BRIGHT LED ELECTRONICS CORP.

SINCE 1981

產 品 承 認 書

Product Approval Sheet

一.基本內容(INFORMATION)

客戶名稱(Customer Name)：

產品型號(Product Number)：BL-7020C10

料號信息(PN Information)：

客戶料號	參數要求				
	亮度 (mcd)	Φ V(lm)	x/y	電壓 (V)	CRI (Ra)
	Min：25000	Min：50	x:0.28;y0.26	Min：2.9	-

二.供應商確認欄(SUPPLIER)

核准(Approved/Date)	審核(Check/Date)	製作(Prepared/Date)
張孝嚴 2016-1-13	張喜光 2016-1-13	熊燦芬 2016-1-13

三.客戶批准欄(CUSTOMER)

產品承認書批准處理：□同意　　□拒絕　　□其它_____

核准(Approved/Date)	審核(Check/Date)	研發/工程(R&D Dept/Date)

說明：請將已簽副本回覆我司

Please return to us one copy "PRODUCT ACKNOWLEDGEMENT SHEET" with your approved signatures!

佰鴻工業股份有限公司

BRIGHT LED ELECTRONICS CORP.
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BRIGHT LED ELECTRONICS CORP.

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Revision History

Rev.	Date	History	Writer	Approved
1.0	2016-1-13	New SPEC	熊燦芬	张喜光

BRIGHT LED ELECTRONICS CORP.

● Features:

1. Emitted Color: White.
2. Lens Appearance: Yellow clear.
3. 7.0x2.0x0.8mm 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. Lighting
2. Automotive lighting.
3. Backlighting: LCDs
4. Status indicators: Consumer & industrial electronics.
5. General use.

●Package Dimensions:
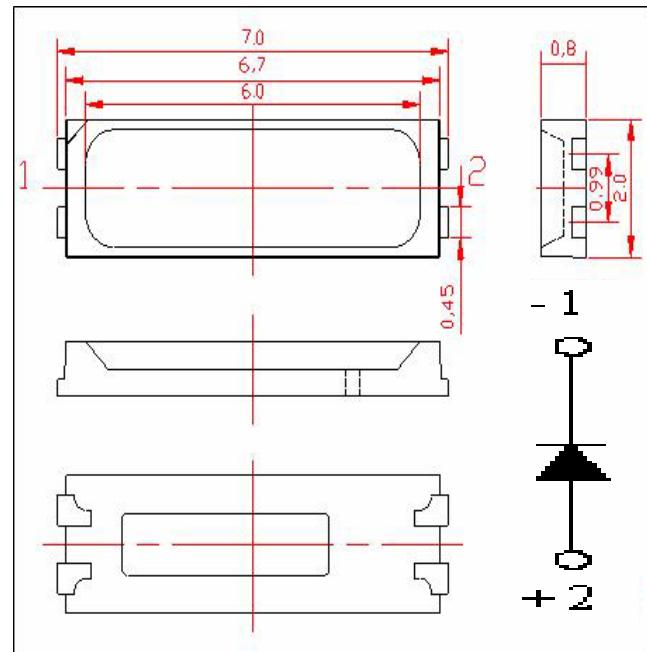
Notes:
1. All dimensions are in millimeters.
2. Tolerance is ±0.2mm unless otherwise specified.
3. Specifications are subject to change without notice.

## ● Absolute Maximum Ratings(Ta=25℃)

Parameter	Symbol	Rating	Unit
Power Dissipation	P_D	500	mW
Forward Current	I_F	180	mA
Peak Forward Current*[1]	I_{FP}	270	mA
Reverse Voltage	V_R	5	V
Operating Temperature	Topr	-40℃~85℃	-
Storage Temperature	Tstg	-40℃~85℃	-
Soldering Temperature	Tsol	See Page 9	-

Note : I_{FP} is pulse of 1/10 duty at 1KHz

● Electrical and optical characteristics(Ta=25℃)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
*2Forward Voltage	VF		2.9	-	3.4	V
Luminous Flux	Φ V		50	55	-	lm
Chromaticity Coordinates	x	IF =150mA	-	0.28	-	-
	y		-	0.26	-	
Color Temperature	CCT		7040	-	30000	K
Viewing Angle	2θ 1/2		-	120	-	deg
Color Rendering Index	CRI		-	70	-	-

● Typical Electro-Optical Characteristics Curves.

