

### EL Mini TOP VIEW LED 65-11-IB0100H-AM



#### Features

- Package : PLCC 2 package
- Color : Ice Blue
- Typ. Luminance Intensity : 710 mcd @ 10mA
- Viewing angle : 120°
- ESD : 8KV
- MSL : 2
- Typ.color coordinates : (0.18,0.23)
- Qualified AEC-Q101
- The product itself will remain within RoHS compliant version.
- Compliance with EU REACH.
- Compliance Halogen Free .(Br <900 ppm ,Cl <900 ppm , Br+Cl < 1500 ppm).

#### Applications

- Automotive Interior Lighting
- Switches
- Cluster

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# 1. Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition	
Forward Current	$I_F$	2	10	20	mA	---	
Luminous Intensity	$I_V$	355	710	1800	mcd	$I_F=10\text{mA}$	
Forward Voltage	$V_F$	2.5	3.1	3.75	V	$I_F=10\text{mA}$	
Viewing Angle	$\phi$	---	120	---	deg	$I_F=10\text{mA}$	
Color	CIE x	---	0.18	---	---	$I_F=10\text{mA}$	
Color	CIE y	---	0.23	---	---	$I_F=10\text{mA}$	
Thermal Resistance (Junction to Solder)	Real	$R_{th\ JS\ real}$	---	---	120	K/W	$I_F=10\text{mA}$
	Electrical	$R_{th\ JS\ el}$	---	---	95		

## Notes:

1. Luminous Flux measurement tolerance:  $\pm 8\%$ .
2. The data of Luminous Flux measured at thermal pad=25°C
3. Forward voltage measurement tolerance:  $\pm 0.05\text{V}$
4. The  $V_F$  range shown in the table above indicates 99% output.
5. Tolerance of Chromaticity Coordinates x,y :  $\pm 0.005$

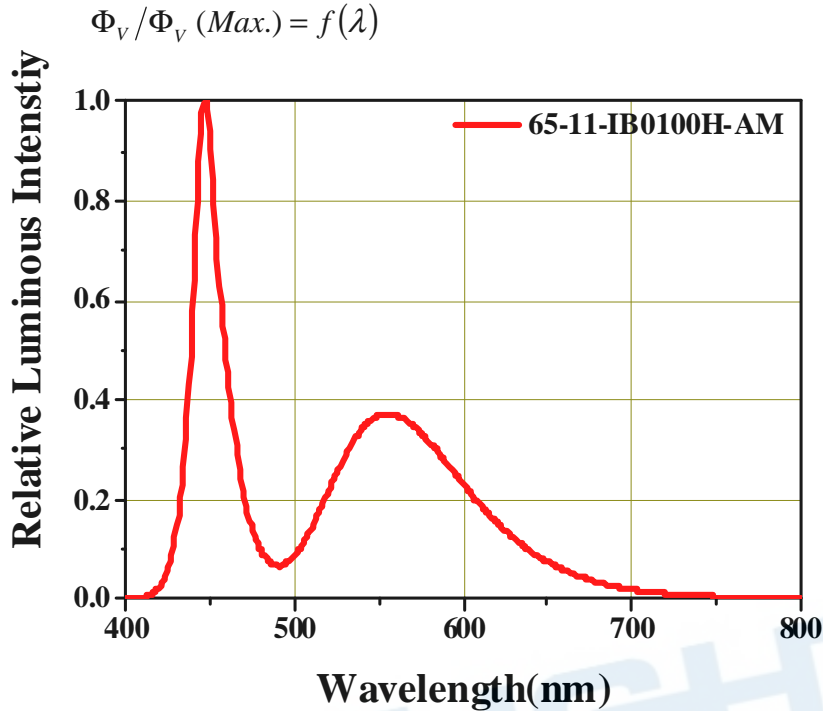
## 2. Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Power Dissipation	$P_d$	112	mW
Forward Current	$I_F$	20	mA
Surge Current ( $t \leq 10 \mu s$ ; $D=0.005$ ; $T_s=25 \text{ }^\circ\text{C}$ )	$I_{FM}$	250	mA
Reverse Voltage	$V_R$	Not designed for reverse operation	V
Junction Temperature	$T_J$	125	$^\circ\text{C}$
Operating Temperature	$T_{opr}$	-40 ~ +110	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-40 ~ +110	$^\circ\text{C}$
ESD Sensitivity ( $R=1.5k\Omega$ , $C=100pF$ )	$ESD_{HBM}$	8	kV
Soldering Temperature	Reflow	260 $^\circ\text{C}$ for 30sec	$^\circ\text{C}$

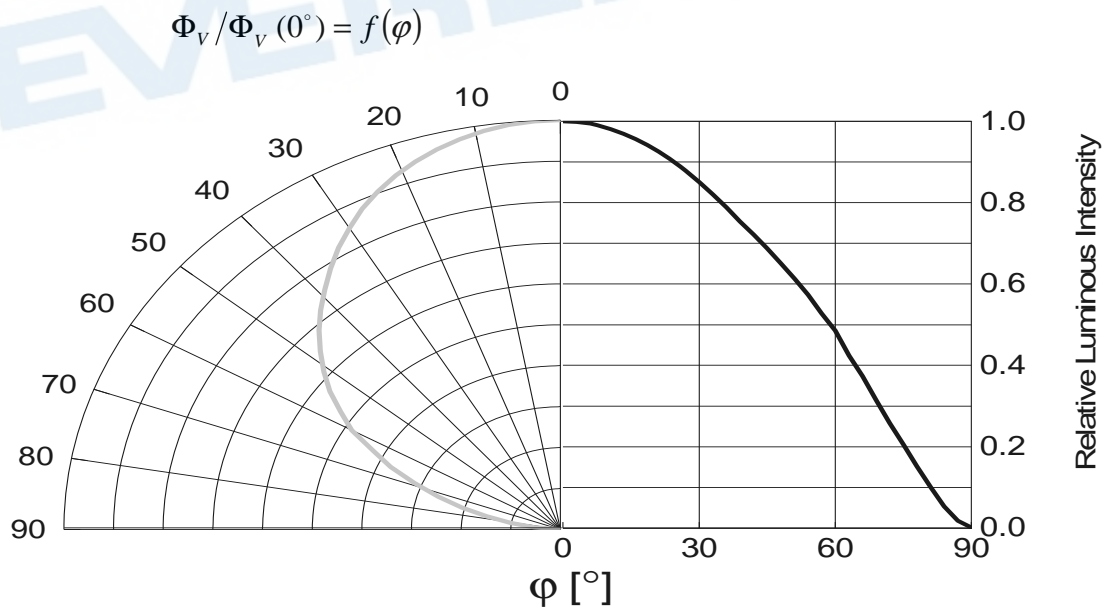
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### 3.Characteristics Graph

