EVERLIGHT AUTOMOTIVE

DATASHEET

# EL TOP VIEW LED
# 67-63-RGB0200H-A04-2T-AM



## Features

- Package：PLCC 6 package
- Color：Red , Green, and Blue
- Typ. Luminance Intensity：Red 900 mcd, Green 2200 mcd, Blue 280 mcd @20mA
- Viewing angle：120°
- ESD：Red-2kV, Green/Blue-8kV
- MSL：3
- Corrosion Robustness Class: B1
- Qualified AEC-Q102
- The product itself will remain within RoHS compliant version
- Compliance with EU REACH
- Compliance Halogen Free .(Br <900 ppm ,CI <900 ppm , Br+Cl < 1500 ppm)

## Applications

- Automotive interior lighting.
- Ambient light.
- Switches.

# Contents

1. Characteristics ..... 3
2. Absolute Maximum Ratings ..... 4
3. Characteristics Graph ..... 5
4. Binning Information ..... 14
5. Part Number ..... 17
6. Ordering Information ..... 18
7. Mechanical Dimension ..... 19
8. Recommended Soldering Pad ..... 20
9. Reflow Soldering Profile ..... 20
10. Packaging Information ..... 21
11. Precaution for Use ..... 23
12. Sulfur test criteria ..... 24


Copyright ©2021, Everlight All Rights Reserved. Release Date:07.Apr.2025 Issue No: DSE-003 Rev 1

# 1. Characteristics

| Parameter | | | Symbol | Min. | Typ. | Max. | Unit | Condition |
|---|---|---|---|---|---|---|---|---|
| Forward Current | | Red | $I_F$ | 5 | 20 | 50 | mA | --- |
| | | Green | | 3 | 20 | 30 | | |
| | | Blue | | 3 | 20 | 30 | | |
| Luminous Intensity | | Red | $I_V$ | 710 | 900 | 1400 | mcd | $I_F$=20mA |
| | | Green | | 1400 | 2200 | 2800 | | |
| | | Blue | | 224 | 280 | 450 | | |
| Forward Voltage | | Red | $V_F$ | 1.75 | 1.95 | 2.75 | V | $I_F$=20mA |
| | | Green | | 2.5 | 2.75 | 3.50 | | |
| | | Blue | | 2.5 | 3.00 | 3.50 | | |
| Viewing Angle | | Red | φ | --- | 120 | --- | deg | $I_F$=20mA |
| | | Green | | --- | 120 | --- | | |
| | | Blue | | --- | 120 | --- | | |
| Dominant Wavelength | | Red | $\lambda_d$ | 618 | 623 | 630 | nm | $I_F$=20mA |
| | | Green | | 520 | 527 | 535 | | |
| | | Blue | | 446 | 455 | 458 | | |
| Thermal Resistance (Junction to Solder) | Real | Red | $R_{th\ JS\ real}$ | --- | --- | 160 | K/W | $I_F$=20mA |
| | | Green | | --- | --- | 130 | | |
| | | Blue | | --- | --- | 130 | | |
| | Electrical | Red | $R_{th\ JS\ el}$ | --- | --- | 125 | | |
| | | Green | | --- | --- | 100 | | |
| | | Blue | | --- | --- | 100 | | |

**Notes:**

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


Copyright ©2021, Everlight All Rights Reserved. Release Date:07.Apr.2025 Issue No: DSE-003 Rev 1

# 2. Absolute Maximum Ratings

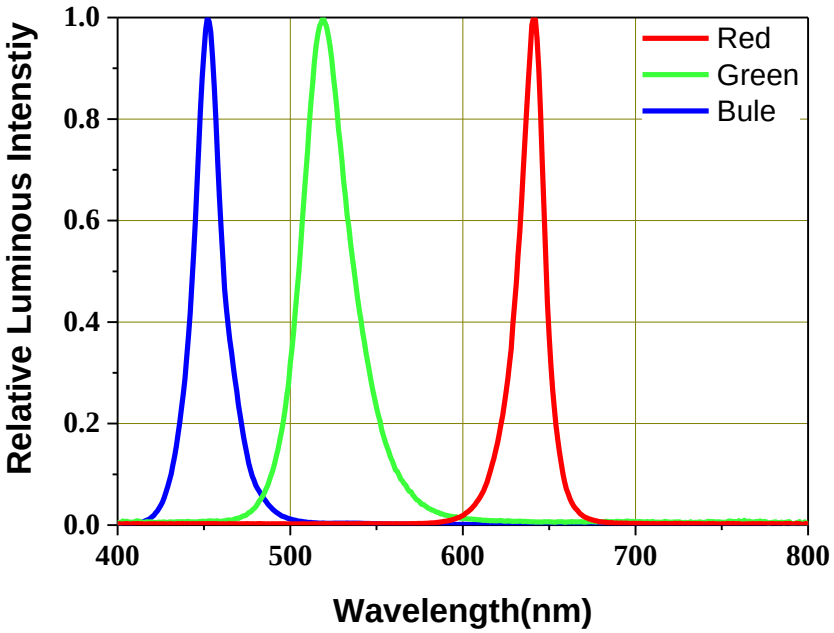
| Parameter | Symbol | Ratings | | | Unit |
|---|---|---|---|---|---|
| | | Red | Green | Bule | |
| Power Dissipation | $P_d$ | 137 | 105 | 105 | mW |
| Forward Current | $I_F$ | 50 | 30 | 30 | mA |
| Surge Current (t<=10 μs; D=0.005; $T_s$=25 ℃) | $I_{FM}$ | 300 | 250 | 250 | mA |
| Reverse Voltage | $V_R$ | 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 (R=1.5kΩ, C= 100pF) | $ESD_{HBM}$ | 2 | 8 | 8 | kV |
| Soldering Temperature | Reflow | 260°C for 30sec | | | °C |


Copyright ©2021, Everlight All Rights Reserved. Release Date:07.Apr.2025 Issue No: DSE-003 Rev 1

# 3. Characteristics Graph

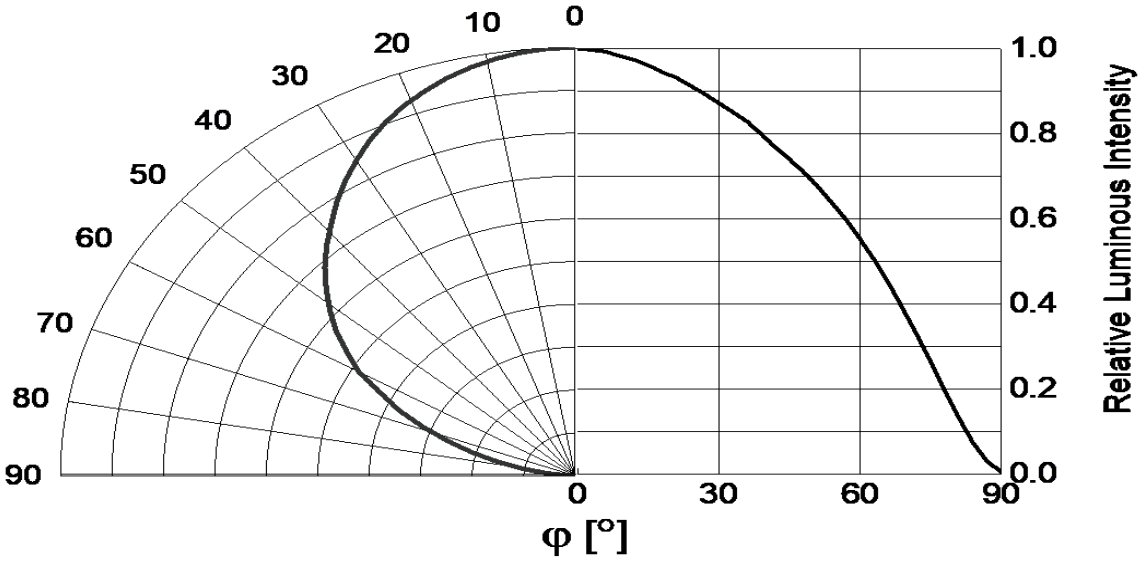
## Wavelength Characteristics Relative Spectral Distribution
### @ Ts = 25°C, $I_F$=20mA