Fig.1 RELATIVE INTENSITY VS. WAVELENGTH
[IF=150mA Ta=25⊥]

RELATIVE RADIANT INTENSITY

WAVELENGTH (nm)
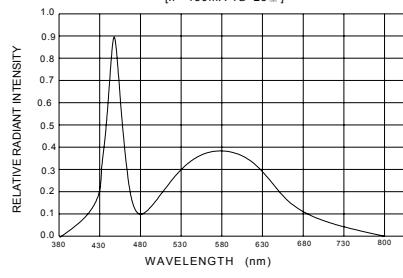
Fig.2 Forward current derating curve
vs. ambient temperature

Forward current (mA)

Ambient temperature Ta(℃)
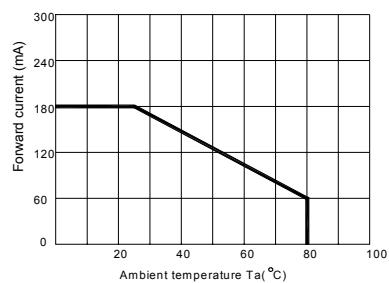
Fig.3 Forward current vs. forward voltage

Forward current (mA)

Forward voltage(V)
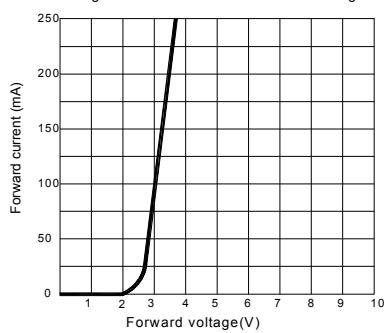
Fig.4 Relative luminous intensity vs.
ambient temperature

Relative Luminous intensity
(Normalized @150mA)

Ambient temperature Ta(℃)
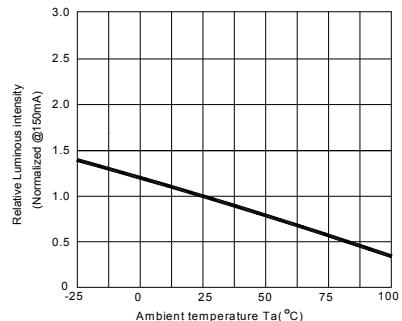
Fig.5 Relative luminous intensity
vs. forward current

Relative luminous intensity (@150mA)

Forward current (mA)

Fig.6 Radiation diagram

Relative radiant intensity
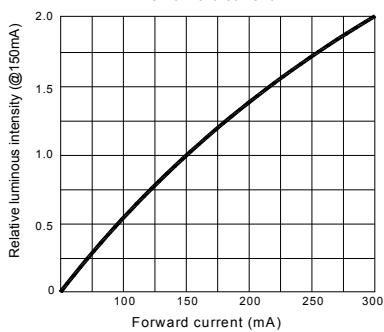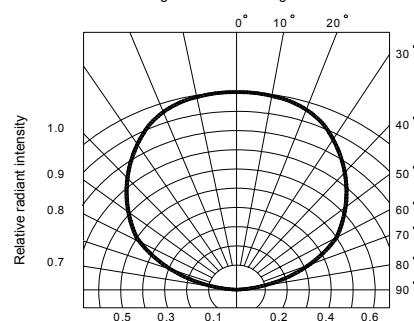
● **Tapping and packaging specifications(Units: mm)**

