REFERENCE

ZIGEN LED DATASHEET

Series Part Number

ZG6CGDxxZ0S

Contents

1. Product Description

ZIGEN is targeting to professional lighting market from innovative concepts and quality driven development.
ZG6CGxxxZ0S is under ZIGEN VI series (ZG6) with features below

- Mechanical Dimensions : 19.0 x 19.0 x 1.5 (mm)
- Color Switch
- Substrate : Aluminum

ZG6 C G x xx Z 0 S
[1] [2] [3] [4] [5] [6] [7] [8]

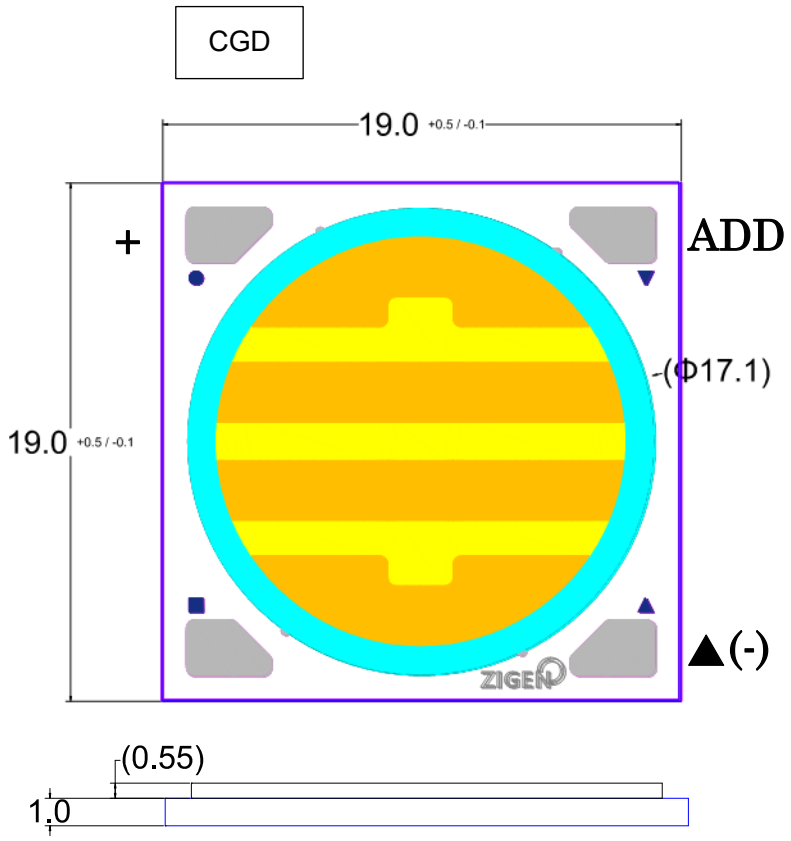
[1]	Series code	ZG6
[2]	Substrate size	C (19x19mm)
[3]	CRI	M (>80), G (>90)
[4]	Chip Layout	C (12s4p+2p), D (12s6p+3p)
[5]	Color code	34 (3000K-4000K) W3 (2700K-3000K)
[6]	Substrate type	Z (LES 15.4mm, 4-pad)
[7]	Test Condition	0 (cold)
[8]	Custom code	S (color switch by single and by both channel)

2. External Dimension & Circuit Diagram

- External Dimension

Unit : mm

Tolerances unless specified : +/-0.1



Notes: Values inside parentheses are reference values.
External sizes of are determined by maximum dimensions,
that include salient areas on the edges of respective sides.

3. Ratings and Characteristics

3-1) Absolute maximum ratings

Parameter	Symbol	Ratings	Unit
Max. DC Forward Current (mA) ※1,4	I_F	1000 for CGD	mA
Power Dissipation ※1,4	Pd	37 for CGD	W
Reverse Voltage ※2,4	VR	-15	V
Max. Junction Temperature	Tj	145	°C
Operating Temperature ※3	T_{Opr}	-30 ~ +95	°C
Storage Temperature	T_{Stg}	-40 ~ +100	°C

Notes:

※1. Power dissipation and forward current are the values when the module temperature is set lower than the rating by using an adequate heat sink.

