

# Press Release

January 21, 2003  
 CITIZEN ELECTRONICS CO.,LTD.

1.6 times brighter than conventional LED lamps! Greatly improves the image shooting functions of cellular phones with a camera under low light conditions

## Announcing development of the CITILIGHT™ Series, white LED lamps suitable as auxiliary light source for cellular phones with a camera

Citizen Electronics Co., Ltd., a manufacturer of precision electronic components (Fuji-Yoshida City, Yamanashi Pref., capitalized at 1.988 billion yen, President: Kei Masuzawa), has complemented its lineup by adding a new type of super-high luminance white LED lamp (CITILIGHT™) for illuminating subjects under low light conditions when taking motion or still pictures with a camera built into a cellular phone. The new CL-590 Series is not only 1.6 times brighter than conventional lamps, but also features greatly improved performance and cost efficiency.

Special about the newly developed CL-590 Series is that 3 LED dies are mounted in a compact package of only 5.0 mm×5.0 mm×1.5 mm, achieving 1.6 times the brightness of our conventional type (3-die) product. On top of that, it is designed as a surface-mountable compact and thin chip type component. Thanks to our advanced light simulation technology, the reflector inside the package is designed so that the light emitted by the LEDs sideways and to the rear is directed toward the front.

Samples can be supplied at this time (sample price ¥1,000/piece). Mass production is scheduled to start in February at a rate of 1 million pieces per month, with a planned increase to 3 million pieces per month within the year.

We are already delivering several hundred thousand pieces per month of our other White LED (CITILIGHT™) auxiliary light source for cellular phones a digital camera. With this new product we intend to establish the de facto standard for this market, and at the same time hope that our expanded product lineup will meet the diverse requirements of a still wider range of clients.

At present, cellular phones with a camera are the mainstream on the Japanese market and are also expected to spread very quickly overseas. These cellular phone cameras do not only shoot and transmit still pictures, but motion pictures as well, so the capability of our new product to provide continuous lighting is what sets it apart from the conventional flash light source (xenon tube). What is more, our compact, slim and lightweight product can be easily incorporated in the cellular phone, just as the camera is. At the same time, the big advantage of the LED, that is, its low power consumption, is an indispensable element for the battery-powered cellular phone.

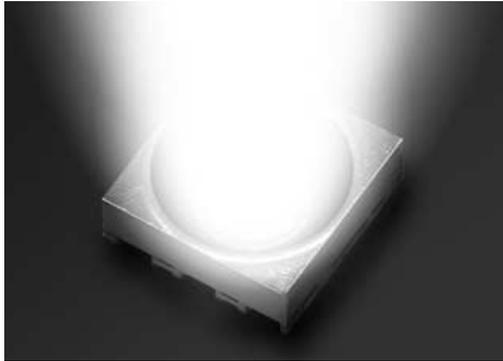
The main features of our new product are:

1. Thin SMD package designed to cope with the demands of surface-mounting technology and the trend toward ever slimmer cellular phones.
2. Capable of uniform lighting within an area of approx. 60° from the light emission center (directive characteristics).
3. 2 lighting modes: pulse lighting for still pictures and continuous lighting for motion pictures.
4. Super-high luminance package achieves a brightness of 24 lux for pulse lighting and 8 lux for continuous lighting at a distance of 50 cm.
5. Expanding our conventional CITILIGHT™ products in dimensions of 3.5 mm×3.5 mm×1.0 mm (1 - 3 dies) and 7.0 mm×7.0 mm×1.0 mm (4 dies) by our new CL-590 Series will enable us to meet the diverse requirements of clients with regard to size, specifications and cost
6. Allows soldering with environment-friendly lead-free solder.

Citizen Electronics is the leading manufacturer of chip (surface-mountable) LED lamps which, produced by our own manufacturing process, excel in reliability and cost performance ratio. Our new CL-590 Series also is a product of this manufacturing process, and we plan to develop it to a quality and cost level that will keep us way ahead of other makers.

# Super-high Luminance White LED Light Source CITILIGHT™

# CL-590S



CL-590S-3WD-D



Outer dimensions 5.0(L)×5.0(W)×1.5(H)mm

## ■ Features

1. Thin SMD package designed to cope with the demands of surface-mounting technology and the trend toward ever slimmer cellular phones.
2. Capable of uniform lighting within an area of approx. 60° from the light emission center (directive characteristics).
3. 2 lighting modes: pulse lighting for still pictures and continuous lighting for motion pictures.
4. Super-high luminance package achieves a brightness of 24 lux for pulse lighting and 8 lux for continuous lighting at a distance of 50 cm.
5. Allows soldering with environment-friendly lead-free solder.

## ■ Absolute Maximum Rating

Ta=25°C

Item	Symbol	Rating	Unit
Power dissipation	Pd	78	mW
Forward current	If	20	mA
Pulse forward current	Ifp	100*	mA
Reverse voltage	Vr	5	V
Operating temperature range	Top	-25~+80	°C
Storage temperature range	Tst	-30~+85	°C

(per die)  
(per die)  
(per die)  
(per die)

\*Duty≤1/10, Pulse Width≤30msec

## ■ Electro-optical Characteristics

Ta=25°C

Item	Symbol	Condition	min	typ	max	Unit
Power voltage	Vf	If=20mA	—	3.5	3.9	V
Reverse current	Ir	Vr=5V	—	—	100	μA
Luminous intensity *1	Iv	If=20mA (per die)	2.0	3.3	—	cd
Chromaticity coordinates *2	x, y	If=20mA	x(±0.02)		y(±0.02)	
			a	0.27	0.22	
			b	0.27	0.29	
			c	0.35	0.40	
			d	0.35	0.33	

(per die)  
(per die)  
(with 3 dies lit)

\*1 Per NIST standards.

\*2 Chromaticity coordinates correspond to the range encompassed by a, b, c, d.

\*3 Take antistatic measures similar to those for CMOS LSI.

Note: Performance and specifications are subject to change in the course of improvements.

**CITIZEN ELECTRONICS CO.,LTD.**

Inquiries on this product information, would you please contact to "Contact Us (About Product)" on our homepage.