**Wavelength Characteristics Relative Spectral Distribution**  
@ Ts = 25°C, If=10mA



**Typical Diagram Characteristics of Radiation**



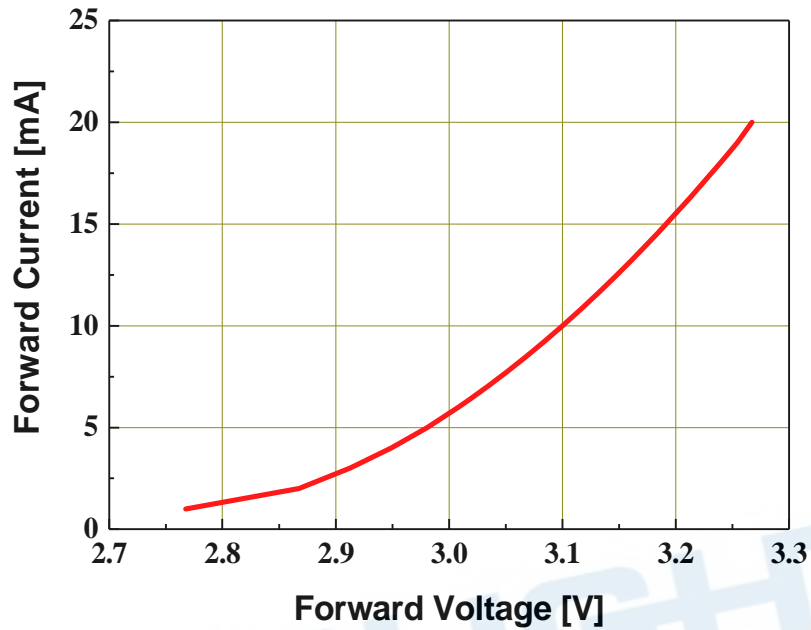
**Notes:**

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

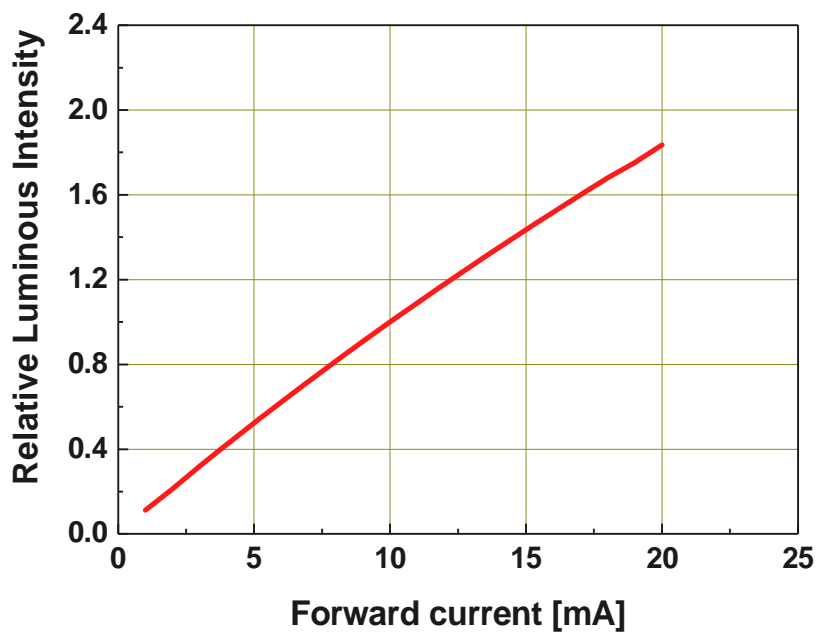
$$I_F = f(V_F)$$



### Relative Luminous Intensity vs. Forward Current

@ Ts = 25°C

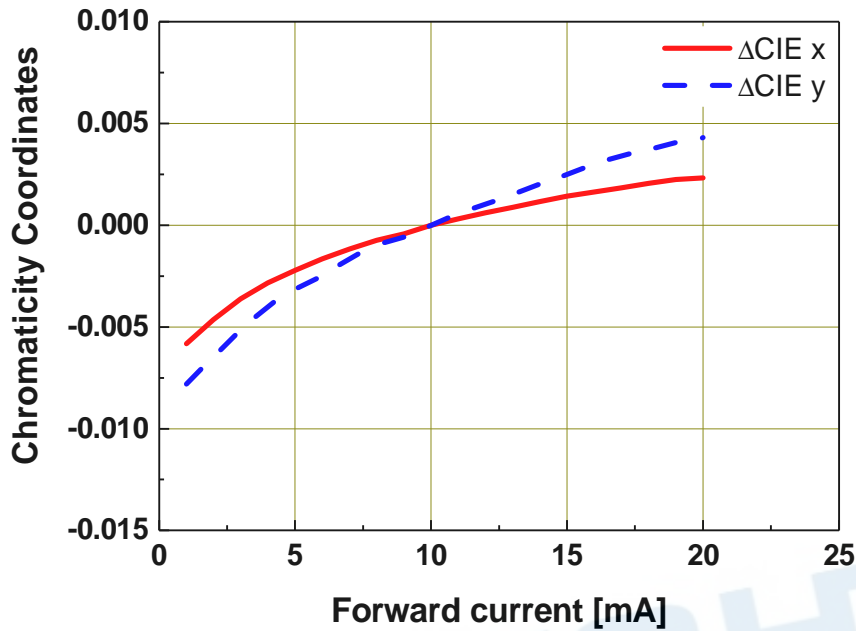
$$\Phi_V / \Phi_V(10mA) = f(I_F)$$



