## **Glass Wafer for CSP**

Alkali-free and polish-free glass wafer featuring low CTE\* is used as cover glass for WLCSP (Wafer Level Chip Size Package) of CMOS image sensors.

\*CTE: coefficient of thermal expansion

## **Features**

- Alkali-free and polish-free
- As-free, Sb-free characteristics are eco-friendly.
- Excellent surface quality
- Available in various thin film coatings such as AR and metal.



## **Properties**

| Properties/Glass Code            |          |                             | ABC-1 |
|----------------------------------|----------|-----------------------------|-------|
| Coefficient of thermal expansion | 30-380°C | × 10-7/K                    | 37    |
| Density × 10 <sup>3</sup> k      |          | $\times 10^3 \text{kg/m}^3$ | 2.52  |
| Young's modulus GPa              |          | GPa                         | 78    |
| Poisson's ratio                  |          |                             | 0.2   |
| Volume resistivity Log p         | 350℃     | Ω·cm                        | 13.0  |
| Dielectric constant              | 1MHz, RT |                             | 5.6   |
| tan $\delta$                     | 1MHz, RT |                             | 0.001 |
| Refractive index(nd)             | 587.6nm  | %                           | 1.53  |
| Light transmittance              | λ=550nm  | %                           | 92    |

## **Configuration Image of Smartphone Camera**

