

EL MULTI COLOR TOP VIEW

3735-C0PA2501H-AM



Features

Package : PLCC 4 package

Typ. Luminous Flux Cool White : 81 lm @ 250mA

Typ. Luminous Flux PC Amber : 52 lm @ 250mA

Viewing angle : 120°

ESD : 8KV

MSL : 2

Qualifications : According to AEC-Q102

Compliance with RoHS & REACH

Compliance Halogen Free. (Br<900ppm, Cl<900ppm, Br+Cl<1500ppm)

Sulfur robustness

Applications

Automotive Exterior Lighting

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1. Characteristics

Parameter		Symbol	Min.	Typ.	Max.	Unit	Condition ^[1]
Forward Current	CW / PA	I_F	20	250	300	mA	---
Luminous Flux ^{[2][3]}	Cool White	Φ_v	60	81	100	lm	$I_F=250\text{mA}$
	PC Amber	Φ_v	39	52	60	lm	$I_F=250\text{mA}$
Forward Voltage ^{[4][5]}	Cool White	V_F	2.75	3.00	3.50	V	$I_F=250\text{mA}$
	PC Amber						
Viewing Angle	Cool White	ϕ	---	120	---	deg	$I_F=250\text{mA}$
	PC Amber						
Chromaticity Coordinates ^[6]	Cool White	CIE_x	---	0.325	---	---	$I_F=250\text{mA}$
		CIE_y	---	0.335	---		
	PC Amber	CIE_x	---	0.570	---		
		CIE_y	---	0.420	---		
Thermal Resistance (Junction to Solder)	CW / PA	$R_{th JS real}$	---	16	---	K/W	$I_F=250\text{mA}$
		$R_{th JS el}$	---	13	---		

Notes:

1. Forward conditon by each of LED.
2. Luminous flux measurement tolerance: $\pm 8\%$.
3. The data of luminous flux measured at thermal pad=25°C
4. Forward voltage measurement tolerance: $\pm 0.05\text{V}$
5. Tolerance of Chromaticity coordinates x,y : ± 0.005

2. Absolute Maximum Ratings

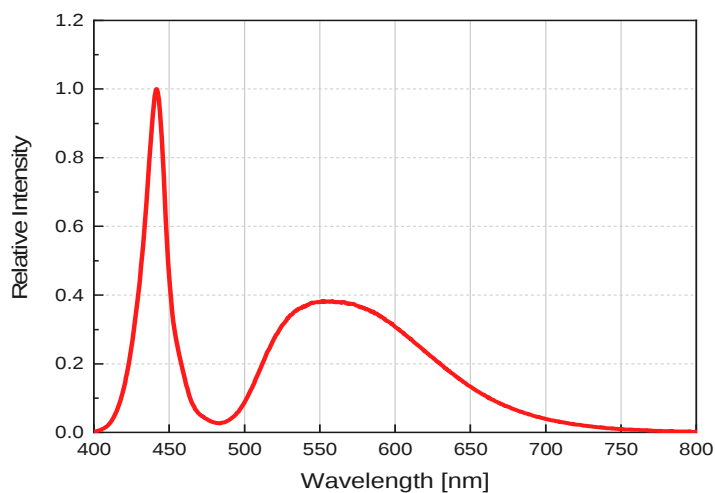
Parameter	Symbol	Ratings	Unit
Power Dissipation	P_d	750	mW
Max. DC Forward Current	I_F	300	mA
Reverse Voltage	V_R	Not designed for reverse operation	V
Junction Temperature	T_J	150	°C
Operating Temperature	T_{opr}	-40 ~ +125	°C
Storage Temperature	T_{stg}	-40 ~ +125	°C
ESD Sensitivity (R=1.5kΩ, C= 100pF)	ESD_{HBM}	8	KV
Soldering Temperature	Reflow	260°C for 30sec	°C

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3. Characteristics Graph

Wavelength Characteristics Relative Spectral Distribution @ $T_S = 25^\circ\text{C}$ 、 $I_F = 250\text{mA}$ (CW)

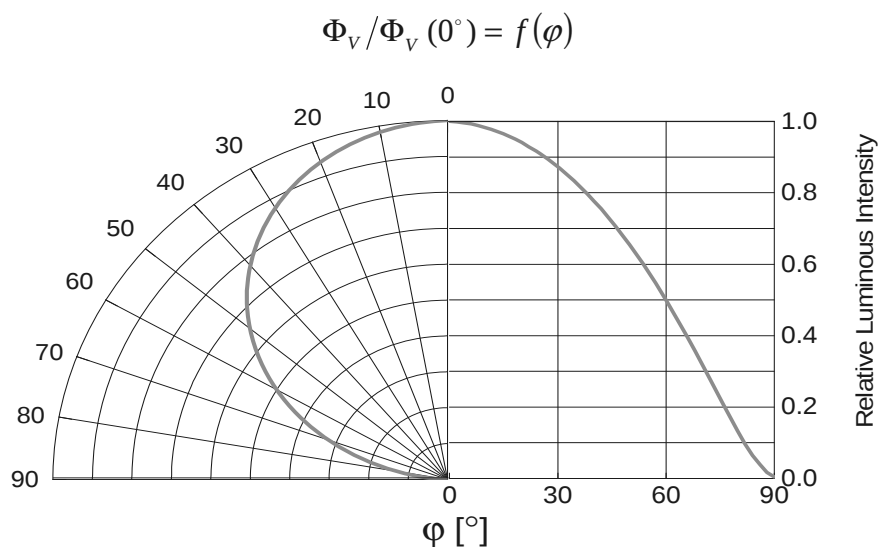
$$\Phi_V / \Phi_V (\text{Max.}) = f(\lambda)$$



Wavelength Characteristics Relative Spectral Distribution @ $T_S = 25^\circ\text{C}$ 、 $I_F = 250\text{mA}$ (PC Amber)

$$\Phi_V / \Phi_V (\text{Max.}) = f(\lambda)$$

Typical Diagram Characteristics of Radiation (CW / PA)