### Chromaticity Coordinates Shift vs. Forward Current

@  $T_s = 25^\circ\text{C}$

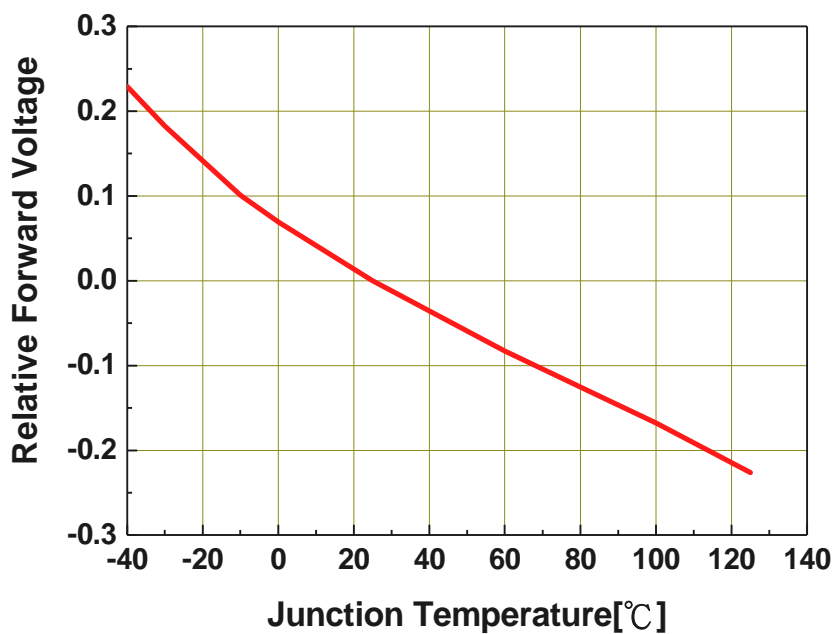
$$\Delta CIE\ x, \Delta CIE\ y = f(I_F)$$



### Relative Forward Voltage vs. Junction Temperature

@  $I_F = 10\text{mA}$

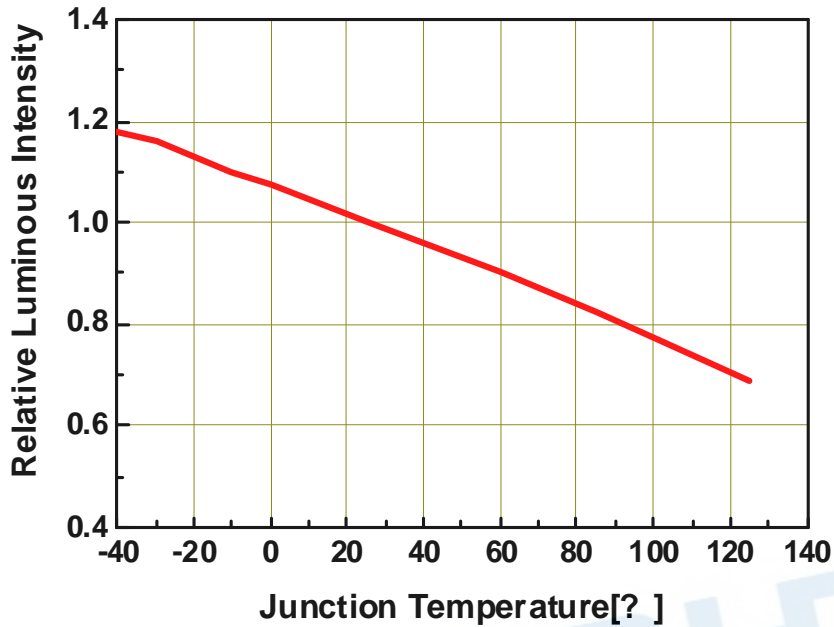
$$\Delta V_F = V_F - V_F(25^\circ\text{C}) = f(T_j)$$



### Relative Luminous Intensity vs. Junction Temperature

@  $I_F=10\text{mA}$

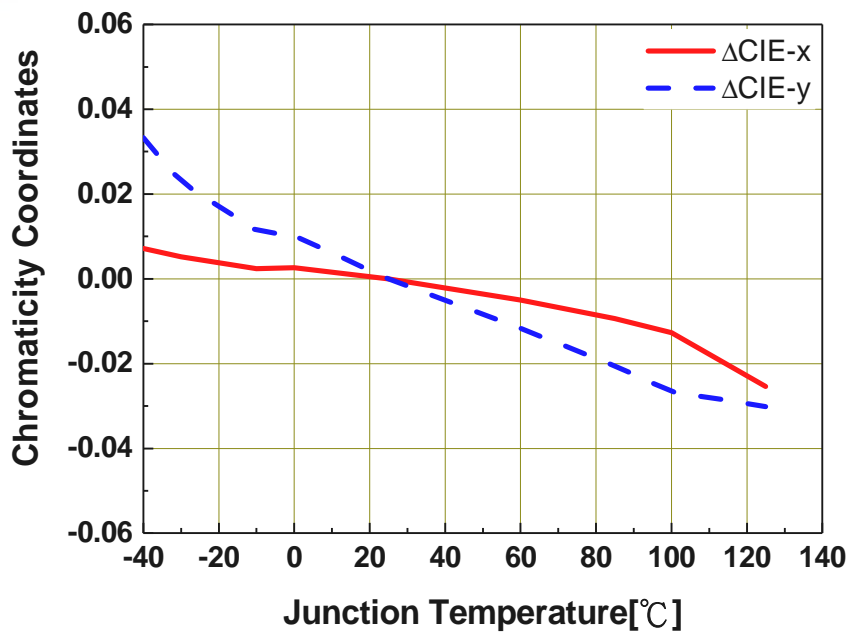
$$\Phi_V / \Phi_V(25^\circ\text{C}) = f(T_j)$$



