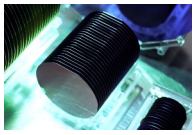
GaAs - Gallium Arsenide

MECHANICAL SPECIFICATIONS

Gallium Arsenide can be supplied in as-cut, etched or polished wafer forms. All slices are individually laser scribed with ingot and slice identity to ensure perfect traceability.



ORIENTATION SPECIFICATIONS

Surface orientations are offered to an accuracy of +/- 0.05 degrees using a triple axis X-Ray diffractometer system. Substrates can also be supplied with very precise misorientations in any direction from the growth plane. Higher index substrates of the type (n,1,1) where n = 1,2,3,4,5,6 etc and orientations such as (110) are also available. We also offer wafers with cut and/or cleaved flats.

SURFACE SPECIFICATIONS

All wafers are offered with high quality epitaxy ready finishing. Surfaces are characterised by in-house, advanced optical metrology techniques which include Surfscan haze and particle monitoring, spectroscopic ellipsometry and grazing incidence interferometry.

PACKAGING

Polished Wafers

coin-style tray, individually sealed in two outer bags in inert atmosphere. Cassette shipments are available on request).

As-cut Wafers

Cassette shipment. (Glassine bag available on request).

'Process Trial' wafers

Packaged in coin-style wafer shipper, individually sealed in one outer bag.

Wafer Specifications

Diameter Slices	2"	3"
Orientation	(100) ± 0.1°	(100) ± 0.1°
Diameter (mm)	50.5 ± 0.5	76.2 ± 0.4
Flat Option	EJ	EJ
Flat Tolerance	± 0.5°	± 0.5°
Major Flat Length (mm)	16 ± 2	22 ± 2
Minor Flat Length (mm)	8 ± 1	11 ± 1
Thickness (µm)	350 ± 25 or 500 ± 25	625 ± 25

Electrical and Doping Specifications

Dopant	Type	Resistivity Ω cm	Carrier Concentration cm^{-3}	Mobility $cm^2 V^{-1} s^{-1}$	E.P.D. cm^{-2}
Undoped	Semi-Insulating	$\geq 10^7$	Not specified	≥5000	2" ≤2000 3" ≤5000
Zinc	p-type	Not specified	5×10^{18} - 5×10^{19}	Not specified	2" ≤3000 3" ≤5000
Mid Silicon	n-type	Not specified	$(1\text{-}10) \times 10^{17}$	≥2000	2" ≤1500
High Silicon	n-type	Not specified	$(1\text{-}5) \times 10^{18}$	Not specified	2"&3" Grade 1 ≤100 Grade 2 ≤500

Tighter electrical ranges are available on request.

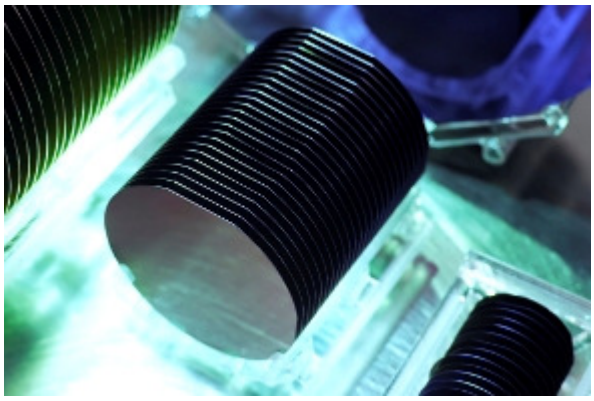
Flatness Specifications

Wafer Form		2"	3"
Polish/Etched	TTV (µm)	<10	<10
	Bow (µm)	<10	<10
	Warp (µm)	<10	<10
Polish/Polish	TTV (µm)	<3	<5
	Bow (µm)	<3	<5
	Warp (µm)	<10	<10

GaSb - Gallium Antimonide

MECHANICAL SPECIFICATIONS

Gallium Antimonide is supplied in polished wafer form. All slices are individually laser scribed with ingot and slice identity to ensure perfect traceability.



ORIENTATION SPECIFICATIONS

Surface orientations are offered to an accuracy of +/- 0.05 degrees using a triple axis X-Ray diffractometer system. Substrates can also be supplied with very precise misorientations in any direction from the growth plane. Higher index substrates of the type (n,1,1) where n = 1,2,3,4,5,6 etc and orientations such as (110) are also available. We also offer wafers with cut and/or cleaved flats.