$$\Phi_V/\Phi_V\,(Max.) = f(\lambda)$$




## Typical Diagram Characteristics of Radiation (Red)

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

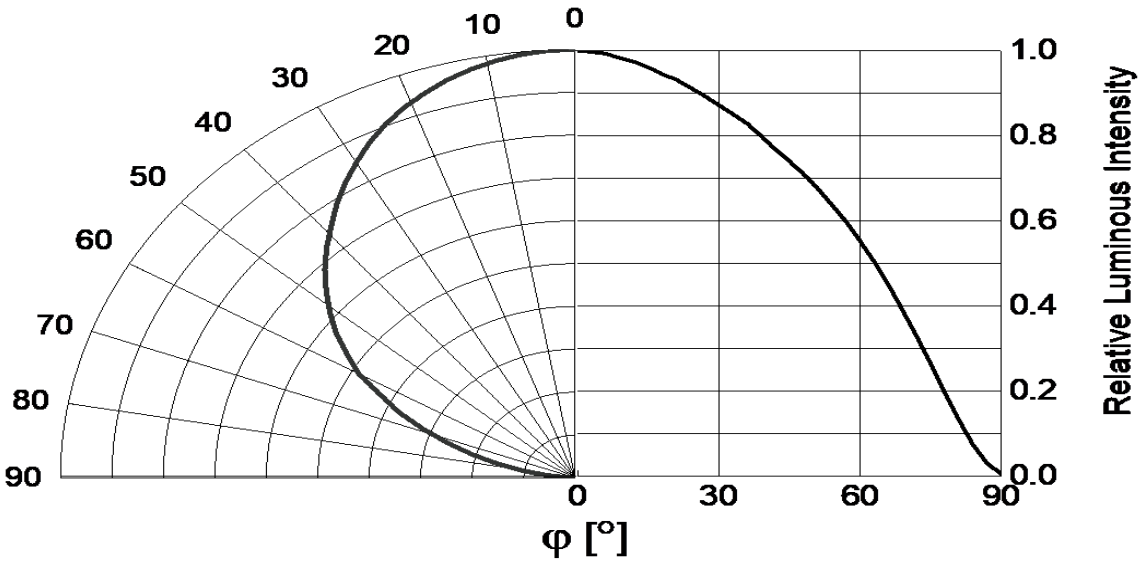




Copyright ©2021, Everlight All Rights Reserved. Release Date:07.Apr.2025 Issue No: DSE-003 Rev 1

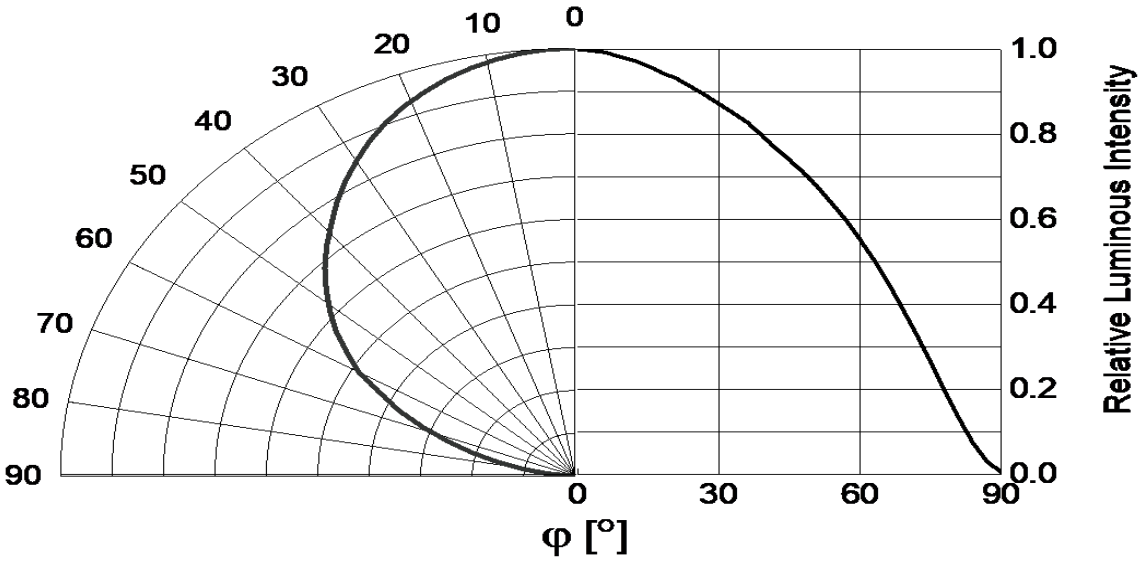
## Typical Diagram Characteristics of Radiation (Green)

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




## Typical Diagram Characteristics of Radiation (Blue)

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



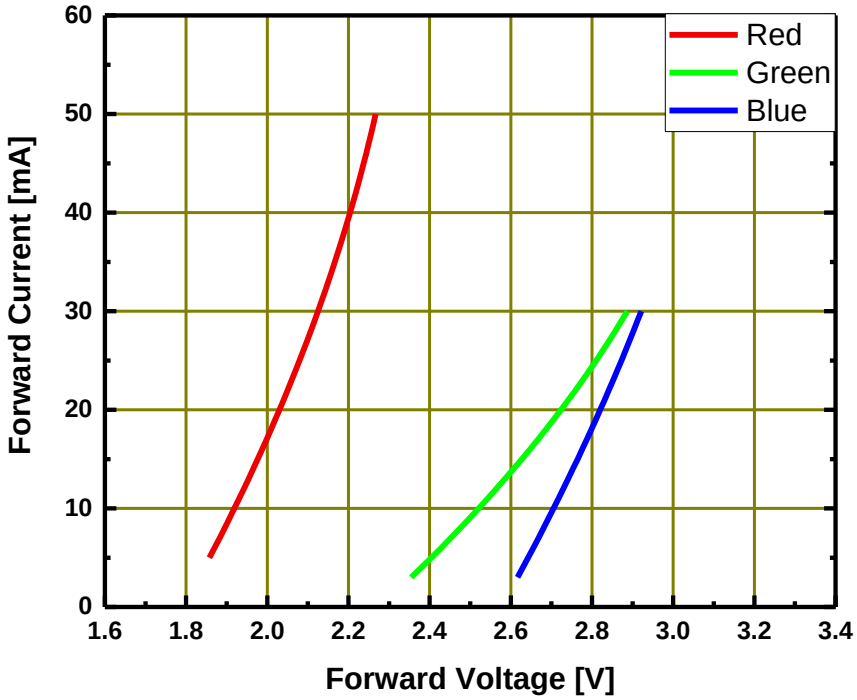

**Notes:**

1. φ is the off axis angle from lamp centerline where the luminous intensity is 1/2 of the peak value.
2. View angle tolerance is ± 5˚.