※2. The maximum rating of reverse voltage is assumed to happen in short time by the initial connection error. (Not dealing with the possibility of always-on reverse voltage.)

※3. Operating temperature is the Case temperature Tc
(Refer to measuring point for case temperature in the next page.)
Refer "Derating curve" in the 3-4) for Operating temperature at operating current.

※4. Tc=25℃ or within derating curve temperature at operating current.

3-2) Electro-Optical Characteristics

(Measured at 700mA, Tj=25℃)

Product Code	Wire Connection	Nomical CCT	CRI (Ra)		Luminous Flux		Voltage		
			Min.	Typ	Min.	Typ.	Min.	Typ.	Max.
ZG6CGD 34Z0S	▲	3000	90	92	2800	3100	31.9	35.4	38.7
	▲+ADD	4000	90	92	3100	3400	30.8	34.2	37.4
ZG6CGD W3Z0S	▲	2700	90	92	2550	2850	31.9	35.4	38.7
	▲+ADD	3000	90	92	2800	3100	30.8	34.2	37.4

Notes:

※ 5 . Measurement tolerance: Voltage ± 3 %, Luminous Flux ±7%, Ra ±2

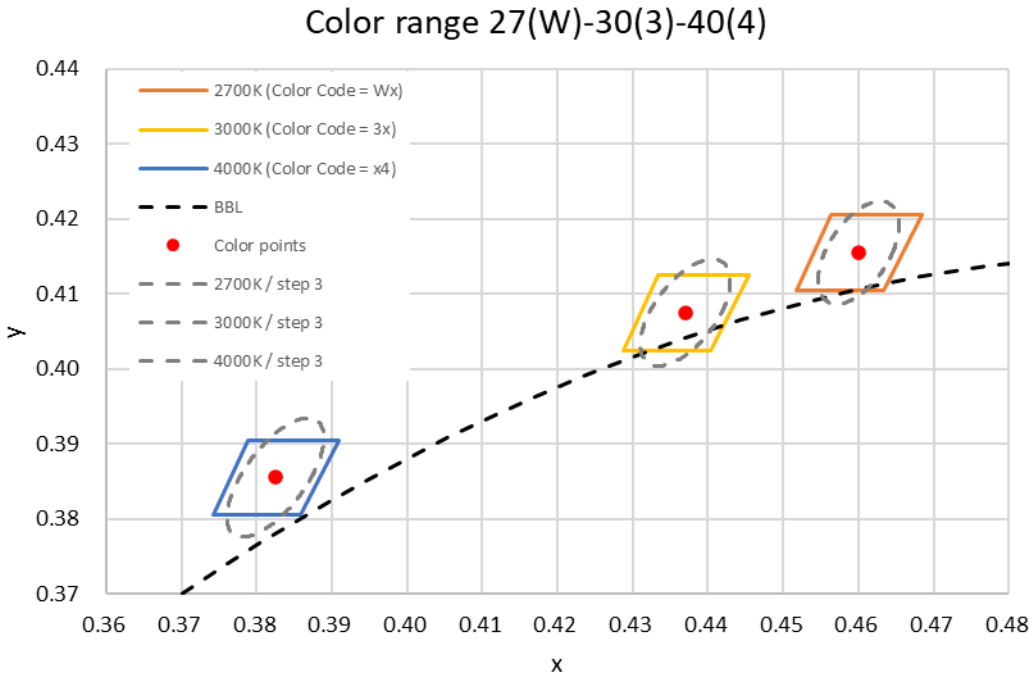
3-3) Chromaticity Characteristics

(Measured at typical current)