SURFACE SPECIFICATIONS

All wafers are offered with high quality epitaxy ready finishing. Surfaces are characterised by in-house, advanced optical metrology techniques which include Surfscan haze and particle monitoring, spectroscopic ellipsometry and grazing incidence interferometry.

PACKAGING

Polished Wafers

coin-style tray, individually sealed in two outer bags in inert atmosphere. Cassette shipments are available on request).

As-cut Wafers

Cassette shipment. (Glassine bag available on request).

'Process Trial' wafers

Packaged in coin-style wafer shipper, individually sealed in one outer bag.

Wafer Specifications			
Diameter Slices	2"	3"	4"
Orientation	(100) ± 0.1°	(100) ± 0.1°	(100) ± 0.1°
Diameter (mm)	50.5 ± 0.5	76.2 ± 0.4	100.0 ± 0.5
Flat Option	EJ	EJ	EJ
Flat Tolerance	± 0.1°	± 0.1°	± 0.1°
Major Flat Length (mm)	16 ± 2	22 ± 2	32.5 ± 2.5
Minor Flat Length (mm)	8 ± 1	11 ± 1	18 ± 1
Thickness (µm)	500 ± 25	625 ± 25	1000± 25

Electrical and Dopant Specifications				
Dopant	Type	Carrier Concentration cm^{-3}	Mobility $cm^2 V^{-1} s^{-1}$	E.P.D. cm^{-2}
Undoped	p-type	≤2 x 10^{17}	>500	2" ≤2000 3" ≤5000
Zinc	p-type	≥1 x 10^{18}	450 - 200	2" ≤2000 3" ≤5000
Tellurium	n-type	(1-9) x 10^{17}	3500 - 2000	2", 3" ≤1000 4" ≤2000
Low Tellurium	n-type	≤2 x 10^{17}	3500 - 2000	2" ≤1000 3", 4" ≤2000
High Tellurium	n-type	≥5 x 10^{17}	3500 - 2000	2", 3", 4" ≤500

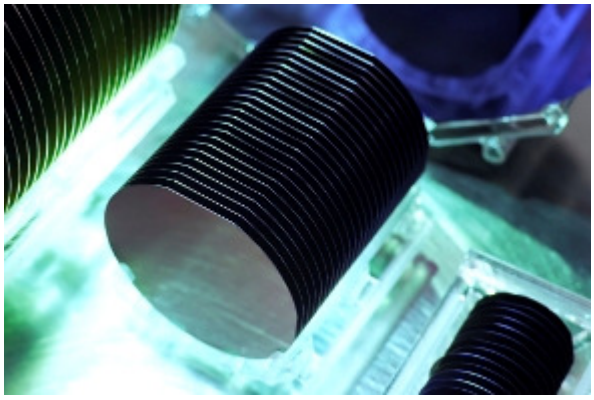
Tighter electrical ranges are available on request.

Flatness Specifications				
Wafer Form		2"	3"	4"
Polish/ Etched	TTV (µm)	<8	<8	<10
	Bow (µm)	<8	<8	<10
	Warp (µm)	<12	<12	<15
Polish/ Polish	TTV (µm)	<5	<5	<5
	Bow (µm)	<5	<5	<5
	Warp (µm)	<8	<8	<10

InP - Indium Phosphide

MECHANICAL SPECIFICATIONS

Indium Phosphide can be supplied in as-cut, etched or polished wafer forms. All slices are individually laser scribed with ingot and slice identity to ensure perfect traceability.



ORIENTATION SPECIFICATIONS

Surface orientations are offered to an accuracy of +/- 0.05 degrees using a triple axis X-Ray diffractometer system. Substrates can also be supplied with very precise misorientations in any direction from the growth plane. Higher index substrates of the type (n,1,1) where n = 1,2,3,4,5,6 etc and orientations such as (110) are also available. We also offer wafers with cut and/or cleaved flats.

SURFACE SPECIFICATIONS

All wafers are offered with high quality epitaxy ready finishing. Surfaces are characterised by in-house, advanced optical metrology techniques which include Surfscan haze and particle monitoring, spectroscopic ellipsometry and grazing incidence interferometry.

PACKAGING

Polished Wafers

coin-style tray, individually sealed in two outer bags in inert atmosphere. Cassette shipments are available on request).

As-cut Wafers

Cassette shipment. (Glassine bag available on request).

'Process Trial' wafers

Packaged in coin-style wafer shipper, individually sealed in one outer bag.

