



# Technical Specification

Hebei Synlight Crystal Co., Ltd.

## 6-Inch HPSI 4H-SiC Substrate Specification

Index Name	Production Grade	Research Grade	Dummy Grade
Diameter	150.0mm+0.0/-0.5mm		
Surface Orientation	<0001>±0.2°		
Micropipe Densities	≤1 cm <sup>-2</sup>	≤5cm <sup>-2</sup>	≤20cm <sup>-2</sup>
Resistivity	≥1E7Ω·cm		(area 75%)≥1E7Ω·cm
TTV	≤10μm		≤15μm
Warp	≤40μm		≤60μm
Bow	≤25μm		≤40μm
Surface Roughness	CMP Si Face Ra < 0.2 nm		CMP Si Face Ra < 0.3 nm

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【問い合わせ先】  
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# Technical Specification

Hebei Synlight Crystal Co., Ltd.

## 4-Inch HPSI 4H-SiC Substrate Specification

Index Name	Production Grade	Research Grade	Dummy Grade
<b>Diameter</b>	100.0mm+0.0/-0.5mm		
<b>Surface orientation</b>	<0001>±0.2°		
<b>Micropipe densities</b>	≤1 cm <sup>-2</sup>	≤5cm <sup>-2</sup>	≤50cm <sup>-2</sup>
<b>Resistivity</b>	≥1E7 Ω•cm		(area 75%)≥1E7Ω•cm
<b>TTV</b>	≤10μm		≤15μm
<b>Warp</b>	≤45μm		
<b>Bow</b>	≤15μm		≤30μm
<b>Surface Roughness</b>	CMP Si Face Ra < 0.3 nm(10μm×10μm)		CMP Si Face Ra < 0.5 nm(10μm×10μm)

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# SILICON CARBIDE MATERIAL PROPERTIES\*



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Property	4H-SiC, Single Crystal
Lattice Parameters	a=3.076 Å c=10.053 Å
Stacking Sequence	ABCB
Mohs Hardness	≈9.2
Density	3.21 g/cm <sup>3</sup>
Therm. Expansion Coefficient	4-5 × 10 <sup>-6</sup> /K
Refraction Index @750nm	n <sub>o</sub> = 2.61 n <sub>e</sub> = 2.66
Dielectric Constant	c~9.66
Thermal Conductivity (N-type, 0.02 ohm.cm)	a~4.2 W/cm·K@298K c~3.7 W/cm·K@298K
Thermal Conductivity (Semi-insulating)	a~4.9 W/cm·K@298K c~3.9 W/cm·K@298K
Band-Gap	3.23 eV
Break-Down Electrical Field	3-5 × 10 <sup>6</sup> V/cm
Saturation Drift Velocity	2.0 × 10 <sup>5</sup> m/s

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