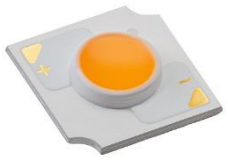
October 17, 2022
Citizen Electronics Co., Ltd.

# Development of “CITILED COB Type-F”, lighting LEDs that have addressed the unevenness of lighting surfaces which was caused by nonuniformity of the irradiated area such as with visible yellow rings
## Realization of uniform lighting without unevenness

Citizen Electronics Co., Ltd. (Head Office: Fujiyoshida City, Yamanashi Prefecture. President: Sekiguchi Kanetaka) has developed new LED packages for lighting, “CITILED COB Series Type-F.” This new product has greatly improved “the quality of light” of the irradiated area by addressing problems such as the generation of a yellow ring, which has been an obstacle in using LEDs for luminaires. Shipment of samples is scheduled to start from late October 2022, and mass production is scheduled to start from January 2023.

**CITILED COB Series Version4 Type-F with an Improved Irradiated Area**

Product type: High Intensity series Version4
2 types and 14 items
Application: Spotlights, downlights, landscape lighting such as wall washer lights
Mass production is scheduled to start from January 2023

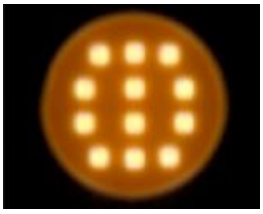


Development of lighting LEDs has tended to focus on improvement of functions such as brightness and luminous efficacy. However, demand for “quality of light,” uniform lighting without unevenness, which is used for space lighting such as in hotels, restaurants and museums, is increasing. This new product CITILED COB Series Type-F meets such needs in the market.

### Characteristics

### 1. Realization of uniform lighting

In our conventional models, generation of a yellow ring, which is caused by characteristics of LED light, and color unevenness have been problems. This new product has solved the problems after review of the materials and structure of light source while limiting the loss of luminous flux to the minimum. It can realize uniform lighting without unevenness and without using an optical lens specially designed for the product.

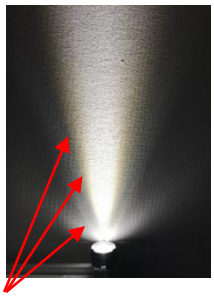
| | New model | Conventional model | | New model | Conventional model |
|---|---|---|---|---|---|
| Surface area when powered on |  |  | Irradiated area |  |  Yellow ring |

**2. Reduction in cost of developing an exclusive part**

Development period and materials cost for developing an exclusive lens that addresses the unevenness of light in conventional products can be drastically reduced.

**3. Expresses a beautiful space**

The unevenness of light is remedied not only in the irradiated area but also in the lighted space, thus the product is ideal for hotels, restaurants and museums where harmony is important. At the same time, reduction of glare, which often happens with outdoor lighting, can be expected as the evenness of the brightness of the light surface is improved.

| | New model | Conventional model |
|---|---|---|
| Irradiation against a wall |  |  Unevenness of color |

Citizen Electronics Co., Ltd. is a pioneer of manufacturing of the COB type LED package for lighting. This product solves the problem that the industry has been facing, and we expect that this product will be the mainstream LED light source in the future. We will keep contributing to the development of LED light sources through product development, with the use of high packaging technology and technology of high quality and high reliability that were created during our long history.

“CITILED The Light Engine” is a brand name of LEDs for lighting manufactured by CITIZEN ELECTRONICS CO., Ltd. “ＣＩＴＩＬＥＤ” is a registered trademark of CITIZEN WATCH CO., LTD.
*Information provided on this news release was accurate at the time of announcement. Design of the product, price, date of sale, specifications, etc. may change.


| Media inquiry | Inquiry about products |
| --- | --- |
| Citizen Watch Co., Ltd.<br>Public & Investor Relations Department<br>Ohdate, Morita<br>Tel: +81 42-466-1232 (direct)<br><br>Citizen Electronics Co., Ltd.<br>Corporate Planning Division<br>Corporate Planning and Public Relations Section<br>Watanabe<br>Tel: +81 555-22-9901 (direct) | Citizen Electronics Co., Ltd.<br>Sales Division<br>Kashitani<br>TEL：+81 6 6396 9081 (direct)<br><br>cej-inquiry@ml.citizen.co.jp |


Ref_CE-1149P-202210