### Chromaticity Coordinates Shift vs. Junction Temperature

@  $I_F=10\text{mA}$

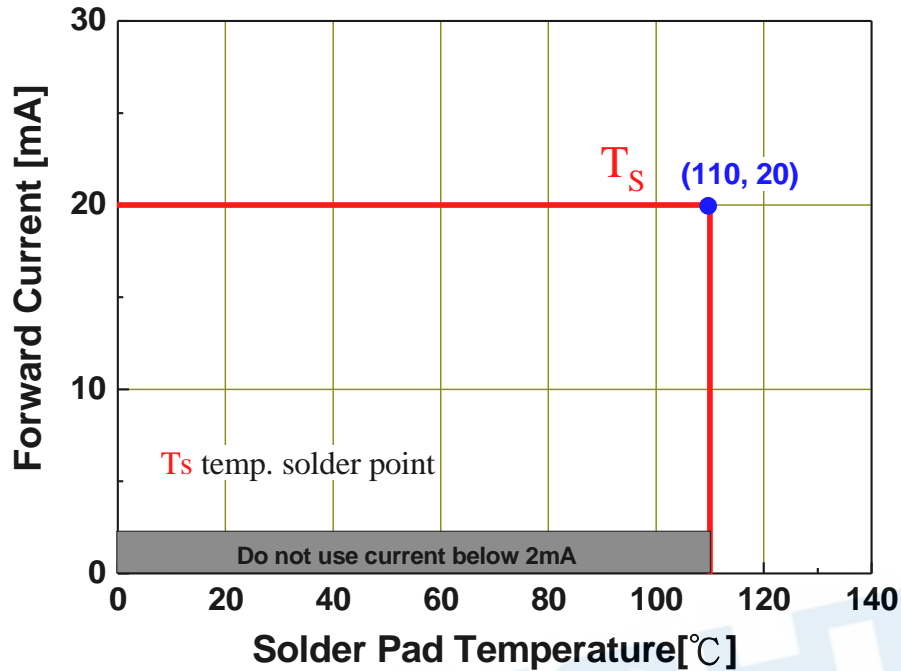
$$\Delta\text{CIE } x, \Delta\text{CIE } y = f(T_j)$$