CATHODE

ANODE

$B-B$

0.28 ± 0.02

$20.\pm0.10$ 4.00 ± 0.10

$\phi1.50+0.10$

7.50 ± 0.10

$16^{+0.3}_{-0.1}$

$\phi1.50\pm0.10$

4.00 ± 0.10

Bo 7.22 ± 0.10

Ao 2.22 ± 0.10

Ko 0.97 ± 0.10

$A-A$

● **Package Method:(unit:mm)**

2 000 pcs/reel

12 bag/box

Bar Code Label

245

Aluminum Foil Bag

220

200

220

185

645

210

470

6 box/carton
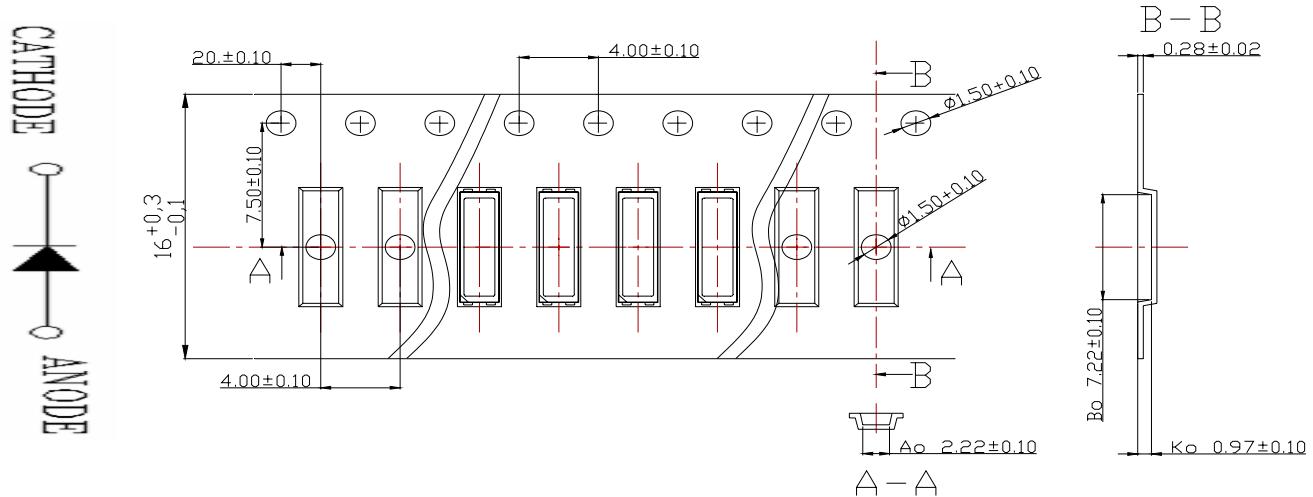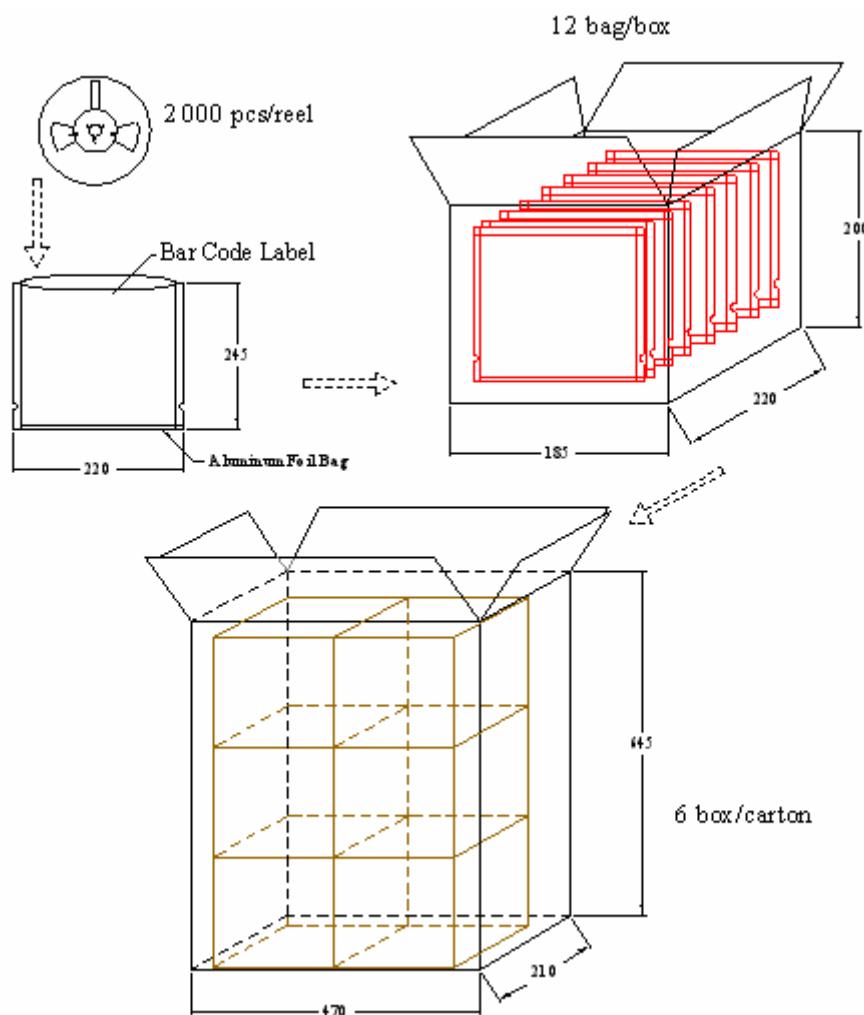
Bin of Luminous Flux (at 150mA)

