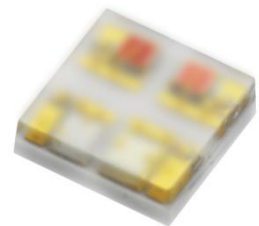


### EL Multi Color CH2525-RGBY0401H-AM

**Preliminary**



#### Features

- Package: SMD ceramic package
- Emitted Color: Red 623nm ; Green 527nm ; Blue 460nm ; Yellow 590nm
- Typical luminous Intensity: Red 1200 mcd; Green 2300 mcd; Blue 360mcd; Yellow 1300mcd @ 40mA
- Viewing angle : Green and Blue 150°; Red and Yellow 140°
- ESD : up to 8KV
- MSL : 2
- Qualifications : According to AEC-Q101
- Compliance with RoHS & REACH
- Compliance Halogen Free. (Br<900ppm,Cl<900ppm,Br+Cl<1500ppm)
- Sulfur robustness

#### Applications

- Automotive interior lighting
- Ambient light

## Contents

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# 1. Characteristics

| Parameter                               |         | Symbol           | Min. | Typ. | Max. | Unit | Condition  |
|---|---------|------------------|------|------|------|------|------------|
| Forward Current                         | R,G,B,Y | $I_F$            | 10   | 40   | 80   | mA   | ---        |
| Luminous Intensity <sup>[1][3]</sup>    | Red     | $\Phi_v$         | 900  | 1200 | 1400 | mcd  | $I_F=40mA$ |
|   | Green   |                  | 2240 | 2300 | 3550 |      |            |
|   | Blue    |                  | 355  | 360  | 560  |      |            |
|   | Yellow  |                  | 900  | 1300 | 1400 |      |            |
| Forward Voltage <sup>[4][5]</sup>       | Red     | $V_F$            | 1.75 | 2.00 | 2.50 | V    | $I_F=40mA$ |
|   | Green   |                  | 2.75 | 2.80 | 3.50 |      |            |
|   | Blue    |                  | 2.75 | 3.00 | 3.50 |      |            |
|   | Yellow  |                  | 1.75 | 2.40 | 2.50 |      |            |
| Viewing Angle                           | Red     | $\varphi$        | ---  | 140  | ---  | deg  | $I_F=40mA$ |
|   | Green   |                  | ---  | 150  | ---  |      |            |
|   | Blue    |                  | ---  | 150  | ---  |      |            |
|   | Yellow  |                  | ---  | 140  | ---  |      |            |
| Peak Wavelength                         | Red     | $\lambda_p$      | ---  | 630  | ---  | nm   | $I_F=40mA$ |
|   | Green   |                  | ---  | 520  | ---  |      |            |
|   | Blue    |                  | ---  | 450  | ---  |      |            |
|   | Yellow  |                  | ---  | 595  | ---  |      |            |
| Dominant Wavelength <sup>[6]</sup>      | Red     | $\lambda_d$      | 621  | 623  | 627  | nm   | $I_F=40mA$ |
|   | Green   |                  | 520  | 527  | 535  |      |            |
|   | Blue    |                  | 455  | 460  | 467  |      |            |
|   | Yellow  |                  | 585  | 590  | 597  |      |            |
| Thermal Resistance (Junction to Solder) | Red     | $R_{th JS real}$ | ---  | 33   | ---  | K/W  | $I_F=40mA$ |
|   |         | $R_{th JS el}$   | ---  | 25   | ---  |      |            |
|   | Green   | $R_{th JS real}$ | ---  | 46   | ---  |      |            |
|   |         | $R_{th JS el}$   | ---  | 35   | ---  |      |            |
|   | Blue    | $R_{th JS real}$ | ---  | 25   | ---  |      |            |
|   |         | $R_{th JS el}$   | ---  | 20   | ---  |      |            |
|   | Yellow  | $R_{th JS real}$ | ---  | 33   | ---  |      |            |
|   |         | $R_{th JS el}$   | ---  | 25   | ---  |      |            |

**Notes:**

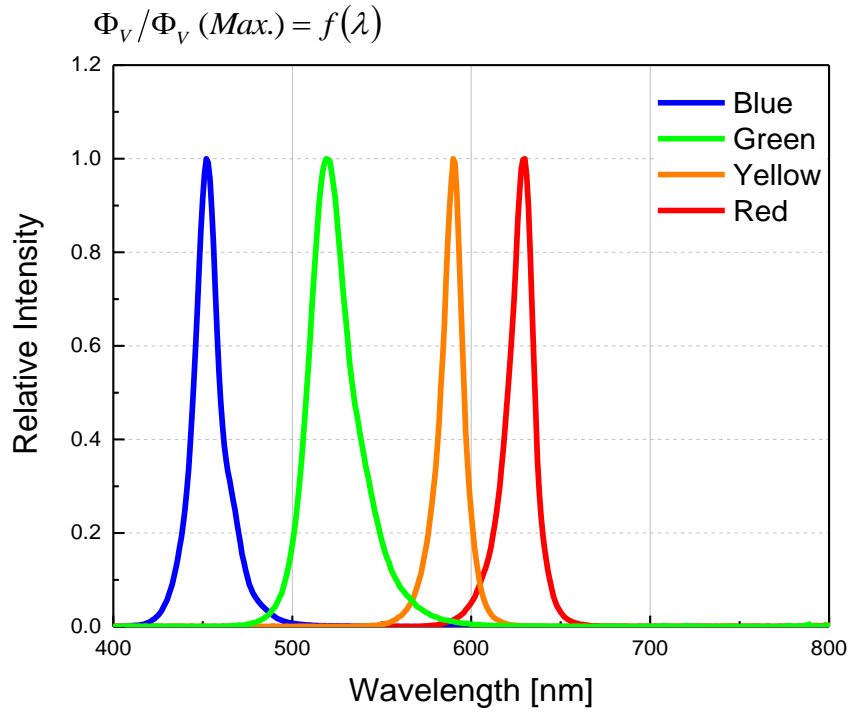
1. Luminous intensity measurement tolerance:  $\pm 8\%$ .
2. Luminous flux measurement tolerance:  $\pm 8\%$ .
3. The data of luminous intensity and luminous flux measured at thermal pad=25°C.
4. Forward voltage measurement tolerance:  $\pm 0.05V$ .
5. The  $V_F$  range shown in the table above indicates 99% output.
6. Tolerance of Dominant Wavelength :  $\pm 1nm$ .

