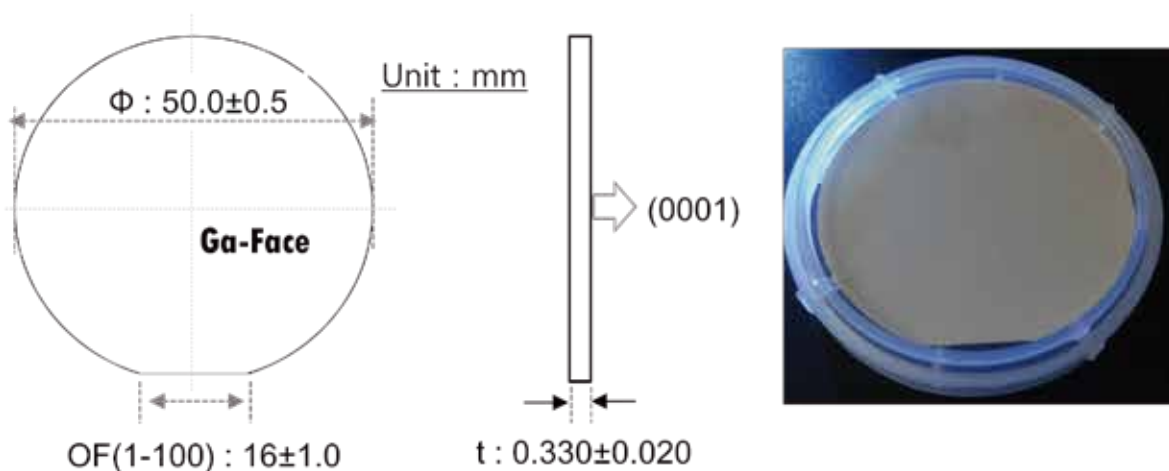


# GaN Wafers for LED

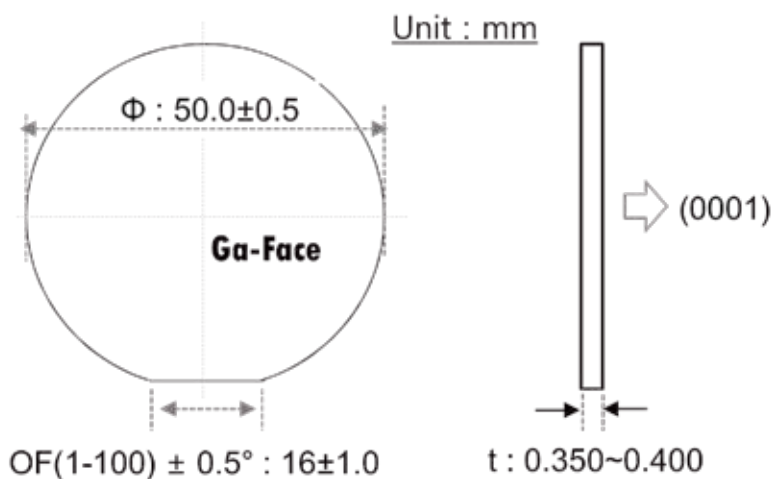
## Standard Specifications

Contents	Specifications
Orientation	(0001) $\pm$ 0.5°
Diameter	50.0 $\pm$ 0.5 mm
Thickness	330 $\pm$ 20 $\mu$ m
Conduction Type	<i>n</i> -Type
Carrier Concentration	$\geq 1 \times 10^{17}$ /cm <sup>3</sup>
Orientation flat	16 $\pm$ 1.0 mm , (1-100) $\pm$ 0.5°
Bow	< $\pm$ 20 $\mu$ m
Macroscopic Defect Density	< 80 / 2inch
Dislocation Density	$\leq 7 \times 10^6$ / cm <sup>2</sup>
XRD FWHM	(0002) & (10-12) < 90arcsec
TTV	< 15 $\mu$ m
Surface Finish	Epi-ready, Single side polished
Ra : AFM (10x10 $\mu$ m)	< 0.5 nm
Package	Individual Container



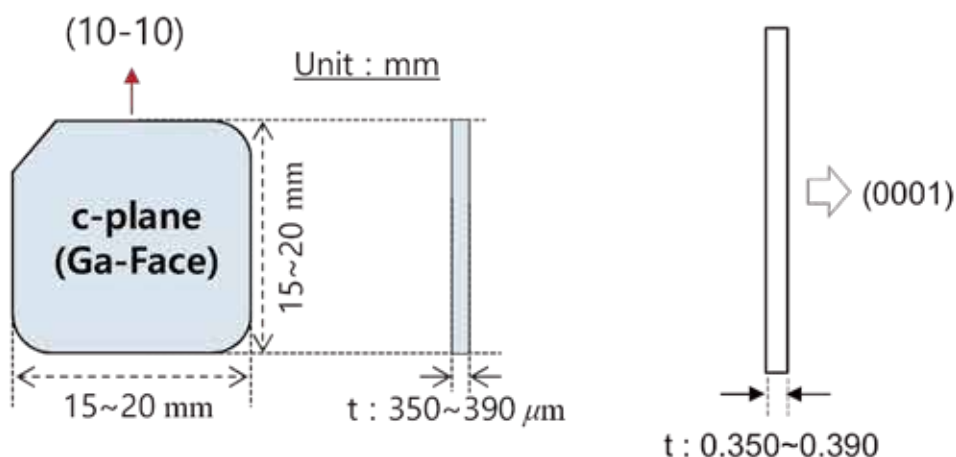
# GaN Wafers for LED

Contents	Specifications
Orientation	(0001) $\pm$ 0.5°
Diameter	$\Phi$ 50.0 $\pm$ 0.5 mm
GaN Thickness	> 350 $\mu$ m
Conduction Type	<i>n</i> -Type
Carrier Concentration	$\geq 1 \times 10^{17}$ /cm <sup>3</sup>
XRD FWHM	(0002) & (10-12) < 90arcsec
Pit Density (Size > 50 $\mu$ m)	< 80 EA / 2 "
Dislocation Density	$\leq 7 \times 10^6$ / cm <sup>2</sup>
Orientation flat	16 $\pm$ 1.0 mm , (1-100) $\pm$ 0.5°
Wafer Bow	Convex 50 $\mu$ m ~ Concave 100 $\mu$ m
Surface Finish	As-grown (Non-polished)



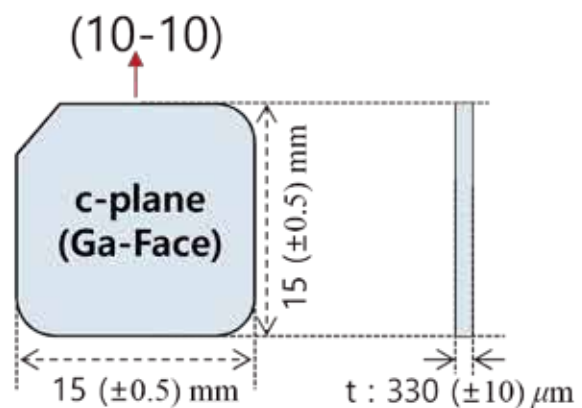
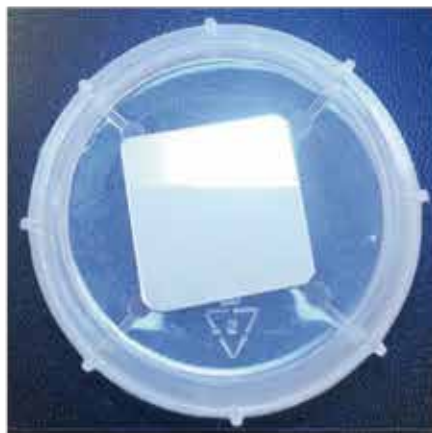
# GaN Wafers for LED

Contents	Specifications
Orientation	(0001) $\pm$ 0.5°
Size	15×15, 18×18, 20×20 mm <sup>2</sup> (error $\pm$ 0.5mm)
GaN Thickness	> 350 $\mu$ m
Conduction Type	n-Type
Carrier Concentration	$\geq 1 \times 10^{17}$ /cm <sup>3</sup>
XRD FWHM	(0002) & (10-12) < 90arcsec
Pit Density (Size > 50 $\mu$ m)	< 40 EA / wafer
Dislocation Density	$\leq 7 \times 10^6$ / cm <sup>2</sup>
Wafer Bow	Convex 20 ~ Concave 60
Surface Finish	As-grown (Non-polished)



# GaN Wafers for LED

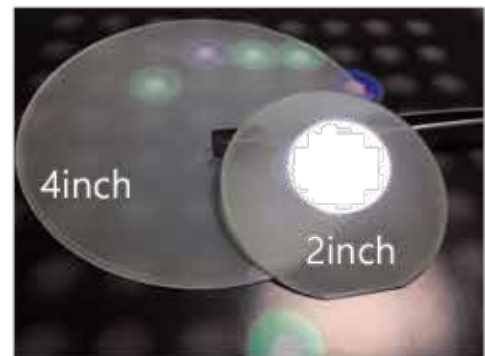
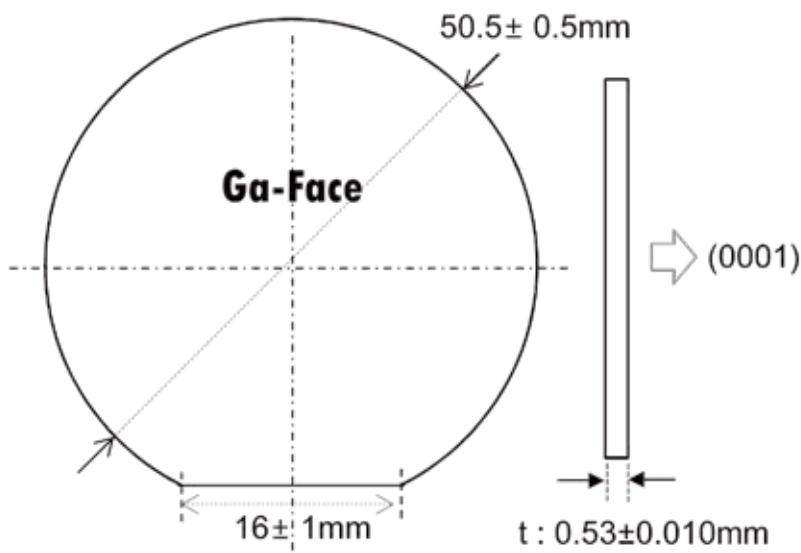
## 15x15 mm<sup>2</sup> c-Plane Gallium Nitride(GaN) Substrate



Specifications	
Appearance(Single side polished)	15 × 15 mm <sup>2</sup> (±0.5mm)
Thickness	330 μm (± 10μm)
Crystal orientation	(0001) ±0.5°
XRD's FWHM (002), (102)	≤ 90arcsec
AFM's Surface roughness (Ra.)	≤ 0.8nm
n-Dopant concentration	> 10 <sup>17</sup> / cm <sup>3</sup>
Dislocation density	≤ 8×10 <sup>6</sup> / cm <sup>2</sup>
Macro defect density	≤ 20 / cm <sup>2</sup>
Bow	≤ ± 20μm
Ra : AFM (10x10 μm)	≤ ± 0.5nm

# GaN Wafers for LED

Contents	Specifications
Orientation	(0001) $\pm 0.2^\circ$
Diameter	2 inch (D.-50.8 $\pm$ 0.5mm)
Sapphire Thickness	430 $\pm$ 10 $\mu$ m
GaN Thickness	100 $\pm$ 10 $\mu$ m
Conduction Type	N-Type
Carrier Concentration	$\geq 1 \times 10^{17}$ /cm <sup>3</sup>
OF Length	16 $\pm$ 1.0 mm
XRD FWHM (arcsec)	(0002) < 150", (10-12) < 300"
Surface Finish	As grown (Non-polished)
Wafer Bow	< 600 $\mu$ m
Package	Individual Container



# GaN Wafers for LED

Contents	Specifications
Orientation	(0001) $\pm$ 0.2°
Diameter	4 inch (D.-100 $\pm$ 0.5mm)
Sapphire Thickness	650 $\pm$ 10 $\mu$ m
GaN Thickness	100 $\pm$ 10 $\mu$ m
Conduction Type	<i>n</i> -Type
Carrier Concentration	$\geq 1 \times 10^{17}$ /cm <sup>3</sup>
OF Length	30 $\pm$ 1.0 mm
XRD FWHM (arcsec)	(0002) < 150", (10-12) < 300"
Surface Finish	As grown (Non-polished)
Wafer Bow	< 1000 $\mu$ m
Package	Individual Container

