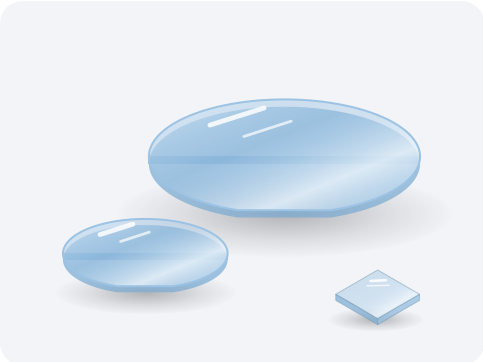
SERIES S24 · SAPPHIRE

Single-crystal sapphire substrates



High-purity Al_2O_3 single crystal, polished to an epi-ready finish. Very hard, chemically inert, transparent from the UV to the mid-IR and insulating: the standard substrate for GaN, ZnO, oxide and 2D-material growth.

- Purity ≥ 99.99 %
- Epi-ready polish, Ra < 0.3 nm
- C-plane off-cut on request (e.g. 0.2° toward M)
- Wafers and diced chips

ORIENTATIONS

Plane	Typical application
C-plane (0001)	GaN and III-nitride LEDs, ZnO, 2D materials (MoS_2, WS_2, hBN)
A-plane (11-20)	Non-polar nitrides, hybrid microelectronics
R-plane (1-102)	Silicon-on-sapphire, non-polar a-plane GaN
M-plane (10-10)	Non-polar nitride growth

CONFIGURATIONS

Ref. No.	Size	Thickness	Orientation	Polish	Price
S2401	5 × 5 mm	0.5 mm	C-plane (0001)	SSP	On request
S2402	5 × 5 mm	0.5 mm	C-plane (0001)	DSP	On request
S2403	5 × 5 mm	0.5 mm	A-plane (11-20)	SSP	On request
S2404	5 × 5 mm	0.5 mm	A-plane (11-20)	DSP	On request
S2405	5 × 5 mm	0.5 mm	R-plane (1-102)	SSP	On request
S2406	5 × 5 mm	0.5 mm	R-plane (1-102)	DSP	On request
S2407	5 × 5 mm	0.5 mm	M-plane (10-10)	SSP	On request
S2408	5 × 5 mm	0.5 mm	M-plane (10-10)	DSP	On request
S2409	10 × 10 mm	0.5 mm	C-plane (0001)	SSP	On request
S2410	10 × 10 mm	0.5 mm	C-plane (0001)	DSP	On request
S2411	10 × 10 mm	0.5 mm	A-plane (11-20)	SSP	On request
S2412	10 × 10 mm	0.5 mm	A-plane (11-20)	DSP	On request
S2413	10 × 10 mm	0.5 mm	R-plane (1-102)	SSP	On request
S2414	10 × 10 mm	0.5 mm	R-plane (1-102)	DSP	On request
S2415	10 × 10 mm	0.5 mm	M-plane (10-10)	SSP	On request
S2416	10 × 10 mm	0.5 mm	M-plane (10-10)	DSP	On request
S2417	2" / 50.8 mm	430 ± 25 µm	C-plane (0001)	SSP	On request
S2418	2" / 50.8 mm	430 ± 25 µm	C-plane (0001)	DSP	On request
S2419	2" / 50.8 mm	430 ± 25 µm	A-plane (11-20)	SSP	On request
S2420	2" / 50.8 mm	430 ± 25 µm	A-plane (11-20)	DSP	On request

Ref. No.	Size	Thickness	Orientation	Polish	Price
S2421	2" / 50.8 mm	430 ± 25 µm	R-plane (1-102)	SSP	On request
S2422	2" / 50.8 mm	430 ± 25 µm	R-plane (1-102)	DSP	On request
S2423	2" / 50.8 mm	430 ± 25 µm	M-plane (10-10)	SSP	On request
S2424	2" / 50.8 mm	430 ± 25 µm	M-plane (10-10)	DSP	On request
S2425	3" / 76.2 mm	500 ± 25 µm	C-plane (0001)	SSP	On request
S2426	3" / 76.2 mm	500 ± 25 µm	C-plane (0001)	DSP	On request
S2427	3" / 76.2 mm	500 ± 25 µm	A-plane (11-20)	SSP	On request
S2428	3" / 76.2 mm	500 ± 25 µm	A-plane (11-20)	DSP	On request
S2429	3" / 76.2 mm	500 ± 25 µm	R-plane (1-102)	SSP	On request
S2430	3" / 76.2 mm	500 ± 25 µm	R-plane (1-102)	DSP	On request
S2431	4" / 100 mm	650 ± 25 µm	C-plane (0001)	SSP	On request
S2432	4" / 100 mm	650 ± 25 µm	C-plane (0001)	DSP	On request
S2433	4" / 100 mm	650 ± 25 µm	R-plane (1-102)	SSP	On request
S2434	4" / 100 mm	650 ± 25 µm	R-plane (1-102)	DSP	On request
S2435	6" / 150 mm	1300 ± 25 µm	C-plane (0001)	SSP	On request
S2436	6" / 150 mm	1300 ± 25 µm	C-plane (0001)	DSP	On request

MATERIAL PROPERTIES (TYPICAL)

Crystal structure	**Hexagonal, a = 4.758 Å, c = 12.991 Å**	Density	**3.98 g/cm³**
Hardness	**Mohs 9**	Melting point	**≈ 2040 °C**
Transmission	**0.17 – 5.5 µm**	Refractive index (589 nm)	**$n_o \approx 1.768$**
Thermal conductivity	**≈ 25 – 35 W/m·K (25 °C)**	Dielectric constant	**≈ 9.4 (⊥ c), 11.5 (∥ c)**

Specifications are typical values; every lot ships with a Certificate of Conformance, and measured data are available on request. Prices on request.