

SPECIFICATIONS

| | |
|-----------------|---------------------------|
| MODEL | BLUE OVAL LAMP LED |
| PART NO. | LB770D |

[Contents]

| | | |
|-----|---------------------------------------|----|
| 1. | Devices ----- | 2 |
| 2. | Outline Dimensions ----- | 2 |
| 3. | Absolute Maximum Ratings ----- | 3 |
| 4. | Electro-Optical Characteristics ----- | 4 |
| 5. | Reliability Tests ----- | 5 |
| 6. | Characteristic Diagrams ----- | 6 |
| 7. | Bin Code Description ----- | 8 |
| 8. | Packing ----- | 9 |
| 9. | Soldering Profile ----- | 12 |
| 10. | Reference ----- | 13 |
| 11. | Precaution For Use ----- | 14 |

<060712> Rev. 0.1

LB770D



SEOUL SEMICONDUCTOR CO., LTD.

148-29, Kasan-Dong, Keumchun-Gu, Seoul, Korea

TEL : 82-2-3281-6269 FAX : 82-2-857-5430

3. ABSOLUTE MAXIMUM RATINGS (at $T_a = 25^\circ\text{C}$)

| Item | Symbol | Value | Unit |
|----------------------------|------------|-----------------------------------|------|
| DC Forward Current | I_F | 30 | mA |
| Forward Peak Pulse Current | I_{FP}^1 | 100 | mA |
| Reverse Voltage | V_R | 5 | V |
| Power Dissipation | P_D | 125 | mW |
| Operating Temperature | T_{opr} | -30 ~ 85 | °C |
| Storage Temperature | T_{stg} | -40 ~ 100 | °C |
| Solder Temperature | T_S | 260 °C for 10 second ² | °C |

Notes : 1. $t \leq 0.1\text{ms}$, $D = 1/10$

2. 3mm bellow seating plane

<060712> Rev. 0.1

LB770D



SEOUL SEMICONDUCTOR CO., LTD.

148-29, Kasan-Dong, Keumchun-Gu, Seoul, Korea

TEL : 82-2-3281-6269 FAX : 82-2-857-5430

4. ELECTRO-OPTICAL CHARACTERISTICS (at $I_F = 20\text{mA}$, $T_a = 25^\circ\text{C}$)

| Item | Symbol | Value | | | Unit |
|---|-----------------|-------|------|------|---------------|
| | | Min. | Typ. | Max. | |
| Luminous Intensity ¹ | I_V | 150 | 300 | 600 | Mcd |
| Dominant Wavelength | λ_d | 464 | 470 | 476 | nm |
| Forward Voltage | V_F | - | 3.6 | 4.0 | V |
| View Angle | $2\theta_{1/2}$ | 70/40 | | | deg. |
| Reverse Current (at $V_R = 5\text{V}$) | I_R | - | - | 5 | μA |

Note : 1. Luminous Intensity Tolerance $\pm 10\%$



5. RELIABILITY TESTS

| Item | Condition | Note | Failures |
|--------------------------------|--|-----------|----------|
| Life Test | $T_a = RT, I_F = 30mA$ | 1000hrs | 0/22 |
| High Temperature Operating | $T_a = 85^{\circ}C, I_F = 8mA$ | 1000hrs | 0/22 |
| Low Temperature Operating | $T_a = -30^{\circ}C, I_F = 20mA$ | 1000hrs | 0/22 |
| Thermal Shock | $T_a = -40^{\circ}C$ (30min) ~ 100° (30min) (Transfer time : 5sec, 1Cycle = 1hr) | 100cycles | 0/50 |
| Resistance to soldering Heat | $T_s = 255 \pm 5^{\circ}C, t = 10sec$ | 1 time | 0/22 |
| ESD (Human Body Model) | 1kV, 1.5k Ω ; 100pF | 1 time | 0/22 |
| High Temperature Storage | $T_a = 100^{\circ}C$ | 1000hrs | 0/22 |
| Low Temperature Storage | $T_a = -40^{\circ}C$ | 1000hrs | 0/22 |
| Temperature Humidity Storage | $T_a = 85^{\circ}C, RH = 85\%$ | 1000hrs | 0/22 |
| Temperature Humidity Operating | $T_a = 85^{\circ}C, RH = 85\%$ $I_F = 8mA$ | 100hrs | 0/22 |