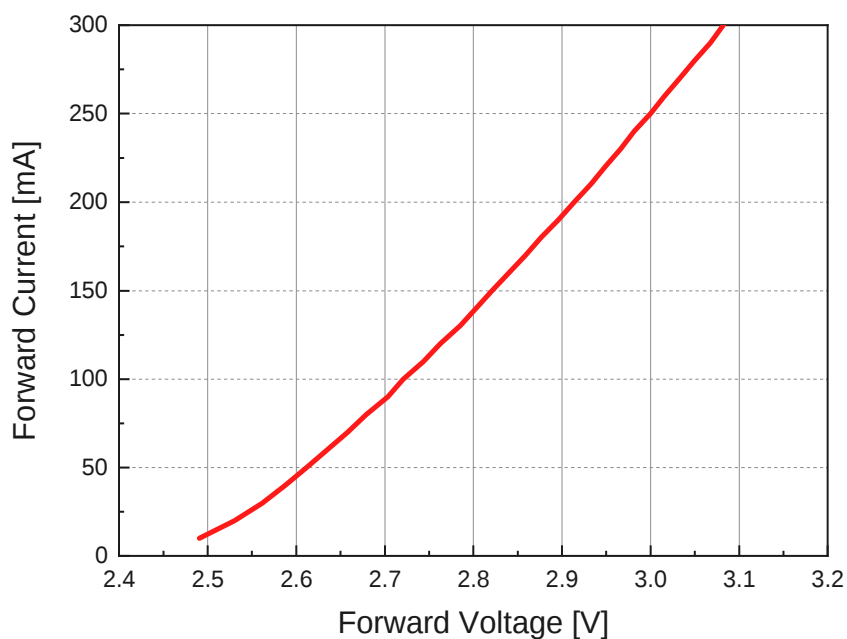


Notes:

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 $\pm 5^\circ$

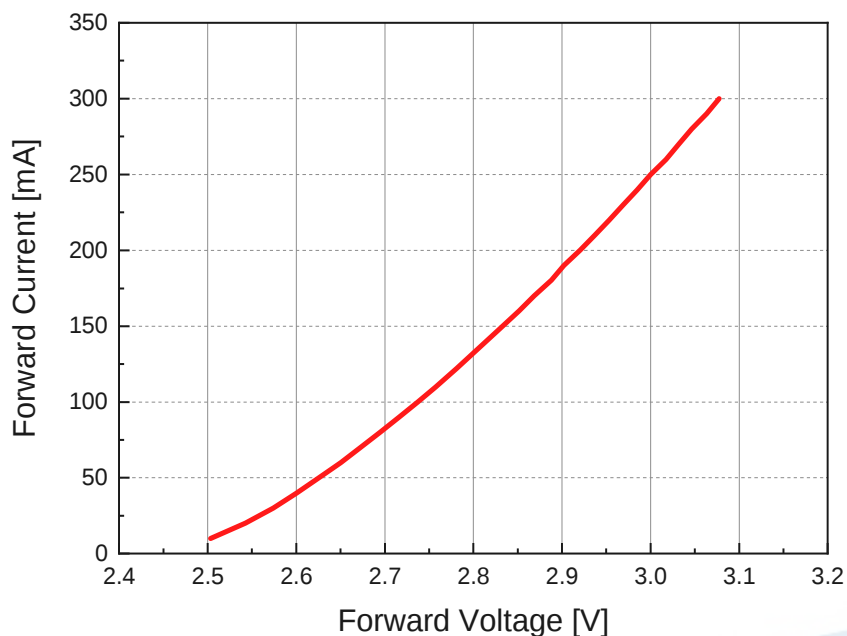
Forward Current vs. Forward Voltage @ $T_s = 25^\circ\text{C}$ (CW)

$$I_F = f(V_F)$$



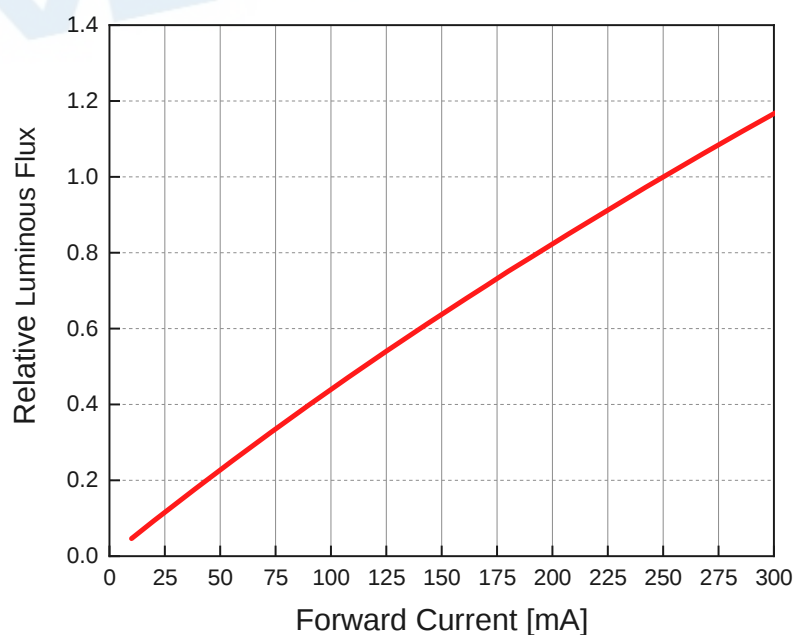
Forward Current vs. Forward Voltage @ T_s = 25°C (PC amber)

