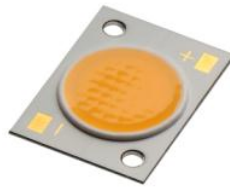


CUSTOMER : _____.

DATE : May 07, 2014 .

REV : REV. 2.0 .

PRODUCT FAMILY DATA SHEET



10W COB(Ver. 2)

MODEL NAME : LEMWM18580 Series



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1. Features

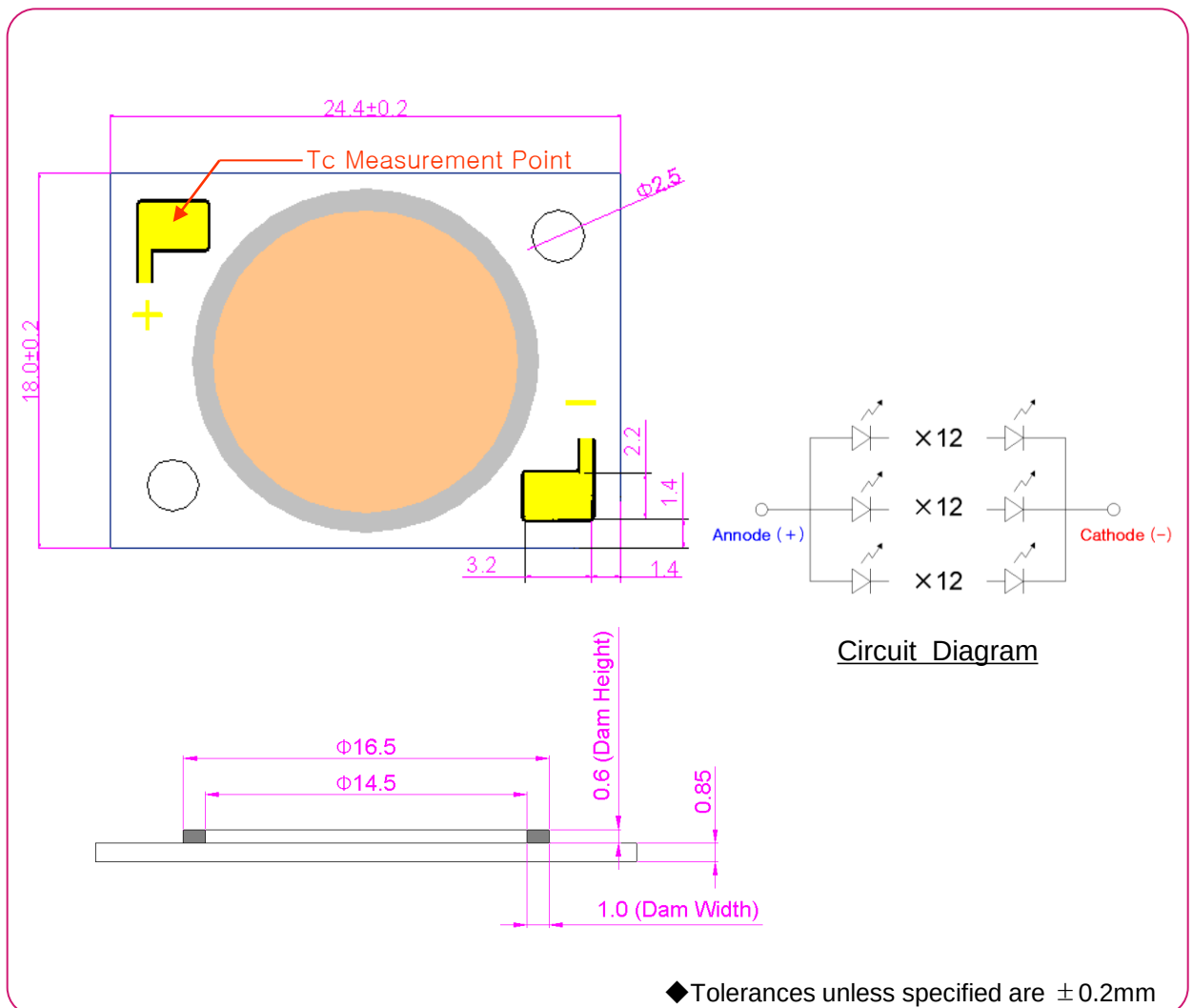
- External Dimensions : 18.0×24.0×1.45mm
- Internal Structure : Aluminum Base Chip on Board
- Compact High Flux Density Light Source
- Uniform High Quality Illumination
- Energy Star / ANSI Compliant Color Binning Structure with 2, 4 SDCM Options
- UL Recognized Component (E356829)
- RoHS Compliant

2. Applications

- Bulb, Down Light, Spot Light, High Bay Light, Flood Light, Outdoor Light

3. Outline Drawings

(unit : mm)



4. Absolute Maximum Ratings

(Ta=25℃)

Items	Symbol	Rating	Unit
Forward Current	If	520	mA
Power Consumption	Pd	20.8	W
Operating Temperature	Topr	-30 ~ +85	℃
Storage Temperature	Tstg	-40 ~ +100	℃
Case Temperature *1)	Tc	100	℃
Junction Temperature *2)	Tj	150	℃

*1) Refer to '2. Outline Drawings' for Tc measurement point

*2) $T_j = T_c + R_{th\ j-c} \times P_d$

※ Operating the COB at or beyond the listed maximum ratings may affect device reliability and cause permanent damage.

※ The COBs are not designed to be driven in reverse bias.

5. Electro - Optical Characteristics

(Ta=25℃, If = 260mA)

Item	Symbol	CCT	Min.	Typ.	Max.	Unit
Luminous Flux	Φ_v	5700 (G)	1,186	1,318		lm
		5000 (H)	1,186	1,318		
		4000 (J)	1,146	1,273		
		3000 (L)	1,102	1,224		
		2700 (M)	1,036	1,151		
Luminous Efficacy	lm/W	5700 (G)	126	140		lm/W
		5000 (H)	126	140		
		4000 (J)	122	135		
		3000 (L)	117	130		
		2700 (M)	110	122		
Color Rendering Index	Ra	5700 (G)	80	84.5		-
		5000 (H)	80	83.5		
		4000 (J)	80	83		
		3000 (L)	80	82		
		2700 (M)	80	82		
Forward Voltage	Vf	All	34.0	36.2	38.0	V
Chromaticity Coordinates	Cx / Cy	All	Refer to 'Chromaticity Bins'			-
Viewing Angle	2 Θ 1/2	All	-	116	-	deg
Thermal Resistance	Rth j-c	All	-	1.7	-	℃/W