x,y tolerance : +/- 0.005

Tj=25 degree

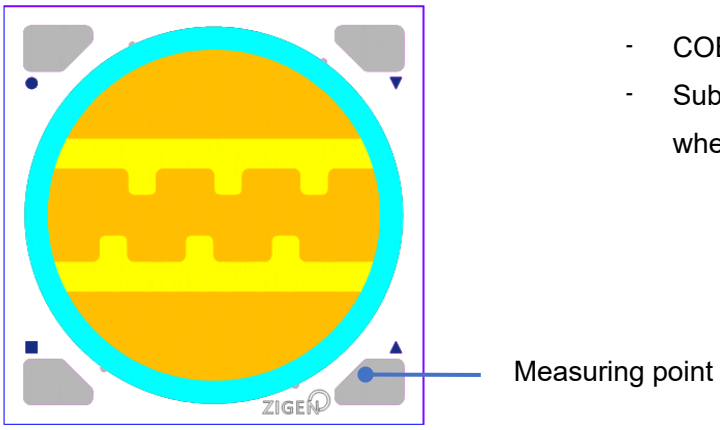
2700K	x	0.4517	0.4634	0.4684	0.4564
(Color Code = **Wx**)	y	0.4105	0.4105	0.4205	0.4205
3000K	x	0.4287	0.4404	0.4454	0.4334
(Color Code = **3x**)	y	0.4025	0.4025	0.4125	0.4125
4000K	x	0.3742	0.3859	0.3909	0.3789
(Color Code = **x4**)	y	0.3805	0.3805	0.3905	0.3905



3-4) Derating Curve

To keep the LED in good reliability use, Case temperature (Tc) of COB must below the rating curve by attaching an adequate heat sink.
Please measure Tc in actual usage condition.
Below Tc derating curve is only applicable to right condition of installation written in precautions.
Especially heat sink surface must be flat on backside of COB and well thermally conducted.
If heatsink under Tc point of COB is not flat, please use the different point on COB with same distance from center of LES as Tc point.
Please ensure that Tc does not exceed derating curve even after installation and operation as final product.

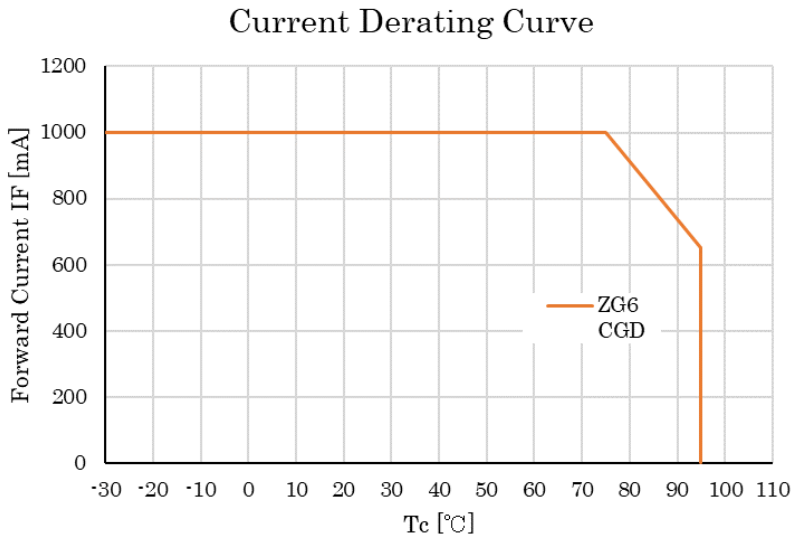
(Measuring point for case temperature)



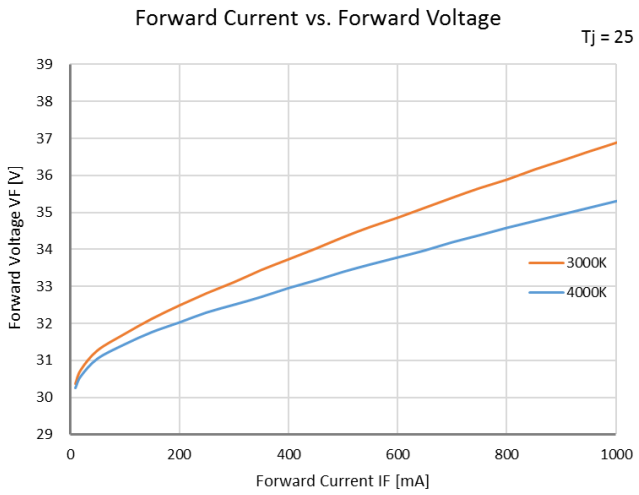
- COB mounting surface must be flat and plain.
- Substrate surface temperature must be uniform when measuring case temperature.