$$I_F = f(V_F)$$



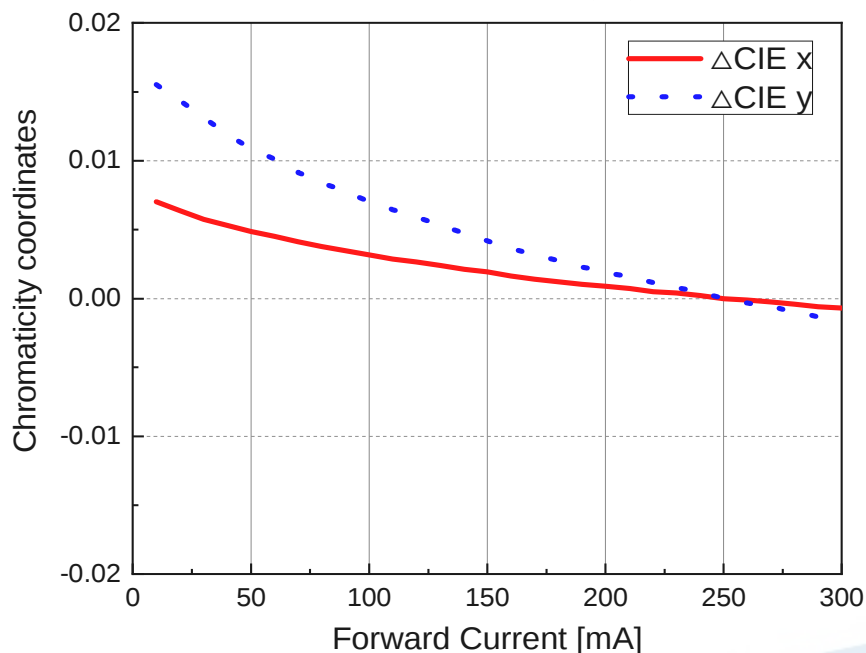
Relative Luminous Flux vs. Forward Current @ T_s = 25°C (CW / PA)

$$\Phi_V / \Phi_V(150mA) = f(I_F)$$



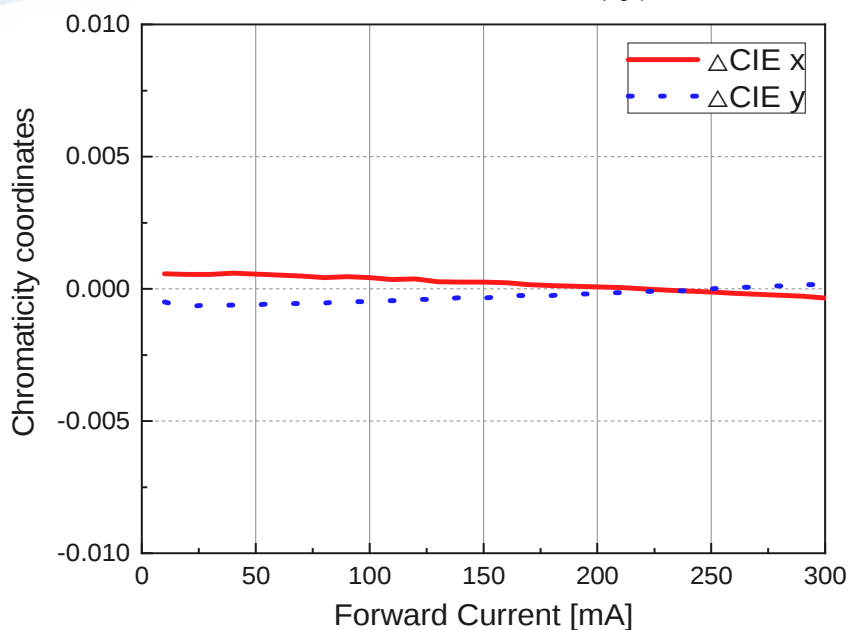
Chromaticity Coordinates vs. Forward Current @ T_s = 25°C (CW)

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



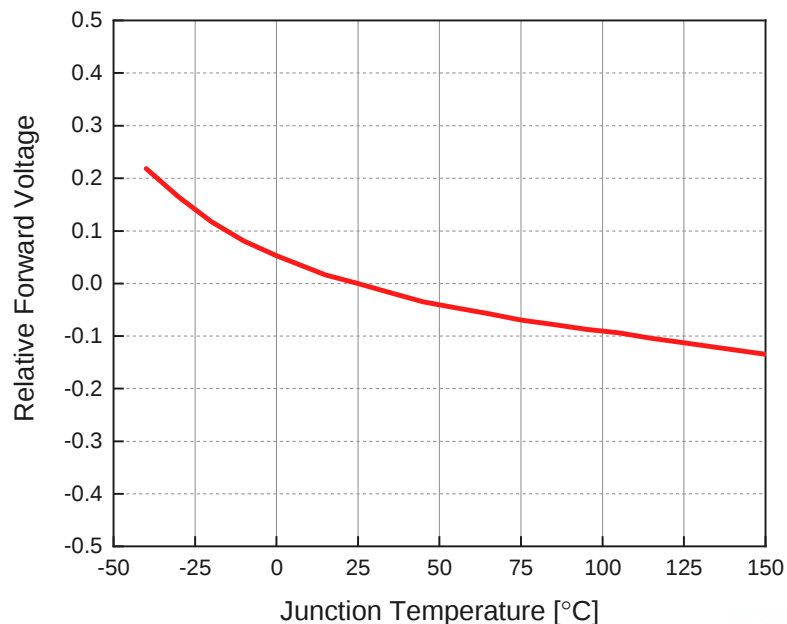
Chromaticity Coordinates vs. Forward Current @ T_s = 25°C (PC Amber)

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



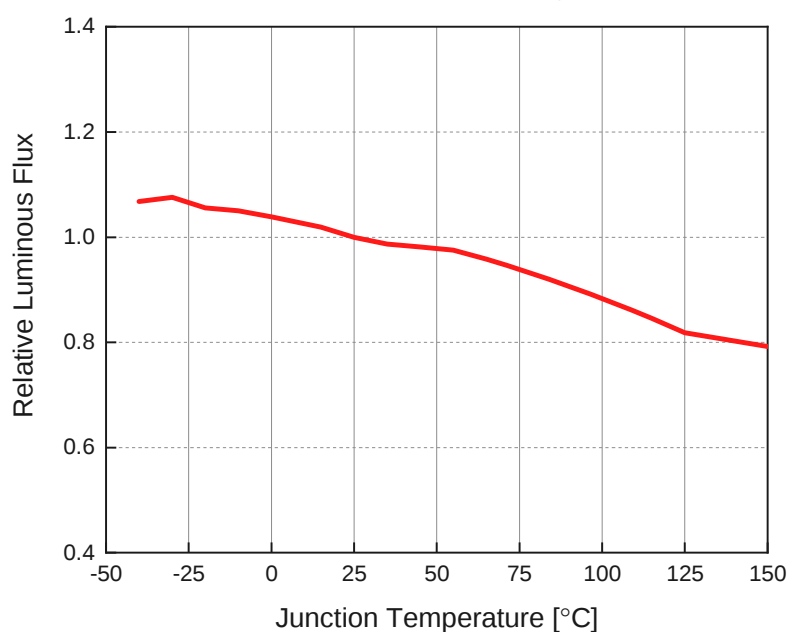
Relative Forward Voltage vs. Junction Temperature @ $I_F = 250\text{mA}$ (CW / PA)