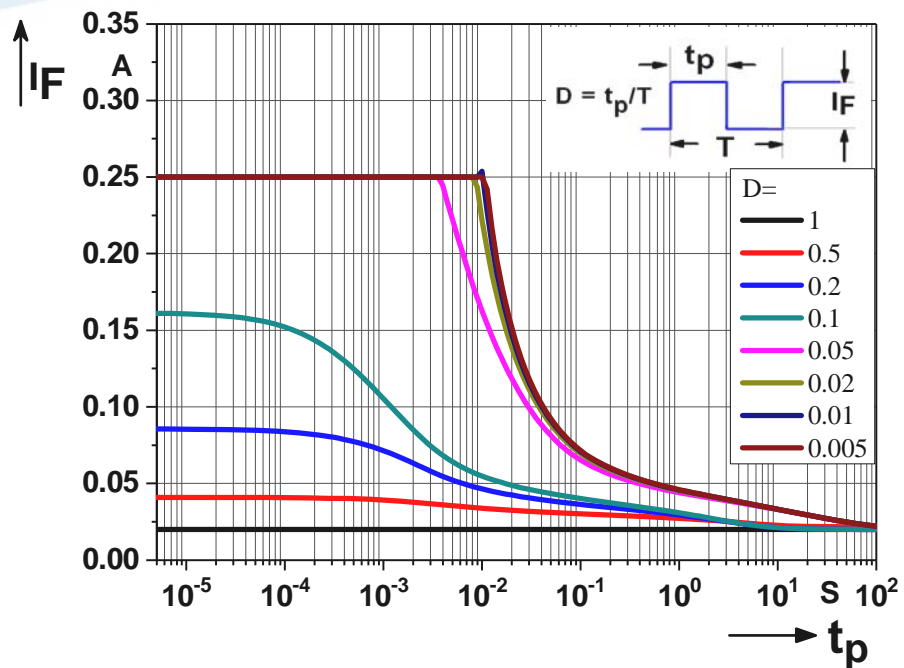
### Forward Current Derating Curve

$$I_F = f(T_S)$$



### Permissible Pulse Handling Capability

D=Duty cycle ,  $T_s = 25^\circ\text{C}$



## 4. Binning Information

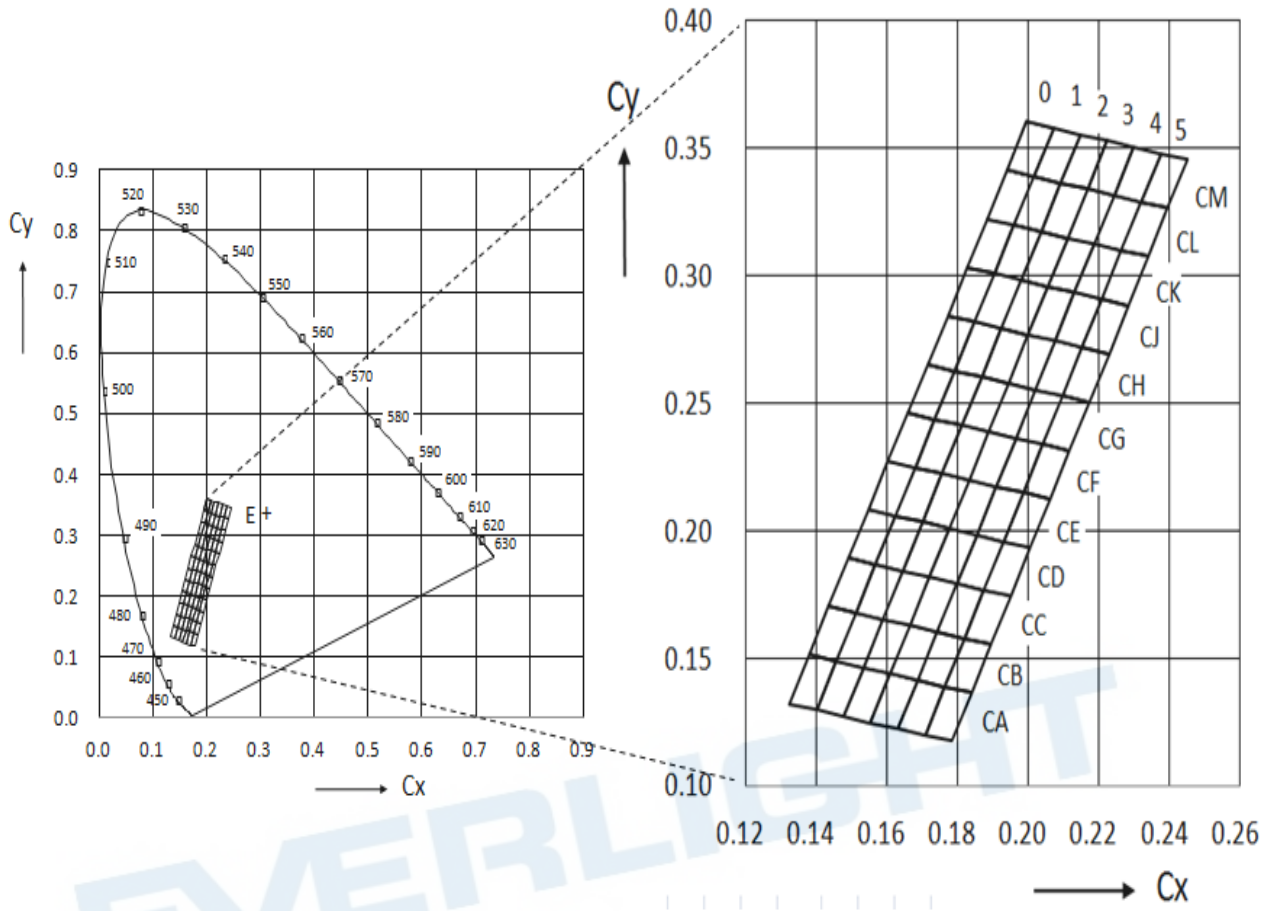
### Luminous Intensity Bins

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:  $\pm 8\%$ .
2. Highlighted Black Box is possible output bins.

**Standard Ice Blue Color Bin Structure**



### Ice Blue Bin Coordinates

Bin Code	CIE_x	CIE_y	Bin Code	CIE_x	CIE_y	Condition
CM0	0.1940	0.3415	CL3	0.2112	0.3151	I <sub>F</sub> = 10mA
	0.1996	0.3605		0.2168	0.3341	
	0.2072	0.3580		0.2244	0.3316	
	0.2016	0.3390		0.2188	0.3126	
CM1	0.2016	0.3390	CL4	0.2188	0.3126	
	0.2072	0.3580		0.2244	0.3316	
	0.2148	0.3556		0.2319	0.3291	
	0.2092	0.3366		0.2264	0.3101	
CM2	0.2092	0.3366	CL5	0.2264	0.3101	
	0.2148	0.3556		0.2319	0.3291	
	0.2224	0.3531		0.2395	0.3267	
	0.2168	0.3341		0.2340	0.3077	
CM3	0.2168	0.3341	CK0	0.1828	0.3035	
	0.2224	0.3531		0.1884	0.3225	
	0.2299	0.3506		0.1960	0.3200	
	0.2244	0.3316		0.1904	0.3010	
CM4	0.2244	0.3316	CK1	0.1904	0.3010	
	0.2299	0.3506		0.1960	0.3200	
	0.2375	0.3481		0.2036	0.3176	
	0.2319	0.3291		0.1980	0.2986	
CM5	0.2319	0.3291	CK2	0.1980	0.2986	
	0.2375	0.3481		0.2036	0.3176	
	0.2451	0.3457		0.2112	0.3151	
	0.2395	0.3267		0.2056	0.2961	
CL0	0.1884	0.3225	CK3	0.2056	0.2961	
	0.1940	0.3415		0.2112	0.3151	
	0.2016	0.3390		0.2188	0.3126	
	0.1960	0.3200		0.2132	0.2936	
CL1	0.1960	0.3200	CK4	0.2132	0.2936	
	0.2016	0.3390		0.2188	0.3126	
	0.2092	0.3366		0.2264	0.3101	
	0.2036	0.3176		0.2208	0.2911	
CL2	0.2036	0.3176	CK5	0.2208	0.2911	
	0.2092	0.3366		0.2264	0.3101	
	0.2168	0.3341		0.2340	0.3077	
	0.2112	0.3151		0.2284	0.2887	

