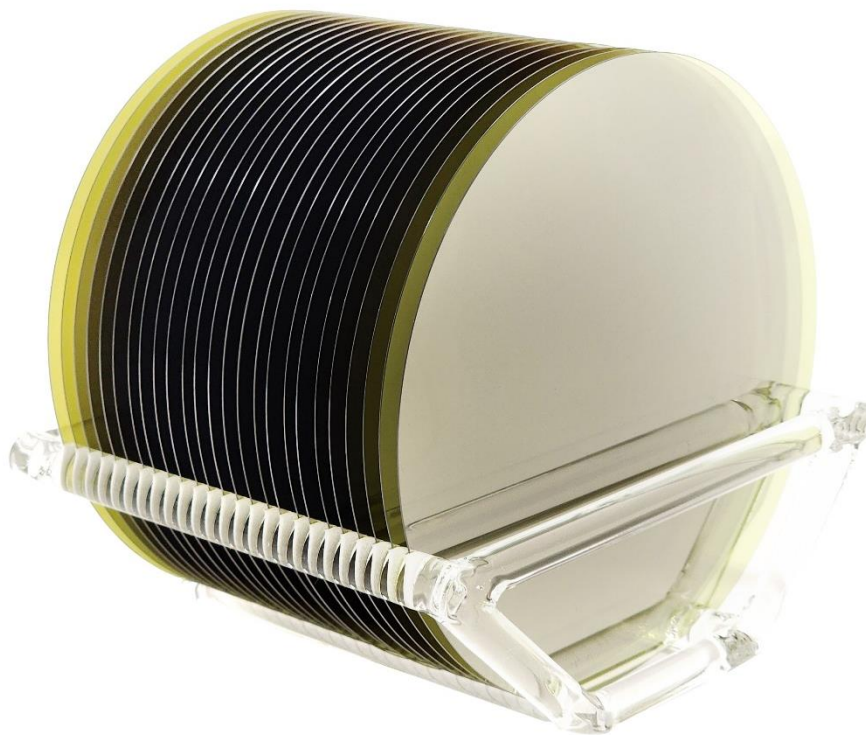


# SILICON CARBIDE (SiC) MATERIALS

## WHERE INNOVATION MEETS PARTNERSHIP

Coherent's Silicon Carbide (SiC) substrates and epitaxial wafers lay the foundation for the future – combining high thermal conductivity, high breakdown voltage, and wide-bandgap performance into a single, scalable platform.

From the crystal structure to the system level, our materials enable the development of compact, high-voltage, and energy-efficient devices for electric vehicles, renewable energy, and next-generation industrial applications.