< Judging Criteria For Reliability Tests >

| | |
|-------|-------------------------------|
| V_F | USL ¹ \times 1.2 |
| I_R | USL \times 2.0 |
| I_V | LSL ² \times 0.5 |

Notes : 1. USL : Upper Standard Level 2. LSL : Lower Standard Level.

<060712> Rev. 0.1

LB770D

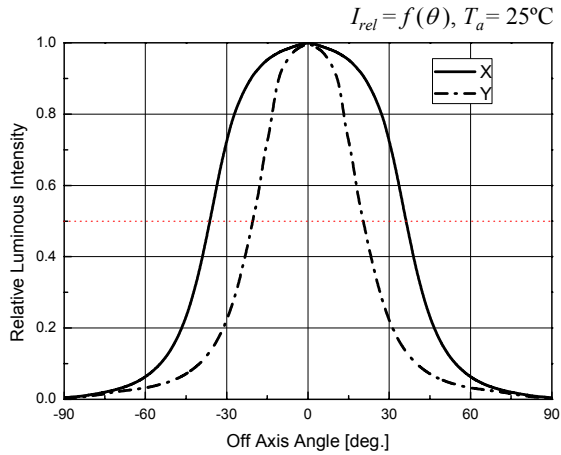


SEOUL SEMICONDUCTOR CO., LTD.

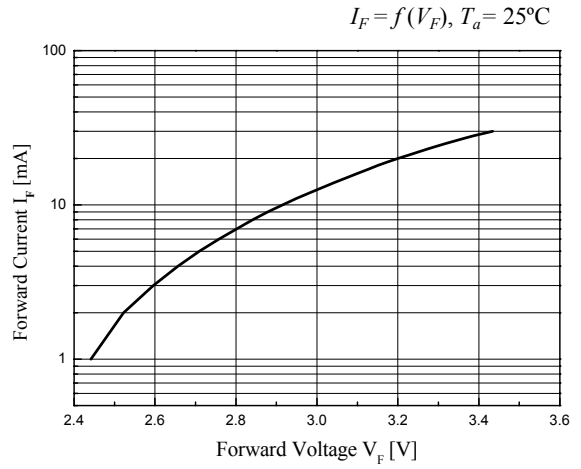
148-29, Kasan-Dong, Keumchun-Gu, Seoul, Korea