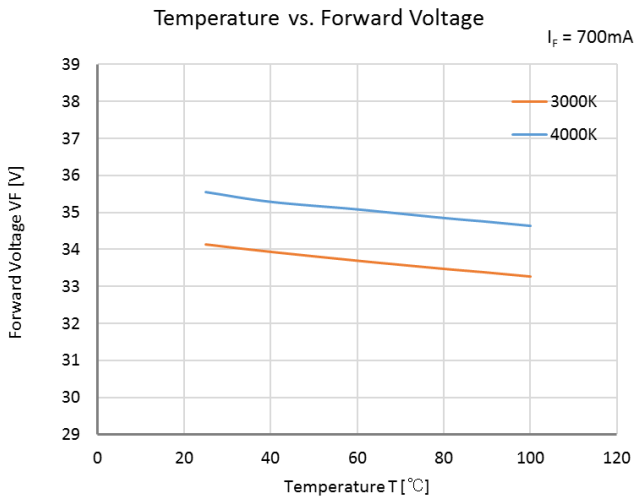
Thermal Resistance (℃/W)

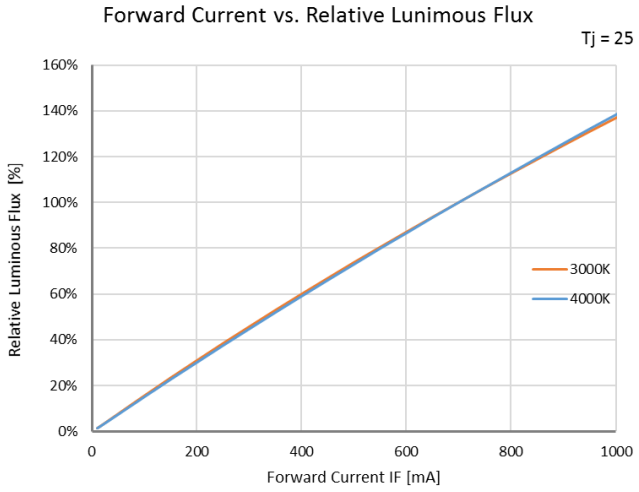
1.25 for CGD

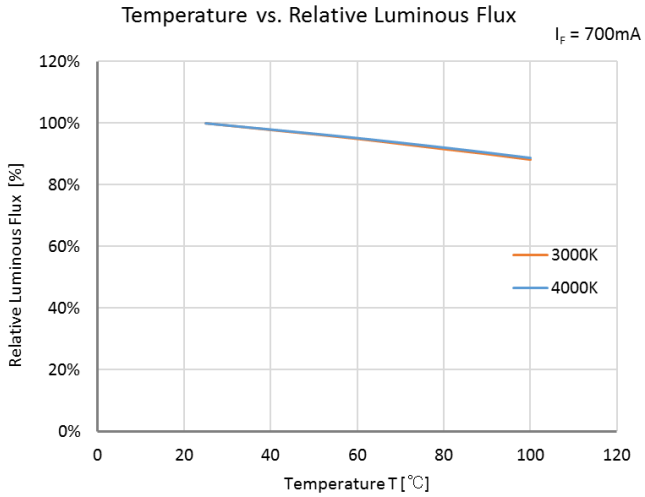


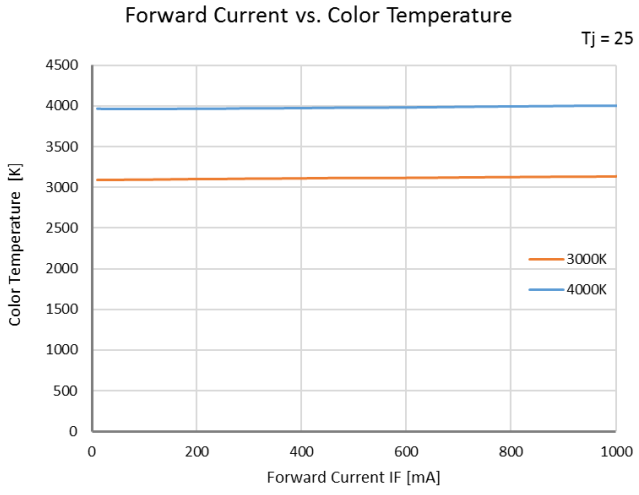
3-5) Characteristics Diagram (TYP.)

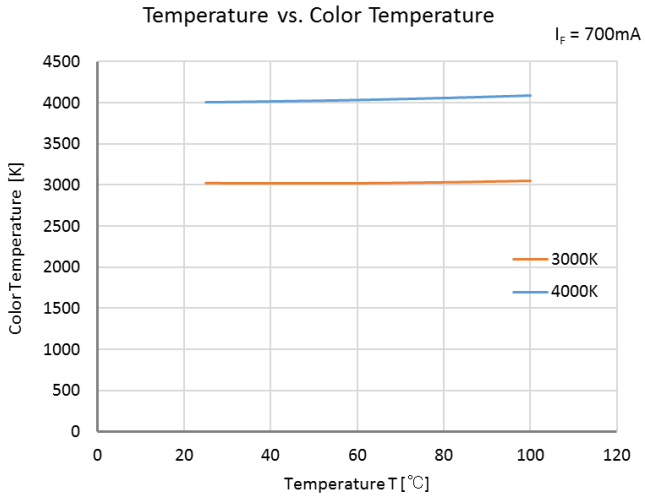












