GaN Templates on Silicon

Kyma Gallium Nitride (GaN) templates grown by HVPE provide a high purity GaN buffer for subsequent device epitaxy. HVPE based templates have several advantages over MOCVD growth:

- Dramatic increase in MOCVD throughput by eliminating the following steps:
  - Sapphire pre-treatment
  - Nucleation layer growth
  - GaN buffer growth
- High purity source material produces higher purity epitaxy
- Lower cost in high volume due to HVPE high growth rates

**Silicon Orientation:** (111)
**GaN Orientation:** C-plane (00.1)
**Conduction Type:** Undoped (N-), Si-doped (N+) and Semi-Insulating
**Front Surface Finish (Ga-face):** As-grown
**Back Surface Finish:** SSP or DSP from silicon vendor
**Undoped (N-) Template Resistivity:** <5 Ohm-cm
**Si-doped (N+) Template Resistivity:** <0.02 Ohm-cm
**Semi-insulating Template Resistivity:** >10⁶ Ohm-cm
**Edge Exclusion Area:** 1 mm for 2-3” & 5 mm for 4”

**Available Sizes:** 2” (50.8 mm), 3” (76.2 mm) and 4” (100 mm)
**Available Grades:** Production, Research and Rider
**Available Thickness:** 200nm up to 500 nm (± 100nm)

<table>
<thead>
<tr>
<th>Grade:</th>
<th>Production</th>
<th>Research</th>
<th>Rider</th>
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</thead>
<tbody>
<tr>
<td>Macro Defect Density:</td>
<td>≤5 cm⁻²</td>
<td>≤10 cm⁻²</td>
<td>&gt;10 cm⁻²</td>
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<tr>
<td>Useable Surface Area</td>
<td>≥90%</td>
<td>≥80%</td>
<td>&lt;80%</td>
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*Other silicon types and thickness options available upon request*