

**Development of the CL-L100 Series of White Power LED Lamps for Various Lighting Purposes Featuring the World's Highest Luminous Efficiency (70 lm/W) and Luminous Flux (245 lm)**

Electronic parts manufacturer, Citizen Electronics, (Fujiyoshida City, Yamanashi Prefecture; Capital:1,988,550,000 yen; President: Takashi Masuzawa) has developed the new series of white power LED lamp for various lighting purposes, CL-L100, featuring the world's highest luminous efficiency together with various application development roles to expand new possibilities in the world of LED lighting.

Citizen Electronics has been developing and producing white power LED lamps for general lighting since autumn in 2003. Since then, we have improved steady luminous efficiency function and maintained the highest level of the luminous efficiency in mass production. The recently developed CL-L100 series is an epoch-making product accomplishing the world's highest luminous efficiency of 70 lm/W, which is 1.4 times as high as our existing product, and at the same time featuring the world's highest luminous flux of 245 lm.



The CL-L100 series is a thin and rectangular shaped package of 4 mm × 40 mm × 0.75 mm, and by installing the unit package vertically, horizontally, or cylindrically to become stereoscopic, each unit will be a light source module similar to the alternative products shown below, which makes possible the development of various applications.

- Line module (Vertical layout): Alternatives of cold cathode fluorescent lamp (CCFL)
- Panel module (Flat, horizontal layout): Alternatives of surface light emitting devices such as electro-luminescent panels
- Bulb module (Cylindrical layout): Alternatives of bulbs for car headlights



Line module



Panel module



Bulb module

All of the above light source modules are driven by 12 V of current and achieve 2,450 lm luminous flux with a 35 W electrical input.

The white LED has drawn attention as a light source of the next generation, but both luminous efficiency and total luminous flux were not sufficient conventionally. These were reason for their slow popularization. However, this LED is almost the equivalent of the fluorescent lamp in luminous efficiency with about 50 lm/W to 100 lm/W., While the luminous efficiency of brighter halogen lamps used in car headlights is 1,500 lm, this product has achieved 2,450 lm in the above-mentioned bulb module. We can say this is an advanced product that has overcome those problems.

The CL-L100 has achieved the world's highest level of luminous efficiency by improving the luminosity of elements and light-extraction efficiency to the maximum level at this time. The product will continue to be developed with a target date for mass production within 2006, and we plan to increase performance by the improvement of the package and heat dissipation measures making it suitable for appliances and applications.

[Product Features]

1. The world's highest luminous efficiency of 70 lm/W.
2. Applicable to a high current input of 3.5 W, and total luminous flux of 245 lm with a 3.5 W input.
3. Compatible with various applications without PC board to be mounted.
4. Sheet style super slim surface emission light source.
5. Since it is possible to secure this LED on metal materials with screws but not by soldering, there is a structural advantage for heat dissipation which has been a problem of power LEDs.

[Light source comparison]	Input power	Luminous efficiency	Luminous flux
CL-L100 (by the piece)	3.5 W	70 lm/W	245 lm
40 W incandescent lamp	40 W	Approx. 15 lm/W	600 lm
40 W striplight fluorescent lamp	40 W	Approx 50 lm to 100lm/W	2,700 lm
Fluorescent lamp bulb type ( 40 W equivalent )	8 W	Approx 60 lm/W	480 lm
CL-L100 bulb module	35 W	70 lm/W	2,450 lm
Halogen lamps for cars	60 W	Approx 25 lm/W	1,500 lm
CL-L100 Line module	35 W	70 lm/W	2,450 lm

As a source of light, the better the LED lamp performance becomes, the wider the market expands. At this point, LEDs are used, in terms of the long lifespan, for lights in overhead locations and outdoors where maintenance work is difficult; for reading lights and footlights in hospitals where heat is undesirable for safety; for lights for perishable foods that must be kept free of heat; and based on the better luminous efficiency compared to incandescent lamps (bulbs), used for car lights for effective fuel savings. Also, since fluorescent bulbs contain toxic hydrargyrum but LEDs do not, we are certain that LEDs for lighting will expand the market as an energy conscious and clean light source of the future, and will become the mainstream light source for lighting appliances.

[General features of white power LED lamps for lighting]

1. Low power consumption reduced to about 1/3 of incandescent lamps.
2. Maintenance-free come from a long lifespan of about 40,000 hours, 20 times longer than incandescent lamps.
3. No toxic materials such as hydrargyrum for fluorescent bulbs.
4. Light does not radiate any heat.
5. Does not shatter like fluorescent bulbs in a time of disaster : In safety from broken glasses.
6. Small, light and thin.

**Start of mass production    Within 2006**

**Luminous efficiency            Up to June 2005    70 lm/W**

[Contact Numbers]

For sales:

TEL: 81-(0)3-3493-2716    Tokyo office    Sales Planning

Manabu Danjo  
E-mail:mnb-dnj@mail.c-e.co.jp

For technology:

TEL: 81-(0)426-31-3330    R&D Tokyo office    1st Electronic Parts Production Div.    Koichi Fukazawa

E-mail:ko-fksw@mail.c-e.co.jp

Ref CE-P122 06/05