Notes:

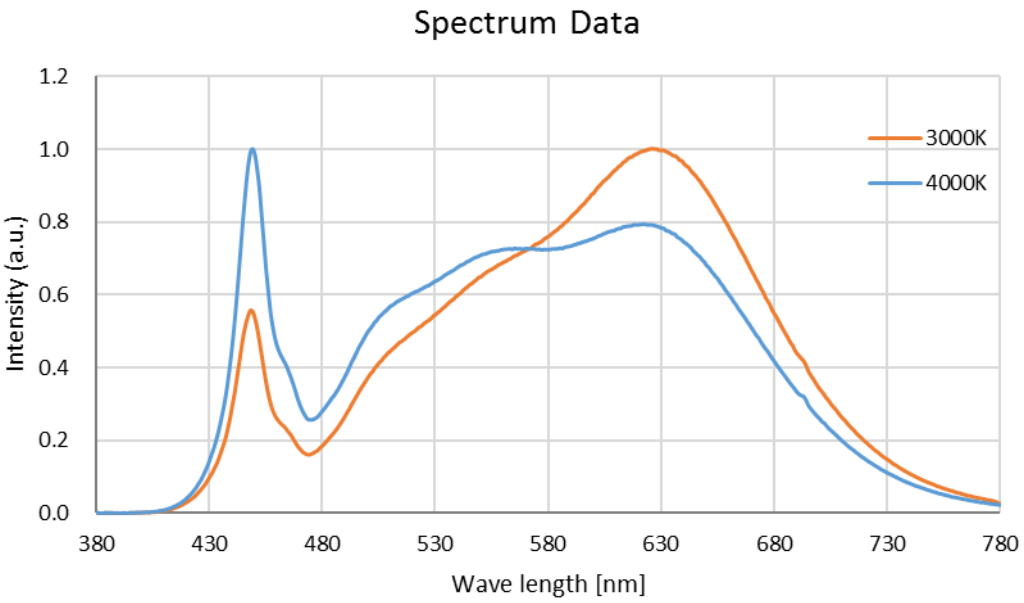
※1 . Temperature shown in above for Tc temperature at instantaneous operation, and Tj is equal to Tc for such operation. Please refer above chart as reference of temperature dependency of LED characteristics.