## 2. Absolute Maximum Ratings

| Parameter                                       | Symbol      | Ratings                            |       |      |        | Ratings |
|---|-------------|------------------------------------|-------|------|--------|---------|
|   |             | Red                                | Green | Blue | Yellow |         |
| Power Dissipation                               | $P_d$       | 220                                | 280   | 280  | 220    | mW      |
| Forward Current                                 | $I_F$       | 10-80                              |       |      |        |         |
| Reverse Voltage                                 | $V_R$       | Not designed for reverse operation |       |      |        | V       |
| Junction Temperature                            | $T_J$       | 125                                |       |      |        | °C      |
| Operating Temperature                           | $T_{opr}$   | -40 ~ +110                         |       |      |        | °C      |
| Storage Temperature                             | $T_{stg}$   | -40 ~ +110                         |       |      |        | °C      |
| ESD Sensitivity<br>(R=1.5k $\Omega$ , C= 100pF) | $ESD_{HBM}$ | 8                                  |       |      |        | kV      |
| Soldering Temperature                           | Reflow      | 260°C for 30sec                    |       |      |        | °C      |

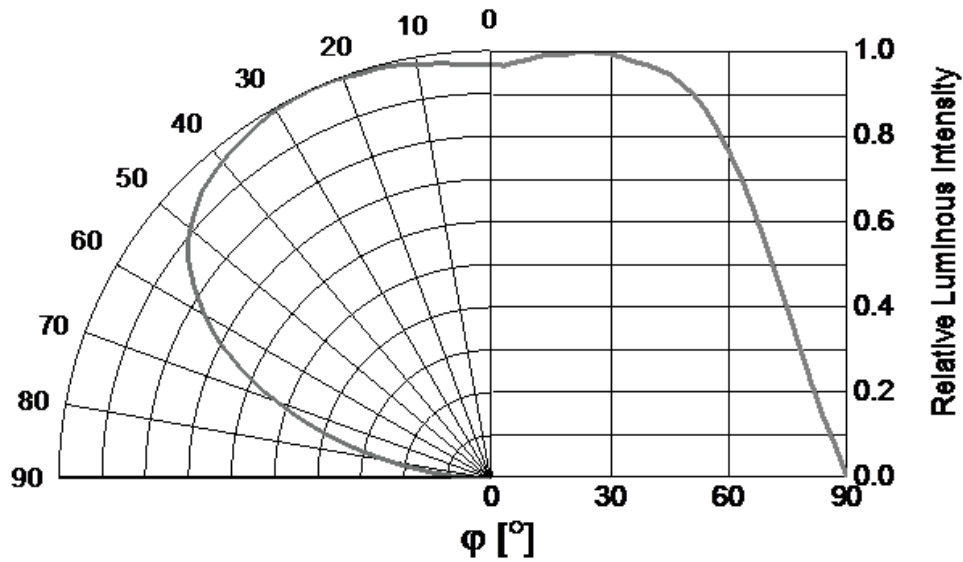
### 3. Characteristics Graph

**Wavelength Characteristics Relative Spectral Distribution**  
@  $T_s = 25^\circ\text{C}$  ,  $I_F = 40\text{mA}$



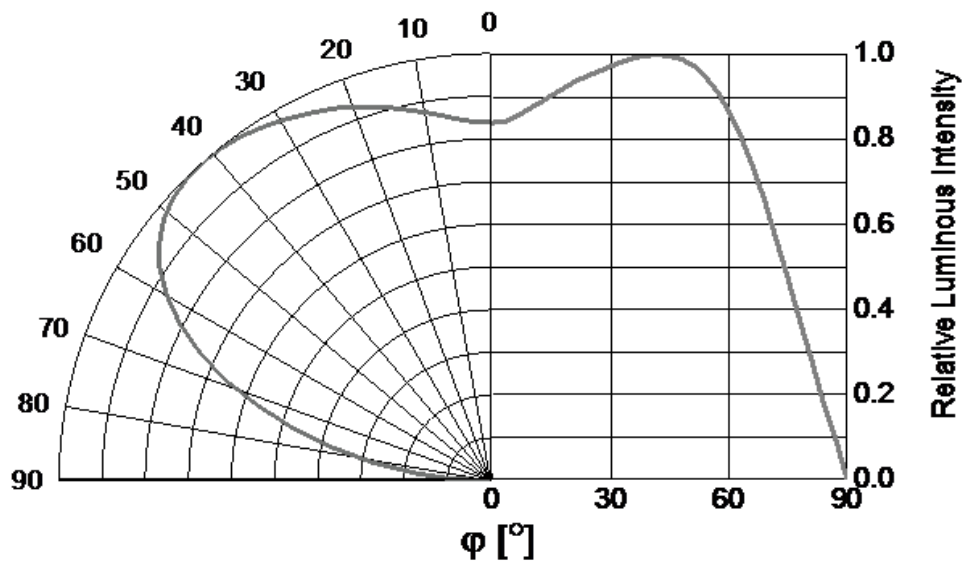
### Typical Diagram Characteristics of Radiation (Red)

$$\Phi_V / \Phi_V(0^\circ) = f(\varphi)$$



### Typical Diagram Characteristics of Radiation (Green)

$$\Phi_V / \Phi_V(0^\circ) = f(\varphi)$$

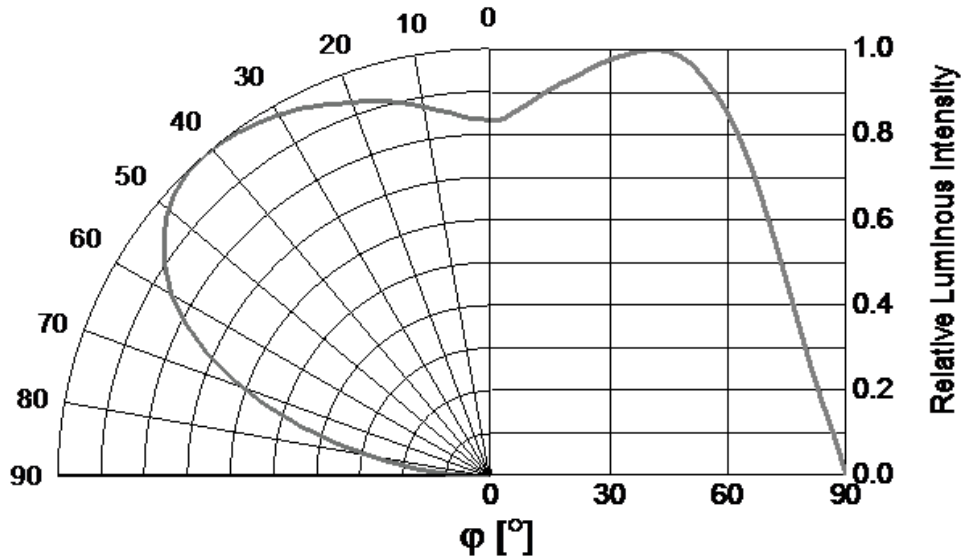


**Notes:**

1.  $\varphi$  is the off axis angle from lamp centerline where the luminous intensity is 1/2 of the peak value.
2. View angle tolerance is  $\pm 5^\circ$ .

