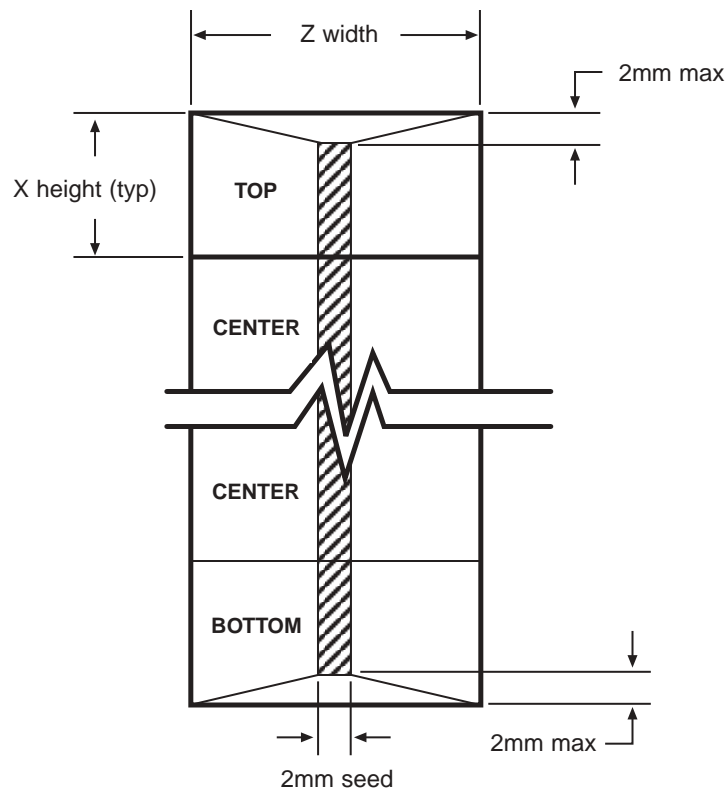


General

This document provides typical specifications for single crystal cultured quartz material grown on Z-plate seeds and lumbered into several uniformly dimensioned bars. The individual as-grown crystals are crystallographically oriented and lumbered with several cuts in the YZ plane, thus producing equal sized lumbered bars, as shown below. In this process, the “top”, “center” and “bottom” bars differ slightly in that while the center bars are pure-Z material, both the top (+X direction) and bottom (-X direction) bars contain a small quantity of +X or -X material, respectively. This non-Z material is, in all cases, limited to a thickness not to exceed 2.0 mm. Seed material in tops, centers and bottoms is centered in the Z-direction within a 3.0 mm wide band.

Section Drawing



References

International Electrotechnical Commission Standard, CEI/IEC 758, Second edition, 1993-04.

Institute of Electrical and Electronic Engineers Standard on Piezoelectricity, ANSI/IEEE Std. 176-1987.

Mechanical Characteristics

	Units	Typical Values	Tolerance
Standard dimensions	(other dimensions available to meet customer-specific requirements)		
X-height x Z-width	mm	10.0 x 20.0 9.5 x 19.0 9.0 x 18.0	± 0.13
Y-length	mm	200	± 5
Orientation of X-surface @ Y-axis	degrees	0	± 15 minutes
@ Z-axis		0	
Orientation of Z-surface @ X-axis	degrees	0	± 1 degree
@ Y-axis		0	
Flatness of -X lumbered surface	mm	Flat	± 0.1
Surface finish of -X lumbered surface, R _a	µm	4.0	maximum

Material Characteristics

Handedness		Right	
Infrared α (3500 cm ⁻¹)	α -units	Grade B: 0.045 Grade C: 0.060	maximum
Inclusions (diameter)		Grade II	Grade I
25-75 µm	cm ⁻³	5	4
75-100 µm	cm ⁻³	4	2
> 100 µm	cm ⁻³	3	2
Etch channels	cm ⁻²	Grade 4: 300 Grade 3: 100 (other grades available to meet customer-specific requirements)	maximum
Twins and cracks in useful volume	count	None	

Seed Characteristics

Seed Characteristics	Within central 3 mm		
Non-Z material			
+ X growth	mm	2.0	maximum
-X growth		2.0	

Marking and Packaging

- Supplier logo, grind lot number, part number and "Minus X" are marked on the minus-X surface of each bar.
- Bars are packed in individual cells within double walled cardboard boxes containing approximately 25 kg.
- Total piece count, net weight, gross weight and part number are marked on the exterior of the carton.
- Cartons are appropriately marked for export purposes and affixed to wooden pallets suitable for ocean transport.

Multi-High Lumbered Bar

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