TEL : 82-2-3281-6269 FAX : 82-2-857-5430

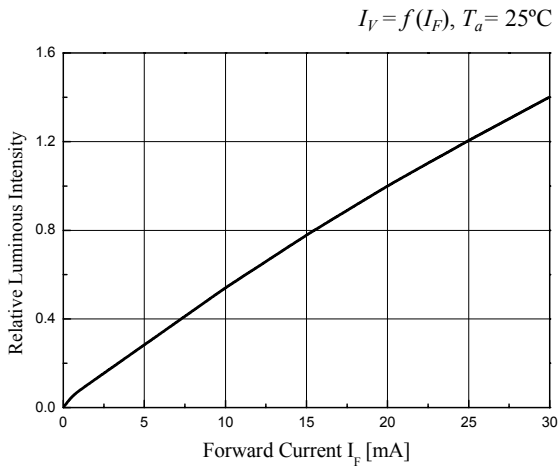
6. CHARACTERISTIC DIAGRAMS



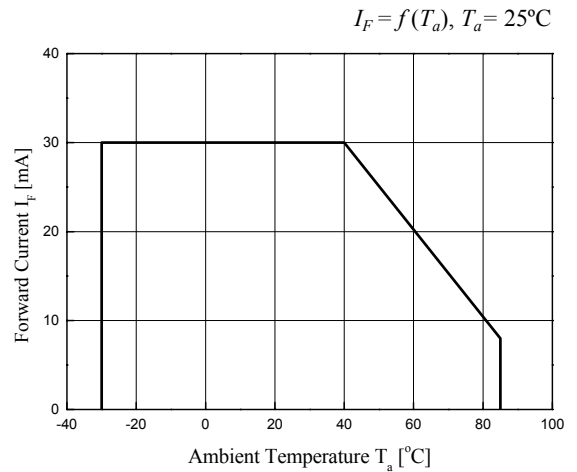
Off Axis Angle vs. Relative Intensity



Forward Voltage vs. Forward Current



Forward Current vs. Relative Intensity



Ambient Temperature vs. Forward Current

<060712> Rev. 0.1

LB770D

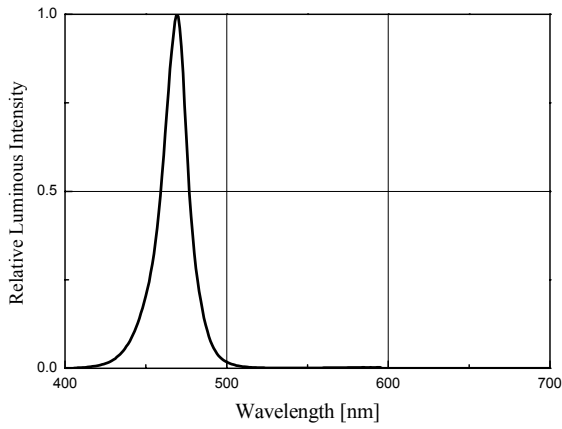


SEOUL SEMICONDUCTOR CO., LTD.

148-29, Kasan-Dong, Keumchun-Gu, Seoul, Korea

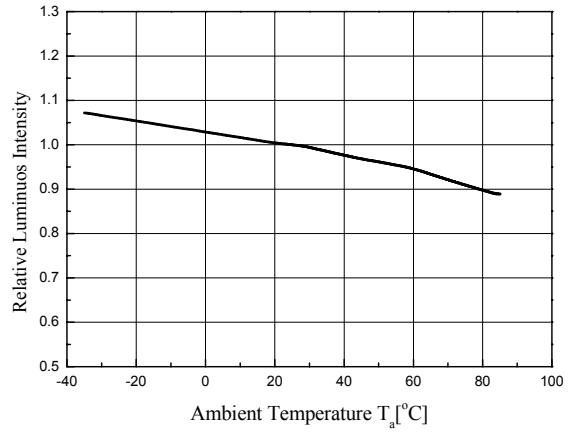
TEL : 82-2-3281-6269 FAX : 82-2-857-5430

$$I_{rel} = f(\lambda_d), T_A = 25^\circ\text{C}, I_F = 20\text{mA}$$



Wavelength vs. Relative Intensity

$$I_V/I_{V(25^\circ\text{C})} = f(T_A), I_F = 20\text{mA}$$



Ambient Temperature vs. Relative Intensity

<060712> Rev. 0.1

LB770D



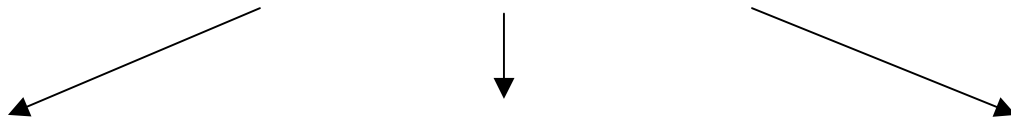
SEOUL SEMICONDUCTOR CO., LTD.

