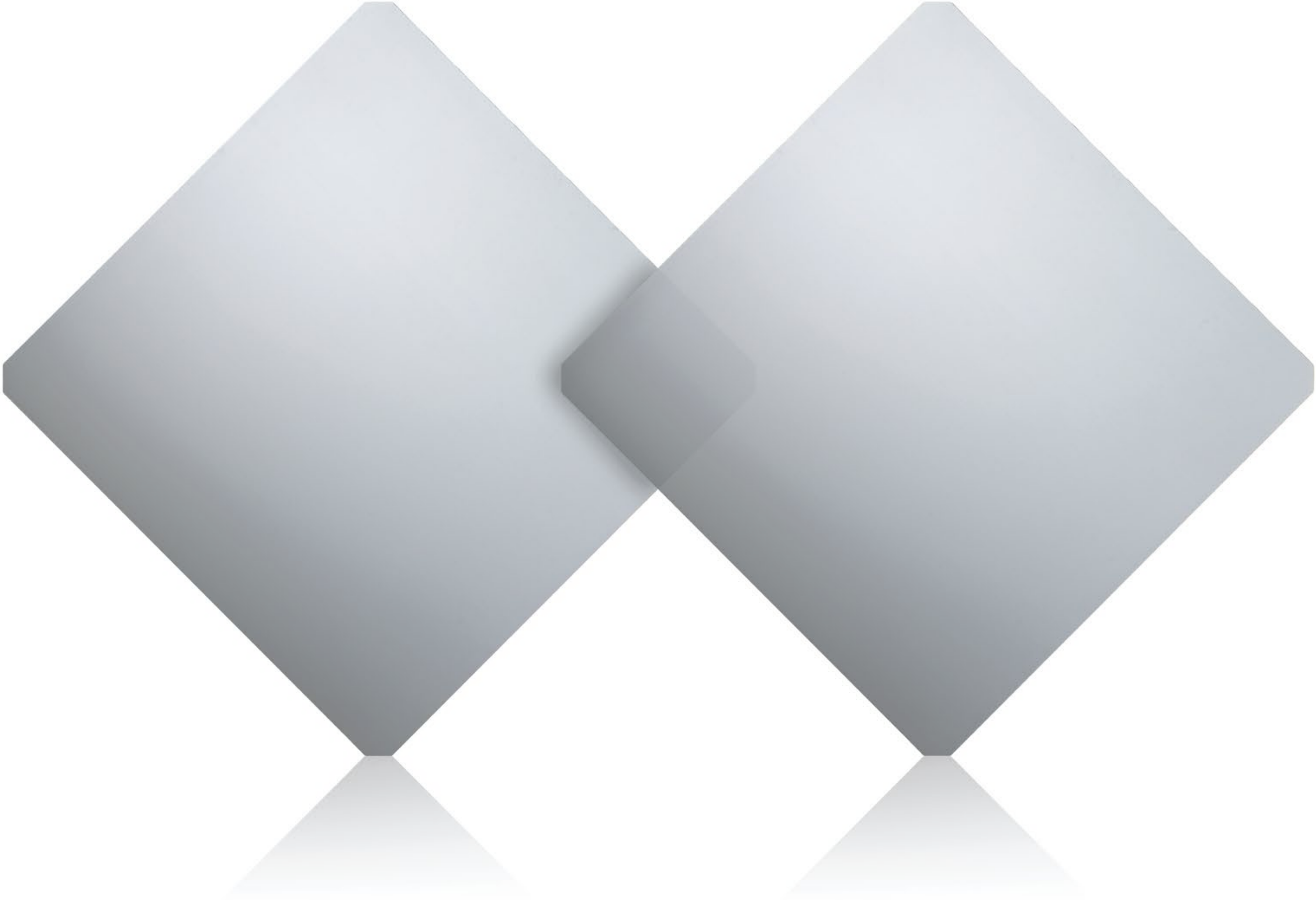
INDOSOL®

Monocrystalline Wafer

N-type-G12-R-Res 0.9~1.6-A Grade



Comprehensive system certification

ISO 9001:2015
ISO 14001:2015
OHSAS 18001:2018

Monocrystalline Wafer Specification

N-type-G12-R-Res0.9~1.6-A Grade

Key Parameters

Conductivity type	N-type	P/N type tester(DLY-2 P/N)
Dopant	Sb,P	--
Resistivity/Ω.cm	0.9-1.6	Wafer inspection system
MCLT(Minority carrier lifetime)/μs	≥ 1000	QSSPC /Transient with injection level: 5E14 cm-3 (Sinton BCT-400)
Oxygen concentration [Oi]/ at/cm^3	≤ 6.0×10^{17}	FTIR (ASTM F121-83)
Carbon Concentration [Cs]/ at/cm^3	≤5.0×10^{16}	FTIR (GB/T 1558-2009)

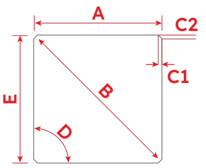
Material Properties

Growth method	CZ	--
Crystallinity	Monocrystalline	--
Etch pit density/ pcs/cm^2	≤500	Preferential Etch Techniques (ASTM F47-88)
Surface orientation/°	<100> ±2	X-ray Diffraction Method (ASTM F26-1987)
Orientation of pseudo square sides/°	<010>, <001> ±2	X-ray Diffraction Method (ASTM F26-1987)

Geometric Dimensions and Surface Properties

Wafer model	G12-R	--
Geometry	Rectangular	--
Bevel edge shape	Straight	--
Wafer Side length/mm	Short 182.3 ± 0.20；Long 210 ± 0.20	Wafer inspection system
Wafer Diagonal line/mm	ϕ272 ± 0.20	Wafer inspection system
Chamfer projection/mm	C1：4.72 ± 0.57；C2：4.07 ± 0.52	Wafer inspection system
Angle between adjacent sides/°	90 ± 0.15	Wafer inspection system
Thickness/μm	130 ± 8	Wafer inspection system
Batch mean/μm	≥ 130	Wafer inspection system
Total thickness variation/μm	≤ 20	Wafer inspection system
Saw marks /μm	≤ 13	Wafer inspection system
Warp/μm	≤40	Wafer inspection system
Cutting method	DW	--
Surface quality	As cut and cleaned, no visible contamination,slight color difference is allowed; (oil or grease, finger prints, spot stains, epoxy/glue residue are not allowed)	Wafer inspection system
Chip	Depth ≤0.3mm and length ≤ 0.5mm, Max 1/pcs; no V-chip	Naked eyes or wafer inspection system
Micro cracks / holes	Not allowed	Wafer inspection system

Schematic diagram of wafer



Size：G12-R

A：182.3±0.20mm
E：210±0.20mm
B：ϕ272±0.20mm
C1：4.72±0.57mm
C2：4.07±0.52mm
D：90±0.15°

Specifications subjects to technical changes and test, Indosol Solar reserves the right of final interpretation.

INDOSOL SOLAR PRIVATE LIMITED

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