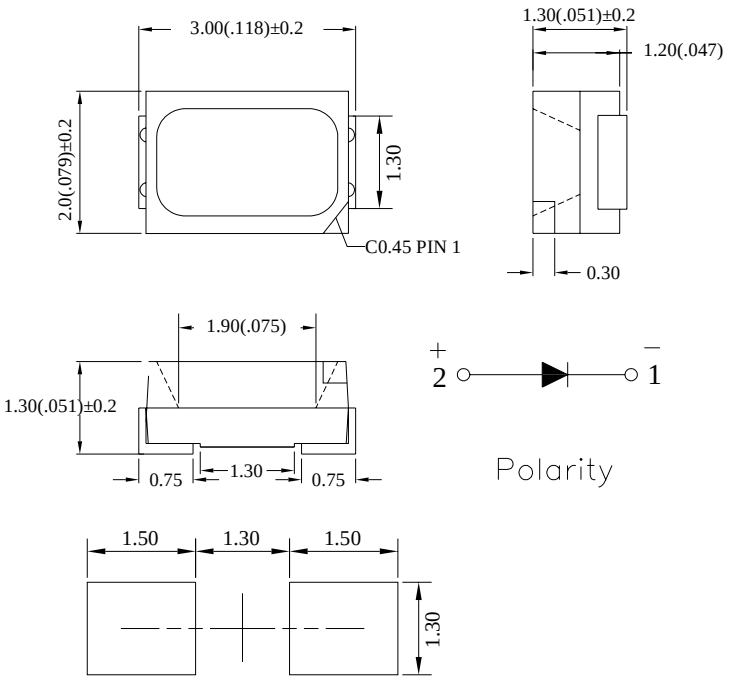
● Features:

1. Emitted Color: Pure White.
   CCT:5400-7000K
2. Lens Appearance: Yellow diffuse.
3. 2.0x3.0x1.3mm 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: Dashboards, stop lamps turn signals.
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	120	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℃~100℃	-
Storage Temperature	Tstg	-40℃~100℃	-
Soldering Temperature	Tsol	See Page 8	-

*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	-	3.2	3.6	V
Luminous Intensity	Iv	I_F=20mA	2300	3000	-	mcd
Chromaticity Coordinates	x	I_F=20mA	-	0.32	-	-
	y	I_F=20mA	-	0.33	-	
Reverse Current	I_R	V_R=5V	-	-	10	mA
Viewing Angle	$2\theta_{1/2}$	I_F=20mA	-	120	-	deg