148-29, Kasan-Dong, Keumchun-Gu, Seoul, Korea

TEL : 82-2-3281-6269 FAX : 82-2-857-5430

7. BIN CODE DESCRIPTION

| BIN CODE | | |
|-----------|-------------|-----------------|
| Intensity | Color Ranks | Forward Voltage |
| S | 1 | 2 |



| Intensity (mcd) @ $I_F = 20\text{mA}$ | | | Dominant Wavelength (nm) @ $I_F = 20\text{mA}$ | | | Forward Voltage (V) @ $I_F = 20\text{mA}$ | | |
|--|------|------|---|------|------|--|------|------|
| BIN CODE | Min. | Max. | BIN CODE | Min. | Max. | BIN CODE | Min. | Max. |
| S | 150 | 300 | 1 | 464 | 470 | 1 | 3.0 | 3.5 |
| T | 300 | 600 | 2 | 470 | 476 | 2 | 3.5 | 4.0 |



8. PACKING

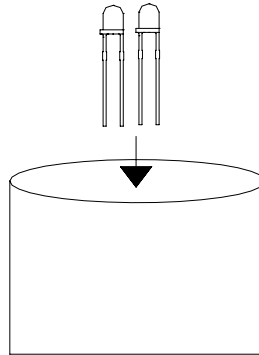
1) Bulk Packing

(1) Antistatic poly vinyl bag apply

Poly bag:

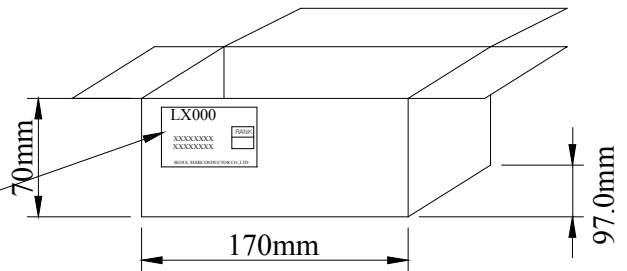
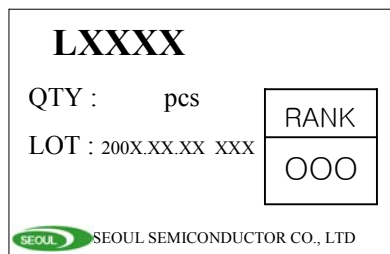
5φ Lamp Series : 500pcs