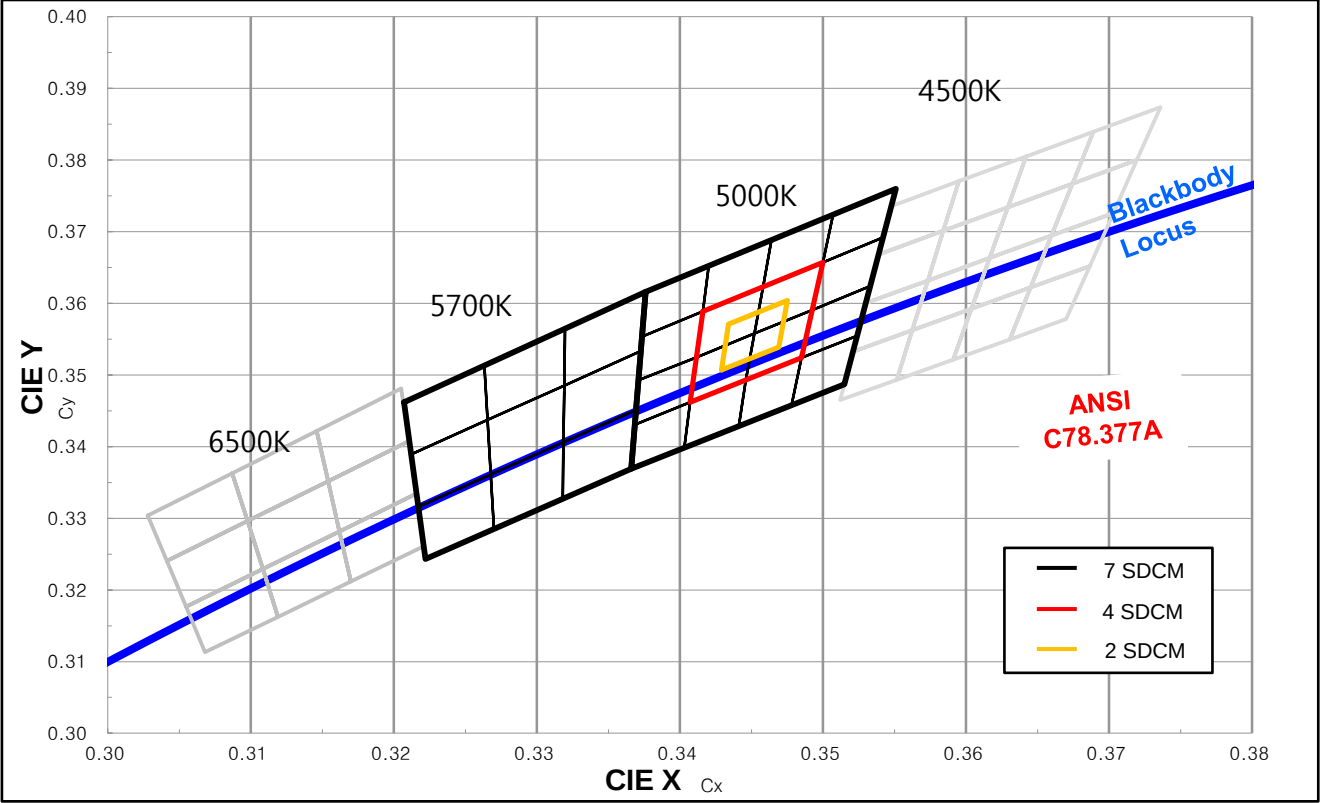
※ These values are measured by the LG Innotek optical spectrum analyzer within the following tolerances.
 Luminous Flux (Φ_v) : $\pm 10\%$, Forward Voltage (Vf) : $\pm 3\%$, Chromaticity Coordinate Value : ± 0.005 ,
 CRI Value : ± 2

6. Flux Characteristics and Order Code

Color	Min. CRI	CCT	Vf @ 260mA [V]	Luminous Flux [lm] @ 260mA			Order Code
				Bin Code	Min.	Typ.	
Cool	80	5700 (G)	34.0 ~ 38.0 (Typ. 36.2)	5	1,186	1,318	LEMWM18580GGxxxx
Cool		5000 (H)			1,186	1,318	LEMWM18580HGxxxx
Neutral		4000 (J)			1146	1273	LEMWM18580JGxxxx
Warm		3000 (L)			1,102	1,224	LEMWM18580LGxxxx
Warm		2700 (M)			1,036	1,151	LEMWM18580MGxxxx

7. Chromaticity Bins

LG Innotek complies with the ANSI C78.377A standard for its chromaticity bin structure. For each ANSI quadrangle for the CCT range of 4500K to 6500K, LG Innotek provides 9 / 16 micro bins. A 2 / 4 SDCM micro bin option is also available.

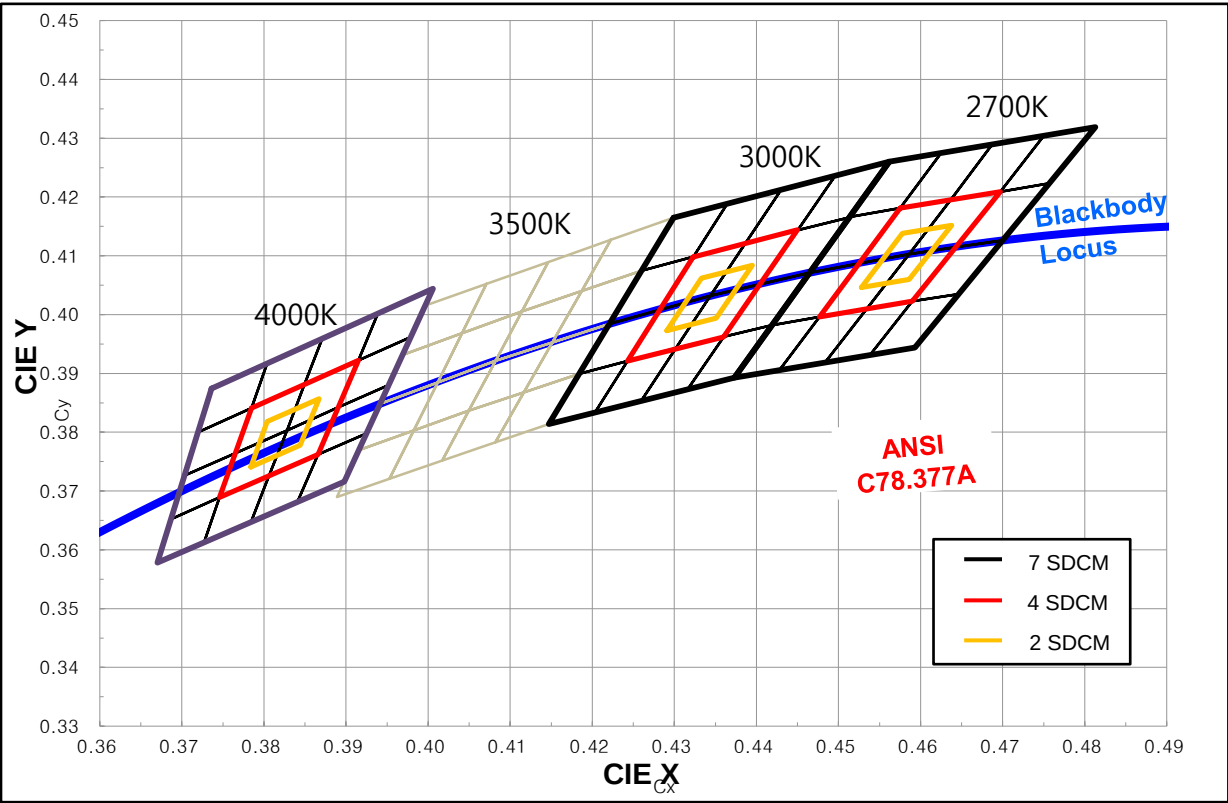


BIN	4500K		5000K		5700K		6500K	
	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy
7 SDCM			0.3376	0.3616	0.3207	0.3462		
			0.3366	0.3369	0.3222	0.3243		
			0.3515	0.3487	0.3366	0.3369		
			0.3551	0.3760	0.3376	0.3616		
4 SDCM			0.3416	0.3589				
			0.3407	0.3462				
			0.3485	0.3524				
			0.3500	0.3657				
2 SDCM			0.3434	0.3571				
			0.3429	0.3507				
			0.3469	0.3539				
			0.3475	0.3604				

* F, I color bins are not available but can be developed within 1 month based on demand.

7. Chromaticity Bins (Continued)

LG Innotek complies with the ANSI C78.377A standard for its chromaticity bin structure. For each ANSI quadrangle for the CCT range of 2700K to 4000K, LG Innotek provides 16 micro bins. A 2 / 4 SDCM micro bin option is also available.