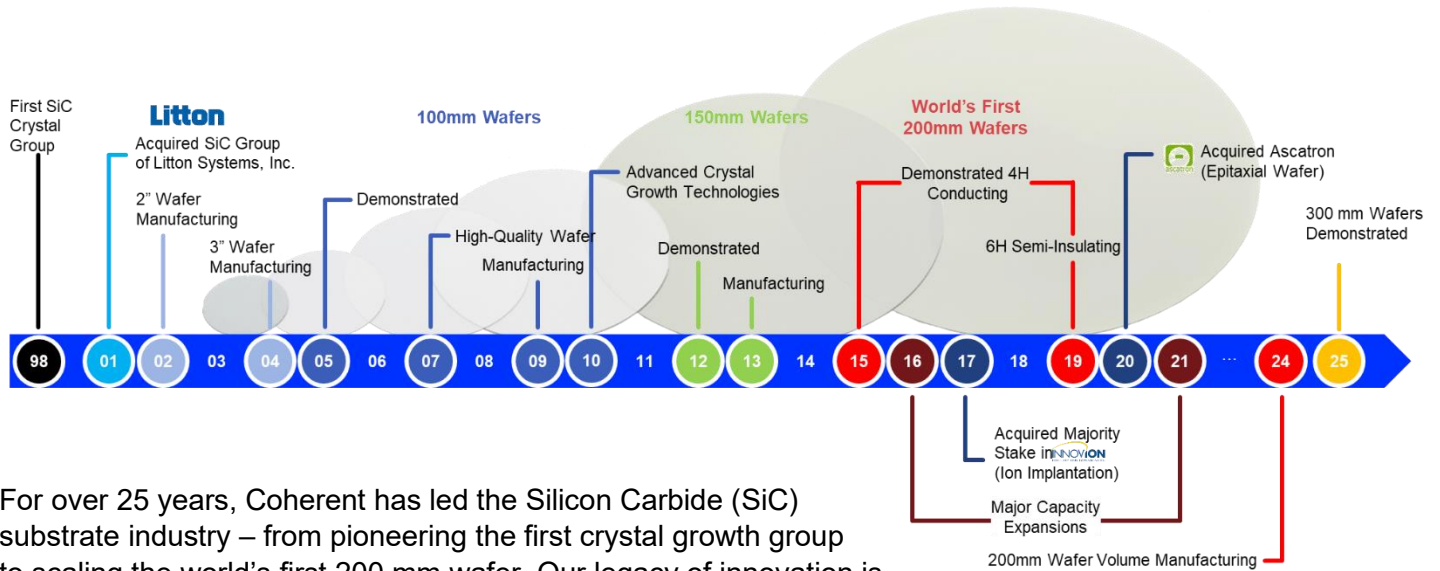
### FEATURES

- Silicon Carbide (SiC) substrates
- Silicon Carbide (SiC) epitaxial wafers

### APPLICATIONS

- Electric vehicles and ultra-fast charging
- Renewable energy (solar and wind) inverters
- Smart grid power switching
- Industrial motor drives
- Telecom and data infrastructure

## SiC SUBSTRATES: 25+ YEARS OF RELIABLE FOUNDATION



For over 25 years, Coherent has led the Silicon Carbide (SiC) substrate industry – from pioneering the first crystal growth group to scaling the world's first 200 mm wafer. Our legacy of innovation is built on deep material science, advanced crystal growth, and a relentless focus on quality, reliability, and scale.

As the demands on power systems grow – higher voltages, smaller footprints, and great efficiency – Coherent's substrates provide the crystal-clear foundation to enable it all.

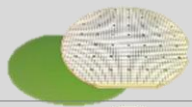
## SiC EPIWAFERS: DRIVING THE NEXT GENERATION FORWARD

### Take Control – From Substrates to Epitaxy

Coherent controls every step of the SiC wafer process – from crystal growth to advanced epitaxy – ensuring unmatched consistency, scalability and speed.

Coherent SiC Epiwafers

Coherent SiC Substrates



### What Sets Our Epitaxy Apart

- Suitable for large area devices
- Optimized substrates and epi processes for higher quality and cost-effective performance
- Record-low defectivity enabled by advanced buffer-layer technology
- 99.9 % BPD-to-TED conversion rate resulting in  $< 0.1$  BPD/cm<sup>2</sup>
- Thickness uniformity  $< 2\%$
- Doping uniformity  $< 3\%$

Building on decades of substrate expertise, Coherent's epitaxial wafers extend our leadership into advanced epitaxy, combining process control with scalable 150 mm and 200 mm manufacturing – enabling next-generation power devices for cleaner energy, smarter mobility, and more efficient industries.