Copyright ©2021, Everlight All Rights Reserved. Release Date:07.Apr.2025 Issue No: DSE-003 Rev 1

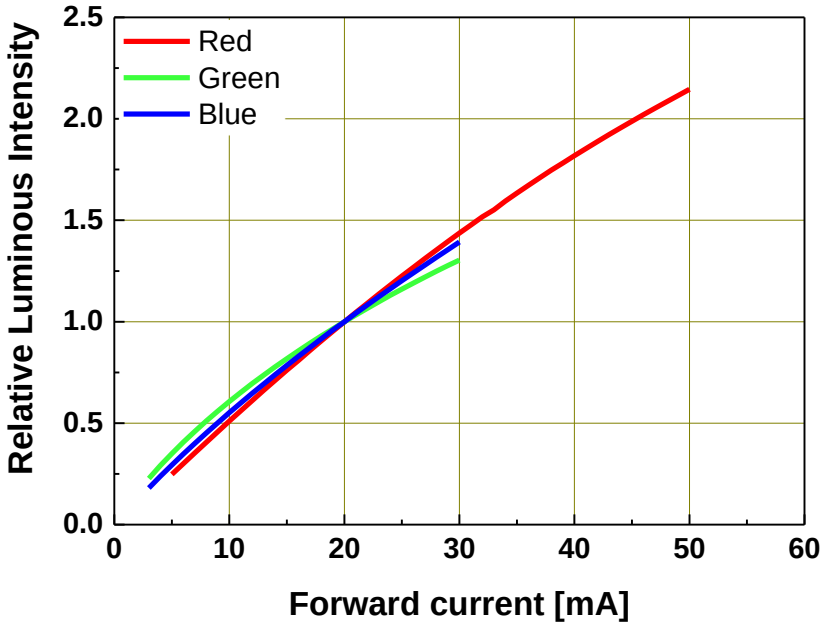
## Forward Current vs. Forward Voltage
**@ Ts = 25°C**

$$I_F = f(V_F)$$




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

$$\Phi_V / \Phi_V\,(20mA) = f(I_F)$$

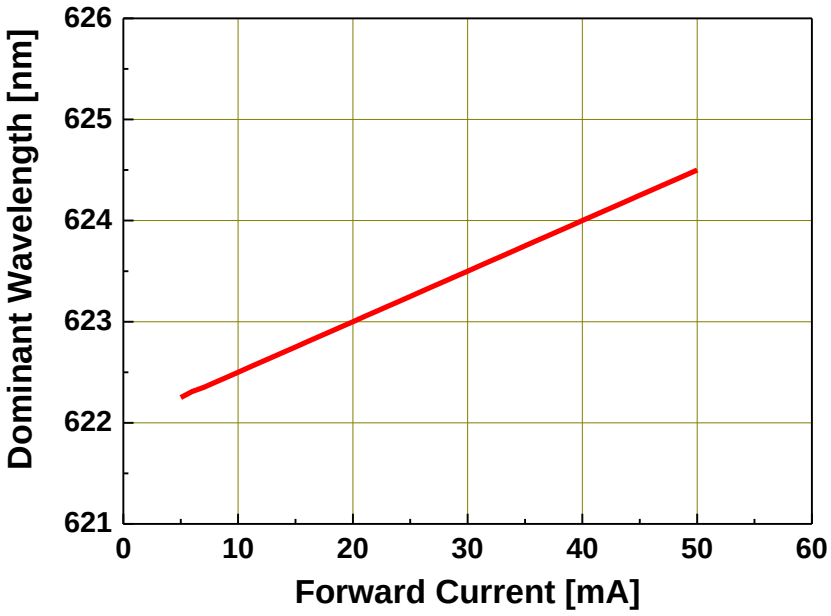




Copyright ©2021, Everlight All Rights Reserved. Release Date:07.Apr.2025 Issue No: DSE-003 Rev 1

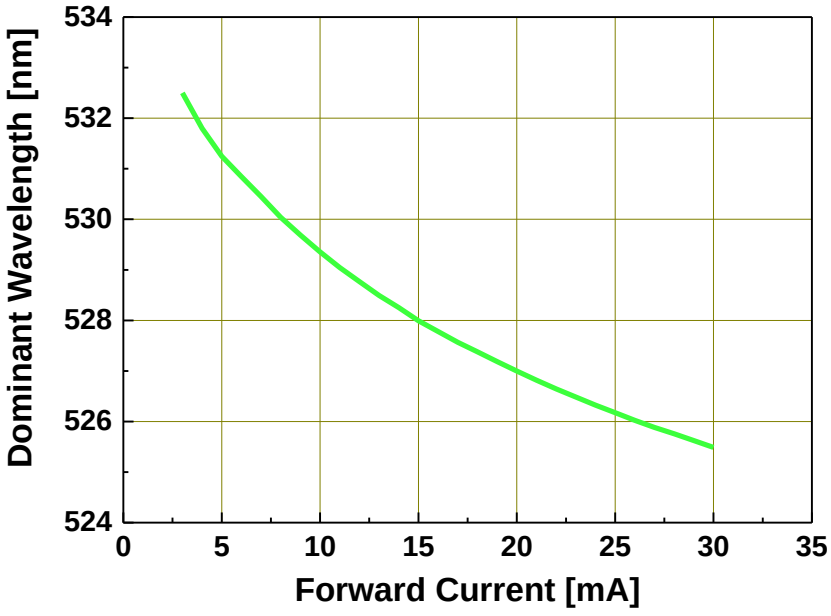
## Dominant Wavelength vs. Forward Current (Red)
### @ Ts = 25°C

$\lambda_d = f(I_F)$




## Dominant Wavelength vs. Forward Current (Green)
### @ Ts = 25°C

$\lambda_d = f(I_F)$



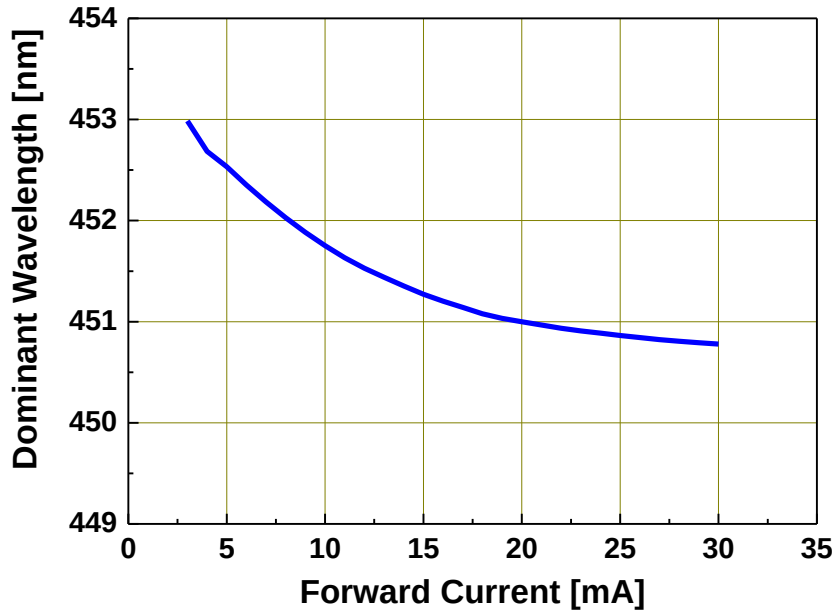


Copyright ©2021, Everlight All Rights Reserved. Release Date:07.Apr.2025 Issue No: DSE-003 Rev 1