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



Relative Luminous Flux vs. Junction Temperature @ $I_F = 250\text{mA}$ (CW)

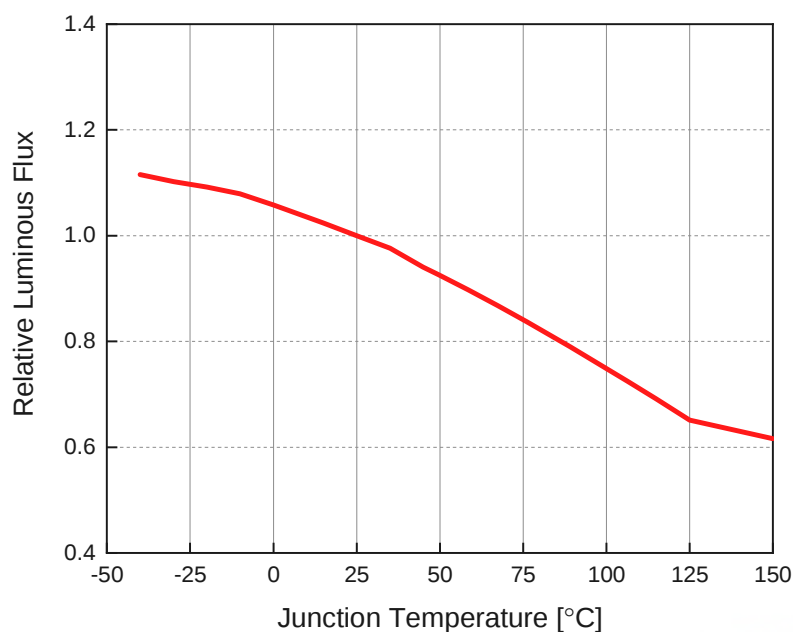
$$\Phi_V / \Phi_V(25^\circ\text{C}) = f(T_j)$$



Relative Luminous Flux vs. Junction Temperature

@ $I_F = 250\text{mA}$ (PC Amber)

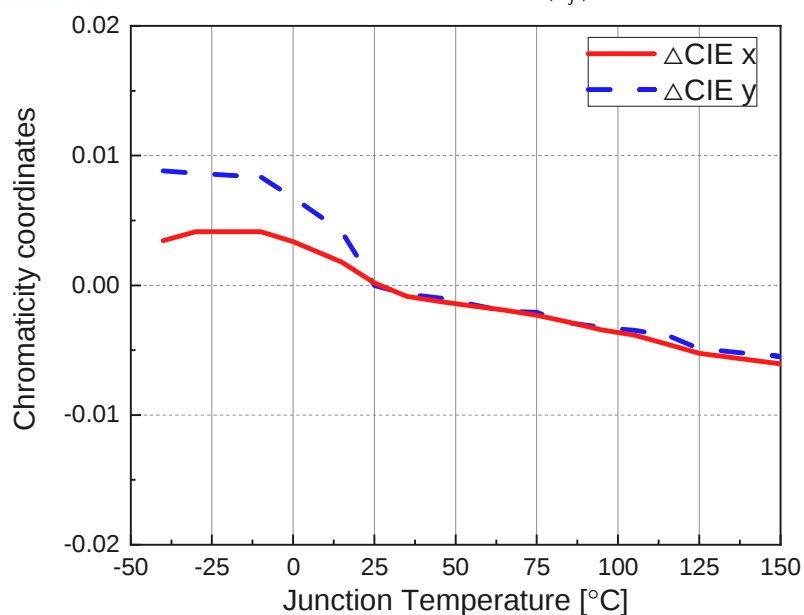
$$\Phi_V / \Phi_V(25^\circ\text{C}) = f(T_j)$$



Chromaticity Coordinates Shift vs. Junction Temperature

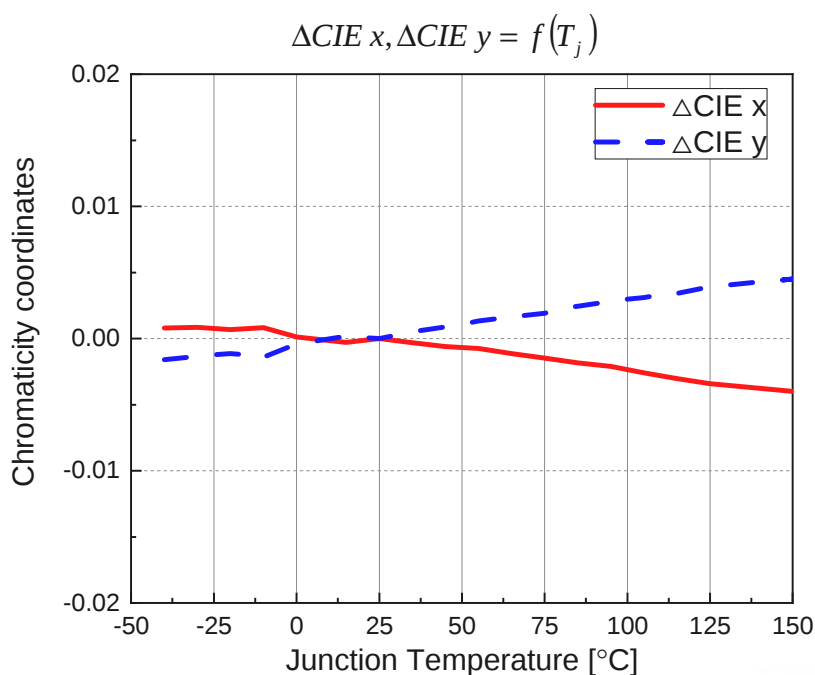
@ $I_F = 250\text{mA}$ (CW)

