

Semiconductor	SiC
Polytype	4H
Diameter	150 mm


Table 1. SUBSTRATE Specifications

Parameter	Production Grade	Research Grade	Mechanical Grade
Diameter	150.0mm±0.25mm		
Thickness	350.0um±25um		
Dopant	n-type: Nitrogen		
Primary flat length	47.5mm±2.5mm		
Surface tilt	4.0° toward <11-20> ± 0.5°		
Surface finish	Si-face CMP; C-face polish		
Primary flat orientation	[11-20] ± 5°		
TTV	≤10um	≤15um	
Warp	≤40um	≤60um	
LTV	≤5um (10mm x 10mm)		N/A
Si-face Ra	≤0.2 nm		
Resistivity	15-28mΩ-cm		N/A
MPD	≤1 cm ⁻²	≤5 cm ⁻²	≤50 cm ⁻²
BPD	≤5000 cm ⁻²	N/A	
TSD	≤500 cm ⁻²	N/A	
Scratch Length*	≤150 mm	≤150 mm	≤225 mm
Polytype inclusion	None	Cumulative area ≤2%	Cumulative area ≤5%
Cracks	None		
Edge chip	0 chips≤0.5mm width & depth	2 chips≤1mm width & depth	N/A

*Measured by candela 8520

Table 2. 150 mm EPITAXY Specifications

Parameter		N-type	P-type
Dopant		Nitrogen	Aluminum
Doping calculation Method		N _D -N _A	N _A -N _D
CV Doping Concentration	Range	9E14~1E19 cm ⁻³	9E14~1E19 cm ⁻³
	Tolerance	± 20%	± 50%
	Uniformity	≤ 10%	≤ 20%
	Test method	MCV	MCV
FTIR Thickness	Range	0.2~50 μm	0.2~50 μm
	Tolerance	± 10%	± 10%
	Uniformity	≤ 5%	≤ 10%
	Test method	FTIR	FTIR
Notes	1. Tolerance calculation method: $\frac{ (\text{Extreme value} - \text{Target value}) }{\text{Target value}}$ 2. Uniformity calculation method: Standard deviation value/Mean value 3. Edge exclusion: 5 mm 2. 4. Specific specifications can be customized by customers		

Table 3. 150mm EPITAXY Characteristics

Characteristics	Specification	Method	Definition and detail
Electrically Active Defects	≤4 cm ⁻²	Candela or Lasertec Sica88	Includes :Triangles, Downfalls, Carrots
Scratches	Total length ≤ 150mm	Candela or Lasertec Sica88	Front side surface. Length to width ratio>5
Stains	<2*2cm ²	Accent light	The stains on the backside (sheet/block)
Roughness	<0.5 nm	AFM	20 μm ² sampling area, front side surface
Coating	Coating width < 3mm	Accent light	Sediments at the backside edge of SiC Epi
Die yield	≥90%	Candela CS920, or 8520, or Lasertec Sica88	Electrically active defects on 3x3 mm ² die, Includes :Triangles, Downfalls
Note	3mm edge exclusion for 150mm wafer		

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Hunan Sanan Semiconductor Co.,Ltd.

399 Changxing Road, Yuelu District, Changsha city,
Hunan Province, P. R. China

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