EPIGAN

HV650V

Standard Layer Specifications

Layer Name	Description	Thickness Target	Comment
Substrate	150mm Si substrate (111), ± 0.5° 200mm Si substrate (111), ± 0.5°	1000µm 1150µm	other substrate diameters available upon request
HV Buffer	Buffer	5.5µm	
GaN Channel	GaN	175nm	can be customized
Barrier	AlGaN (25% Al) or AlN	20nm or (4-6)nm	Thickness and composition can be customized
Cap layer	SiN	50nm (AlGaN barrier) or 10nm (AlN barrier)	GaN cap available upon request for AlGaN barrier

Characterization Specifications

Parameter	Measurement	Units	Target
AlGaN Thickness **AlN Thickness**	X-Ray	nm	20 ± 2 (4-6) ± 1
AlGaN Composition*	Photoluminescence	%	25 ± 1
SiN Cap Thickness	X-Ray	nm	50 ± 5 (for AlGaN) 10 ± 1 (for AlN)
Wafer Bow	Laser profilometer	µm	± 50 max.
Edge Exclusion		mm	5
Vertical Breakdown Voltage*		V	> 1000
Lateral Breakdown Voltage* **(L_{G-D} >20 µm)**		V	> 1200
Leakage Current* (lateral, grounded substrate)	@650V, RT	nA/mm	< 100
Leakage Current* (vertical)	@650V, RT	µA/mm²	< 1

AlGaN barrier thickness and composition and cap thickness can be customized upon request

Electrical Specifications

Parameter	Measurement	Units	Target
Electron Mobility*	Hall	cm²/V.s	> 1800 (for AlGaN, 25% Al) > 1000 (for AlN)
Sheet Charge Density*	Hall	/cm²	> 9e12 (for AlGaN, 25% Al) > (1,5-2)e13 (for AlN)
Sheet Resistivity*	Eddy current	Ohms/sq	< 400 (for AlGaN, 25% Al) < 350 (for AlN)
Buffer resistivity*	Buffer Isolation Structure	Ohms/sq @ 1MV/cm	> 5e11