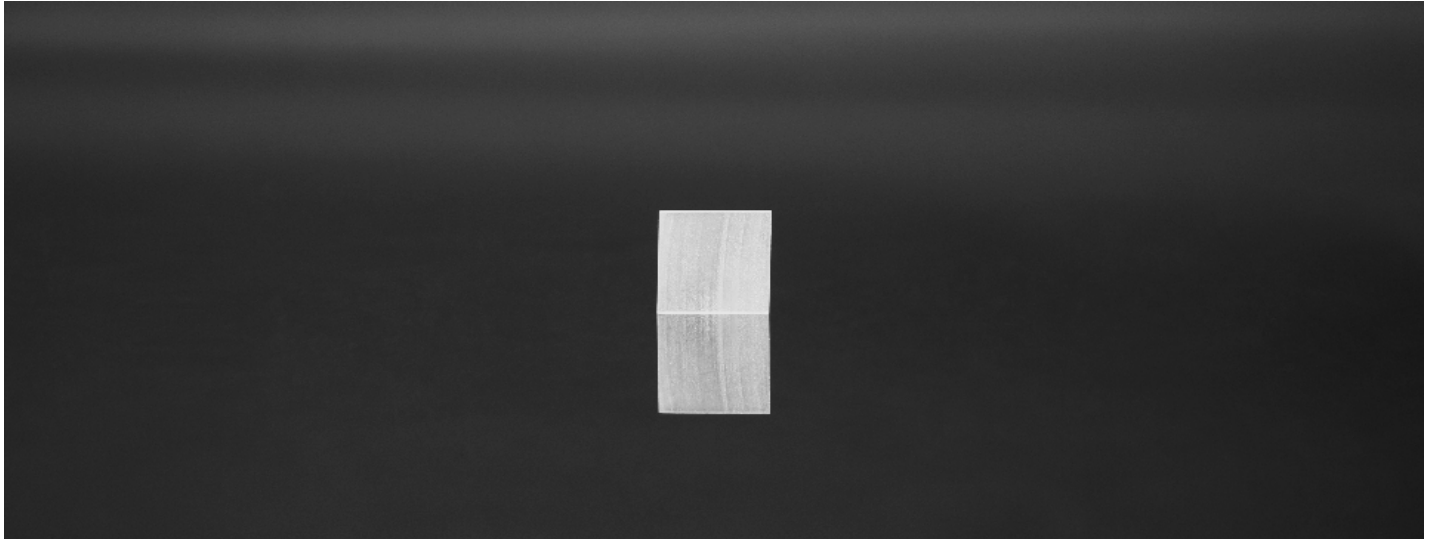


Silicon (Si) Crystal Substrate



DESCRIPTION

Silicon (Si) wafer is a material essential for manufacturing semiconductors, which are found in all kinds of electronic devices that enrich our lives. Few of us have a chance to encounter an actual silicon wafer in daily life. This ultra-flat disk is polished to a mirror-like surface, and made as free as possible of tiny surface irregularities, making it the flattest object in the world. It is also ultra-clean, virtually free of micro-particles and other impurities. These qualities are necessary so it can be used as the substrate material of today's state-of-the-art semiconductors.

The wafers are ideal substrates for research applications, setup and tool qualification of precision equipment (e.g. steppers & other fabrication processes and semiconductor production requirements). Silicon is exceptionally flat, hard and has very tight thickness, TTV and other dimensional tolerances as well as being bio compatible and radiation hard. Tight tolerance wafers enable a range of technologies such as Si membranes, Si sensors and Si detectors for pressure measurement and MEMS devices such as Si cantilevers for measurement, micro-mechanisms used in energy harvesting, substrates for energy storage, microfluidics including PCR devices, air speed measurement and ultra-precision micro-flow measurements.

FEATURE

- High quality single crystal
- High hardness
- Good mechanical properties
- Good physical and chemical properties

APPLICATION

- Electronic parts and components
- Semiconductors
- PCR devices

PARAMETER

Physical Properties

Si Properties	
Refractive Index	3.4179 @ 10 μm ; 3,45
Reflective Loss	46.1 % @ 10 μm
Density	2,3291 g/cm ³
Melting Point	1420 °C
Molecular Weight	28.086
Thermal Conductivity	1,63 W/(cm K); 1,4 W/(cm K)
Specific Heat	0,703 J/(g K) @ 25 °C
Thermal Expansion	4.05×10 ⁻⁶ / K @ 10...50 °C
Hardness (Knoop)	1150 (Mohs 7)
Young' s Modulus	131 GPa
Shear Modulus	79.9 GPa
Bulk Modulus	102 GPa
Rupture Modulus	340 MPa
Elastic Coefficient	C11 = 167 / C12 = 65 / C44 = 80 GPa
Dielectric Constant	13 @ f = 9.37 GHz

Main Specification

Si wafer	
Diameter	1inch, 2inch, 3inch, 4inch, 5inch
Thickness	0.5mm or 1.0mm
Polished	Single or double side polished (SSP or DSP)
Orientation	<100>, <111>, <211>, <311>, <411>, <511>, <711>, <911>, <110>, <210>, <310>, <510>, <531>, <731>, <910>
Redirection Precision	±0.5°
Angle of Crystalline	Special size and orientation are available on demand
Special Specification	We can customize specific orientation and dimension upon requirements

