



Monocrystalline Wafer

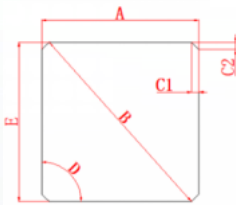
Comprehensive system certification

ISO 9001:2015

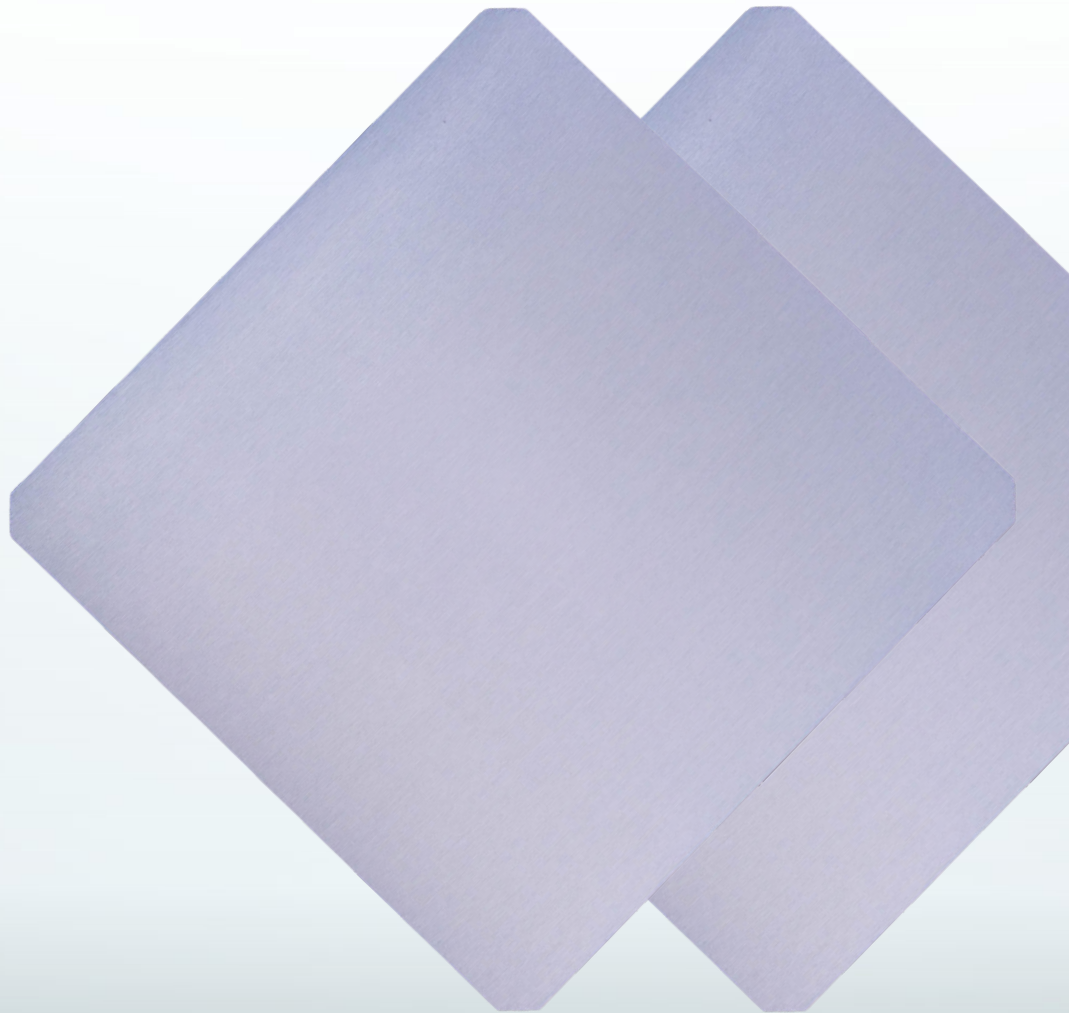
ISO 14001:2015

OHSAS 18001:2018

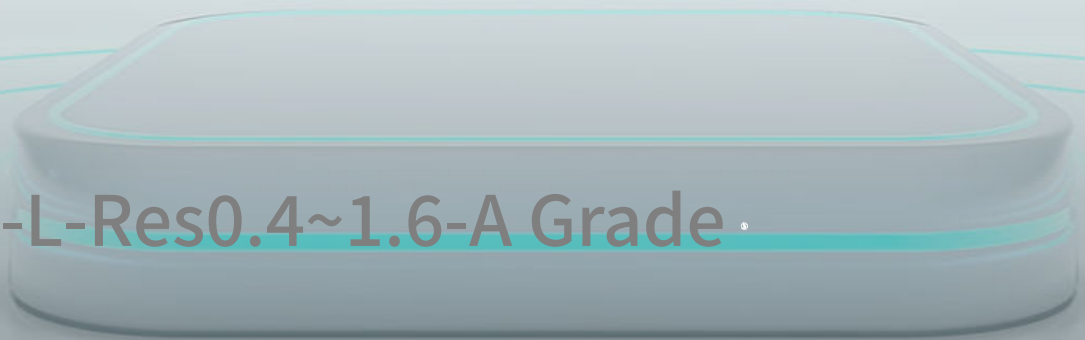
Schematic diagram of wafer size



Size: M11-L
A: 182.2 ± 0.2 mm
E: 191.6 ± 0.25 mm
B: $\phi 262.5 \pm 0.25$ mm
C1: 1.38 ± 0.5 mm
C2: 1.32 ± 0.5 mm
D: $90 \pm 0.15^\circ$



N-type-M11-L-Res0.4~1.6-A Grade



Monocrystalline Wafer Specification

N-type-M11-L-Res0.4~1.6-A Grade

Key parameters

Conductivity type	N-type	P/N type tester(DLY-2 P/N)
Dopant	Phos.(磷)	--
Resistivity/ Ω .cm	0.4-1.6	Wafer inspection system
MCLT(Minority carrier lifetime)/ μ s	≥ 1000	Transient with injection level: $5E14\text{cm}^{-3}$ (Sinton BCT-400)
Oxygen concentration [Oi]/at/cm ³	$\leq 6.0 \times 10^{17}$	FTIR(ASTM F121-83)
Carbon Concentration [Cs]/at/cm ³	$\leq 5.0 \times 10^{16}$	FTIR(GB/T 1558-2009)

Material properties

Growth method	CZ	--
Crystallinity	Monocrystalline	--
Etch pit density (dislocation density)/pcs/cm ²	≤ 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	M11-L	--
Geometry	Rectangular	--
Bevel edge shape	Straight	--
Wafer Side length/mm	Short 182.2 ± 0.2 ; Length 191.6 ± 0.25	Wafer inspection system
Wafer Diameter/mm	$\phi 262.5 \pm 0.25$	Wafer inspection system
Arc length projection/mm	C1: 1.38 ± 0.5 ; C2: 1.32 ± 0.5	Wafer inspection system
Angle between adjacent sides/ $^{\circ}$	90 ± 0.15	Wafer inspection system
Thickness/ μ m	130 ± 8	Wafer inspection system
Batch mean/ μ m	≥ 130	Wafer inspection system
Total thickness variation/ μ m	≤ 20	Wafer inspection system
Saw marks/ μ m	≤ 13	Wafer inspection system
Bow/ μ m	≤ 40	Wafer inspection system
Warp/ μ m	≤ 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

