Standard specifications of 4 inch Sn-doped β-Ga_2O_3 substrates

4 inch substrates		
Orientation		(001)
Dopant		Sn
Conductivity		n-type
N_d-N_a (cm^{-3})		1×10^{18} ～ 2×10^{19}
Dimensions	Diameter (mm)	100 ±0.5
	Orientation flat width (mm)	32.5 ±2.5
	Index flat width (mm)	18.0 ±2.5
	Thickness (mm)	0.65 ±0.02
	Reference	Fig. 1
Offset angle (degree)		[010]:0 ±1
		[100]:0 ±1
FWHM (arcsec)		[010]:350 or less
		[100]:350 or less
Surface	Front	CMP
	Back	CMP

Remarks

1 These products must be used for research and development purposes only.
2 The substrates must not be used as a seed crystal.
3 The specifications are subject to change without notice.

New product

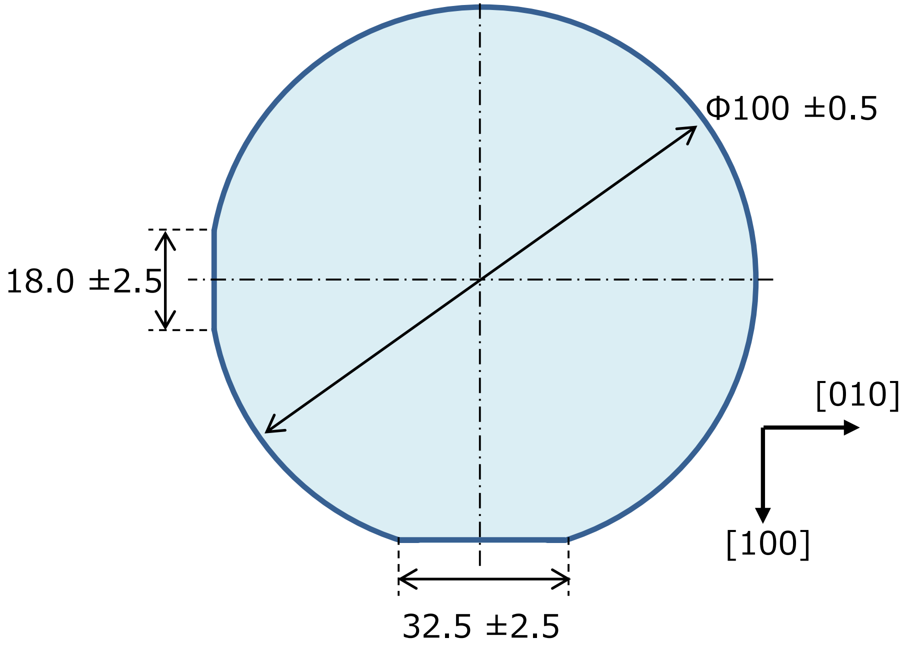

Fig. 1

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Standard specifications of 2 inch (001) Sn-doped β-Ga_2O_3 substrates

2 inch substrates		
Orientation		(001)
Dopant		Sn
Conductivity		n-type
N_d-N_a (cm^{-3})		1×10^{18} ～ 2×10^{19}
Dimensions	Diameter (mm)	50.8 ±0.3
	Orientation flat width (mm)	15.9 ±2.5
	Index flat width (mm)	8.0 ±2.5
	Thickness (mm)	0.65 ±0.02
	Reference	Fig. 2
Offset angle (degree)		[010]:0 ±1
		[100]:0 ±1
FWHM (arcsec)		[010]:350 or less
		[100]:350 or less
Surface	Front	CMP
	Back	CMP

Remarks

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New product

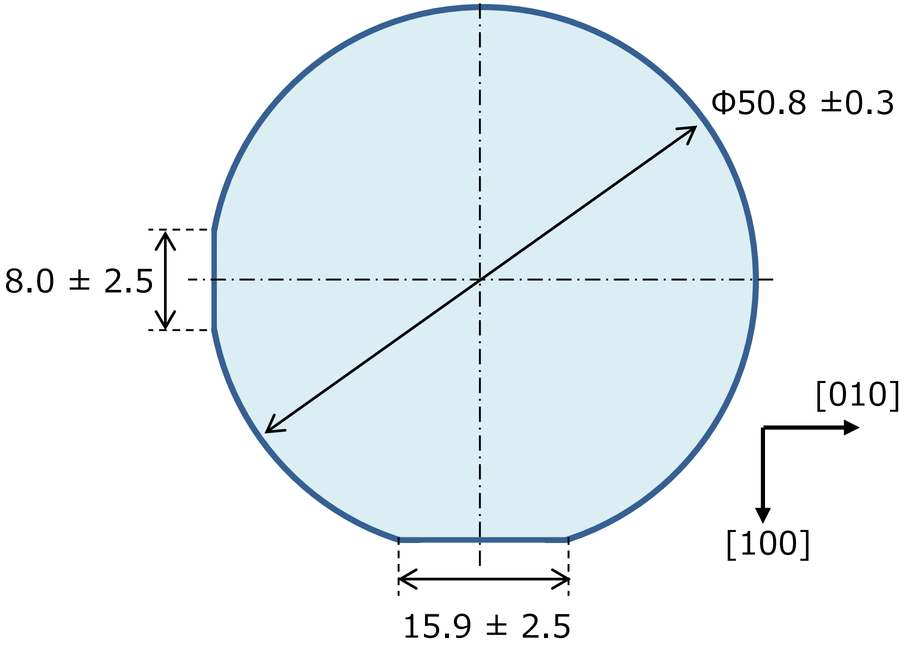

Fig.2

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Standard specifications of 2 inch ($\bar{2}01$) β-Ga_2O_3 substrates

		2 inch substrates		
Orientation		($\bar{2}01$)		
Dopant		Sn	Unintentionally-doped	Fe
Conductivity		n-type	n-type	Insulating (＞10^{10}Ω・cm)
N_d-N_a (cm^{-3})		1×10^{18}～9×10^{18}	≦9×10^{17}	-
Dimensions	A-B (mm)	50.8 ±0.3	50.8 ±0.3	50.8 ±0.3
	C-D (mm)	49.5 ±0.3	49.5 ±0.3	49.5 ±0.3
	Thickness (mm)	0.68 ±0.02	0.68 ±0.02	0.68 ±0.02
	Reference	Fig. 3	Fig. 3	Fig. 3
Offset angle (degree)		[010]: 0 ±0.4	[010]: 0 ±0.4	[010]:0 ±1
		[102]:-0.7 ±0.4	[102]:-0.7 ±0.4	[102]:-0.7 ±1
FWHM (arcsec)		[010]:150 or less	[010]:150 or less	[010]:150 or less
		[102]:150 or less	[102]:150 or less	[102]:150 or less
Surface	Front	CMP	CMP	CMP
	Back	Grinding	Grinding	Grinding

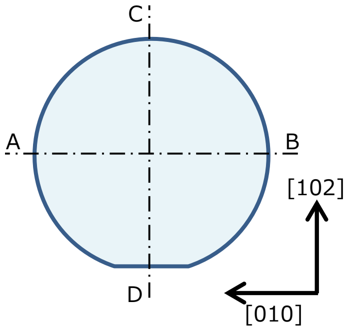

Fig. 3

Remarks

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Standard specifications of 23x25 mm^2 β-Ga_2O_3 substrates

		23x25 mm^{2}substrates
Orientation		(010)
Dopant		Fe
Conductivity		Insulating (> $10^{10}\Omega \cdot$ cm)
N_d-N_a (cm^{-3})		-
Dimensions	A-B (mm)	23 +0.3, -1
	C-D (mm)	25 +0.3, -1
	Thickness (mm)	0.5 ±0.02
	Reference	Fig. 3
Offset angle (degree)		[001]:0 ±1
		⊥[001]:0 ±1
FWHM (arcsec)		[001]:350 or less
		⊥[001]:350 or less
Surface	Front	CMP
	Back	Grinding

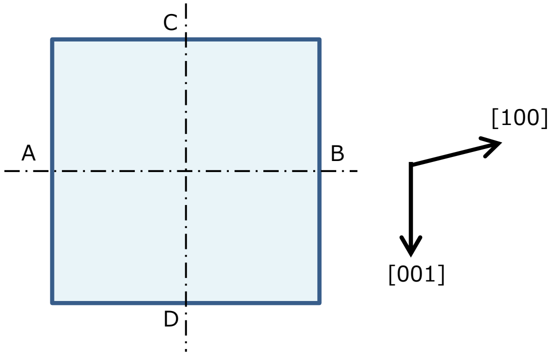

Fig. 3

Remarks

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Standard specifications of 10x15 mm^2 β-Ga_2O_3 substrates

		10x15 mm^2 substrates					
Orientation		($\bar{2}01$)			(010)		
Dopant		Sn	Unintentionally-doped	Fe	Sn	Unintentionally-doped	Fe
Conductivity		n-type	n-type	Insulating ($>10^{10}\Omega\cdot$cm)	n-type	n-type	Insulating ($>10^{10}\Omega\cdot$cm)
N_d-N_a (cm^{-3})		$1\times10^{18}\sim9\times10^{18}$	$\leqq9\times10^{17}$	-	$1\times10^{18}\sim9\times10^{18}$	$\leqq9\times10^{17}$	-
Dimensions	A-B (mm)	15 ±0.3	15 ±0.3	15 ±0.3	15 ±0.3	15 ±0.3	15 ±0.3
	C-D (mm)	10 ±0.3	10 ±0.3	10 ±0.3	10 ±0.3	10 ±0.3	10 ±0.3
	Thickness (mm)	0.68 ±0.02	0.68 ±0.02	0.68 ±0.02	0.5 ±0.02	0.5 ±0.02	0.5 ±0.02
	Reference	Fig. 4	Fig. 4	Fig. 4	Fig. 5	Fig. 5	Fig. 5
Offset angle (degree)		[010]: 0 ±0.4	[010]: 0 ±0.4	[010]: 0 ±1	⊥[102]:0 ±1	⊥[102]:0 ±1	⊥[102]:0 ±1
		[102]:-0.7 ±0.4	[102]:-0.7 ±0.4	[102]:-0.7 ±1	[102]:0 ±1	[102]:0 ±1	[102]:0 ±1
FWHM (arcsec)		[010]:150 or less	[010]:150 or less	[010]:150 or less	⊥[102]:150 or less	⊥[102]:150 or less	⊥[102]:150 or less
		[102]:150 or less	[102]:150 or less	[102]:150 or less	[102]:150 or less	[102]:150 or less	[102]:150 or less
Surface	Front	CMP	CMP	CMP	CMP	CMP	CMP
	Back	Grinding	Grinding	Grinding	Grinding	Grinding	Grinding

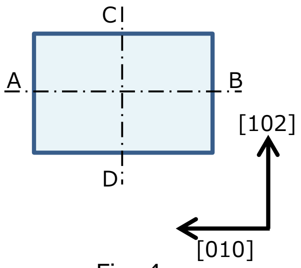

Fig. 4

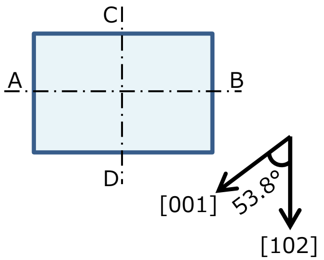

Fig. 5

Remarks

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Standard specifications of 10x15 mm^2 β-Ga_2O_3 substrates

		10x15mm^2 substrates		
Orientation		(001)		
Dopant		Sn	Unintentionally-doped	Fe
Conductivity		n-type	n-type	Insulating (＞$10^{10}\Omega$・cm)
N_d-N_a (cm^{-3})		1×10^{18}～2×10^{19}	≦9×10^{17}	-
Dimensions	A-B (mm)	15 ±0.3	15 ±0.3	15 ±0.3
	C-D (mm)	10 ±0.3	10 ±0.3	10 ±0.3
	Thickness (mm)	0.65 ±0.02	0.65 ±0.02	0.65 ±0.02
	Reference	Fig. 5	Fig. 5	Fig. 5
Offset angle (degree)		[010]:0 ±1	[010]:0 ±1	[010]:0 ±1
		[100]:0 ±1	[100]:0 ±1	[100]:0 ±1
FWHM (arcsec)		[010]:150 or less	[010]:150 or less	[010]:150 or less
		[100]:150 or less	[100]:150 or less	[100]:150 or less
Surface	Front	CMP	CMP	CMP
	Back	Grinding	Grinding	Grinding

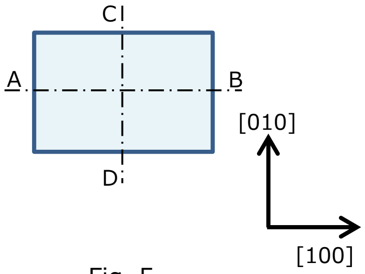

Fig. 5

Remarks

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