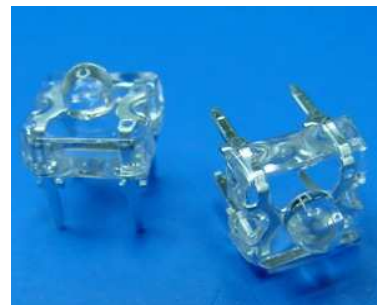


**Technical Data Sheet**

**3mm Piranha**

**30-01-B4C-AKNB**

**Lead (Pb) Free Product - RoHS Compliant**



**Feature**

- Low profile.
- Uniform color.
- High flux output.
- Colorless clear resin.
- Brightness: 1125 to 2850 mlm at 30mA.
- Packaged in tubes for use with automatic insertion equipment.

**Applications**

- Electronic Signs and Signals.
- Channel Letter
- General applications.

**Device Selection Guide**

| Chip     | Emitted Color | Resin Color |
|----------|---------------|-------------|
| Material |               |             |
| InGaN    | Blue          | Water Clear |

Technical Data Sheet

3mm Piranha

**30-01-B4C-AKNB**

Absolute Maximum Ratings (Ta=25°C)

| Parameter                                 | Symbol        | Rating   | Unit |
|---|---------------|--|------|
| Reverse Voltage                           | $V_R$         | 5  | V    |
| Forward Current                           | $I_F$         | 30   | mA   |
| Peak Forward Current<br>(Duty 1/10 @1KHz) | $I_{FP}$      | 110  | mA   |
| Junction Temperature                      | $T_j$         | 110  | °C   |
| Operating Temperature                     | $T_{opr}$     | -40 ~ +100   | °C   |
| Storage Temperature                       | $T_{stg}$     | -40 ~ +100   | °C   |
| Thermal Resistance                        | $R_{th\ J-A}$ | 220  | K/W  |
| ESD<br>(Classification acc. AEC Q101)     | $ESD_{HBM}$   | 4000   | V    |
|   | $ESD_{MM}$    | 200  | V    |
| Soldering Temperature                     | $T_{sol}$     | Wave Soldering : 260 °C for 5 sec.<br>Hand Soldering : 300 °C for 3 sec. |      |

## Technical Data Sheet

### 3mm Piranha

**30-01-B4C-AKNB**

#### Electro-Optical Characteristics (Ta=25°C)

| Parameter           | Symbol          | Min. | Typ. | Max. | Unit          | Condition           |
|---------------------|-----------------|------|------|------|---------------|---------------------|
| Total Flux          | $\Phi_V$        | 1125 | ---  | 2850 | mlm           | $I_F = 30\text{mA}$ |
| Peak Wavelength     | $\lambda_p$     | ---- | 468  | ---- | nm            | $I_F = 30\text{mA}$ |
| Dominant Wavelength | $\lambda_d$     | 464  | 470  | 476  | nm            | $I_F = 30\text{mA}$ |
| Viewing Angle       | $2\theta_{1/2}$ | ---  | 80   | ---  | deg           | $I_F = 30\text{mA}$ |
| Forward Voltage     | $V_F$           | 2.8  | ---  | 3.8  | V             | $I_F = 30\text{mA}$ |
| Reverse Current     | $I_R$           | ---  | ---  | 10   | $\mu\text{A}$ | $V_R = 5\text{V}$   |

Note:

1. Tolerance of Total Flux:  $\pm 11\%$
2. Tolerance of Dominant Wavelength:  $\pm 1.0\text{nm}$
3. Tolerance of Forward Voltage:  $\pm 0.1\text{V}$

Technical Data Sheet

3mm Piranha

**30-01-B4C-AKNB**

**Bin Range of Forward Voltage**

| Bin Code | Min. | Max. | Unit | Condition            |
|----------|------|------|------|----------------------|
| 0        | 2.8  | 3.0  | V    | I <sub>F</sub> =30mA |
| 1        | 3.0  | 3.2  |      |                      |
| 2        | 3.2  | 3.4  |      |                      |
| 3        | 3.4  | 3.6  |      |                      |
| 4        | 3.6  | 3.8  |      |                      |