## Dominant Wavelength vs. Forward Current (Blue)

**@ Ts = 25°C**

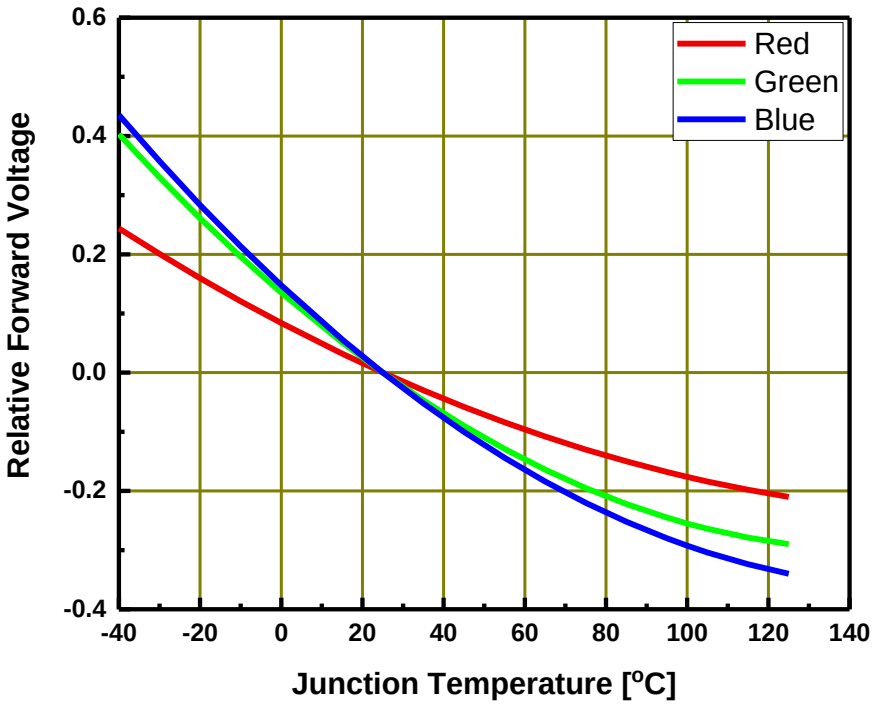
$$\lambda_d = f(I_F)$$




## Relative Forward Voltage vs. Junction Temperature

**@ $I_F$=20mA**

$$\Delta V_F = V_F - V_F(25^\circ C) = f(T_j)$$



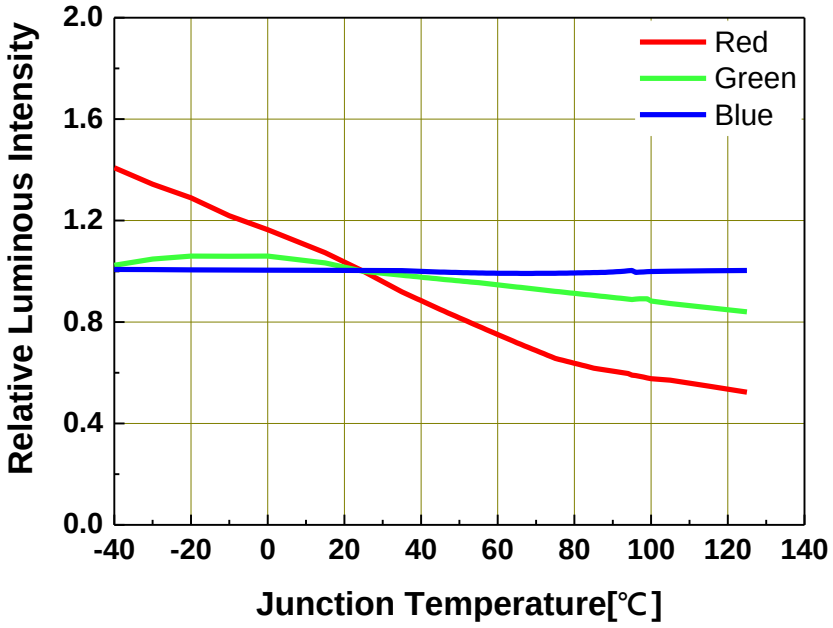


Copyright ©2021, Everlight All Rights Reserved. Release Date:07.Apr.2025 Issue No: DSE-003 Rev 1

## Relative Luminous Intensity vs. Junction Temperature

**@ $I_F$=20mA**

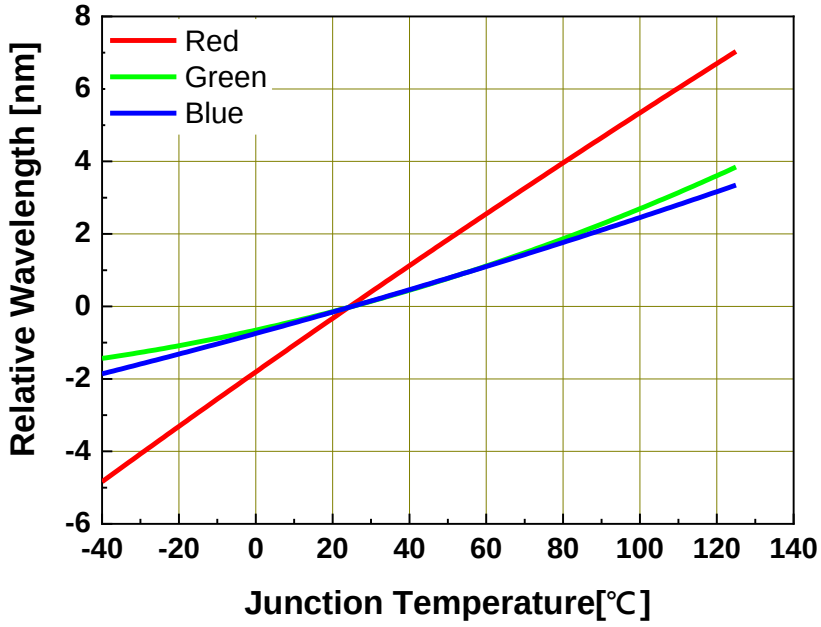
$$\Phi_V / \Phi_V(25^\circ C) = f(T_j)$$




