

### SMD ■ Side View LEDs (0.8mm) 99-213/G6C-AN1P1B/2C



#### Features

- Side view LED.
- Lead frame package with individual 2 pins.
- Wide viewing angle.
- Soldering methods: IR reflow soldering.
- ESD protection.
- Pb-free.
- The product itself will remain within RoHS compliant version.
- Compliance Halogen Free .(Br <900 ppm ,Cl <900 ppm , Br+Cl < 1500 ppm).
- Precondition: Bases on JEDEC J-STD 020D Level 3

#### Description

Due to the package design, 99-213 has wide viewing angle , low power consumption and white LEDs are devices which are materialized by combining Blue LEDs and special phosphors . This feature makes the LED ideal for light guide application.

#### Applications

- LCD Back Light.
- Mobile phones .
- Indicators.
- Illuminations.
- Switch Lights.

## Device Selection Guide

| Chip Materials | Emitted Color          | Resin Color |
|----------------|------------------------|-------------|
| AlGaInP        | Brilliant Yellow Green | Water Clear |

## Absolute Maximum Ratings (Ta=25°C)

| Parameter                                 | Symbol      | Rating  | Unit |
|---|-------------|---|------|
| Reverse Voltage                           | $V_R$       | 5   | V    |
| Forward Current                           | $I_F$       | 25  | mA   |
| Peak Forward Current<br>(Duty 1/10 @1KHz) | $I_{FP}$    | 60  | mA   |
| Power Dissipation                         | $P_d$       | 60  | mW   |
| Operating Temperature                     | $T_{opr}$   | -40 ~ +85   | °C   |
| Storage Temperature                       | $T_{stg}$   | -40 ~ +90   | °C   |
| ESD                                       | $ESD_{HBM}$ | 2000  | V    |
| Soldering Temperature                     | $T_{sol}$   | Reflow Soldering : 260 °C for 10 sec.<br>Hand Soldering : 350 °C for 3 sec. |      |

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

| Parameter                    | Symbol          | Min.  | Typ.  | Max.  | Unit    | Condition  |
|------------------------------|-----------------|-------|-------|-------|---------|------------|
| Luminous Intensity           | $I_v$           | 36    | ----- | 90    | mcd     | $I_F=20mA$ |
| Viewing Angle                | $2\theta_{1/2}$ | ----- | 110   | ----- | deg     | $I_F=20mA$ |
| Peak Wavelength              | $\lambda_p$     | ----- | 575   | ----- | nm      | $I_F=20mA$ |
| Dominant Wavelength          | $\lambda_d$     | 567.5 | ----  | 573.5 | nm      | $I_F=20mA$ |
| Spectrum Radiation Bandwidth | $\Delta\lambda$ | ----- | 20    | ----- | nm      | $I_F=20mA$ |
| Forward Voltage              | $V_F$           | 1.75  | ----  | 2.35  | V       | $I_F=20mA$ |
| Reverse Current              | $I_R$           | ----- | ----- | 10    | $\mu A$ | $V_R=5V$   |

Note:

1. Tolerance of Luminous Intensity:  $\pm 11\%$
2. Tolerance of Dominant Wavelength:  $\pm 1nm$
3. Tolerance of Forward Voltage:  $\pm 0.1V$
4. All reliability item are tested under good thermal management. Dynamic reliability are tested at 20mA.
5. LED components are not supposed to be reverse operated.

### Bin Range of Luminous Intensity

| Bin Code | Min. | Max. | Unit | Condition           |
|----------|------|------|------|---------------------|
| N2       | 36.0 | 45.0 | mcd  | $I_F = 20\text{mA}$ |
| P1       | 45.0 | 56.0 |      |                     |
| P2       | 56.0 | 71.0 |      |                     |
| Q1       | 71.0 | 90.0 |      |                     |

Note:  
Tolerance of Luminous Intensity:  $\pm 11\%$

### Bin Range of Dominant Wavelength

| Group | Bin Code | Min.  | Max.  | Unit | Condition           |
|-------|----------|-------|-------|------|---------------------|
| A     | C15      | 567.5 | 569.5 | nm   | $I_F = 20\text{mA}$ |
|       | C16      | 569.5 | 571.5 |      |                     |
|       | C17      | 571.5 | 573.5 |      |                     |