3φ Lamp Series : 500pcs



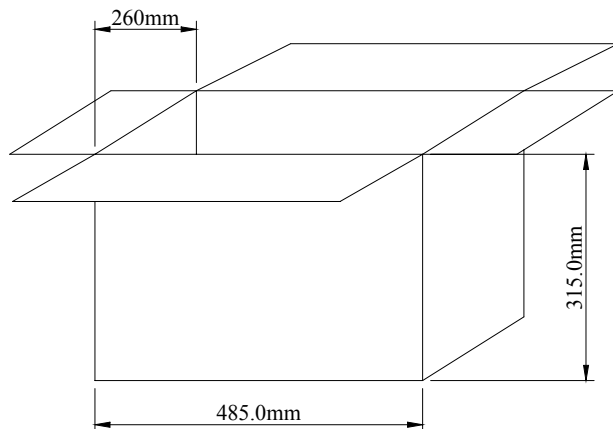
(2) Inner box structure

Box : 2 poly bags



(3) Outer box structure

Box : 27 boxes



<060712> Rev. 0.1

LB770D

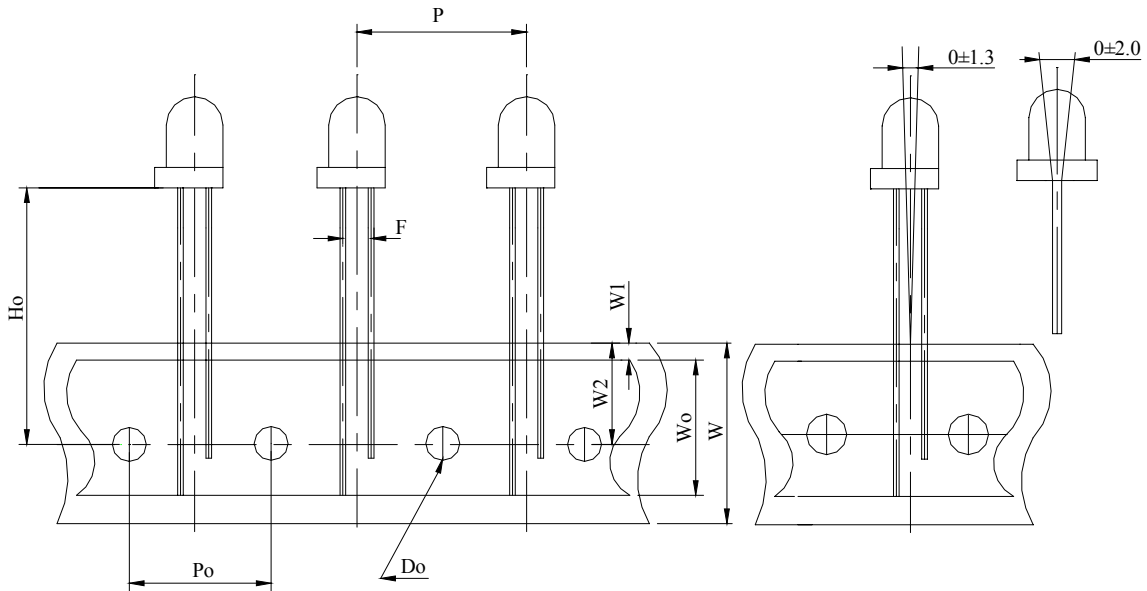


SEOUL SEMICONDUCTOR CO., LTD.

148-29, Kasan-Dong, Keumchun-Gu, Seoul, Korea

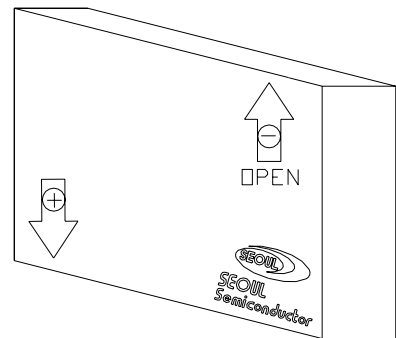
TEL : 82-2-3281-6269 FAX : 82-2-857-5430

2) Tapping Outline Dimensions



| Package Dimensions (unit : mm) | | | |
|--------------------------------|----------------------|-------|--------------------|
| H_o^* | | P | 12.7 ± 0.5 |
| W | $18.0^{+1.0}_{-0.5}$ | P_o | 12.7 ± 0.3 |
| W_o | 13.0 ± 0.3 | F | 5.0 ± 0.5 |
| W_1 | 1.0 ± 0.5 | D_o | $\phi 4.0 \pm 0.5$ |
| W_2 | 9.0 ± 0.5 | | |

* Remark : H_o - users define.