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



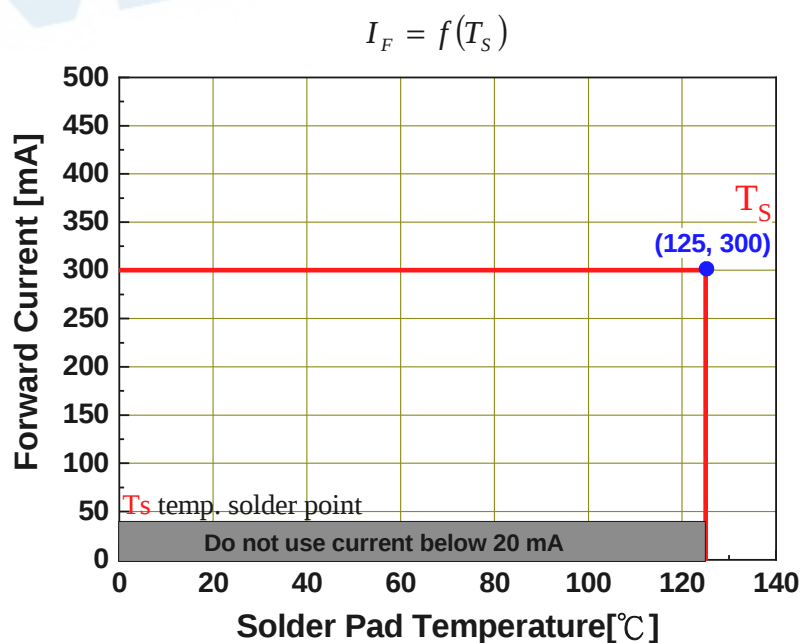
Chromaticity Coordinates Shift vs. Junction Temperature

@ $I_F = 250\text{mA}$ (PC Amber)



Forward Current Derating Curve

(CW / PA)



4. Binning Information

Luminous Flux Bins

[Cool White]			
Group	Bin	Minimum Photometric Flux (lm)	Maximum Photometric Flux (lm)
	6	60	70
	7	70	80
	8	80	90
	9	90	100

[PC Amber]			
Group	Bin	Minimum Photometric Flux (lm)	Maximum Photometric Flux (lm)
	3	39	45
	4	45	52
	5	52	60

Notes:

1. Luminous flux measurement tolerance: $\pm 8\%$.
2. Highlighted Black Box is available bins.

Forward Voltage Bins

Bin	Minimum Forward Voltage [V]	Maximum Forward Voltage [V]
2730	2.75	3.00
3032	3.00	3.25
3235	3.25	3.50

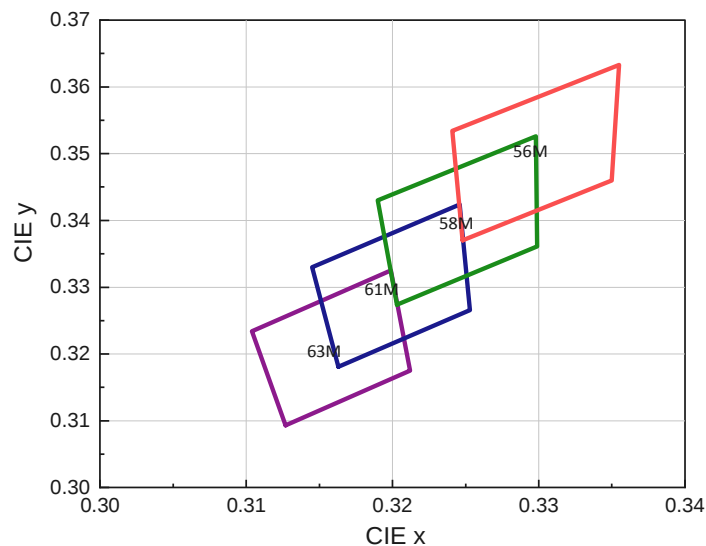
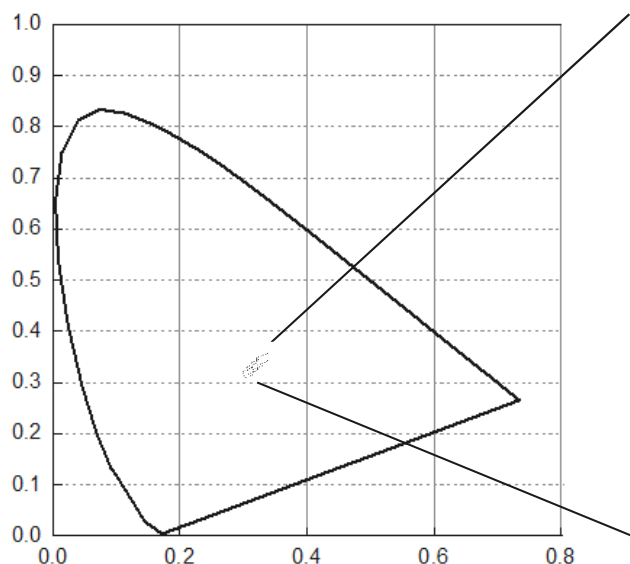
Notes:

1. Forward voltage measurement tolerance: $\pm 0.05\text{V}$.
2. Forward voltage bins are defined at $I_F = 250\text{mA}$ operation.