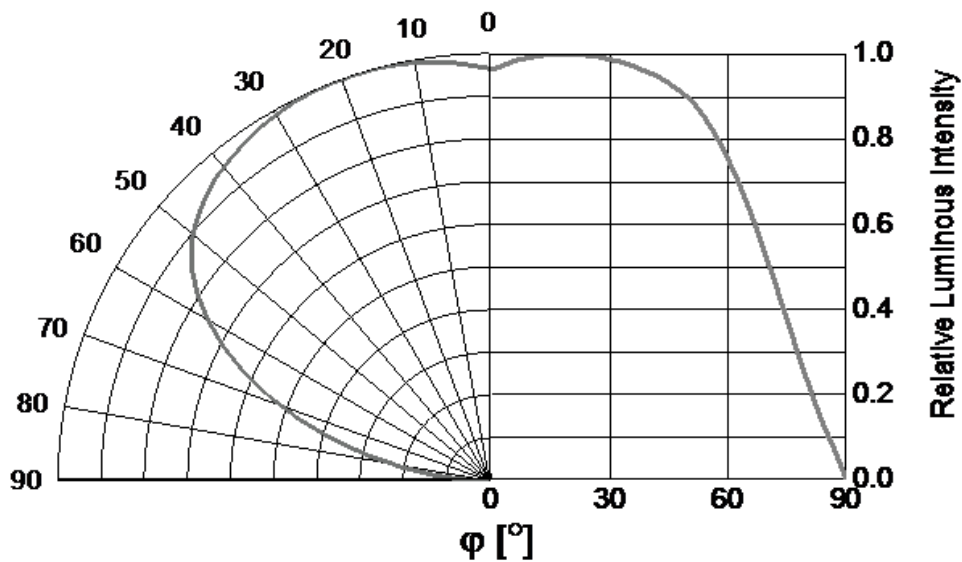
### Typical Diagram Characteristics of Radiation (Blue)

$$\Phi_V / \Phi_V(0^\circ) = f(\varphi)$$



### Typical Diagram Characteristics of Radiation (Yellow)

$$\Phi_V / \Phi_V(0^\circ) = f(\varphi)$$

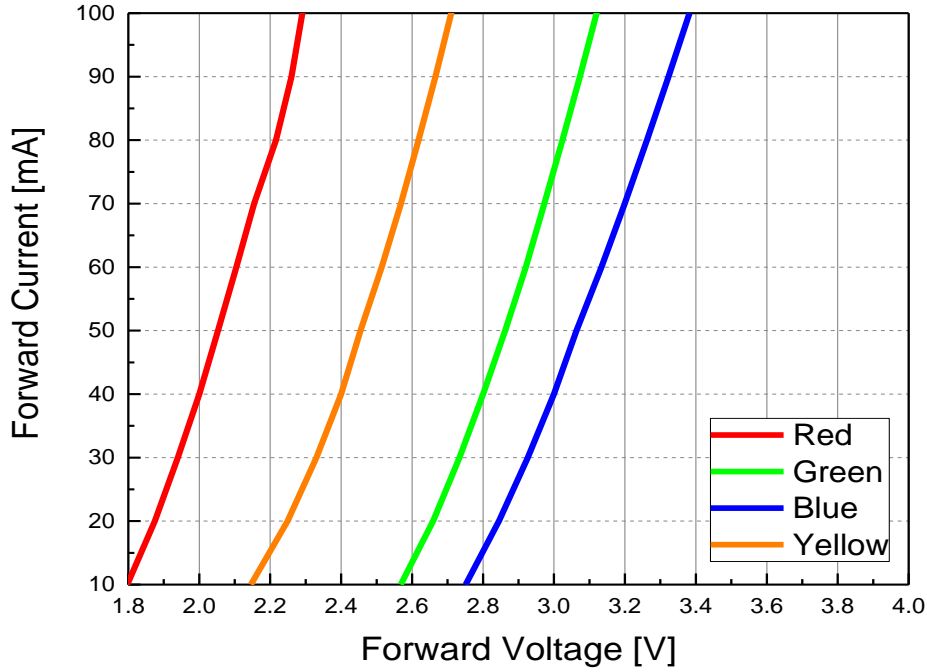


**Notes:**

1.  $\varphi$  is the off axis angle from lamp centerline where the luminous intensity is 1/2 of the peak value.
2. View angle tolerance is  $\pm 5^\circ$ .

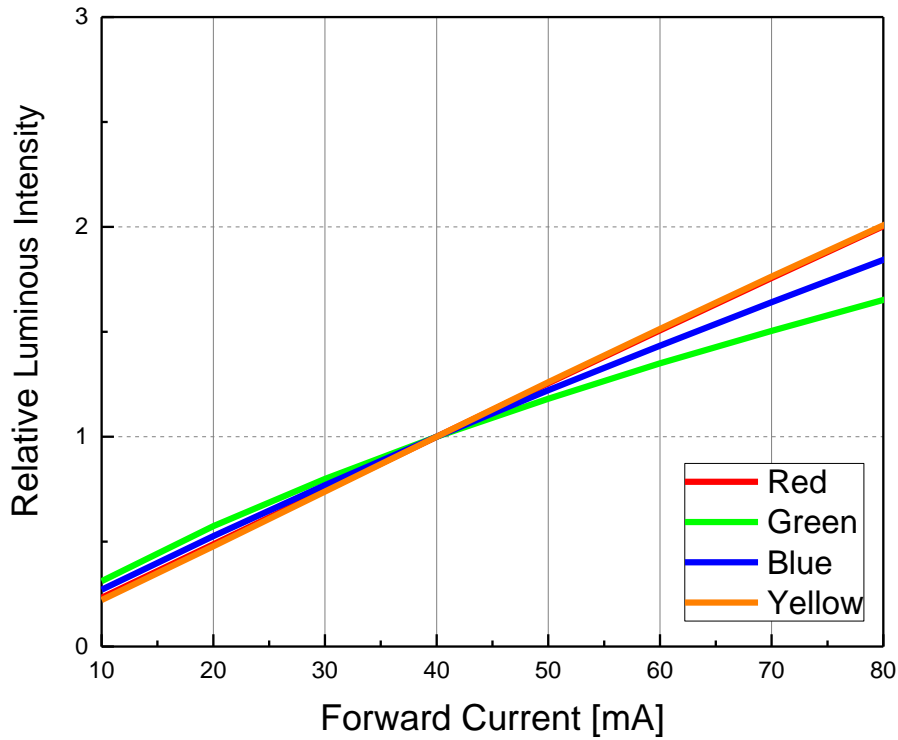
### Forward Current vs. Forward Voltage @ Ts = 25°C