Note:

Tolerance of Forward Voltage: ±0.1V

**Bin Range of Dominant Wavelength**

| Bin Code | Min. | Max. | Unit | Condition            |
|----------|------|------|------|----------------------|
| 3        | 464  | 468  | nm   | I <sub>F</sub> =30mA |
| 4        | 468  | 472  |      |                      |
| 5        | 472  | 476  |      |                      |

Note:

Tolerance of Dominant Wavelength: ±1nm

**Bin Range of Total Flux**

| Bin Code | Min. | Max. | Unit | Condition            |
|----------|------|------|------|----------------------|
| K        | 1125 | 1425 | mlm  | I <sub>F</sub> =30mA |
| L        | 1425 | 1800 |      |                      |
| M        | 1800 | 2250 |      |                      |
| N        | 2250 | 2850 |      |                      |

Note:

Tolerance of Total Flux: ±11%

Technical Data Sheet

3mm Piranha

**30-01-B4C-AKNB**

Typical Electro-Optical Characteristics Curves

Typical Curve of Spectral Distribution

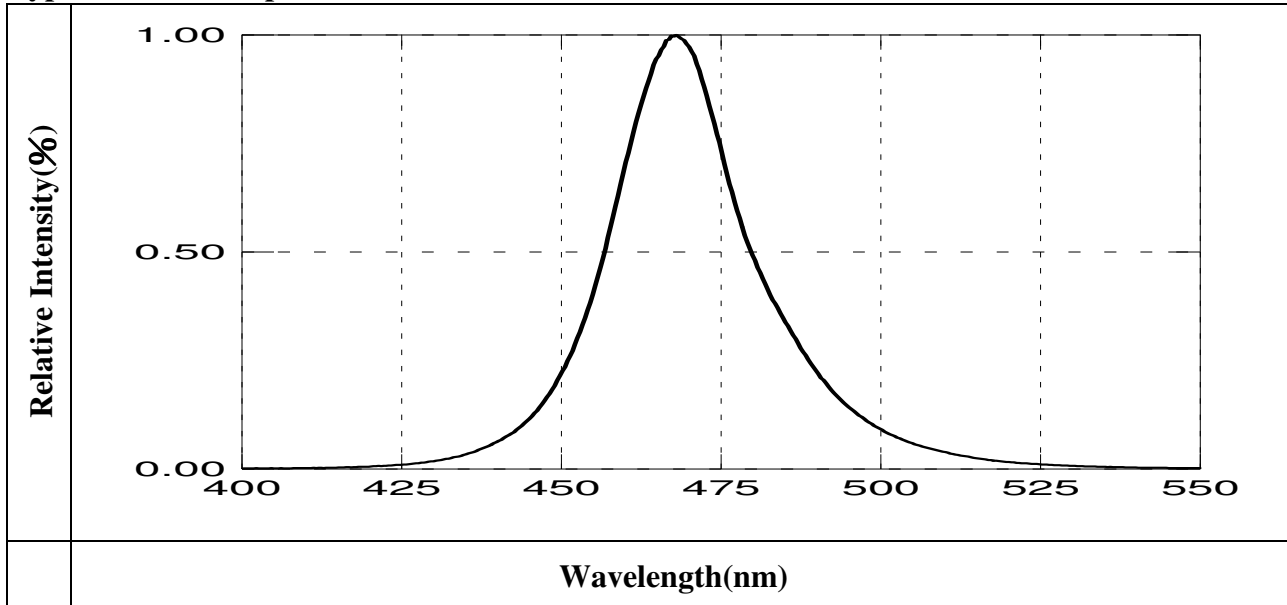
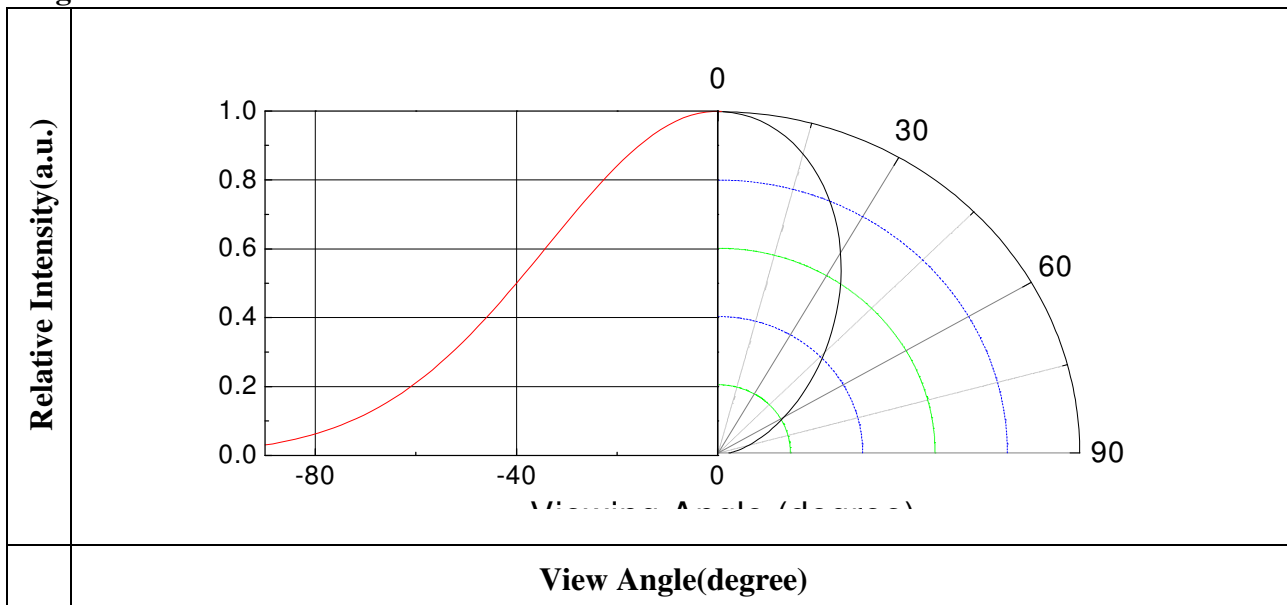


