

December 22, 2025

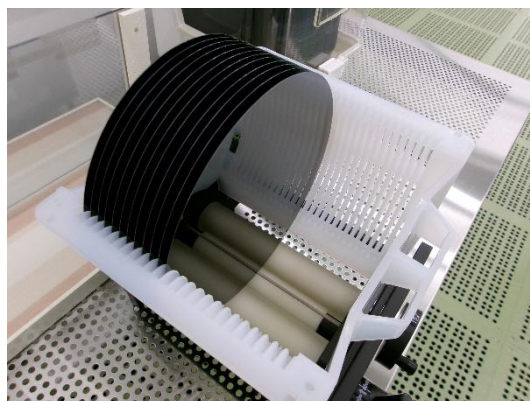
Direct Bonded SiC Substrate “SiCkrest” Adopted for Power Semiconductor Devices by Shindengen Electric Manufacturing Co., Ltd.

Tokyo, Japan – Sumitomo Metal Mining Co., Ltd. (TSE: 5713) is pleased to announce that its direct bonded silicon carbide (SiC) substrate “SiCkrest®” has been adopted for metal-oxide-semiconductor field-effect transistor (MOSFET), a power semiconductor device, developed by Shindengen Electric Manufacturing Co., Ltd.

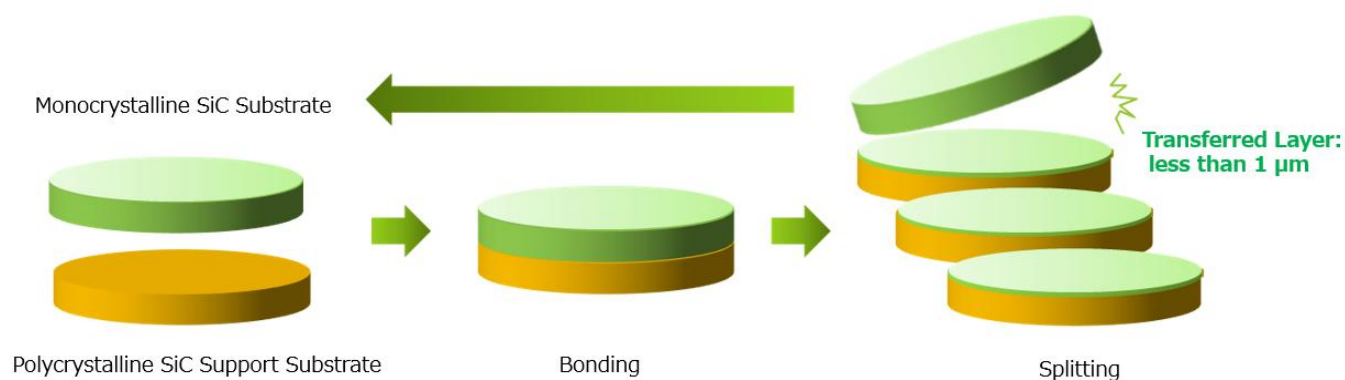
Sumitomo Metal Mining’s SiCkrest is a bonded SiC substrate as a key material for SiC power semiconductor devices. By utilizing proprietary bonding technology, SiCkrest realizes a two-layer wafer structure, achieving both high performance and cost competitiveness. A thin, high-quality monocrystalline SiC layer is bonded on a low-resistance polycrystalline SiC supporting substrate, enabling the substrate to maintain the characteristics of monocrystalline SiC while achieving low overall resistance and suppressing degradation during current conduction.

MOSFETs are transistors used for switching electrical signals in electronic circuits. Shindengen Electric Manufacturing’s newly developed SiC MOSFET, now available as samples, leverages SiCkrest for its low on-resistance. Combined with Shindengen Electric Manufacturing’s proprietary device design, the MOSFET enables reduced power loss even at high temperatures. As a result, these devices are well suited for automotive applications that require high current and high voltage performance.

Sumitomo Metal Mining will continue to expand the applications and supply system for SiCkrest, contributing to the advancement of material technologies in the power semiconductor market. By leveraging its integrated production system from raw materials to substrate manufacturing, the company aims to support next-generation device development and respond to diverse customer needs as a trusted partner.



SiCkrest, the direct bonded SiC substrates



Bonding Technology:

more than 50 direct bonded substrates to be manufactured from a single monocrystalline substrate.

Reference URLs

SiCkrest Product Overview

<https://www.smm.co.jp/en/business/material/products/sickrest/>

Shindengen Electric Manufacturing Co., Ltd. Page

<https://www.shindengen.com/>

Contact Information

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Please contact from the inquiry form: <https://www.smm.co.jp/en/contact/>