



Schott® Borofloat® 33 Borosilicate Wafers

Material Description

The performance requirements for wafers used for anodic bonding or as a carrier in wafer thinning processes are mainly determined by their ability to perfectly match those of the silicon wafer to which they shall be bonded. Well-adapted thermal expansion behavior is as important as excellent flatness and process robustness. BOROFLOAT® wafers provide these along with exceptionally high UV transmission.

Wafer Options

Coresix produces Schott® BOROFLOAT® 33 wafers to all SEMI Standards including dimensional, flat and notch specifications. In addition, we offer custom specifications designed to your unique needs including, alignment marks, holes, pockets, edge profile, thickness, flatness, surface quality, cleanliness or other details critical to your application.

Wafer Specifications

Attribute	Standard	Best
Diameter	50.8, 76.2, 100, 150, 200, 300, 450	Custom Diameters
Diameter Tolerance	+/- 200µm	+/- 50 µm
Thickness	.7, 1.1, 1.75, 2.2, 52, 75, 33	Custom .45mm - .50mm
Thickness Tolerance	+/- 5%	+/- 5 µm
Thickness Variation (TV)	<20µm	<1µm
Scratch and Dig	60/40	5/2
Roughness (RMS)	<7Å	<3Å
Warp	<400µm	<30µm
Flatness	λ per inch TIR	λ/10 per inch TIR

Electrical Properties

Dielectric Strength (25°C, 50Hz)	16 kV/mm
Dielectric Constant (25°C, 1MHz)	4.6
Loss Tangent (25°C, 1MHz)	37×10^{-4}
Electric Volume Resistivity (250°C)	8.0
Electric Volume Resistivity (350°C)	6.5

Mechanical Properties

Density (25°C / 77°F)	2.23 g/cm ³
Modulus of Elasticity	63 kN/mm ²
Young's Modulus (25°C / 77°F)	64 kN/mm ²
Knoop Hardness HK	0.1/20: 480
Poisson's Ratio	0.2
Bending Strength	25 MPa

Thermal Properties

Thermal Coefficient of Expansion (20-300°C)	$3.25 \times 10^{-6} \text{ K}^{-1}$
Specific Thermal Capacity (20-100°C)	0.83 KJ x (kg x K) ⁻¹
Specific Thermal Conductivity (90°C)	(1.2W x (m x K) ⁻¹
Annealing Point	560°C / 1040°F
Softening Point	815°C / 1508°F
Thermal Conductivity	1.2 W/mk @90°C
Maximum Operating Temperature Considering RTG (Resistance to Thermal Gradients) and RTS (Resistance to Thermal Shock)	
Short Term	500°C / 932°F
Long Term	450°C / 842°F

Optical Properties

Refractive Index	1.471
Index of Refraction	
@435.8nm	1.48
@589.3nm	1.47
@656.3nm	1.46
Dispersion	71.4×10^{-4}
Abbe Constant	65.41

