

# SHARP LED

- General lighting LED -

**SHARP Corporation**

Electronic device components

Lighting device division

Planning group

Date. July. 2013

**SHARP**

# General Lighting LEDs Features

Mainstream LED commodity

General lighting



Bulb lamp



Tube light

TV backlighting



High class reliability due to ceramic substrate applied.  
Good performance on endurance for lighting degradation.  
High-end TV backlighting is also taking up its technique.

Definitely ensure clear patent due to valiant license.  
You can get success whole entire world without any IP issue concern.

**H**igh reliability

**W**hite patent



5630 series



Zenigata SMD Series



Zenigata COB Series

**SHARP LED device**

**D**eliverability

**G**ood temperature characteristic

Delivers narrow chromaticity bin on macadam step 3 due to our special production control technique.

Good temperature characteristic at high ambient temperature. Very lightly affected degradation from normal to high temp on driving.

# Which one is the best ?

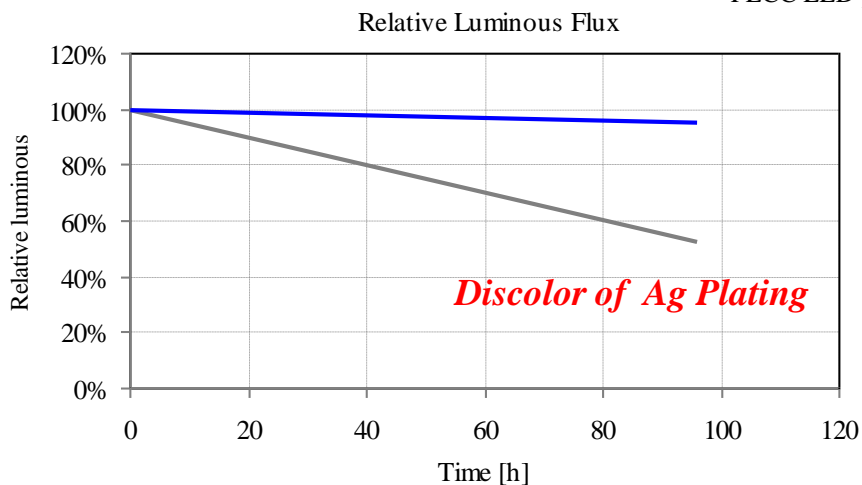
Which one is the better for your application, PLCC type or COB (Chip on board) !? There are 2 trend in general lighting LED. These have both advantage and disadvantage for each other. It must be carefully considered which type you choose. Generally it depends on finished products quality category.



## Comparison test data

(Condition: Sulfured hydrogen, concentration 3vol-ppm)

— COB LED package  
— PLCC LED package



## Contents

## PLCC LED package

## COB LED package

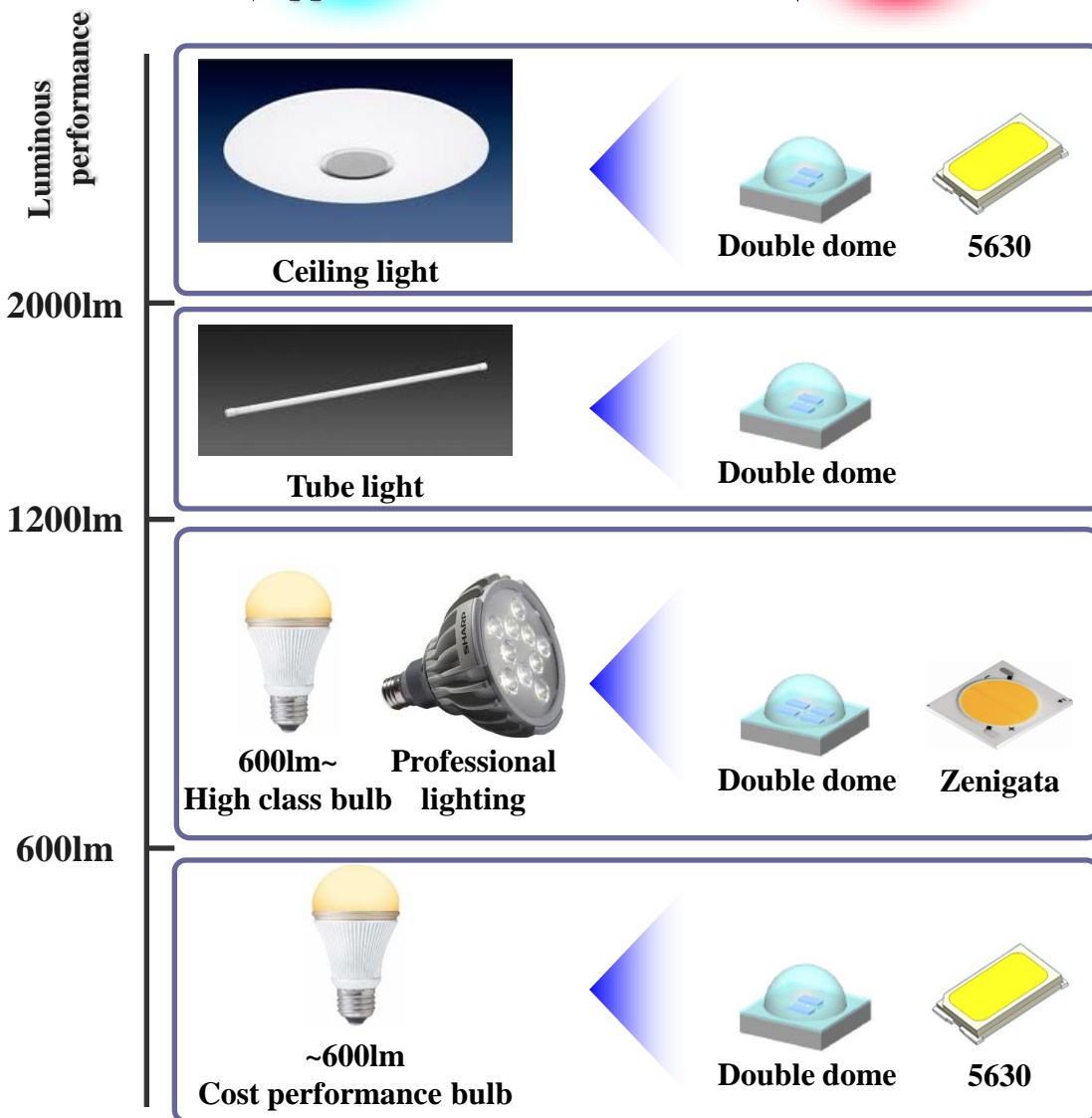
Contents	PLCC LED package	COB LED package
Price	◎	△
Drive wattage	~0.5W	0.2W~50W
Long-lifetime	~10,000 hours	60,000 hours ~
Temperature characteristic	○	◎
Resistance to Sulfur *see left diagram	damaged 47%	Not damaged critically
Design-ability	Familiar	Easy to optical design

# LED Solution Idea

## Application

## LED device solution

## What is your target application ?



The most suitable LED device should be chosen for your target application, concerning Price, life-time, installation location and so on. If you target on cost performance model, 5630 would be enough. On the other Double dome and Zenigata LED must be the one for a high class application due to high reliability even if its price disadvantage.

## LED device comparison

Contents	PLCC LED package	COB LED package
Price	◎	△
Drive wattage	~0.5W	0.2W~50W
Long-lifetime	~10,000 hours	60,000 hours ~
Temperature characteristic	○	◎
Resistance to Sulfur *see left diagram	damaged 47%	Not damaged critically
Design-ability	Familiar	Easy to optical design

# Finished Product with Double dome LED applying 1

## In house use



**SHARP**

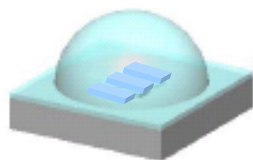
“ELM” (**Eco Lighting Management**) is a trademark of Sharp LED finished products, blub light and ceiling for household use. Our own LED devices are applied for both bulb and ceiling, and have much past record of sales and belief in the market.



SHARP ELM ceiling light



SHARP ceiling light  
Inner structure

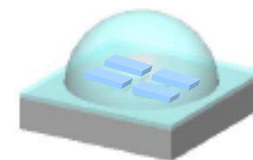


0.5W dome type LED inside

0.5W LED luminous performance approx. 65lm at 5000K, 55lm at 2700K are inside of this finished products. It could be achieving totally over **3000lm**. The double dome LED family can be strongly recommended for thin type ceiling light application.

## External business

Not only internal use, our LED device is applied widely know in the world. Some of very famous and well-known brand companies are familiar with our LED, and actually have much past record of sales and belief in the market because of our most biggest advantage against the other LED maker “**Good temperature characteristic**” at high temperature driven.



0.6W dome type LED inside

0.6W LED luminous performance approx. 78lm at 5000K, 57lm at 2700K totally 16 pcs are inside. The bulb lighting performs at **1248lm**. It could be achieving totally over 3000lm. High class category bulb also the suitable application for our double dome LED family.

# Finished Product with Double dome LED applying 2

In house use

Below picture also our own brand newly-developed products release in Sep. 2012. Stylish design and colorful



<Model No:DL-PD01K-W>

<Model No:DL-PD02K-T>

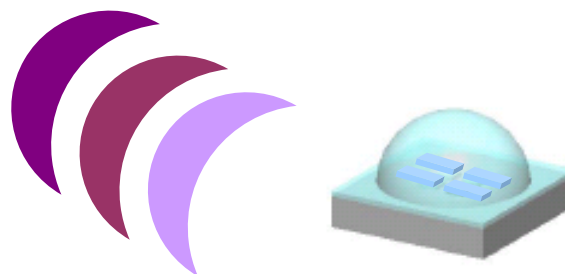
<Model No:DL-PD03K>

<Model No:DL-PD04K>

Dimmer and toning function.