## Relative Wavelength Shift vs. Junction Temperature

**@ $I_F$=20mA**

$$\Delta\lambda_d = \lambda_d - \lambda_d(25^\circ C) = f(T_j)$$

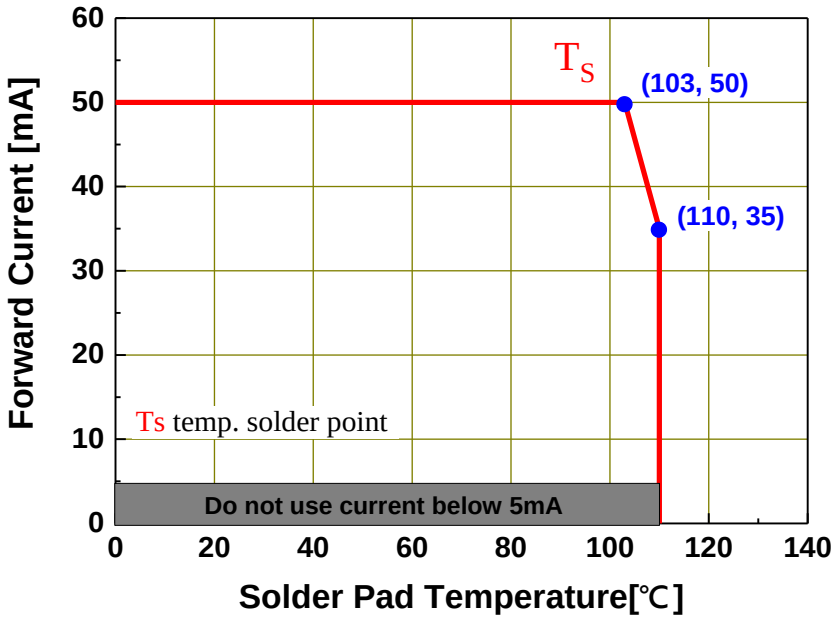




Copyright ©2021, Everlight All Rights Reserved. Release Date:07.Apr.2025 Issue No: DSE-003 Rev 1

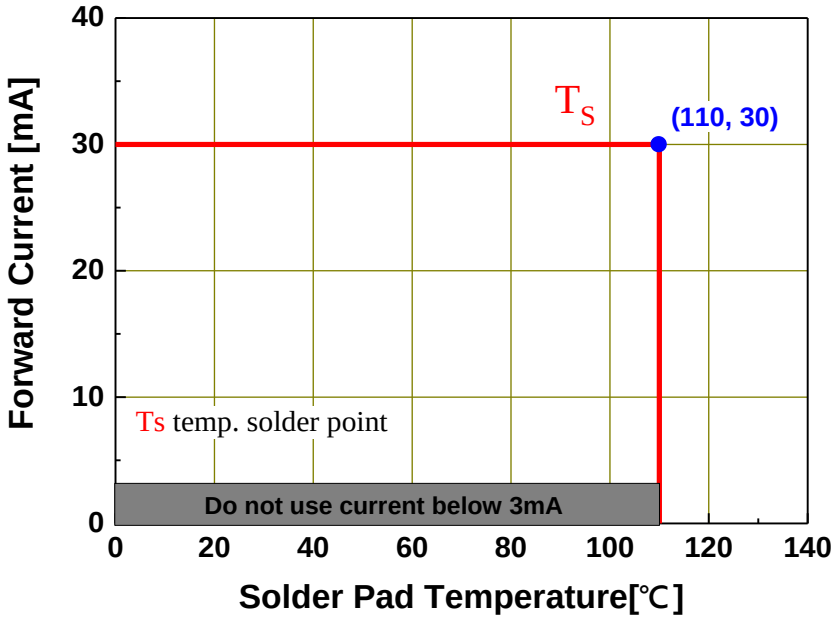
## Forward Current Derating Curve (Red)

$$I_F = f(T_S)$$




## Forward Current Derating Curve (Green)

$$I_F = f(T_S)$$

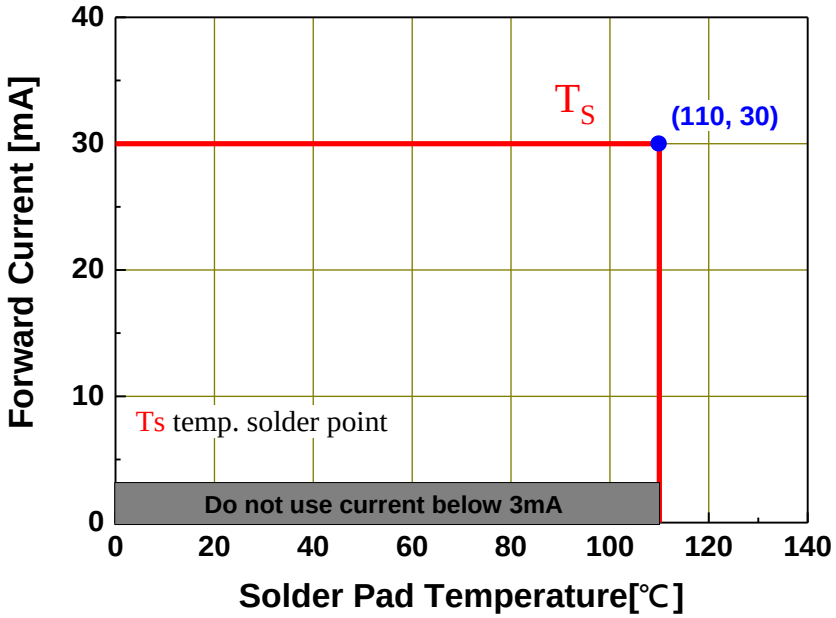




Copyright ©2021, Everlight All Rights Reserved. Release Date:07.Apr.2025 Issue No: DSE-003 Rev 1

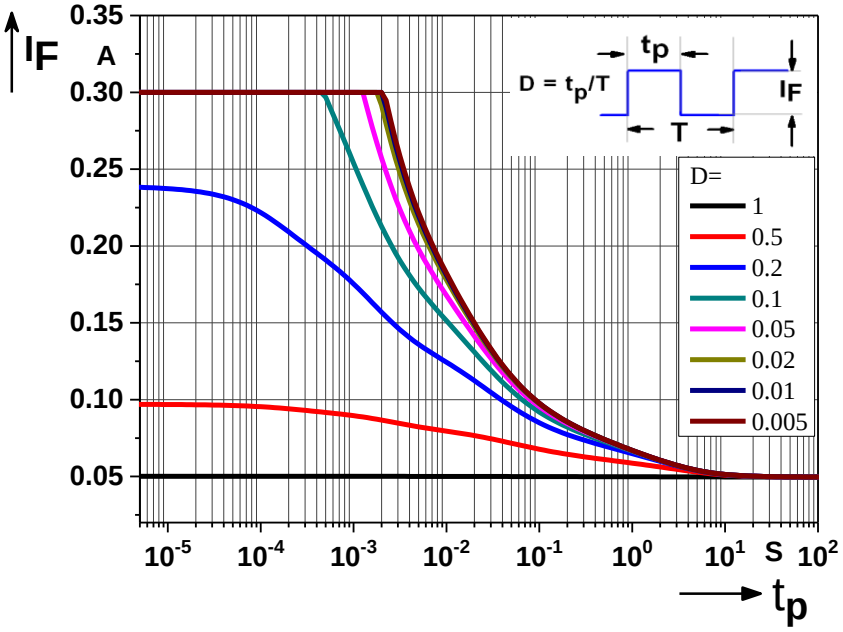
## Forward Current Derating Curve (Blue)

