



Quartz :

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Quartz crystal is a kind of piezoelectric crystal. The piezoelectric effect of quartz crystal is used to realize frequency control, stability or selection. The electronic components made include quartz crystal resonators, quartz crystal oscillators and quartz crystal filters. Mainly used in communications, home appliances, automobiles and other various industrial and consumer electronics products.

Typical application :

surface wave substrate

optical window

Carrier Wafer or Bulk Wave Chip

Also used to make commercial and military grade crystals

filter

OCXO

TCXO

Material properties:

growth method	Hydrothermal
Crystal structure	hexagonal
Lattice constant	a=4.914Å
density	2.684g/cm ³
hardness	7 (mohs)
heat capacity	0.18cal/gm
melting point	1610°C (phase transition point: 573.1°C)
Thermal conductivity	0.0033cal/cm°C
Thermoelectric constant	1200uv/°C (300°C)
Refractive index	1.544
Thermal expansion	$\alpha_{11}: 13.71 \times 10^{-6} / ^\circ\text{C}$ $\alpha_{33}: 7.48 \times 10^{-6} / ^\circ\text{C}$
Q value	1.8×10^6 min
sound velocity, SAW level	3160 (m/sec)
frequency constant	1661 (kHz/mm)
piezoelectric coupling	K ₂ (%) BAW: 0.65 SAW: 0.14
Wrapping	IEC Grade

Product Introduction -----Semiconductor Wafer



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Product parameters :

Material	quartz crystal			
Tangential	X/Y/Z/AT32, 33, 36/BT/ST42.75°-cut etc			
size	3"(76.2mm)	4" (100mm)	6"(150mm)	8"(200mm)
Tolerance (±)	<0.20 mm			
thickness	0.08mmMin	0.10mmMin	0.20mmMin	≥0.35mm
main reference edge	22mm	32mm	42.5mm	57.5mm
LTV (5mmx5mm)	<1μm			
TTV	<3μm			
Bow	-30<bow<30			
Warp	<40μm			
PLTV(<0.5um)	≥95%(5mm*5mm)			
Orientation Flat	All available			
polishing	Single Throw/Double Throw			
Surface roughness	Ra<0.5nm			
back	0.2-0.5μm			
Chamfer	R=0.2mm			
Material properties	ECD	better than grade 4		
	envelope	Better than II		
	Q-Value	better than C		
surface finish	Particle $\phi > 0.3$	≤ 30		
	Scratches,	none		
	flaw	Five chipped edges, scratches, stains, etc.		
Package	quantity	25 pieces/box		