

Semiconductor	SiC
Polytype	4H
Diameter	150 mm



Table 1. SUBSTRATE Specifications

Parameter	Production Grade	Research Grade	Mechanical Grade
Diameter	150.0 mm ± 0.25 mm		
Thickness	350.0 μm ± 25.0 μm		
Dopant	n-type: Nitrogen		
Primary flat length	47.5 mm ± 2.5 mm		
Surface tilt	4.0° toward <11-20> ± 5°		
Surface finish	Si-face CMP; C-face polish		
Primary flat orientation	[11-20] ± 5°		
TTV	≤ 10 μm	≤ 15 μm	
Warp	≤ 40 μm	≤ 60 μm	
LTV	≤ 5 μm (10mm x 10mm)		N/A
Edge profile	Type R		
Edge exclusion	3 mm		
Si-face R _a	≤ 0.2 nm		
Resistivity	15 – 28 mΩ-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 ≤ 0.5 mm width & depth	2 chips ≤ 1 mm width & depth	N/A

* Measured by Candela 8520

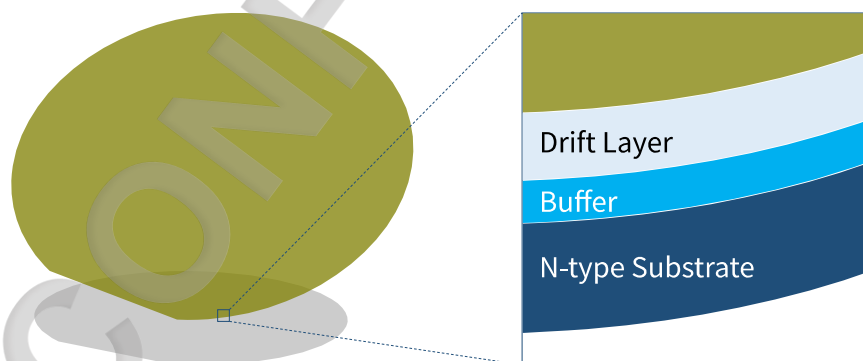
Table 2. 150 mm EPITAXY Specifications

Parameter		N-type	P-type
Dopant		Nitrogen	Aluminum
Doping Calculation Method		$N_D - N_A$	$N_A - N_D$
CV Doping Concentration	Range	$9E14 - 1E19 \text{ cm}^{-3}$	$9E14 - 1E19 \text{ cm}^{-3}$
	Tolerance	$\pm 15\%$	$\pm 50\%$
	Uniformity	$\leq 10\%$	$\leq 20\%$
FTIR Thickness	Range	$0.2 - 50 \mu\text{m}$	$0.2 - 50 \mu\text{m}$
	Tolerance	$\pm 10\%$	$\pm 10\%$
	Uniformity	$\leq 10\%$	$\leq 10\%$

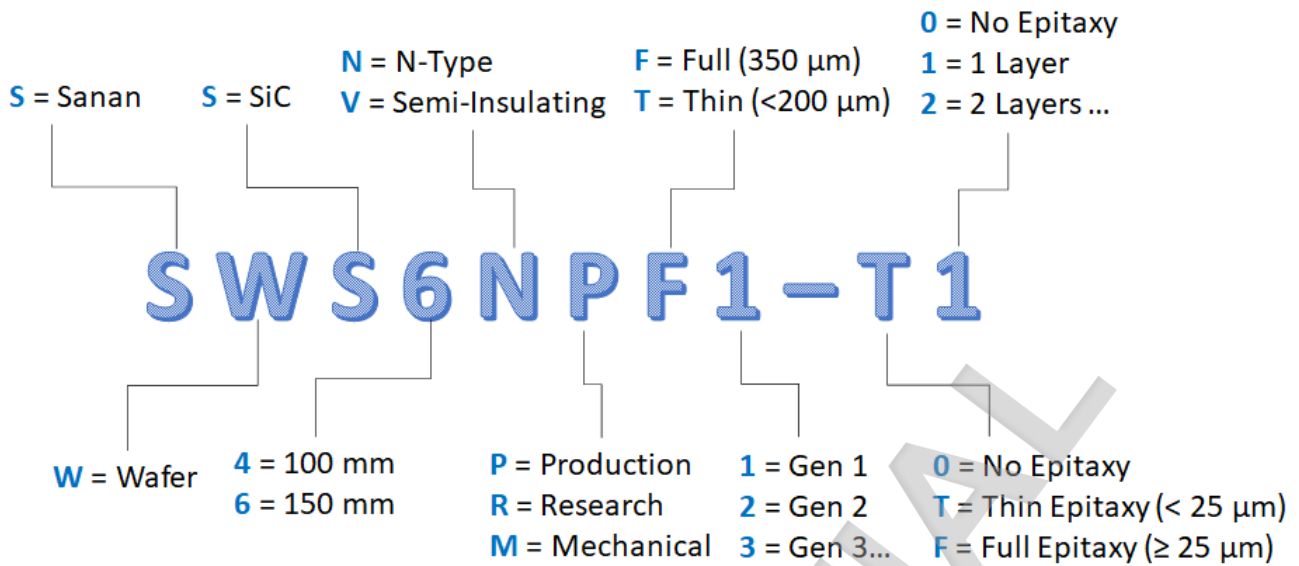
Table 3. 150 mm EPITAXY Characteristics

Characteristics	Specification	Method	Definition and Detail
Electrically Active Defects	$\leq 4 \text{ cm}^{-2}$	Candela CS920	Includes: triangles, carrots, downfalls
Scratches	$\leq 150 \text{ mm}$ total length	Candela CS920	Length to width ratio > 5
Edge chips	≤ 2 with radius $> 1.5 \text{ mm}$	Accent light	Within 1.5 mm of edge
Roughness	$< 0.5 \text{ nm}$	AFM	$20 \mu\text{m}^2$ sampling area
Backside cleanliness	100% clean	Accent light	No foreign matter allowed
Die yield	$\geq 95\%$	Candela CS920	Electrically active defects on $2 \times 2 \text{ mm}^2$ die

Note: 3mm edge exclusion for 150mm wafer



Naming Rules / How to Order



Important Notice

- The information in this document contains general purpose specifications; customer-specific requirements can be considered on a case-by-case basis.
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