October 21st, 2010
CITIZEN ELECTRONICS CO., LTD.

Development of white LEDs for lighting: 'CL-L330 (26W)' and 'CL-L340 (41W)' featuring the world's highest level of luminous flux

- More than twice the luminous flux of the conventional model -

Citizen Electronics Co., Ltd. (Head Office: Fujiyoshida City, Yamanashi Prefecture. President: Yoshihiro Gohta) has developed the CL-L330 series (26W type) and CL-L340 series (41W type) of white LEDs for lighting, of which the luminous flux per LED lamp is more than twice that of the conventional model.
A product demonstration will be held during the "Hong Kong International Lighting Fair 2010" in Hong Kong from October 27, 2010.

◆Newly developed products

White LED for lighting

- CL-L330 Series (26W)
  Two types (5000K, 3000K)
- CL-L340 Series (41W)
  Two types (5000K, 3000K)
- Mass production is scheduled to start in November 2010

CL-L330-C26N-C
(5000K type)

CL-L340-MC41L1-C
(3000K type)

■ Background and advantages of development

LED lighting has been in the spotlight as LED bulbs are commercially available. However, in most cases it is difficult to provide enough luminous flux for applications with only one LED. Therefore, it is necessary to place two or more LEDs in lights. In such cases, the area in which LEDs are to be placed becomes larger and accordingly the size of the light also tends to become larger. In addition, there is another negative effect. When there are two or more light sources, design to control light such as that of the reflection plate becomes complex.
The newly developed products resolve these problems by dramatically increasing luminous flux per LED and contribute to miniaturized lights and simplified optical design. It is also possible to expand lighting applications substantially where only one LED is used.

■ Main features

1. More than twice the conventional luminous flux

<5000K (kelvin) color temperature *1 type>
26W type: 2800 lm, 41W type: 4390 lm
[The conventional model with the highest luminous flux of our products (13W type): 1400 lm (lumen)]

2. High luminous efficacy

In general, for LEDs, the more power supplied to a product, the lower luminous efficacy is likely to become. In response to this problem, we can combine high luminous flux and high luminous efficacy by mounting a number of compact light-emitting dice, of which luminous efficacy is relatively high, in one LED package through utilization of "Citizen Electronics" specialized high-density mounting technology.
The new products, both 26W and 41W types, provide the same high luminous efficacy as that of our conventional model (13W type) which has the highest luminous efficacy of our products.

<5000K color temperature type> 26W type: 104 lm/W, 41W type: 105 lm/W
<3000K color temperature type> 26W type: 73 lm/W, 41W type: 73 lm/W

3. Our highest level of heat dissipation has been improved by 30% over that of the conventional model

As a measure against heat generation that has significant effects on the service life of LEDs, we have achieved the lowest level of thermal resistance*2 of our LED products, and effective heat dissipation processes are provided, such as transferring heat to a heat sink, etc. In addition, since the whole rear face of the LED package can be used as a heat dissipation route, it is possible to diffuse heat promptly.

<Thermal resistance>
26W type: 1.7°C/W, 41W type: 1.0°C/W
[The conventional model with the highest luminous flux of our products (13W type): 2.4°C/W]

4. Color rendering *3

For white LEDs, there is a trade-off between color rendering and luminous efficacy. Color rendering indices are set for the new products by color temperature, based on main applications.

5000K color temperature type: Ra67 (priority placed on luminous efficacy)
3000K color temperature type: Ra83 (priority placed on color rendering)

5. Applications

The 5000K-color temperature (cool color) type is intended mainly for exterior illumination where priority is placed on luminous efficacy. For example, this type is suitable for streetlights, projectors and advertising lights. The 41W type provides, with one LED lamp, the same high luminous flux as that of a general 100W mercury lamp. Therefore, it is expected to reduce power consumption by about 60%.
The 3000K-color temperature (warm color) type is intended mainly for interior illumination where priority is placed on color rendering. For example, this type is suitable for down lights for base lighting or spotlights for product rendition. The 41W type provides, with one LED lamp, the same high luminous flux as that of a general 150W halogen lamp. Therefore, it is expected to reduce power consumption by about 70%.

- Main specifications for products -

・CL-L330 Series (26W type)

Product code	CL-L330-C26N-C	CL-L330-MC26L1-C
Color temperature (K)	5000	3000
Total luminous flux (lm)	2800	1960
General color rendering index Ra	67	83
Luminous efficacy (lm/W)	104	73
Input current (mA)	720	
Thermal resistance (°C/W)	1.7	
Size (mm)	L:28.0×W:19.0×H:1.4	

・CL-L340 Series (41W type)

Product code	CL-L340-C41N-C	CL-L340-MC41L1-C
Color temperature (K)	5000	3000
Total luminous flux (lm)	4390	3060
General color rendering index Ra	67	83
Luminous efficacy (lm/W)	105	73
Input current (mA)	900	
Thermal resistance (°C/W)	1.0	
Size (mm)	L:28.5×W:28.5×H:1.4	

(*1 Color temperature: an index indicating hue of light. As the number gets bigger, the light becomes tinged with blue-white (cool color), and as the number gets smaller, light becomes tinged with orange (warm color).)

(*2 Thermal resistance: an index indicating how easy it is to transfer heat. The lower the value is, the easier it is to transfer heat.)

(*3 Color rendering: a measure of the ability to reproduce the colors of irradiated objects. The higher the general color-rendering index Ra is, the better the color rendering.)

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