



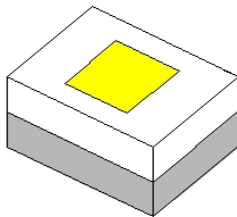
PRODUCT SPECIFICATION

Model No: BOF-2016WD-DY10-57

For reference only.

Subject to change maybe necessary in a limited number of cases

| Descriptions: | |
|--------------------------|-------|
| • Ceramic Substrate Type | |
| • SMD Chip Type | |
| • Emitting Color : | White |
| • Viewing Angle : | 120° |



LED 胶体为软硅胶封装，请避免外力碰撞。

| CUSTOMER APPROVED SIGNATURES | APPROVED BY | CHECKED BY | PREPARED BY |
|------------------------------|-------------|------------|-------------|
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http: // www.byd.com.cn



■ Applications

- Automotive light
- Day time running light
- Camera Flash and Video Light
- Torch Light

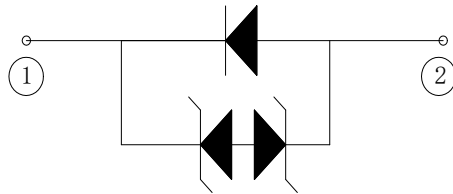
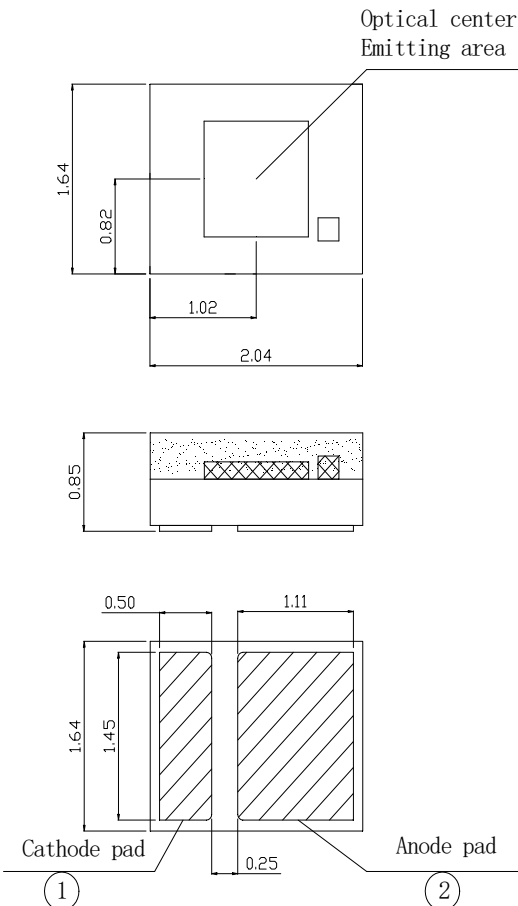
■ Device Selection Guide

| Model No. | Chip | | Epoxy Color |
|--------------------|----------|----------------|-----------------|
| | Material | Emitting Color | |
| BOF-2016WD-DY10-57 | InGaN | White | Yellow Diffused |

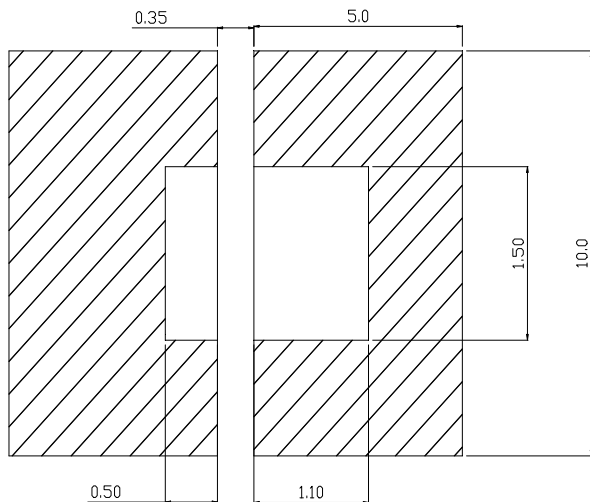
LED 胶体为软硅胶封装，请避免外力碰撞。

■ Package Outline Dimensions

Dimensions: 2.04(L) × 1.64(W) × 0.85(H) mm.