● Typical Electro-Optical Characteristics Curves

Fig.1 RELATIVE INTENSITY VS. WAVELENGTH

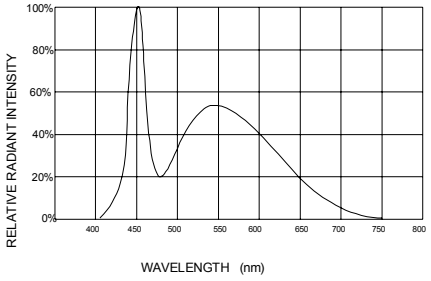


Fig.2 FORWARD CURRENT VS. AMBIENT TEMPERATURE

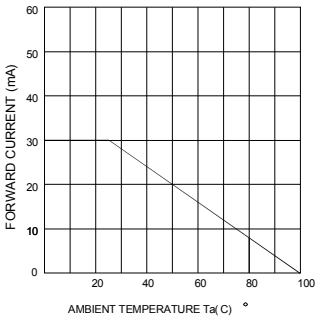


Fig.3 FORWARD CURRENT VS. FORWARD VOLTAGE

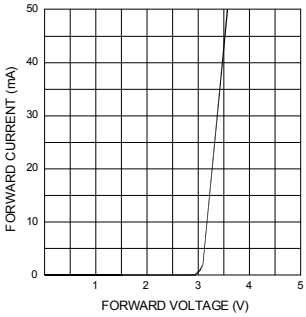


Fig.4 RELATIVE LUMINOUS INTENSITY VS. AMBIENT TEMPERATURE

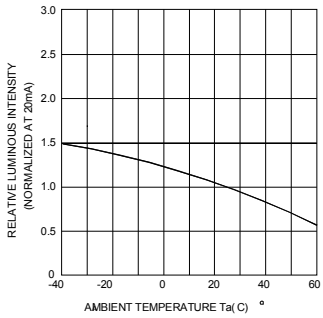


Fig.5 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

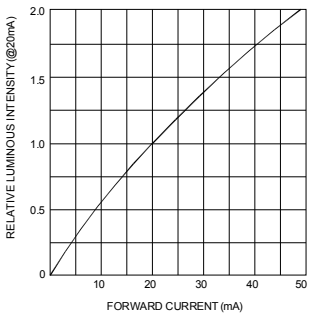


Fig.6 RADIATION DIAGRAM

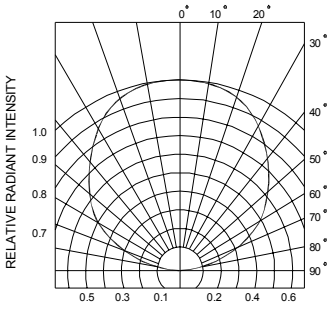


Fig.7 FORWARD CURRENT VS. CHROMATICITY COORDINATE

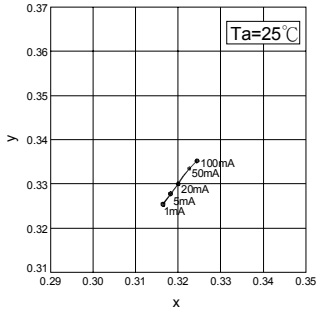
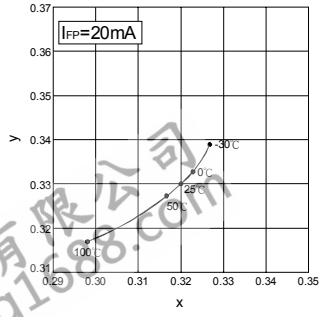
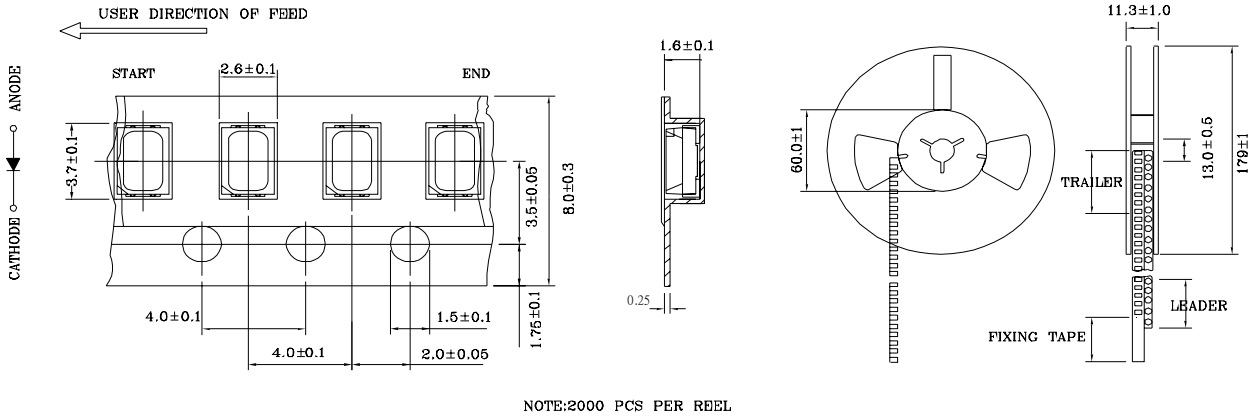


