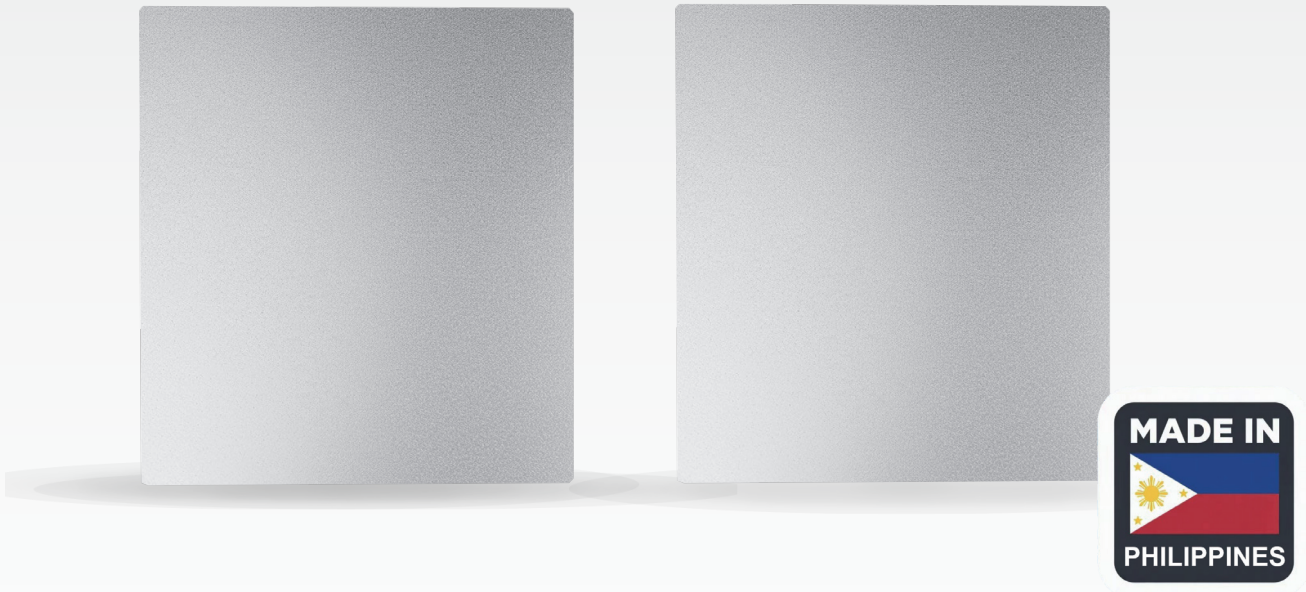


N-Type-G12-R-182.3x210 Φ 272-0.9~1.6-Grade-A



High conversion efficiency with high reliability



No light-induced degradation



Uniform cell performance with stable process control



Both sides can generate electricity



Low mismatch of cell performance during encapsulation



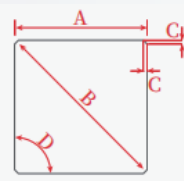
Excellent power generation performance under low irradiation



Low hot spot effect

SOLARIS PANABO

N-Type-G12-R-182.3x210 Φ 272-0.9~1.6-Grade-A

Property	Specification	Inspection Method
Conducting Type	N-Type	PN-type tester(DLY-2 P/N)
Doping Element	Sb, P	-
Resistivity	0.9-1.6	Silicon wafer automatic detection equipment
Minority Carrier Lifetime	≥ 1000	Quasi steady state photoconductivity decay method transient photoconductivity decay method
Gap Oxygen Content	$\leq 6.00 \times 10^{17}$	Fourier transform infrared spectrometer
Substitute Carbon Content	$\leq 5.0 \times 10^{16}$	Fourier transform infrared spectrometer
Growth Mode	Straight pull method	-
Crystallinity	Monocrystalline	-
Dislocation Density	≤ 500	Optimal chemical corrosion method
Surface Crystal Orientation	$\langle 100 \rangle \pm 2$	X-ray diffractometer
Lateral Crystal Orientation	$\langle 010 \rangle, \langle 001 \rangle \pm 2$	X-ray diffractometer
Silicon Wafer Model	G12-R	-
Geometric Shape	Rectangle	-
Chamfered Edge Shape	Flat	-
Margins	Short side 182.3 ± 0.20 ; Long side 210 ± 0.20	Silicon wafer automatic detection equipment
Diagonal After Chamfering	$\Phi 272 \pm 0.20$	Silicon wafer automatic detection equipment
Chamfering Projection	C1: 4.72 ± 0.57 ; C2: 4.07 ± 0.52	Silicon wafer automatic detection equipment
Verticality	90 ± 0.15	Silicon wafer automatic detection equipment
Thickness	130 ± 8	
Batch Thickness	≥ 130	Silicon wafer automatic detection equipment
TTV	≤ 20	Silicon wafer automatic detection equipment
Line Mark	≤ 13	Silicon wafer automatic detection equipment
Warpage	≤ 40	Silicon wafer automatic detection equipment
Cutting Method	Diamond wire cutting	Silicon wafer automatic detection equipment
Surface Quality	Clean surface, no visible pollution, color difference (judged according to standard samples) (No oil stains, fingerprints, flower spots, mortar residue, adhesive residue allowed)	
Edge Chipping	Depth $\leq 0.3\text{mm}$ &length $\leq 0.5\text{mm}$, each piece cannot exceed one, with no V-shaped broken edges	Manual inspection or automatic silicon wafer testing equipment
Hidden Cracks/Pores	Not allowed	Silicon wafer automatic detection equipment
Schematic Diagram of Silicon Wafer Size	 Size: G12-R A: $182.3 \pm 0.20\text{mm}$ E: $210 \pm 0.20\text{mm}$ B: $\Phi 272 \pm 0.20\text{mm}$ C1: $4.72 \pm 0.57\text{mm}$ C2: $4.07 \pm 0.52\text{mm}$ D: $90 \pm 0.15^\circ$	