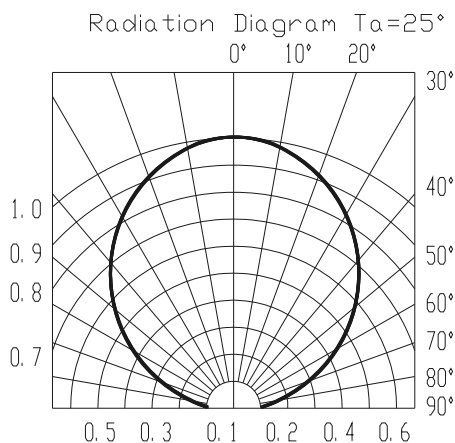
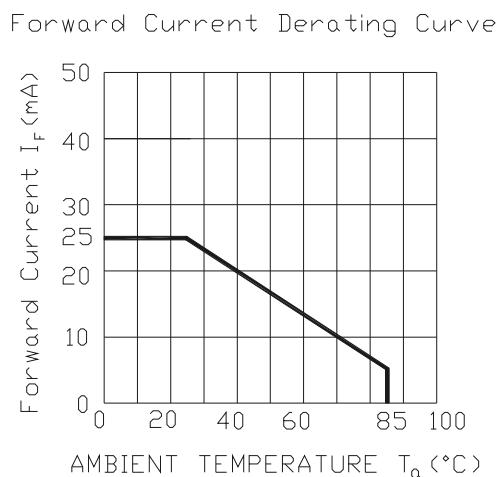
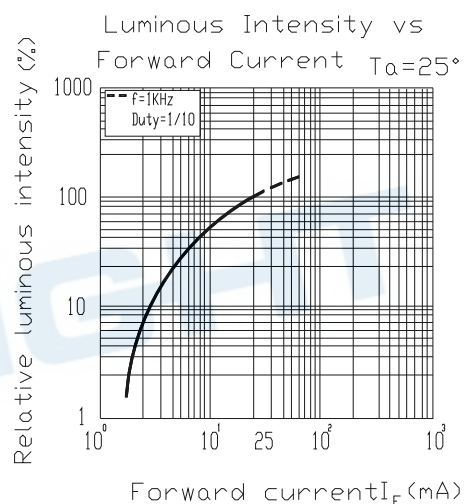
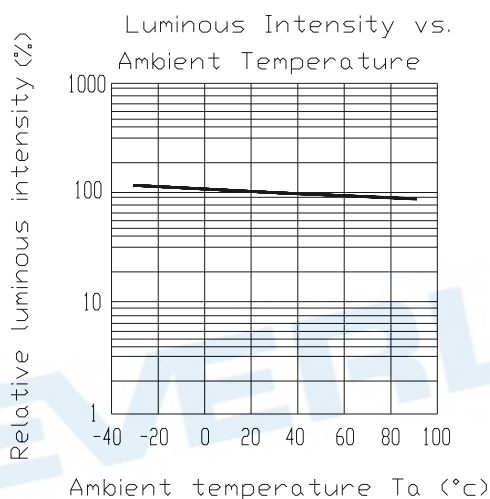
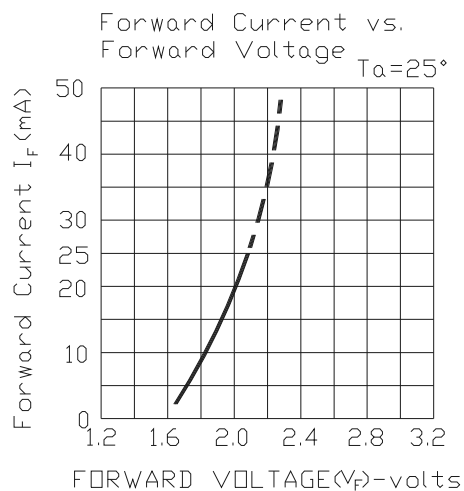
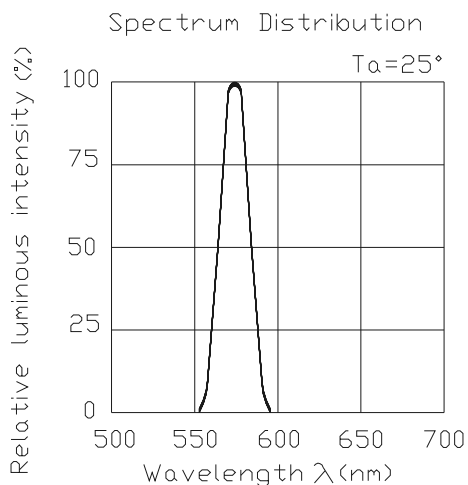
Note:  
Tolerance of Dominant Wavelength:  $\pm 1\text{nm}$