Stylish design

Easy-to-replace



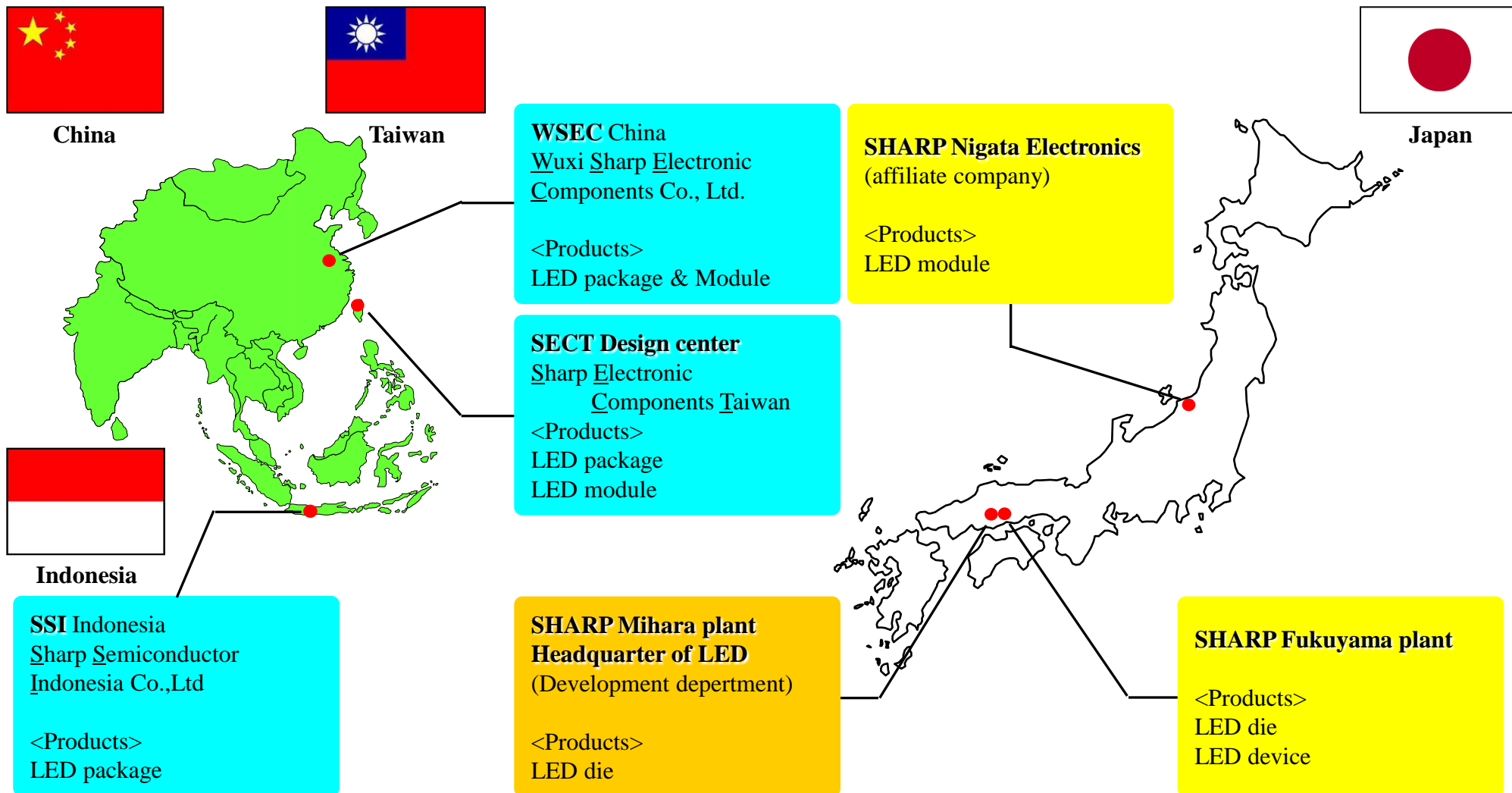
### Dome type LED inside

0.5W LED luminous performance approx. **57lm at 5000K** 1in1 type LED are inside of this finished products. The double dome LED family can be strongly recommended for thin type ceiling light application.

Model No.	DL-PD01K-W/T	DL-PD02K-W/T	DL-PD03K	DL-PD04K
Toning	Yes			
Dimmer	Yes			
Color Control	2 kinds of cherry blossom color, Cool ~ Warm white			
Luminous	800lm	1,200lm	1,350lm	1,500lm
Power consumption	15W	23W	34W	34W

# SHARP LED Production Site

From LED die to assembled LED bar, vertical integrated products are made in these value chain, Japan, China, Indonesia and Taiwan, contributing to efficient delivery and advanced cost structure.



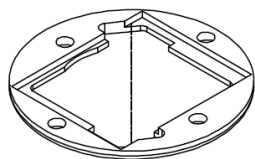
# Accessories

The cooperating company proposes the line-up of below accessories to help SHARP LED assemble. Easy and helpful for you to design with Sharp LED using.

## 1. Holder for Zenigata LEDs

Holder components are very useful, one of the easy and safe way to attach to heat sink. Line-up for each types of Zenigata, “Petit” “Mini” and “Mega”. There are two types of material, resin and ceramic. You can take and chose the one depends on your request reliability level.

<Resin type Zenigata holder>



<Ceramic type Zenigata holder>



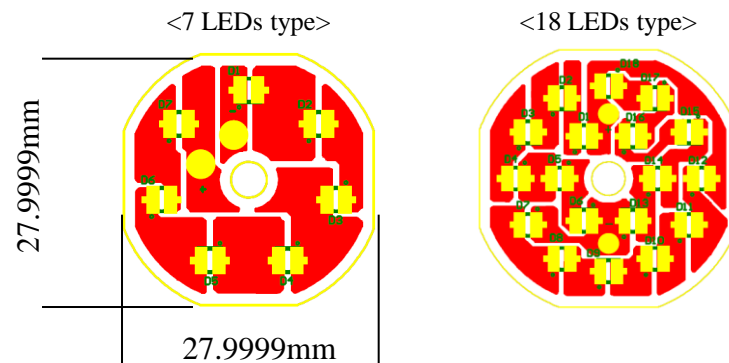
Petit Zenigata

Mini Zenigata

Mega Zenigata

## 2. Substrate parts for our double dome LEDs

Below substrate is completely match for foot pattern of our all double dome LEDs. You can chose the type of quantity 4, 7, 8, 12, 16, 18 LEDs mounting. Easy to design bulb type finished products.



4 LEDs

7 LEDs

8 LEDs

12 LEDs

16 LEDs

18 LEDs

## 3. Lens and reflector solution for Zenigata and double dome LEDs

Lens and reflector also become great help your optics design. These components are completely customized for SHARP LED products.



Reflector for Zenigata



Lens for Zenigata



Lens for double dome



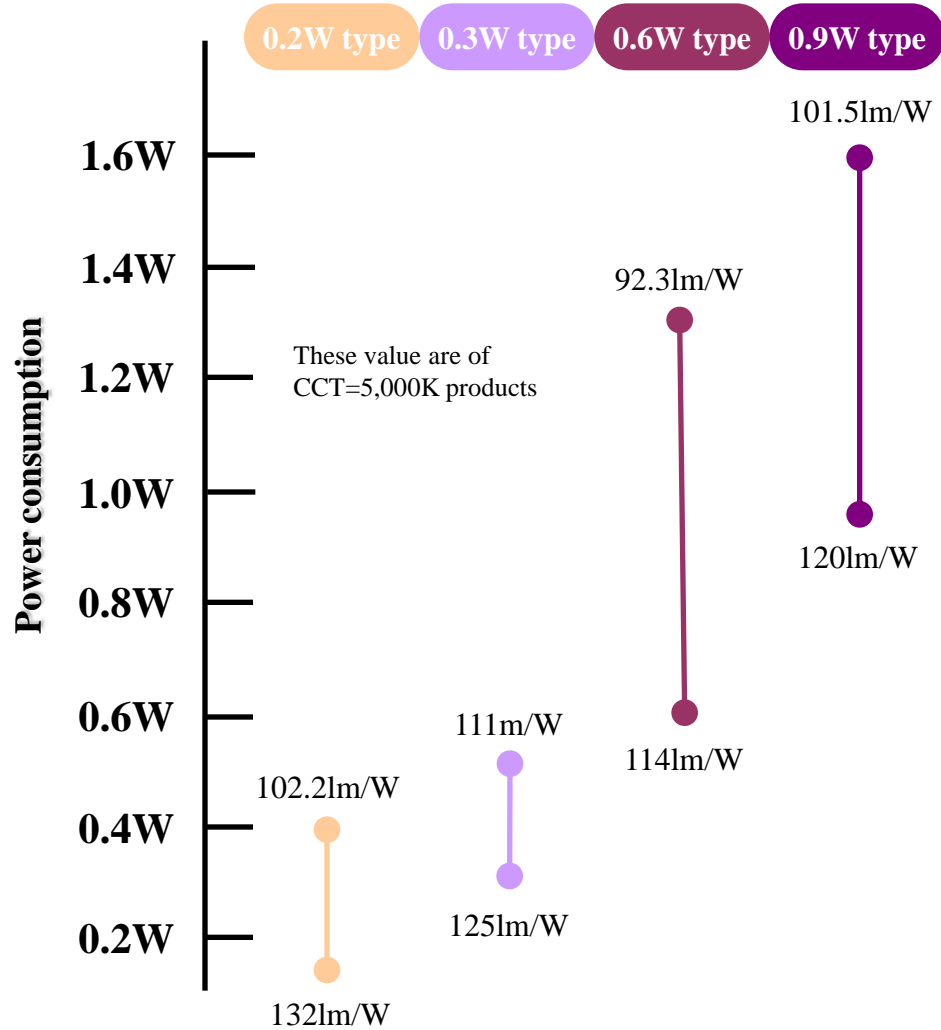
Lens for double dome



# Zenigata SMD type LED features

## 1. Variation

You can flexibly fix your drive current and set up power consumption by your circuit design. Because they can be wide range capacity for drive current.



## 2. Long life-time

Ceramic substrate surely contributes to long life time and reliability. According to our estimation, the Double dome series could achieve over **60,000H within only 20%** luminous performance degradation at its maximum Tj condition.

## 3. Easy-to-Design

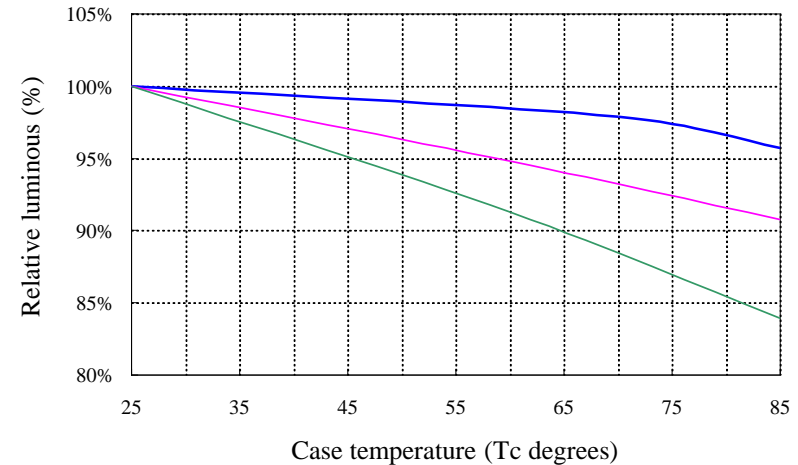
When you design, it requires many peripheral goods for example lens. **SHARP can suggest not only device but also these goods** to help your design as total solution for your final LED lighting products.

