

Standard specifications of 2 inch / 100 mm β -Ga₂O₃ (001) epitaxial wafer (by HVPE)

Epitaxial layer

Items	Specifications
Dopant	Si+Cl ^{*1} (n-type)
Doping concentration (cm ⁻³)	1×10 ¹⁶
Thickness (μm) <small>*Selectable in 1 μm increments.</small>	5–10

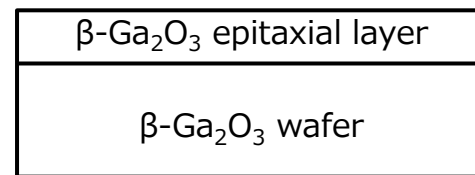
*1: Unintentionally-doped

Epi-Wafer

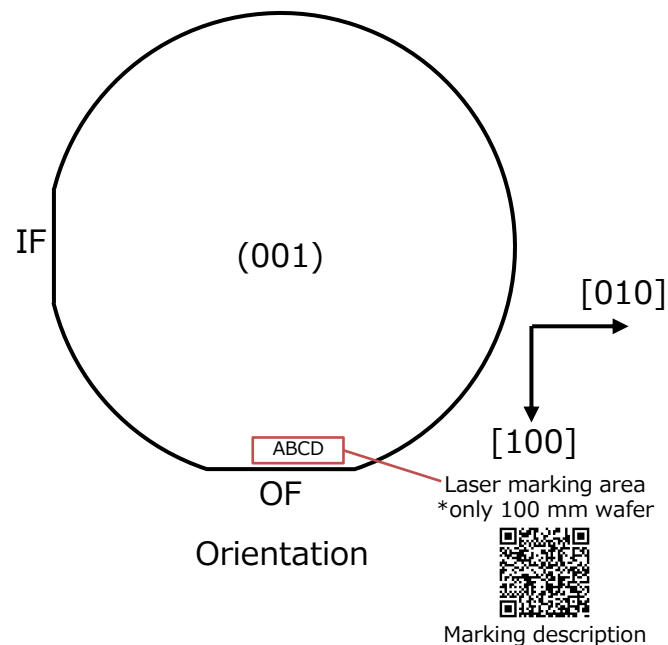
Items	Specifications
Substrate dopant	Sn (n-type)
Substrate resistivity (Ω·cm)	0.007–0.042
Surface orientation	(001)
Backside finish	CMP
Wafer thickness (μm)	650
XRD FWHM (arcsec) <small>*Not listed on delivery inspection sheet.</small>	≤ 50

Remarks

- Chipping may occur within the following limits:
2-inch: <8 mm (opposite OF), <15.9 ± 2.5 mm (OF side); 100 mm: <18 mm (opposite OF), <32.5 ± 2.5 mm (OF side).
- These products must be used for research and development purposes only.
- The substrates must not be used as a seed crystal.
- The specifications are subject to change without notice.



Cross section of β -Ga₂O₃ epitaxial wafer



Novel Crystal Technology, Inc.

2 inch / 100 mm β -Ga₂O₃ (001) epitaxial wafer (by HVPE) for developing planar SBD

Epitaxial layer

Items	Specifications
Dopant	Si+Cl ^{*1} (n-type)
Doping concentration (cm ⁻³)	The mid to late order of 10 ¹⁵
Thickness (μm)	15

*1: Unintentionally-doped

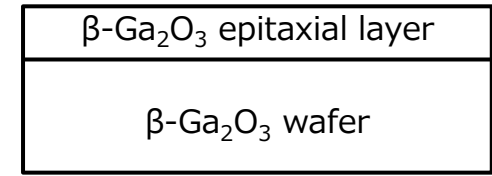
Epi-Wafer

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Substrate dopant	Sn (n-type)
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Surface orientation	(001)
Backside finish	CMP
Wafer thickness (μm)	650
XRD FWHM (arcsec)	≤ 50