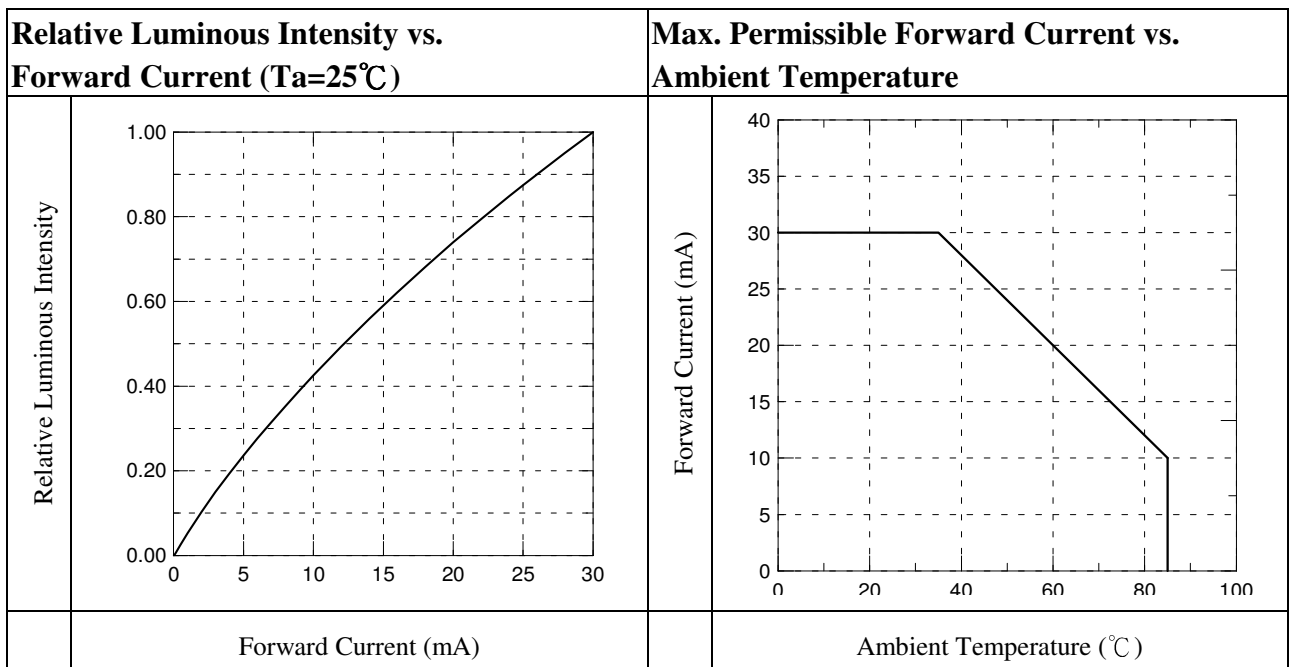
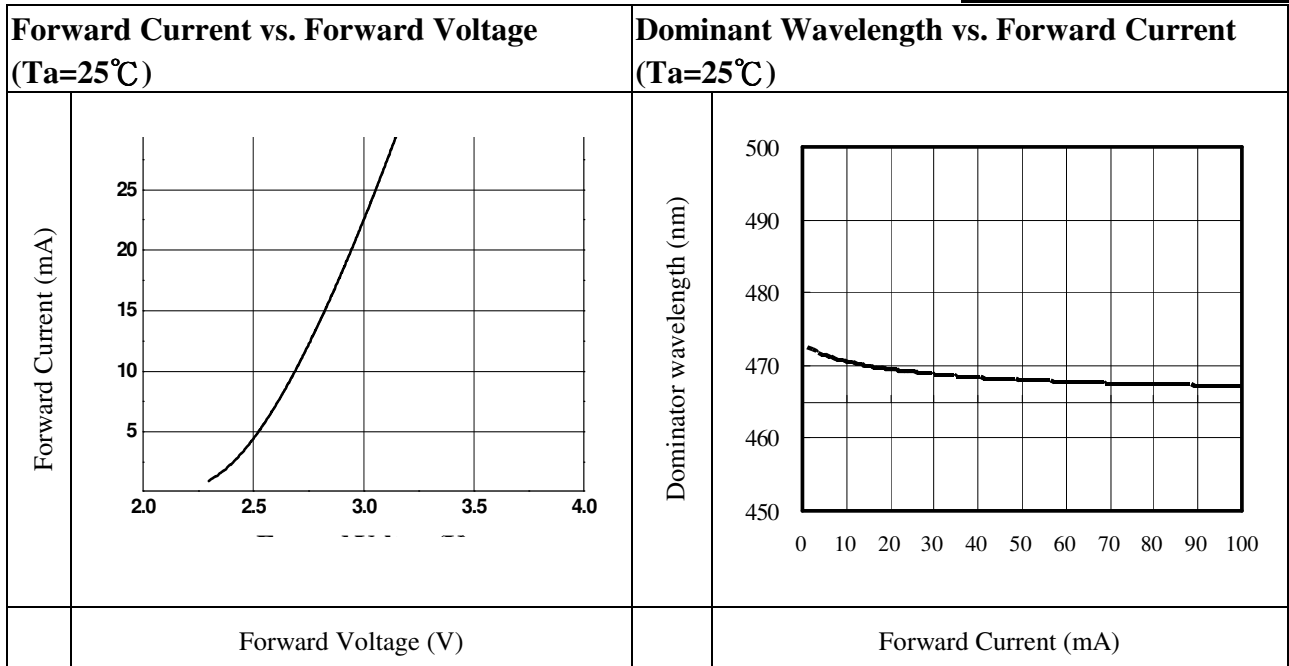
Diagram Characteristics of Radiation