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Color Bin Structure

ECE Bin Structure



Cool White Bin Coordinates

Bin	CIE x	CIE y
63M	0.3127	0.3093
	0.3212	0.3175
	0.3199	0.3325
	0.3104	0.3234

Bin	CIE x	CIE y
61M	0.3163	0.3181
	0.3253	0.3266
	0.3246	0.3424
	0.3145	0.333

Bin	CIE x	CIE y
58M	0.3203	0.3274
	0.3299	0.3361
	0.3298	0.3526
	0.319	0.343

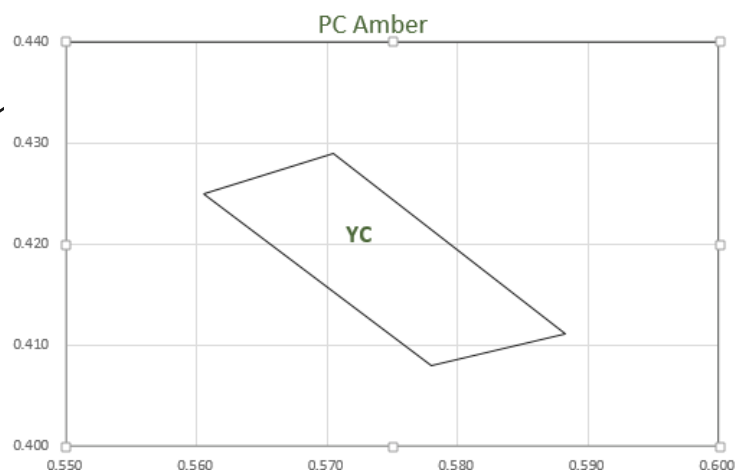
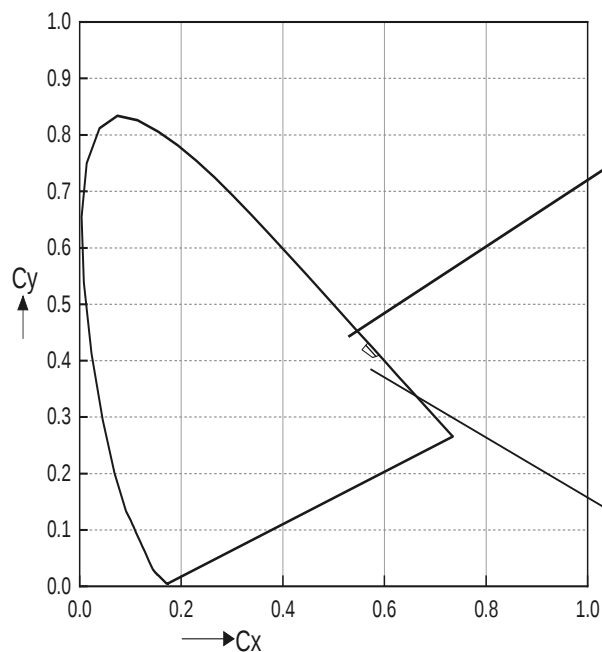
Bin	CIE x	CIE y
56M	0.3248	0.337
	0.335	0.346
	0.3355	0.3633
	0.3241	0.3534

Notes:

1. Color coordinates measurement tolerance: ± 0.005 .

Color Bin Structure

ECE Bin Structure



ECE Phosphor Yellow Bin Coordinates

Bin	CIE x	CIE y
YC	0.5605	0.4250
	0.5705	0.4289
	0.5883	0.4111
	0.5780	0.4080

Notes:

1. Color coordinates measurement tolerance: ± 0.005 .

5. Part Number

3735-C0PA2501H-AM

Part number is designated with below details.

3735 = Product family name.

C = Color ^[1]

0 = CRI (0=N/A ; >70=7 ; >80=8 ; >90=9)

PA= Color ^[1]

250 = Test current [mA]

1 = Lead frame 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
PYG	Phosphor Converted Yellow Green

6. Ordering Information

Part Number of the 3735	Order Code
3735-C0PA2501H-AM	3735-C0PA2501H- ABCDEFGF - 1T -AM

Order code contains information with below details :

ABCDEFGF = Group Bin^[1]

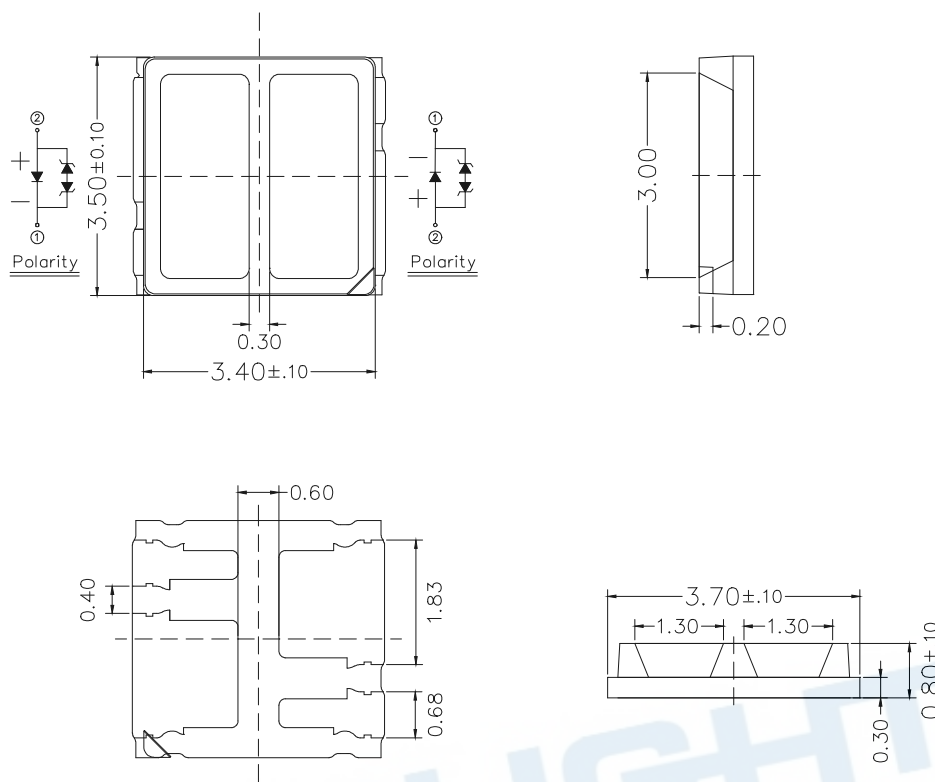
1T = Internal Code

Note:

^[1] Group Bin Chart :

Group Bin	Bin Coordinates	IV	VF
A00	CW: 56M63M PA: YC	CW: F6F9 PA: F3F5	2735
A01	CW: 56M63M PA: YC	CW: F6F9 PA: F3F5	2735
A02	CW: 56M63M PA: YC	CW: F6F9 PA: F3F5	2735
A03	CW: 56M63M PA: YC	CW: F6F9 PA: F3F5	2735
A04	CW: 56M63M PA: YC	CW: F6F9 PA: F3F5	2735
A05	CW: 56M63M PA: YC	CW: F6F9 PA: F3F5	2735