Fig.8 AMBIENT TEMPERATURE VS. CHROMATICITY COORDINATE

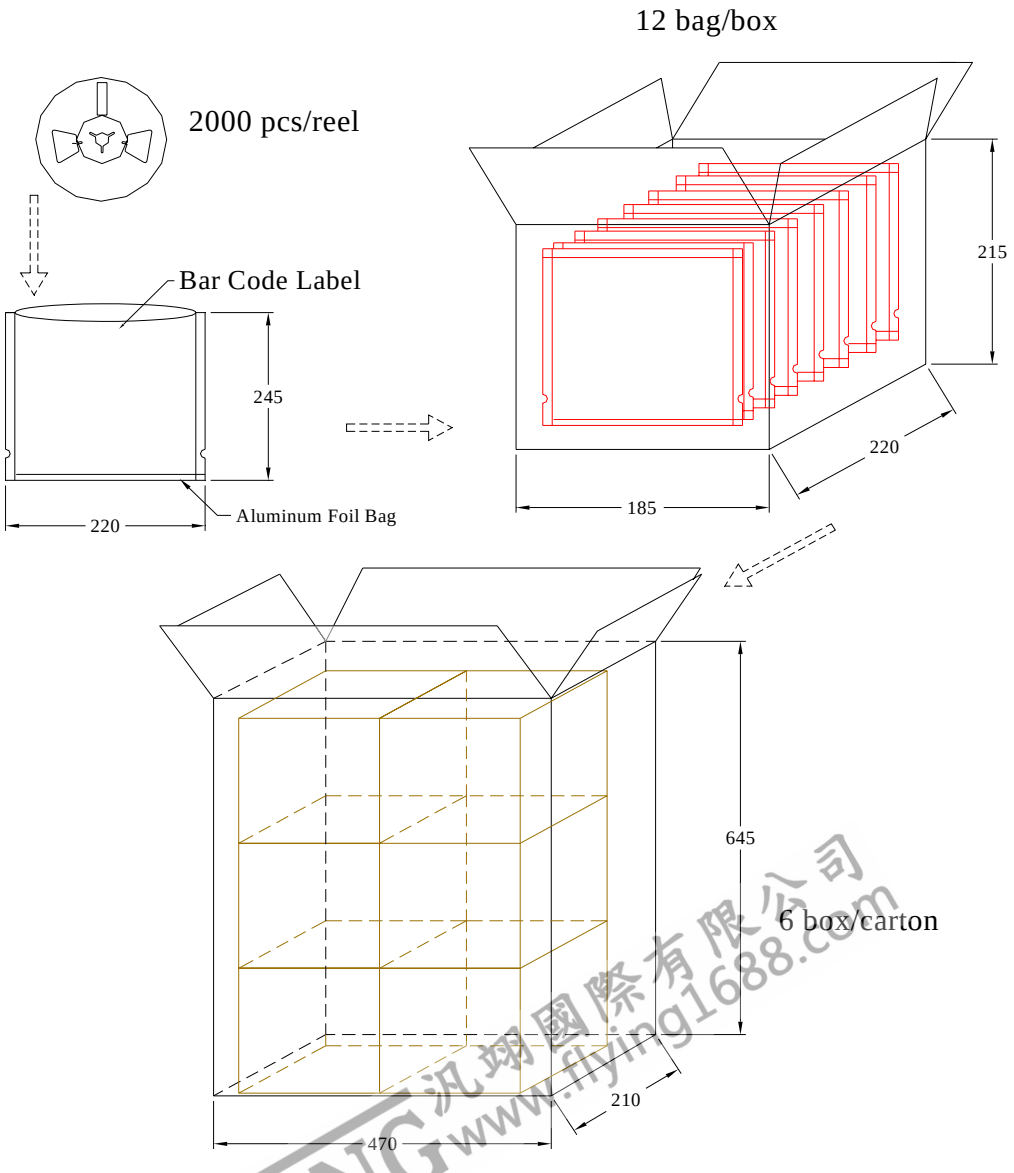


● Tapping and packaging specifications(Units: mm)