$$I_F = f(V_F)$$



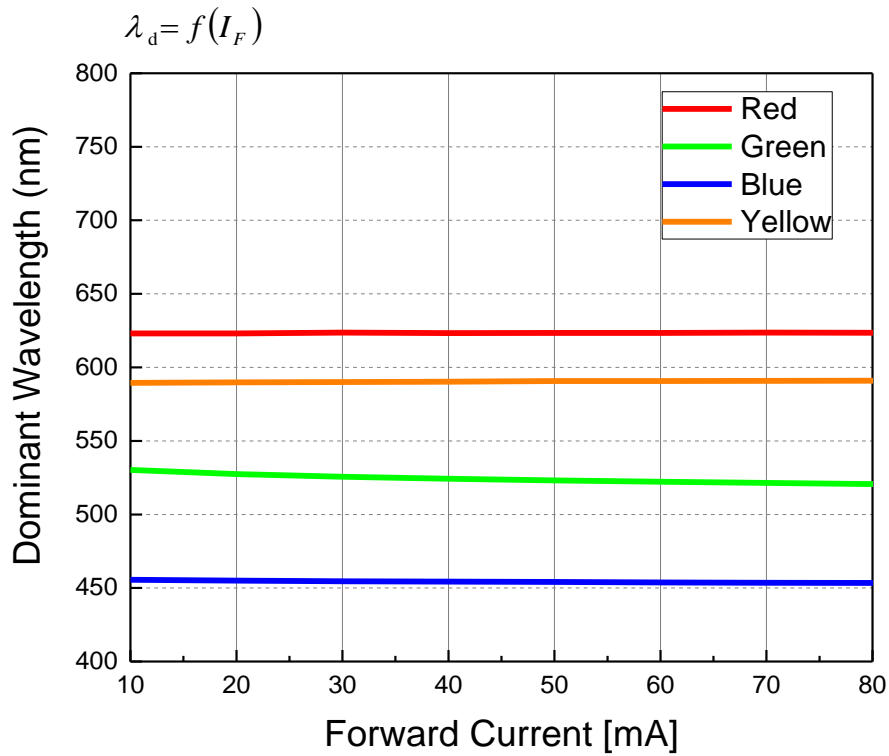
### Relative Luminous Intensity vs. Forward Current @ Ts = 25°C