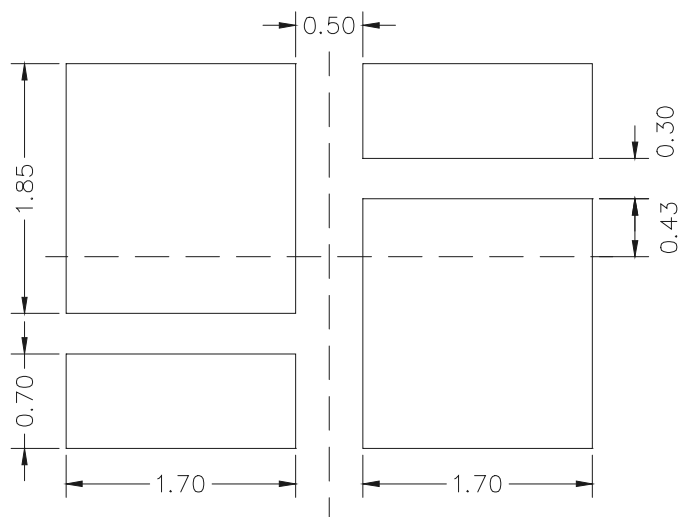
7. Mechanical Dimension



Notes:

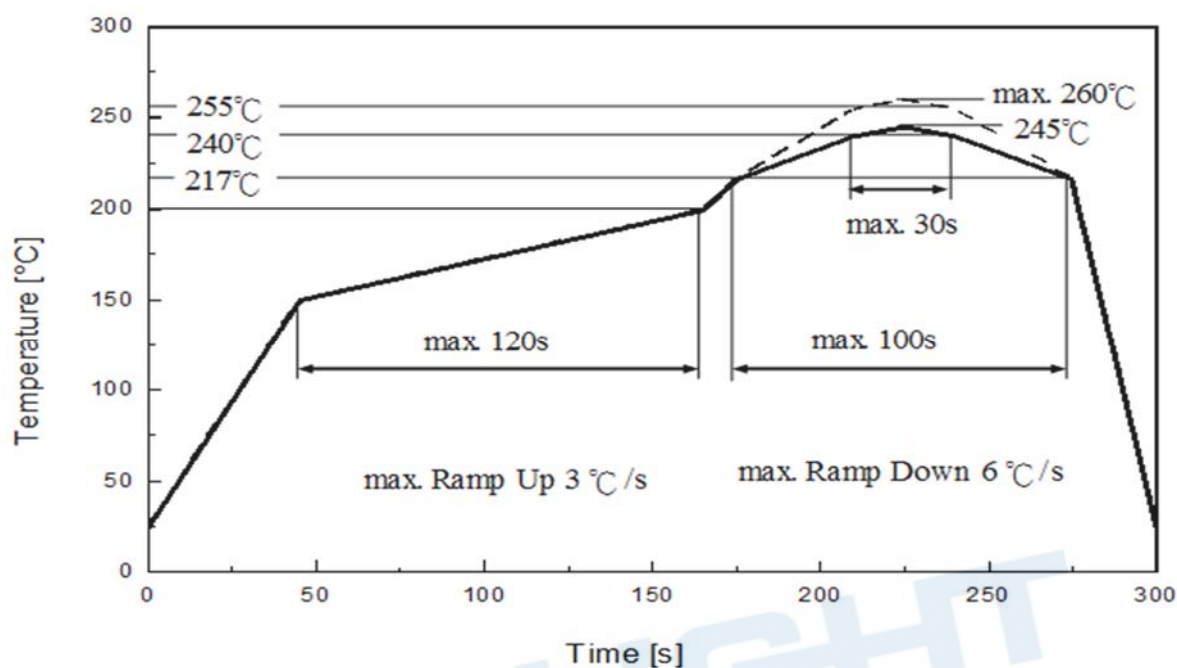
1. Dimensions are in millimeters.
2. Tolerances unless mentioned are ± 0.1 mm.

8. Recommended Soldering Pad



9. Reflow Soldering Profile

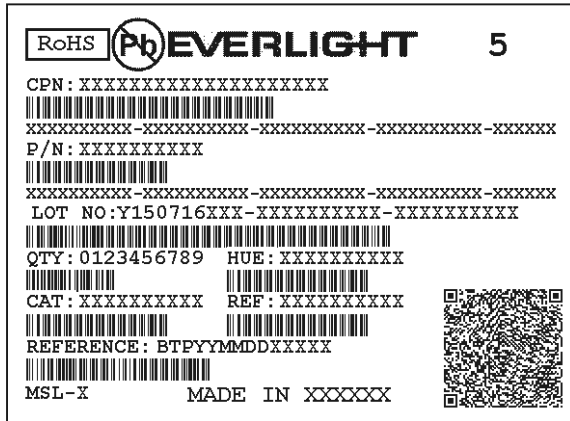
Soldering Condition (Reference: IPC/JEDEC J-STD-020D)



Profile Feature	Pb-Free Assembly	Unit Einheit
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