Technical Data Sheet

3mm Piranha

**30-01-B4C-AKNB**

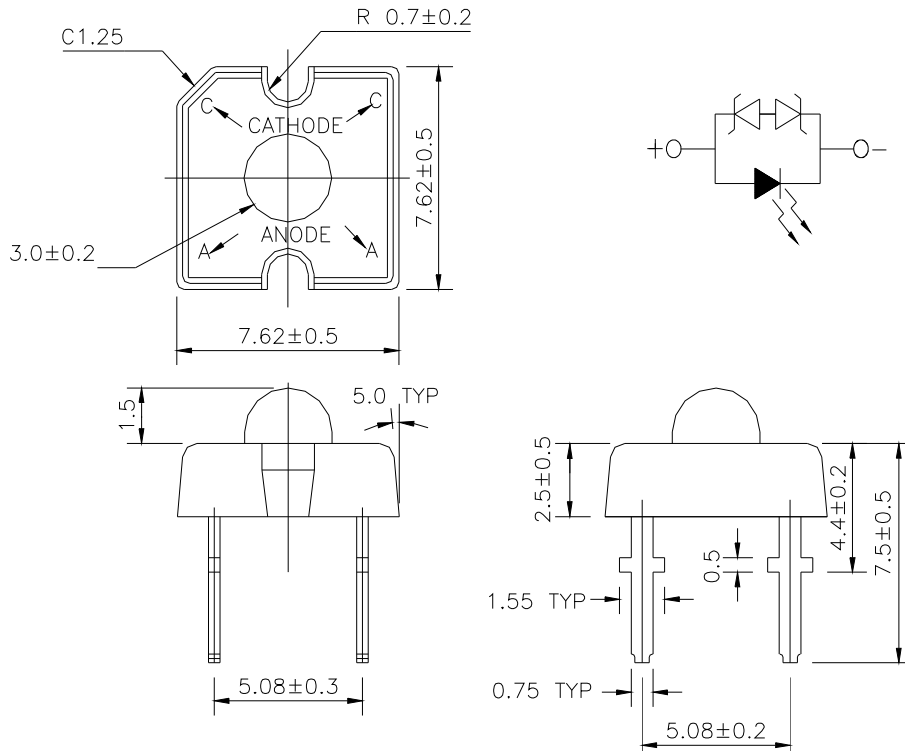


Technical Data Sheet

3mm Piranha

**30-01-B4C-AKNB**

Package Dimension



Note: Tolerances unless mentioned  $\pm 0.25$ mm. Unit = mm

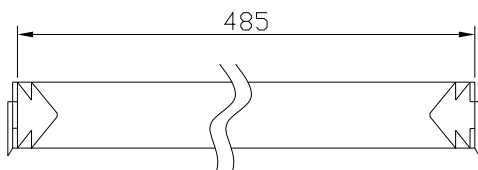
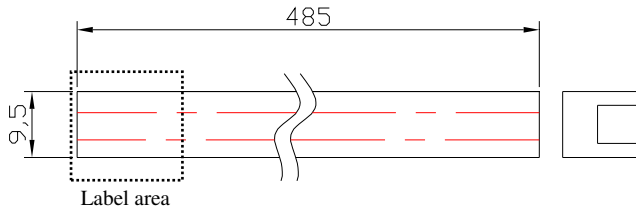
Moisture Resistant Packing Materials