$$I_F = f(T_S)$$




## Permissible Pulse Handling Capability (Red)

D=Duty cycle , $T_S$ = 25℃

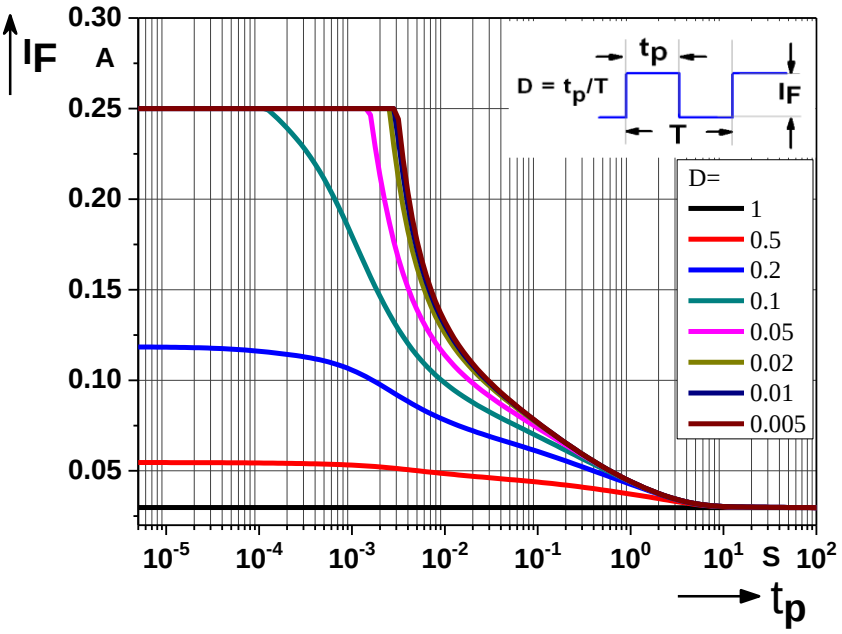




Copyright ©2021, Everlight All Rights Reserved. Release Date:07.Apr.2025 Issue No: DSE-003 Rev 1

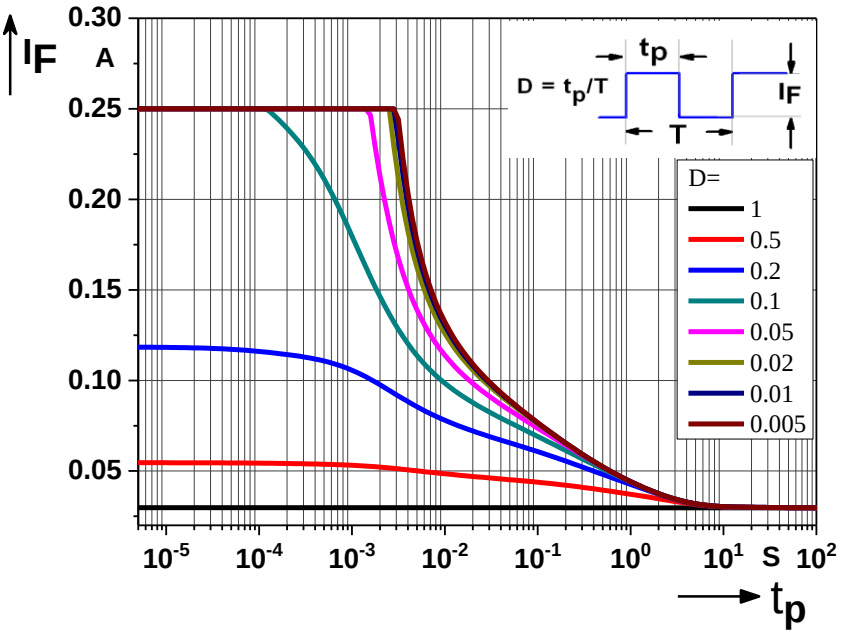
## Permissible Pulse Handling Capability (Green)

D=Duty cycle , $T_S$ = 25℃




## Permissible Pulse Handling Capability (Blue)

D=Duty cycle , $T_S$ = 25℃





Copyright ©2021, Everlight All Rights Reserved. Release Date:07.Apr.2025 Issue No: DSE-003 Rev 1

# 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 flux measurement tolerance: ±8%.
2. Highlighted Black Box is possible output bins.


Copyright ©2021, Everlight All Rights Reserved. Release Date:07.Apr.2025 Issue No: DSE-003 Rev 1

## Wavelength Groups

| Color | Bin Code | Minimum Dominant Wavelength [nm] | Maximum Dominant Wavelength [nm] |
|---|---|---|---|
| Red | 1822 | 618 | 622 |
| | 2226 | 622 | 626 |
| | 2630 | 626 | 630 |
| | 3034 | 630 | 634 |
| Green | 2025 | 520 | 525 |
| | 2530 | 525 | 530 |
| | 3035 | 530 | 535 |
| | 3540 | 535 | 540 |
| Blue | 4650 | 446 | 450 |
| | 5054 | 450 | 454 |
| | 5458 | 454 | 458 |
| | 5862 | 458 | 462 |
| | 6266 | 462 | 466 |
| | 6670 | 466 | 470 |
| | 7073 | 470 | 473 |

**Notes:**

1.Dominant wavelength measurement tolerance: ±1nm


Copyright ©2021, Everlight All Rights Reserved. Release Date:07.Apr.2025 Issue No: DSE-003 Rev 1

.

## Forward Voltage Bins

| Bin code | Min Forward Voltage [V] | Max Forward Voltage [V] |
|---|---|---|
| 1012 | 1.00 | 1.25 |
| 1215 | 1.25 | 1.50 |
| 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: ±0.05V.
2. Forward voltage bins are defined at $I_F$ = 20mA operation.


Copyright ©2021, Everlight All Rights Reserved. Release Date:07.Apr.2025 Issue No: DSE-003 Rev 1

# 5. Part Number

## 67-63-RGB0200H-AM

Part number is designated with below details.

67-63 = Product family name.

RGB = Color [1]

020 = Test current [mA]

0 = internal code

H = Brightness Level

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 |
| UYG | Brilliant Yellow Green |
| UPG | Pale Green |
| UA | Amber |
| UR | Red |
| SR | Super Red |
| RGB | RGB-Color |
| PYG | Phosphor Converted Yellow Green |


Copyright ©2021, Everlight All Rights Reserved. Release Date:07.Apr.2025 Issue No: DSE-003 Rev 1

# 6. Ordering Information

## 67-63-RGB0200H-AM

| Part Number of the 67-63 | Order Code |
|---|---|
| 67-63-RGB0200H-AM | 67-63-RGB0200H-A04-2T-AM |

Order code contains information with below details：

ABC = Please refer to the chart to the right [1]

