

# Oxide Single Crystal Substrate

We offer a variety of oxide single-crystal substrates suitable for epitaxial growth.

For details on sapphire, SrTiO<sub>3</sub>, rutile, LaAlO<sub>3</sub>, and NdGaO<sub>3</sub>, please refer to the individual product catalogs.



Detail site

## 【Characteristics】 (Reference data)

Crystal	MgO	YSZ	LSAT	MgAl <sub>2</sub> O <sub>4</sub>
Crystal system	Cubic	Cubic	Cubic	Cubic
Crystal structure	NaCl	CaF <sub>2</sub>	Perovskite	Spinel
Lattice constant	a = 0.4213 nm	a = 0.5139 nm	a = 0.7736 nm	a = 0.8083 nm
Melting point	2800 °C	2500 °C	1840 °C	2130 °C
Density	3.59 g/cm <sup>3</sup>	6.05 g/cm <sup>3</sup>	6.79 g/cm <sup>3</sup>	3.64 g/cm <sup>3</sup>
Thermal expansion	13.5x10 <sup>-6</sup> /°C	10.3x10 <sup>-6</sup> /°C	10x10 <sup>-6</sup> /°C	7.5x10 <sup>-6</sup> /°C
Dielectric constant	10	27	22	—

## 【Standard Specifications】

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) ※ Excluding MgO and MgAl <sub>2</sub> O <sub>4</sub>

\*This table is made for a general specification. Since it may differ from above specifications 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<sub>2</sub>O<sub>3</sub>≒10mol%)

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

【Note】 YSZ is not able to be exported from Japan

★ :Planned inventory

○ : Standard

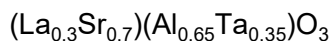
△ : Made-to-order

Planned inventory: Production is regularly managed to ensure prompt delivery.  
(Please note that specifications may change without prior notice.)

We also accept orders for different sizes and off-spec substrates.

Please contact us for details.

## LSAT



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

## MgAl<sub>2</sub>O<sub>4</sub>

Spinel

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

★ : Planed inventory

○ : Standard

△ : Made-to-order

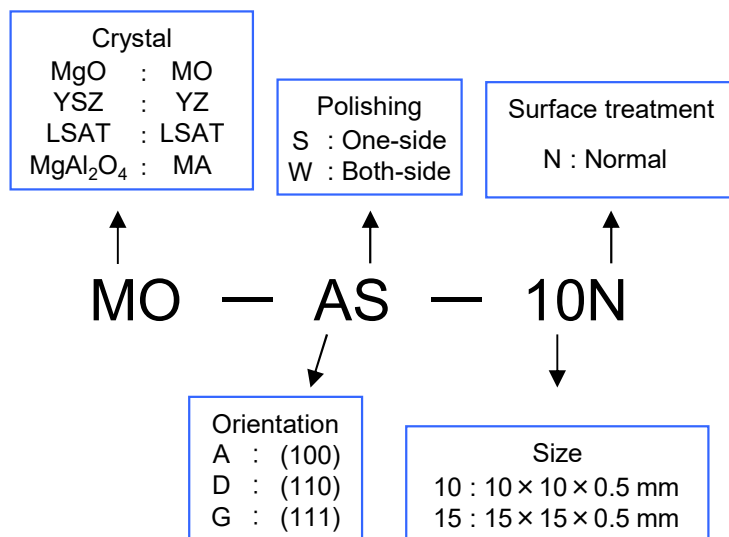
*Planned inventory: Production is regularly managed to ensure prompt delivery.*

*(Please note that specifications may change without prior notice.)*

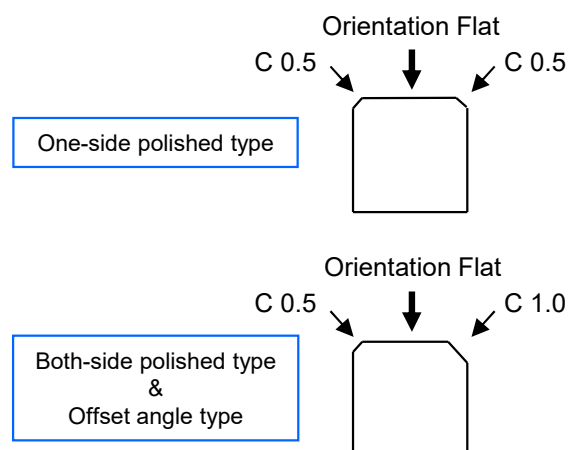
*We also accept orders for different sizes and off-spec substrates.*

*Please contact us for details.*

## Model Number



## 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

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