Technical Data Sheet

3mm Piranha

**30-01-B4C-AKNB**

Tube



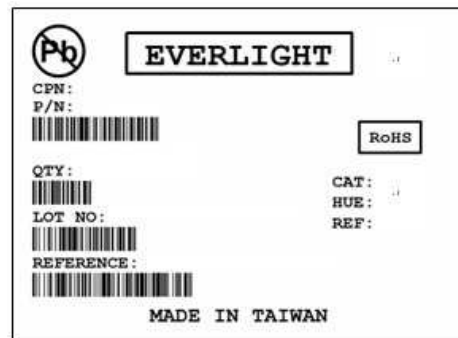
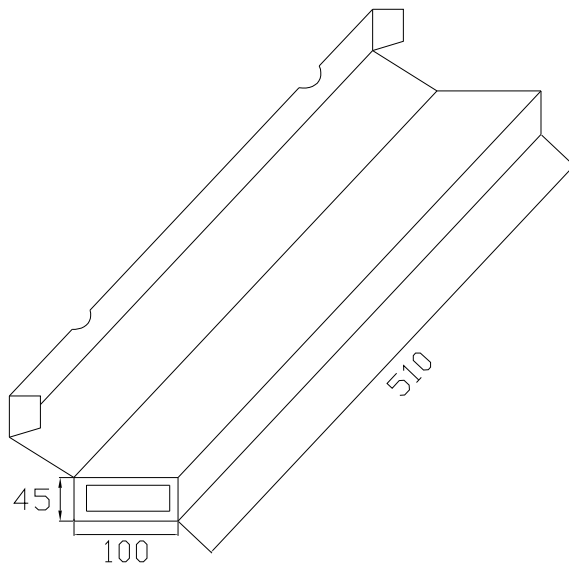
Note: Tolerances unless mentioned  $\pm 2.0$ mm. Unit = mm

|                  |          |      |
|------------------|----------|------|
| <b>EVERLIGHT</b> | PART NO: | QTY: |
|                  | LOT NO:  | CAT: |

Tube Label Explanation

- PART NO: Product Number
  - QTY: Packing Quantity
  - LOT No: Lot Number
  - CAT: Rank of (VF)(Note\*)( $\Phi$ V)
- Note:  $\lambda_d$ /CIE/Color temperature

Standard Box



Tube Label Explanation

- CPN: Customer's Product Number
  - P/N: Product Number
  - QTY: Packing Quantity
  - CAT: Rank of (VF)(Note\*)( $\Phi$ V)
- Note:  $\lambda_d$ /CIE/Color temperature
- HUE/REF: Reference
  - LOT No: Lot Number

Note: Tolerances unless mentioned  $\pm 3.0$ mm. Unit = mm

Packing Quantity

Technical Data Sheet

3mm Piranha

**30-01-B4C-AKNB**

| Packing material | Length × Width × height (mm) | Tube Quantity (Pcs) | LED Quantity (Pcs) |
|------------------|------------------------------|---------------------|--------------------|
| Tube             | 485 x 9.5 x 14.8             | 1                   | 60                 |
| Standard box     | 510 x 100 x 45               | 30                  | 1800               |
| Large box        | 510 x 150 x 90               | 105                 | 6300               |

Note:

1. Normal packing specification is use standard box, unless already defined initially.
2. Vacuum packing with anti-static bag after packing in standard box.
3. Specifications are subject to change without prior notice.

Technical Data Sheet

3mm Piranha

**30-01-B4C-AKNB**

Notes

1. Lead Forming

- During lead formation, the leads should be bent at a point at least 3mm from the base of the epoxy bulb.
- Lead forming should be done before soldering.
- Avoid stressing the LED package during leads forming. The stress to the base may damage the LED's characteristics or it may break the LEDs.
- Cut the LED leadframes at room temperature. Cutting the leadframes at high temperatures may cause failure of the LEDs.
- When mounting the LEDs onto a PCB, the PCB holes must be aligned exactly with the lead position of the LED. If the LEDs are mounted with stress at the leads, it causes deterioration of the epoxy resin and this will degrade the LEDs.

2. Storage

- The LEDs should be stored at 30°C or less and 70%RH or less after being shipped from Everlight and the storage life limits are 3 months. If the LEDs are stored for 3 months or more, they can be stored for a year in a sealed container with a nitrogen atmosphere and moisture absorbent material.
- Please avoid rapid transitions in ambient temperature, especially, in high humidity environments where condensation can occur.