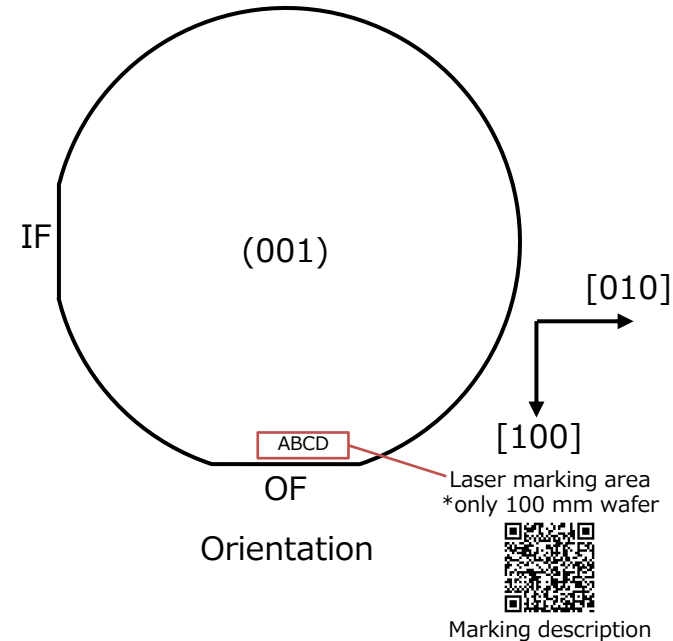
*Not listed on delivery inspection sheet.

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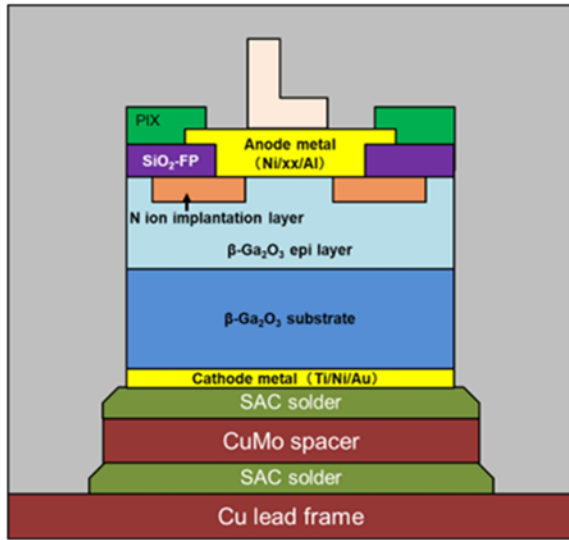


Cross section of β -Ga₂O₃ epitaxial wafer



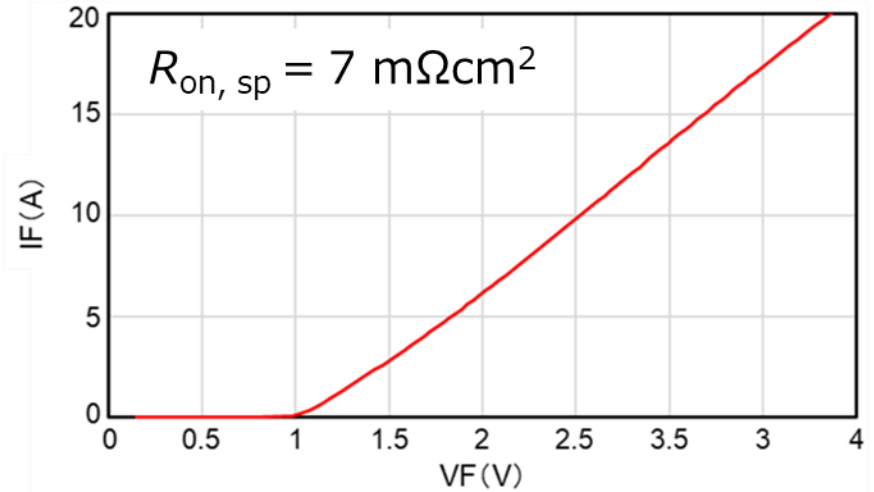
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Example of SBD characteristics using the epi-wafer for developing planar SBD