Wafer Specifications	
Diameter Slices	2"
Orientation	(100) ± 0.1°
Diameter (mm)	50.5 ± 0.4
Flat Option	EJ
Flat Tolerance	± 0.1°
Major Flat Length (mm)	16 ± 2
Minor Flat Length (mm)	8 ± 1
Thickness (µm)	350 ± 25 or 500 ± 25

Electrical and Dopant Specifications				
Dopant	Type	Carrier Concentration cm^{-3}	Mobility $cm^2 V^{-1} s^{-1}$	E.P.D. cm^{-2}
Undoped	n-type	$\leq 10^{16}$	≥4200	$\leq 1 \times 10^5$
Iron	n-type	Semi-Insulating	≥1000	$\leq 5 \times 10^4$
Tin	n-type	$(7\text{-}40) \times 10^{17}$	2500-750	$\leq 6 \times 10^4$
Sulphur	n-type	$(3\text{-}20) \times 10^{18}$	2000-1000	≤1000
Zinc	p-type	$(1\text{-}6) \times 10^{18}$	Not Specified	$\leq 1 \times 10^4$
Low Zinc	p-type	$(1\text{-}6) \times 10^{17}$	Not Specified	$\leq 6 \times 10^4$

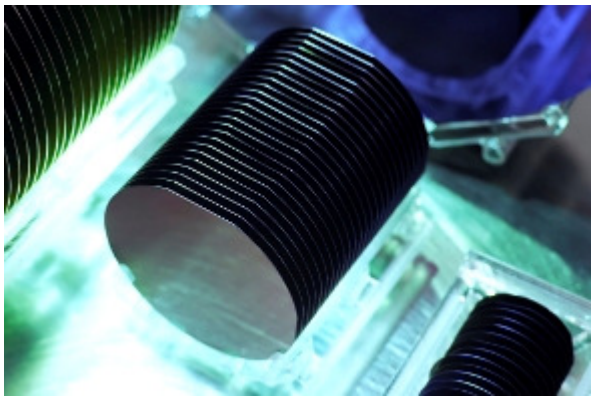
Tighter electrical ranges are available on request.

Flatness Specifications		
Wafer Form		2"
Polish/Etched or Polish/Polish	TTV (µm)	<12
	Bow (µm)	<12
	Warp (µm)	<12

InSb - Indium Antimonide

MECHANICAL SPECIFICATIONS

Indium Antimonide is supplied in polished wafer form. All slices are individually laser scribed with ingot and slice identity to ensure perfect traceability.



ORIENTATION SPECIFICATIONS

Surface orientations are offered to an accuracy of +/- 0.05 degrees using a triple axis X-Ray diffractometer system. Substrates can also be supplied with very precise misorientations in any direction from the growth plane. Higher index substrates of the type (n,1,1) where n = 1,2,3,4,5,6 etc and orientations such as (110) are also available. We also offer wafers with cut and/or cleaved flats.

SURFACE SPECIFICATIONS

All wafers are offered with high quality epitaxy ready finishing. Surfaces are characterised by in-house, advanced optical metrology techniques which include Surfscan haze and particle monitoring, spectroscopic ellipsometry and grazing incidence interferometry.

PACKAGING

Polished Wafers

coin-style tray, individually sealed in two outer bags in inert atmosphere. Cassette shipments are available on request).

As-cut Wafers

Cassette shipment. (Glassine bag available on request).

'Process Trial' wafers

Packaged in coin-style wafer shipper, individually sealed in one outer bag.

Wafer Specifications

Diameter Slices	2"	3"	4"
Orientation	(111) A or B ± 0.1°	(111) A or B ± 0.1°	(111) A or B ± 0.1°
	(100) orientation wafers with mis-cut directions away from the growth plane, are also available.		
Diameter (mm)	50.5 ± 0.5	76.2 ± 0.4	100.0 ± 0.5
Flat Option	2 Flats at 120°	2 Flats at 120°	2 Flats at 120°
Flat Tolerance	± 0.1°	± 0.1°	± 0.1°
Major Flat Length (mm)	16 ± 2	22 ± 2	32.5 ± 2.5
Minor Flat Length (mm)	8 ± 1	11 ± 1	18 ± 1
Thickness (µm)	625 ± 25	800 or 900 ± 25	1000 ± 25

Electrical and Dopant Specifications

Dopant	Type	Carrier Concentration cm^{-3}	Mobility $cm^2 V^{-1} s^{-1}$	E.P.D. cm^{-2}
Undoped	n-type	5×10^{13} - 3×10^{14}	$\geq 4 \times 10^5$	2", 3", 4" ≤50
Tellurium	n-type	$(1\text{-}7) \times 10^{17}$	$\geq 2.5 \times 10^4$	
Low Tellurium	n-type	4×10^{14} - 2×10^{15}	$\geq 2.5 \times 10^5$	
High Tellurium	n-type	$\geq 1 \times 10^{18}$	Not specified	
Germanium	p-type	5×10^{14} - 5×10^{15}	8000 - 4000	2" ≤100

Tighter electrical ranges are available on request.

