Bismuth Silicate ($Bi_{12}SiO_{20}$)

	Surface Acoustic Wave (SAW) Devices Bulk Acoustic Wave (BAW) Devices Holographic Memory Eiectro-optic Devices

Crystal Properties	Crystal Class	Cubic
	Point Group	23
	Space Group	$I2_13$
	Lattice Parameter	a 1.0103 nm
	Melting Point	890 °C
	Density	9.2 g/cm^3
	Hardness	4.5 Mohs
	Dielectric Constant	$\varepsilon^S_{11}/\varepsilon_0$ 42.7, $\varepsilon^T_{33}/\varepsilon_0$ 47.5
	Elastic Stiffness Coefficient	C^E_{11} 1.33, C^E_{44} 0.25 x 10^{11} N/m^2
	Piezoelectric Strain Constant	e_{14} 1.01 C/m^2
	Transparency Range	470 ~ 7500 nm
	Electro-optic Coefficient	r_{41} 5.00 x 10^{-12} m/V
	Refractive Index	2.45 (632.8 nm)
	Gradient of Refractive Index	≤ 5 x 10^{-5}/cm
	Optic Activity	Left 20° mm^{-1} (632.8 nm)
	Transmittivity	69% (632.8 nm)

		V_s (m/s)	K^2_s (%)	TCV (10^{-6} / °C)	TCD (10^{-6} / °C)
Typical SAW Properties	[001] - [110]	1622	0.62	118	

Specifications	**Boules**	Section Size	45x45 [100], 45x50 [110]
		Typical Length	100 ~ 200 mm
		Typical Orientation	[100] [110], [111]
	Wafers	Typical Size	(20 ~ 40) x (100 ~ 200) mm
		Typical Thickness	2.0 mm
		Typical Orientation	[110] [001], [111]
		Front Side Polish	0.25 ~ 0.016 µm
		Back Side Lapping	10 ~ 15
		Flatness	≤ 30 µm
		Bow	≤ 30 µm
	Blocks	Typical Size	40x40x150 mm
		Polish	0.016 µm

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1 INNOVATION WAY • SUITE 304A • NEWARK, DE 19707 FAX 302.894.1151 TEL 302.894.9021 www.ymtonline.com