

# Standard specifications of gallium oxide substrates

2 inch substrates		
Orientation	(001)	
Dopant	Sn	
Conductivity	n-type	
$N_d-N_a$ (cm <sup>-3</sup> )	$1 \times 10^{18} \sim 9 \times 10^{18}$	
Dimensions	A-B (mm)	$50.8 \pm 0.3$
	C-D (mm)	$49.5 \pm 0.3$
	Thickness (mm)	$0.65 \pm 0.02$
	Reference	Fig. 1
Offset angle (degree)	[010]:	$0 \pm 1$
	[100]:	$0 \pm 1$
FWHM (arcsec)	[010]:	350 or less
	[100]:	350 or less
Surface	Front	CMP
	Back	Grinding

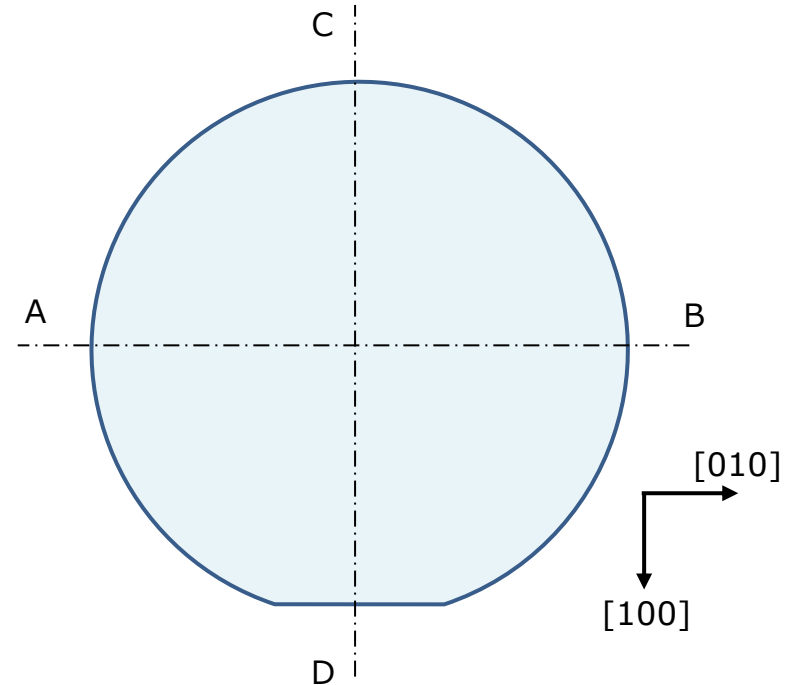


Fig. 1

Remarks

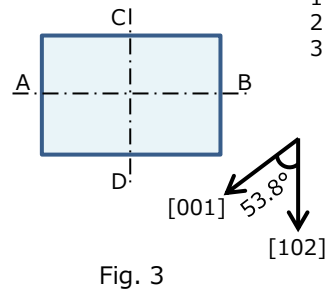
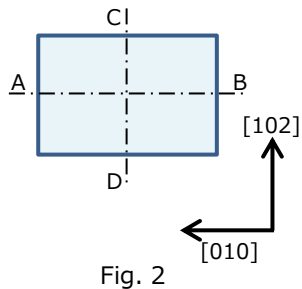
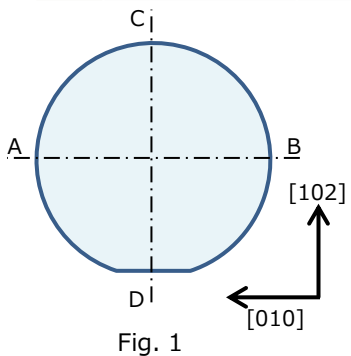
- 1 These products must be used for research and development purposes only.
- 2 The substrates must not be used as a seed crystal.
- 3 The specifications are subject to change without notice.



**Novel Crystal Technology, Inc.**

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		2 inch substrates		10x15 mm <sup>2</sup> substrates				
Orientation		( $\bar{2}01$ )	( $\bar{2}01$ )	( $\bar{2}01$ )	( $\bar{2}01$ )	(010)	(010)	(010)
Dopant		Sn	Unintentionally-doped	Sn	Unintentionally-doped	Sn	Unintentionally-doped	Fe
Conductivity		n-type	n-type	n-type	n-type	n-type	n-type	Insulating (> 10 <sup>10</sup> Ω · cm)
N <sub>d</sub> -N <sub>a</sub> (cm <sup>-3</sup> )		5×10 <sup>17</sup> ~9×10 <sup>18</sup>	1×10 <sup>17</sup> ~9×10 <sup>17</sup>	5×10 <sup>17</sup> ~9×10 <sup>18</sup>	1×10 <sup>17</sup> ~9×10 <sup>17</sup>	1×10 <sup>18</sup> ~9×10 <sup>18</sup>	1×10 <sup>17</sup> ~9×10 <sup>17</sup>	-
Dimensions	A-B (mm)	50.8 ±0.3	50.8 ±0.3	15 ±0.3	15 ±0.3	15 ±0.3	15 ±0.3	15 ±0.3
	C-D (mm)	41~49.8	41~49.8	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	0.68 ±0.02	0.5 ±0.02	0.5 ±0.02	0.5 ±0.02
	Reference	Fig. 1	Fig. 1	Fig. 2	Fig. 2	Fig. 3	Fig. 3	Fig. 3
Offset angle (degree)	[010]:0 ±0.4	[010]:0 ±0.4	[010]:0 ±0.4	[010]:0 ±0.4	⊥[102]:0 ±1	⊥[102]:0 ±1	⊥[102]:0 ±1	
	[102]:0.7 ±0.4	[102]:0.7 ±0.4	[102]:0.7 ±0.4	[102]:0.7 ±0.4	[102]:0 ±1	[102]:0 ±1	[102]:0 ±1	
FWHM (arcsec)	[010]:150 or less	[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	[102]:150 or less	
Surface	Front	CMP	CMP	CMP	CMP	CMP	CMP	CMP
	Back	Grinding	Grinding	Grinding	Grinding	Grinding	Grinding	Grinding



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