ACROTEC

SEMICONDUCTOR
MATERIALS

InP and CdTe Single Crystal Substrates

InP Single Crystal Substrates

InP HB Polycrystal

CdTe and CdZnTe Single Crystal Substrates

ISO-9001 / ISO-14001

InP Single Crystal Substrates
(Density : 4.79g/cm³)

■2-inch-diameter

Crystalline and Electrical Properties*1

Type	Dopant	EPD(cm^{-2}) (See below A.)	DF(Defect Free)area(cm^2, See below B.)	c/c(cm^{-3})	Mobility(cm^2/Vs)	Resistivity(Ω·cm)
n	Sn	≦5×10⁴ ≦1×10⁴ ≦5×10³	————	(0.5~6)×10¹⁸	————	————
n	S	————	≧10(59.4%) ≧15(87%)	(2~10)×10¹⁸	————	————
p	Zn	————	≧10(59.4%) ≧15(87%)	(3~6)×10¹⁸	————	————
S.I.	Fe	≦5×10⁴ ≦1×10⁴	————	————	————	≧1×10⁶
n	none	≦5×10⁴	————	≦1×10¹⁶	≧4×10³	————

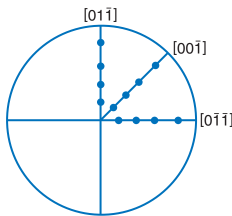
*1 Other specifications are available upon request.

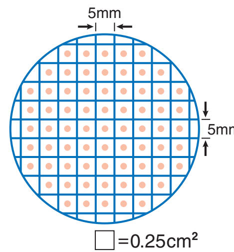
A.13 Points Average

1. Dislocation etch pit densities are measured at 13 points.
2. Area weighted average of the dislocation densities is calculated.

B.DF Area Measurement (In Case of Area Guarantee)

1. Dislocation etch pit densities of 69 points shown as right are counted.
2. DF is defined as EPD less than 500cm^{-2}
3. Maximum DF area measured by this method is 17.25cm^2





Surface Finish \ Item (Unit)	Diameter (mm)	Thickness*1 (μm)	Orientation Flat Length (mm)	Index Flat Length (mm)	TV*2 (μm)	SORI*3 (μm)
One Side Mirror-Polished	50.0±0.5	350±20	15±2	8±2	≦10	≦15
Both Sides Mirror-Polished	50.0±0.5	350±20	15±2	8±2	≦10	≦15

*1 Thickness is measured at the center point of the wafer by opto micrometer.
*2 Thickness Variation (TV) is the maximum-minimum of five points within the wafer measured by opto micrometer.
*3 SORI is measured by laser interferometer flatness tester.

■3-inch and 4-inch diameter

Crystalline, Electrical Properties, Dimension and Flatness

Type	Dopant	EPD(cm^{-2})	c/c(cm^{-3})	Mobility(cm^2/Vs)	Resistivity(Ω·cm)
n	S	≦5×10³	(2~10)×10¹⁸	————	————
S.I.	Fe	≦IE5, ≦5E4	————	————	≧IE6

Surface Finish \ Item (Unit)	Diameter (mm)	Thickness*1 (μm)	Orientation Flat Length (mm)	Index Flat Length (mm)	TTV*2 (μm)	Warp*2 (μm)
One Side Mirror-Polished	76.2±0.3	625±20	22±1	11±1	≦8	≦10
Both Sides Mirror-Polished	76.2±0.3	600±20	22±1	11±1	≦5	≦10
Both Sides Mirror-Polished	100.0±0.3	625±20	32.5±1	18±1	≦5, ≦8	≦10, ≦15

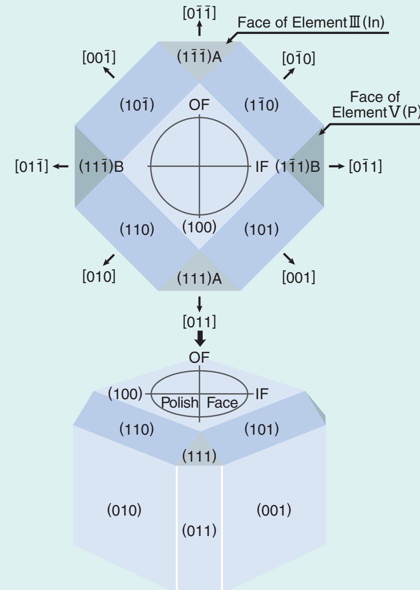
*1 Other thicknesses are available upon request.
*2 TTV and Warp are measured by SuperSort™ / Ultra Sort™, SuperSort™ / Ultra Sort™ is the registrated mark of Tropel Corp.

InP Single Crystal Substrates Common Specifications

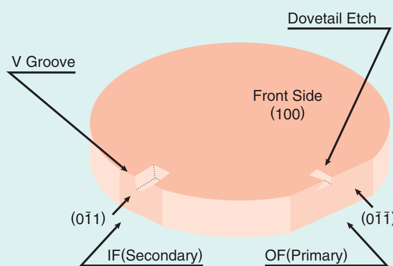
1. Orientation
   Surface orientation (100)±0.2° or (100)±0.05°
   Surface off orientation is available upon request.
   Orientation of flat OF : $(0\bar{1}\bar{1})$±1° or $(0\bar{1}\bar{1})$±0.1°
   IF : $(0\bar{1}1)$±2°
   Cleaved OF is available upon request.
2. Laser marking based on SEMI standard is available.
3. Individual package,as well as package in N_2 gas are available.
4. Etch-and-pack in N_2 gas is available.
5. Rectangular wafers are available.

Above specification is of JX' standard.
If other specifications are required, please inquire us.

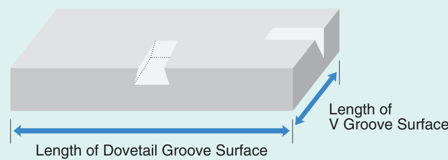
Orientation



Type : European/Japanese



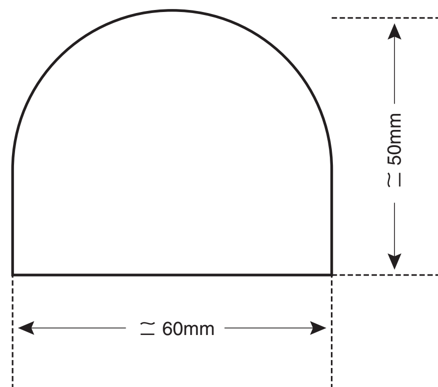
Rectangular Wafer



InP HB Polycrystal

Standard Specifications

1. Electrical Properties
   Carrier Concentration : $\leqq 3\times10^{15}cm^{-3}$
   (Measured at 300K)
2. Dimensions
   Size : D-shape, approx.$50\times60mm^2$
   Thickness : 1.0±0.1mm
   Weight : approx.10g
3. Surface Finish : As cut or as etched after cutting.
4. Packaging
   Individual package by glassine



CdTe and CdZnTe Substrates
(Density : 5.86g/cm³)

Crystalline and electrical properties

Dopant \ Item	$Cd_{1-x}Zn_xTe$	EPD*1	FWHM*2	Te precipitate size*3
Unit	molar ratio x	cm^{-2}	second	μm
Zn	0.01～0.05±0.01	≦1E5	≦50	≦10, ≦2
None	―――――	≦3E5	≦50	≦10, ≦2

*1 Etch pits on (111) A are revealed by Nakagawa etchant (H_2O:H_2O_2:HF=2:2:1).
*2 FWHM is measured by X-ray rocking curve.
*3 Size of Te precipitate (PPT) is measured by IR microscope.

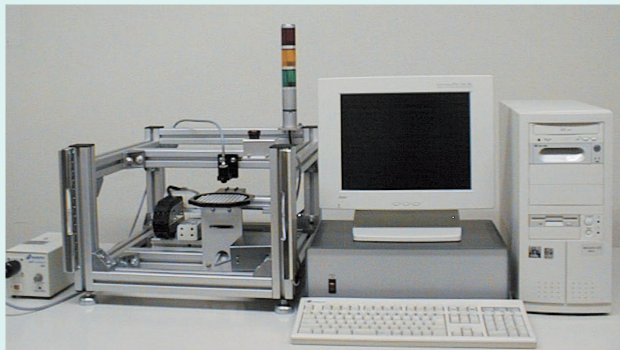
Dimension

Surface Finish \ Item	Size*1	Thickness*2	Surface Orientation*3
Unit	mm^2	μm	degree
Both Sides Polished	10×10～50×50 40×60	800±50	(111)±0.25 (211)±0.25 (100)±0.25

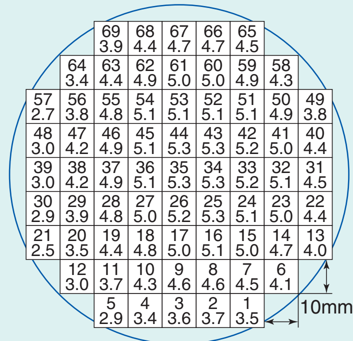
*1 Other sizes are available upon request.The maximum size of ingot is 4 inches in diameter. Size is measured by profile projector.
*2 Thickness is measured by opto-micrometer. Other thicknesses are available upon request.
*3 Orientation is measured by X-ray diffractometer.

New equipments for CdZnTe evaluations

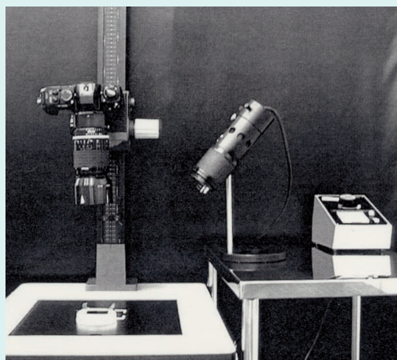
(1)Automatic Zn concentration Mapping System



■Zn mapping
BZ904_2



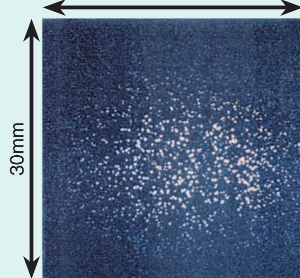
(2)Light scattering System



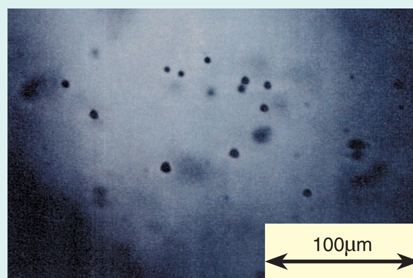
■Light scattering

30mm

30mm



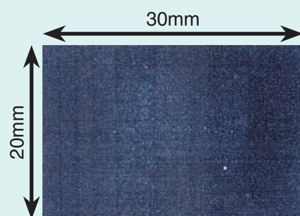
■IR micro

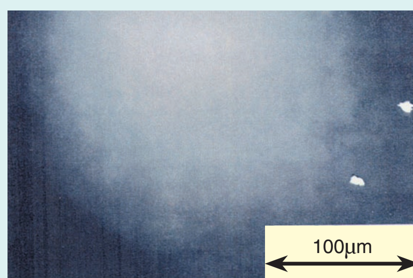


PPT≦10μm

30mm

20mm





PPT-free

* Export of CdTe and CdZnTe single crystal from Japan is subject to the approval of the Japanese government due to the export regulation.