### Ice Blue Bin Coordinates

Bin Code	CIE_x	CIE_y	Bin Code	CIE_x	CIE_y	Condition
CJ0	0.1772	0.2845	CH3	0.1945	0.2581	I <sub>F</sub> = 10mA
	0.1828	0.3035		0.2000	0.2771	
	0.1904	0.3010		0.2077	0.2746	
	0.1848	0.2820		0.2021	0.2556	
CJ1	0.1848	0.2820	CH4	0.2021	0.2556	
	0.1904	0.3010		0.2077	0.2746	
	0.1980	0.2986		0.2153	0.2721	
	0.1924	0.2796		0.2097	0.2531	
CJ2	0.1924	0.2796	CH5	0.2097	0.2531	
	0.1980	0.2986		0.2153	0.2721	
	0.2056	0.2961		0.2229	0.2697	
	0.2000	0.2771		0.2173	0.2507	
CJ3	0.2000	0.2771	CG0	0.1660	0.2465	
	0.2056	0.2961		0.1716	0.2655	
	0.2132	0.2936		0.1792	0.2630	
	0.2077	0.2746		0.1736	0.2440	
CJ4	0.2077	0.2746	CG1	0.1736	0.2440	
	0.2132	0.2936		0.1792	0.2630	
	0.2208	0.2911		0.1869	0.2606	
	0.2153	0.2721		0.1813	0.2416	
CJ5	0.2153	0.2721	CG2	0.1813	0.2416	
	0.2208	0.2911		0.1869	0.2606	
	0.2284	0.2887		0.1945	0.2581	
	0.2229	0.2697		0.1889	0.2391	
CH0	0.1716	0.2655	CG3	0.1889	0.2391	
	0.1772	0.2845		0.1945	0.2581	
	0.1848	0.2820		0.2021	0.2556	
	0.1792	0.2630		0.1965	0.2366	
CH1	0.1792	0.2630	CG4	0.1965	0.2366	
	0.1848	0.2820		0.2021	0.2556	
	0.1924	0.2796		0.2097	0.2531	
	0.1869	0.2606		0.2043	0.2341	
CH2	0.1869	0.2606	CG5	0.2043	0.2341	
	0.1924	0.2796		0.2097	0.2531	
	0.2000	0.2771		0.2173	0.2507	
	0.1945	0.2581		0.2118	0.2317	

### Ice Blue Bin Coordinates

Bin Code	CIE_x	CIE_y	Bin Code	CIE_x	CIE_y	Condition
CC0	0.1436	0.1705	CB3	0.1610	0.1441	I <sub>F</sub> = 10mA
	0.1492	0.1895		0.1666	0.1631	
	0.1568	0.1870		0.1742	0.1606	
	0.1513	0.1680		0.1687	0.1416	
CC1	0.1513	0.1680	CB4	0.1687	0.1416	
	0.1568	0.1870		0.1742	0.1606	
	0.1645	0.1846		0.1819	0.1581	
	0.1589	0.1656		0.1764	0.1391	
CC2	0.1589	0.1656	CB5	0.1764	0.1391	
	0.1645	0.1846		0.1819	0.1581	
	0.1721	0.1821		0.1896	0.1557	
	0.1666	0.1631		0.1840	0.1367	
CC3	0.1666	0.1631	CA0	0.1324	0.1325	
	0.1721	0.1821		0.1380	0.1515	
	0.1798	0.1796		0.1457	0.1490	
	0.1742	0.1606		0.1401	0.1300	
CC4	0.1742	0.1606	CA1	0.1401	0.1300	
	0.1798	0.1796		0.1457	0.1490	
	0.1875	0.1771		0.1533	0.1466	
	0.1819	0.1581		0.1477	0.1276	
CC5	0.1819	0.1581	CA2	0.1477	0.1276	
	0.1875	0.1771		0.1533	0.1466	
	0.1951	0.1747		0.1610	0.1441	
	0.1896	0.1557		0.1554	0.1251	
CB0	0.1380	0.1515	CA3	0.1554	0.1251	
	0.1436	0.1705		0.1610	0.1441	
	0.1513	0.1680		0.1687	0.1416	
	0.1457	0.1490		0.1631	0.1226	
CB1	0.1457	0.1490	CA4	0.1631	0.1226	
	0.1513	0.1680		0.1687	0.1416	
	0.1589	0.1656		0.1764	0.1391	
	0.1533	0.1466		0.1708	0.1201	
CB2	0.1533	0.1466	CA5	0.1708	0.1201	
	0.1589	0.1656		0.1764	0.1391	
	0.1666	0.1631		0.1840	0.1367	
	0.1610	0.1441		0.1785	0.1177	

### 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:  $\pm 0.05V$ .
2. Forward voltage bins are defined at  $I_F = 10mA$  operation.

## 5.Part Number

### 65-11-IB0100H-AM

Part number is designated with below details.

65-11 = Product family name.

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

010 = Test current [mA]

0 = Lead Frame Type

H =Chip Code

AM = Automotive application

Note

<sup>[1]</sup> 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



## 6. Ordering Information

### 65-11- IB0100H-**ABCDEFGHIJKLMNO-PQ**-AM

Part Number of the 65-11	Order Code
65-11-IB0100H-AM	65-11-IB0100H-ABCDEFGHIJKLMNO-PQ-AM

Order code contains information with below details :

ABCDEF = min/max wavelength or CCT

GHJK = min./max. luminous flux in [lm] or luminous intensity in [mcd]