### Bin Range of Forward Voltage

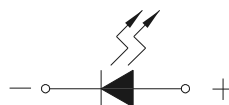
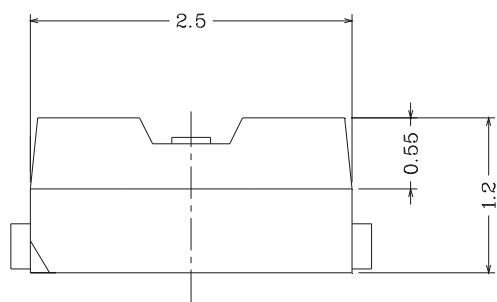
| Group | Bin Code | Min. | Max. | Unit | Condition           |
|-------|----------|------|------|------|---------------------|
| B     | 0        | 1.75 | 1.95 | V    | $I_F = 20\text{mA}$ |
|       | 1        | 1.95 | 2.15 |      |                     |
|       | 2        | 2.15 | 2.35 |      |                     |

Note:  
Tolerance of Forward Voltage:  $\pm 0.1\text{V}$

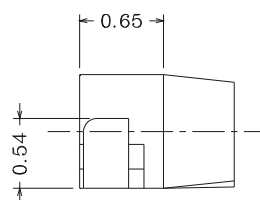
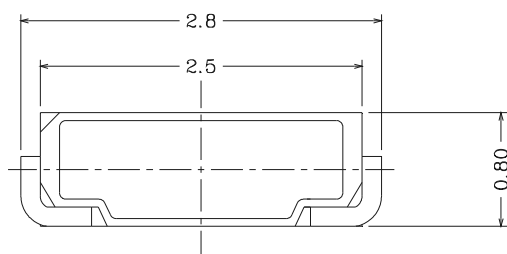
## Typical Electro-Optical Characteristics Curves



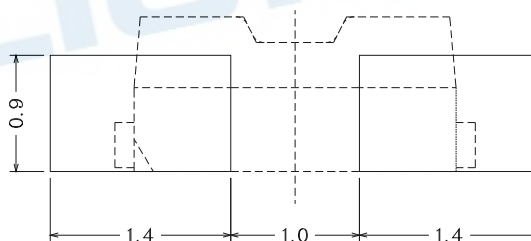
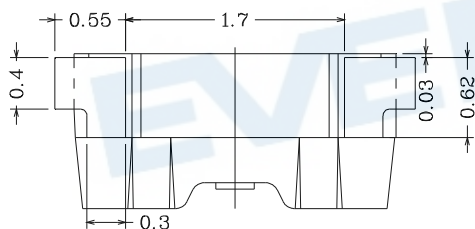
## Package Dimension