# ENGINEERED TO YOUR SPECIFICATIONS

## N-TYPE AND SI SiC SUBSTRATES

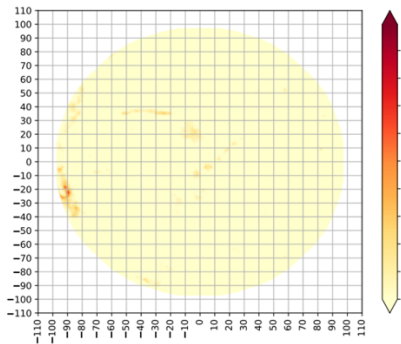
| Typical Properties                                            | N-Type Substrates |       | SI Substrates |        |
|---------------------------------------------------------------|-------------------|-------|---------------|--------|
| Polytype                                                      | 4H                | 4H    | 4H            | 6H     |
| Diameter (mm)                                                 | 150               | 200   | 100, 150, 200 |        |
| Thickness (μm)                                                | 350               | 350   | 500           |        |
| Thermal Conductivity (W/mK)                                   | 370               |       |               |        |
| Dopant                                                        | Nitrogen          |       | Vanadium      |        |
| Resistivity (Ω·cm)                                            | 0.02              | 0.02  | > 1E+11       |        |
| Dislocation Density (cm <sup>-2</sup> )                       | 3,000             | 3,000 | 5,000         | 10,000 |
| Threading Screw Dislocation (TSD) Density (cm <sup>-2</sup> ) | 300               | 300   | 1,000         | 3,000  |
| Basal Plane Dislocation (BPD) Density (cm <sup>-2</sup> )     | 700               | 400   | N/A           | N/A    |
| Micropipe Density (cm <sup>-2</sup> )                         | 0.01              | 0.04  | 0.05          | 0.5    |
| Warp (μm)                                                     | 3                 | 4     | 8             | 8      |
| Stacking Fault (%)                                            | 0                 | 0     | 0             | 0      |

Specifications can be customized upon request

## 200 MM QUALITY

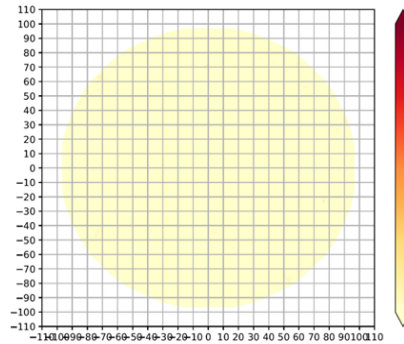
| Defects                  | Best in Class | CY27 Typical |
|--------------------------|---------------|--------------|
| TSD ( $\text{cm}^{-2}$ ) | 75            | 100          |
| BPD ( $\text{cm}^{-2}$ ) | 90            | 250          |
| MPD ( $\text{cm}^{-2}$ ) | 0             | 0            |

TSD [1/cm<sup>2</sup>] DD = 2938, BPD = 637, TSD = 75 TED = 2223 [1/cm<sup>2</sup>]

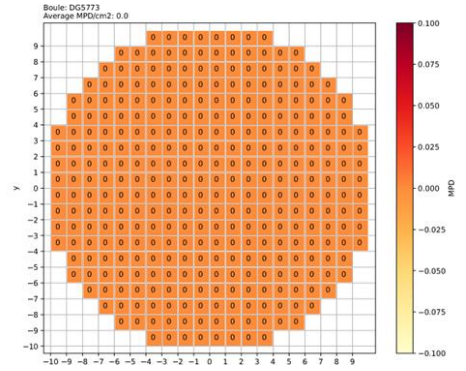


TSD 75  $\text{cm}^{-2}$

BPD [1/cm<sup>2</sup>] DD = 1848, BPD = 88, TSD = 499, TED = 1261 [1/cm<sup>2</sup>]



BPD 90  $\text{cm}^{-2}$



Zero MPD Wafer

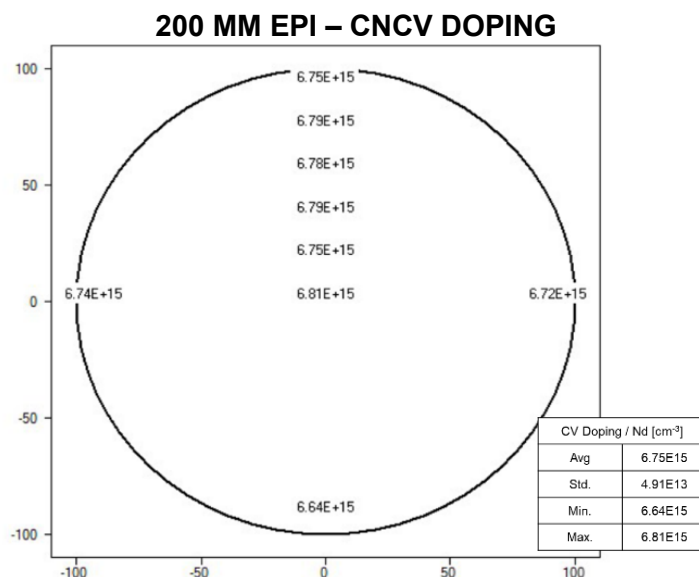
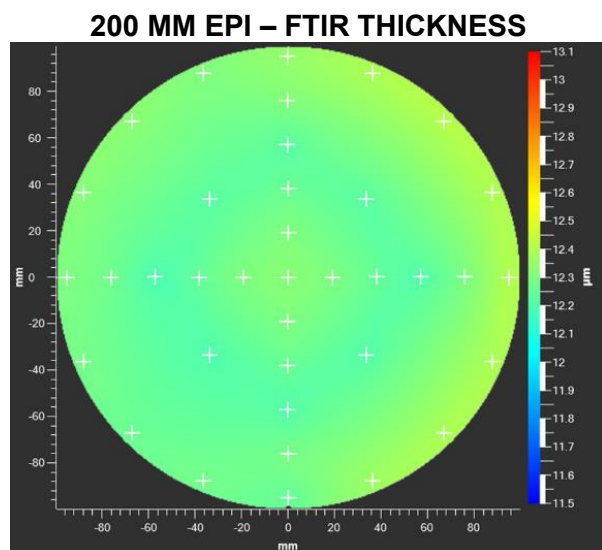
# ENGINEERED TO YOUR SPECIFICATIONS

## N-TYPE SiC EPITAXIAL WAFERS

| Key Properties                |                     |
|-------------------------------|---------------------|
| Wafer Size (mm)               | 150, 200            |
| Polytype                      | 4H                  |
| N-Doping ( $\text{cm}^{-3}$ ) | $10^{14} - 10^{19}$ |
| Thickness ( $\mu\text{m}$ )   | 0.5 – 250           |

| Standard Specifications  |                    |
|--------------------------|--------------------|
| N-Type ( $\mu\text{m}$ ) | 5 – 60             |
| Thickness Tolerance      | $\pm 10\%$ /target |
| Thickness Uniformity     | 2 % $\sigma$ /mean |
| Doping Tolerance         | $\pm 15\%$ /target |
| Doping Uniformity        | 3 % $\sigma$ /mean |

Specifications can be customized upon request

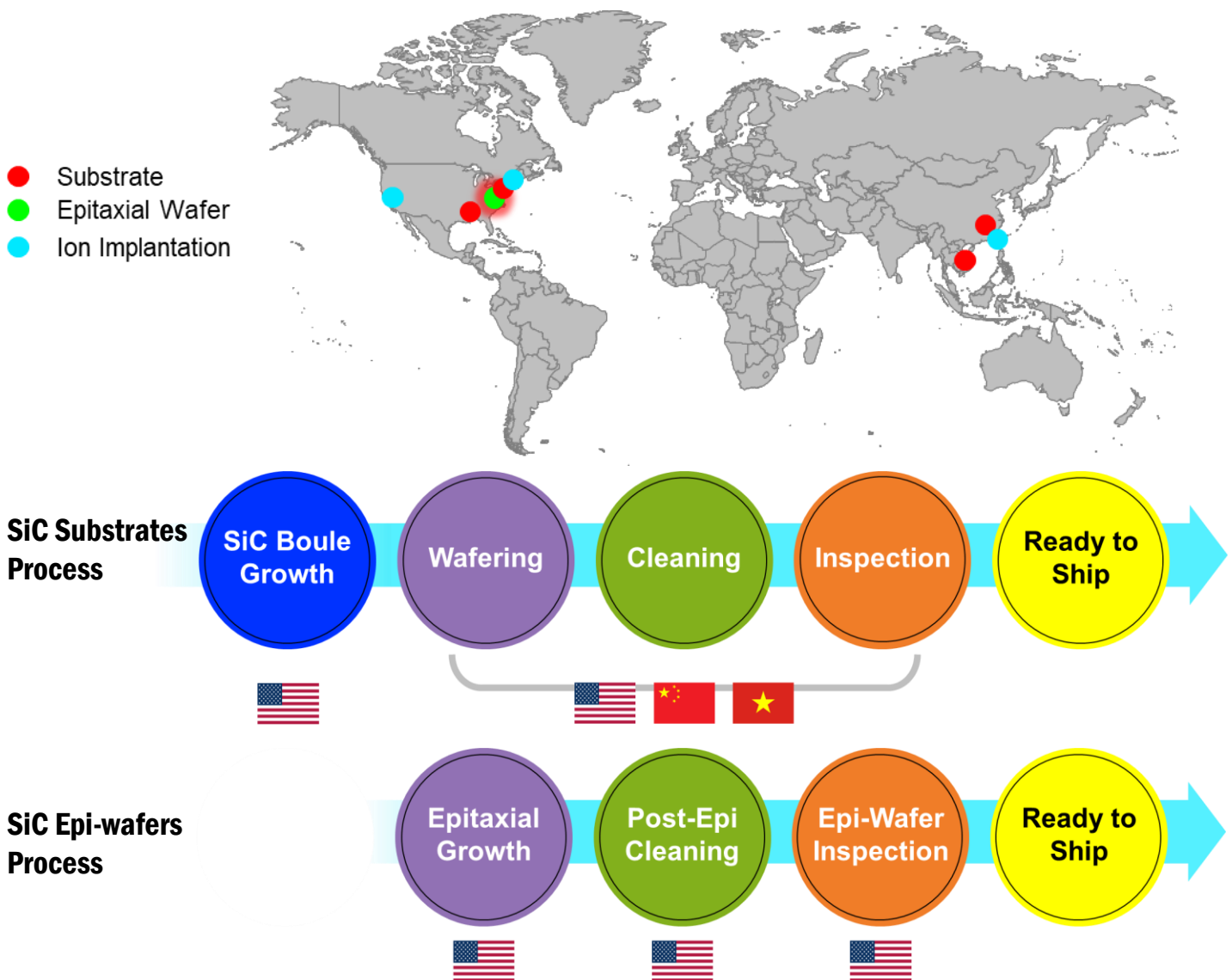


| Dia. (mm) | FTIR Thickness (Avg. $\mu\text{m}$ ) | Uniformity (% Std.Dev/mean) |
|-----------|--------------------------------------|-----------------------------|
| 200       | 12.1                                 | 0.4 %                       |

| Dia. (mm) | Doping Measured (Avg. $\text{cm}^{-3}$ ) | Uniformity (% Std.Dev/mean) |
|-----------|------------------------------------------|-----------------------------|
| 200       | 6.75E15                                  | 0.7 %                       |

# GLOBAL REACH, LOCAL COMMITMENT

| Pine Brook<br>NJ, USA                                                             | Easton<br>PA, USA                                                                 | Starkville<br>MS, USA                                                             | Fuzhou<br>China                                                                    | Dong Nai<br>Vietnam                                                                 | San Jose, CA<br>Hsinchu, TW<br>Wilmington, MA                                       |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| SiC Substrates                                                                    | SiC Substrates<br>SiC Epi-wafer                                                   | Backend SiC<br>Wafer<br>Processing                                                | Backend SiC<br>Wafer<br>Processing                                                 | Backend SiC<br>Wafer<br>Processing                                                  | Ion Implantation<br>Service                                                         |
|  |  |  |  |  |  |



## COMPLETE SiC SOLUTIONS FOR PERFORMANCE & SCALE



- 20+ yr growth expertise
- Low defect density
- 6-inch / 8-inch scalable

*“Foundation for  
Reliable High-  
Voltage Devices”*

- Excellent uniformity
- Yield-driven epitaxy
- High-volume capacity

*“Enabling  
Higher Yield for  
Automotive & Energy”*

- Multi-material capacity
- Extended lifetime
- Particle reduction

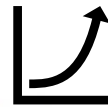
*“Driving  
Cost Efficiency &  
Sustainability”*

## WHERE INNOVATION MEETS PARTNERSHIP



### Proven Legacy of Innovation

Decades of expertise driving next generation solutions



### Ready for Scale

300 mm vision and 200 mm ramp-up in progress



### Financial Strength & Stability

A reliable long-term partner



### Value Beyond Supply

Adding innovation, service, and collaboration



### Complement to Your Success

Enabling and enhancing customers' products



### Trusted Partnership

More than a supplier, a true partner