Compound Semiconductor Solutions SK siltron css



150 mm Silicon Carbide Wafers

High-quality SiC substrates for power electronics applications



Key features

- Optimizes targeted performance and total cost of ownership for next-generation power electronics devices
- Large-diameter wafers for improved economies of scale in semiconductor manufacturing
- Range of tolerance levels to meet specific device fabrication needs
- High crystal quality
- Low defect densities

Your source for SiC wafers

SK Siltron CSS offers leading-edge SiC material solutions across the value chain for power electronics manufacturing processes, including:

150 mm SiC epitaxial wafers _____





High crystal quality for demanding power electronics

As transportation, energy and industrial markets evolve, demand for reliable, high-performance power electronics continues to grow. To meet the needs for improved semiconductor performance, device manufacturers are looking to wide-bandgap semiconductor materials, such as the SK Siltron CSS 4H SiC Prime Grade portfolio of 4H n-type silicon carbide (SiC) wafers.

Consistent, reliable quality

SK Siltron CSS 150 mm SiC Wafers offer device manufacturers a consistent, high-quality substrate for developing high-performance power devices. High-quality SiC wafers/substrates are produced from 4H, 4° off-axis, n+ SiC ingots manufactured using proprietary state-of-the-art physical vapor transport (PVT) growth techniques and computer-aided manufacturing. Advanced wafer manufacturing techniques are used for the conversion into wafers to ensure the consistent and reliable quality that device manufacturers require.

Sized for improved production

With the 150 mm wafer size, SK Siltron CSS offers manufacturers the ability to leverage improved economies of scale compared with 100 mm device fabrication. SK Siltron CSS 150 mm SiC Wafers offer consistently excellent mechanical characteristics to ensure compatibility with existing and developing device fabrication processes.

Customized to meet your needs

SiC material from SK Siltron CSS can be customized to meet the performance and cost requirements of device design needs. We have the capability to produce high-quality wafers for next-generation devices with low defect densities – as low as MPD ≤ 0.1 cm⁻², TSD ≤ 400 cm⁻² and BPD $\leq 1,500$ cm⁻².

With our leading-edge SiC substrates, device manufacturers can drive improved device yield, performance and development of next-generation SiC power devices.

Potential uses

SK Siltron CSS Prime SiC substrates are presently used by leading SiC device companies in volume manufacturing applications. Applications include the production of MOSFETs, JFETS, JBS and MPS diodes; these devices can be found in industries ranging from automotive and industrial to consumer electronics. Voltage ratings for these devices range from 650 V to greater than 3.3 kV, and their current ratings span single Amperes to greater than 100 A.

SiC, due to its material properties, is well-suited for current and future power electronics applications. With the significance of power electronics growing rapidly due to the world's increased electrical needs, the rise of renewable energy and the electrification of vehicles, SiC is poised to be a crucial enabling technology for efficient next-generation power electronics.

Material properties

Please refer to product data sheet for complete property summary. These values are not intended for use in preparing specifications. Please contact your local sales office or SK Siltron CSS technical support for definition of product specifications.

Product metric	Prime
Diameter, mm	149.8 - 150.2
Thickness ⁽¹⁾ , µm	325 - 75
Primary flat length, mm	45 - 50
Bow, µm	± 10
Warp, µm	≤ 30
TTV, μm	≤ 10
SBIR, µm ⁽²⁾	≤ 2
Visible scratches, mm	≤ 150
Resistivity, ohm-cm	0.014 - 0.024
Dislocation density, cm ⁻²	
TED (mean)	≤ 9,000
BPD (mean)	≤ 3,000
MPD, cm ⁻²	≤ 0.5



Why SK Siltron CSS?

SK Siltron CSS is a pure-play manufacturer of both SiC substrates and epitaxial wafers with a long track record of proven customer service and innovation. With the backing of SK Siltron, CSS also possesses a wealth of expertise developed in the volume manufacturing of leading-edge Si wafers that is being leveraged to continue driving improvement of CSS's SiC wafers and to aggressively expand capacity to meet your needs.

 $^{(1)}$ Wafer thickness of 500 + 25 μm may be available upon request. $^{(2)}$ SBIR_max (10 mm x 10 mm).

How can we help you today?

Tell us about your performance, design and manufacturing challenges. Let us put our materials expertise, application knowledge and processing experience to work for you. For more information about our materials and capabilities, visit **www.sksiltron.com/en/wafer/waferC.do**.



To discuss how we could work together to meet your specific needs, contact us at **sales@sksiltron.com**.

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