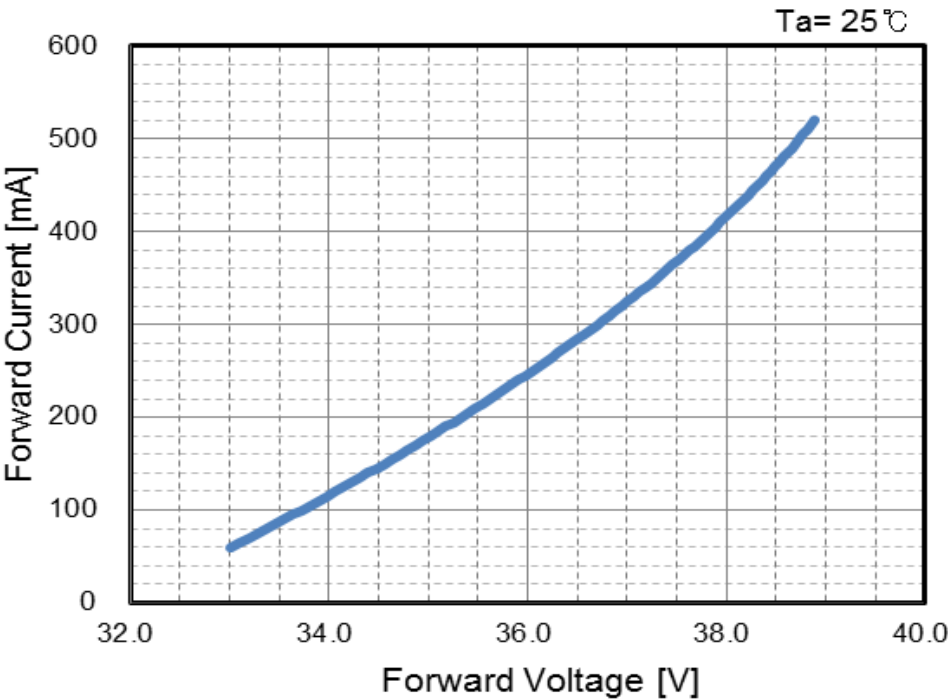


BIN	2700K		3000K		3500K		4000K	
	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy
7 SDCM	0.4562	0.4260	0.4299	0.4165			0.3736	0.3874
	0.4373	0.3893	0.4147	0.3814			0.3670	0.3578
	0.4593	0.3944	0.4373	0.3893			0.3898	0.3716
	0.4813	0.4319	0.4562	0.4260			0.4006	0.4044
4 SDCM	0.4575	0.4181	0.4323	0.4098			0.3785	0.3841
	0.4477	0.3996	0.4243	0.3921			0.3746	0.3689
	0.4590	0.4023	0.4360	0.3962			0.3866	0.3762
	0.4697	0.4209	0.4450	0.4144			0.3915	0.3922
2 SDCM	0.4578	0.4138	0.4333	0.4062			0.3804	0.3818
	0.4528	0.4046	0.4291	0.3973			0.3784	0.3741
	0.4586	0.4060	0.4351	0.3994			0.3844	0.3778
	0.4638	0.4152	0.4395	0.4084			0.3867	0.3857

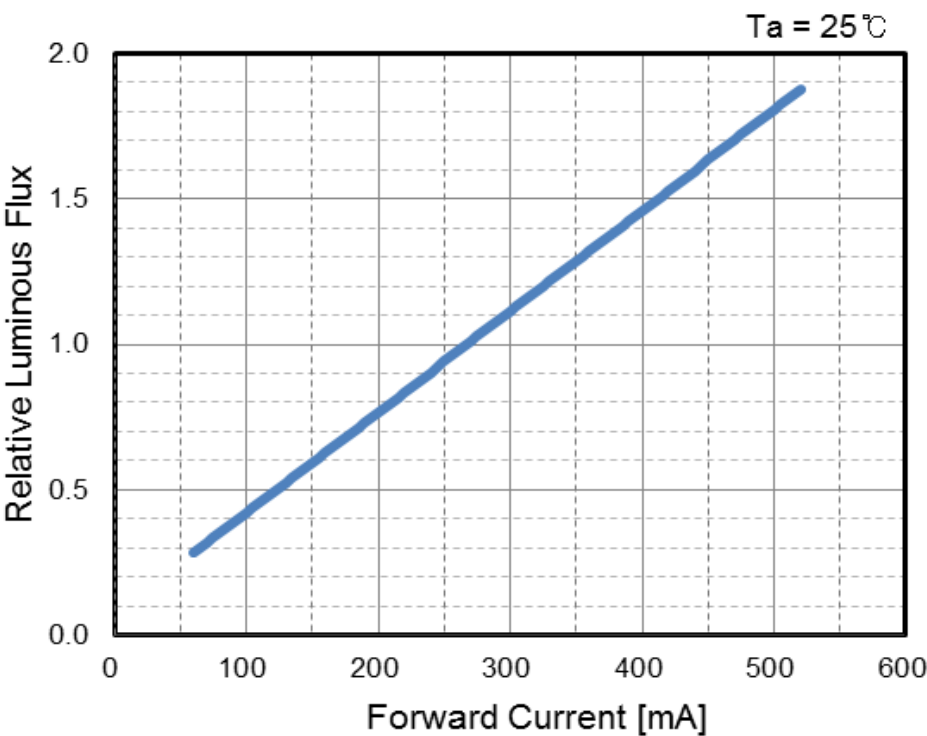
* K color bin is not available but can be developed within 1 month based on demand.

8. Typical Characteristic Curves

- Forward Current vs. Forward Voltage

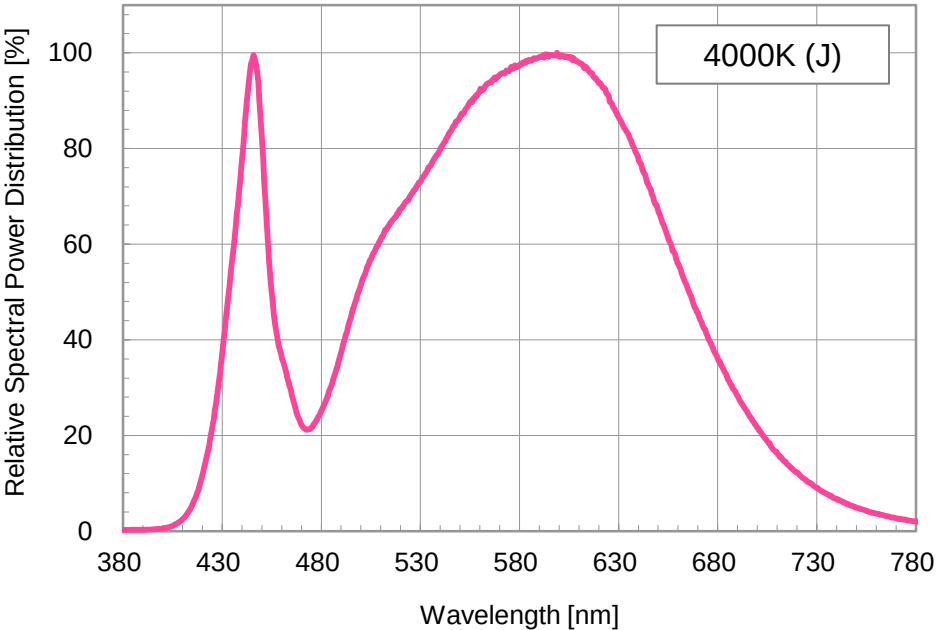
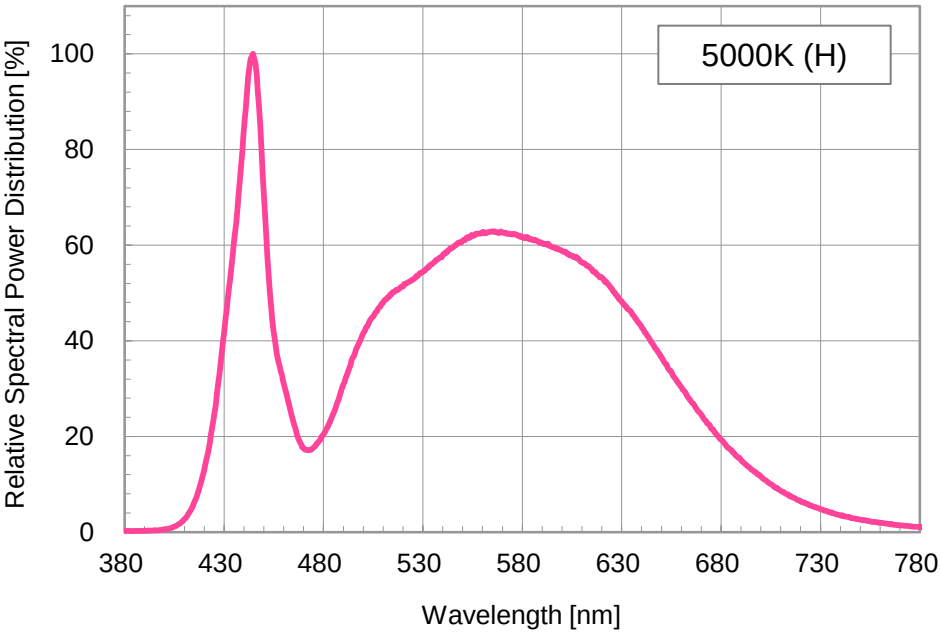


