

## Special substrates

Besides standard wafers and blanks we produce special substrates based on customer's requests. Below are a few examples of these substrates. In case of other requirements, feel free to contact us.

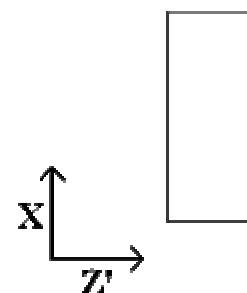
### 1) SC wafers - 4", 3", 2" x 2"

Parameter, orientation	Value
Material	quartz, $Q > 1.8$ mil.
Orientation	
	$22^{\circ}45' (\pm 5')$
	$34^{\circ}05' (\pm 5')$
	$0^{\circ} (\pm 5')$
Dimensions	1) 4" diameter with a flat 2) 3" diameter with a flat 3) 50.8 x 50.8 mm
Thickness	590 ( $\pm 20$ ) [ $\mu\text{m}$ ]
Front side	polished SAW, RMS < 0.5 nm
Back side	polished SAW, RMS < 0.5 nm



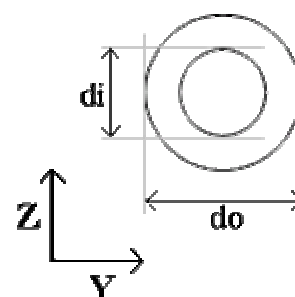
### 2) Rectangular blanks / wafers

Parameter, orientation	Value
Material	quartz, $Q > 1.8$ mil.
Cutting angle	$43.75^{\circ} (\pm 10')$
Dimensions	50.80 x 12.80 ( $\pm 0.13$ ) [mm]
Thickness	965 ( $\pm 76$ ) [ $\mu\text{m}$ ]
Front side	polished SAW, RMS < 0.5 $\mu\text{m}$
Back side	fine lapped, Ra ~ 0.2 $\mu\text{m}$



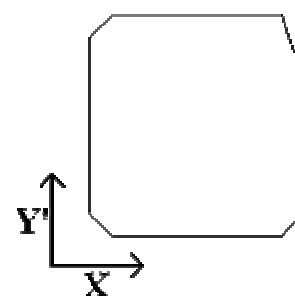
### 3) Rings

Parameter, orientation	Value
Material	quartz, $Q > 1.8$ mil.
Cutting angle	$X90^{\circ} (\pm 1^{\circ})$
Dimensions (do / di / thickness)	1) 20.0 / 11.9 / 1.2 mm 2) 26.6 / 14.3 / 0.8 mm 3) 32.6 / 18.3 / 1.2 mm
Front side	lapped, Ra ~ 1 $\mu\text{m}$
Back side	lapped, Ra ~ 1 $\mu\text{m}$



### 4) Rectangular blanks

Parameter, orientation	Value
Material	quartz, $Q > 1.8$ mil.
Cutting angle	ZX $0^{\circ} + 1^{\circ}50' (\pm 15')$
Dimensions	38.10 x 38.10 ( $\pm 0.05$ ) [mm]
Thickness	400 ( $\pm 3$ ) [ $\mu\text{m}$ ]
Front side	fine lapped, Ra ~ 0.2 $\mu\text{m}$
Back side	fine lapped, Ra ~ 0.2 $\mu\text{m}$



**Note:**

All of the above parameters are only sample specifications. Differences from standard values and other parameters can be consulted.