

# Ge

## Germanium (Ge) Crystal Substrate



### DESCRIPTION

As a rare metal, germanium has many unique properties. Like, Good chemical stability, strong corrosion-resistance, easy processing, high and uniform transmittance, high refractive index, high radiation resistance, high frequency, and good photoelectric performance. The germanium substrates can always be used to manufacture semiconductor devices, infrared optics, and solar cell substrates.

Thanks to the closely-matching thermal and crystallographic properties of germanium and gallium arsenide, epi-ready germanium substrates provide an interesting alternative for the epitaxial growth and/or layer transfer of III-V compounds. For proper nucleation, the wafers are precisely "off-cut" towards the appropriate direction and have been epi-cleaned. Germanium has long been a popular material for integrated circuits. Outside the core area of electronic devices, an EU-funded project is showing its great potential as a substrate to lead next-generation multi-junction solar cells.

### FEATURE

- Good chemical stability
- Strong corrosion-resistance
- Easy processing
- High and uniform transmittance
- High refractive index
- High radiation resistance
- High frequency
- Good photoelectric performance

### APPLICATION

- Semiconductor devices
- Infrared optics
- Solar cell substrates



## PARAMETER

## Physical Properties

Material	Germanium		
Growth Method	CZ		
Structure	M3		
Lattice (A)	a=5.65754		
Melting Point	937.4°C		
Density(g/cm <sup>3</sup> )	5.323 g/cm <sup>3</sup>		
Doped Material	undoped	Sb-doped	In/Ga-doped
Type	/	N	P
Resistivity	>35 Ωcm	0.05 Ωcm	0.05~0.1 Ωcm
Thermal-expans	<4 x10 <sup>3</sup> /cm <sup>2</sup>	<4 x10 <sup>3</sup> /cm <sup>2</sup>	<4 x10 <sup>3</sup> /cm <sup>2</sup>

## Main Specification

Size	10x3, 10x5, 10x10, 15x15, 20x 15, 20x 20, Dia 1", Dia 2"
Thickness	0.33mm, 0.43mm 0.5mm, 1.0mm
Polished	SSP or DSP
Orientation	<100>, <110>, <111>
Redirection Precision	±0.5°
Ra:	≤5Å (5μm×5μm)