BIN CODE	Min. (mcd)	Max. (mcd)	Min. (Lm)	Max. (Lm)
P	25000	27500	50	55
Q	27500	30000	55	60
R	30000	32500	60	65

Bin of Forward Voltage (at 150 mA,)

BIN CODE	Min. (v)	Max. (v)
Z	2.9	3.0
A	3.0	3.1
B	3.1	3.2
C	3.2	3.3
D	3.3	3.4

Chromaticity Diagram (at 150 mA)
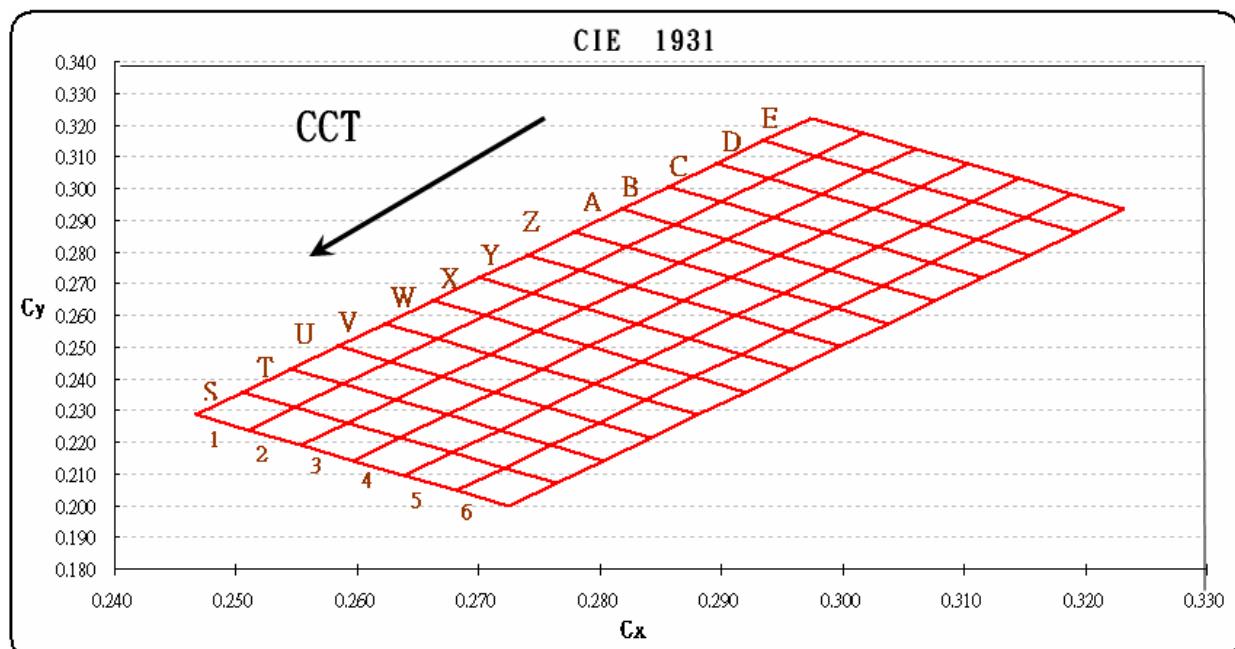
Color Bin Limits (at 150mA)

S1		S2		S3		S4		S5		S6	
Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy
0.2467	0.2286	0.251	0.2238	0.2553	0.219	0.2467	0.2286	0.251	0.2238	0.2553	0.219
0.2506	0.2358	0.2549	0.231	0.2592	0.2262	0.2506	0.2358	0.2549	0.231	0.2592	0.2262
0.2549	0.231	0.2592	0.2262	0.2635	0.2214	0.2549	0.231	0.2592	0.2262	0.2635	0.2214
0.251	0.2238	0.2553	0.219	0.2596	0.2142	0.251	0.2238	0.2553	0.219	0.2596	0.2142

T1		T2		T3		T4		T5		T6	
Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy
0.2506	0.2358	0.2549	0.231	0.2592	0.2262	0.2506	0.2358	0.2549	0.231	0.2592	0.2262
0.2545	0.243	0.2588	0.2382	0.2631	0.2334	0.2545	0.243	0.2588	0.2382	0.2631	0.2334
0.2588	0.2382	0.2631	0.2334	0.2674	0.2286	0.2588	0.2382	0.2631	0.2334	0.2674	0.2286
0.2549	0.231	0.2592	0.2262	0.2635	0.2214	0.2549	0.231	0.2592	0.2262	0.2635	0.2214

U1		U2		U3		U4		U5		U6	
Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy
0.2545	0.243	0.2588	0.2382	0.2631	0.2334	0.2674	0.2286	0.2717	0.2238	0.276	0.219
0.2584	0.2502	0.2627	0.2454	0.267	0.2406	0.2713	0.2358	0.2756	0.231	0.2799	0.2262
0.2627	0.2454	0.267	0.2406	0.2713	0.2358	0.2756	0.231	0.2799	0.2262	0.2842	0.2214
0.2588	0.2382	0.2631	0.2334	0.2674	0.2286	0.2717	0.2238	0.276	0.219	0.2803	0.2142

V1		V2		V3		V4		V5		V6	
Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy
0.2584	0.2502	0.2627	0.2454	0.267	0.2406	0.2713	0.2358	0.2756	0.231	0.2799	0.2262
0.2623	0.2574	0.2666	0.2526	0.2709	0.2478	0.2752	0.243	0.2795	0.2382	0.2838	0.2334
0.2666	0.2526	0.2709	0.2478	0.2752	0.243	0.2795	0.2382	0.2838	0.2334	0.2881	0.2286
0.2627	0.2454	0.267	0.2406	0.2713	0.2358	0.2756	0.231	0.2799	0.2262	0.2842	0.2214

W1		W2		W3		W4		W5		W6	
Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy
0.2623	0.2574	0.2666	0.2526	0.2709	0.2478	0.2752	0.243	0.2795	0.2382	0.2838	0.2334
0.2662	0.2646	0.2705	0.2598	0.2748	0.255	0.2791	0.2502	0.2834	0.2454	0.2877	0.2406
0.2705	0.2598	0.2748	0.255	0.2791	0.2502	0.2834	0.2454	0.2877	0.2406	0.292	0.2358
0.2666	0.2526	0.2709	0.2478	0.2752	0.243	0.2795	0.2382	0.2838	0.2334	0.2881	0.2286

X1		X2		X3		X4		X5		X6	
Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy
0.2662	0.2646	0.2705	0.2598	0.2748	0.255	0.2791	0.2502	0.2834	0.2454	0.2877	0.2406
0.2701	0.2718	0.2744	0.267	0.2787	0.2622	0.283	0.2574	0.2873	0.2526	0.2916	0.2478
0.2744	0.267	0.2787	0.2622	0.283	0.2574	0.2873	0.2526	0.2916	0.2478	0.2959	0.243
0.2705	0.2598	0.2748	0.255	0.2791	0.2502	0.2834	0.2454	0.2877	0.2406	0.292	0.2358

Y1		Y2		Y3		Y4		Y5		Y6	
Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy
0.2701	0.2718	0.2744	0.267	0.2787	0.2622	0.283	0.2574	0.2873	0.2526	0.2916	0.2478
0.274	0.279	0.2783	0.2742	0.2826	0.2694	0.2869	0.2646	0.2912	0.2598	0.2955	0.255
0.2783	0.2742	0.2826	0.2694	0.2869	0.2646	0.2912	0.2598	0.2955	0.255	0.2998	0.2502
0.2744	0.267	0.2787	0.2622	0.283	0.2574	0.2873	0.2526	0.2916	0.2478	0.2959	0.243

Z1		Z2		Z3		Z4		Z5		Z6	
Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy
0.274	0.279	0.2783	0.2742	0.2826	0.2694	0.2869	0.2646	0.2912	0.2598	0.2955	0.255
0.2779	0.2862	0.2822	0.2814	0.2865	0.2766	0.2908	0.2718	0.2951	0.267	0.2994	0.2622
0.2822	0.2814	0.2865	0.2766	0.2908	0.2718	0.2951	0.267	0.2994	0.2622	0.3037	0.2574
0.2783	0.2742	0.2826	0.2694	0.2869	0.2646	0.2912	0.2598	0.2955	0.255	0.2998	0.2502

A1		A2		A3		A4		A5		A6	
Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy
0.2779	0.2862	0.2822	0.2814	0.2865	0.2766	0.2908	0.2718	0.2951	0.267	0.2994	0.2622
0.2818	0.2934	0.2861	0.2886	0.2904	0.2838	0.2947	0.279	0.299	0.2742	0.3033	0.2694
0.2861	0.2886	0.2904	0.2838	0.2947	0.279	0.299	0.2742	0.3033	0.2694	0.3076	0.2646
0.2822	0.2814	0.2865	0.2766	0.2908	0.2718	0.2951	0.267	0.2994	0.2622	0.3037	0.2574

B1		B2		B3		B4		B5		B6	
Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy
0.2818	0.2934	0.2861	0.2886	0.2904	0.2838	0.2947	0.279	0.299	0.2742	0.3033	0.2694
0.2857	0.3006	0.29	0.2958	0.2943	0.291	0.2986	0.2862	0.3029	0.2814	0.3072	0.2766
0.29	0.2958	0.2943	0.291	0.2986	0.2862	0.3029	0.2814	0.3072	0.2766	0.3115	0.2718
0.2861	0.2886	0.2904	0.2838	0.2947	0.279	0.299	0.2742	0.3033	0.2694	0.3076	0.2646

C1		C2		C3		C4		C5		C6	
Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy
0.2857	0.3006	0.29	0.2958	0.2943	0.291	0.2986	0.2862	0.3029	0.2814	0.3072	0.2766
0.2896	0.3078	0.2939	0.303	0.2982	0.2982	0.3025	0.2934	0.3068	0.2886	0.3111	0.2838
0.2939	0.303	0.2982	0.2982	0.3025	0.2934	0.3068	0.2886	0.3111	0.2838	0.3154	0.279
0.29	0.2958	0.2943	0.291	0.2986	0.2862	0.3029	0.2814	0.3072	0.2766	0.3115	0.2718

D1		D2		D3		D4		D5		D6	
Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy
0.2896	0.3078	0.2939	0.303	0.2982	0.2982	0.3025	0.2934	0.3068	0.2886	0.3111	0.2838
0.2935	0.315	0.2978	0.3102	0.3021	0.3054	0.3064	0.3006	0.3107	0.2958	0.315	0.291
0.2978	0.3102	0.3021	0.3054	0.3064	0.3006	0.3107	0.2958	0.315	0.291	0.3193	0.2862
0.2939	0.303	0.2982	0.3025	0.3068	0.2886	0.2939	0.303	0.2982	0.3025	0.3068	0.2886

