

8" GaN-on-Si Epitaxial Specification

Items		Specification	Typical	Metrology
Total thickness (μm)	Mean	1~5.5	2.2	EpiTT in-situ reflectance
	σ/avg	$\leq 5\%$	1.5%	EpiTT in-situ reflectance
P-GaN thickness (nm)	Mean	5~150	60	XRR
	σ/avg	$\leq 6\%$	2.5%	XRR
AlGaIn barrier thickness (nm)	Mean	10~30	25	XRR
	σ/avg	$\leq 6\%$	2%	XRR
Barrier Al (%)	Mean	10~30	20	PL
	σ/avg	$\leq 6\%$	1%	PL
GaN FWHM (arcsec)	002	≤ 800	680	XRD
	102	≤ 1500	1300	XRD
Warp (μm)		≤ 100	60	ADE 9000
Crack @ Radius 0~97mm (3mm EE)		Free	Free	Spot Light, Inspection by Eye
Particle (Size $>0.5\mu\text{m}$)		≤ 3000	1500	KLA CS920
Peeling		Free	Free	Spot Light, Inspection by Eye
Roughness (Ra, nm)	pGaN surface	≤ 1	0.5	AFM
2DEG Density (cm^{-2})		$\geq 5\text{E}+12$	7E+12	Hall
2DEG Mobility (cm^2/Vs)		≥ 1500	1700	Hall
SIMS	Mg conc. (cm^{-3})	$\geq 3\text{E}+19$	4E+19	SIMS (by monitor wafer)