DE = internal code

AM = Automotive Application

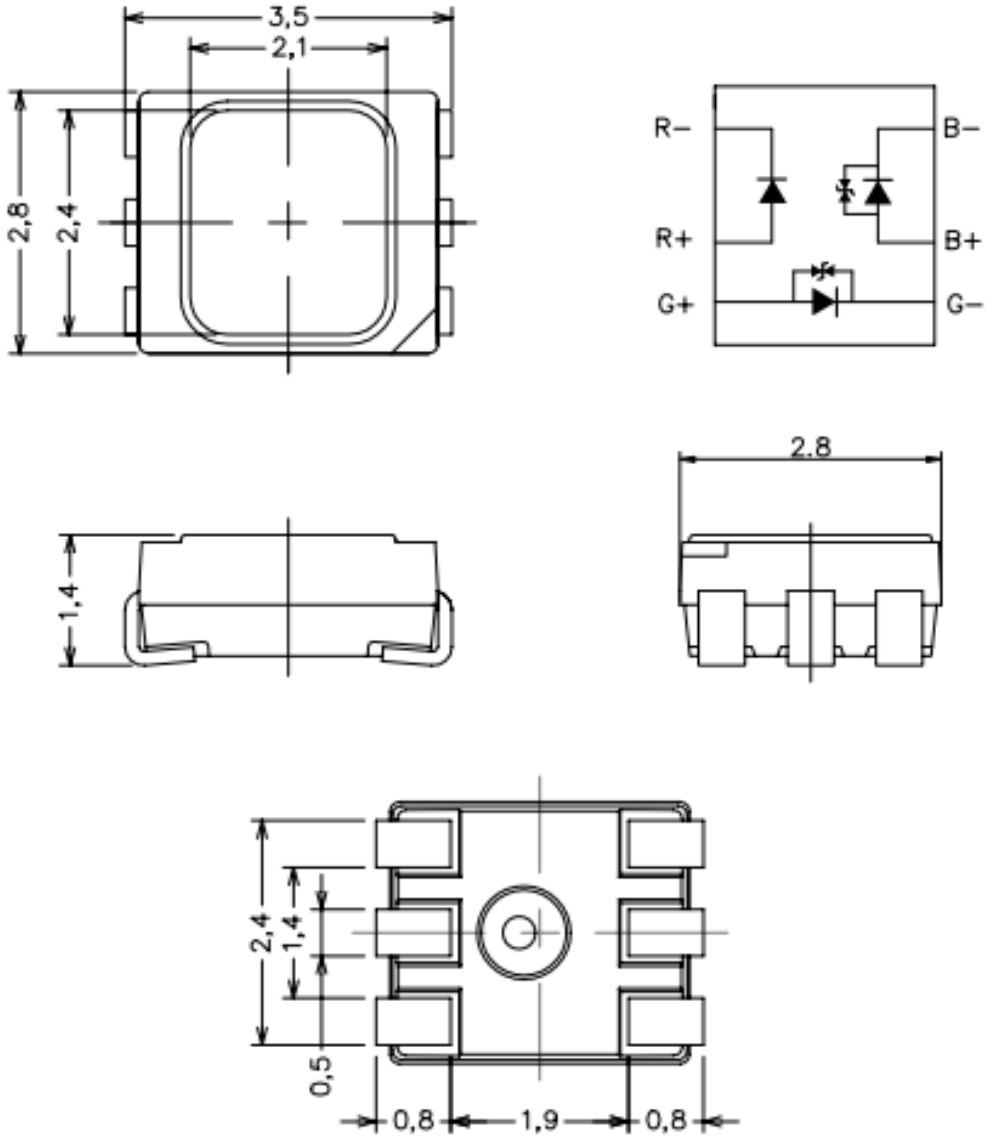
Note

[1] Group Bin chart

| Group Bin | Dominant Wavelength (nm) | | IV | VF |
|---|---|---|---|---|
| A04 | Red | 618-630 | V1AA | 1727 |
| | Green | 525-535 | AABB | 2535 |
| | Blue | 446-458 | S2T2 | 2535 |


Copyright ©2021, Everlight All Rights Reserved. Release Date:07.Apr.2025 Issue No: DSE-003 Rev 1

# 7. Mechanical Dimension

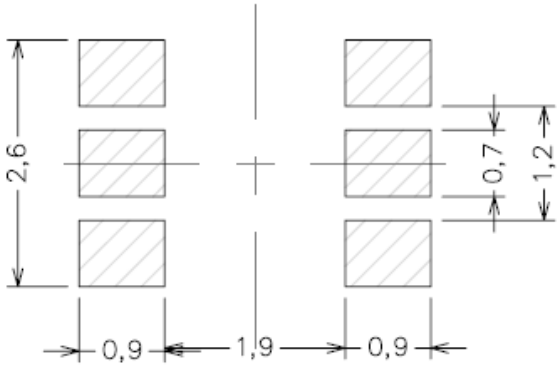



**Notes:**

1. Dimensions are in millimeters.
2. Tolerances unless mentioned are ± 0.1mm.

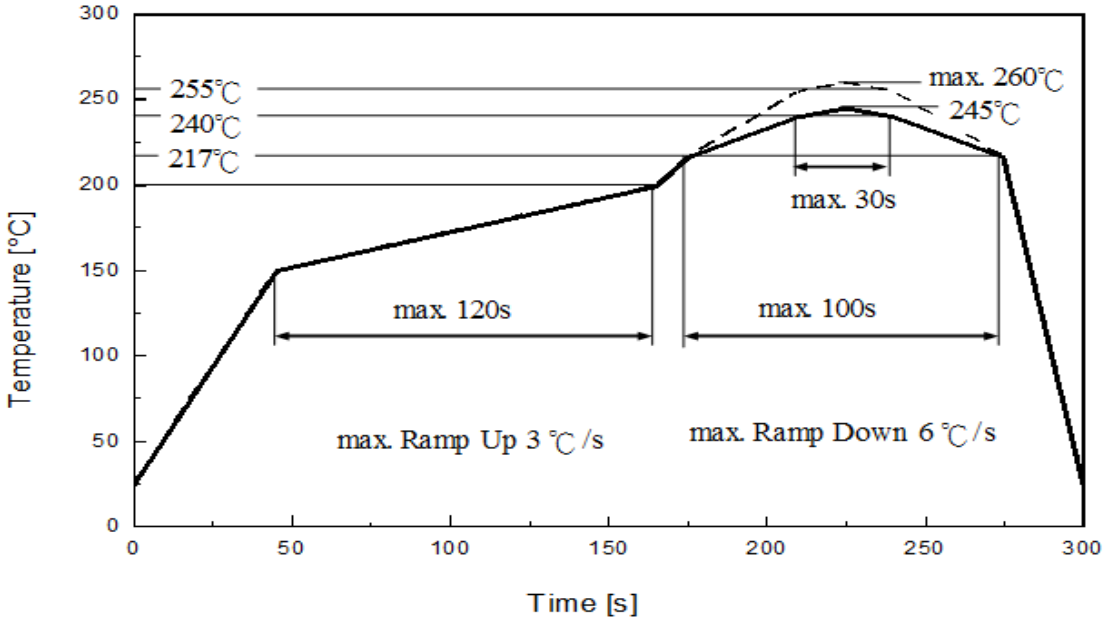

Copyright ©2021, Everlight All Rights Reserved. Release Date:07.Apr.2025 Issue No: DSE-003 Rev 1

# 8. Recommended Soldering Pad




# 9. Reflow Soldering Profile

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




| Profile Feature | Pb-Free Assembly<br>Recommendation | Unit |
|---|---|---|
| Ramp-up rate to preheat<br>25 °C to 150 °C | 3 | °C /sec |
| Time of soaking zone<br>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 |


Copyright ©2021, Everlight All Rights Reserved. Release Date:07.Apr.2025 Issue No: DSE-003 Rev 1