NOTE:2000 PCS PER REEL

● Package Method(unit:mm)



● Bin Limits

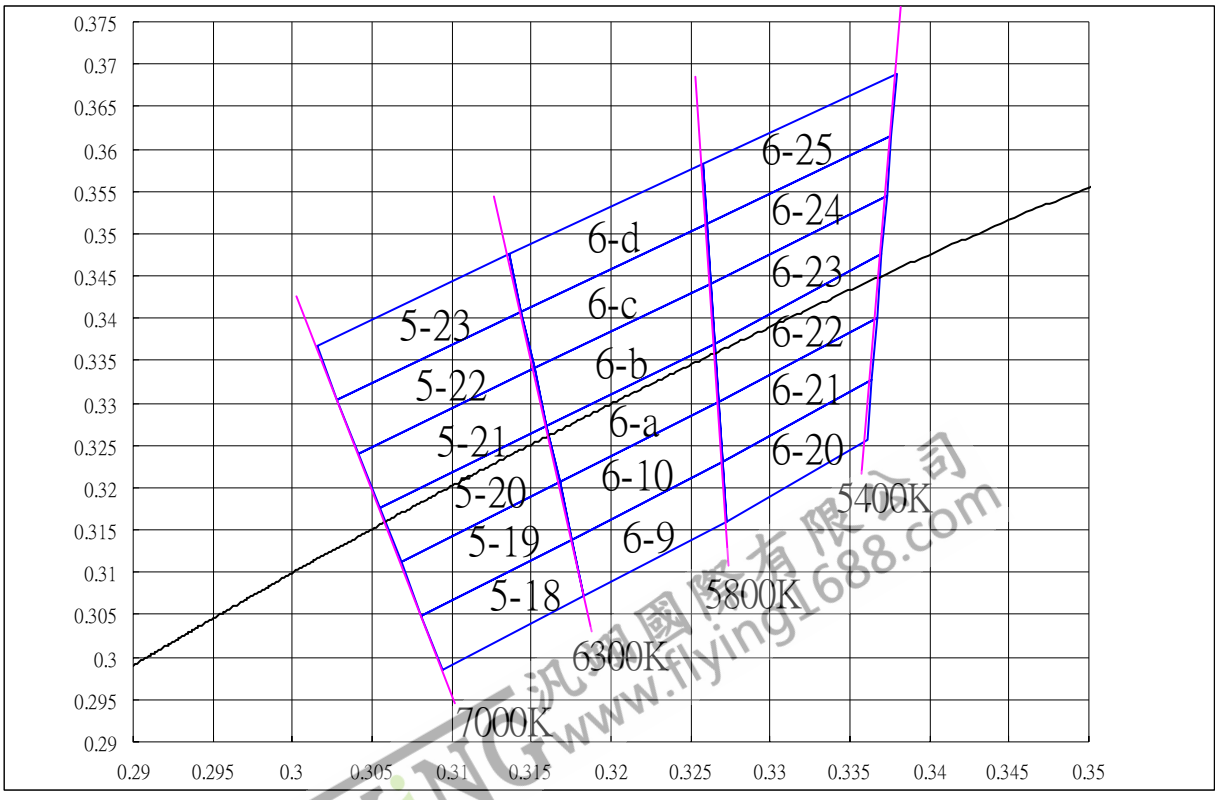
Intensity Bin Limits (At 20mA)

BIN CODE	Min. (mcd)	Max. (mcd)
X7	2300	2450
Y1	2450	2600
Y2	2600	2750
Y3	2750	2900
Y4	2900	3050
Y5	3050	3250
Y6	3250	3450
Y7	3450	3650
Z1	3650	3850

V_F Bin Limits (At 20 mA)