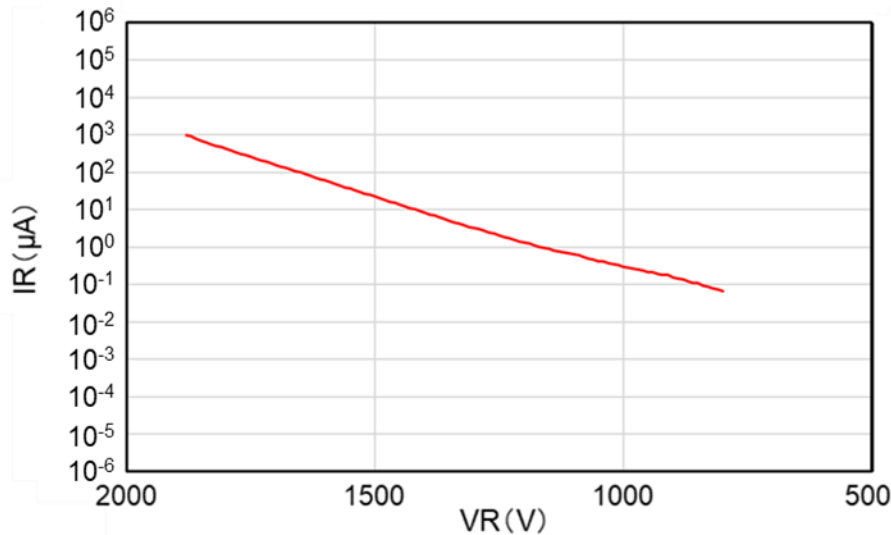


Schematic cross-section

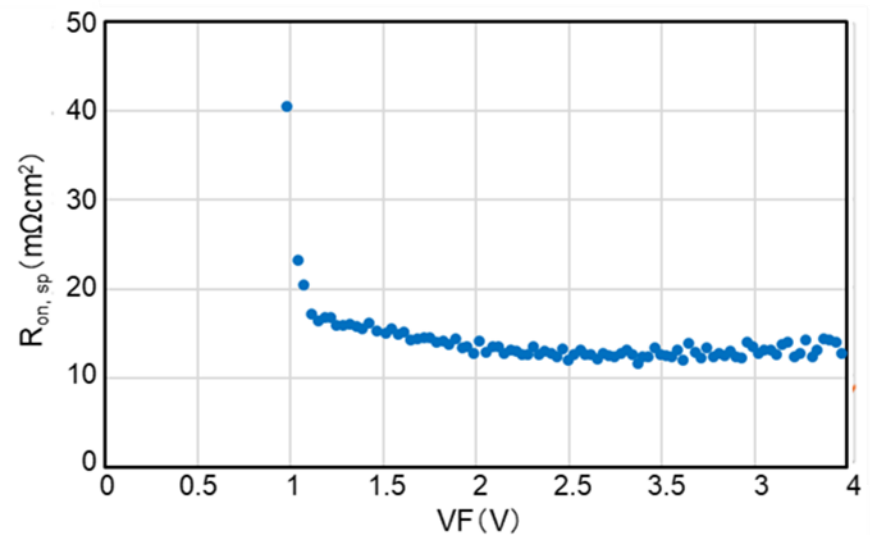
Anode electrode size: $2.4 \times 2.4 \text{ mm}^2$



Forward characteristics



Reverse characteristics



$R_{on, sp}$ dependence on V_F

2 inch / 100 mm β -Ga₂O₃ (001) epitaxial wafer (by HVPE) for developing intermediate breakdown voltage trench MOSSBD

Epitaxial layer

Items	Specifications
Dopant	Si+Cl* ¹ (n-type)
Doping concentration (cm ⁻³) *Selectable in 1×10 ¹⁶ cm ⁻³ increments.	4–9×10 ¹⁶
Thickness (μm) *Selectable in 1 μm increments.	5–10

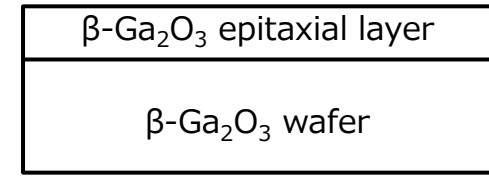
*1: Unintentionally-doped

Epi-Wafer

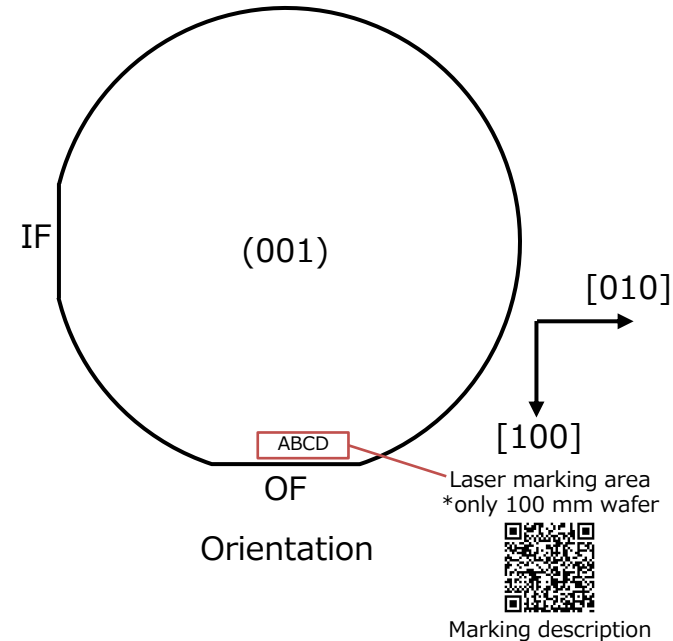
Items	Specifications
Substrate dopant	Sn (n-type)
Substrate resistivity (Ω·cm)	0.007–0.042
Surface orientation	(001)
Backside finish	CMP
Wafer thickness (μm)	650
XRD FWHM (arcsec) *Not listed on delivery inspection sheet.	≤ 50

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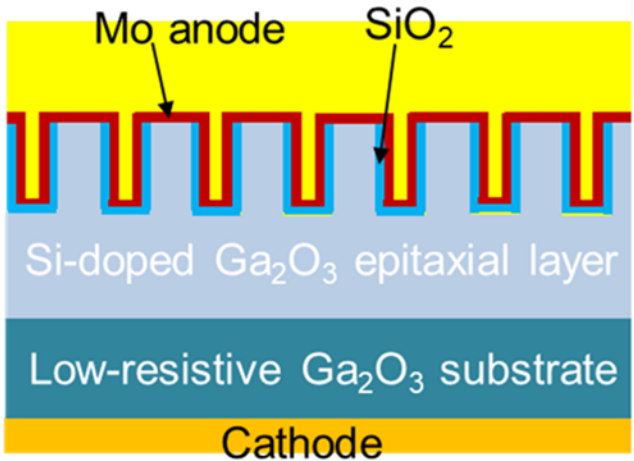
Cross section of β -Ga₂O₃ epitaxial wafer



Novel Crystal Technology, Inc.

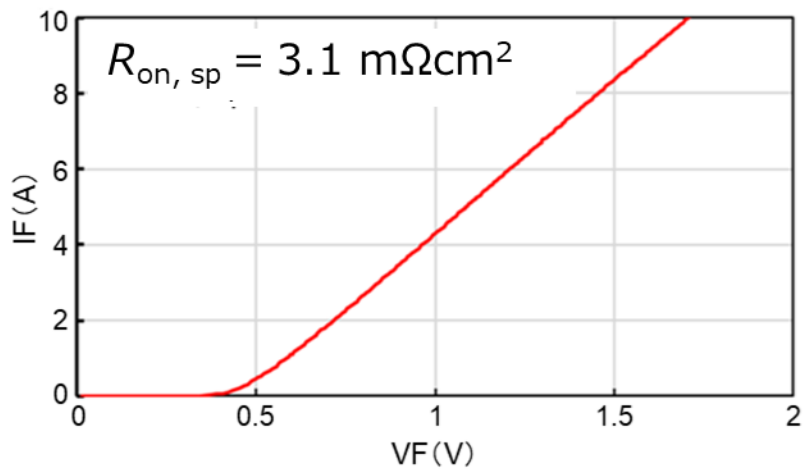
2025. 12. 16

Example of SBD characteristics using the epi-wafer for developing intermediate breakdown voltage trench MOSSBD

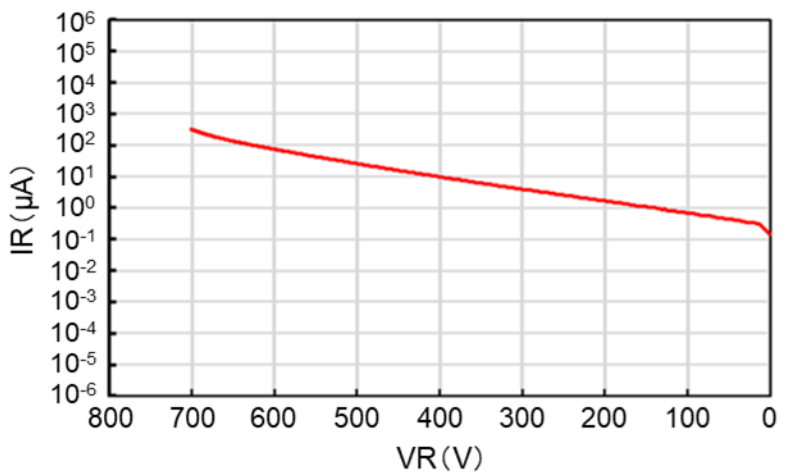


Schematic cross-section

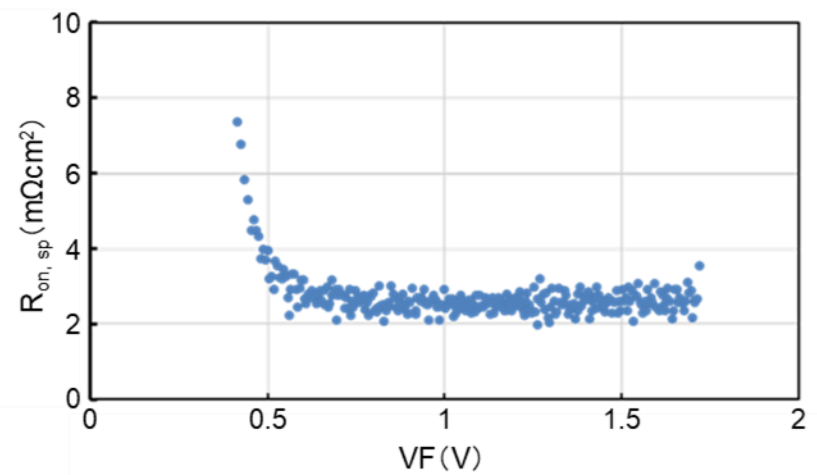
Anode electrode size: 1.7 × 1.7 mm²



Forward characteristics



Reverse characteristics



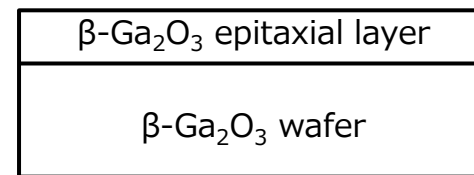
$R_{on, sp}$ dependence on V_F

Standard specifications of $10 \times 15 \text{ mm}^2$ $\beta\text{-Ga}_2\text{O}_3$ (011) epitaxial wafer (by HVPE)

Epitaxial layer

Items	Specifications
Dopant	$\text{Si}^{*1} + \text{Cl}^{*1}$ (n-type)
Doping concentration (cm^{-3})	$2 - 5 \times 10^{15}$
Thickness (μm) *Selectable in 10 μm increments.	20 - 40

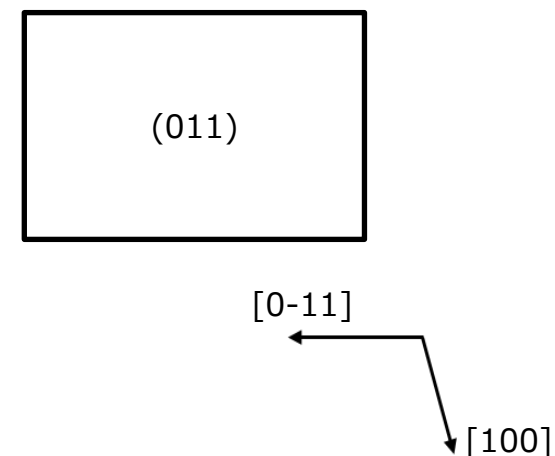
*1: Unintentionally-doped



Cross section of $\beta\text{-Ga}_2\text{O}_3$ epitaxial wafer

Epi-Wafer

Items	Specifications
Substrate dopant	Sn (n-type)
Substrate resistivity ($\Omega \cdot \text{cm}$)	0.02 - 0.1
Surface orientation	(011)
Backside finish	CMP
Wafer thickness (μm)	450



Remarks

- 1 These products must be used for research and development purposes only.
- 2 The substrates must not be used as a seed crystal.
- 3 The specifications are subject to change without notice.



Standard specifications of 2 inch β -Ga₂O₃ (011) epitaxial wafer (by HVPE)

Epitaxial layer

Items	Specifications
Dopant	Si ^{*1} +Cl ^{*1} (n-type)
Doping concentration (cm ⁻³)	2 – 5 × 10 ¹⁵
Thickness (μm) *Selectable in 10 μm increments.	20 – 30 ^{*2}

*1: Unintentionally-doped

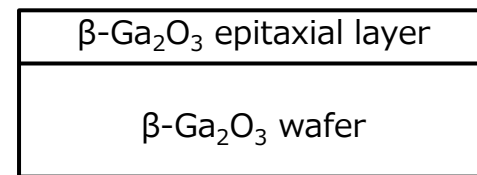
*2: We will include the 40 μm specification once it becomes available.

Epi-Wafer

Items	Specifications
Substrate dopant	Sn (n-type)
Substrate resistivity (Ω·cm)	0.02–0.1
Surface orientation	(011)
Backside finish	CMP
Wafer thickness (μm)	450

Remarks

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- 2 The substrates must not be used as a seed crystal.
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Cross section of β -Ga₂O₃ epitaxial wafer