Recommended Solder pattern



□ foot print ▨ Cu area + solder resist
Recommended >10*10mm

Note:

1. Dimensions are in millimeters.
2. Tolerances unless mentioned are ± 0.2mm.
3. Emitting area: 0.90*0.90 ± 0.1mm



■ Absolute Maximum Ratings (Ta=25°C)

| Items | Symbol | Absolute Maximum Ratings | Unit |
|---|-----------------|--------------------------|------|
| Power Dissipation | P_d | 1.5 | W |
| Junction Temperature | T_j | 150 | °C |
| Forward Current (DC) | I_F | 500 | mA |
| Peak Forward Current* (200ms: on, 1800ms: off) | I_{FP} | 1000 | mA |
| Operation Temperature | T_{opr} | -40 ~ +125 | °C |
| Storage Temperature | T_{stg} | -40 ~ +125 | °C |
| Wavelength | W_p | 435 ~ 455 | nm |
| Wavelength | W_d | 460 ~ 560 ~ 600 | nm |
| Ra | Ra | ≥60 | nm |
| 50% Power Angle | $2\theta_{1/2}$ | 110 ~ 120 ~ 130 | deg |
| Thermal resistance junction/board | R_{th} | ≤10 | k/w |
| ESD (HBM) | ESD | ≥8 | Kv |
| Lead Soldering Temperature | T_{sol} | 260° C for 5 Seconds | |

*Pulse Width ≤200ms and Duty ≤1/10;

For 1000 mA all reliability items are tested under good thermal management with 16x 16 mm² MPCB. Ts<125°C.

■ Typical Electrical & Optical Characteristics (Ta=25°C)

| Items | Symbol | Condition | Min. | Typ. | Max. | Unit |
|-------------------------|----------|-------------|-------------|-------------|-------------|------|
| Forward Voltage | V_F | $I_F=150mA$ | 2.6 | 2.9 | 3.1 | V |
| | V_F | $I_F=350mA$ | 2.8 | 3.1 | 3.3 | V |
| | V_F | $I_F=500mA$ | 2.8 | 3.2 | 3.5 | V |
| Reverse Current | I_R | $V_R=-5v$ | --- | --- | 10 | μA |
| Chromaticity Coordinate | CHC | $I_F=350mA$ | 0.303/0.291 | 0.323/0.323 | 0.342/0.355 | --- |
| Luminous Flux | ϕ_v | $I_F=150mA$ | 30 | 45 | --- | Lm |
| | ϕ_v | $I_F=350mA$ | 80 | 110 | --- | Lm |
| | ϕ_v | $I_F=500mA$ | 100 | 140 | --- | Lm |

■ Ranks Combination ($I_F=350mA$)

| | | | | | |
|--------------|-----------|------------|------------|------------|------------|
| ϕ_v /Lm | L:80~100 | M:100~120 | N:120-160 | / | / |
| VF/v | M:2.8-2.9 | N: 2.9-3.0 | O: 3.0-3.1 | P: 3.1-3.2 | Q: 3.2-3.3 |
| CHC | 4C1 | 4C2 | 4C3 | 5A | / |

Notes:

- *Tolerance of measurement of Luminous Flux is ±15%;
- *Tolerance of measurement of forward voltage is ± 0.15V;
- *Tolerance of measurement of Ir is ± 3uA;
- *Tolerance of measurement of If is ± 5%;
- *Chromaticity Coordinate s measurement allowance : ±0.015.