Polarity



Recommended soldering pad design



Note: Tolerances unless mentioned  $\pm 0.1\text{mm}$ . Unit = mm

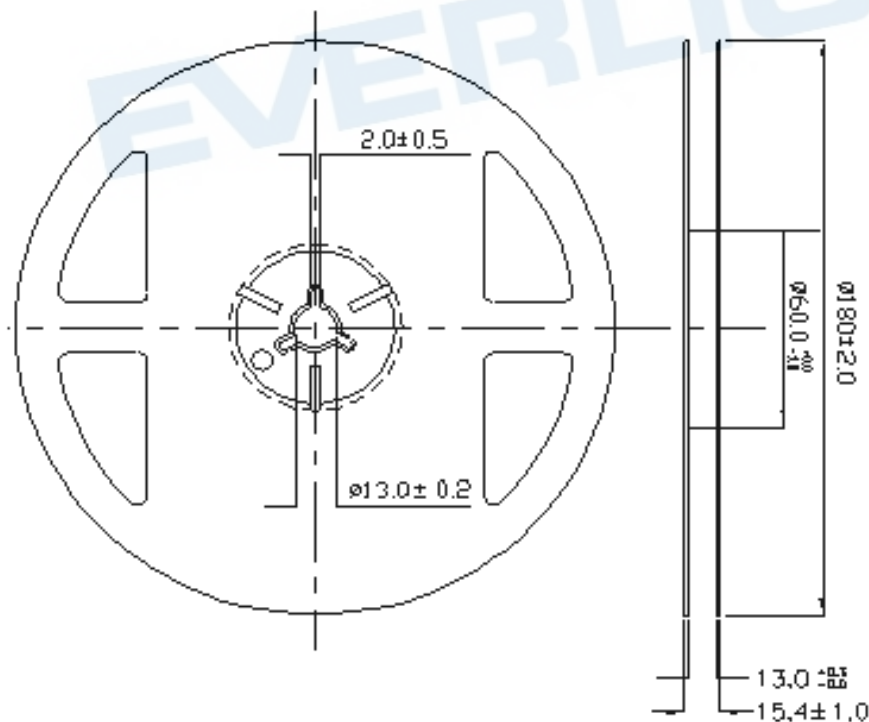
## Moisture Resistant Packing Materials

### Label Explanation

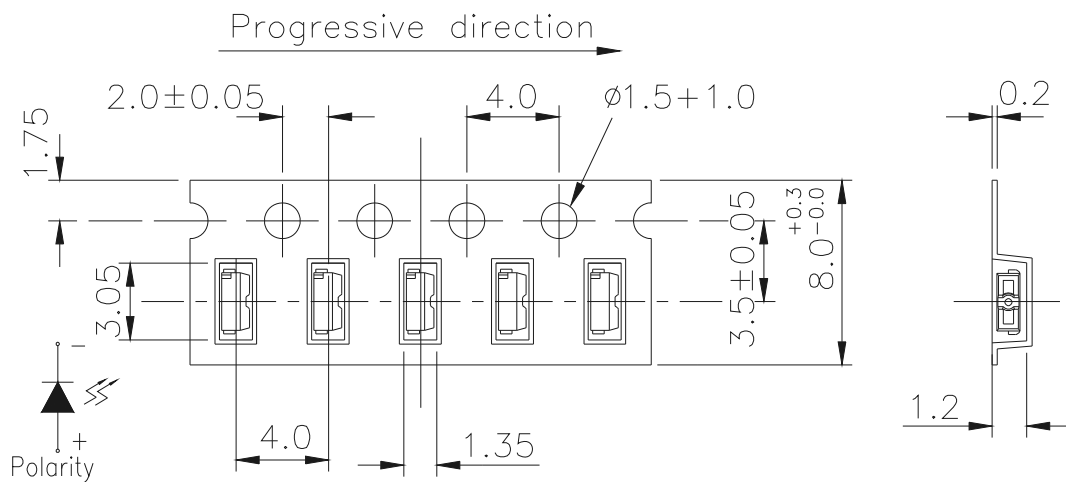


- CPN: Customer's Product Number
- P/N: Product Number
- QTY: Packing Quantity
- CAT: Luminous Intensity Rank
- HUE: Dom. Wavelength Rank
- REF: Forward Voltage Rank
- LOT No: Lot Number

