News Release

May 22, 2020

Sumitomo Electric Industries, Ltd.

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Sumitomo Electric Launches High Quality SiC 150mm Single Crystal Substrate CrystEra™

Sumitomo Electric Industries, Ltd. has successfully developed a SiC 150mm diameter single crystal substrate—CrystEra™—for power devices. It will be used in production of Sumitomo SiC epitaxial wafer EpiEra™ starting from second half of fiscal 2020.

Semiconductor devices used to control electric power are known as power devices, which are used in various fields such as power transmission, train, automotive, solar power, home appliances and other sectors. From an energy-saving perspective, demand is growing for high-performance, high-efficiency devices operating with low loss of power. Silicon carbide (SiC) power devices are among the most notable semiconductor devices, and are being used in an increasingly wide range of applications. Meanwhile, stable supply chain for SiC power product has not been established yet, and expectations are higher for manufacturers who can provide substrates and epitaxial wafers with improved quality.

Against this background, Sumitomo Electric has successfully commercialized a 150 mm (6-inch) diameter substrate (product name: CrystEra™) for SiC power devices. CrystEra™ offers a low dislocation density SiC substrate with smaller thickness variation and warpage. The Company achieved these features using a crystal growth furnace that took advantage of its proprietary technology MPZ™*1 with precise simulations and an established slicing/polishing process for hard and brittle SiC, in addition to its more than 40 years of experience in compound semiconductor technology.

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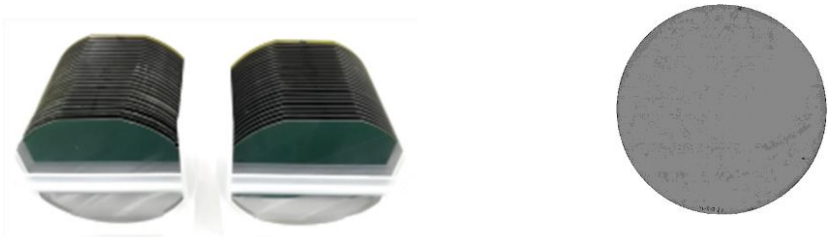

The SiC substrate product CrystEra™ (left) and its X-ray topographic image*2 (right)

Since fiscal 2017, Sumitomo Electric has mass-produced the high quality SiC epitaxial wafer EpiEra™. The product has been well received in the market. From the second half of fiscal 2020, the Company will use the currently commercialized CrystEra™ as a substrate for EpiEra™.

As a manufacturer capable of delivering substrates, epitaxial wafers and devices through an integrated production system, Sumitomo Electric intends to continue supplying high quality SiC materials using CrystEra™ and EpiEra™, thereby helping to realize high-performance power devices for an extensive range of sectors.

*1. An abbreviation for Multi-Parameter and Zone controlled SiC growth technology. This crystal growth technology enables the setting of the optimal conditions multi-dimensionally (e.g. spatially and temporally) through precise simulations, optimal conditions multi-dimensionally
(e.g. in spatially and thermally)

*2. The substrate was X-ray photographed for observation. If it has no concentrated displacement area, it has a uniform (gray) appearance.

■ Reference

Sumitomo Electric's Website

https://sumitomoelectric.com/

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