Oxide Single Crystal Substrate

Shinkosha provides various optimal oxide single crystal substrates for epitaxial thin-film growth (Sapphire, $SrTiO_3$, Rutile, $LaAlO_3$ and $NdGaO_3$ are each treated in a separate catalog).

【Characteristics】 (Reference data)

Crystal	MgO	YSZ	LSAT	$MgAl_2O_4$
Crystal system	Cubic	Cubic	Cubic	Cubic
Crystal structure	NaCl	CaF_2	Perovskite	Spinel
Lattice constant	a = 0.4213 nm	a = 0.5139 nm	a = 0.7736 nm	a = 0.8083 nm
Melting point	2800 ℃	2500 ℃	1840 ℃	2130 ℃
Density	3.59 g/cm^3	6.05 g/cm^3	6.79 g/cm^3	3.64 g/cm^3
Thermal expansion	13.5x10^{-6}/℃	10.3x10^{-6}/℃	10x10^{-6}/℃	7.5x10^{-6}/℃
Dielectric constant	10	27	22	—

【Standard Specs】

Orientation tolerance	±0.5°
Size	10×10×0.5 mm , 15×15×0.5 mm (max : φ2in) Outer size tolerance : ±0.1 mm Thickness tolerance : ±0.05 mm
Surface roughness	Ra ≦1.0nm , Rmax ≦5.0nm
Flatness	10×10×0.5mm : ≦λ , 15×15×0.5mm : ≦1.5λ (λ=632.8nm)

*This table is made for a general specification. Since it may differ from above specs depending on materials and orientations, please ask us for the details.

MgO

Orientation	Orientation flat	Size	One-side polishing	Both-side polishing
(100)	(010)	10x10x0.5mm	○	○
〃	〃	15x15x0.5mm	○	△

YSZ

Yttria Stabilized Zirconia (Y_2O_3≒10mol%)

Orientation	Orientation flat	Size	One-side polishing	Both-side polishing
(100)	(010)	10x10x0.5mm	○	○
〃	〃	15x15x0.5mm	○	△
(111)	(110)	10x10x0.5mm	○	○

LSAT

$(La_{0.3}Sr_{0.7})(Al_{0.65}Ta_{0.35})O_3$

Orientation	Orientation flat	Size	One-side polishing	Both-side polishing
(100)	(010)	10x10x0.5mm	○	△
〃	〃	15x15x0.5mm	○	△

$MgAl_2O_4$

Spinel

Orientation	Orientation flat	Size	One-side polishing	Both-side polishing
(100)	(010)	10x10x0.5mm	○	△
(111)	(110)	10x10x0.5mm	△	△

○ : Standard △ : Made-to-order

If you are looking for different sizes, offset angle type and others, please contact us.
*Minimum order for made-to-order model and special model : 5pcs

Model Number

Crystal
MgO : MO
YSZ : YZ
LSAT : LSAT
$MgAl_2O_4$: MA

Polishing
S : One-side
W : Both-side

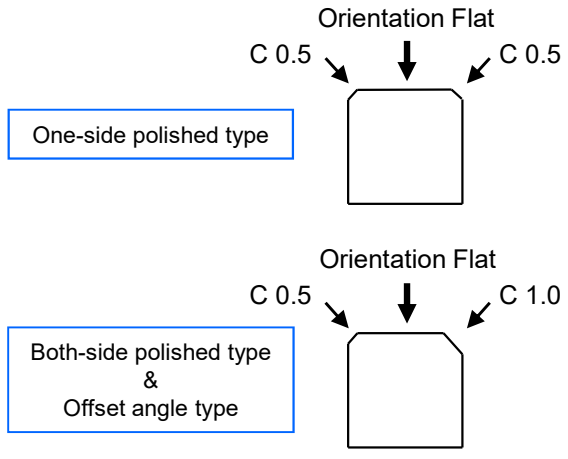
Surface treatment
N : Normal

MO — AS — 10N

Orientation
A : (100)
D : (110)
G : (111)

Size
10 : 10 × 10 × 0.5 mm
15 : 15 × 15 × 0.5 mm

Orientation Flat



<Visual check note>
We pass over the following:
(a) Chips within 0.2mm from the circumference of substrates
(b) Chips on the edge strip under 1/2 size of substrate thickness
(c) Scratches and blemish on the back side of single-side polished substrates

SHINKOSHA Co., Ltd.

2-4-1 Kosugaya, Sakae-ku, Yokohama, 247-0007, JAPAN
TEL: 81-45-892-4393, FAX: 81-45-892-2986
E-mail : sales@shinkosha.com
URL : http://www.shinkosha.com/

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