

LONGi N-Type Monocrystalline Wafer Specification

隆基 N 型单晶硅片规格书 (Res1.0-7.0-M6)

1、Material properties 材料性能

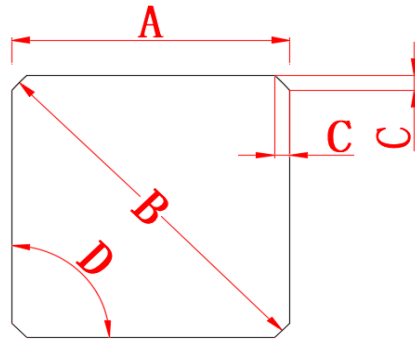
Property 项目	Specification 规格	Inspection Method 检测方法
Growth method 生长方式	CZ 直拉法	--
Crystallinity 结晶性	Monocrystalline 单晶	Preferential Etch Techniques (ASTM F47-88) 择优化学腐蚀法
Conductivity type 导电类型	N-type N 型	Napson EC-80TPN P/N 型测试仪
Dopant 掺杂元素	Phosphorus 磷	--
Oxygen concentration [Oi] 间隙氧含量	$\leq 8E + 17 \text{ at/cm}^3$	FTIR (ASTM F121-83) 傅里叶变换红外光谱仪
Carbon Concentration [Cs] 替位碳含量	$\leq 5E + 16 \text{ at/cm}^3$	FTIR (ASTM F123-91) 傅里叶变换红外光谱仪
Etch pit density (dislocation density) 位错密度	$\leq 500 \text{ cm}^{-2}$	Preferential Etch Techniques (ASTM F47-88) 择优化学腐蚀法
Surface orientation 表面晶向	$\langle 100 \rangle \pm 3^\circ$	X-ray Diffraction Method (ASTM F26-1987) X 射线衍射仪
Orientation of pseudo square sides 侧面晶向	$\langle 010 \rangle, \langle 001 \rangle \pm 3^\circ$	X-ray Diffraction Method (ASTM F26-1987) X 射线衍射仪

2、Electrical properties 电性能

Property 项目	Specification 规格	Inspection Method 检测方法
Resistivity 电阻率	1.0-7.0 Ω.cm	wafer inspection system 硅片自动检测设备
MCLT (Minority carrier lifetime) 少数寿命	≥1000 μs	Sinton BCT-400 Transient 瞬态光电导衰减法 (with injection level: 5E14 cm ⁻³)

3、Geometry 几何尺寸

Property 项目	Specification 规格	Inspection Method 检测方法
Geometry 几何外形	pseudo square 准方	--
Bevel edge shape 倒角边形状	Round 圆弧	--
Wafer Side length 硅片边距	166 ± 0.25 mm	wafer inspection system 硅片自动检测设备
Wafer Diameter 硅片直径	φ 223 ± 0.25 mm	wafer inspection system 硅片自动检测设备
Angle between adjacent sides 垂直度	90 ° ± 0.2 °	wafer inspection system 硅片自动检测设备
Thickness 厚度	<input type="checkbox"/> 180 + 20/ - 10 μm <input type="checkbox"/> 175 + 20/ - 10 μm <input type="checkbox"/> 170 + 20/ - 10 μm <input type="checkbox"/> 165 + 20/ - 10 μm <input type="checkbox"/> 160 + 20/ - 10 μm <input type="checkbox"/> 150 + 10/ - 10 μm <input type="checkbox"/> Other _____	wafer inspection system 硅片自动检测设备
TTV (Total thickness variation) 总厚度变化	≤ 27 μm	wafer inspection system 硅片自动检测设备



Size: M6

A: 166±0.25mm

B: ϕ 223±0.25mm

C: 8.55±0.5mm

D: 90±0.2°

4、Surface properties 表面性能

Property 项目	Specification 规格	Inspection Method 检测方法
Cutting method 切割方式	DW 金刚线切割	--
Surface quality 表面质量	as cut and cleaned, no visible contamination, (oil or grease, finger prints, soap stains, slurry stains, epoxy/glue stains are not allowed) 表面洁净，无可见污染（不允许有油污，指印，花斑，砂浆残留，胶残留）	wafer inspection system 硅片自动检测设备
Saw marks / steps 线痕/台阶	≤ 15μm	wafer inspection system 硅片自动检测设备
Bow 弯曲度	≤ 40 μm	wafer inspection system 硅片自动检测设备
Warp 翘曲度	≤ 40 μm	wafer inspection system 硅片自动检测设备
Chip 崩边	depth ≤ 0.3mm and length ≤ 0.5mm Max 2/pcs; no V-chip 深度≤0.3mm且长度≤0.5mm;每片不能超过2个;无V型崩边	Naked eyes or wafer inspection system 人工检验或硅片自动检测设备
Micro cracks / holes 隐裂/气孔	Not allowed 不允许	wafer inspection system 硅片自动检测设备