1 Box contain quantity.

* 3 ϕ Lamp Series : 3000pcs

* 5 ϕ Lamp Series : 2000pcs

<060712> Rev. 0.1

LB770D

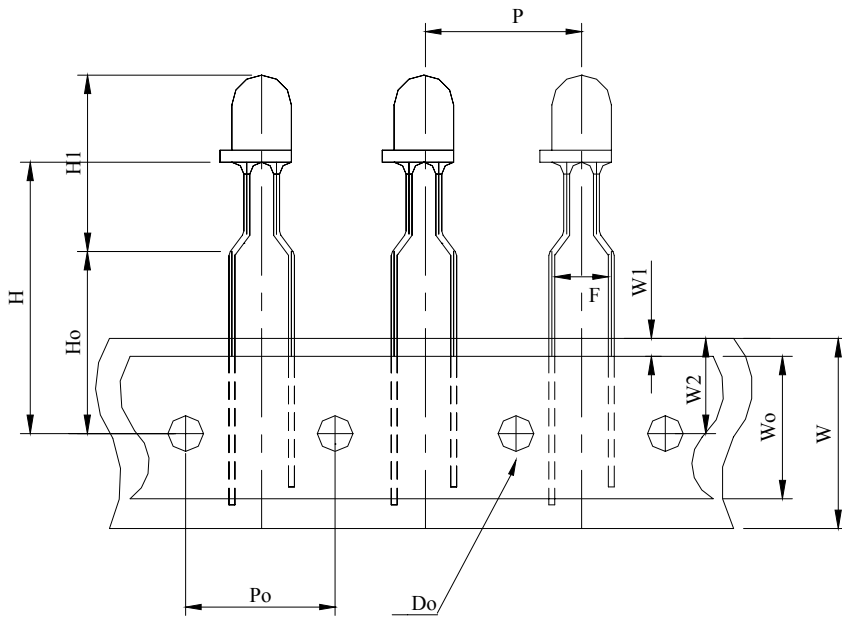


SEOUL SEMICONDUCTOR CO., LTD.

148-29, Kasan-Dong, Keumchun-Gu, Seoul, Korea

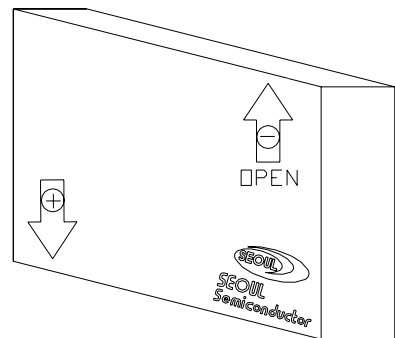
TEL : 82-2-3281-6269 FAX : 82-2-857-5430

3) Forming Outline Dimensions



| Package Dimensions (unit : mm) | | | |
|--------------------------------|--------------------------------------|----|----------|
| H * | | W2 | 9.0±0.5 |
| Ho * | | P | 12.7±0.5 |
| H1 * | | Po | 12.7±0.3 |
| W | 18.0 ^{+1.0} _{-0.5} | F | 5.0±0.5 |
| W0 | 13.0±0.3 | Do | φ4.0±0.5 |
| W1 | 1.0±0.5 | | |

* Remark : H / Ho / H1- users define.