E1		E2		E3		E4		E5		E6	
Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy
0.2935	0.315	0.2978	0.3102	0.3021	0.3054	0.3064	0.3006	0.3107	0.2958	0.315	0.291
0.2974	0.3222	0.3017	0.3174	0.306	0.3126	0.3103	0.3078	0.3146	0.303	0.3189	0.2982
0.3017	0.3174	0.306	0.3126	0.3103	0.3078	0.3146	0.303	0.3189	0.2982	0.3232	0.2934
0.2978	0.3102	0.3021	0.3054	0.3064	0.3006	0.3107	0.2958	0.315	0.291	0.3193	0.2862

● BIN : x   x   x

V_F BIN CODE

Color BIN CODE

Intensity BIN CODE
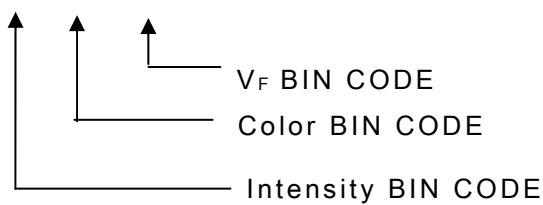
Notes:

1. Iv : Tolerance for each Bin limit is ± 10 %
2. Color : Tolerance for each Bin limit is ±0.005
3. Bin categories are established for classification of products.
   Products may not be available in all bin categories

● **Reliability Test**

Test Item	Test Conditions	Test Hours/Cycles	Result
Steady State Operating Life of High Temperature	I_F=150mA Ta=60℃	1,000hrs	0/20
Steady State Operating Life	I_F=150mA Ta=25℃	3,000hrs	0/20
Steady State Operating Life Low Temperature Condition1	I_F=150mA Ta=-30℃	1,000hrs	0/20
Steady State Operating Life Of High Humidity Heat	I_F=150mA Ta=60℃ RH=75%	1,000hrs	0/20
Thermal shock	-45℃~+125℃ 30 min 30 min	100cycle	0/20
Temperature &Humidity Cycling	Ta=25℃ ~ +65℃ ~ -10℃ RH=90％RH,24hr/1cycle	1cycle	0/20
Resistance to Soldering Heat	Tsld=260℃,10sec(Pre treatment30℃,70％,168hrs)	2times	0/20
ESD(HBM)	-R1:10 KΩ,R2:1.5 KΩ,C:100 pF Discharge Time:3 times	Min.2KV	0/5
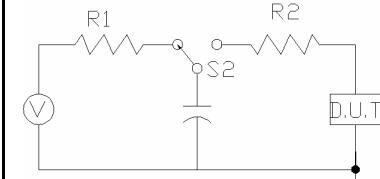
● **Judgment criteria of failure for the reliability**

Measuring items	Symbol	Measuring conditions	Judgment criteria for failure
Forward voltage	V_F (V)	I_F=150mA	Over U[1]x1.2
Reverse current	I_R (uA)	$_R$=5V	Over U[1]x2
Luminous intensity	Iv (mcd)	I_F=150mA	Below S[1]X0.5

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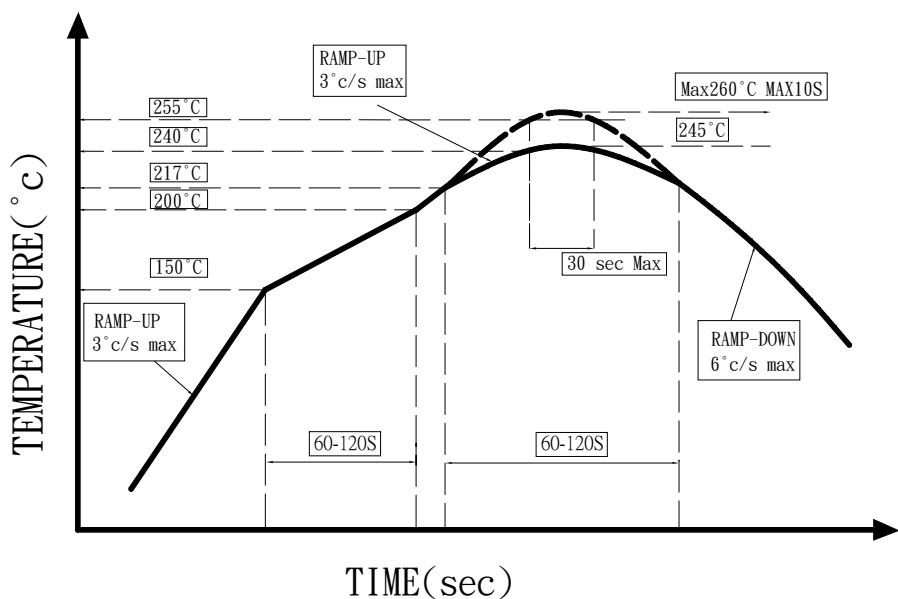
1.   Avoid any external stress applied to the resin while the LEDs are at
       high temperature, especially during soldering .
2.   Avoid rapid cooling or any excess vibration during temperature ramp-down process
3.   Although the soldering condition is recommended above,
       soldering at the lowest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