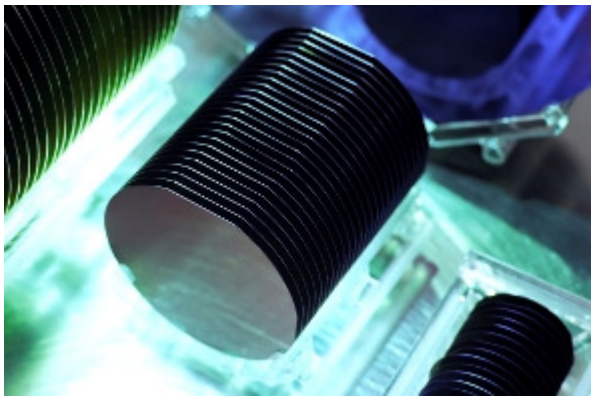
Flatness Specifications

Wafer Form		2"	3"	4"
Polish/ Etched	TTV (µm)	<15	<15	<15
	Bow (µm)	<10	<10	<10
	Warp (µm)	<15	<15	<15
Polish/ Polish	TTV (µm)	<5	<5	<5
	Bow (µm)	<5	<5	<5
	Warp (µm)	<8	<8	<10

InAs - Indium Arsenide

MECHANICAL SPECIFICATIONS

Indium Arsenide can be supplied as ingot sections or as-cut, etched or polished wafers. All slices are individually laser scribed with ingot and slice identity to ensure perfect traceability.



ORIENTATION SPECIFICATIONS

Surface orientations are offered to an accuracy of +/- 0.05 degrees using a triple axis X-Ray diffractometer system. Substrates can also be supplied with very precise misorientations in any direction from the growth plane. Higher index substrates of the type (n,1,1) where n = 1,2,3,4,5,6 etc and orientations such as (110) are also available. We also offer wafers with cut and/or cleaved flats.

SURFACE SPECIFICATIONS

All wafers are offered with high quality epitaxy ready finishing. Surfaces are characterised by in-house, advanced optical metrology techniques which include Surfscan haze and particle monitoring, spectroscopic ellipsometry and grazing incidence interferometry.

PACKAGING

Polished Wafers

coin-style tray, individually sealed in two outer bags in inert atmosphere. Cassette shipments are available on request).

As-cut Wafers

Cassette shipment. (Glassine bag available on request).

'Process Trial' wafers

Packaged in coin-style wafer shipper, individually sealed in one outer bag.

Wafer Specifications

Diameter Slices	2"	3"
Orientation	(100) ± 0.1°	(100) ± 0.1°
Diameter (mm)	50.5 ± 0.5	76.2 ± 0.4
Flat Option	EJ	EJ
Flat Tolerance	± 0.1°	± 0.1°
Major Flat Length (mm)	16 ± 2	22 ± 2
Minor Flat Length (mm)	8 ± 1	11 ± 1
Thickness (µm)	500 ± 25	625 ± 25

Electrical and Dopant Specifications

Dopant	Type	Carrier Concentration cm^{-3}	Mobility $cm^2V^{-1}s^{-1}$	E.P.D. cm^{-2}
Undoped	n-type	(1-3) x 10^{16}	≥23000	2" ≤15,000 3" ≤50,000
Low Sulphur	n-type	(4-8) x 10^{16}	25000-15000	
High Sulphur	n-type	(1-3) x 10^{18}	12000-7000	
Low Zinc	p-type	(1-3) x 10^{17}	350-200	
High Zinc	p-type	(1-3) x 10^{18}	250-100	

Tighter electrical ranges are available on request.

Flatness Specifications

Wafer Form		2"	3"
Polish/Etched or Polish/Polish	TTV (µm)	<12	<15
	Bow (µm)	<12	<15
	Warp (µm)	<12	<15