

P型M10+单晶硅片产品规格书

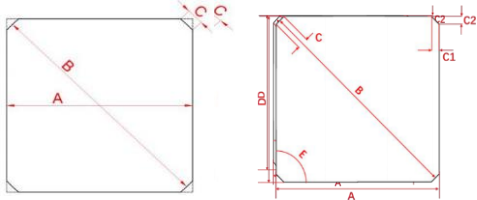
P-Type Monocrystalline Wafer Specification



| 项目 (Property)                         | 标准 (Specification)                                     | 检测方法 (Inspection Method)                             |
|---------------------------------------|--------------------------------------------------------|------------------------------------------------------|
| 材料特性                                  |                                                        |                                                      |
| Material Properties                   |                                                        |                                                      |
| 生长方式                                  | 直拉法                                                    |                                                      |
| Growth Method                         | CZ                                                     |                                                      |
| 掺杂剂                                   | 镓                                                      | 硅材料测试仪 (Silicon material tester (ASTM F43))          |
| Dopant                                | Gallium                                                |                                                      |
| 表面晶像                                  | < 100 > ±3°                                            | X射线衍射仪 (X-ray Diffraction Method (ASTM F26-1987))    |
| Surface Orientation                   |                                                        |                                                      |
| 位错密度                                  | ≤500pcs/cm²                                            | 择优化学腐蚀法 (Preferential Etch Techniques (ASTM F47-88)) |
| Etch pit Density/ Dislocation Density |                                                        |                                                      |
| 切割方式                                  | 电镀金刚线切割                                                |                                                      |
| Cutting Method                        | DW                                                     |                                                      |
|                                       |                                                        |                                                      |
| 电学特性                                  |                                                        |                                                      |
| Electrical Properties                 |                                                        |                                                      |
| 电阻率                                   | 0.40~1.10 Ω · cm                                       | 硅材料测试仪 SSRPT (Silicon material tester (ASTM F43))    |
| Resistivity                           |                                                        |                                                      |
| 少子寿命                                  | ≥70 μs                                                 | 微波光电导衰减法 BCT-400 Semilab μ-PCD (ASTM F28-90)         |
| Minority Carrier Lifetime             |                                                        |                                                      |
| 间隙氧含量                                 | ≤7.5×10 <sup>17</sup> atoms/cm <sup>3</sup> (Top)      | 傅里叶变换红外光谱仪 (FTIR(ASTM F121-83))                      |
| Oxygen Concentration [Oi]             |                                                        |                                                      |
| 替位碳含量                                 | ≤5.0×10 <sup>16</sup> atoms/cm <sup>3</sup> (Bottom)   | 傅里叶变换红外光谱仪 (FTIR(ASTM F121-83))                      |
| Carbon Concentration [Cs]             |                                                        |                                                      |
|                                       |                                                        |                                                      |
| 几何尺寸                                  |                                                        |                                                      |
| Geometry                              |                                                        |                                                      |
| 直线段的垂直度                               | 90° ±0.15°                                             | 硅片自动检测设备 (Wafer Inspection System)                   |
| Angle Between Adjacent Sides          |                                                        |                                                      |
| 厚度                                    | 120~150 μm 硅片平均厚度 (Average Thickness): +20 μm/ - 10 μm | 硅片自动检测设备 (Wafer Inspection System)                   |
| Thickness                             |                                                        |                                                      |
| 总厚度变化                                 | ≤30 μm                                                 | 硅片自动检测设备 (Wafer Inspection System)                   |
| TTV (Total Thickness Variation)       |                                                        |                                                      |
|                                       |                                                        |                                                      |
| 表面质量                                  |                                                        |                                                      |
| Appearance                            |                                                        |                                                      |
| 隐裂/裂痕                                 | 无                                                      | 硅片自动检测设备 (Wafer Inspection System)                   |
| Micro Cracks                          |                                                        |                                                      |
| 缺口                                    | 不可有                                                    | 硅片自动检测设备 (Wafer Inspection System)                   |
| Chip                                  | Not Allowed                                            |                                                      |
| 穿孔                                    | 不可有                                                    | 硅片自动检测设备 (Wafer Inspection System)                   |
| Holes                                 | Not Allowed                                            |                                                      |
| 线痕                                    | ≤10 μm                                                 | 硅片自动检测设备 (Wafer Inspection System)                   |
| Saw Marks                             |                                                        |                                                      |
| 翘曲度                                   | ≤50 μm                                                 | 硅片自动检测设备 (Wafer Inspection System)                   |
| Warp                                  |                                                        |                                                      |
| 黑芯/黑角                                 | 无                                                      | 硅片自动检测设备 (Wafer Inspection System)                   |

硅片尺寸示意图

Wafer Size Pattern



边距(Wafer Side Length) A: 182.2±0.25mm  
对角线(Wafer Side Length) B: 247±0.25mm  
弧长投影(Arc Length Projection)  
C: 10.91±0.7mm