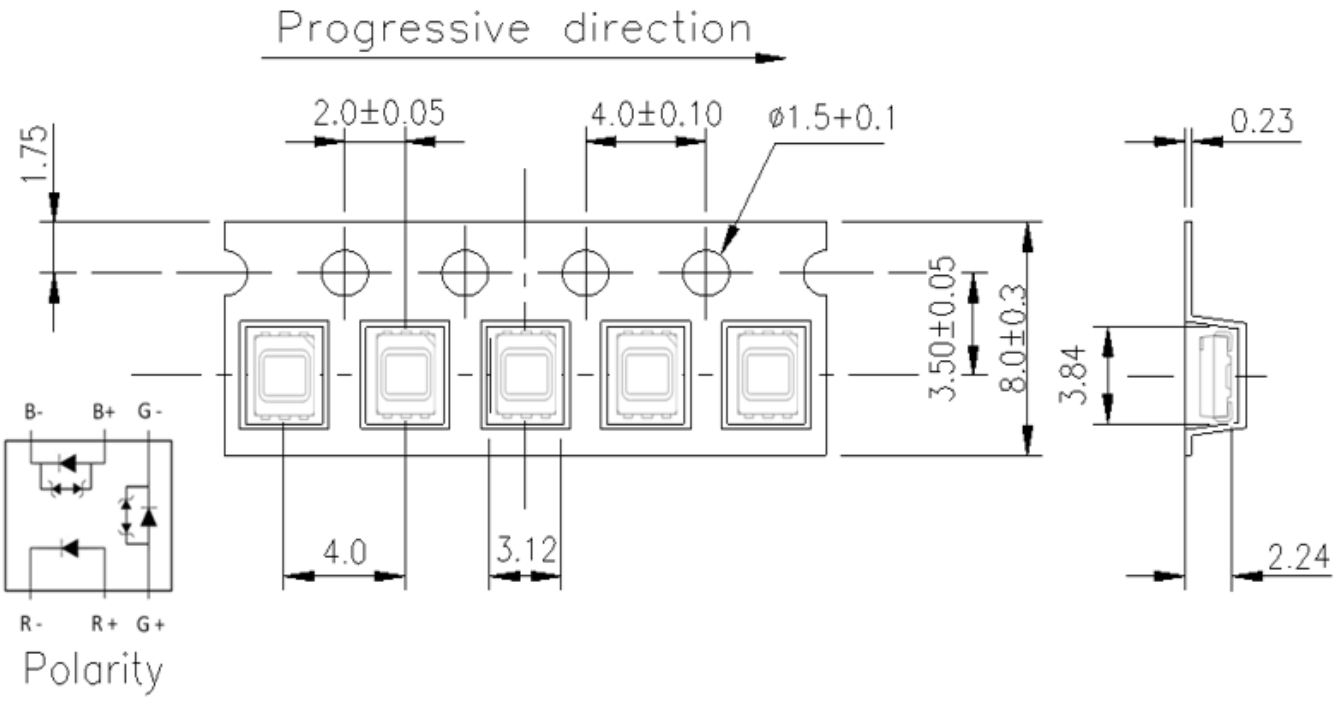
# 10. Packaging Information

## • 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 2000 pcs Per Reel

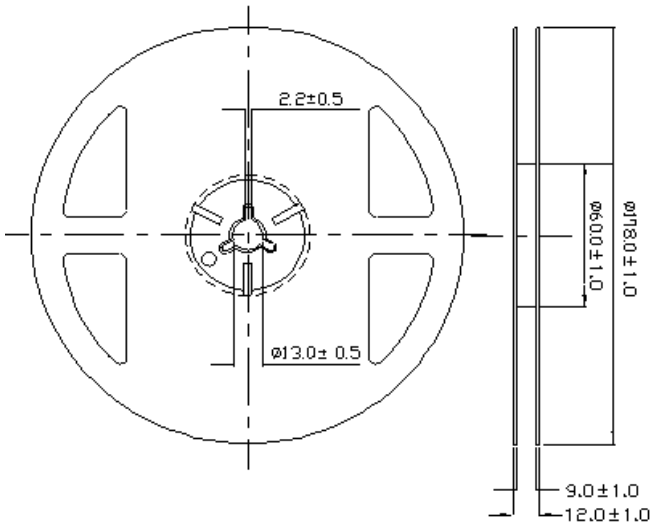



**Notes:**

1. Dimensions are in millimeters.


Copyright ©2021, Everlight All Rights Reserved. Release Date:07.Apr.2025 Issue No: DSE-003 Rev 1

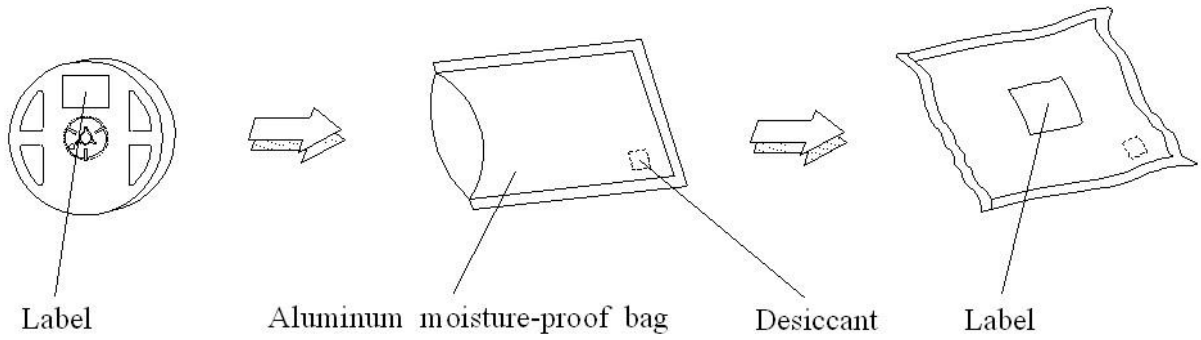
## ● Reel Dimensions




**Notes:**

1. Dimensions are in millimeters.

## ● Moisture Resistant Packing Process





Copyright ©2021, Everlight All Rights Reserved. Release Date:07.Apr.2025 Issue No: DSE-003 Rev 1

# 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℃ 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.It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.


Copyright ©2021, Everlight All Rights Reserved. Release Date:07.Apr.2025 Issue No: DSE-003 Rev 1

# 12. Sulfur Test Criteria

| Products | Failure Criteria |
|---|---|
| Exterior Lighting products | Luminous Flux +/-20%, forward voltage +/-10%, color coordinates x,y +/-0.01, color wavelength +/- 2 nm<br>Visual defect issue following Everlight's inspection criteria |
| Interior lighting products | Luminous Flux +/-30% or +/-50% for some application, forward voltage +/-10%, color coordinates x,y +/-0.02, color wavelength +/- 2 nm<br>Visual defect issue following Everlight's inspection criteria |

| H2S test | Grade A0 | Grade A1 | Grade B0 | Grade B1 |
|---|---|---|---|---|
| Class A | Pass ΔIV, ΔColor, ΔVF criteria<br>No Corrosion | Pass ΔIV, ΔColor, ΔVF criteria<br>Corrosion without the impact on reliability and lifetime | | |
| Class B | | | Pass ΔIV, ΔColor, ΔVF criteria<br>No Corrosion | Pass ΔIV, ΔColor, ΔVF criteria<br>Corrosion without the impact on reliability and lifetime |

| Condition for H2S and FMG | Description | |
|---|---|---|
| | H2S | FMG |
| Class A | 15 ppm with duration 336 h at 40 °C and 90% RH | Duration 500 h at 25 °C and 75% RH.<br>H2S concentration: 10ppb<br>SO2 concentration: 200ppb<br>NO2 concentration: 200ppb<br>Cl2 concentration: 10ppb |
| Class B | 10 ppm with duration 500 h at 25 °C and 75% RH | |

| Grade for H2S Test | Description |
|---|---|
| 0 | No Corrosion |
| 1 | Corrosion without the impact on reliability and lifetime |


Copyright ©2021, Everlight All Rights Reserved. Release Date:07.Apr.2025 Issue No: DSE-003 Rev 1