### Reel Dimensions

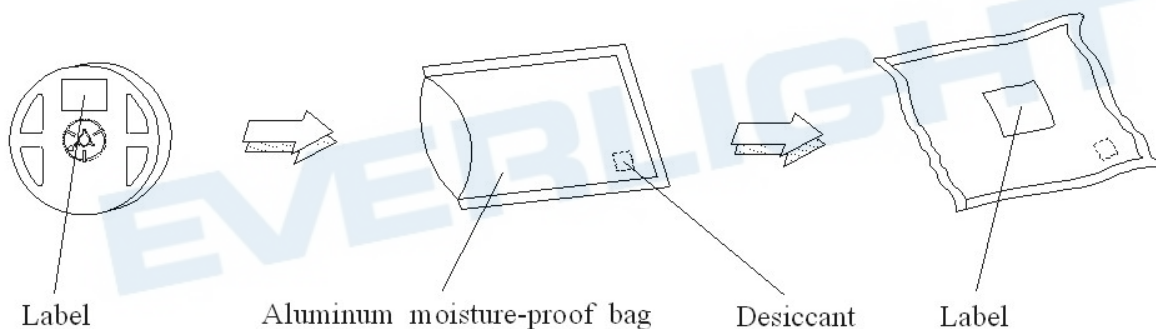


**Carrier Tape Dimensions: Loaded Quantity 2000 pcs Per Reel**



Note: Tolerances unless mentioned ±0.1mm. Unit = mm

**Moisture Resistant Packing Process**

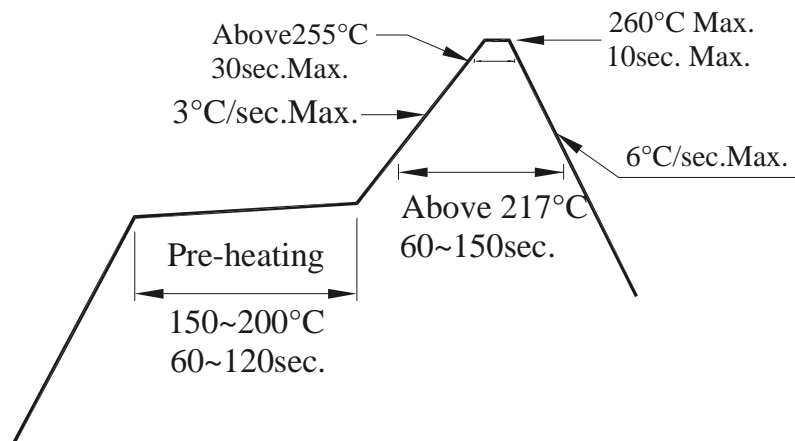


Note: Tolerances unless mentioned ±0.1mm. Unit = mm

## Precautions for Use

### 1. Over-current-proof

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



### 2. Storage

2.1 Moisture proof bag should only be opened immediately prior to usage..

2.2 Environment should be less than 30°C and 60% RH when moisture proof bag is opened

2.3 After opening the package MSL Conditions stated on page 1 of this spec should not be exceeded.

If unused LEDs remain, it should be stored in moisture proof packages.

2.4 If the moisture sensitivity card indicates higher than acceptable moisture, the component should be baked at min. 60deg +/-5deg for 24 hours.

### 3. Soldering Condition

3.1 Pb-free solder temperature profile

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

3.3 When soldering, do not put stress on the LEDs during heating.

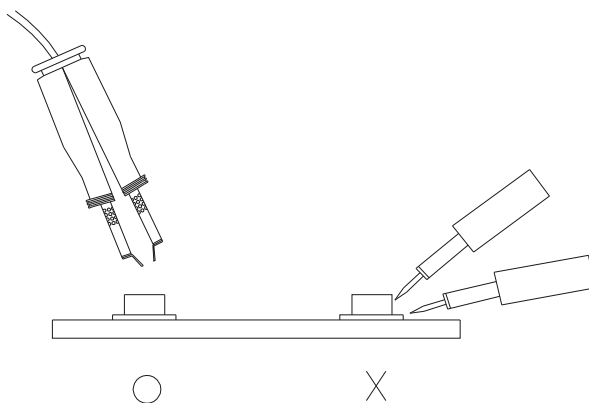
3.4 After soldering, do not warp the circuit board.

### 4. Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than 350°C for 3 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of the hand solder.

### 5. Repairing

Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used (as below figure). It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.





## Application Restrictions

High reliability applications such as military/aerospace, automotive safety/security systems, and medical equipment may require different product. If you have any concerns, please contact Everlight before using this product in your application. This specification guarantees the quality and performance of the product as an individual component. Do not use this product beyond the specification described in this document.

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