



# Monocrystalline Wafer

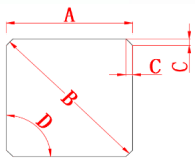
## Comprehensive system certification

ISO 9001:2015

ISO 14001:2015

OHSAS 18001:2018

Schematic diagram of wafer size



Size: G12

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

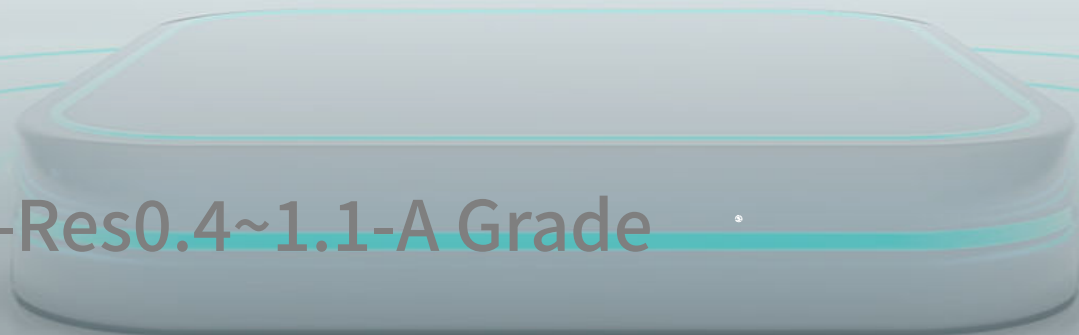
B:  $\phi 295 \pm 0.25\text{mm}$

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

D:  $90 \pm 0.15^\circ$



P-type-G12-Res0.4~1.1-A Grade



# Monocrystalline Wafer Specification

P-type-G12-Res0.4~1.1-A Grade

## Key parameters

Conductivity type	P-type	P/N type tester(DLY-2 P/N)
Dopant	Ga. (稼)	--
Resistivity/ $\Omega$ .cm	0.4-1.1	Wafer inspection system
MCLT(Minority carrier lifetime)/ $\mu$ s	$\geq 70$	QSSPC /Transient with injection level: $1E15\text{cm}^{-3}$ (Sinton BCT-400)
Oxygen concentration [Oi]/at/cm <sup>3</sup>	$\leq 7.5 \times 10^{17}$	FTIR(ASTM F121-83)
Carbon Concentration [Cs]/at/cm <sup>3</sup>	$\leq 5.0 \times 10^{16}$	FTIR(GB/T 1558-2009)

## Material properties

Growth method	CZ	--
Crystallinity	Monocrystalline	--
Etch pit density (dislocation density)/pcs/cm <sup>2</sup>	$\leq 500$	Preferential Etch Techniques(ASTM F47-88)
Surface orientation/ $^{\circ}$	$\langle 100 \rangle \pm 3$	X-ray Diffraction Method (ASTM F26-1987)
Orientation of pseudo square sides/ $^{\circ}$	$\langle 010 \rangle, \langle 001 \rangle \pm 3$	X-ray Diffraction Method (ASTM F26-1987)

## Geometric dimensions and surface properties

Wafer model	G12	--
Geometry	Square	--
Bevel edge shape	Straight	--
Wafer Side length/mm	$210 \pm 0.25$	Wafer inspection system
Wafer Diameter/mm	$\phi 295 \pm 0.25$	Wafer inspection system
Arc length projection/mm	$1.41 \pm 0.45$	Wafer inspection system
Angle between adjacent sides/ $^{\circ}$	$90 \pm 0.15$	Wafer inspection system
Thickness/ $\mu$ m	$150 \pm 10$	Wafer inspection system
Batch mean/ $\mu$ m	$\geq 150$	Wafer inspection system
Total thickness variation/ $\mu$ m	$\leq 25$	Wafer inspection system
Saw marks/ $\mu$ m	$\leq 13$	Wafer inspection system
Bow/ $\mu$ m	$\leq 40$	Wafer inspection system
Warp/ $\mu$ m	$\leq 40$	Wafer inspection system
Cutting method	DW	--
Surface quality	as cut and cleaned, no visible contamination, color difference (as determined by standard sample) (oil or grease, finger prints, spot stains, epoxy/glue residue are not allowed)	Wafer inspection system
Chip	depth $\leq 0.3\text{mm}$ & length $\leq 0.5\text{mm}$ , Max 1/pcs, no V-chip	Naked eyes or wafer inspection system
Micro cracks / holes	Not allowed	Wafer inspection system