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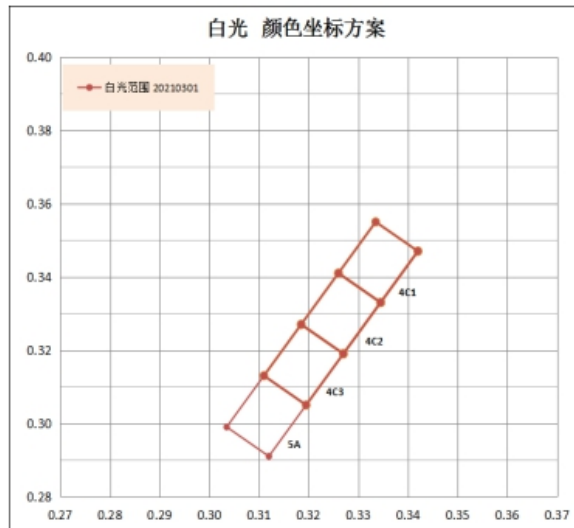
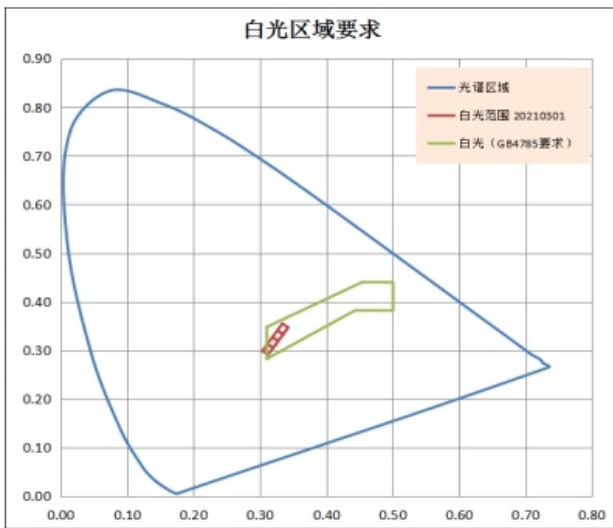
■ Chromaticity coordinate (IF=350mA)

白光范围 20210301

| | x | y |
|-----|--------|--------|
| 4C1 | 0.3420 | 0.3470 |
| | 0.3335 | 0.3550 |
| | 0.3260 | 0.3410 |
| | 0.3345 | 0.3330 |
| 4C2 | 0.3345 | 0.3330 |
| | 0.3260 | 0.3410 |
| | 0.3185 | 0.3270 |
| | 0.3270 | 0.3190 |

| | x | y |
|-----|--------|--------|
| 4C3 | 0.3270 | 0.3190 |
| | 0.3185 | 0.3270 |
| | 0.3110 | 0.3130 |
| | 0.3195 | 0.3050 |
| 5A | 0.3195 | 0.3050 |
| | 0.3110 | 0.3130 |
| | 0.3035 | 0.2990 |
| | 0.3120 | 0.2910 |

■ CIE Graph



Note:

- 1、Percentage of red: >5% acc. to GB 25991 regulation.
- 2、Percentage of UV: <10⁻⁵ W/lm acc. to GB 25991 regulation.
- 3、Acc. to white area GB 4785.



■ Reliability

1) Test Items and Results:

| Classification | Test Item | Standard Test Method | Test Conditions | Duration | Units Tested | Number Of Damaged |
|------------------|--------------------------|--|--------------------------------------|-------------|--------------|-------------------|
| Life Test | Operating Life Test * | JIS7021:B4 MIL-STD-202:107D MIL-STD-750:1026 | Ta=85±5℃, IF=500mA * | 1000Hrs | 11 | 0/11 |
| | | JESD22-A101 | Ta=85±5℃ RH=85±5%RH IF=500mA * | 1000 Hrs | 11 | 0/11 |
| Environment Test | High Temperature Storage | JIS7021:B10 MIL-STD-202:210A MIL-STD-750:2031 | Ta=125±5℃ | 1000Hrs | 11 | 0/11 |
| | Low Temperature Storage | JIS7021:B12 | Ta= -40±5℃ | 1000Hrs | 11 | 0/11 |
| | Temp. & Humidity Test | JIS7021:B11 MIL-STD-202:103D | Ta=85±5℃ RH=85±5%RH | 1000Hrs | 11 | 0/11 |
| | Thermal Shock Test | JIS7021B4 MIL-STD-202:107D MIL-STD-750:1026 | -40℃ ← - → 125℃ 15min 10sec 15min | 1000 Cycles | 11 | 0/11 |
| | ESD | JEDEC JS-001: HMB | 8KV | 10 Cycles | 11 | 0/11 |
| Soldering Test | Resistance to soldering | - | Tsol=260±5℃, 10sec | 3 time | 22 | 0/22 |