3. Soldering

- Careful attention should be paid during soldering. Solder the LED no lower than 1.6mm from the base of stopper is recommended.
- Avoiding applying any stress to the lead frame while the LEDs are at high temperature particularly when soldering.
- Recommended soldering conditions:

| Hand Soldering       |  | DIP Soldering |  |
|----------------------|--|---------------|--|
| Temp. at tip of iron | 300°C Max. (30W Max.)                        | Preheat temp. | 100°C Max. (60 sec Max.)                     |
| Soldering time       | 3 sec Max.                                   | Bath temp.    | 260 Max.                                     |
| Distance             | No lower than 1.6mm from the base of stopper | Bath time.    | 5 sec Max.                                   |
|                      |  | Distance      | No lower than 1.6mm from the base of stopper |

## Technical Data Sheet

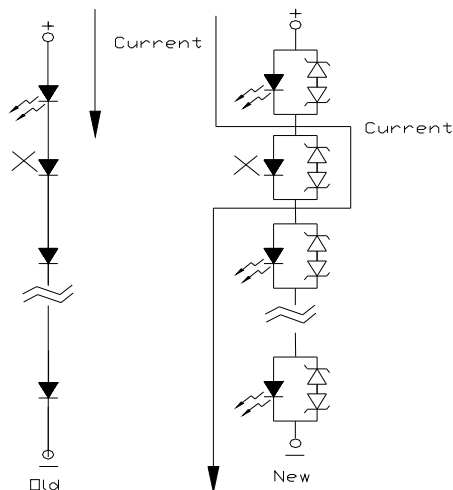
### 3mm Piranha

#### **30-01-B4C-AKNB**

- Dip and hand soldering should not be done more than one time.
- After soldering the LEDs, the epoxy bulb should be protected from mechanical shock or vibration until the LEDs return to room temperature.
- A rapid-rate process is not recommended for cooling the LEDs down from the peak temperature.
- Although the recommended soldering conditions are specified in the above table, dip or handsoldering at the lowest possible temperature is desirable for the LEDs.
- Wave soldering parameter must be set and maintain according to recommended temperature and dwell time in the solder wave.

#### 4. Circuit Protection

- Below the zener reference voltage  $V_z$ , all the current flows through LED and as the voltage rises to  $V_z$ , the zener diode "breakdown." If the voltage tries to rise above  $V_z$  current flows through the zener branch to keep the voltage at exactly  $V_z$ .
- When the LED is connected using serial circuit, if either piece of LED is no light up but current can't flow through causing others to light down. In new design, the LED is parallel with zener diode. if either piece of LED is no light up but current can flow through causing others to light up.



#### 5. Cleaning

- When necessary, cleaning should occur only with isopropyl alcohol at room temperature for a duration of no more than one minute. Dry at room temperature before use.
- Do not clean the LEDs by the ultrasonic. When it is absolutely necessary, the influence of

## Technical Data Sheet

### 3mm Piranha

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#### **30-01-B4C-AKNB**

ultrasonic cleaning on the LEDs depends on factors such as ultrasonic power and the assembled condition. Ultrasonic cleaning shall be pre-qualified to ensure this will not cause damage to the LED

#### 6. Heat Management

- Heat management of LEDs must be taken into consideration during the design stage of LED application. The current should be de-rated appropriately by referring to the de-rating curve found in each product specification.
- The temperature surrounding the LED in the application should be controlled. Please refer to the data sheet de-rating curve.

#### 7. ESD (Electrostatic Discharge)

- Electrostatic discharge (ESD) or surge current (EOS) can damage LEDs.
- An ESD wrist strap, ESD shoe strap or antistatic gloves must be worn whenever handling LEDs.
- All devices, equipment and machinery must be properly grounded.
- Use ion blower to neutralize the static charge which might have built up on surface of the LEDs plastic lens as a result of friction between LEDs during storage and handling.

#### 8. Other

- Above specification may be changed without notice. EVERLIGHT will reserve authority on material change for above specification.
- When using this product, please observe the absolute maximum ratings and the instructions for using outlined in these specification sheets. EVERLIGHT 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 sheets.
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