$$\Phi_V / \Phi_V(40mA) = f(I_F)$$

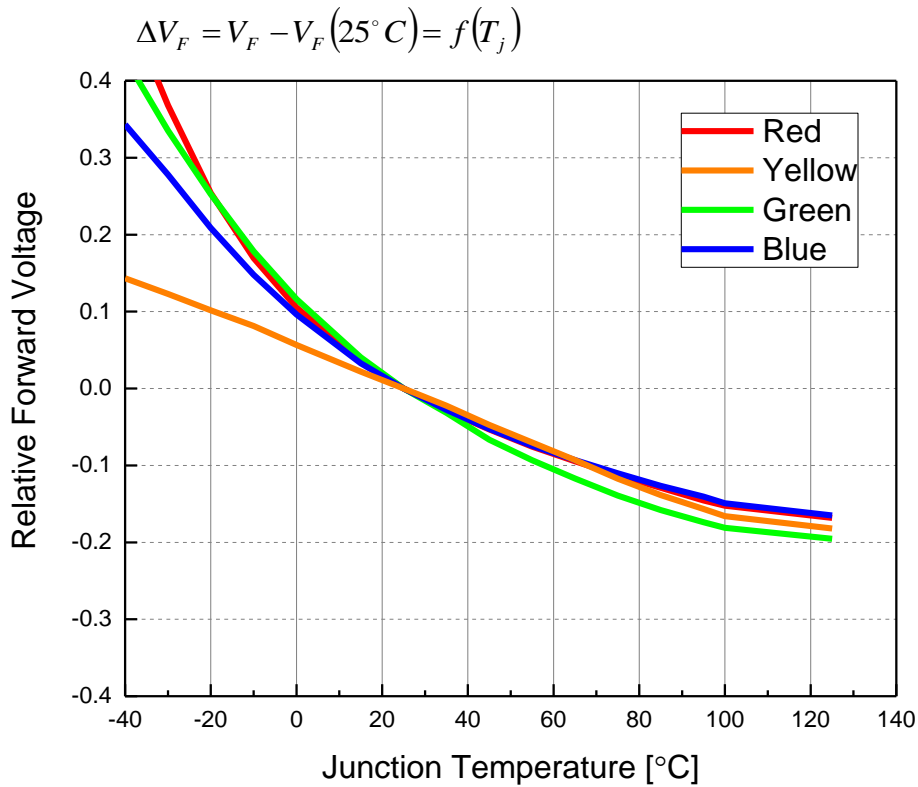




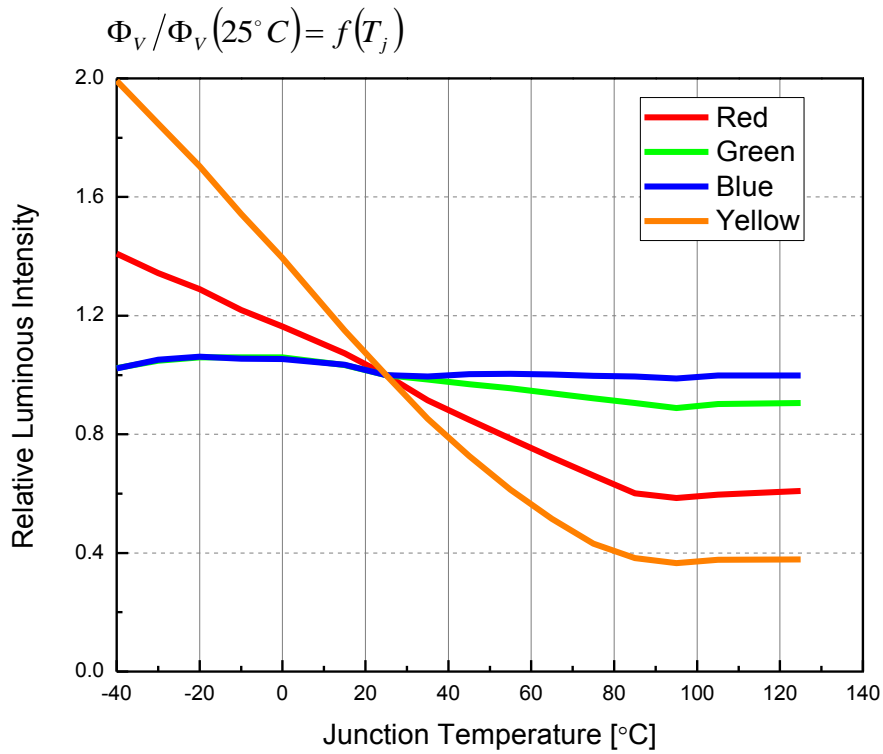
**Dominant Wavelength vs. Forward Current @  $T_s = 25^\circ\text{C}$**



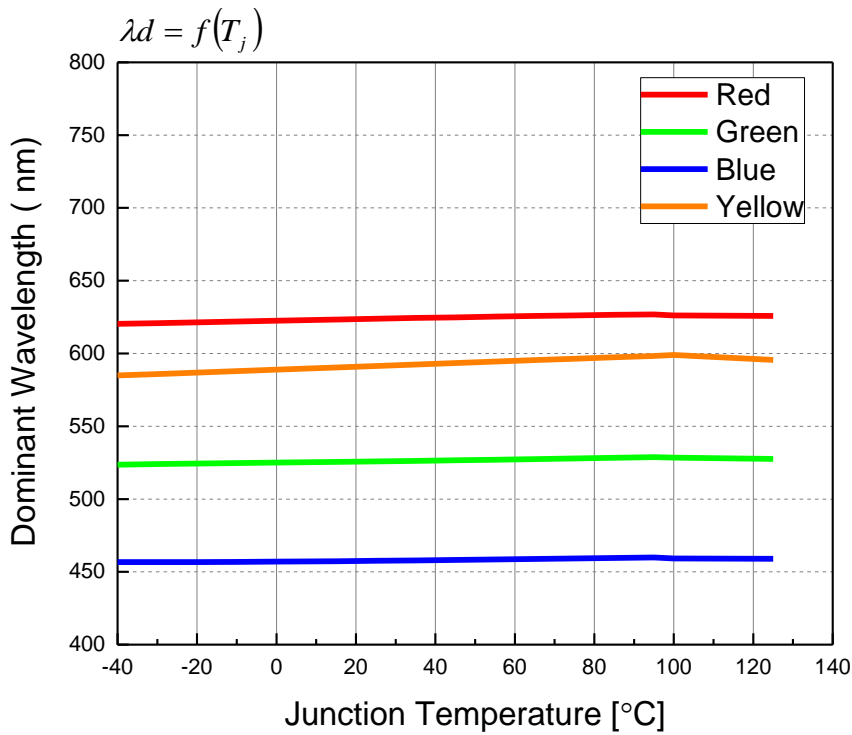
**Relative Forward Voltage vs. Junction Temperature @  $I_F=40\text{mA}$**



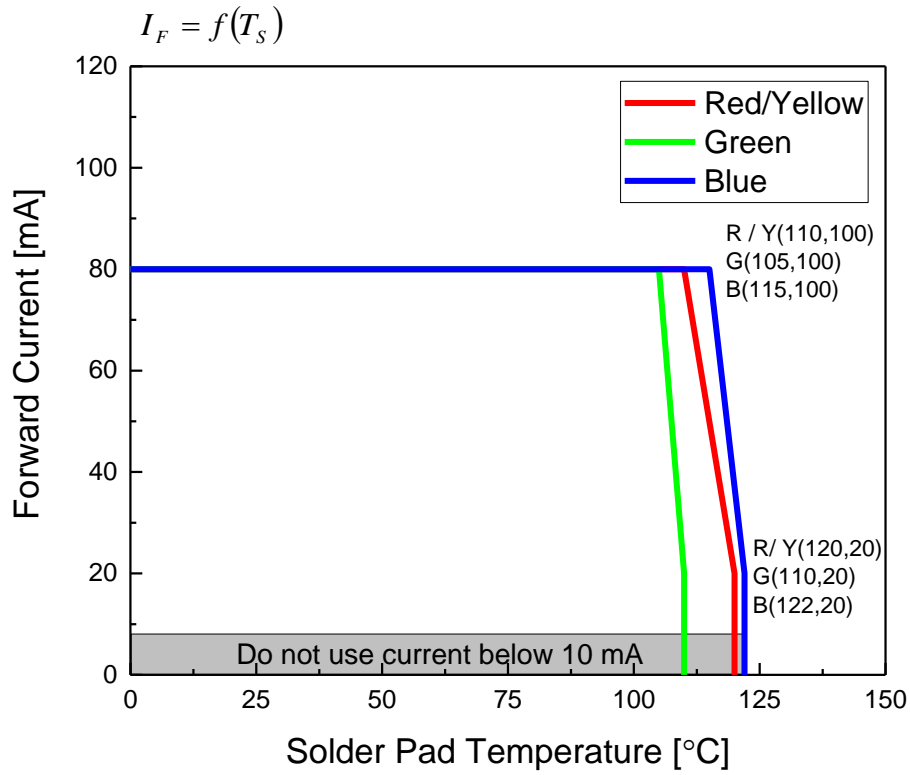
**Relative Luminous Intensity vs. Junction Temperature @  $I_F=40\text{mA}$**