- Relative Luminous Flux vs. Forward Current



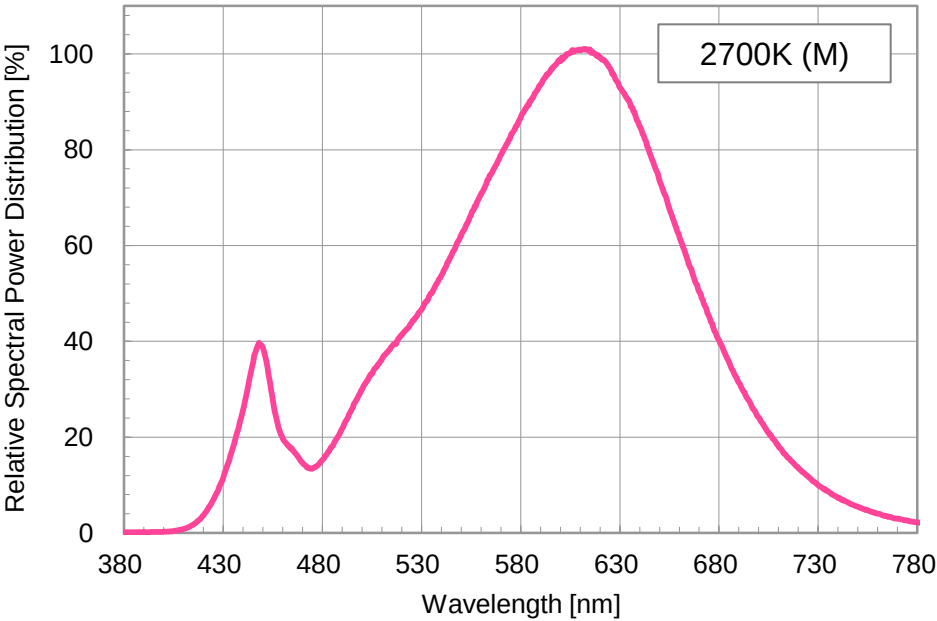
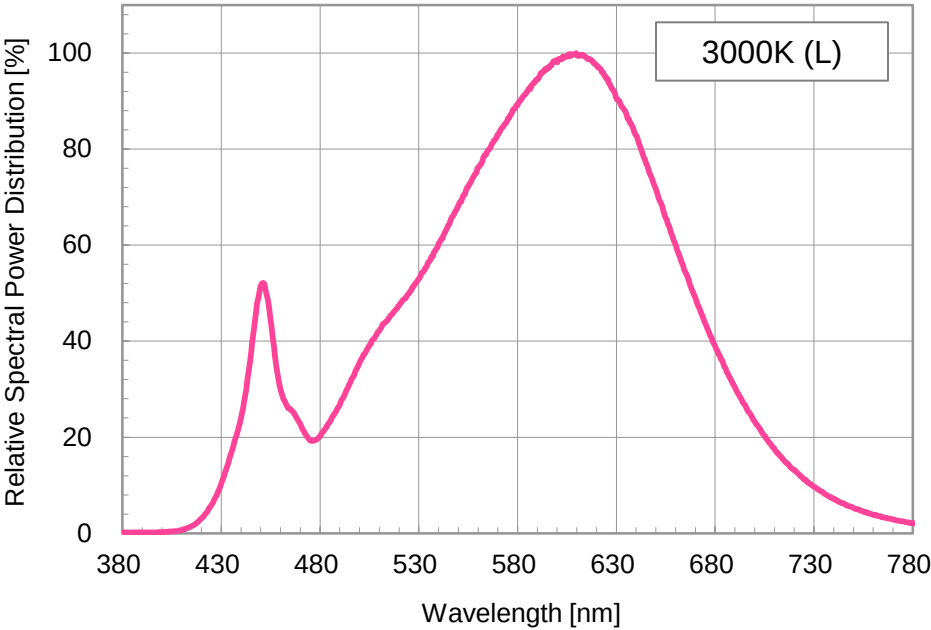
8. Typical Characteristic Curves