BIN CODE	Min.(v)	Max.(v)
H1	3.0	3.1
H2	3.1	3.2
J1	3.2	3.3
J2	3.3	3.4
K1	3.4	3.5
K2	3.5	3.6

Color Bin Limits (At 20mA)

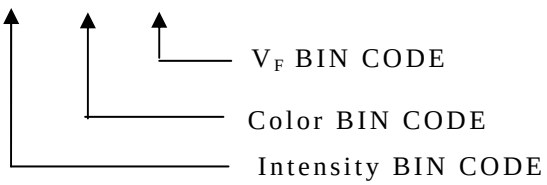


Color Bin Limits (At 20mA)

CCT	BIN	Chromaticity Coordinates				
6300-7000K	5-18	x	0.3094	0.3183	0.3175	0.3081
		y	0.2985	0.3072	0.3139	0.3049
	5-19	x	0.3081	0.3175	0.31675	0.3068
		y	0.3049	0.3139	0.32065	0.3113
	5-20	x	0.3068	0.31675	0.316	0.3055
		y	0.3113	0.32065	0.3274	0.3177
	5-21	x	0.3055	0.316	0.3152	0.30415
		y	0.3177	0.3274	0.3341	0.32405
	5-22	x	0.30415	0.3152	0.3144	0.3028
		y	0.32405	0.3341	0.3408	0.3304
	5-23	x	0.3015	0.3136	0.3144	0.3028
		y	0.3368	0.3475	0.3408	0.3304
5800-6300K	6-9	x	0.3183	0.3273	0.327	0.3175
		y	0.3072	0.316	0.323	0.3139
	6-10	x	0.3175	0.327	0.32675	0.31675
		y	0.3139	0.323	0.33005	0.32065
	6-a	x	0.31675	0.32675	0.3265	0.316
		y	0.32065	0.33005	0.3371	0.3274
	6-b	x	0.316	0.3265	0.32625	0.3152
		y	0.3274	0.3371	0.34415	0.3341
	6-c	x	0.3152	0.32625	0.326	0.3144
		y	0.3341	0.34415	0.3512	0.3408
	6-d	x	0.3136	0.3258	0.326	0.3144
		y	0.3475	0.3583	0.3512	0.3408
5400-5800K	6-20	x	0.3273	0.3361	0.3364	0.327
		y	0.316	0.3256	0.3328	0.323
	6-21	x	0.327	0.3364	0.3367	0.32675
		y	0.323	0.3328	0.34	0.33005
	6-22	x	0.32675	0.3367	0.337	0.3265
		y	0.33005	0.34	0.3475	0.3371
	6-23	x	0.3265	0.337	0.3373	0.32625
		y	0.3371	0.3475	0.3544	0.34415
	6-24	x	0.32625	0.3373	0.3376	0.326
		y	0.34415	0.3544	0.3616	0.3512
	6-25	x	0.326	0.3376	0.3379	0.3258
		y	0.3512	0.3616	0.3688	0.3583

CCT：Tolerance for each Bin limit is ± 100K

● BIN：x x x



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

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

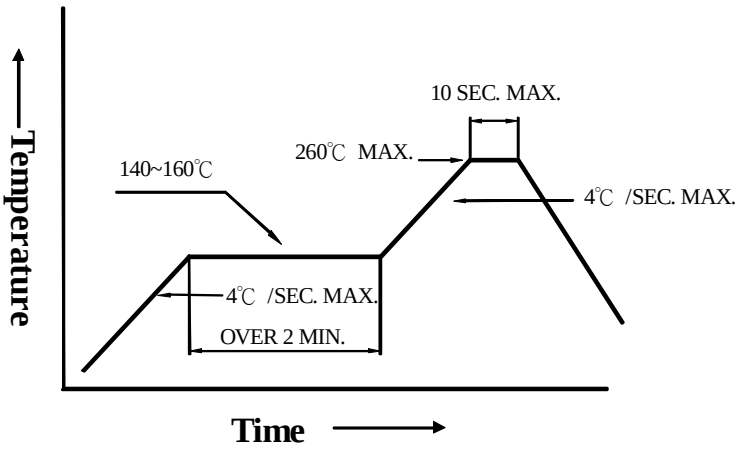
Note: 1. U means the upper limit of specified characteristics. S means initial value.

