

BSO crystals

Main features

- High electro-optic coefficient ($r_{41} = 5 \text{ pm/V}$)
- High phase-conjugation efficiency
- Available in large size elements or wafers up to 3"
- Customization available upon request

Application examples

- Spatial light modulators
- Optical switches
- Pockels readout optical memory (PROM) applications
- Optical waveguides

Bismuth silicone oxide ($\text{Bi}_{12}\text{SiO}_{20}$, BSO) crystals are highly efficient photoconductors with a low dark conductivity, that allows a build-up of large photo-induced space-charges. Tremendous photoconductivity and electro-optic properties make BSO crystals attractive in a range of applications: spatial light modulators, optical switches, phase conjugation mixers. BSO crystals are grown by modified Czochralski method and available in up to 3" diameter aperture size. Crystals can be supplied with ITO coatings on request.

Standard specifications

BSO CRYSTALS	
Clear aperture	85%
Face dimensions tolerance	+0.1/-0.25 mm
Thickness tolerance	±0.2 mm
Parallelism error	<30 arcsec
Protective chamfers	<0.3 mm at 45°
Surface quality	40-20 S-D
Wavefront distortion	<λ/4@632.8 nm
Coatings	Uncoated
Mount	Unmounted

Properties

MAIN PROPERTIES	
Chemical formula	$\text{Bi}_{12}\text{SiO}_{20}$
Crystal structure	Cubic, point group 23
Lattice parameters	10.10 Å
Density	9.2 g/cm ³
Mohs hardness	5
Transmission Range	0.45-6 μm
Refractive Index	2.54@0.63 μm
Optical Activity	42 deg/mm@500 nm
Electro-optic coefficient	$r_{41} = 5 \text{ pm/V}$
Dielectric constant (low frequency)	56
Dark resistance	10 ¹⁴ Ohm cm

Standard products

FACE DIMENSIONS	LENGTH	ORIENTATION	SKU
5 x 5 mm	5 mm	[100]	6885
	5 mm	[110]	6884
10 x 10 mm	5 mm	[100]	6883
	5 mm	[110]	6882
20 x 20 mm	1,1 mm	[100]	6881
	1,1 mm	[110]	6880
25 x 25 mm	1,1 mm	[110]	27782
30 x 30 mm	1,1 mm	[110]	1558
	1,4 mm	[110]	9095