▪ Spectrum



8. Typical Characteristic Curves

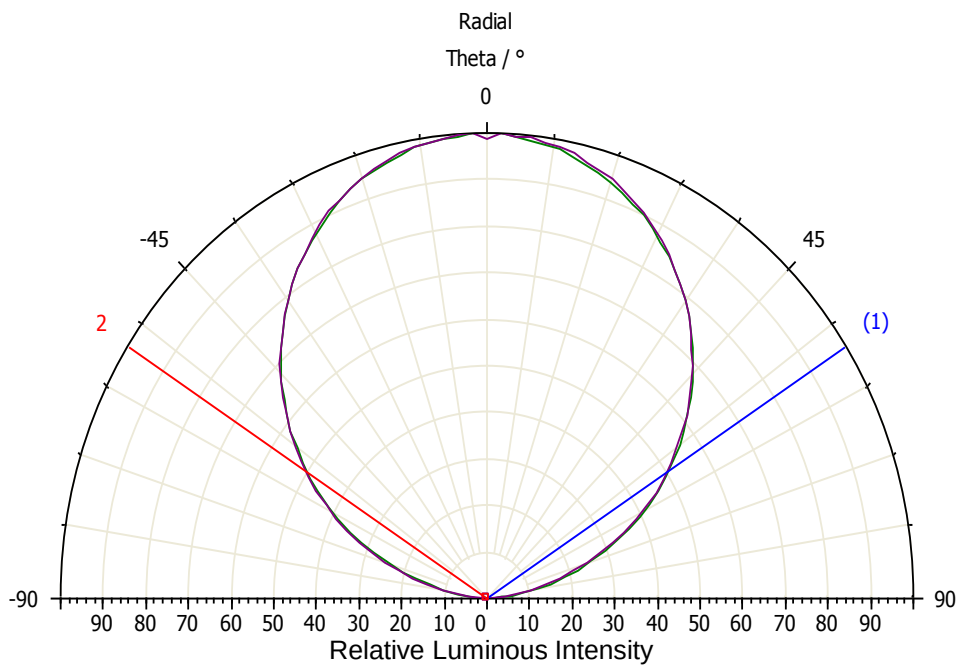
▪ Spectrum



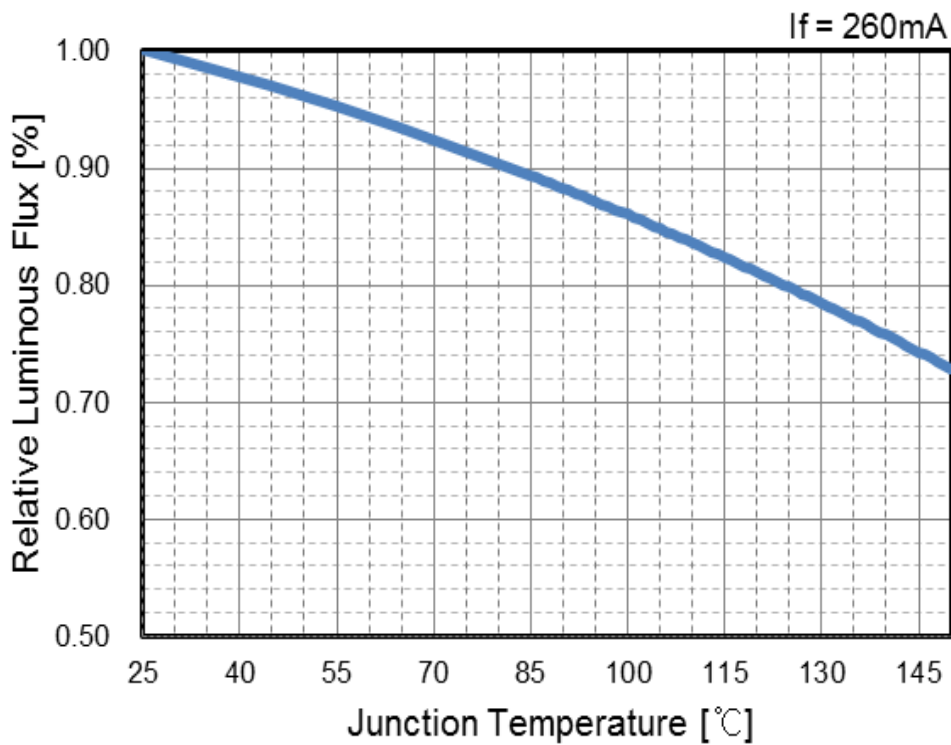
8. Typical Characteristic Curves

▪ Radiation Characteristics

If= 260mA, Ta=25 °C

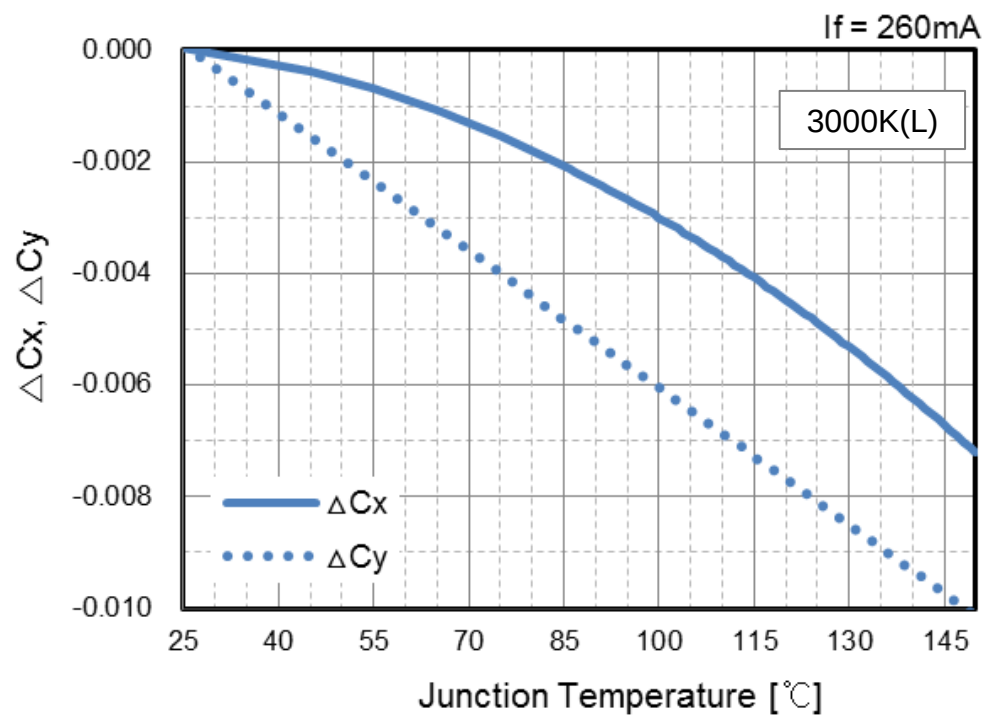
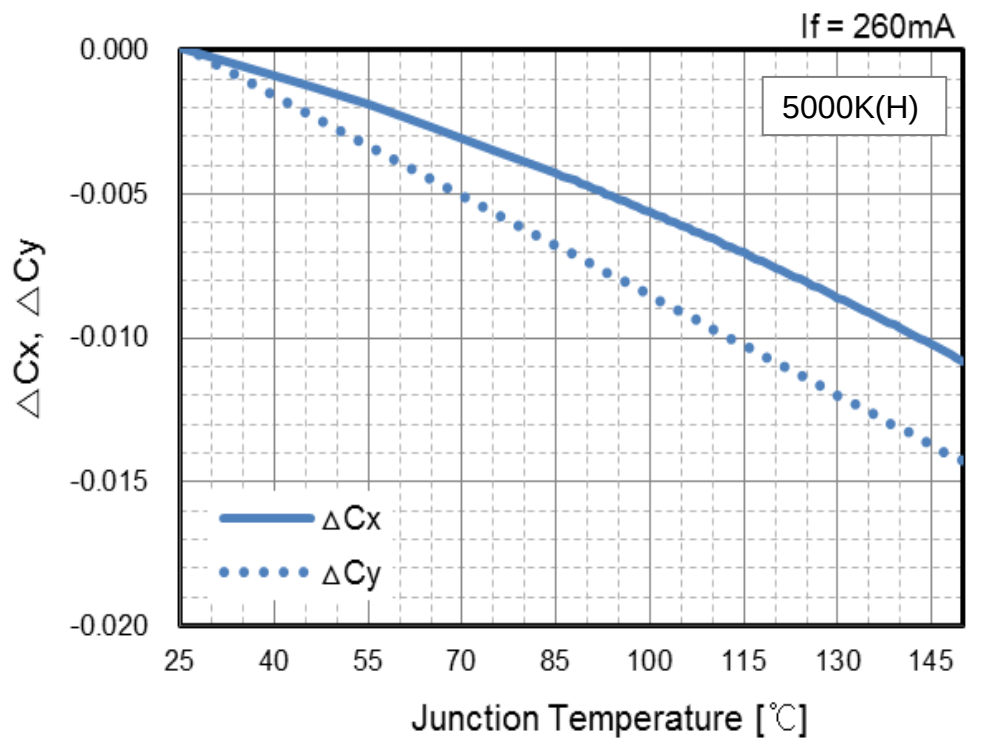


▪ Luminous Flux vs. Temperature



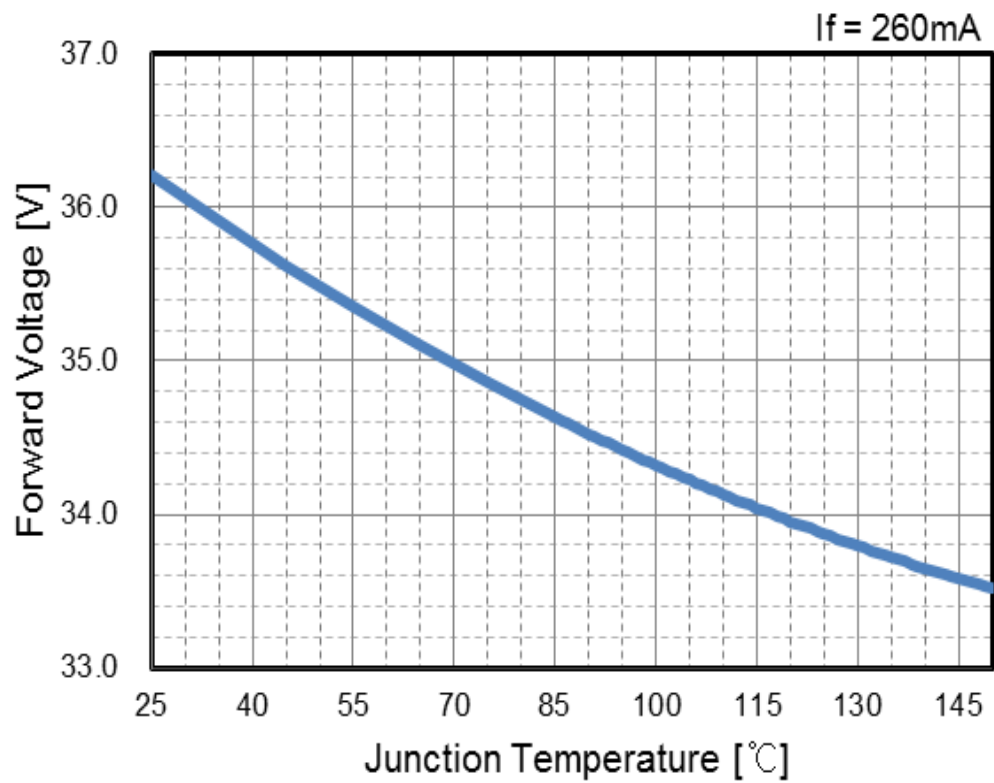
8. Typical Characteristic Curves

- Chromaticity Coordinate vs. Temperature



8. Typical Characteristic Curves

- Forward Voltage vs. Temperature



9. Reliability Test Items and Conditions

9-1. Failure Criteria

Item	Symbol	Test Condition	Limit	
			Min	Max
Forward Voltage	V _f	I _f = 260mA	-	S × 1.1
Luminous Flux	Φ _v	I _f = 260mA	S × 0.7	-