*Reliability items are tested under good thermal management with 16x 16 mm² MPCB. Ts<125℃。

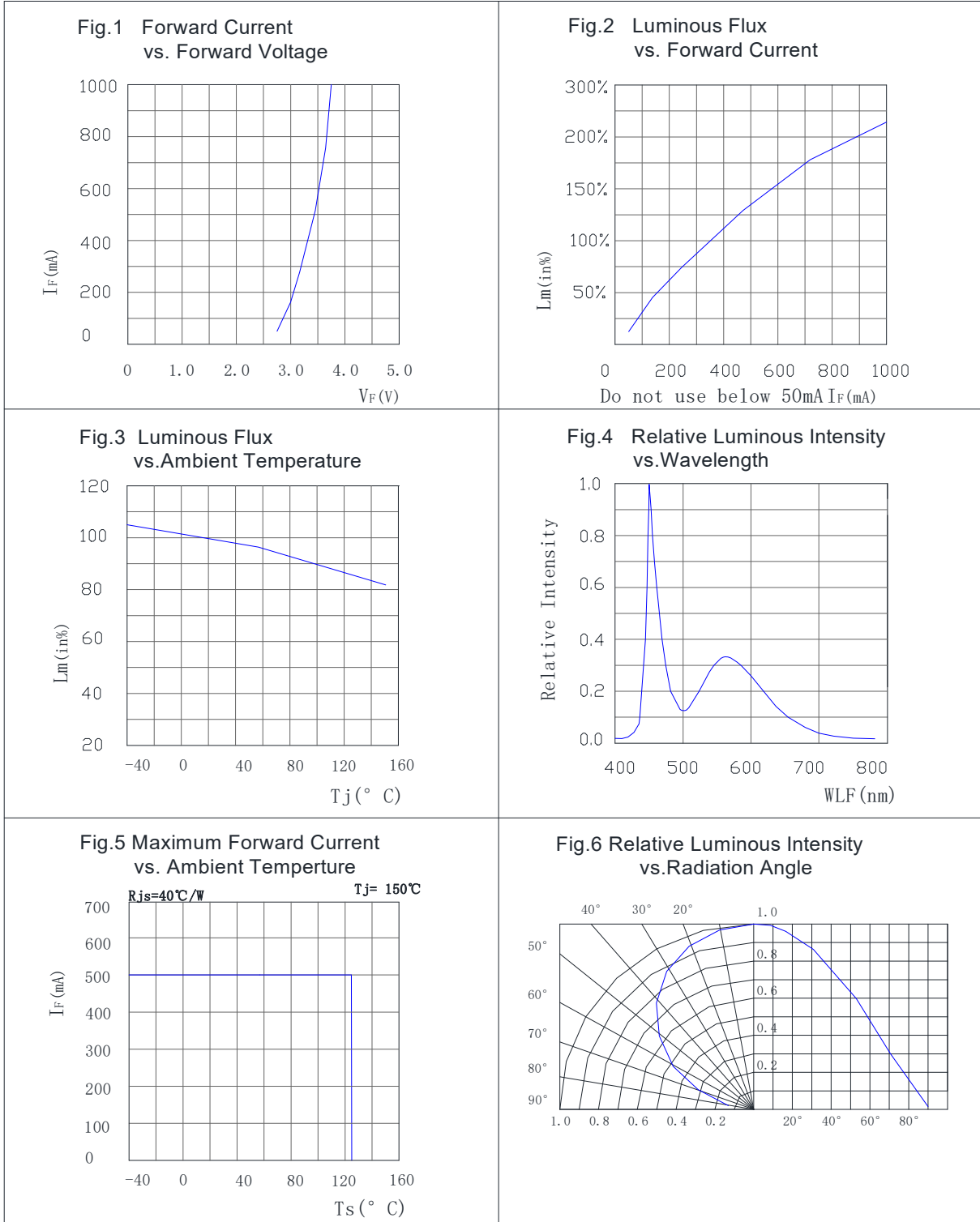
2) Criteria for Judge The Damage:

| Items | Symbol | Condition | Criteria for Judge | |
|--------------------|----------------|-----------------------|----------------------|------------------------------------|
| | | | Min. | Max. |
| Forward Voltage | V _F | I _F =350mA | --- | initial value x 1.2 |
| Reverse Current | I _R | V _R =5V | --- | not designed for reverse operation |
| Luminous Flux (Lm) | Φ _V | I _F =350mA | initial value x 0.85 | --- |



■ Typical Electrical / Optical Characteristics Curves

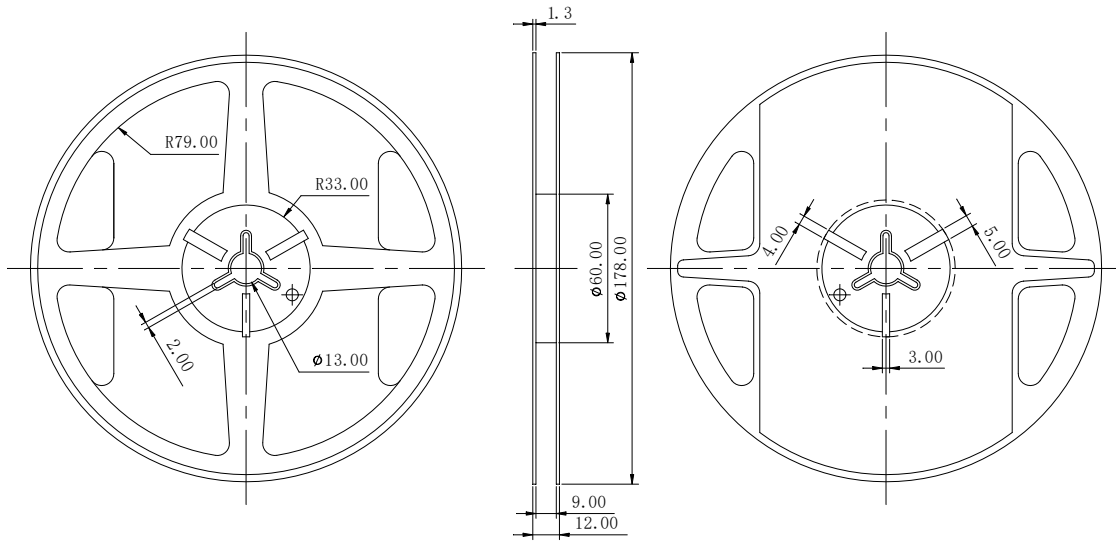
(Ta = 25°C Unless Otherwise Noted)