**Dominant Wavelength vs. Junction Temperature @  $I_F=40\text{mA}$**



### Forward Current Derating Curve



## 4. Binning Information

### Luminous Intensity Bins

| Group Bin | Minimum Luminous Intensity [mcd] | Maximum Luminous Intensity [mcd] |
|-----------|----------------------------------|----------------------------------|
| L1        | 11.2                             | 14                               |
| L2        | 14                               | 18                               |
| M1        | 18                               | 22.4                             |
| M2        | 22.4                             | 28                               |
| N1        | 28                               | 35.5                             |
| N2        | 35.5                             | 45                               |
| P1        | 45                               | 56                               |
| P2        | 56                               | 71                               |
| Q1        | 71                               | 90                               |
| Q2        | 90                               | 112                              |
| R1        | 112                              | 140                              |
| R2        | 140                              | 180                              |
| S1        | 180                              | 224                              |
| S2        | 224                              | 280                              |
| T1        | 280                              | 355                              |
| T2        | 355                              | 450                              |
| U1        | 450                              | 560                              |
| U2        | 560                              | 710                              |
| V1        | 710                              | 900                              |
| V2        | 900                              | 1120                             |
| AA        | 1120                             | 1400                             |
| AB        | 1400                             | 1800                             |
| BA        | 1800                             | 2240                             |
| BB        | 2240                             | 2800                             |
| CA        | 2800                             | 3550                             |
| CB        | 3550                             | 4500                             |
| DA        | 4500                             | 5600                             |
| DB        | 5600                             | 7100                             |
| EA        | 7100                             | 9000                             |
| EB        | 9000                             | 11200                            |
| FA        | 11200                            | 14000                            |
| FB        | 14000                            | 18000                            |
| GA        | 18000                            | 22400                            |

#### Notes:

1. Luminous intensity measurement tolerance: 8%.

### Dominant Wavelength Bins

| Color Bin<br>Structure Bin | Minimum Dominant<br>Wavelength [nm] | Maximum Dominant<br>Wavelength [nm] |
|----------------------------|-------------------------------------|-------------------------------------|
| 5155                       | 451                                 | 455                                 |
| 5559                       | 455                                 | 459                                 |
| 5963                       | 459                                 | 463                                 |
| 6367                       | 463                                 | 467                                 |
| 6771                       | 467                                 | 471                                 |
| 7175                       | 471                                 | 475                                 |
| 1015                       | 510                                 | 515                                 |
| 1520                       | 515                                 | 520                                 |
| 2025                       | 520                                 | 525                                 |
| 2530                       | 525                                 | 530                                 |
| 3035                       | 530                                 | 535                                 |
| 5861                       | 558                                 | 561                                 |
| 6164                       | 561                                 | 564                                 |
| 6467                       | 564                                 | 567                                 |
| 6770                       | 567                                 | 570                                 |
| 7073                       | 570                                 | 573                                 |
| 7376                       | 573                                 | 576                                 |
| 7679                       | 576                                 | 579                                 |
| 7982                       | 579                                 | 582                                 |
| 8285                       | 582                                 | 585                                 |
| 8588                       | 585                                 | 588                                 |
| 8891                       | 588                                 | 591                                 |
| 9194                       | 591                                 | 594                                 |
| 9497                       | 594                                 | 597                                 |
| 9700                       | 597                                 | 600                                 |
| 0003                       | 600                                 | 603                                 |
| 0306                       | 603                                 | 606                                 |
| 0609                       | 606                                 | 609                                 |
| 0912                       | 609                                 | 612                                 |
| 1215                       | 612                                 | 615                                 |
| 1518                       | 615                                 | 618                                 |
| 1821                       | 618                                 | 621                                 |
| 2124                       | 621                                 | 624                                 |
| 2427                       | 624                                 | 627                                 |
| 2730                       | 627                                 | 630                                 |
| 3033                       | 630                                 | 633                                 |
| 3336                       | 633                                 | 636                                 |
| 3639                       | 636                                 | 639                                 |

**Notes:**

1. Dominant wavelength measurement tolerance:  $\pm 1$ nm.

### Forward Voltage Bins

| Bin  | Minimum Forward Voltage [V] | Maximum Forward Voltage [V] |
|------|-----------------------------|-----------------------------|
| 1012 | 1.00                        | 1.25                        |
| 1215 | 1.25                        | 1.75                        |
| 1517 | 1.50                        | 1.75                        |
| 1720 | 1.75                        | 2.00                        |
| 2022 | 2.00                        | 2.25                        |
| 2225 | 2.25                        | 2.50                        |
| 2527 | 2.50                        | 2.75                        |
| 2730 | 2.75                        | 3.00                        |
| 3032 | 3.00                        | 3.25                        |
| 3235 | 3.25                        | 3.50                        |
| 3537 | 3.50                        | 3.75                        |
| 3740 | 3.75                        | 4.00                        |
| 4042 | 4.00                        | 4.25                        |
| 4245 | 4.25                        | 4.50                        |
| 4547 | 4.50                        | 4.75                        |
| 4750 | 4.75                        | 5.00                        |
| 5052 | 5.00                        | 5.25                        |
| 5255 | 5.25                        | 5.50                        |
| 5557 | 5.50                        | 5.75                        |
| 5760 | 5.75                        | 6.00                        |
| 6062 | 6.00                        | 6.25                        |
| 6265 | 6.25                        | 6.50                        |
| 6567 | 6.50                        | 6.75                        |
| 6770 | 6.75                        | 7.00                        |

**Notes:**

1. Forward voltage measurement tolerance:  $\pm 0.05V$ .
2. Forward voltage bins are defined at  $I_F = 40mA$  operation.

## 5. Part Number

### CH2525-RGBY0401H-AM

Part number is designated with below details.

CH2525 = Product family name.

RGBY = Color <sup>[1]</sup>

040 = Test current [mA]

1 = Metallic Plating Type ( 0=Ag ; 1=Au ; 2=MLP)

H = Brightness Level ( H=High ; M=Medium ; L=Low)

AM = Automotive Application

Note

[1] Color:

| Symbol | Description              |
|--------|--------------------------|
| C      | Cool White               |
| N      | Neutral White            |
| W      | Warm White               |
| PA     | Phosphor Converted Amber |
| PR     | Phosphor Converted Red   |
| UB     | Blue                     |
| IB     | Ice Blue                 |
| SB     | Sky Blue                 |
| UP     | Purple                   |
| UG     | Green                    |
| UY     | Yellow                   |
| UA     | Amber                    |
| UR     | Red                      |
| SR     | Super Red                |
| RGB    | RGB – Color              |
| RGBY   | RGBY – Color             |

## 6. Ordering Information

### CH2525-RGBY0401H-**ABC-DE**-AM

| Part Number of the EL Multi Color | Order Code                 |
|-----------------------------------|----------------------------|
| CH2525-RGBY0401H-AM               | CH2525-RGBY0401H-ELM-DE-AM |

Order code contains information with below details:

ABC = Please refer to the chart to the right <sup>[1]</sup>

D = Standard packing quantity

E = Packing method (T for tape & reel )