* S : Initial Value

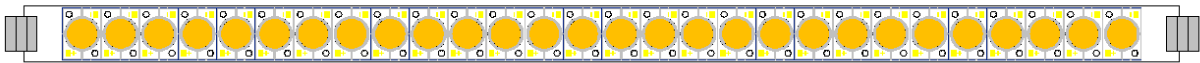
9-2. Reliability Test

No	Item	Test Condition	Test Hours/ Cycles	SPL No	Ac/ Re
1	Steady State Operation	Ta=25℃, I _F =260 [mA]	1000 hrs	11 pcs	1 / 0
2	High Temperature / Humidity Steady State Operation	Ta=85℃, 85% RH, I _F =260 [mA]	1000 hrs	11 pcs	1 / 0
3	High Temperature Steady State Operation	Ta=85℃, I _F =260 [mA]	1000 hrs	11 pcs	1 / 0
4	High Temperature Storage	100℃	1000 hrs	11 pcs	1 / 0
5	Low Temperature Storage	-40℃	1000 hrs	11 pcs	1 / 0
6	Thermal Shock	100℃ (30min) ~ -40℃ (30min)	100 cycles	11 pcs	1 / 0
7	Vibration	200m/s ² , 100~2000Hz (sweep 4min) 48min, 3 directions	4 times	5 pcs	1 / 0

10. Packing and Labeling of Product

10-1. Tube Outline Dimension

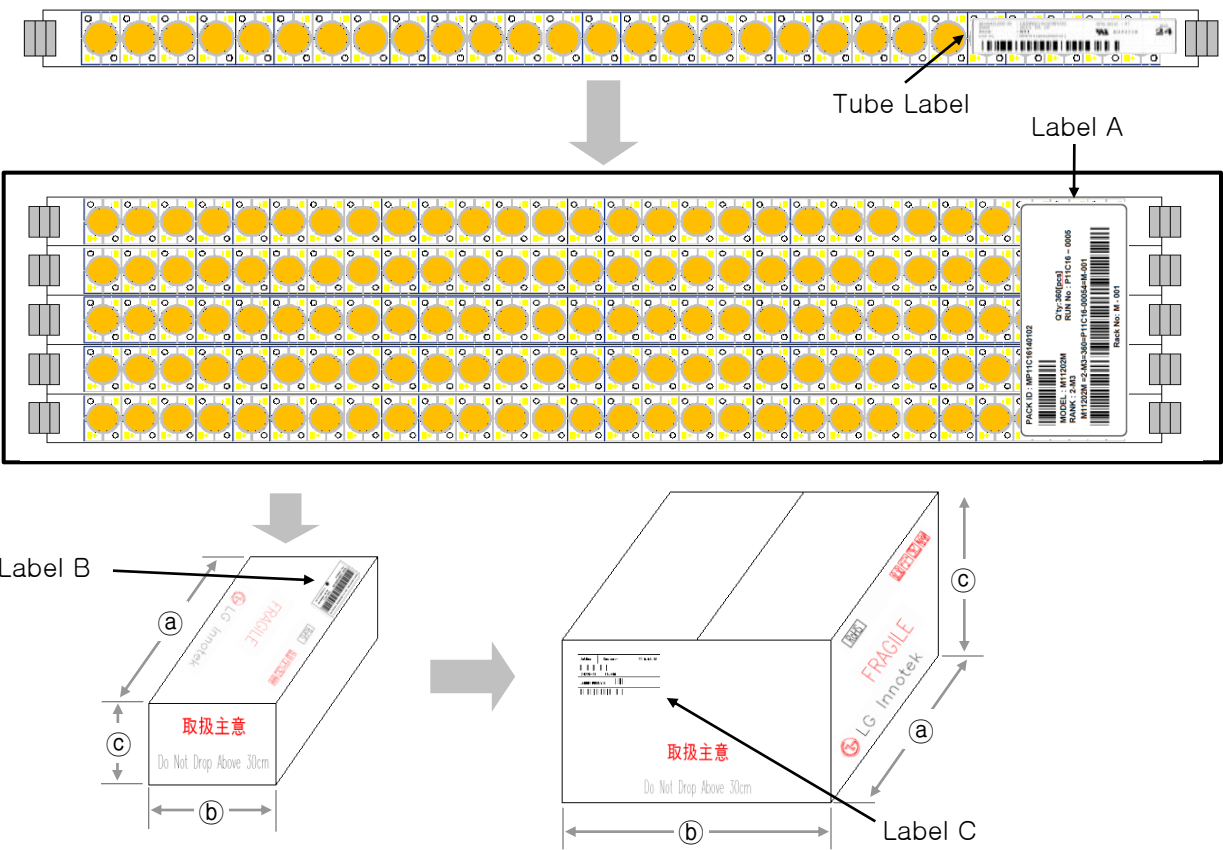
(unit : mm)



- Tube Dimension : 540 × 26.6 × 5.5mm
- Units per Tube : 28 units

10-2. Packing Specifications

A rubber band ties 5 tubes (with a total of 140 units) that are then packed in a vacuum sealed packing bag along with desiccants (Silica Gel). 8 packing bags (with a maximum total of 1,120 units) are packed in an inner box where 4 inner boxes are placed into an outer box (for a maximum grand total of 4,480 units).



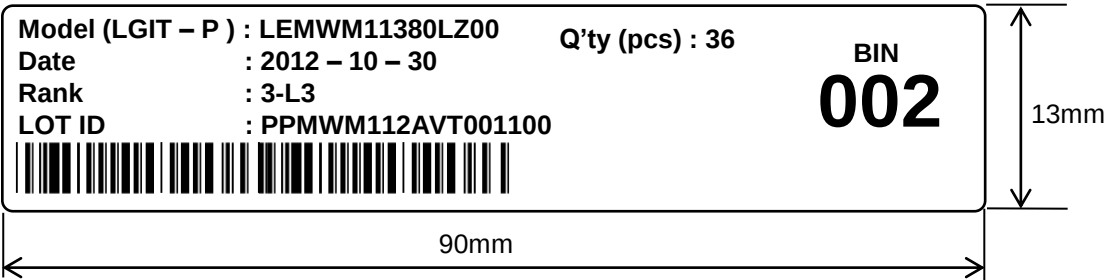
Types	Sizes (mm)		
	(a)	(b)	(c)
Inner Box	622	260	105
Outer Box	640	540	240

Tolerance : ±10mm

10. Packing and Labeling of Product

10-3. MES Label Structure

- ※ Label A (Tube Label)
Model (Company Name – manufacturing location), Date, Rank, LOT ID, Quantity