※2. Characteristics data shown here are for reference purpose only. (Not guaranteed data)

3-6) Color Rendering Index (Reference)

Spectrum data for 3000K, 4000K (Ra>90)

(Measured at typical current, Tj=25℃)



※ Spectrum data shown here are for reference purpose only. (Not guaranteed data)

Color Rendering Index 3000K (for CGD34)

Ra	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
92	92	93	93	93	92	92	93	85	62	84	94	80	92	95	89

Color Rendering Index 4000K (for CGD34)

Ra	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
92	90	92	92	92	90	88	94	86	61	80	92	71	90	95	88

※ Color Rendering Index data shown above are for reference purpose only. (Not guaranteed data)

3-7) Radiation Beam Angle (Reference)

FWHM (full width at half maximum) : 114 degree

4. Reliability

The reliability of products shall be satisfied with items listed below.

NO	Test Item	Condition	Samples n	Defective C
1	Temperature Cycle	-40°C~100°C / Dwell time 30min / 300 Cycles	4	0
2	High Temperature / Humidity Storage	85°C/85%RH / 1000 H	4	0
3	Low Temperature Storage	-40°C / 1000 H	4	0
4	High Temperature Storage	100°C / 1000 H	4	0
5	High Temperature Life	Tc 85°C / 1000 H / @IF=700mA (CGD)	4	0

Failure Criteria

(Measured at typical current, Tj=25℃)

	Item	Symbol	Criteria
1	Forward Voltage	V_F	V_F > Initial value x 1.1
2	Luminous Flux	Φ	Φ < Initial value x 0.8
3	CIE-x / CIE-y	⊿x, ⊿y	⊿x, ⊿y < 0.02

5. Packing and Labels

Packaging

- ■ One tray composed of 30 pieces
- ■ 6 trays (180 pieces) and one upper lid-tray in one moisture-proof bag
- ■ 2 bags (360 pieces) in one carton
- ■ Dimensions of outer carton : 235 × 220 × 90 mm (Reference value)

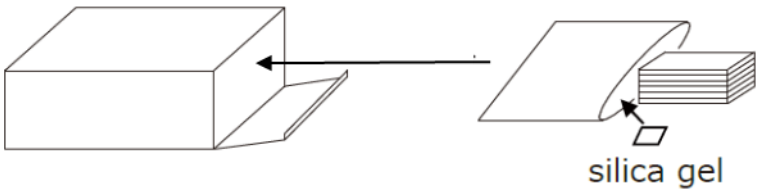
(Note 1) There are cases of one carton composed of one bag. (30 pieces~)

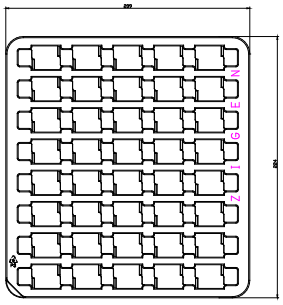
(Note 2) State of packing is subject to change.

< Outer carton >
180 pieces × 2 bags = 360 pieces

< One bag >
30 pieces × 6 trays = 180 pieces

< One Tray >
5 x 6 = 30 pieces





Note: VERSION No. 01 will be marked on label

Indication printed on product

Model No. and control No. are indicated on substrate surface.

Control No.

Indicated as follows ;

C	S	9	J	K
①	②	③	④	⑤

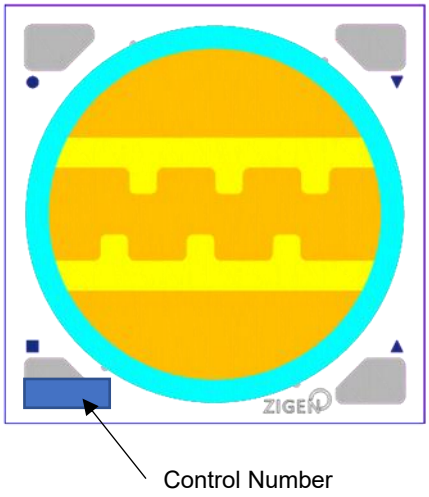
① C : Chip layout
(C: 25W D: 35W)