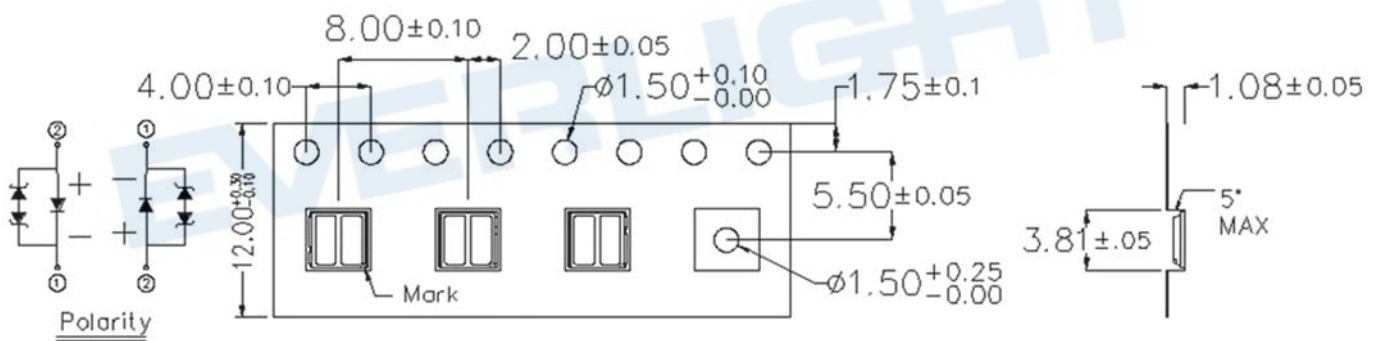
10. Packaging Information

• Product Labeling



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

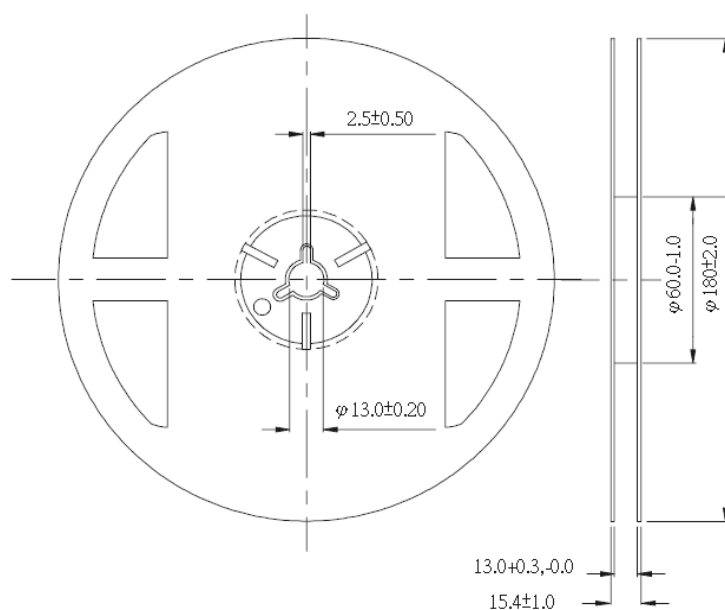
• Packing: Loaded Quantity 1000 pcs Per Reel



Notes:

1. Dimensions are in millimeters.

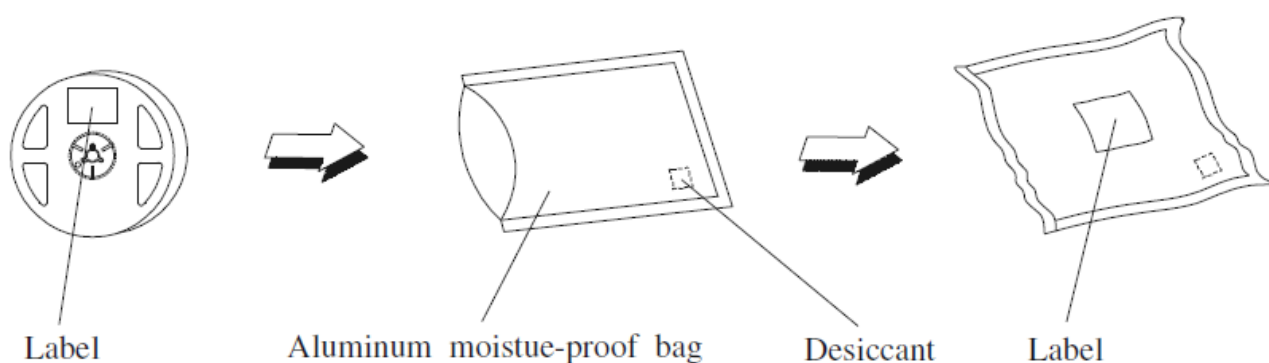
● Reel Dimensions



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.

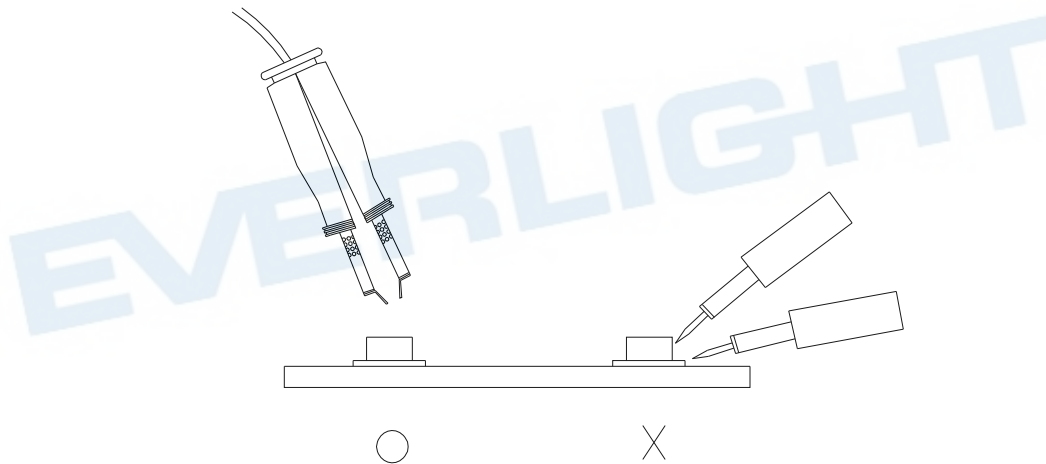
3.2 After soldering, do not warp the circuit board.

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.



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 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 Visual defect issue following Everlight's inspection criteria
Grade of H2S and FMG test	Please refer to the table as below. As for discolor, please refer to the Frame blackening after Grade of H2S and FMG test defect under Everlight's inspection criteria

	Grade A0	Grade A1	Grade B0	Grade B1
C12 H2S Class A C13 FMG	No corrosion	Corrosion without the impact on reliability and life time, following AEC-Q102 rev. A		
C12 H2S Class B C13 FMG			No corrosion	Corrosion without the impact on reliability and life time, following AEC-Q102 rev. A

Class for H2S Test & 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. H2S concentration: 10ppb SO2 concentration: 200ppb NO2 concentration: 200ppb Cl2 concentration: 10ppb
Class B	10 ppm with duration 500 h at 25 °C and 75% RH.	

Class for H2S Test & FMG	Description
0	No corrosion found
1	Corrosion without the impact on reliability and life time, following AEC-Q102 rev. A

Revision History

Current version: Feb.23.2023

Issue No. DSE-0029351

Version: 1.0

Created by: Tom Xiao

Rev.	Subjects (major change in previous version)	Modified date
1.0	Standard data sheet	2023/2/15

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