● **IRON   Soldering**

   300℃ Within 3 sec,one time only.

Handling Precautions

Compare to epoxy encapsulant that is hard and brittle, silicone is softer and flexible. Although its characteristic significantly reduces thermal stress, it is more susceptible to damage by external mechanical force.

As a result, special handling precautions need to be observed during assembly using silicone encapsulated LED products.   Failure to comply might lead to damage and premature failure of the LED.

1. Handle the component along the side surfaces by using forceps or appropriate tools.(pic.1)
2. Do not directly touch or handle the silicone lens surface. It may damage the internal circuitry. (pic.2,pic.3)
3. Do not stack together assembled PCBs, containing exposed LEDs. Impact may scratch the silicone lens or damage the internal circuitry. (pic.4)
4. The outer diameter of the SMD pickup nozzle should not exceed the size of the LED to prevent air leaks. The inner diameter of the nozzle should be as large as possible. (pic.5)
5. A pliable material is suggested for the nozzle tip to avoid scratching or damaging the LED surface during pickup. (pic.5)
6. The dimensions of the component must be accurately programmed in the pick-and-place machine to insure precise pickup and avoid damage during production. (pic.5)

Pic.1   **Pic.2**   **Pic.3**

Pic.4

Pic.5

BRIGHT LED ELECTRONICS CORP.
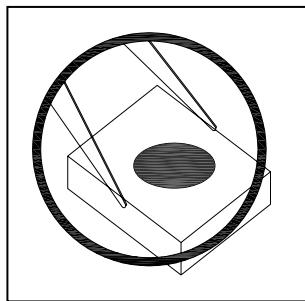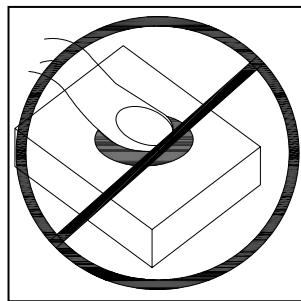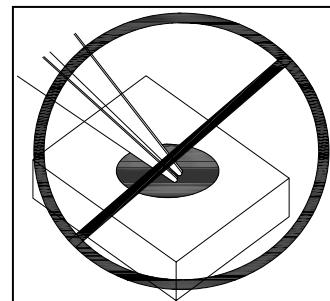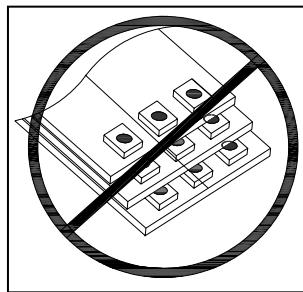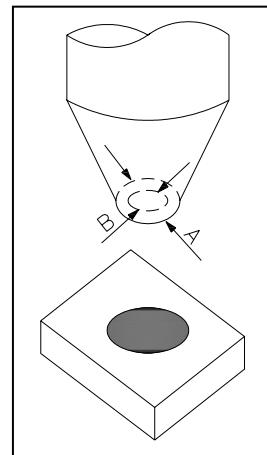
● **Notes for designing:**

Care must be taken to provide the current limiting resistor in the circuit so as to drive the LEDs within the rated figures. Also, caution should be taken not to overload 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 LEDs.

● **Storage:**

In order to avoid the absorption of moisture, it is recommended to solder 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:
　　2a or 2b 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 1000 pcs (one taping reel) and a label is attached to each bag.
(2) Label: