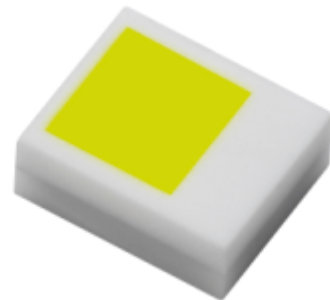# EL Compact 2016
CH2016-C07001H-AM

Features

- Package: Cool White LEDs on Ceramic substrate
- Typ. Color Temperature: 5180 K ~ 6680 K
- Typ. Luminous Flux: 195 lm @ 700mA
- Viewing angle : Cold White 120°
- ESD : up to 8KV
- MSL : 1
- Preconditioning : According to JEDEC J-STD 020D Level 1
- Qualifications : According to AEC-Q101
- Compliance with RoHS and REACH

Applications

- Automotive Exterior Lighting , Day Time Running Light (DRL), Tail Light

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Contents

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1. Characteristics

| Parameter		Symbol	Min.	Typ.	Max.	Unit	Condition
Forward Current		I_F	50	700	800	mA	---
Luminous Flux[1][2][3]		Φ_v	150	195	275	lm	I_F=700mA
Forward Voltage[4][5]		V_F	3.00	3.25	3.75	V	I_F=700mA
Viewing Angle		φ	---	120	---	deg	I_F=700mA
Correlated Color Temperature		K	5180	5850	6680	K	I_F=700mA
Thermal Resistance (Junction to Solder)	Real	$R_{th\,JS\,real}$	---	10.59	---	K/W	I_F=700mA
	Electrical	$R_{th\,JS\,el}$	---	7.87	---		

Notes:

1. Luminous Flux measurement tolerance: ±8%.

2. The data of Luminous Flux measured at thermal pad=25°C

3. Typical luminous flux or light output performance is operated within the condition guided by this datasheet.

4. Forward voltage measurement tolerance: ±0.05V

5. The V_F range shown in the table above indicates 99% output.

6. Tolerance of Chromaticity Coordinates x,y：±0.005

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2. Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Reverse Voltage	V_R	Not designed for reverse operation	V
Power Dissipation	P_d	3000	mW
Max. DC Forward Current	I_F	50 ~ 800	mA
Surge current	I_{FM}	2500	mA
Junction Temperature	T_J	150	°C
Operating Temperature	T_{opr}	-40 ~ +125	°C
Storage Temperature	T_{stg}	-40 ~ +125	°C
ESD Sensitivity	ESD_{HBM}	8	kV
Soldering Temperature	Reflow	260°C for 30 sec	°C

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3. Characteristics Graph

Wavelength Characteristics Relative Spectral Distribution
@ Ts = 25°C, I$_F$=700mA

$$\Phi_V / \Phi_V (Max.) = f(\lambda)$$
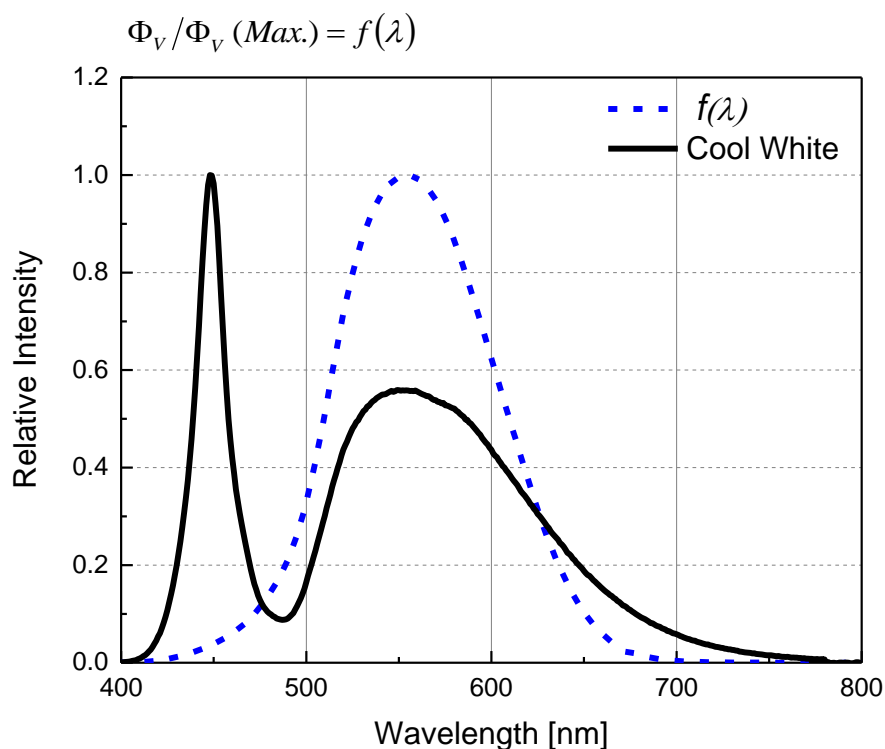
Typical Diagram Characteristics of Radiation

$$\Phi_V / \Phi_V (0°) = f(\varphi)$$
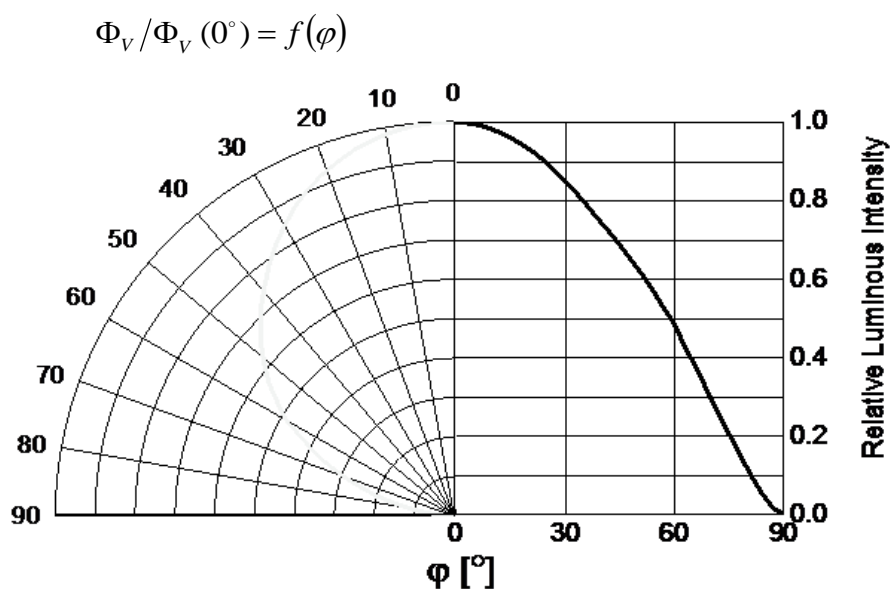
Notes:

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°.

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

$$I_F = f(V_F)$$

Forward Current [mA] vs. Forward Voltage [V]

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

$$\Phi_V/\Phi_V(700mA) = f(I_F)$$

Relative Luminous Flux vs. Forward Current [mA]

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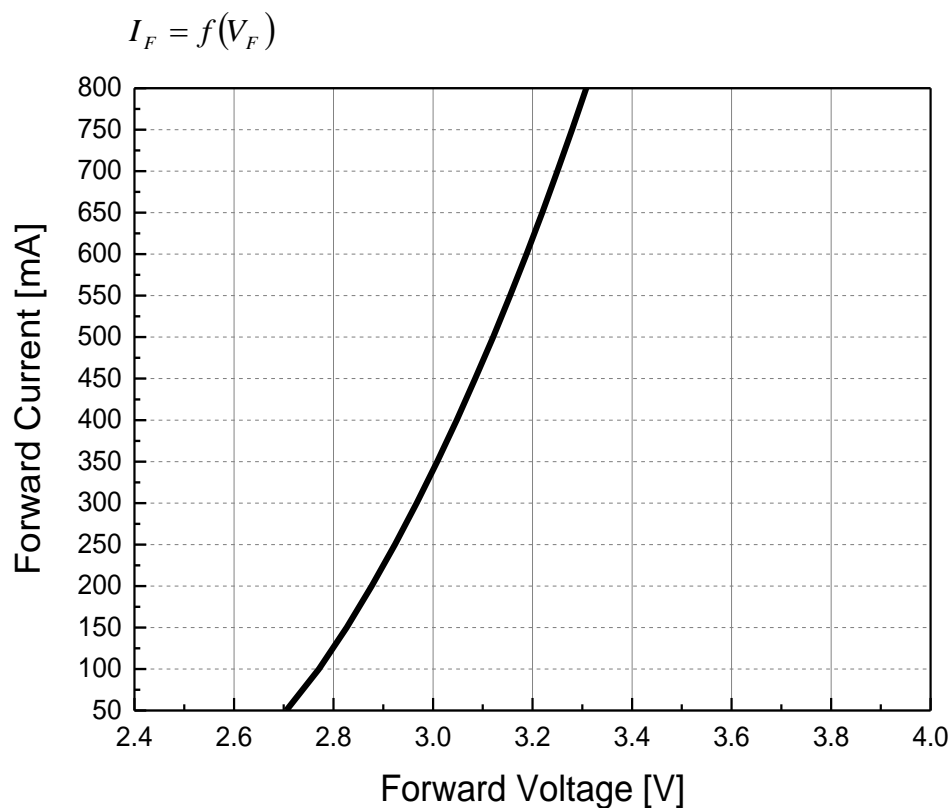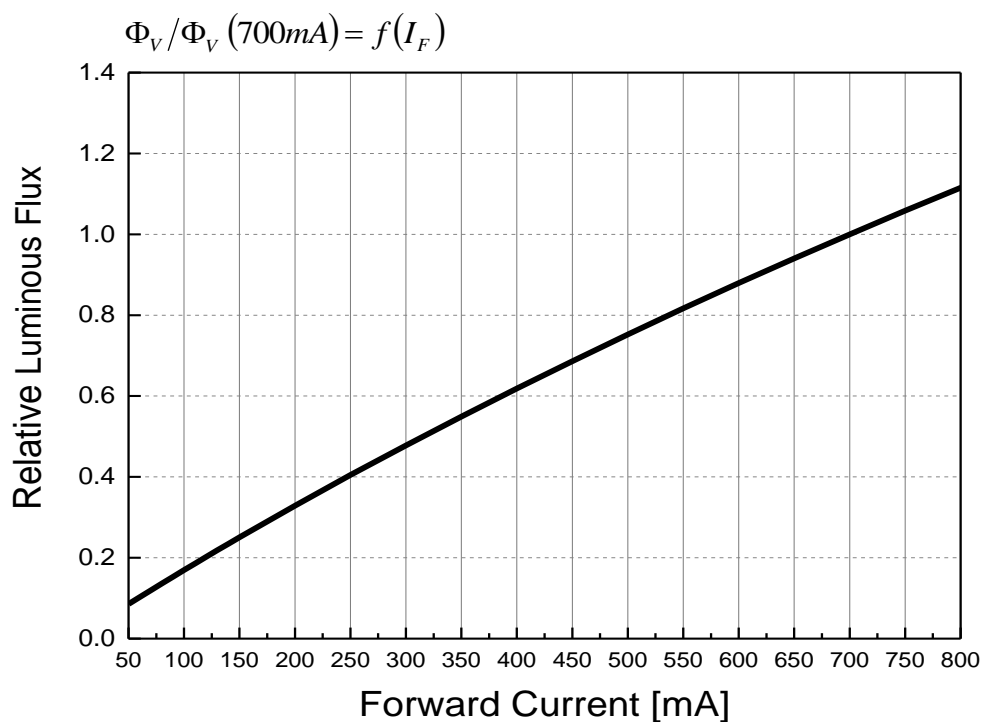
Chromaticity Coordinates Shift vs. Forward Current
@ Ts = 25°C

$$\triangle CIE\ x, \triangle CIE\ y = f(I_F)$$
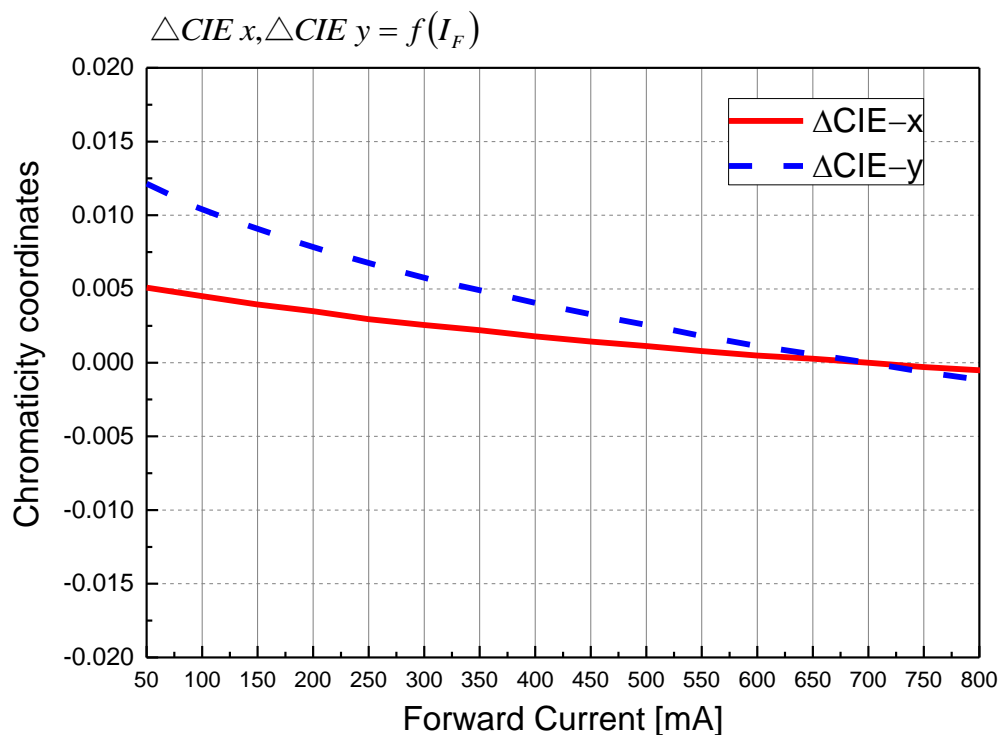
Relative Forward Voltage vs. Junction Temperature
@ I_F=700mA

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

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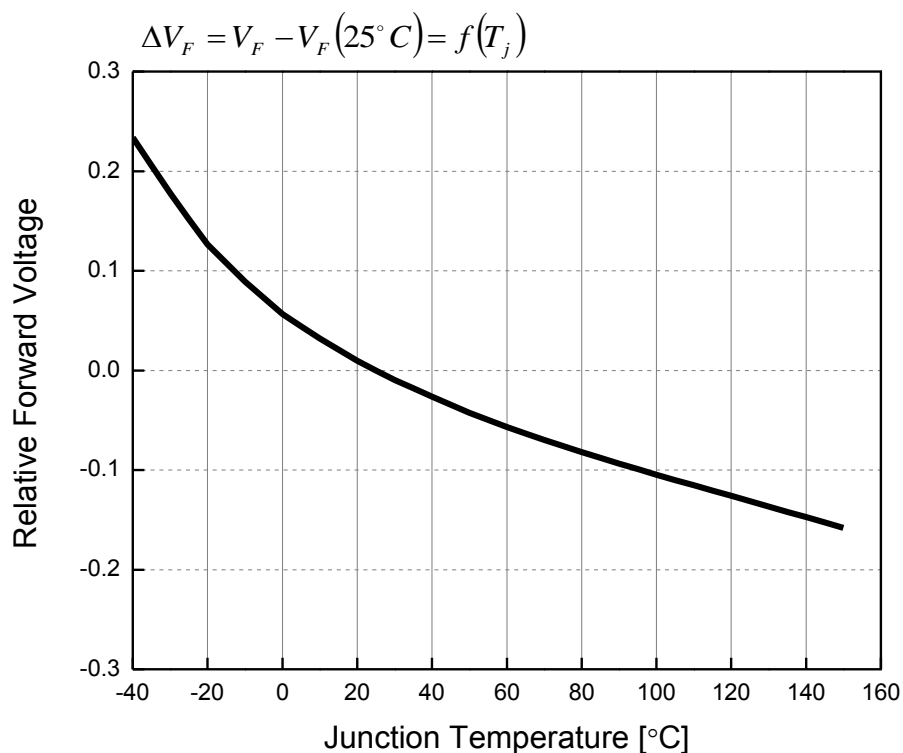
Relative Luminous Flux vs. Junction Temperature
@ I$_F$=700mA

$$\Phi_v / \Phi_v \left(25^\circ C\right) = f\left(T_j\right)$$
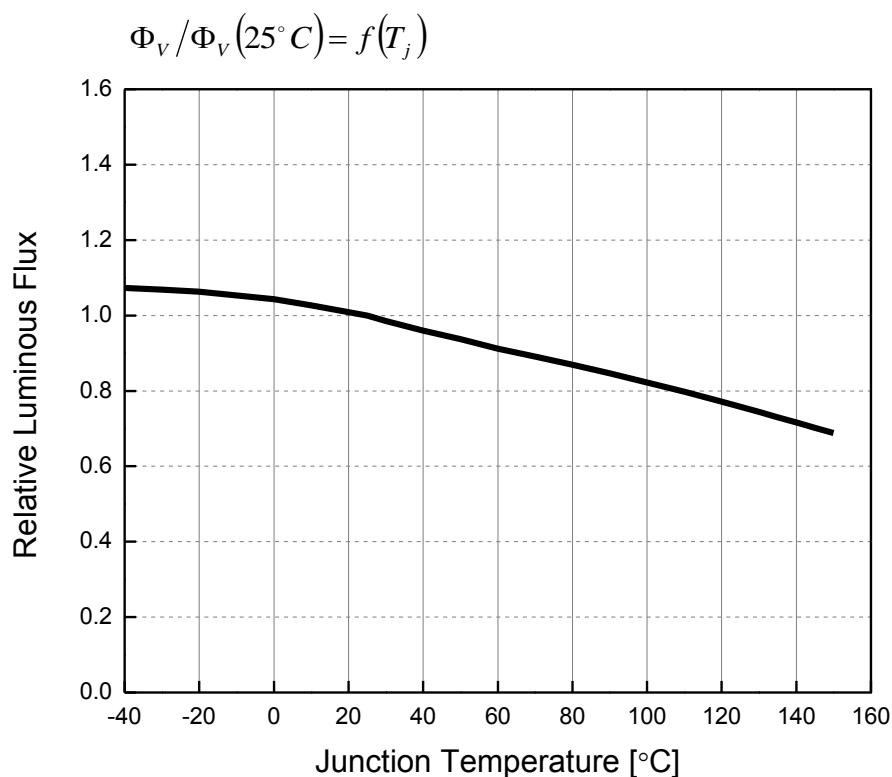
Chromaticity Coordinates Shift vs. Junction Temperature
@ I$_F$=700mA

$$\triangle CIE\ x, \triangle CIE\ y = f\left(T_j\right)$$

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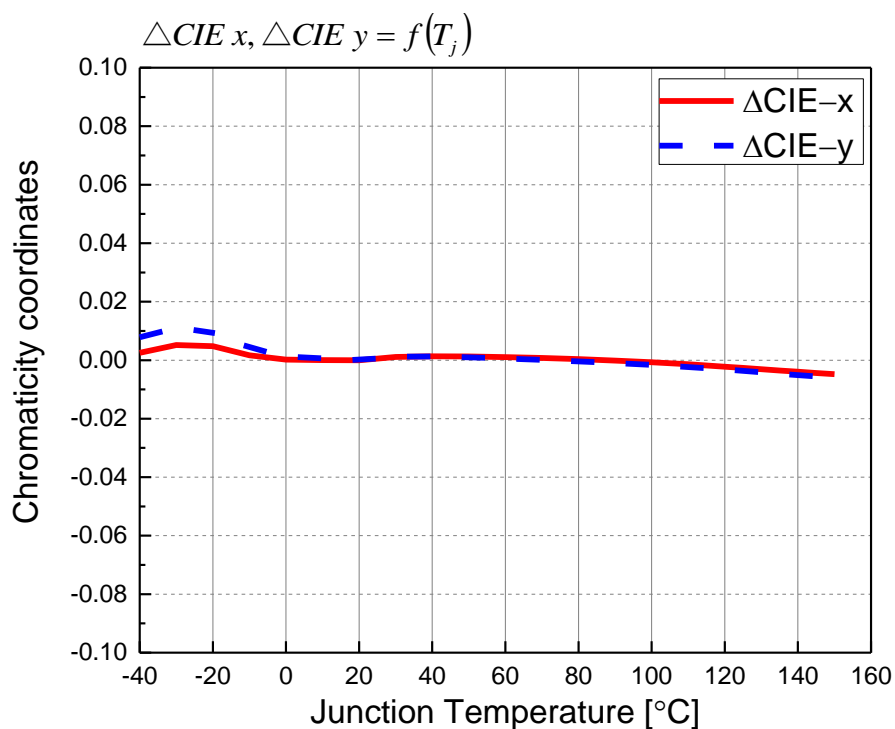
Forward Current Derating Curve

$$I_F = f(T_S)$$

Forward Current [mA] vs Solder Pad Temperature [°C]

(117,800)

(125,700)

Do not use current below 50mA
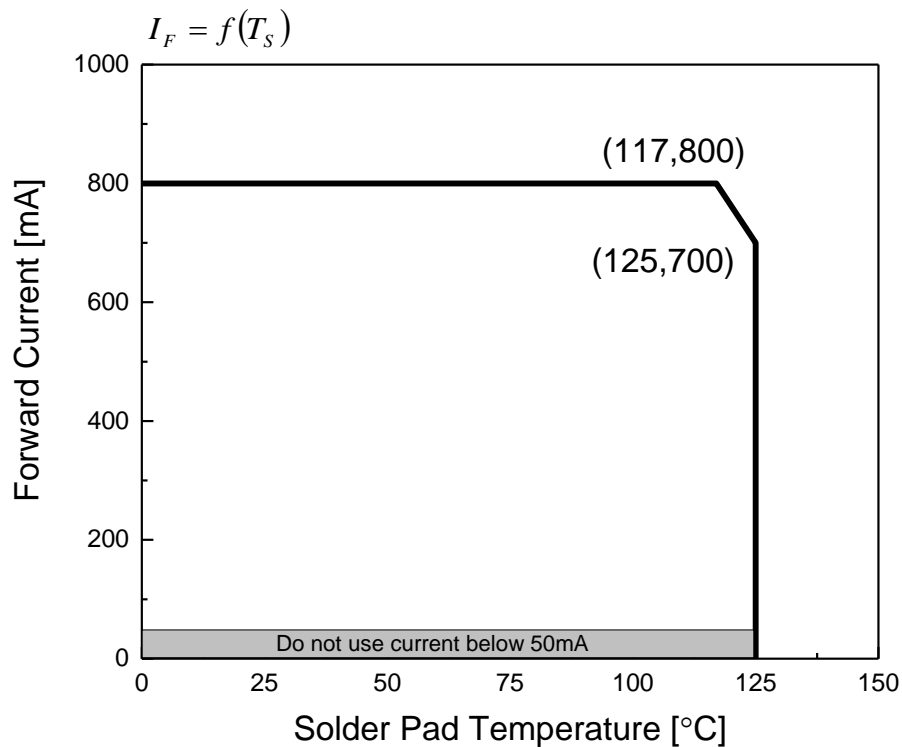
Permissible Pulse Handling Capability

D=Duty cycle , T_s = 25C

- D = 100%
- D = 50%
- D = 20%
- D = 10%
- D = 5%
- D = 2%
- D = 1%
- D = 0.5%

I_F[mA] vs Pulse time [s]

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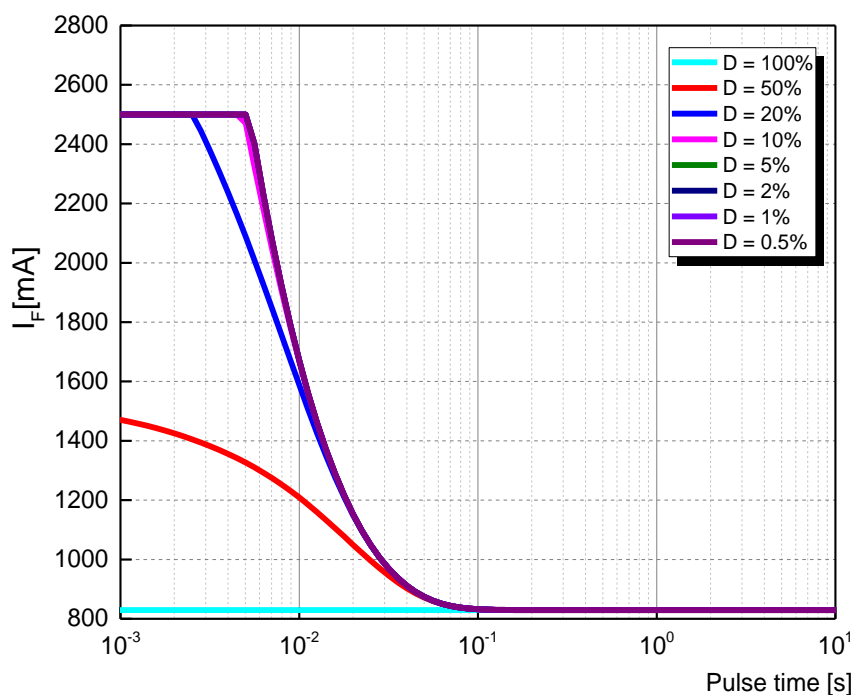
4. Binning Information

Luminous Intensity Bins

Group	Bin	Minimum Photometric Flux (lm)	Maximum Photometric Flux (lm)	Group	Bin	Minimum Photometric Flux (lm)	Maximum Photometric Flux (lm)
E	1	4	5	J	1	100	110
	2	5	6		2	110	120
	3	6	8		3	120	130
	4	8	10		4	130	140
	5	10	13		5	140	150
	6	13	17		6	150	160
	7	17	20		7	160	180
	8	20	23		8	180	200
	9	23	27		9	200	225
F	1	27	33	K	1	225	250
	2	33	39		2	250	275
	3	39	45		3	275	300
	4	45	52		4	300	325
	5	52	60		5	325	350
	6	60	70		6	350	375
	7	70	80		7	375	400
	8	80	90		8	400	425
	9	90	100		9	425	450

Notes:

1. Luminous flux measurement tolerance: ±8%.

2. Highlighted Black Box is available bins.

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Color Bin Structure
ECE White Bin Structure
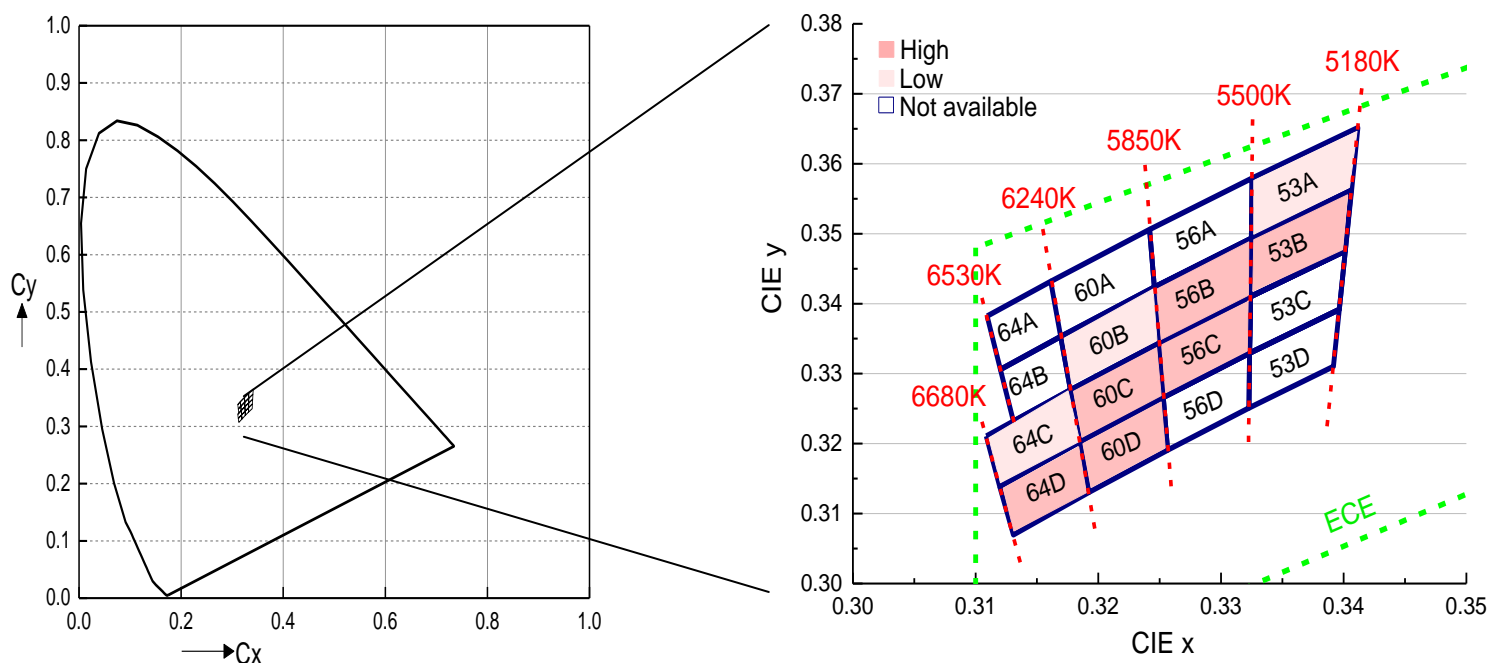
Cool White Bin Coordinates

Bin	CIE x	CIE y
	0.3109	0.3382
64A	0.3161	0.3432
	0.3169	0.3353
	0.3120	0.3306
Reference Range: 6240~6530K		

Bin	CIE x	CIE y
	0.3120	0.3306
64B	0.3169	0.3353
	0.3177	0.3277
	0.3131	0.3232
Reference Range: 6240~6530K		

Bin	CIE x	CIE y
	0.3109	0.3211
64C	0.3177	0.3277
	0.3185	0.3203
	0.3120	0.3139
Reference Range: 6240~6680K		

Bin	CIE x	CIE y
	0.3120	0.3139
64D	0.3185	0.3203
	0.3192	0.3131
	0.3131	0.3070
Reference Range: 6240~6680K		

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Cool White Bin Coordinates

Bin	CIE x	CIE y
60A	0.3161	0.3432
	0.3242	0.3506
	0.3246	0.3424
	0.3169	0.3353
Reference Range: 5850~6240K		

Bin	CIE x	CIE y
60B	0.3169	0.3353
	0.3246	0.3424
	0.3249	0.3344
	0.3177	0.3277
Reference Range: 5850~6240K		

Bin	CIE x	CIE y
60C	0.3177	0.3277
	0.3249	0.3344
	0.3253	0.3266
	0.3185	0.3203
Reference Range: 5850~6240K		

Bin	CIE x	CIE y
60D	0.3185	0.3203
	0.3253	0.3266
	0.3256	0.3191
	0.3192	0.3131
Reference Range: 5850~6240K		

Bin	CIE x	CIE y
56A	0.3242	0.3506
	0.3325	0.3579
	0.3325	0.3493
	0.3246	0.3424
Reference Range: 5500~5850K		

Bin	CIE x	CIE y
56B	0.3246	0.3424
	0.3325	0.3493
	0.3324	0.3410
	0.3249	0.3344
Reference Range: 5500~5850K		

Bin	CIE x	CIE y
56C	0.3249	0.3344
	0.3324	0.3410
	0.3323	0.3329
	0.3253	0.3266
Reference Range: 5500~5850K		

Bin	CIE x	CIE y
56D	0.3253	0.3266
	0.3323	0.3329
	0.3323	0.3251
	0.3256	0.3191
Reference Range: 5500~5850K		

Bin	CIE x	CIE y
53A	0.3325	0.3579
	0.3412	0.3652
	0.3406	0.3562
	0.3325	0.3493
Reference Range: 5180~5500K		

Bin	CIE x	CIE y
53B	0.3325	0.3493
	0.3406	0.3562
	0.3401	0.3476
	0.3324	0.3410
Reference Range: 5180~5500K		

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Cool White Bin Coordinates

Bin	CIE x	CIE y	Bin	CIE x	CIE y
53C	0.3324	0.3410	53D	0.3323	0.3329
	0.3401	0.3476		0.3396	0.3392
	0.3396	0.3392		0.3392	0.3310
	0.3323	0.3329		0.3323	0.3251
Reference Range: 5180~5500K			Reference Range: 5180~5500K		

Notes:

1. Tolerance of Chromaticity Coordinates x,y：±0.005

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Forward Voltage Bins

Bin code	Forward Voltage [V]
10	1.00
12	1.25
15	1.50
17	1.75
20	2.00
22	2.25
25	2.50
27	2.75
30	3.00
32	3.25
35	3.50
37	3.75
40	4.00
42	4.25
45	4.50
47	4.75
50	5.00
52	5.25
55	5.50
57	5.75
60	6.00
62	6.25
65	6.50
67	6.75
70	7.00

Notes:

1. Bin code defines either Minimum or Maximum Value of the Bin.

2. Forward voltage measurement tolerance: ±0.05V.

3. Forward voltage bins are defined at I_F = 700mA operation.

4. Highlighted Black Box is available bins.

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5. Part Number

CH2016-C07001H-AM

Part number is designated with below details.

CH2016 = Product family name.

C = Color [1]

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

700 = Test current [mA]

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

H = Brightness Level (H=High ; 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
UG	Green
UY	Yellow
UA	Amber
UR	Red
SR	Super Red
RGB	RGB – Color
RGBY	RGBY – Color

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6. Ordering Information

CH2016-C07001H-ABCDEFGHJKLMNO-PQ-AM

Part Number of the EL Compact 2016	Order Code
CH2016-C07001H-AM	CH2016-C07001H-53A64DJ6K23037-2T-AM

Order code contains information with below details：
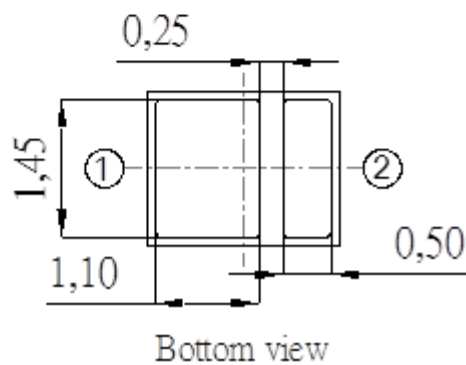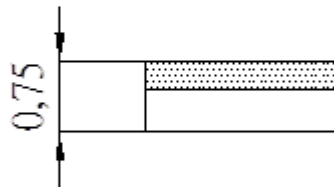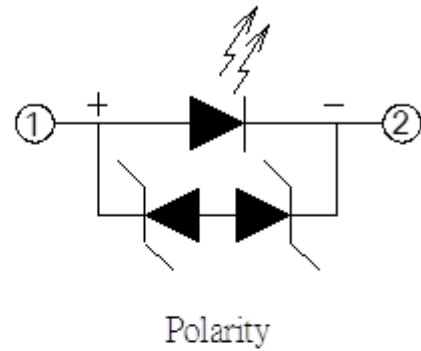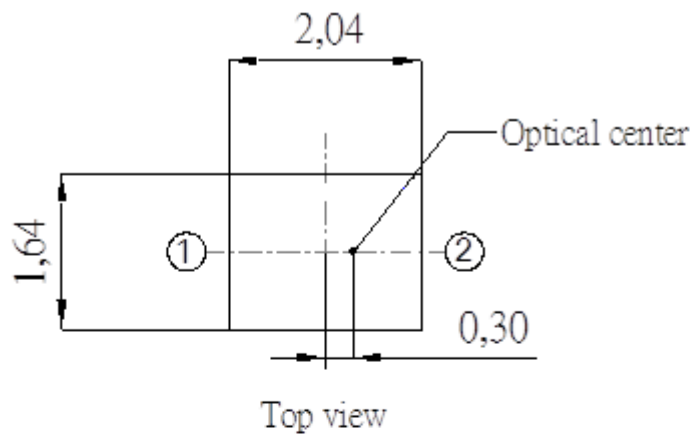
ABCDEF = min/max wavelength or CCT

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

LMNO = min./max. forward voltage
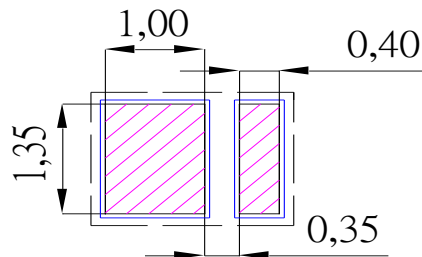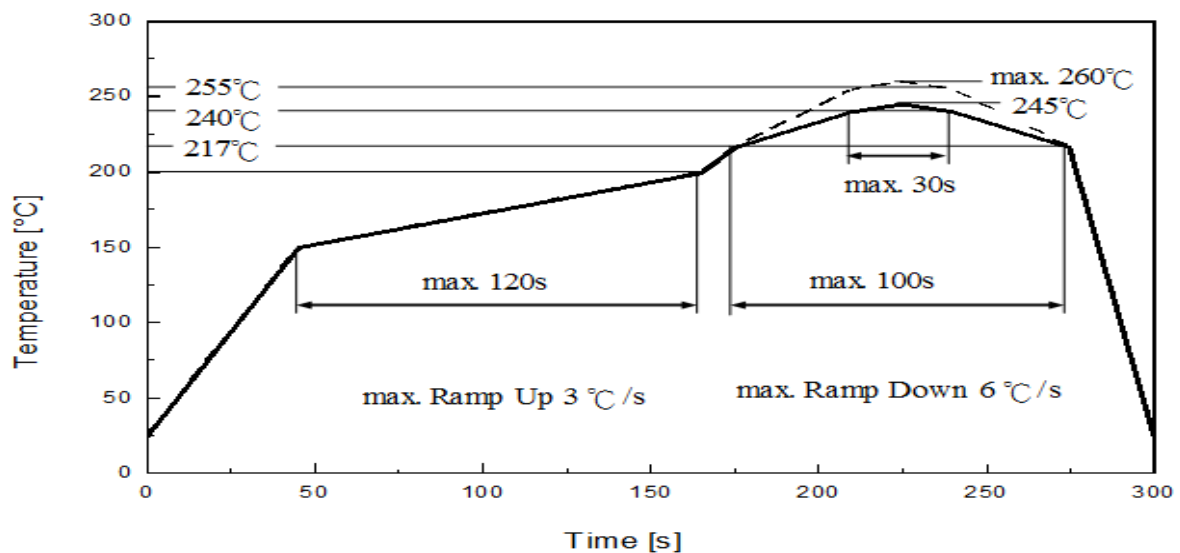
PQ =Internal code

AM = Automotive Application

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7. Mechanical Dimension

Top view

Polarity

Bottom view

Notes:

1. Dimensions are in millimeters.

2. Tolerances unless mentioned are ± 0.1mm.

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8. Recommended 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

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10.   Packaging Information

● Product Labeling

```
RoHS  (Pb) EVERLIGHT      5
CPN: XXXXXXXXXXXXXXXXXX
|||||||||||||||||||||||||||||||
XXXXXXXXXX-XXXXXXXXXX-XXXXXXXXX-XXXXXXXXX-XXXXX
P/N: XXXXXXXXXX
|||||||||||||||||||||||||||||||
XXXXXXXXXX-XXXXXXXXXX-XXXXXXXXX-XXXXXXXXX-XXXXX
LOT NO:Y150716XXX-XXXXXXXXX-XXXXXXXXX
|||||||||||||||||||||||||||||||
QTY: 0123456789   HUE:XXXXXXXXX
|||||||||||||||||||||||||||||||
CAT: XXXXXXXXX   REF:XXXXXXXXX
|||||||||||||||||||||||||||||||
REFERENCE: BTPYYMMDDXXXXX
|||||||||||||||||||||||||||||||
MSL-X            MADE IN XXXXXX
```

- 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

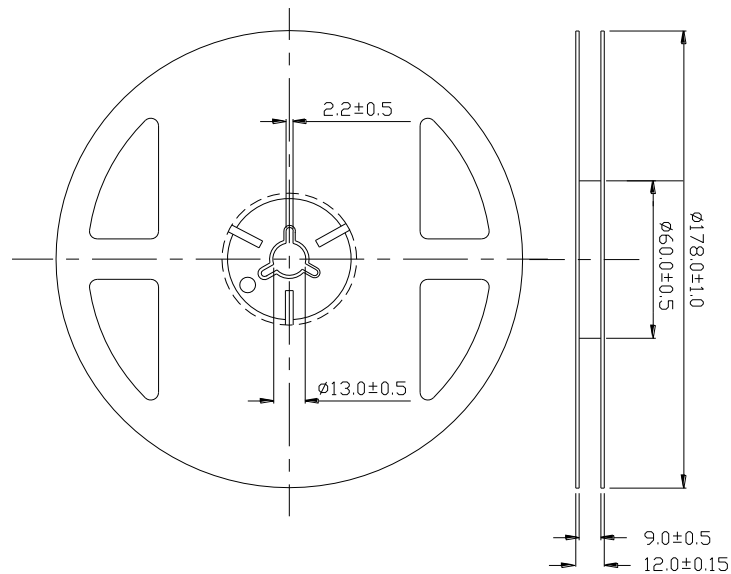## ● Packing: Loaded Quantity 2000 pcs Per Reel