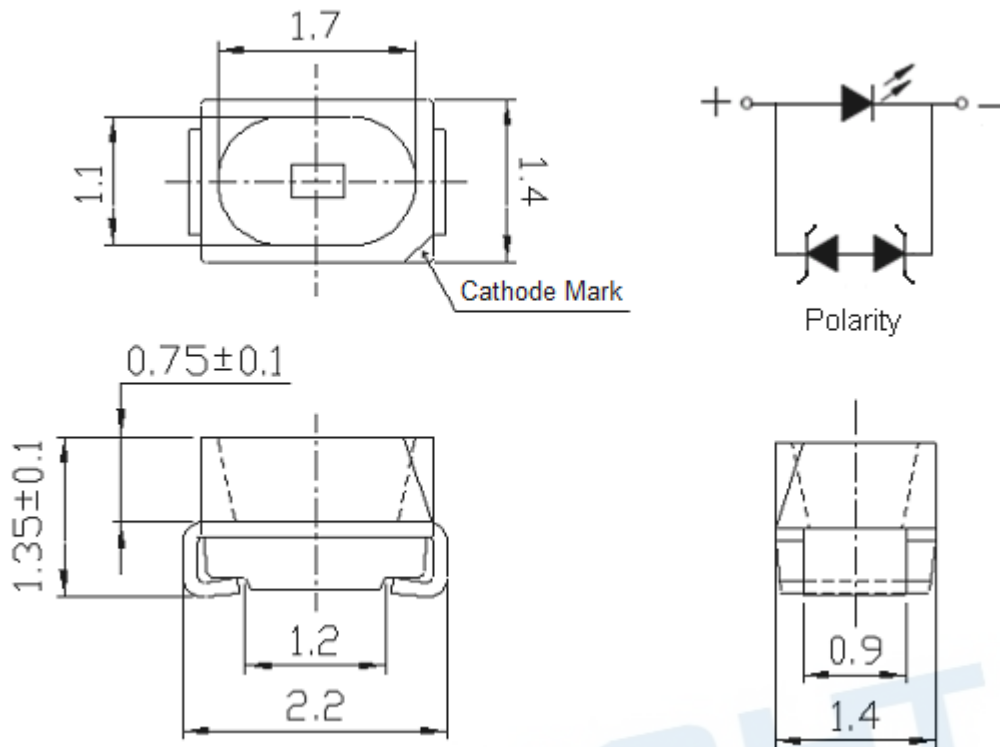
LMNO = min./max. forward voltage

PQ = internal code

AM = Automotive Application

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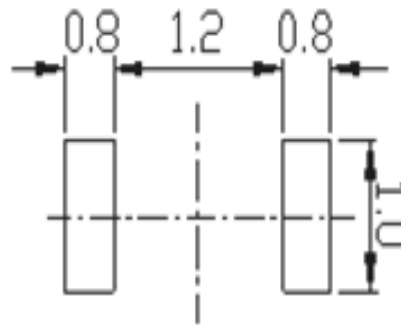
## 7. Mechanical Dimension



### Notes:

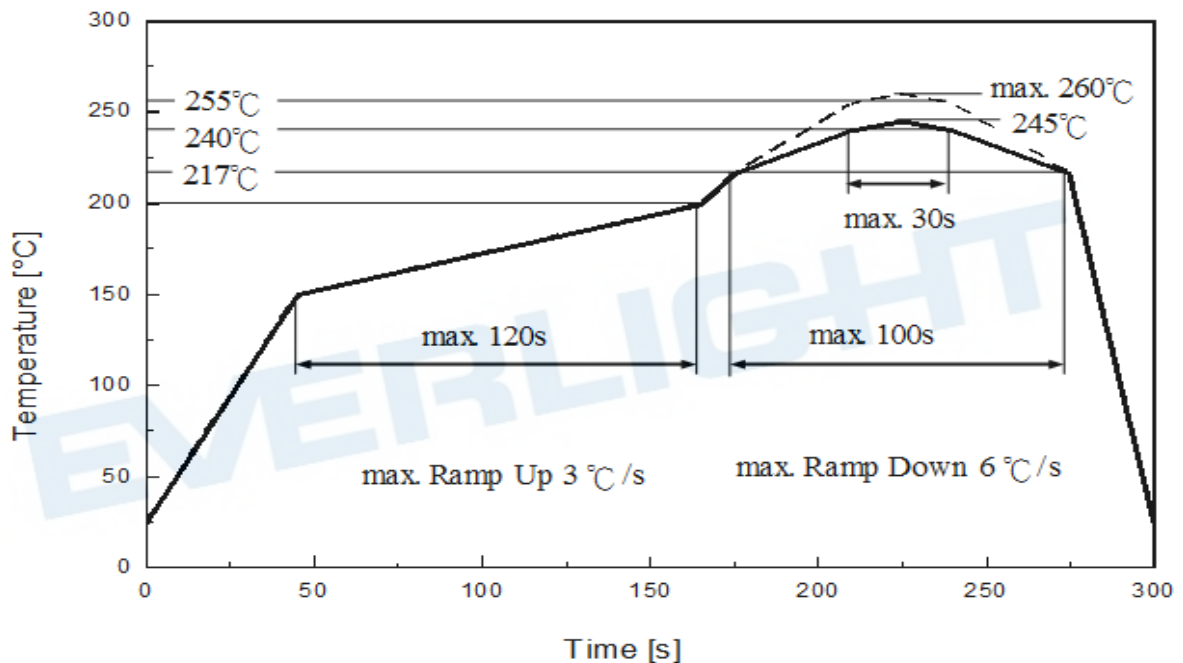
1. Dimensions are in millimeters.
2. Tolerances unless mentioned are  $\pm 0.1$ mm.