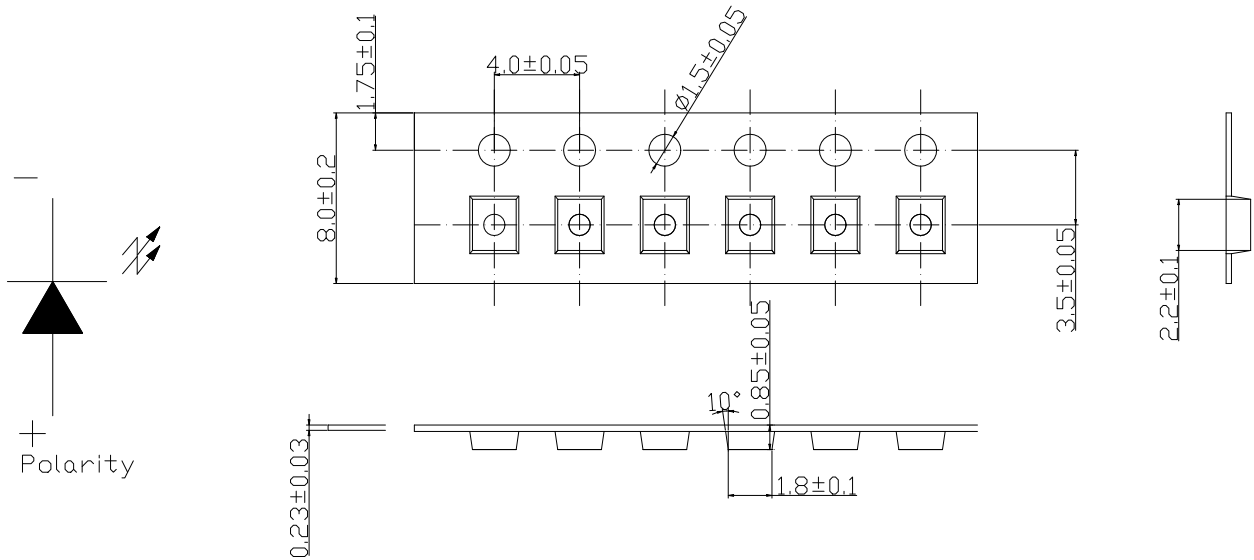


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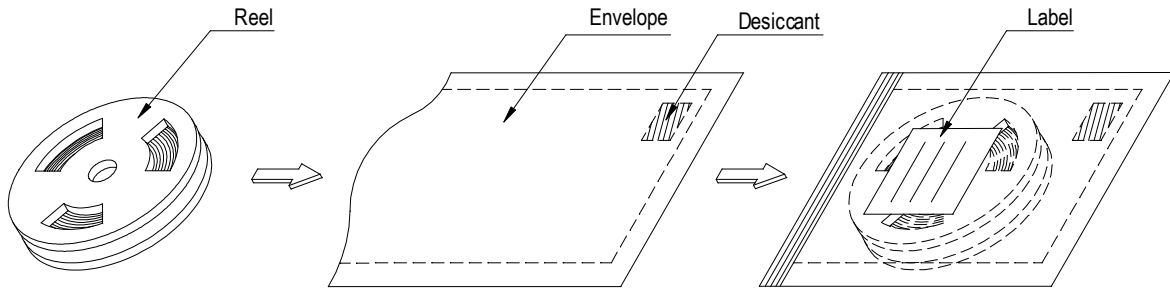
■ Reel Specification:



■ Taping Specification - (500 , or1000, or2000pcs / reel)



■ Packing Type



■ Precautions For Use

1. Over - current - proof

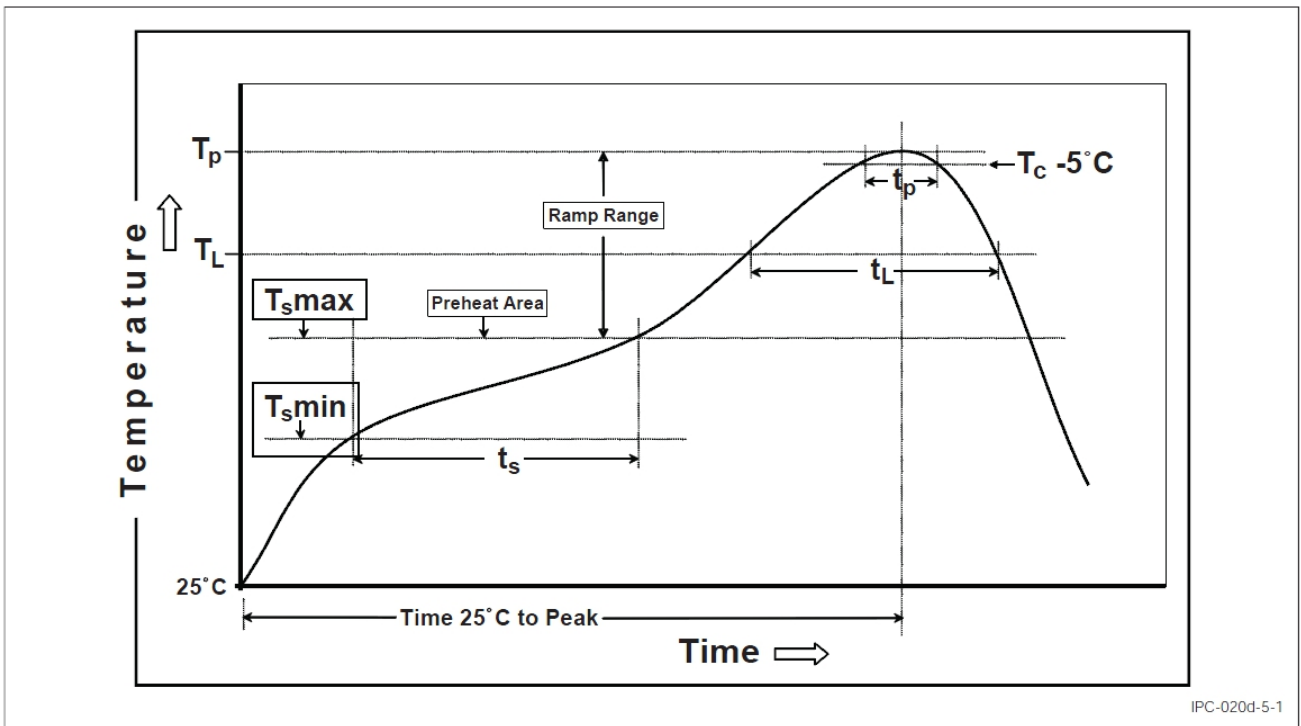
Customer must apply resistors for protection, otherwise slight voltage shift will cause big current change (Burn out will happen).

