**GaN Substrates: N+**

Kyma’s bulk GaN substrates improve device epitaxy by reducing dislocation density by 1000x and doubling thermal conductivity when compared to other non-native substrates. N+ substrates offer benefits for vertical devices as well as reduced contact resistance for all devices. Key advantages:

- Ultra-low on-resistance as well as decreased parasitic resistance for vertical power devices
- Low vertical resistance and the mitigation of current crowding effects for light emitting diodes (LEDs)

**Grades:** Prime, Production, Research, Rider

**Available Sizes:** 10mm x 10mm square and 18mm x 18mm square

**Available Grades:** Prime, Production, Research, Rider

**Available Thickness:** 475 µm (± 25 µm)

*Varies for rider grade

**Other polishing options available:** N-face CMP, double-side CMP, double-side optical

Other size, thickness and offcut options available

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**Orientation**: c-axis (00.1) ± 1°

**Conduction Type**: N+

**Resistivity**: < 0.02 Ohm-cm

**Front Surface Finish (Ga-face)**: Epi-ready, RMS < 0.5 nm

**Back Surface Finish**: Optical polish

**Dislocation Density**: ≤ 5x10^6 / cm^2

**Edge Exclusion Area**: 1 mm

**TTV**: < 10 µm (10 mm^2), < 20 µm (18 mm^2)

**Bow**: < 5 µm (10 mm^2), < 15 µm (18 mm^2)

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**Grade** | **Prime** | **Production** | **Research** | **Rider**
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**Macro Defect Density**: | ≤ 3 cm^-2 | ≤ 5 cm^-2 | ≤ 10 cm^-2 | > 10 cm^-2

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*Other polishing options available: N-face CMP, double-side CMP, double-side optical

Other size, thickness and offcut options available

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