## 8. Recommended Soldering Pad



## 9. Reflow Soldering Profile

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



Profile Feature	Pb-Free Assembly	Unit
	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

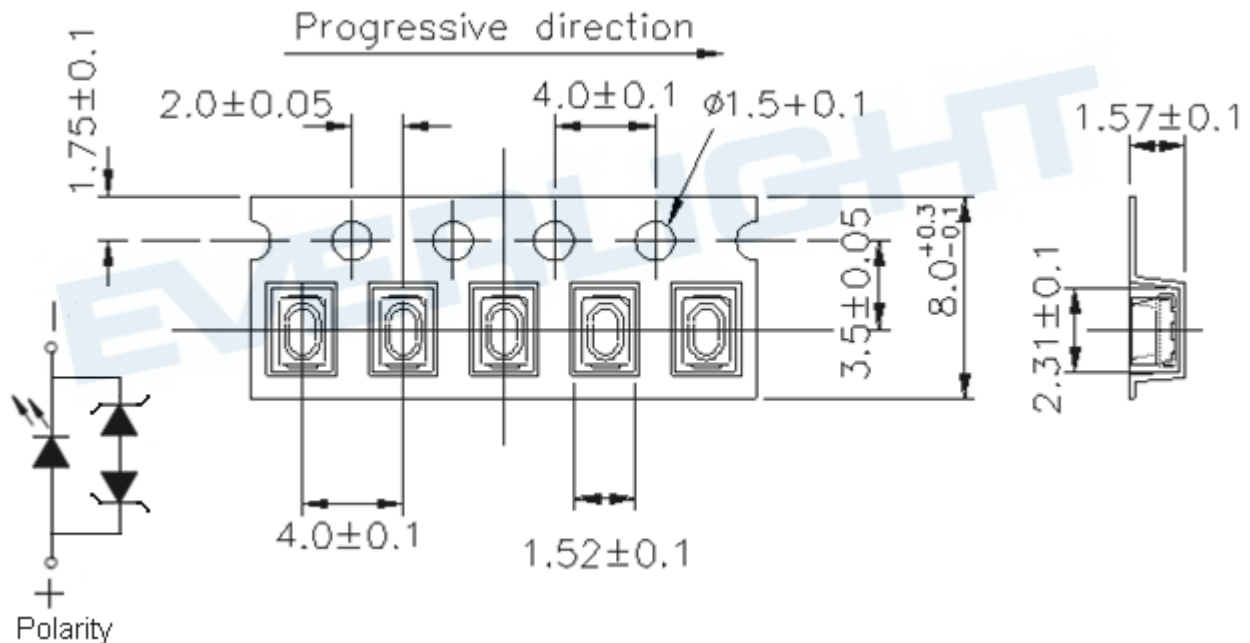
RoHS **(Pb) EVERLIGHT** 5

CPN: XXXXXXXXXXXXXXXXXXXX  
 XXXXXXXXXXXX-XXXXXXXXXX-XXXXXXXXXX-XXXXXXXX-XXXXXX  
 P/N: XXXXXXXXXXXX  
 XXXXXXXXXXXX-XXXXXXXXXX-XXXXXXXXXX-XXXXXXXXXX-XXXXXX  
 LOT NO: Y150716XXX-XXXXXXXXXX-XXXXXXXXXX  
 QTY: 0123456789 HUE: XXXXXXXXXXXX  
 CAT: XXXXXXXXXXXX REF: XXXXXXXXXXXX  
 REFERENCE: BTPYMMDDXXXXX  
 MSL-X                      MADE IN XXXXXXX



- 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

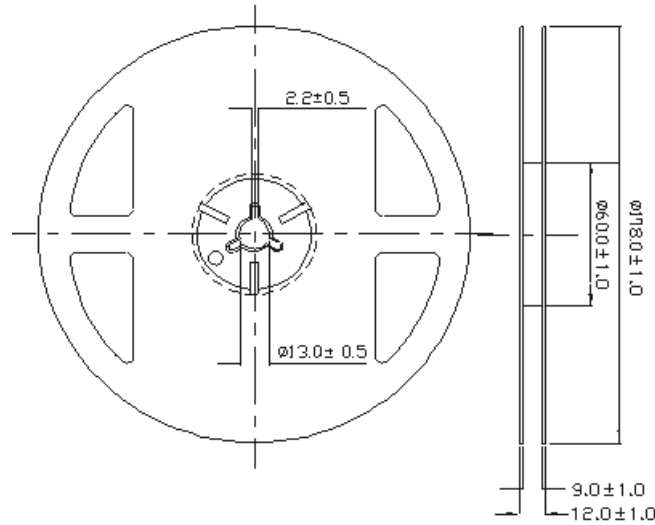
### ● Packing: Loaded Quantity 2000 pcs Per Reel



**Notes:**

1. Dimensions are in millimeters.

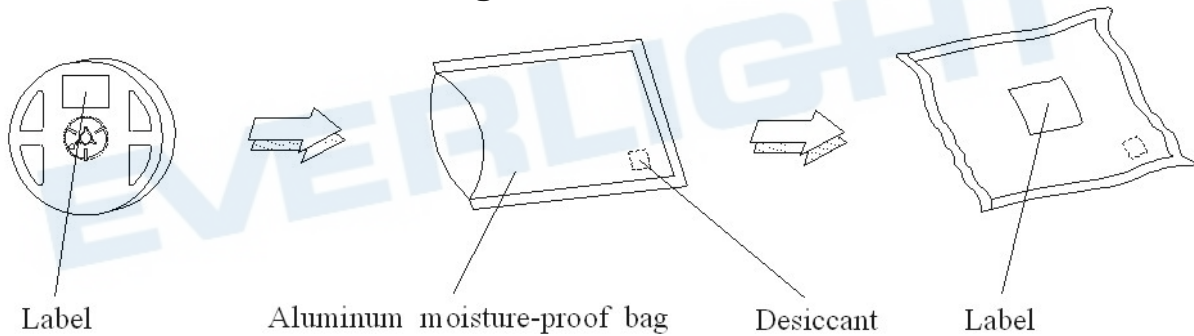
● **Reel Dimensions**



**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.