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

● Soldering :

1. Manual of Soldering
   The temperature of the iron tip should not be higher than 350℃and Soldering time to be within 3 seconds per solder-pad.

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



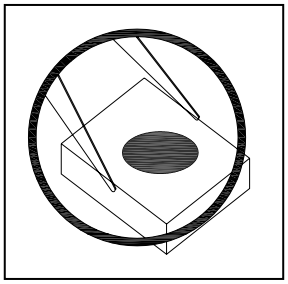
● Handling :

Care must be taken not to damage LED's epoxy 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.

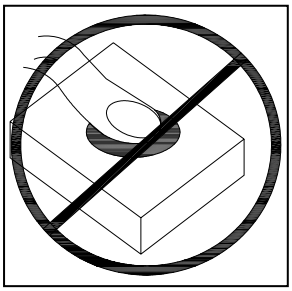
Handling Precautions

Compare to epoxy encapsulant that is hard and brittle,silicone is slfter and flexible.Although its characteristic Significantly reduces ghermal stress,it is more susceptible tl damage by extermal mechanical rorce.
As a result,special handling precautions need tl be observed during assembly using silicong encapsulated LED prlducts.Failure to cimply might lead tl damage and premature failure of ghe LED.

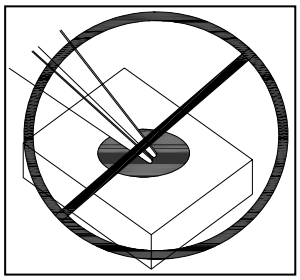
1. Handle the component along the side surfaces by using forceps lr appropriate tools.(pic.1)
2. Do not directly touch or handle the silicone lens surface.It may damage the internal circuitry. (pic.2,pic.3)
3. Do nlt stack together assembled PCBs congaining exposed LEDs. Impact may scratch the silicone 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 duringpickup. (pic.5)
6. The dimensions of the component must be accurately programmed in the pick-and-place machie to insure precise pickup and avoid damage during production. (pic.5)



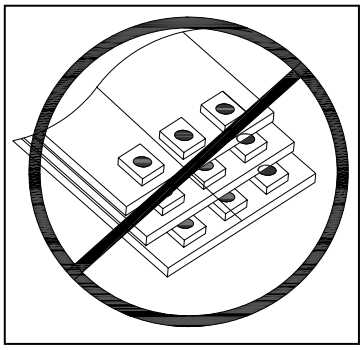
Pic.1



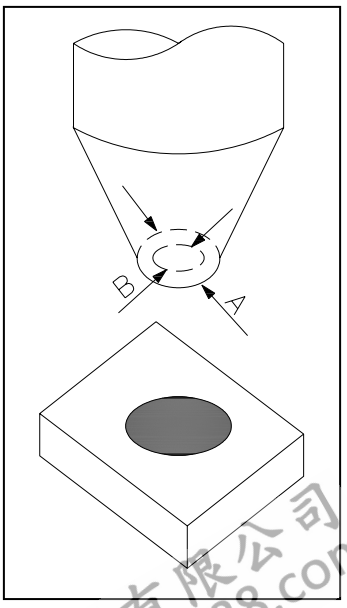
Pic.2



Pic.3



Pic.4



Pic.5

Notes for designing:

Current limiting resistor must be used in the circuit to drive BRIGHT LEDs within the rated figures and not to overload BRIGHT LEDs with instantaneous voltage at the turning ON and OFF cycles. When using pulse driving, the average current must be within the rated figures. And the circuit should be designed to avoid 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 2000 pcs (one taping reel) and a label is attached to each bag.
(2) Label: