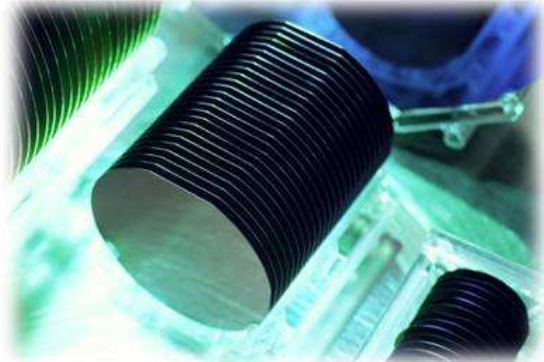




## Gallium Nitride (GaN) Template

**Marco-Defect Density** <math><10/cm^2</math>  
**Substrate Diameter** 4"  
**Thickness** 20 $\mu m$



GaN templates refer to a thin layer of single crystalline GaN, typically with thickness less than 100 microns, epitaxial grown on a foreign substrate, e.g. sapphire. Comparing with free standing GaN substrate, GaN template is only an alternative solution to device makers and its technical merit is limited. Upon high volume and low cost production, however, GaN template can replace sapphire in LED manufacturing, enhancing up to 50% capacity of downstream MOCVD reactors. Furthermore, GaN template usually has lower dislocation density than MOCVD GaN grown on sapphire. This is a favorable factor for UV devices as it is more sensitive to dislocation density than blue LED does.

### Gallium Nitride (GaN) Template Specifications

|                                     |                       |                                     |                  |
|-------------------------------------|-----------------------|-------------------------------------|------------------|
| Thickness ( $\mu m$ )               | 20                    | Substrate Diameter                  | 4"               |
| Off-Cut Angle (Degree)              | 1                     | GaN Template Line                   | N-type doping    |
| Marcodefect Density:                | <math><10/cm^2</math> | Thickness Variation ( $\pm \mu m$ ) | 1.0              |
| Carrier concentration ( $cm^{-3}$ ) | $\sim 1E+18$          | Resistivity ( $\Omega \cdot cm$ )   | 0.001-0.01       |
| FWHM of (102) XRD arcsec            | <math><300</math>     | Dislocation density                 | $1.5E+8 cm^{-2}$ |
| Surface finishing                   | as grown              | Substrates                          | sapphire         |
| Bow ( $\mu m$ )                     | 90                    | Package (cell cassette)             | 25               |

GaN Template Marco-Defect Density <math><10/cm^2</math> Substrate Diameter 4" Thickness 20 $\mu m$