SiO_2
Single Crystal Quartz Wafer

Single crystal quartz wafer is an excellent substrate for microwave filters for wireless communication industries. MTI can provide high quality quartz wafers for both research and industries production at the lowest price.

Typical Physical Properties	
Purity Wt %	SAW grade: > 99.9 Optical grade: 99.99
Crystal Structure	Hex. a= 4.914 Å c = 5.405 Å
Growth Method	Hydrothermal
Hardness	7.0 Moh's
Density	2.684 g/cm^3
Melt Point	1610 ^oC (phase transition point: 573.1^oC)
Specific heat	0.18 cal/gm
Thermoelectric Constant	1200 $\mu V/^oC$ @ 300 ^oC
Thermal conductivity	0.0033 cal/cm/ ^oC
Thermal expansion ($x10^{-6}/^oC$)	α_{11}: 13.71 α_{33}: 7.48
Index of Refraction	1.544
Q value Acoustic velocity, SAW Frequency constant, BAW Piezoelectric coupling ,	1.8 x 10^6 min. 3160 (m/sec) 1661 (kHz/mm) K^2 (%) BAW: 0.65 SAW: 0.14
Inclusion	IEC Grade II
Standard Quartz Wafer Specifications	
Orientation	Y, X or Z cut: Rotated to any value in the range 30° ~ 42.75^o ± 5 min. Primary flat: orientation specified by customer ± 30 min Secondary Flat: orientation specified by customer. Seed: located in the center: width < 5mm, height > 66mm
Polished surface	EPI polished on one side or two sides to Ra < 10 Å Working Area: Wafer diameter minus 3 mm BOW: < 20 μm for 3" wafer and 30 μm for 4" wafer No chips out on working area. In the edge, chip width < 0.5 mm Pit and scratches: < 3 per wafer or < 20 per 100 wafers
Standard Thickness	0.5 mm ± 0.05mm TTV < 5 μm
Standard Diameter	<u>ϕ 2" (50.8mm)</u> <u>ϕ 3" (76.2mm)</u> <u>ϕ 4"(100mm)</u> ±0.2 mm Primary Flat : 22 ± 1.5 mm (ϕ 3") 32 ± 3.0 mm (ϕ 4") Secondary Flat: 10 mm ±1.5 mm
Production Capability	20,000 wafer per month

Special size and orientation are available upon request

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