Optical lens

Assemble substrate

## 4. Temperature characteristic

SHARP LED (blue diagram) keeps high performance at high Tc temperature, comparing with the other vendors one (pink and green diagram)

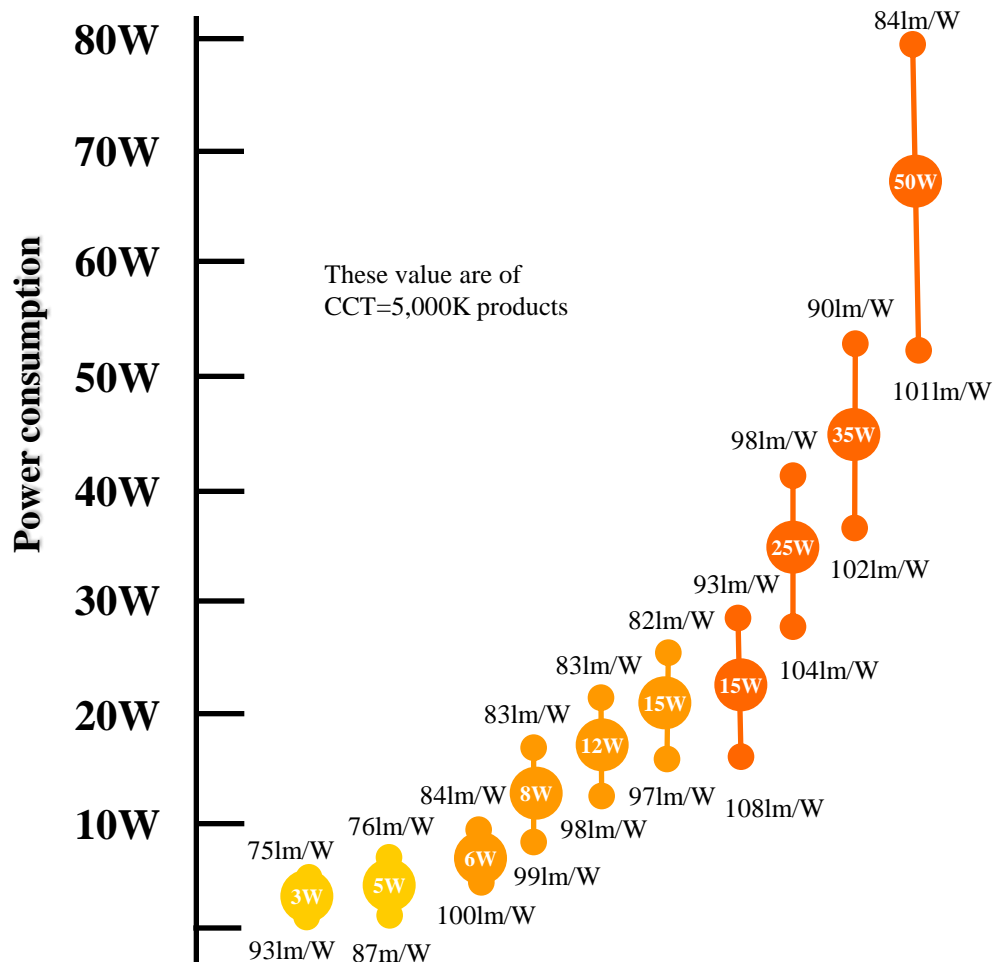


# Zenigata COB type LED features

## 1. Variation

Rich line up from **3W** to **50W**, low to high power consumption, and voltage class. You can chose the best one which is suitable for your target demand.

Petit Zenigata    Mini Zenigata    Mega Zenigata



## 2. Long life-time

Ceramic substrate surely contributes to long life time and reliability. According to our estimation, the Zenigata series could achieve over **50,000H within only 20%** luminous performance degradation at its maximum Tj condition.

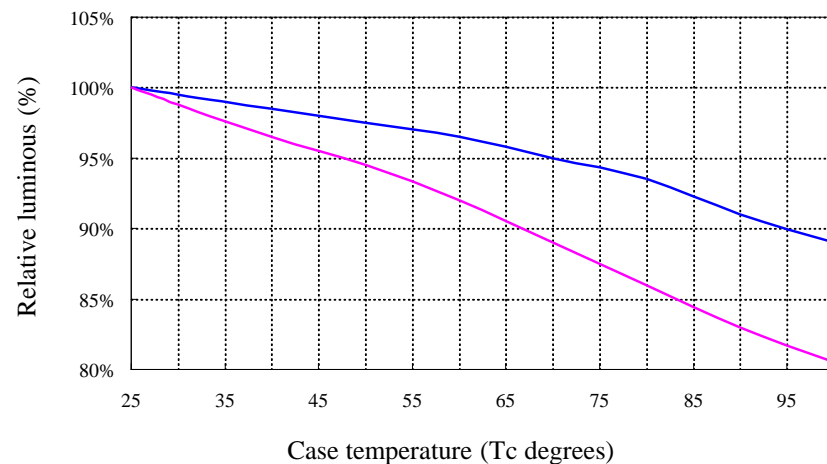
## 3. Easy-to-Design

When you design, it requires many peripheral goods for example lens, heat sink, device holder to attach on substrate and so on. **SHARP can suggest not only device but also these goods** to help your design as total solution for your final LED lighting products.



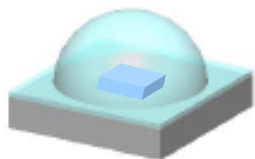
## 4. Temperature characteristic

SHARP LED (blue diagram) keeps high performance at high Tc temperature, comparing with the other venders one (pink diagram)



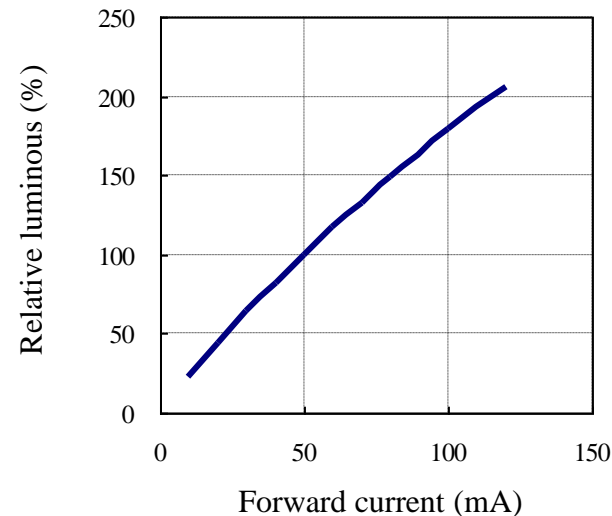
# 0.2W Double dome type LED line-up

## Overview

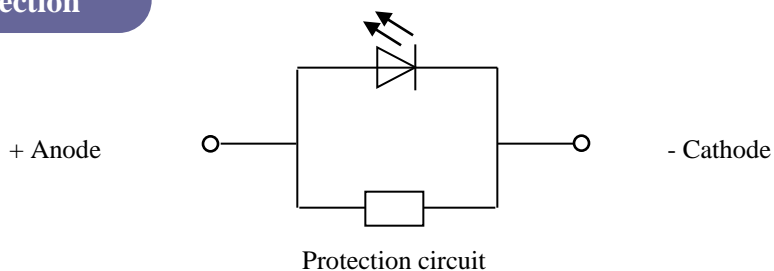


**Dimension** :2.8 x 2.8 mm  
**Thickness** :1.9 mm  
**IF** :50mA (max.120mA)  
**Thermal resistance** :60°C/W  
**Connection** :1in1  
**Resin** :Silicone  
**Substrate** :Ceramic

## IF x lm character



## Connection

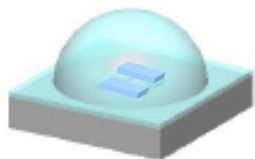


Tc=25°C

Type No.	Connection	IF	VF	CRI(Typ.)	CCT	Luminous flux	Efficiency
GM2BB27QT1C	1 in 1	50mA	2.95V	83	2,700K	16.5lm	112lm/W
GM2BB30QT1C					3,000K	17.5lm	119lm/W
GM2BB50QT1C					5,000K	20.0lm	136lm/W
GM2BB65QT1C					6,500K	19.0lm	129lm/W

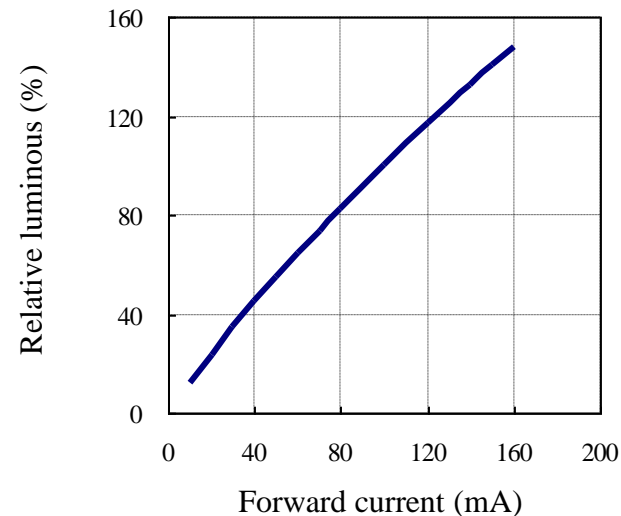
# 0.3W Double dome type LED line-up

## Overview

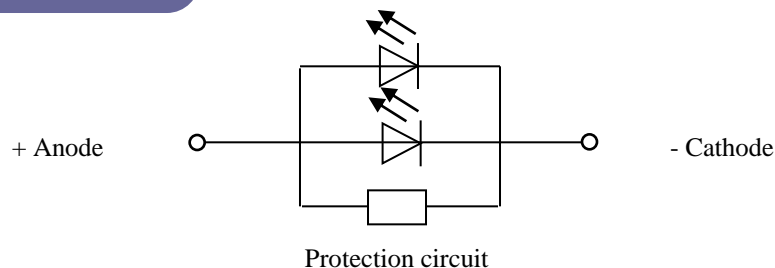


**Dimension** :2.8 x 2.8 mm  
**Thickness** :1.9 mm  
**IF** :100mA (max.160mA)  
**Thermal resistance** :33°C/W  
**Connection** :2in1  
**Resin** :Silicone  
**Substrate** :Ceramic

## IF x lm character



## Connection

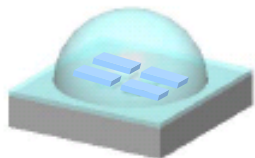


Tc=25°C

Type No.	Connection	IF	VF	CRI(Typ.)	CCT	Luminous flux	Efficiency
GM2BB27QB2C	2 parallel	100mA	2.95V	83	2,700K	32.5lm	110lm/W
GM2BB30QB2C					3,000K	34.0lm	115lm/W
GM2BB50QB2C					5,000K	39.0lm	132lm/W
GM2BB65QB2C					6,500K	37.0lm	125lm/W

# 0.6W Double dome type LED line-up

## Overview



**Dimension**

**Thickness**

**IF**

**Thermal resistance**

**Connection**

**Resin**

**Substrate**

:2.8 x 2.8 mm

:1.9 mm

:100mA (max.200mA)

50mA(max.100mA)

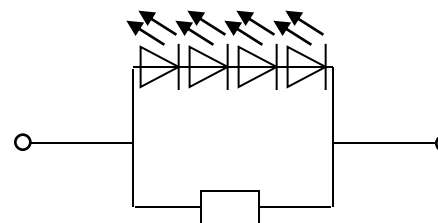
:20°C/W

:4in1

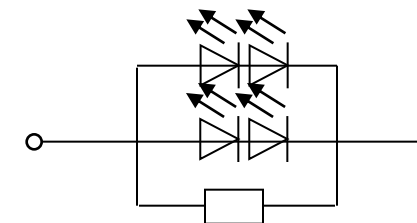
:Silicone

:Ceramic

## Connection



Protection circuit



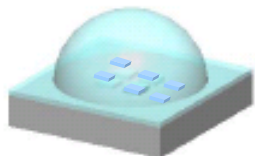
Protection circuit

Tc=25°C

Type No.	Connection	IF	VF	CRI(Typ.)	CCT	Luminous flux	Efficiency
GM2BB27QT4C	2 series x 2 parallel	100mA	5.95V	83	2,700K	58.0lm	97lm/W
GM2BB30QT4C					3,000K	61.0lm	103lm/W
GM2BB50QT4C					5,000K	70.0lm	118lm/W
GM2BB65QT4C					6,500K	66.5lm	112lm/W
GM2BB27QT4E	4 series	50mA	11.90V	83	2,700K	58.0lm	97lm/W
GM2BB30QT4E					3,000K	61.0lm	103lm/W
GM2BB50QT4E					5,000K	70.0lm	118lm/W
GM2BB65QT4E					6,500K	66.5lm	112lm/W

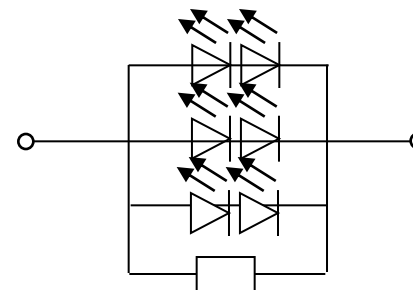
# 0.9W Double dome type LED line-up

## Overview



<b>Dimension</b>	:3.2 x 3.2 mm
<b>Thickness</b>	:1.9 mm
<b>IF</b>	:150 mA(max.250mA)
<b>Thermal resistance</b>	:15.0°C/W
<b>Connection</b>	:6in1
<b>Resin</b>	:Silicone
<b>Substrate</b>	:Ceramic

## Connection



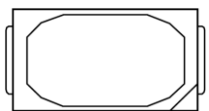
Protection circuit

Tc=25°C

Type No.	Connection	IF	VF	CRI	CCT	Luminous flux	Efficiency
GM2AA50GV6F	6in1	150mA	5.95V	70	5,000K	120lm	134lm/W
GM2AA65GV6F					6,500K	114lm	128lm/W
GM2AA27QV6F	6in1	150mA	5.95V	83	2,700K	90lm	101lm/W
GM2AA30QV6F					3,000K	93lm	104lm/W
GM2AA40QV6F					4,000K	102lm	114lm/W
GM2AA50QV6F					5,000K	107lm	120lm/W
GM2AA27FV6F	6in1	150mA	5.95V	95	2,700K	77lm	87lm/W
GM2AA30FV6F					3,000K	80lm	90lm/W
GM2AA40FV6F				93	4,000K	88lm	98lm/W
GM2AA50FV6F					5,000K	92lm	103lm/W

# 5630pkg LED line-up

## Overview



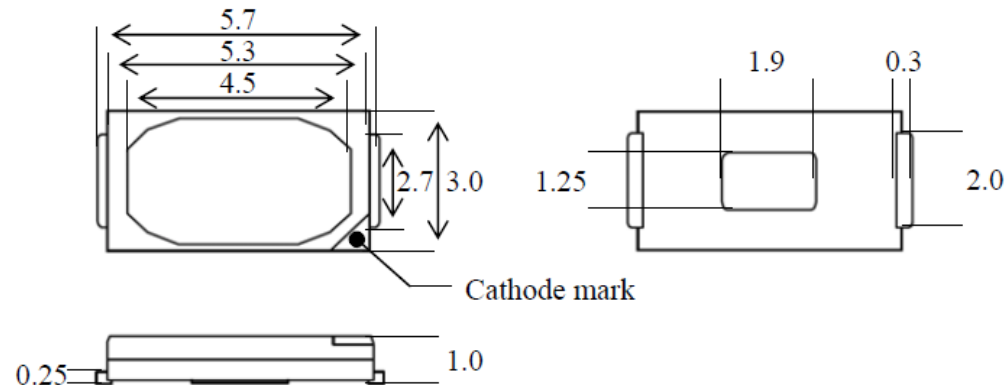
Dimension	:5.7 x 3.0 mm
Thickness	:1.0 mm
IF	:100mA (max.150mA)
Thermal resistance	:20°C/W
Connection	:1in1
Resin	:Silicone
Substrate	:Plastic

## Connection

1 LED die and 1 zener diode inside in a package.

## Design

unit = mm



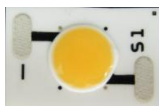
T<sub>c</sub>=25°C

Type No.	Connection	IF	VF	CRI(Typ.)	CCT	Luminous flux	Efficiency
GM5FK27QV1Z	1in1	100mA	2.95V	83	2,700K	34.0lm	115lm/W
GM5FK30QV1Z					3,000K	35.0lm	119lm/W
GM5FK35QV1Z					3,500K	36.0lm	122lm/W
GM5FK40QV1Z					4,000K	38.0lm	131lm/W
GM5FK50QV1Z					5,000K	40.0lm	136lm/W
GM5FK57QV1Z					5,700K	39.0lm	132lm/W
GM5FK65QV1Z					6,500K	38.5lm	131lm/W
GM5FK27FV1Z	1in1	100mA	2.95V	93	2,700K	30.0lm	102lm/W
GM5FK30FV1Z					3,000K	31.0lm	105lm/W
GM5FK35FV1Z					3,500K	32.0lm	108lm/W
GM5FK40FV1Z					4,000K	34.0lm	115lm/W
GM5FK50FV1Z					5,000K	36.0lm	122lm/W

# 3W class New Zenigata LED line-up

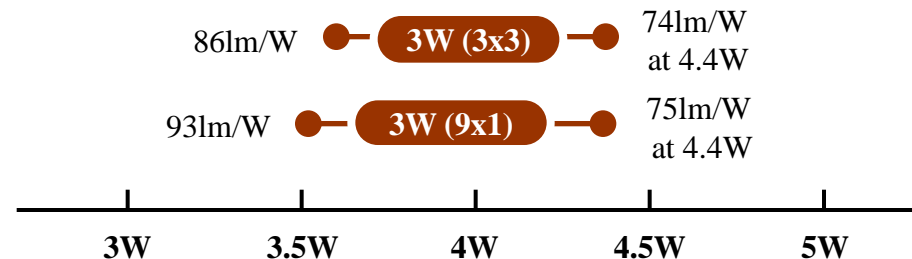
Sep. 2012 ver.01

## Overview



**Dimension** :12 x 8 mm  
**Thickness** :1.8 mm  
**IF** : 350mA(max.400mA)  
 170mA(max.190mA)  
**Resin** :Silicone  
**Substrate** :Ceramic

## Drive range



Tc=25 °C, Rjc=11.9 °C/W



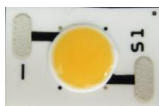
Type No.	Connection	IF	VF	CRI	CCT	Luminous flux	Efficiency
GW5SMB27P0C	3 series x 2 parallel	350mA	10.3V	82	2,700K	260lm	72lm/W
GW5SMB30P0C					3,000K	280lm	78lm/W
GW5SMB40P0C					4,000K	300lm	83lm/W
GW5SMB50P0C					5,000K	310lm	86lm/W
GW5SMB60P0C					6,000K	310lm	86lm/W
GW5SMK27P0C	6 series x 1 parallel	170mA	20.7V	82	2,700K	250lm	71lm/W
GW5SMK30P0C					3,000K	270lm	77lm/W
GW5SMK40P0C					4,000K	290lm	82lm/W
GW5SMK50P0C					5,000K	300lm	93lm/W
GW5SMK60P0C					6,000K	300lm	93lm/W



# 5W class New Zenigata LED line-up

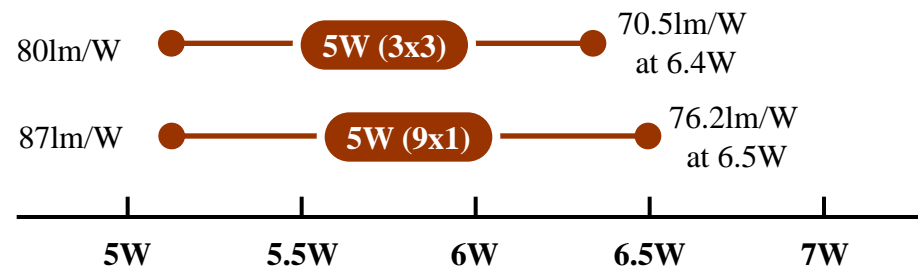
Sep. 2012 ver.01

## Overview



**Dimension** :12 x 8 mm  
**Thickness** :1.8 mm  
**IF** :500mA(max.560mA)  
 170mA(max.190mA)  
**Resin** :Silicone  
**Substrate** :Ceramic

## Drive range



Tc=25 °C, Rjc=9.3 °C/W



Type No.	Connection	IF	VF	CRI	CCT	Luminous flux	Efficiency
GW5SMC27P0C	3 series x 3 parallel	500mA	10.3V	82	2,700K	350lm	68lm/W
GW5SMC30P0C					3,000K	380lm	74lm/W
GW5SMC40P0C					4,000K	400lm	78lm/W
GW5SMC50P0C					5,000K	410lm	80lm/W
GW5SMC60P0C					6,000K	410lm	80lm/W
GW5SMM27P0C	9 series x 1 parallel	170mA	30.5V	82	2,700K	375lm	72lm/W
GW5SMM30P0C					3,000K	405lm	78lm/W
GW5SMM40P0C					4,000K	435lm	84lm/W
GW5SMM50P0C					5,000K	450lm	87lm/W
GW5SMM60P0C					6,000K	450lm	87lm/W

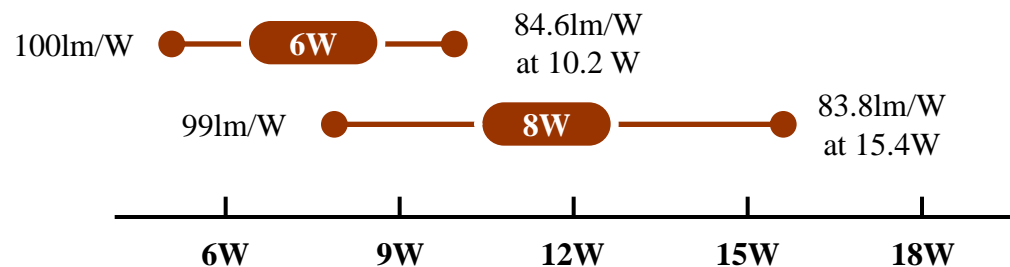
# 6W / 8W class New Zenigata LED line-up

## Overview



**Dimension** :15 x 12 mm  
**Thickness** :1.6 mm  
**IF(6W)** :160mA (max.320mA)  
**(8W)** :240mA(max.390mA)  
**Resin** :Silicone  
**Substrate** :Ceramic

## Drive range



Tc=90 °C, Rjc=5.2 °C/W

Type No.	Connection	IF	VF	CRI	CCT	Luminous flux	Efficiency
GW6BMG27HED	12 series x 2 parallel	160mA	36.0V	82	2,700K	495lm	86lm/W
GW6BMG30HED					3,000K	520lm	90lm/W
GW6BMG40HED					4,000K	555lm	96lm/W
GW6BMG50HED					5,000K	575lm	100lm/W

Tc=90 °C, Rjc=3.9 °C/W

Type No.	Connection	IF	VF	CRI	CCT	Luminous flux	Efficiency
GW6BMW27HED	12 series x 3 parallel	240mA	36.0V	82	2,700K	740lm	85lm/W
GW6BMW30HED					3,000K	780lm	90lm/W
GW6BMW40HED					4,000K	840lm	97lm/W
GW6BMW50HED					5,000K	860lm	99lm/W

6w  
class

8w  
class

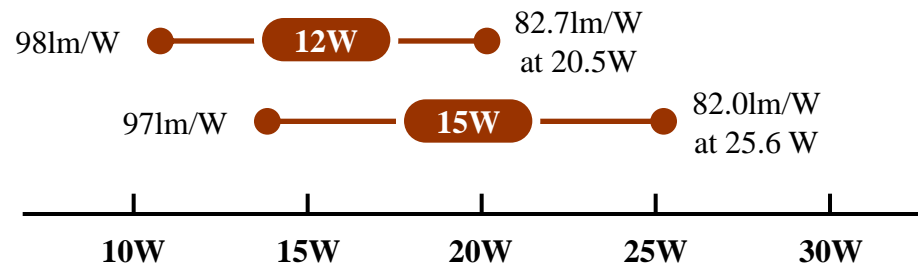
# 12W / 15W class New Zenigata LED line-up

## Overview



**Dimension** :15 x 12 mm  
**Thickness** :1.6 mm  
**IF(12W)** :320mA (max.520mA)  
**(15W)** :400mA(max.650mA)  
**Resin** :Silicone  
**Substrate** :Ceramic

## Drive range



Tc=90 °C, Rjc=3.1 °C/W

Type No.	Connection	IF	VF	CRI	CCT	Luminous flux	Efficiency
GW6BMR27HED	12 series x 4 parallel	320mA	36.0V	83	2,700K	970lm	84lm/W
GW6BMR30HED				83	3,000K	1,030lm	89lm/W
GW6BMR40HED				82	4,000K	1,110lm	96lm/W
GW6BMR50HED				82	5,000K	1,130lm	98lm/W

Tc=90 °C, Rjc=2.7 °C/W

Type No.	Connection	IF	VF	CRI	CCT	Luminous flux	Efficiency
GW6BMS27HED	12 series x 5 parallel	400mA	36.0V	83	2,700K	1,200lm	83lm/W
GW6BMS30HED				83	3,000K	1,270lm	88lm/W
GW6BMS40HED				82	4,000K	1,370lm	95lm/W
GW6BMS50HED				82	5,000K	1,400lm	97lm/W

12w  
class

15w  
class

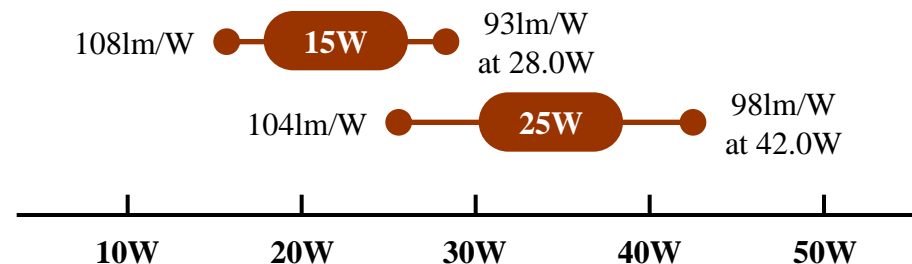
# 15W / 25W class New Zenigata series LED line-up

## Overview



**Dimension** :24 x 20 mm  
**Thickness** :1.8 mm  
**IF(15W)** :400mA(max.700mA)  
**(25W)** :700mA(max.1050mA)  
**Phosphor** :Green + Red  
**Electrode pad** :Ag plate  
**Resin** :Silicone  
**Substrate** :Ceramic

## Drive range



Tc=90 °C, Rjc=2.3 °C/W

Type No.	Connection	IF	VF	CRI	CCT	Luminous flux	Efficiency
GW6DMA27NFC	12 series x 4 parallel	400mA	37.0V	83	2,700K	1,400lm	95lm/W
GW6DMA30NFC				83	3,000K	1,450lm	98lm/W
GW6DMA40NFC				82	4,000K	1,580lm	107lm/W
GW6DMA50NFC				82	5,000K	1,600lm	108lm/W

Tc=90 °C, Rjc=1.6 °C/W

Type No.	Connection	IF	VF	CRI	CCT	Luminous flux	Efficiency
GW6DMC27NFC	12 series x 7 parallel	700mA	37.0V	83	2,700K	2,390lm	93lm/W
GW6DMC30NFC				83	3,000K	2,450lm	95lm/W
GW6DMC40NFC				82	4,000K	2,650lm	102lm/W
GW6DMC50NFC				82	5,000K	2,700lm	104lm/W

15w  
class

25w  
class

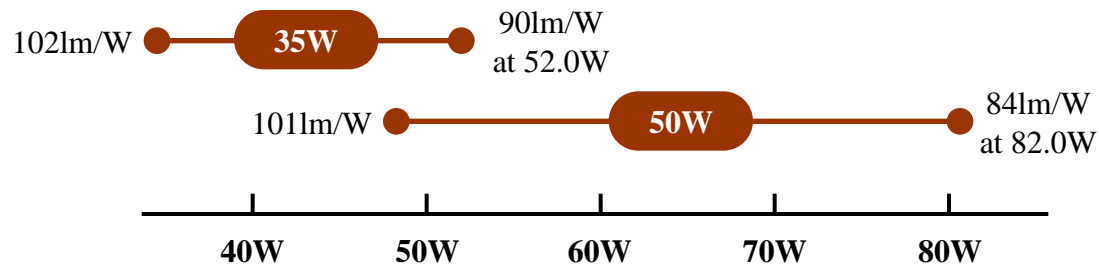
# 35W / 50W class New Zenigata series LED line-up

## Overview



**Dimension** :24 x 20 mm  
**Thickness** :1.8 mm  
**IF(35W)** :950mA(max.1300mA)  
**(50W)** :950mA(max.1500mA)  
**Phosphor** :Green + Red  
**Electrode pad** :Ag plate  
**Resin** :Silicone  
**Substrate** :Ceramic

## Drive range



\*These value are of CCT=5,000K products

Tc=90 °C, Rjc=1.1°C/W

Type No.	Connection	IF	VF	CRI	CCT	Luminous flux	Efficiency
GW6DMD27NFC	12 series x 10 parallel	950mA	37.0V	83	2,700K	3,140lm	89lm/W
GW6DMD30NFC				83	3,000K	3,300lm	94lm/W
GW6DMD40NFC				82	4,000K	3,550lm	101lm/W
GW6DMD50NFC				82	5,000K	3,600lm	102lm/W

Tc=90 °C, Rjc=0.8 °C/W

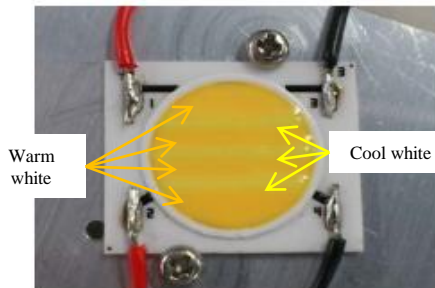
Type No.	Connection	IF	VF	CRI	CCT	Luminous flux	Efficiency
GW6DME27NFC	16 series x 10 parallel	950mA	50.0V	83	2,700K	4,300lm	90lm/W
GW6DME30NFC				83	3,000K	4,430lm	92lm/W
GW6DME40NFC				82	4,000K	4,770lm	98lm/W
GW6DME50NFC				82	5,000K	4,880lm	101lm/W

35w  
class

50w  
class

# Unique Idea “Tora Zenigata” LED

## Overview



**Dimension** :24 x 20 mm  
**Thickness** :1.0 mm  
**IF** :700mA (max.840mA)  
**Thermal resistance** :1.35°C/W(Warm white)  
                               1.91°C/W(Cool white)  
**Resin** :Silicone  
**Substrate** :Ceramic

## Origin of product name

“Tora Zenigata” is a unique but functional idea for LED luminaire. It enables you to tune color from Warm White(2700K) to Cool White(5700K) with 25W range. SHARP’s expertise allows precise creation of two different phosphor zones. It looks like Tora (means Tiger in English) print, isn’t it!?



## Spec and Features

Type No.GW6TGCBG40C

IF=700mA	lm	VF	CCT	W	Series x Parallel	Ra
Warm white	1840	37	2700	25.9	12 x 8	96
Cool white	2170	38	5700	26.6	12 x 6	90

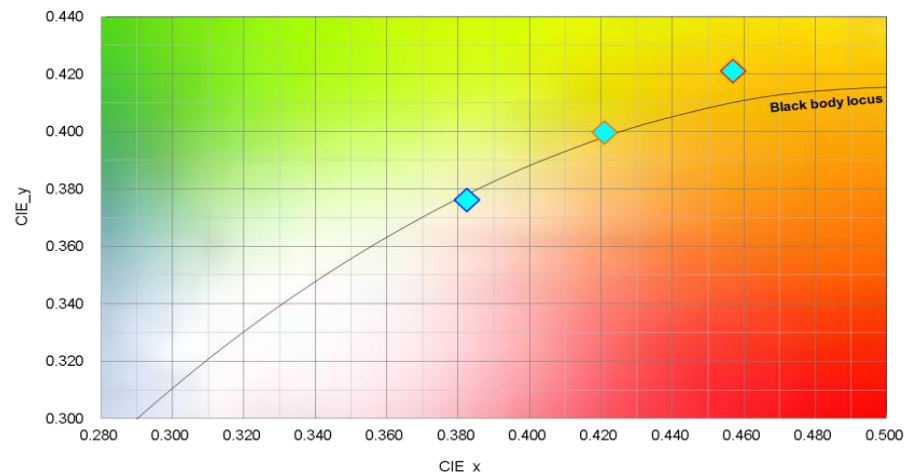
1. Control-able its color on just one LED device.

2. High CRI performance.

3. Good reliability based on ceramic material substrate.

## Color control

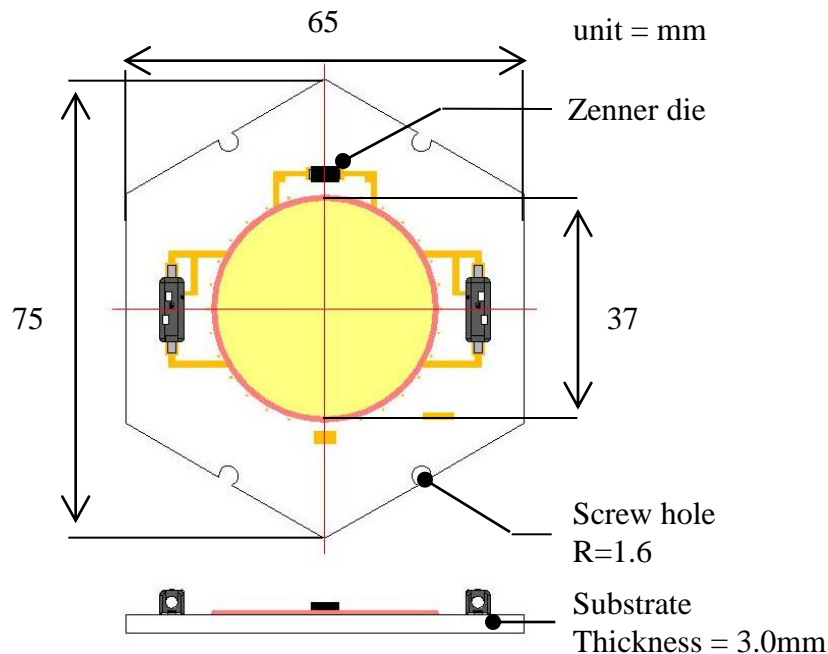
Control-able its color as following range from warm to cool with high class CRI value over Ra=92.



# 100W type Zenigata LED device

All our accumulated technical skill is evolve into the 100W type Zenigata LED device. High class power with just single core LED would be considerable contribution for your optical design, and good advantage for shadow and radiated lighting irregularity. If you are particular about supreme lighting quality, SHARP 100W Zenigata surely becomes a one of your best solution.

## Outline



## Spec

**Dimension** :65 x 75 mm  
**Thickness** :3.0 mm  
**Phosphor** :Green + Red  
**Electrode pad** :Connector  
**Resin** :Silicone  
**Substrate** :Al + Ceramic coating

**Max. Power** :148W  
**Max. IF** :910mA  
**Max. IR** :100mA  
**Max. Topr** :-30~+100°C  
**Max. Tstg** :-40~+100°C  
**Max. Tj** :140°C

**VF** :123~153V typ.140V  
**Luminous** :typ.13,000lm  
**Chromaticity** :x=0.3481  
 :y=0.3589  
**Color temp.** :4902K  
**Ra** :min.65~ typ.70

\*IF test condition = 700mA

## Technical feature

**Point I**

### In-house LED die

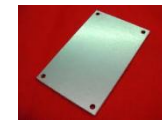
Blue LED die, one of key parts in LED device, is provided by our own plant with clear patent. Excellent and latest technology is promptly reflected to our device products. Additionally, clear patent ensured.



**Point II**

### Al substrate

To achieve good heat radiation, the 100W Zenigata installs Al substrate, and with insulation coating for surge damage protection to LED die.



**Point III**

### Connector juncture

Connector juncture is great help for your assemble process. And contribute to riskless of disconnection.



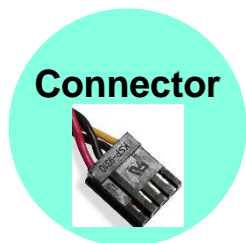
# Module accessories & components overview

★ =our own and unique technology

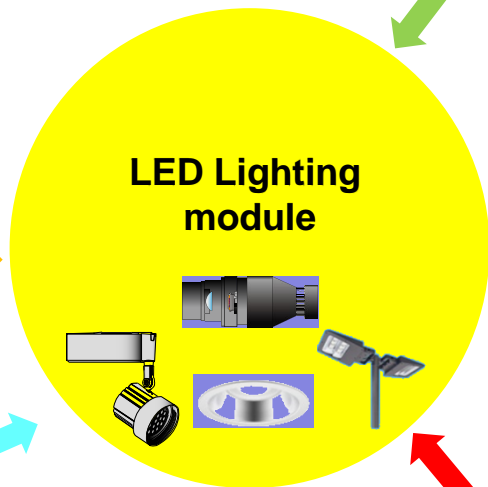
★ Achievable high uniformity spot lighting by our own optical technology



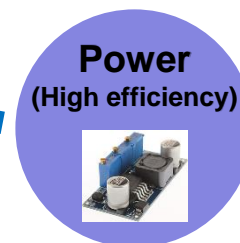
★ Able to reduce both “glare” and “yellow ring” phenomenon by our unique reflector with special coating technology.



Help for “non-solder” connecting.



- STEP1 : MEGA Zenigata ~50W  
Appli: Store inside spot light / Down light
- STEP2 : GIGA Zenigata 100W~  
Appli: Alley light / Street lamp / Highway light



- High efficiency & small type power supply



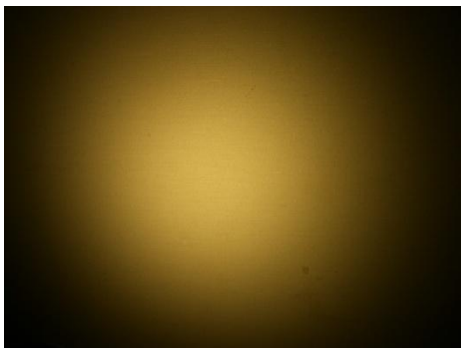
★ Original & unique framework heatsink  
(Compatible both cooling function and easy-to-assemble by sub-heatsink technology.)



# Lens technology

The lens, one of the key parts in the module selling, targets to achieve “clear edge spot lighting” illuminating. The technology is still under development in SHARP, however it is surely good support for your optical design and products concept. Target application would be a reading lamp on the first class train, air plain, shop advertising illumination, stage lighting and so on.

Convectional spotting

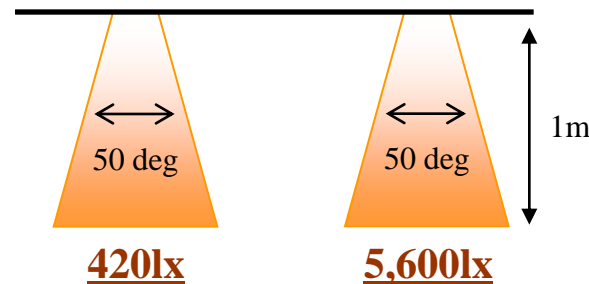


with SHARP Lens

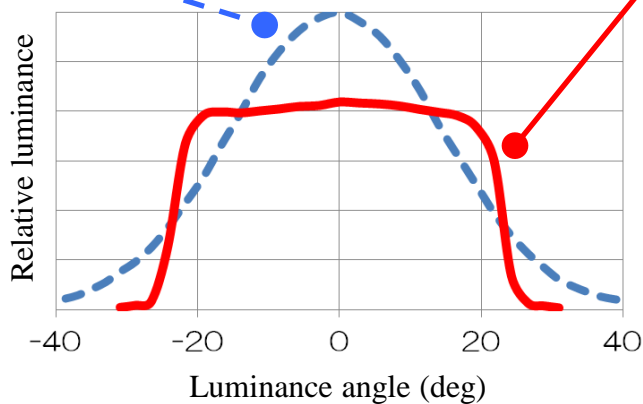


【Simulation reference】

5W Zenigata LED Lens : φ45mm      50W Zenigata LED Lens : φ100mm



illuminance distribution



<Reading lamp>



<Stage lighting>

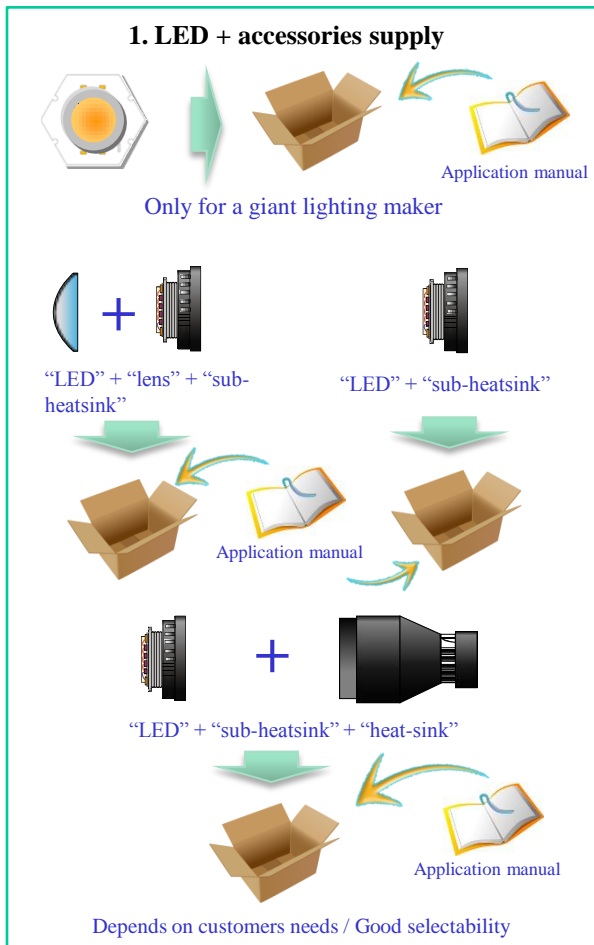


- No leakage loss
- Lighting to the objection with good uniformity

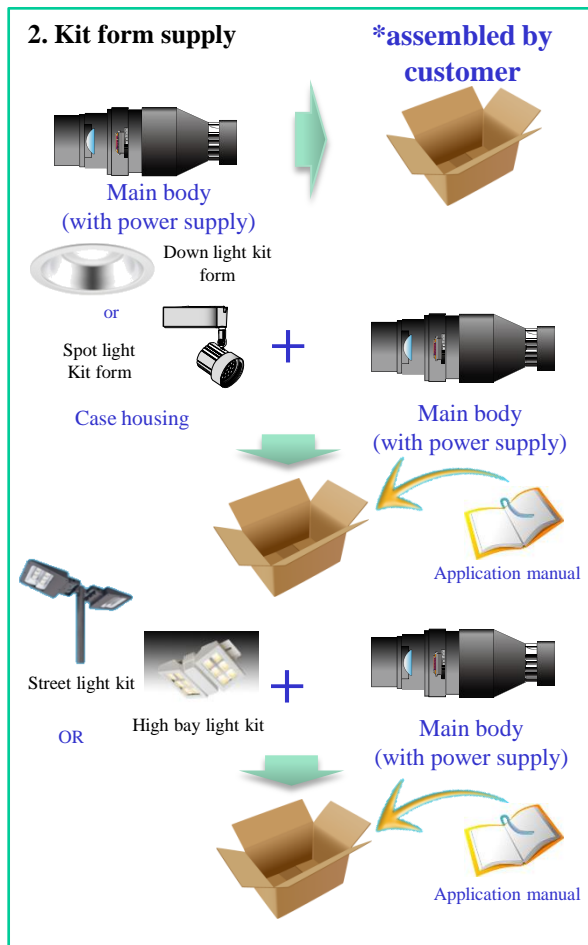


# Module selling scheme

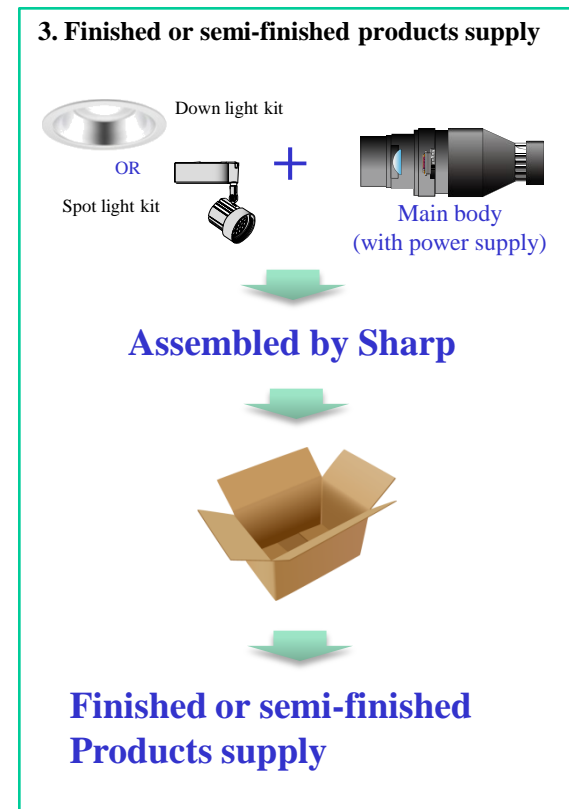
## Parts supply



## Kit form supply



## OEM



Application manual will be set up soon to help for customer's design. It explains of each accessories and components.

# SHARP Zenigata LED

- High Efficiency Models -

## SHARP Corporation

Electronic device components  
Lighting device division  
Planning group

Date. July. 2013



**SHARP**

# 10 W class Zenigata series LED line-up

Competitive with  
A company 1507

July. 2013 ver.03

## Overview



**Dimension** :15 x 12 mm  
**Thickness** :1.6 mm  
**Phosphor Diameter** :φ10mm  
**Phosphor** :Green + Red  
**Electrode pad** :Ag plate  
**Resin** :Silicone  
**Substrate** :Ceramic

# Confidential

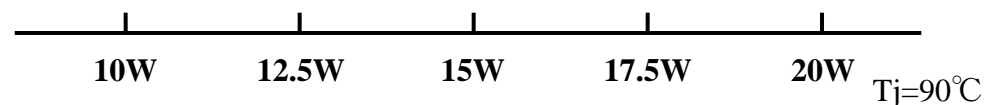
## Drive range

105lm/W  
at 8.8W

10W

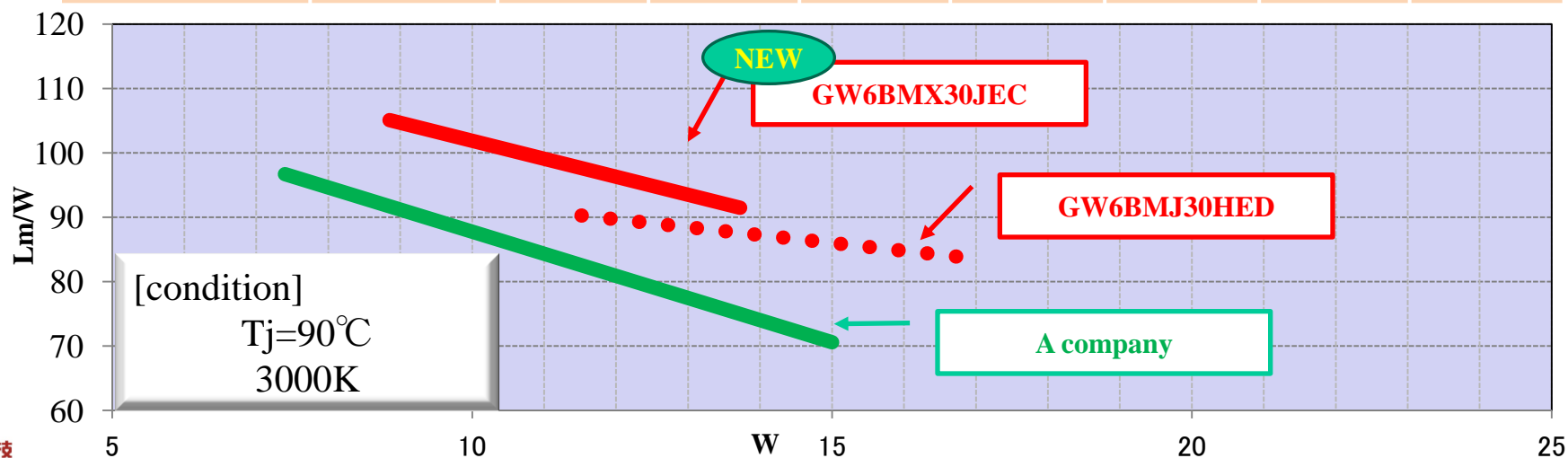
91lm/W  
at 13.7W

\*These value are of  
CCT=3,000K products  
Tj=90°C



Type No.	Thermal resistance(ref)	IF	VF	W	CRI	CCT	Luminous flux	Efficiency
GW6BMX27JEC	4.0°C/W	500mA	17.5V	8.8W	82	2,700K	880lm	100.6lm/W
GW6BMX30JEC						3,000K	930lm	106.3lm/W
GW6BMX40JEC						4,000K	990lm	113.1lm/W
GW6BMX50JEC						5,000K	1000lm	114.3lm/W

10w  
class



# 15 W class Zenigata series LED line-up

Competitive with  
A company 1512

July. 2013 ver.03

## Overview

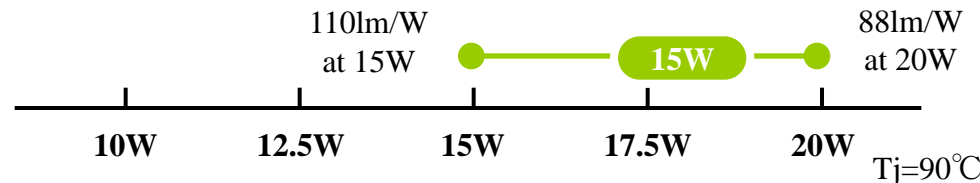


**Dimension** :15 x 12 mm  
**Thickness** :1.6 mm  
**Phosphor Diameter** :φ10mm  
**Phosphor** :Green + Red  
**Electrode pad** :Ag plate  
**Resin** :Silicone  
**Substrate** :Ceramic

## Drive range

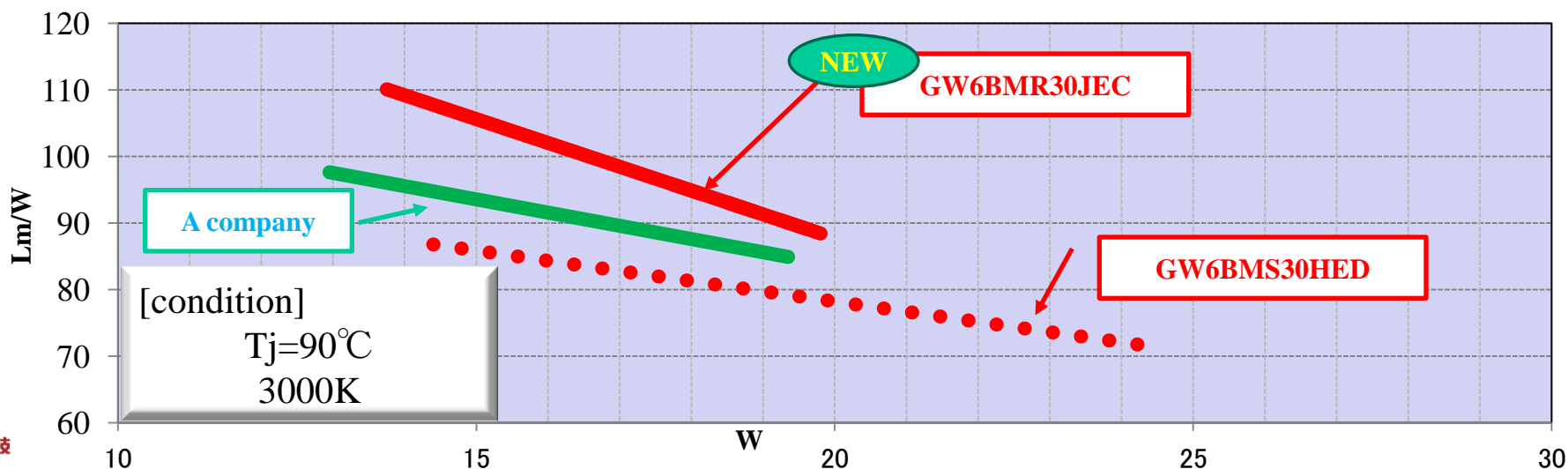
**Confidential**

\*These value are of  
CCT=3,000K products  
T<sub>j</sub>=90°C



Type No.	Thermal resistance(ref)	IF	VF	W	CRI	CCT	Luminous flux	Efficiency
GW6BMR27JEC	3.3°C/W	500mA	35.5V	17.8W	82	2,700K	1610lm	90.7lm/W
GW6BMR30JEC						3,000K	1700lm	95.8lm/W
GW6BMR40JEC						4,000K	1810lm	102.0lm/W
GW6BMR50JEC						5,000K	1820lm	102.5lm/W

15w  
class



# 25 W class Zenigata series LED line-up

Competitive with  
B company 030-1208/A company 2520

July. 2013 ver.03

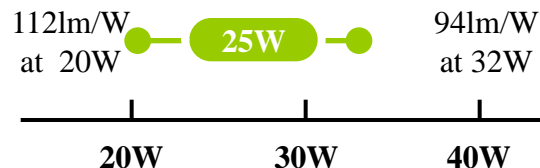
## Overview



**Dimension** :24 x 20 mm  
**Thickness** :1.8 mm  
**Phosphor diameter** :φ17.2mm  
**Phosphor** :Green + Red  
**Electrode pad** :Ag plate  
**Resin** :Silicone  
**Substrate** :Ceramic

# Confidential

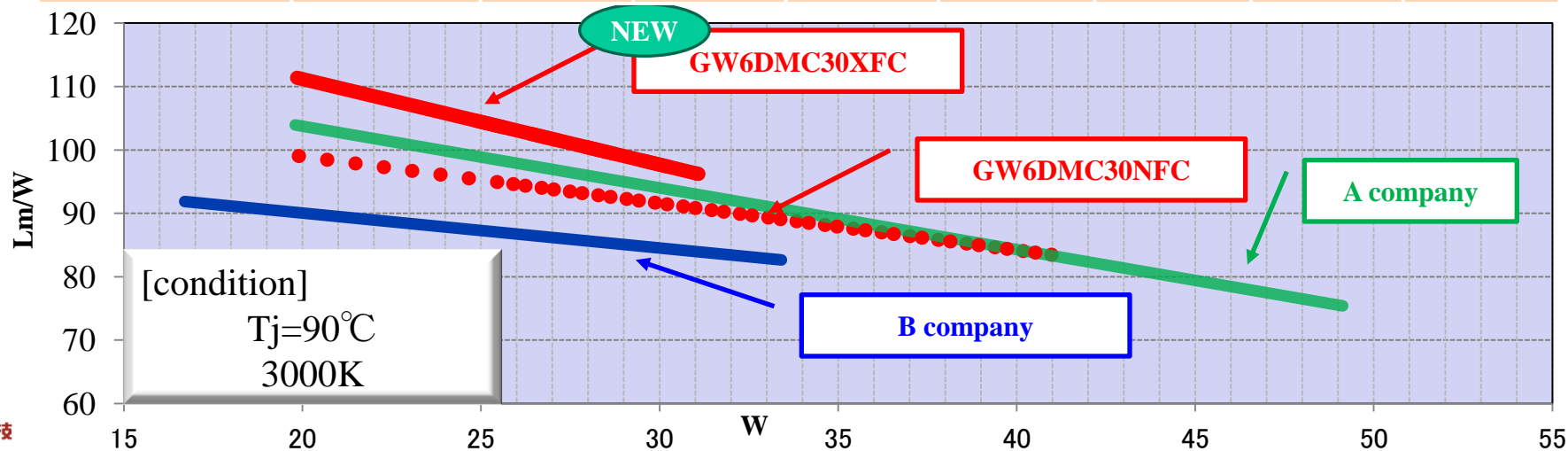
## Drive range



\*These value are of  
CCT=3,000K products  
 $T_j=90^\circ\text{C}$

Type No.	Thermal resistance(ref)	IF	VF	W	CRI	CCT	Luminous flux	Efficiency
GW6DMC27XFC	1.9°C/W	700mA	35.5V	24.9W	82	2,700K	2460lm	99.0lm/W
GW6DMC30XFC						3,000K	2600lm	104.6lm/W
GW6DMC40XFC						4,000K	2760lm	111.1lm/W
GW6DMC50XFC						5,000K	2790lm	112.3lm/W

25w  
class



# 35 W class Zenigata series LED line-up

Competitive with  
B company 030-1212/A company 2530

July. 2013 ver.03

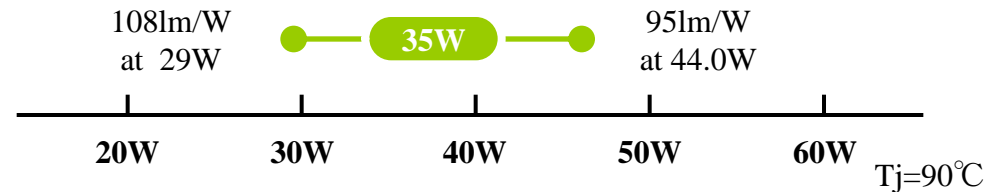
## Overview



**Dimension** :24 x 20 mm  
**Thickness** :1.8 mm  
**Phosphor diameter** :φ17.2mm  
**Phosphor** :Green + Red  
**Electrode pad** :Ag plate  
**Resin** :Silicone  
**Substrate** :Ceramic

# Confidential

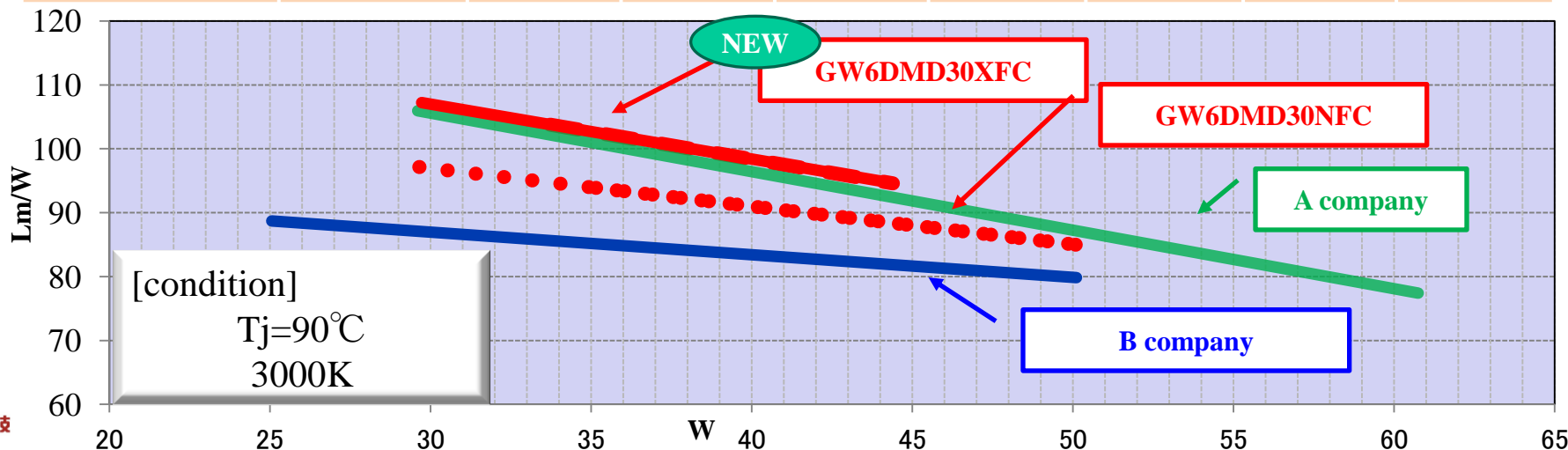
## Drive range



\*These value are of  
CCT=3,000K products  
 $T_j=90^\circ\text{C}$

Type No.	Thermal resistance(ref)	IF	VF	W	CRI	CCT	Luminous flux	Efficiency
GW6DMD27XFC	1.3°C/W	950mA	35.5V	33.7W	82	2,700K	3310lm	98.1lm/W
GW6DMD30XFC						3,000K	3500lm	103.8lm/W
GW6DMD40XFC						4,000K	3710lm	110.0lm/W
GW6DMD50XFC						5,000K	3750lm	111.2lm/W

**35w**  
class



## Overview



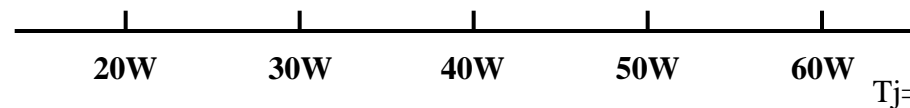
**Dimension** :24 x 20 mm  
**Thickness** :1.8 mm  
**Phosphor diameter** :φ17.2mm  
**Phosphor** :Green + Red  
**Electrode pad** :Ag plate  
**Resin** :Silicone  
**Substrate** :Ceramic

## Drive range

97.8lm/W  
at 41.3W

50W

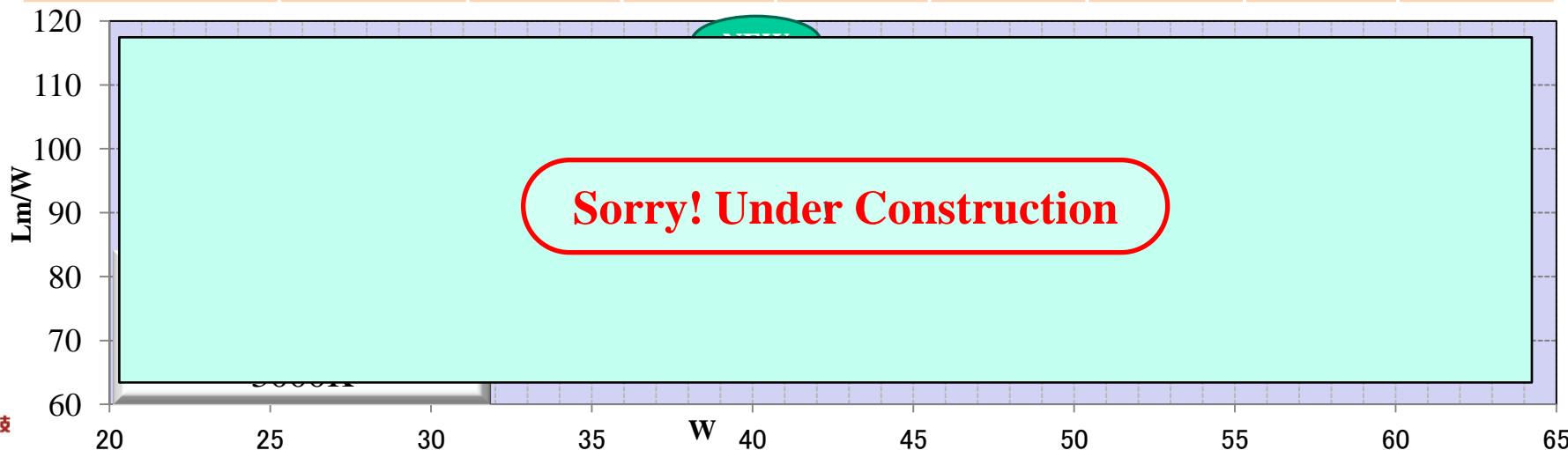
95lm/W  
at 46.2W



**Confidential**

\*These value are of  
CCT=3,000K products  
Tj=90°C

Type No.	Thermal resistance(ref)	IF	VF	W	CRI	CCT	Luminous flux	Efficiency
GW6DME27XFC	1.3°C/W	950mA	47.5V	45.1W	82	2,700K	4240lm	94.0lm/W
GW6DME30XFC						3,000K	4480lm	99.3lm/W
GW6DME40XFC						4,000K	4790lm	106.2lm/W
GW6DME50XFC						5,000K	4810lm	106.6lm/W



50w  
class



# SHARP

**WGL** 詮晨科技  
**TC**

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**World General Lighting Technology Corp.**

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