- ※ Label B (Packing Bag)
PACK ID, MODEL, Rank, Quantity, Run No, Rack No



- ※ Label C (Inner Box Label)
INNER BOX ID, MODEL, Quantity, Date, Rank



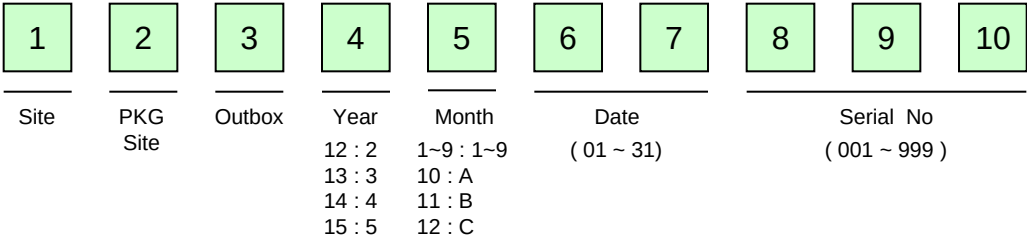
10. Packing and Labeling of Product

10-3. MES Label Structure

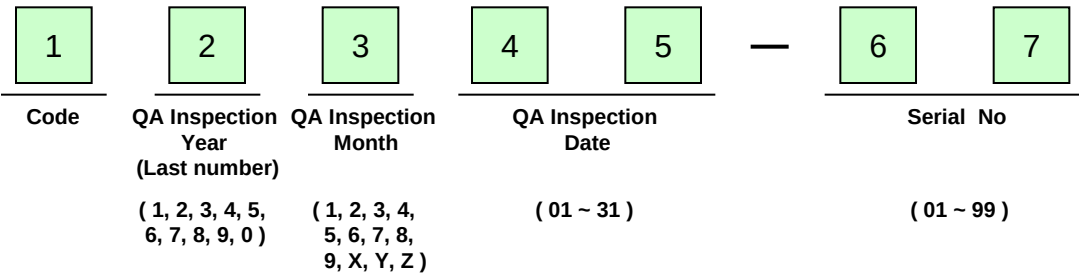
- ※ Label D (Out Box Label)
Specifying Customer, Date, Model Name, Quantity, Customer Part no, Outbox ID



■ Outbox ID. indication



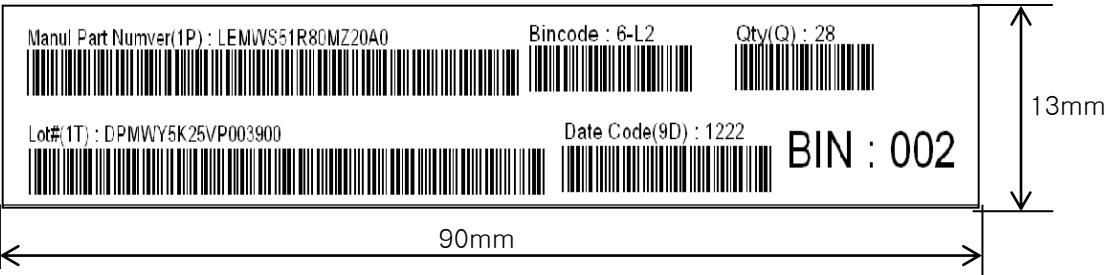
■ Lot No. indication



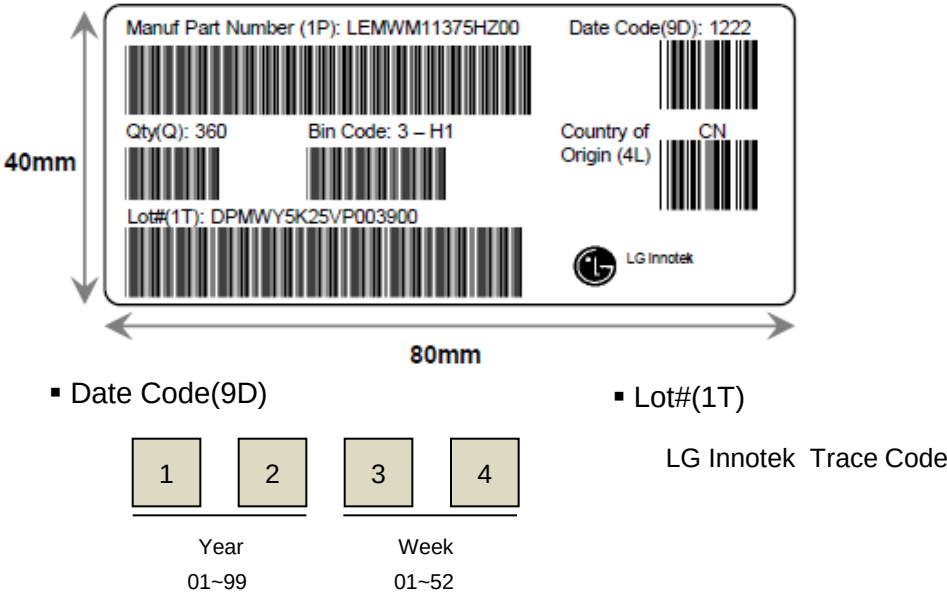
10. Packing and Labeling of Product

10-4. NEDA Label Structure

- ※. Label A (Tube label)
Specifying Manufacturing Part Number, Quantity, Bin Code, Lot, Date Code



- ※ Label B (Sealing label)
Specifying Manufacturing Part Number, Quantity, Bin Code, Lot, Date Code and Country of Origin

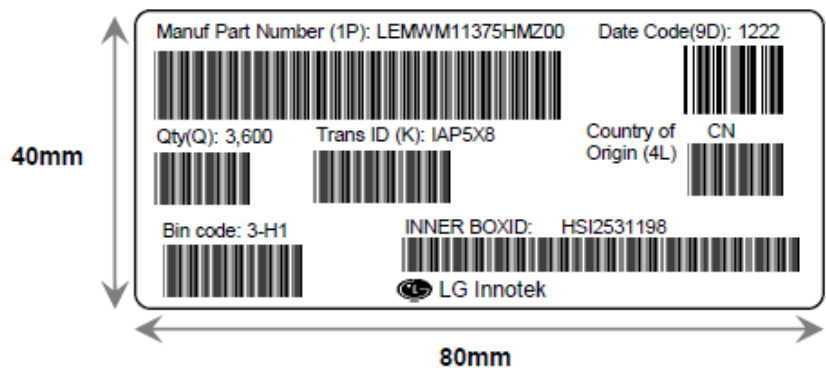


10. Packing and Labeling of Product

10-4. NEDA Label Structure

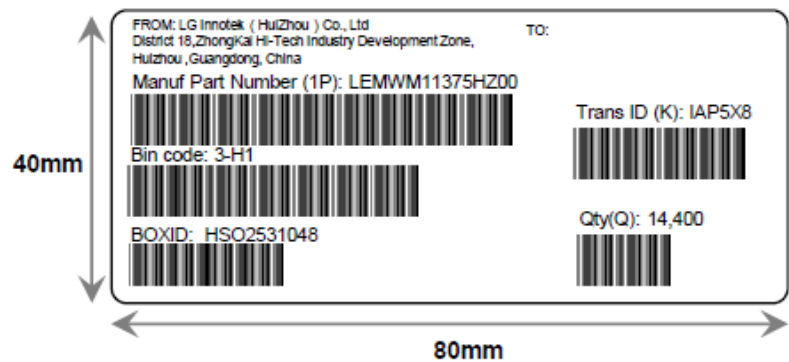
※ Label C (Inner)

Specifying Manufacturing Part Number, Quantity, Bin Code, Trans ID, Date Code, Country of Origin and Inner Box ID



※ Label C (Outer)

Specifying Manufacturing Site, Customer Address, Manufacturing Part Number, Bin Code, Box ID, Trans ID and Quantity



■ Box ID Indication

1	2	3	4	5	6	7	8	9	10
Site	Code	Outbox	Year	Month	Date		Serial No		
Paju: P Huizhou: H	S, P	Outbox: O Inbox: I	12 : 2 13 : 3 14 : 4 15 : 5	1~9 : 1~9 10 : A 11 : B 12 : C	(01 ~ 31)		(001 ~ 999)		

11. Cautions on Use

11-1. Overcurrent Protection

- Customers must apply current limiting devices for protection such as resistors or constant current LED drivers. Otherwise, a slight variation in voltage will cause a significant current shift where a catastrophic failure may occur.
- LG Innotek is not responsible for any damages or accidents caused if the operating or storage conditions exceed the absolute maximum ratings recommended in this document

11-2. During Storage

- Proper temperatures and RH conditions for storage are 5 °C ~ 35 °C and RH 60%.
- Do not open the moisture-proof bag until the products are ready to be used.
- Store the products in a moisture-proof bag with desiccant (Silica gel) after opening.
- The products should be used within 168 hours after opening the bag under the recommended storage conditions.
- The products must be baked to remove moisture before using if the silica gel loses its color. Conditions for baking are 60±5°C, 20% (RH) and 24 hours maximum.

