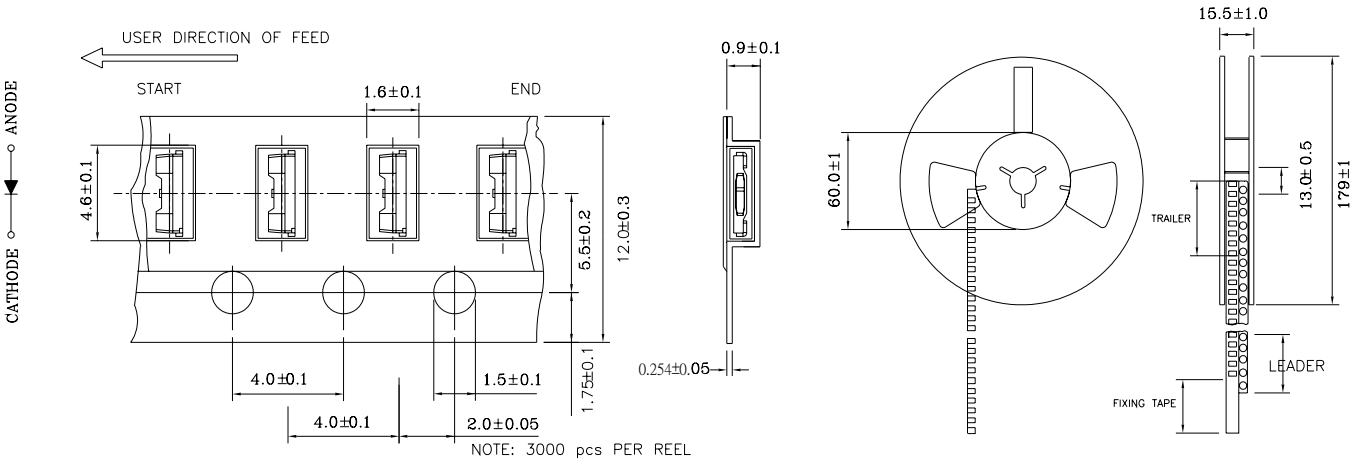
Fig.5 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT



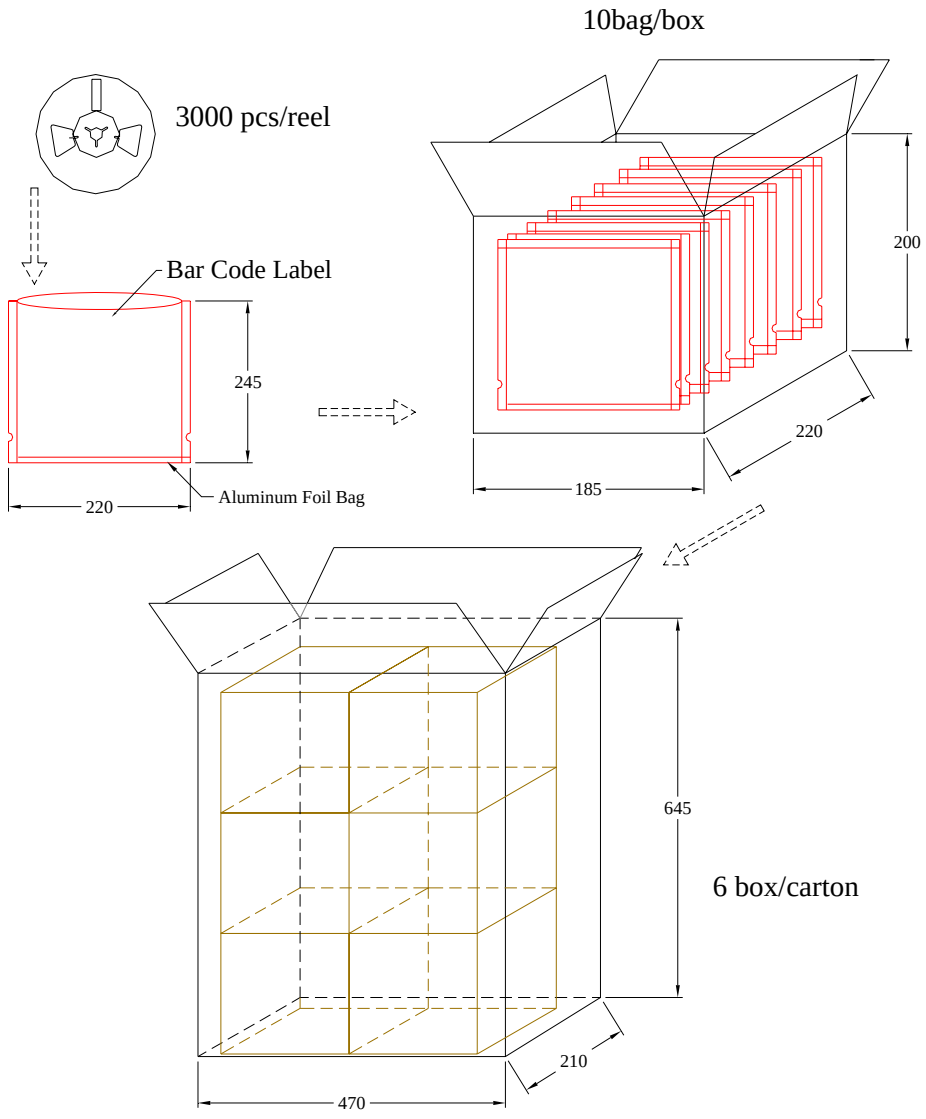
RADIATION DIAGRAM



● Tapping and packaging specifications(Units: mm)



●Package Method:(unit:mm)



● Intensity Bin Limits (At 20 mA)

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

Tolerance for each Bin limit is ±10%.