Progress Direction

Polarity
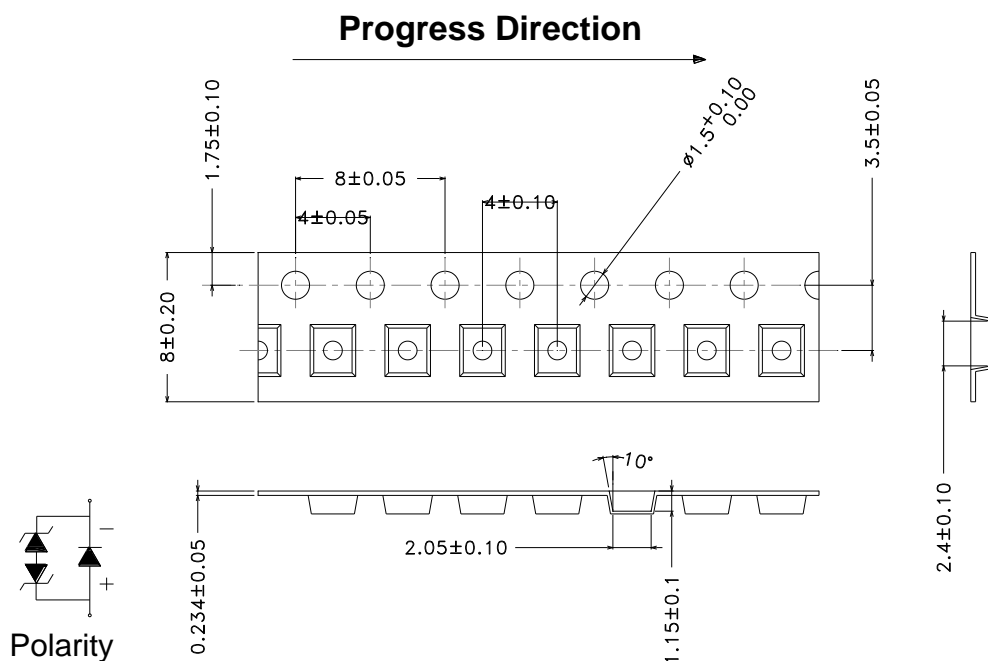
Notes:

1. Dimensions are in millimeters.

2. Tolerances for fixed dimensions are ±0.2mm.

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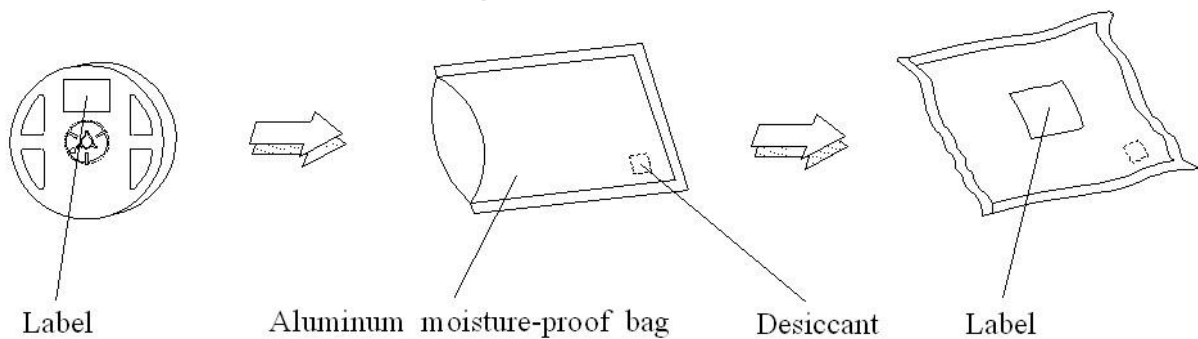## ● Reel Dimensions

2.2±0.5

Ø178.0±1.0

Ø60.0±0.5

Ø13.0±0.5

9.0±0.5

12.0±0.15

Notes:

1. Dimensions are in millimeters.

2. Tolerances unless mentioned are ±0.2mm.

● Moisture Resistant Packing Process

Label

Aluminum moisture-proof bag

Desiccant

Label

Notes:

1. Dimensions are in millimeters.

2. Tolerances unless mentioned are ±0.2mm.

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11.　Handling of Silicon Resin for LEDs

■　Do not put mechanical stress on the LED.

■　When handling the product, do not apply direct pressure on the optical surface. The LED surface could be damaged, which could affect the optical performance of the LED.

■　In low-humidity work environment, please keep handling the LEDs with appropriate ESD grounding.

■　It is recommended to handle the LED with powder-less latex gloves.

■　Do not touch the resin with tweezers to avoid scratching or other damage.

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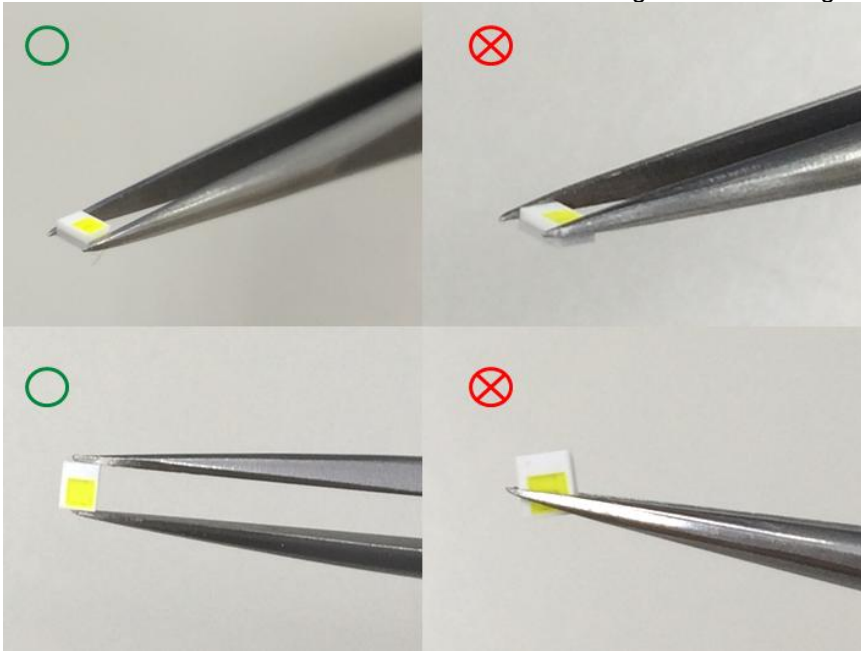
12. Precaution for Use

- Before the package is opened, the LEDs should be stored at 30°C or less and 90%RH or less after being shipped from Everlight and the storage life limits are 18 months. The LEDs can be stored up to 3 years in a sealed container with a nitrogen atmosphere and moisture absorbent material.

- After opening the package, all unused LEDs are recommended to be stored in moisture proof packages.

- If the moisture absorbent material (silica gel) has exceeded effectiveness or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions. Baking treatment: 60±5°C for 24 hours.

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Revision History

Current version: Mar.24.2017

Issue No: DHE-0003225

Version: 2

Created by: Sam Lu

Rev.	Subjects (major change in previous version)	Modified date
1	Mass Production	2016/12/26
2	Add Characteristics Forward Current	2017/03/24

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