

Wafer

P-type

G12-Res0.4~1.1-A



TOP PV TECH,
DRIVING ONWARD FOR GREEN ENERGY

Monocrystalline Silicon Wafer Specification

P-type-G12-Res 0.4~1.1-Grade A

Key Parameters

Conductive Type	P-type	P/N Type Tester (DLY – 2 P/N)
Doping Element	Ga.(Gallium)	--
Resistivity/ $\Omega \cdot \text{cm}$	0.4-1.1	Silicon Wafer Automatic Testing Equipment
Minority Carrier Lifetime/ μs	≥ 70	Quasi-Steady-State Photoconductance Decay Method/ Transient Photoconductance Decay Method
Interstitial Oxygen Content/ at/cm^3	$\leq 7.5 \times 10^{17}$	Fourier Transform Infrared Spectrometer (ASTM F121-83)
Substitutional Carbon Content/ at/cm^3	$\leq 5.0 \times 10^{16}$	Fourier Transform Infrared Spectrometer (GB/T1558-2009)

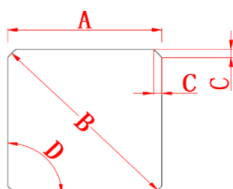
Material Properties

Growth Method	Czochralski Method	
Crystallinity	Single Crystal	
Dislocation Density/ pcs/cm^2	≤ 500	Preferred Chemical Etching Method(ASTM F47-88)
Surface Crystal Orientation/ $^\circ$	$\langle 100 \rangle \pm 3$	X-ray Diffractometer(ASTM F26-1987)
Side Crystal Orientation/ $^\circ$	$\langle 010 \rangle, \langle 001 \rangle \pm 3$	X-ray Diffractometer(ASTM F26-1987)

Geometric Dimensions and Surface Properties

Silicon Wafer Model	G12	--
Geometric Shape	Full-dimension	--
Chamfered Edge Shape	Flat-angle	--
Silicon Wafer Edge Distance/mm	210 ± 0.25	Silicon Wafer Automatic Testing Equipment
Silicon Wafer Diameter/mm	$\Phi 295 \pm 0.25$	Silicon Wafer Automatic Testing Equipment
Arc Length Projection/mm	1.41 ± 0.45	Silicon Wafer Automatic Testing Equipment
Perpendicularity/ $^\circ$	90 ± 0.15	Silicon Wafer Automatic Testing Equipment
Thickness/ μm	150 ± 10	Silicon Wafer Automatic Testing Equipment
Batch Thickness/ μm	≥ 150	Silicon Wafer Automatic Testing Equipment
TTV/ μm	≤ 25	Silicon Wafer Automatic Testing Equipment
Scratch/ μm	≤ 13	Silicon Wafer Automatic Testing Equipment
Warpage/ μm	≤ 40	Silicon Wafer Automatic Testing Equipment
Bow/ μm	≤ 40	Silicon Wafer Automatic Testing Equipment
Cutting Method	Diamond Wire Cutting	--
Surface Quality	The surface is clean, with no visible pollution, and color deviation (judged according to standard sample pieces)	Silicon Wafer Automatic Testing Equipment
Edge Chipping	Depth $\leq 0.3\text{mm}$ & Length $\leq 0.5\text{mm}$, no more than 1 piece, no V-shaped edge chipping	Manual Inspection or Silicon Wafer Automatic Testing Equipment
Hidden Cracks/Pores	Not Allowed	Silicon Wafer Automatic Testing Equipment

Schematic diagram of silicon wafer dimensions



Size: G12

A: $210 \pm 0.25\text{mm}$

B: $\Phi 295 \pm 0.25\text{mm}$

C: $1.41 \pm 0.45\text{mm}$

D: $90 \pm 0.15^\circ$