2. Storage

- 2.1 Do not open moisture proof bag before the products are ready to use;
- 2.2 The LEDs should be kept at 30°C or less and 70%RH or less, and the storage life limits are 12 months;
- 2.3 Product complies to MSL Level 2 acc. to JEDEC J-STD-020E.

3. Soldering

3.1 Reflow Soldering / Time





BOF-2016WD-DY10-57

| Profile Feature | Sn-Pb Eutectic Assembly | Pb-Free Assembly |
|--|-------------------------|-----------------------|
| Preheat & Soak | | |
| Temperature Min (T _{min}) | 100° C | 150° C |
| Temperature Max (T _{max}) | 150° C | 200° C |
| Time (T _{min} to T _{max}) (ts) | 60-120 seconds | 60-120 seconds |
| Average ramp-up rate (T _{max} to T _p) | 3° C/second max. | 3° C/second max. |
| Liquidous Temperature (TL) Time at Liquidous (tL) | 183° C/60-150 seconds | 217° C/60-150 seconds |
| Peak Package Body Temperature (T _p)* | 235° C max. | 260° C max. |
| Time (t _p)** within 5° C of the specified classification Temperature (T _c) | 10 seconds max | 10 seconds max |
| Average ramp-down Rate (T _p to T _{max}) | 6° C/second max. | 6° C/second max. |
| Time 25° C to Peak Temperature | 6 minutes max. | 8 minutes max. |

3.2 Reflow soldering should not be done more than two times;

3.3 While soldering, do not put stress on the LEDs during heating;

3.4 After soldering, do not warp the circuit board.

4. Caution in ESD

4.1 Electrostatic discharge (ESD) and surge current (EOS) can damage LEDs;

4.2 An ESD wrist strap, ESD shoe strap or antistatic gloves must be worn whenever handling LEDs;

4.3 All devices equipment and machinery must be properly grounded.

5. Other

5.1 Above specification may be changed without notice. BYD will reserve authority on material change for above specification;

5.2 When using this product, please observe the absolute maximum ratings and the instructions for using outlined in these specification. BYD assumes no responsibility for any damage resulting from use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification.



RESTRICTIONS ON PRODUCT USE

- The information contained herein is subject to change without notice.
- **BYD Semiconductor Company Limited** exerts the greatest possible effort to ensure high quality and reliability. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing products, to comply with the standards of safety in making a safe design for the entire system, including redundancy, fire-prevention measures, and malfunction prevention, to prevent any accidents, fires, or community damage that may ensue. In developing your designs, please ensure that products are used within specified operating ranges as set forth in the most recent products specifications.
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