YOUR SOURCE FOR SUPERIOR TEMPLATES

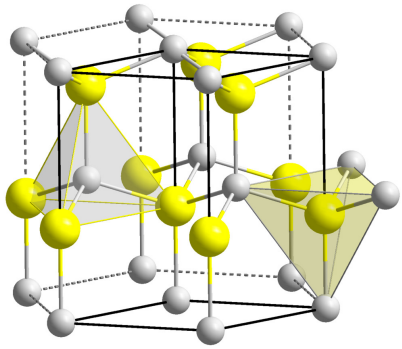
ALUMINIUM NITRIDE TEMPLATES - SAPPHIRE
SINGLE CRYSTAL Quality

GENERAL DESCRIPTION

High quality Gallium Nitride (GaN) substrates are required to mass produce optoelectronic and electronic devices such as near UV laser diodes for next generation DVDs, high brightness LEDs for general lighting or high power, high frequency transistors for cellular phone base stations and defence applications.
Starting point could be a template generated in a MOCVD reactor with the disadvantages of high costs, limited purity and reduced reactor capacity for generating active layers. Alternative are AIXaTECHs SINGLE CRYSTAL templates. A thin layer of single crystalline AlN guaranteeing an ideal crystal and thermal match is the ideal starting layer for all demanding opto- and electronic components up to high brightness UV LEDs. The excellent price performance ratio due to AIXaTECHs patented technology makes AIXaTECH sapphire templates also the ideal choice for standard components.

ADVANTAGES

- single crystal structure
- optimum crystal match
- optimum thermal match
- stress-free wafer due to low temperature process
- elimination of long MOCVD or MBE undoped buffer growth
- optimum price-performance ratio
- prevention of nucleation layer
- excellent surface quality
- highest dimensional flexibility



SERVICE

- Aside our standard template specification we offer customized designs to meet your specific require-ments.
- We offer the templates in any diameter or form re-quired.
- We offer small batch numbers at attractive prices for initial tests.

QUALITY

The single crystalline structure of AIXaTECHs templates is an inherent guarantee for highest purity as well as for the ideal crystal and thermal match. Nevertheless AIXaTECH uses latest technology like X-ray deflection to monitor and analyze consistently the status of its manufacturing processes and to inspect the generated layer structures. We want to make sure that we are able to keep AIXaTECHs promise – SINGLE CRYSTAL quality with an excellent price performance ratio.

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SPECIFICATION

SC - SINGLE CRYSTAL Templates		AIX-SC-AIN-SA-X
Conduction type	[-]	Semi -insulating
RMS (front surface)	[nm]	< 0.4
RMS (back surface)	[nm]	DSP or SSP from substrate vendor
Film thickness	[nm]	30 … 2000
FWHM-XRD (002)	[arcsec]	< 200
Substrate material	[-]	Sapphire
Macro defect density	[cm^{-2}]	< 3.0
Wafer diameter	[mm]	50.8 … 300
Diameter tolerance	[mm]	0.25
Useable surface area	[%]	> 95
Edge exclusion area	[mm]	Semi-standard
Package	[-]	Wafer box

- X: Instead of X please add in your order P for PRIME quality grade or B for BASE quality grade.
- RMS (front surface): Value is measured for a layer thickness of 60 nm on sapphire.
- RMS (back surface): Surface quality as delivered from substrate vendor or as supplied by the customer.
- FWHM-XRD: Value is measured for a layer thickness of 60 nm on sapphire.

OPTIONS

SC - SINGLE CRYSTAL Templates	
Dimension	AIXaTECHs patented manufacturing technology offers the possibility to supply templates in any size. However the typical diameter range reaches from 2" to 300 mm.
Layer thickness	The standard thickness of AIXaTECHs AlN layer is 50 nm. However AIXaTECH is capable to customize the layer thickness according to your specific needs.
Orientation new	The standard orientation of sapphire is c-plane. However if required AIXaTECH can grow non-polar AlN on a- and r-plane sapphire.

QUALITY STANDARDS

SC - SINGLE CRYSTAL Templates	
SC - PRIME	Due to the single crystalline structure of AIXaTECHs layers we are able to supply templates with very high purity, idela crystal and thermal match - the **SINGLE CRYSTAL PRIME** series. This quality standard will only be provided for serial manufacture.
SC - BASE	AIXaTECH **SINGLE CRYSTAL BASE** series is optimized for small series manufacture in research.

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