② S : Ra/Color code / rank
(S: 3000-4000K Ra90, W: 2700-3000K Ra90)

③ 9 : Year

④ J : Month

⑤ K : Date (1~9,A~V)



6. Precautions

1. Storage conditions

- Before the package is opened: The LEDs should be stored at 30°C or less and 50%RH or less after being delivered and the storage life limit is 6 months. If the LEDs are stored for 6 months or more, they should be stored in a sealed container with a nitrogen atmosphere and moisture absorbent material.
- After opening the package: The LED should be stored under 30°C or less and 30%RH or less. The LED should be used within 7days after opening the package. If unused LEDs remain, it should be stored in moisture proof packages with absorbent.
- Please avoid exposing air with corrosive gas.

2. Handling of COB

- Do not put mechanical stress on the LED, and Do not bend substrate.
- Never touch the optical surface with finger or sharp object. The LED surface could be soiled or damaged, which could affect the optical performance of the LED.
- Please keep handling the LEDs with appropriate ESD grounding, especially in low-humidity work environment.
- 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.
- Please use IPA when cleaning COB

3. Assembly conditions

- Please use appropriate heatsink to control Tc temperature
- Thermal conductor (heat conductive glue/adhesive/sheet etc) must be used for mounting COB to heat sink
- Please do not use convex or rough surface or not clean heatsink.
- Please make sure COB will not detach from heatsink through life of finish product.
- When using holder please avoid to use harmful outgas (Cl, Br etc) contain material (Br contain PBT etc) and make sure it's reliability is enough in temperature and light from COB.
- Please make sure thermal conductor on back side of LED will not reduce performance through life of finish product.
- Please avoid keep convex stress during and after installation, which may cause bending and affect thermal conductivity in long use.
- Please do not touch or hold by resin area and handle by Aluminum substrate part only.

4. Connecting method

- Connection by solder wire with 380 degree tip-temperature tool under 5seconds is recommended.
- Please solder whole solder pad area.
- Please avoid to touch resin part by soldering tool.

- This product is not designed for reflow and flow soldering.
- Please prevent to pull lead connected to solder pad and pulling stress after installation.
- Please prevent to use flux.
- Please verify solder wire contented flux is no more activated after soldering.
- In case using holder connector, please verify electric connectivity for long use.

5. Usage conditions
   - Please check reliability well enough under finish product condition before using for mass production.
   - Please avoid use or verify reliability in a place with high moisture and corrosive gas (halogen, H2S, NH3, SO2, NOX etc)
   - Please avoid use or verify reliability under direct sun right condition, exposure in outdoor and dusty place.
   - Please avoid use or verify reliability to use in liquid like water, oil and solvent.
   - Please avoid use under strong acidic or alkali atmosphere condition.

6. Operation
   - Any reverse voltage cannot be applied after installation.
   - Please use appropriate protective device to avoid surge or high voltage.

7. Safety
   - Please be care to LED light from injuring eyes.
   - Please avoid flammable goods from strong light intensity area.
   - Please follow appropriate regulations and lows for usage as lighting product.

8. Others
   - Any uncertain or necessity of suggestion in usage, please consult with sales representative.
   - Please follow the latest assemble guide, available in the website of ZIGEN.
   - All information in this document is subject to be updated without prior notice.
   - Please confirm the latest datasheet with sales representative and exchange formal specification before starting purchase for mass production

Revision History

Current version: **2507a**

Previous version: **2406b**

Page	Subjects (major change in previous version)	Date of change
5,10	Addition of Φuse Addition of FWHM	2020.4.27
5	Remove Φuse	2020.8.17
10	Addition of CRI	2021.4.30
4, 9	Addition of W3 model Revise Vr absolute max value	2022.2.9
6	Revise 2700K color range	2022.6.9
1-7	Make part number for -01 of CGD Luminuous intensity update Ammend derating curve	2024.5.22
1	Revise part number	2404.6.4
3	Add dimension	2404.6.6
3	Ammend Tj max	2405.7.21