AM = Automotive Application Note

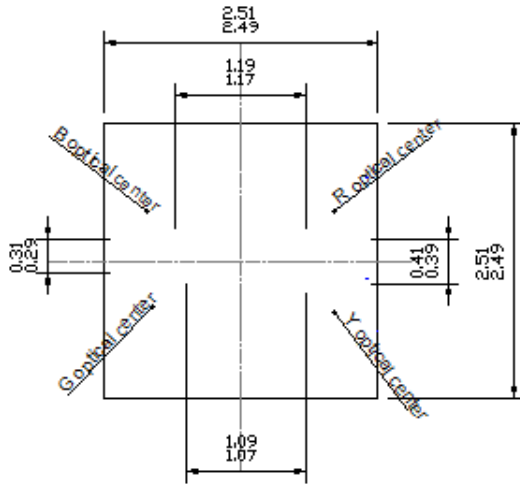
Note

<sup>[1]</sup> Group Bin chart

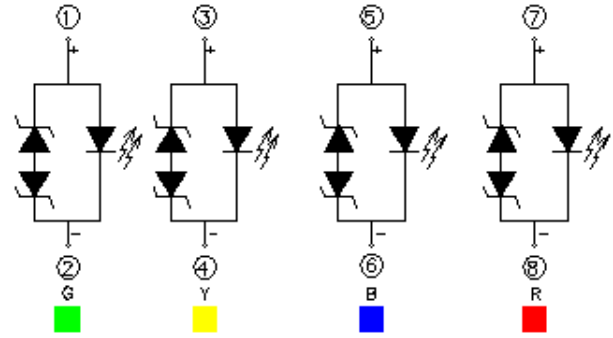
| Group Bin | Dominant Wavelength (nm) |                  | $\Phi_v$ | $V_F$ |
|-----------|--------------------------|------------------|----------|-------|
|           | Color                    | Wavelength Range |          |       |
| ELM       | Red                      | 621 ~ 627        | V2AA     | 1725  |
|           | Green                    | 520 ~ 535        | BBCA     | 2735  |
|           | Blue                     | 455 ~ 467        | T2U1     | 2735  |
|           | Yellow                   | 585 ~ 597        | V2AA     | 1725  |



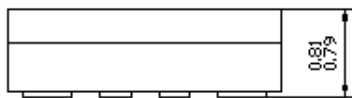
## 7. Mechanical Dimension



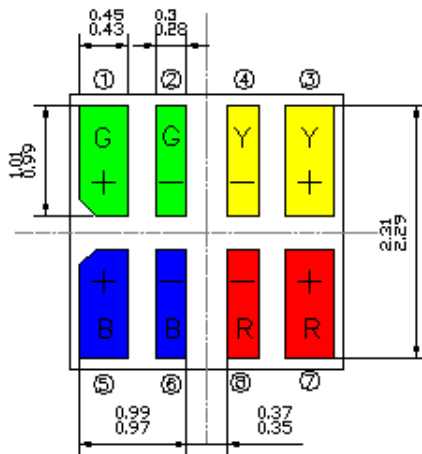
TOP View



Polarity



Side view

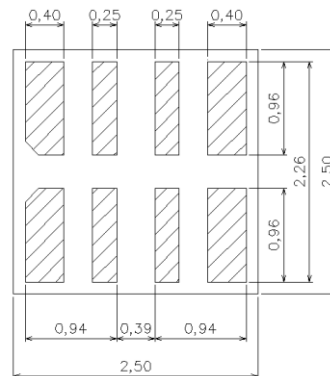


BOT. view

### Notes:

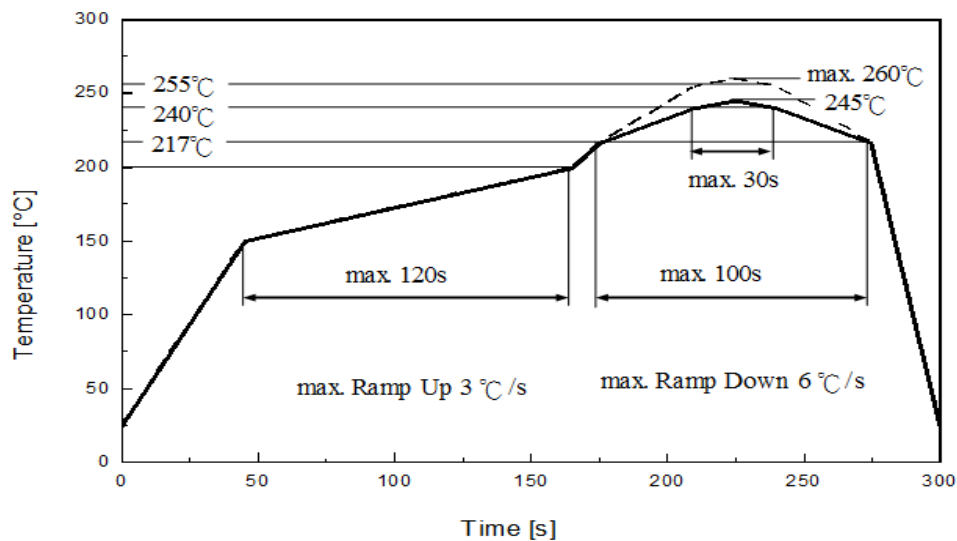
1. Dimensions are in millimeters.
2. Tolerances unless mentioned are  $\pm 0.1\text{mm}$ .

## 8. Recommend Soldering Pad



## 9. Reflow Soldering Profile

Soldering Condition (Reference: IPC/JEDEC J-STD-020D)



| Profile Feature                                   | Pb-Free Assembly | Unit Einheit |
|---|------------------|--------------|
|   | Recommendation   |              |
| Ramp-up rate to preheat 25 °C to 150 °C           | 3                | °C /sec      |
| Time of soaking zone 150 °C to 200 °C             | 120              | sec          |
| Ramp-up rate to peak                              | 3                | °C /sec      |
| Liquidus temperature                              | 217              | °C           |
| Time above liquidus temperature                   | 100              | sec          |
| Peak temperature (max.)                           | 260              | °C           |
| Time within 5°C of the specified peak temperature | 30               | sec          |
| Ramp-down Rate (max.)                             | 6                | °C /sec      |