11-3. During Usage

- The product should not be directly exposed to environments containing hazardous substances.
- Please confirm performance and reliability properly if used under any of the following conditions;
 - Environments with a significant amount of moisture, dew condensation, briny air, and corrosive gas (Cl, H₂S, NH₃, SO₂, NOX, etc.)
 - Direct sunlight, outdoor exposure, and dusty locations
 - Water, oil, medical fluid, and organic solvents
- Avoid rapid transitions in ambient temperature, especially in high humidity environments where condensation can occur.
- For designing a circuit, the current through the product must not exceed the absolute maximum rating.

11. Cautions on Use

11-4. Cleaning

- Avoid cleaning, since the silicone resin is eroded by the cleaning process.

11-5. Thermal Management

- Thermal design of the end product is of paramount importance.
- Please consider how the heat generated by the product will be managed when developing the system design.
- The generation of heat is greatly impacted by the input power, the junction to case thermal resistance of the COB and the performance of the thermal interface material combined with the proximity of other components in the system.
- It is necessary to make sure that the product is operated within the maximum ratings provided in the specifications.

11-6. Static Electricity

- If a voltage exceeding the absolute maximum rating is applied to the COBs, it will damage or destroy the product. Since the COBs are sensitive to static electricity and surge, it is strongly recommended to use a wristband or anti-electrostatic glove when handling the COBs where all devices including the equipment and machinery must be properly grounded.
- It is recommended that precautions should be taken against surge voltage to the equipment that mounts the COB.
- Damaged COBs will show some unusual characteristics such as a significant increase in leakage current, lower turn-on voltage, or malfunctioning at a low current level.
- When examining the final products, it is recommended to verify whether the assembled COBs are damaged by static electricity. Damaged COBs from static electricity can be identified by conducting a light-on test or a forward voltage test at a low current.

11. Cautions on Use

11-7. Recommended Circuits

- The current through each COB must not exceed the absolute maximum rating when designing the circuits.
- The LED driver must be designed to operate the COB by forward bias only.
Reverse voltages can damage the COB.
- A constant current LED driver is recommended to power the COB.

11-8 Recommended Soldering Conditions

- Manual Soldering is recommended.
- Lead-free soldering shall be implemented using a maximum 40W soldering bit under the conditions of 350 °C or less within 3.5 seconds.

11. Cautions on Use

11-9. Safety Guideline for Human Eyes

- Do not directly look at the light when the LEDs are on.
- Proceed with caution to avoid the risk of damage to the eyes when examining the LEDs with optical instruments.

11-10. Manual Handling

- It is recommended to wear anti-static plastic gloves to prevent damage from static electricity and dirt or other contaminants.
- When using tweezers, please handle the aluminum substrate part and avoid touching the resin part.
- For mounting, please handle the side of the aluminum part.

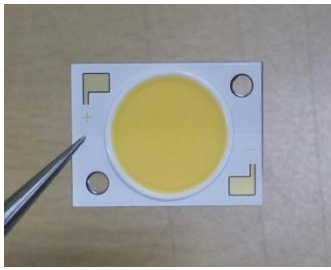


Fig.3 Proper Handling of the COB
Using Tweezers

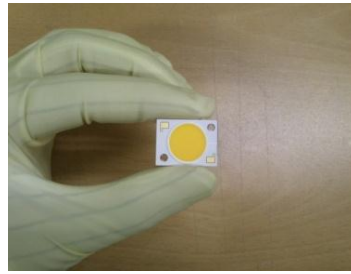
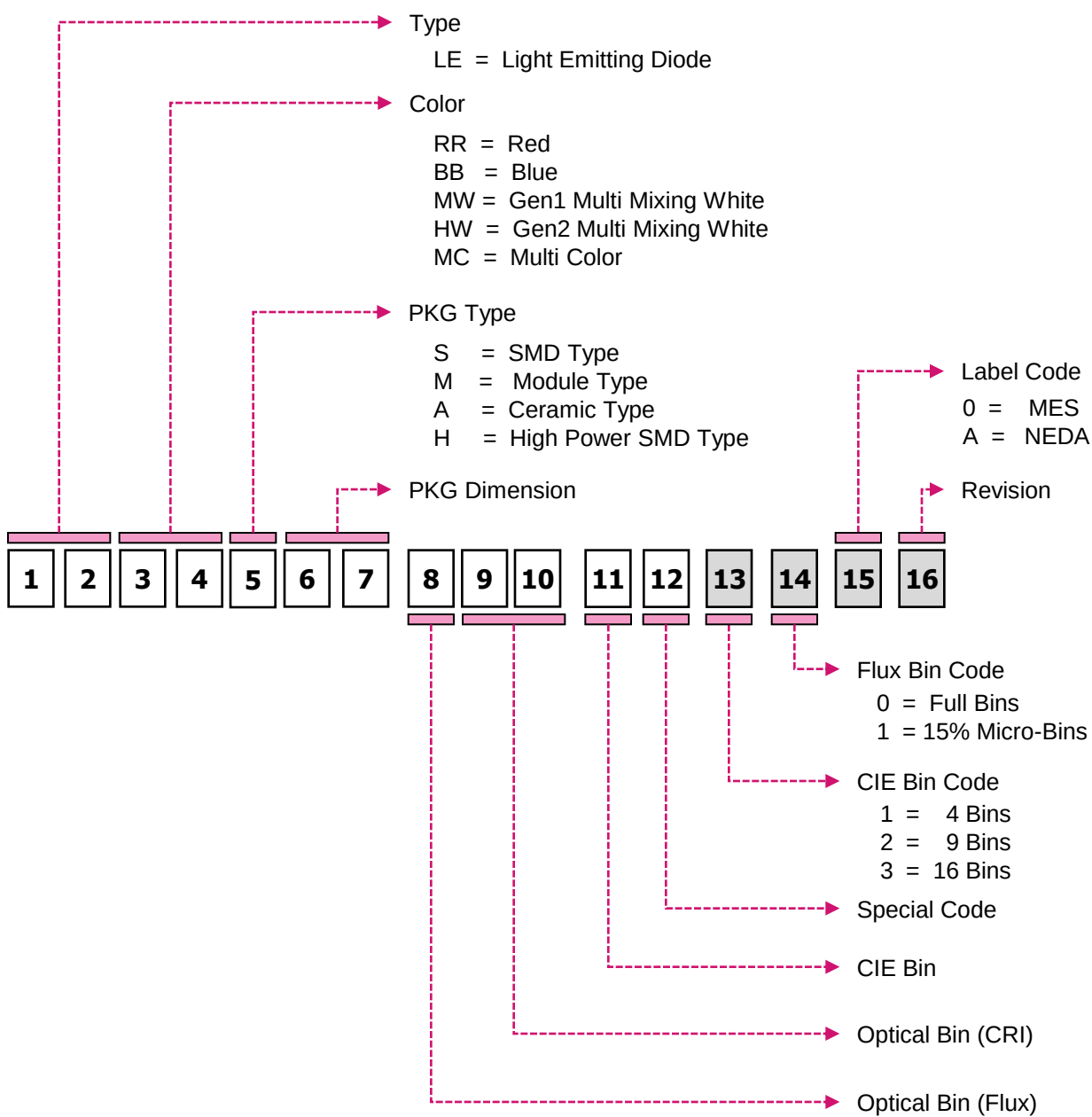


Fig.4 Proper Handling of the COB
Using Anti-Static Gloves

Appendix. Nomenclature of Package

All COBs are tested and sorted by color, luminous flux and forward voltage where every COB in a tube has only a single color bin, luminous flux bin and forward voltage bin. However, the forward voltage bin information is not captured in the part number nomenclature.

A 16-digit part number is required when orders are placed. LG Innotek leverages the following part number nomenclature.



MODEL	LEMWM18580 Series	DOCUMENT No.	-
REG.DATE	2013. 02. 15	REV. No.	2.0
REV.DATE	2014. 05. 07	PAGE	-

History of Revisions

[illegible]