1 Box contain quantity.

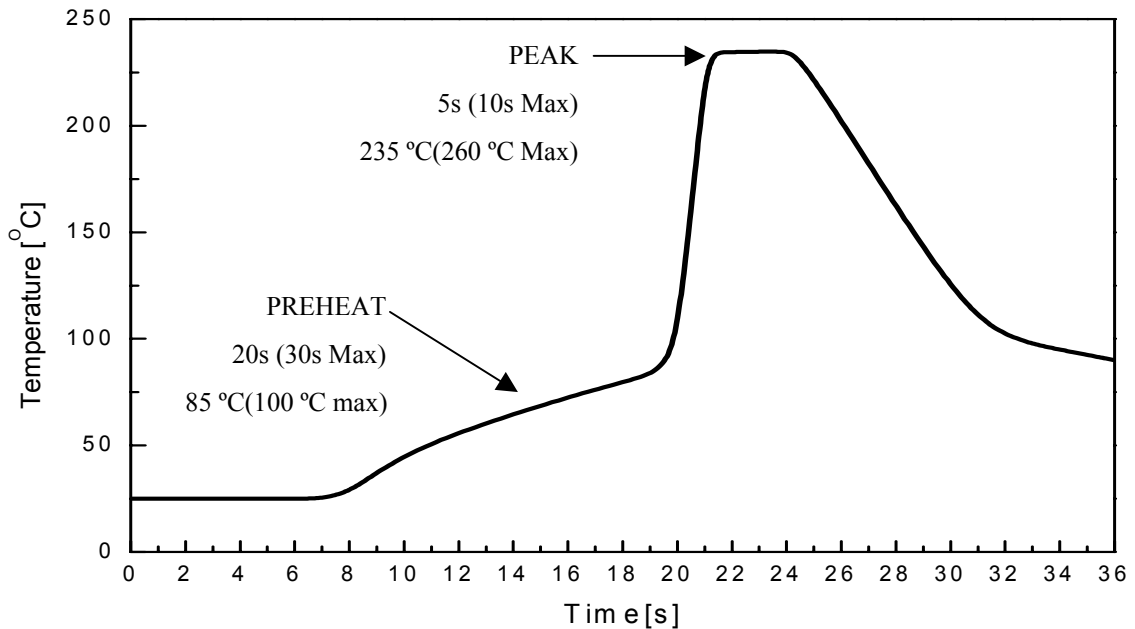
* 3φ Lamp Series : 2000pcs

* 5φ Lamp Series : 1500pcs

9. SOLDERING PROFILE

1) Wave Soldering Conditions / Profile

- Preliminary heating to be at 85°C(120 °C max) for 20 seconds(60 seconds max).
- Soldering heat to be at 235 °C (260°C max) for 5 seconds (10 seconds max.)
- Soak time above 200 °C is 5 seconds



2) Hand Soldering conditions

- Not more than 5 seconds at max. 300°C, under Soldering iron.

Note : In case the soldered products are reused in soldering process, we don't guarantee the products.

10. PART NUMBERING SYSTEM

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | A | B | C |
| L | * | * | * | * | * | * | * | - | * | * | * |

1) Lamp LED initial

2) Color

U: Ultra Violet, B : Blue (460~490nm), C : Cyan (490~510nm)

T : True Green (510~540nm), G : Yellow-Green (540~580nm)

Y : Yellow (580~600nm) O : Orange (600~620nm) R : Red (620~700nm)

W : White M : Warm I : Infrared

3) If the products have 2 or 3chips

GR : Green + Red (according to wavelength), FL : Full color

4) Outline type

1 : 3x2(square), 2 : 5x2(square), 3 : Phi3, 5 : Phi 5 ,

6 : 3Phi Oval, 7 : 5Phi Oval

5) Half angle

1: ~14°, 2: 15~24°, 3: 25~34°, 4: 35~44°, 5 : 45~54°... 0 : more than 100°

6) 1st Development according to a chip

7) 2nd Development (other material)

D : diffused C : colored Z : zener chip attached

8) Stand off type

A, B, C : Bin cord description A: IV, B: WD C: VF

11. PRECAUTION FOR USE

- 1) In order to avoid the absorption of moisture, it is recommended to store in the dry box (or desiccators) with a desiccant .
- 2) In case of more than 1 week passed after opening or change color of indicator on desiccant components shall be dried 10-12Hr, at $60\pm 5^{\circ}\text{C}$.
- 3) In case of supposed the components is humid, shall be dried dip-solder just before, 12Hr at $80\pm 5^{\circ}\text{C}$ or 10Hr at $100\pm 5^{\circ}\text{C}$.
- 4) Any mechanical force or any excess vibration shall not be accepted to apply during cooling process to normal temp. after soldering.
- 5) Quick cooling shall not be avoid.
- 6) Components shall not be mounted on warped direction of PCB.
- 7) Anti radioactive ray design is not considered for the products listed here in.
- 8) This device should not be used in any type of fluid such as water, oil, organic solvent and etc. When washing is required, IPA should be used.
- 9) When the LEDs are illuminating, operating current should be decided after considering the ambient maximum temperature.
- 10) LEDs must be stored to maintain a clean atmosphere. If the LEDs are stored for 3 months or more after being shipped from SSC, a sealed container with a nitrogen atmosphere should be used for storage.
- 11) The LEDs must be soldered within seven days after opening the moisture-proof packing.
- 12) Repack unused products with anti-moisture packing, fold to close any opening and then store in a dry place.
- 13) The appearance and specifications of the product may be modified for improvement without notice.