● Color Bin Limits (At 20 mA)

BIN CODE	Min. (nm)	Max. (nm)
4	586	588
5	588	590
6	590	592
7	592	594

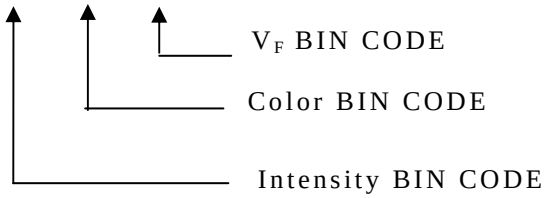
Tolerance for each Bin limit is ± 1 nm

● Forward Voltage Bin Limits (At 20 mA)

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 ± 0.05V.

● BIN : X X X



● Reliability Test

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	I_F=20mA Ta=Under room temperature Test time=1,000hrs	0/20
	High Temperature High Humidity Storage	MIL-STD-202:103B JIS-C-7021 :B-11	Ta=+65℃±5℃ RH=90%-95% Test time=240hrs	0/20
	High Temperature Storage	MIL-STD-883:1008 JIS-C-7021 :B-10	High Ta=+85℃±5℃ Test time=1,000hrs	0/20
	Low Temperature Storage	JIS-C-7021 :B-12	Low Ta=-35℃±5℃ 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℃ ~ +25℃ ~ +85℃ ~ +25℃ 60min 20min 60min 20min Test Time=5cycle	0/20
	Thermal Shock	MIL-STD-202:107D MIL-STD-750:1051 MIL-STD-883:1011	-35℃±5℃ ~+85℃±5℃ 20min 20min Test Time=10cycle	0/20
	Solder Resistance	MIL-STD-202:201A MIL-STD-750:2031 JIS-C-7021 :A-1	Preheating： 140℃-160℃,within 2 minutes. Operation heating： 260℃(Max.), within 10seconds. (Max.)	0/20

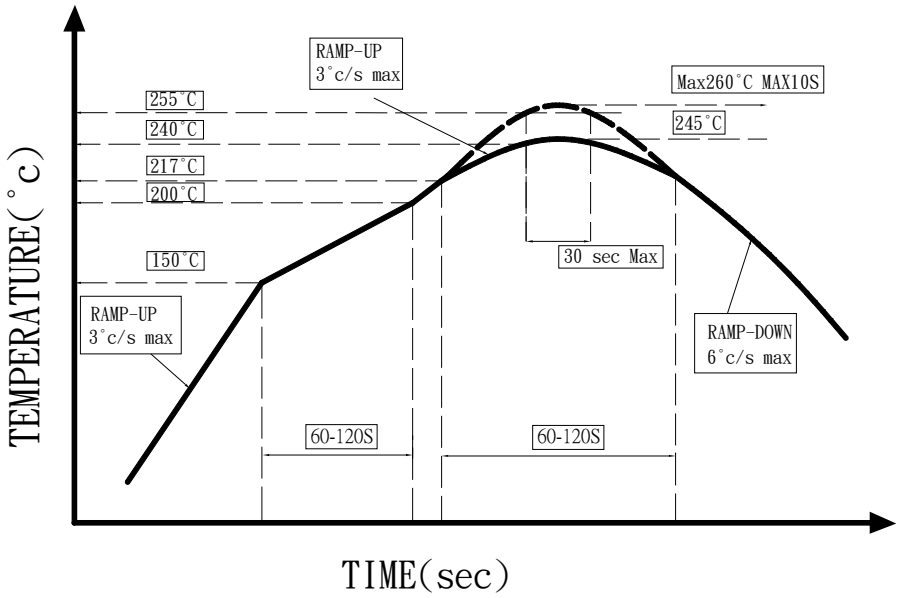
● **Judgment criteria of failure for the reliability**

Measuring items	Symbol	Measuring conditions	Judgment criteria for failure
Forward voltage	V_F (V)	I_F=20mA	Over U^1x1.2
Reverse current	I_R (uA)	V_R=5V	Over U^1x2
Luminous intensity	Iv (mcd)	I_F=20mA	Below S^1X0.5

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

2. After each test, remove test pieces, wait for 2 hours and test pieces have returned to ambient temperature, then take next measurement.

●IR-Reflow Soldering



1. Avoid any external stress applied to the resin while the LEDs are at high temperature, especially during soldering .
2. Avoid rapid cooling or any excess vibration during temperature ramp-down process
3. Although the soldering condition is recommended above, soldering at the lowest possible temperature is feasible for the LEDs

● IRON Soldering

350℃ Within 3 sec,one time only.

● Handling :

Care must be taken not to damage LED's resin while exposing to high temperature or contact LED's epoxy resin with hard or sharp objects, such as metal hook, tweezer or sand blasting.

● 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 24 hours.
b. Stored at less than20% 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℃±5℃.

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: