

Resonac Holdings Corporation

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**Resonac Develops and Starts to Mass-produce  
Third Generation High-grade SiC Epitaxial Wafers**

— Through supply of top-quality epitaxial wafers, Resonac contributes to practical application of space-saving high-output next-generation power semiconductors —

Resonac Corporation (Tokyo: 4004, President: Hidehito Takahashi) has developed a third generation of high-grade silicon carbide (SiC) epitaxial wafer (HGE-3G) for power semiconductors and has started to mass-produce it. HGE-3G has quality superior to that of second-generation high-grade SiC epi-wafer (HGE-2G), which has been mass-produced up to the present.

SiC power semiconductor reduces power loss which occurs in conversion of electricity and emits less heat than conventional silicon-wafer-based power semiconductor, thereby conserving energy. Therefore, the demand for SiC power semiconductor is increasing rapidly especially in the field of industrial use, including use in electric vehicles (EVs) and renewable-energy-based power generation. SiC epi-wafer is produced through deposition and growth of epitaxial SiC layer on the surface of single crystal SiC substrate, and it is used as main material for SiC power semiconductors. Resonac has been supplying world-class-quality SiC epi-wafers as the largest independent supplier in the world and is acclaimed by many device manufacturers inside and outside Japan.

High-end models of power semiconductors for use in high-priced EVs and railcars are required to conduct electric current of higher density to achieve high output and space saving concurrently. To realize conduction of high-density electric current, SiC-epi-wafer manufacturers must develop technology to prevent expansion of dislocation defects existing in SiC substrate into epitaxial SiC layer. This time, Resonac has developed the very latest technology to grow epitaxial SiC layer and successfully solved the abovementioned problem and started to mass-produce third-generation high-grade SiC epi-wafers. This HGE-3G has high-reliability under high electric current density, and it will contribute to the spread of SiC-based high-end power modules.

The Resonac Group aims to be a “Co-Creative Chemical Company” and contribute to the sustainable development of global society. Under this vision, Resonac positions its operation to produce SiC epitaxial wafers, which contributes to efficient use of energy, as a next-generation business, and will allocate much of our business resources. In September 2022, Resonac started to ship samples of 200mm SiC epi-wafers using in-house manufactured single crystal SiC wafers.\*<sup>1</sup> In addition, Resonac has been promoting “The Project to Develop SiC Wafers Technology for Next-generation Green Power Semiconductors,”\*<sup>2</sup> which aims to improve quality of SiC epi-wafer further. The Resonac Group will continue contributing to the spread of SiC power semiconductors by maintaining “Best in Class” as its motto and continuing provision of high-performance and highly reliable products.

\*1. For detail, please refer to the news release, “Showa Denko Starts to Ship Samples of 200mm SiC Epi-wafers,” which was announced on September 7, 2022.

\*2. For detail, please refer to the news release, “Showa Denko’s Program to Develop 8-inch SiC Wafers for Next-generation Green Power Semiconductor Selected for NEDO’s Green Innovation Fund Projects,” which was announced on May 23, 2022.

[About the Resonac Group]

The Resonac Group is a new company established as a result of the integration of the Showa Denko Group and the Showa Denko Materials Group (former Hitachi Chemical Group) in January 2023. The Group’s annual sales of semiconductor and electronic materials amount to about 400 billion yen, accounting for about 30% of the Group’s annual net sales. The Group especially has global top share of semiconductor materials for packaging process. The integration of the two companies has enabled the Resonac Group to design functions of materials as well as to develop them in-house, going all the way back to raw materials. The new trade name “RESONAC” was created as a combination of two English words, namely, the word of “RESONATE” and “C” as the first letter of CHEMISTRY. The Resonac Group will make the most of its co-creative platform, and accelerate technological innovation with semiconductor manufacturers, material manufacturers, and equipment manufacturers inside and outside Japan.

For detail, please refer to our Website.

Resonac Holdings Corporation: [https:// www.resonac.com/](https://www.resonac.com/)

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