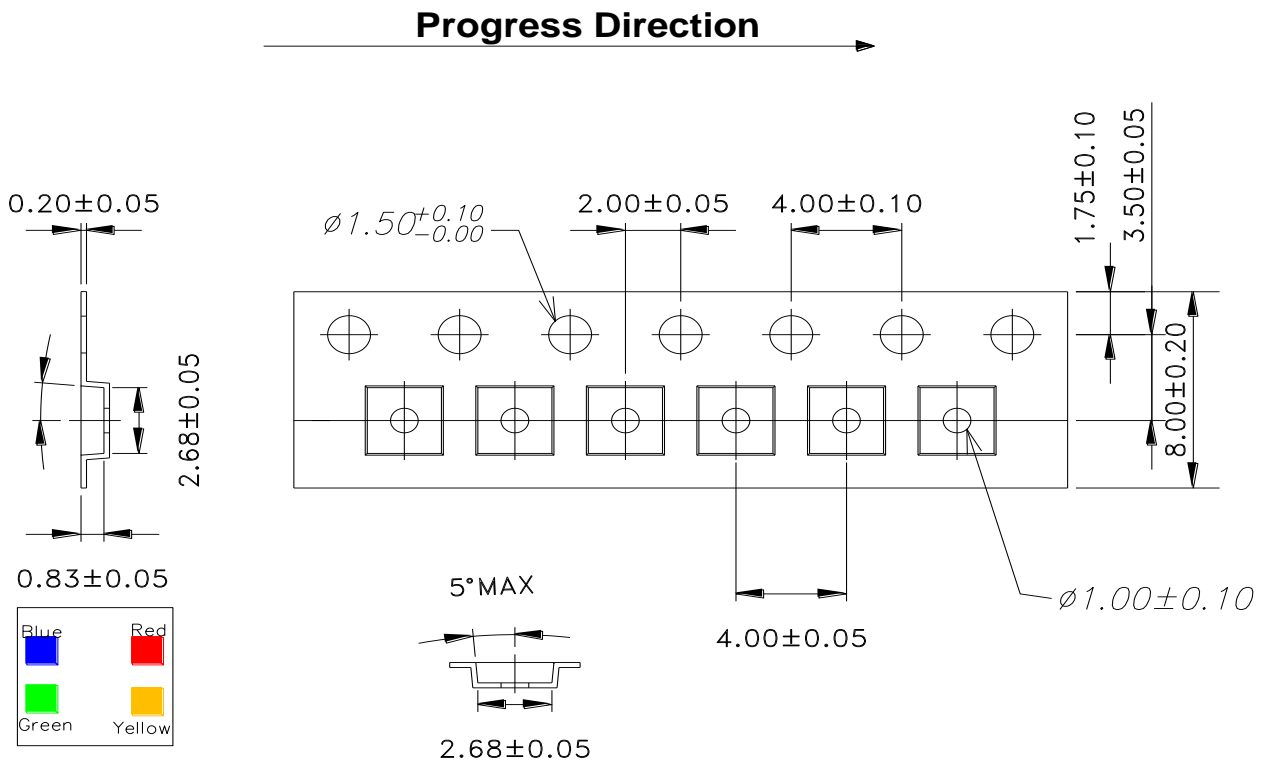
## 10. Packaging Information

### • Product Labeling



- CPN : Customer's Product Number
- P/N : Everlight Part Number
- QTY : Packing Quantity
- CAT : Luminous Flux (Brightness) Bin
- HUE : Color Bin
- REF : Forward Voltage Bin
- LOT No : Lot Number

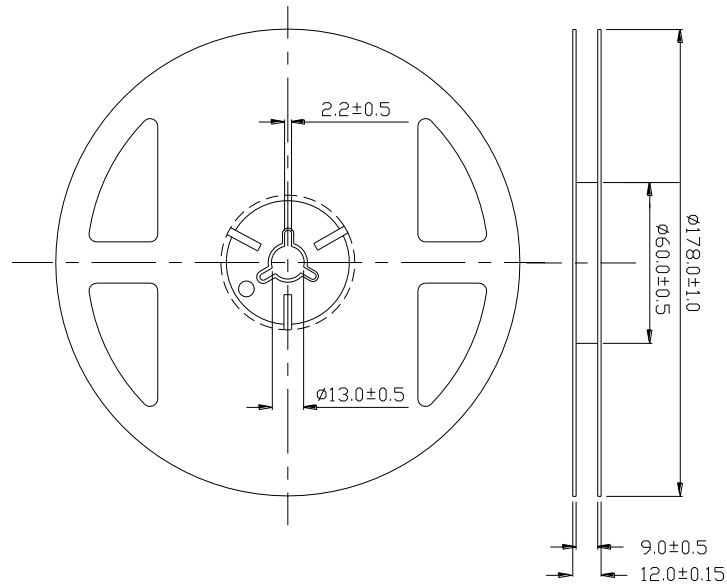
### • Packing: Loaded Quantity 500 pcs Per Reel



#### Notes:

1. Dimensions are in millimeters.

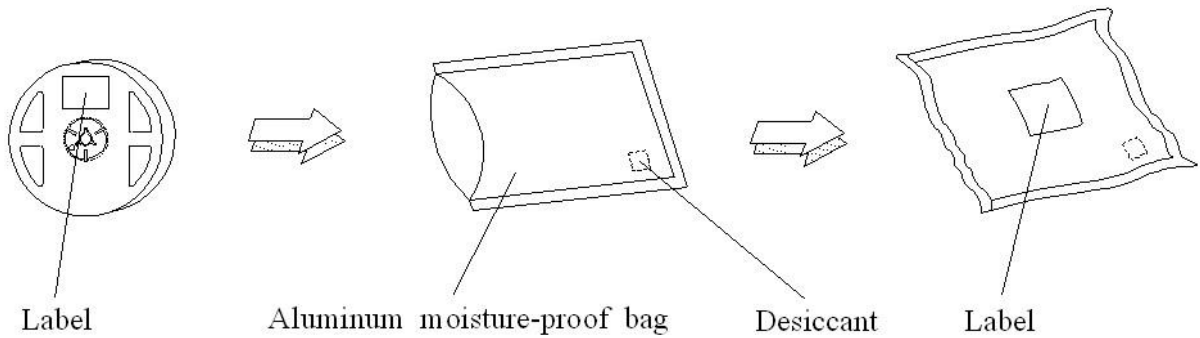
● **Reel Dimensions**



**Notes:**

1. Dimensions are in millimeters.

● **Moisture Resistant Packing Process**



## 11. Precaution 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. Assemblies

Do not stack assemblies containing LEDs to prevent damage to the optical surface of LEDs. Forces applied to the optical surface may result in the surface being damaged.

### 3. Soldering Condition

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

3.2 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.

单击下面可查看定价，库存，交付和生命周期等信息

[>>Everlight \(亿光\)](#)