

Gallium Nitride on Silicon Epitaxy Wafer

150mm DesiGaN Power/RF HEMT Series

IGSS GaN 150mm DesiGaN Power/RF HEMT Series of Gallium Nitride on Silicon (GaN-on-Si) is an AlGaN/GaN hetero-epitaxial layer structure grown on a Silicon(111) substrate targeting high voltage Power & RF applications.

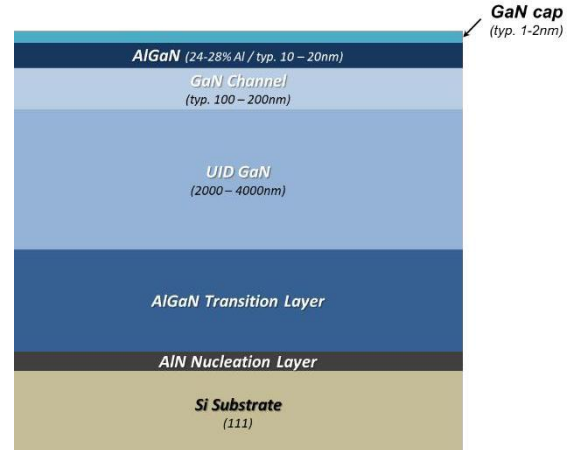
FEATURES

- High uniformity
- Low leakage current
- Higher operating temperatures
- Excellent 2DEG characteristic
- High breakdown voltage (600V-1200V)*
- Lower ON-resistance*
- Higher switching frequencies*
- Higher operating frequencies (upto 18GHz)**

TYPICAL APPLICATION

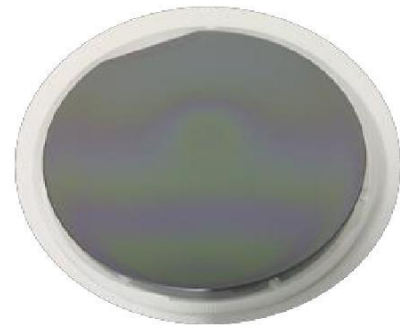
- *Power HEMT
- *RF HEMT
- *GaN Diode

TYPICAL STACK STRUCTURE

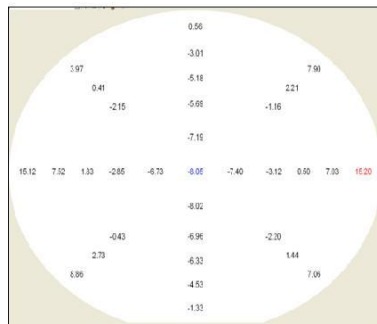


STANDARD EPIWAFER CHARACTERISTICS

GaN Materials Specifications	150mm
Wafer Warp (μm)	< 50
AFM RMS (nm)	< 0.5
(002) FWHM (arcsec)	< 600
(102) FWHM (arcsec)	< 1200
Hall Sheet Resistance, R_{sh} (W^{-2})	< 500
Hall Sheet Carrier Density, N_s (cm^{-2})	> $1\text{E}+13$
Hall Mobility, μ ($\text{cm}^2/\text{V}\cdot\text{s}$)	> 1500

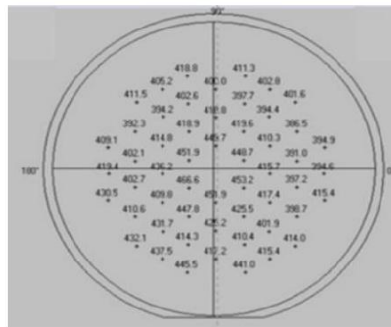


TYPICAL WAFER WARP



Total Wafer Warp = 23.3 μm (Max. local warp = 15.20 μm ; Min. local warp = -1.33 μm)

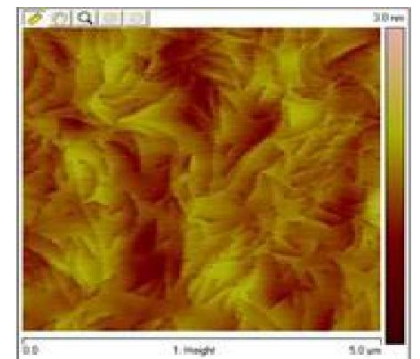
TYPICAL SHEET RESISTANCE



$$R_{sh} = 437.9 \text{ W}^{-2}$$

Standard Dev. = 1.00%

TYPICAL ROUGHNESS



AFM RMS $\sim 0.25\text{nm}$ ($5 \times 5 \mu\text{m}^2$)

available wafer size 4"~8"