

**Development of high power white LED for illumination:****CL-L102-C7 Series****A combination of high luminous flux (540 lm) and high efficiency (74 lm/W)**

Citizen Electronics Co., Ltd. (Head Office: Fujiyoshida City, Yamanashi Prefecture. President: Takashi Masuzawa. Paid-in capital: 1,988.55 million yen), a precision electronics manufacturer and a subsidiary of Citizen Holdings Co., Ltd., has developed the “CL-L102-C7 Series” of high power white LED lamps that combine high luminous flux and high efficiency to achieve the highest standards for LED illumination in the world.

Citizen Electronics has built a formidable track record as a consistent leader in LED light sources for electronic devices such as mobile phones. We have taken that experience and entered the field of high power white LED for general lighting, where we have achieved the world’s highest standard for luminous efficiency at the mass production level. Already, we have commercialized the CL-L102-C3 Series, which successfully combines a luminous flux of 245 lm and a luminous efficiency of 70 lm/W and has been adopted by many lighting equipment manufacturers both in Japan and abroad.

The newly developed “CL-L102-C7 Series” is an expansion of the existing CL-L102-C3 Series, and inherits the metal core base package, which is an excellent radiator. Without altering the dimensions of the product, we have succeeded in more than doubling the luminous flux.

In terms of performance as a general light source, this new product provides more luminous flux with just one LED lamp than the widely used 40 W incandescent light bulb or the light bulb-shaped 8 W fluorescent tube, which is becoming a common alternative (both 485 lm). The new product contains no infrared (heat) or ultraviolet radiation within its spectral output, making it suitable for installation in places where the use of incandescent or fluorescent light sources is not an option. For applications such as solar battery systems, where priority is placed on luminous efficiency, our new product can be used with a lowered incoming current to obtain an efficiency of 150 lm flux at 110 lm/W.

We are convinced that this product, which can provide luminous flux on a par with widely used general lighting sources at a high luminous efficiency, in an extremely thin package, and with the LED’s long life, will open up new possibilities in the development of lighting applications. Citizen Electronics will continue to strive for further enhancement of luminous flux and luminous efficiency, as well as continuous development of LED lamps that combine these two attributes to help popularize the use of LED lighting.

We are also plan to make a 2900K color temperature type a standard part of the product lineup.

Samples of the new product are expected to be available in October 2007. Volume production and shipment are scheduled for January 2008.



Appearance of the CL-L102-C7 Series

CL-L102-C7N	
Incoming current (mA)	700
Total luminous flux (lm)	540
Luminous efficiency (lm/W)	74
Color temperature (K)	5000
External dimensions (mm)	L:50 × W:7 × H:2

General specifications of CL-L102-C7N [5000K type]

## References

[Characteristics of the new product]

1. Achievement of high luminous flux (540 lm) coupled with high efficiency (74 lm/W), the highest standards in the world for a mass produced product
2. Screwed configuration eliminates the need for a substrate
3. Metal core base package is an excellent radiator
4. Super thin surface emitting light source
5. Efficient output of 150 lm flux at 110 lm/W possible with lowered incoming current

[Comparison of our new product with our existing LED light source]

Product #	CL-L102-C7N (The new product)		CL-L102-C3N (Our existing LED light source)
	Incoming current (mA)	700	350
Total luminous flux (lm)	540	310	245
Luminous efficiency (lm/W)	74	90	70
Color temperature (K)	5000		
External dimensions (mm)	L:50 × W:7 × H:2		

[Changes in properties according to incoming current]

Product #	CL-L102-C7N (The new product)	
	Incoming current (mA)	700 (Standard operation)
Total luminous flux (lm)	540	150
Luminous efficiency (lm/W)	74	110

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