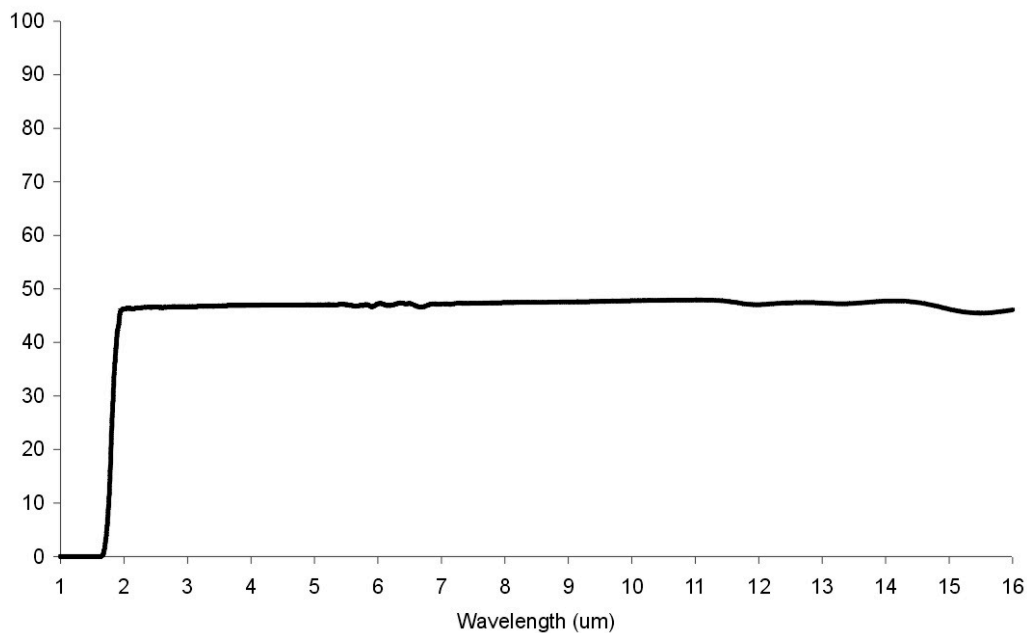


**DATA SHEET      GERMANIUM UNCOATED 1MM THICK**

Material: Germanium – Optical Grade - Monocrystalline  
Spectral Data: Transmission  $\geq 46\%$  @ 3-10 microns  
Polished 10mm thick sample  
Purity : > 99.9999%  
Crystal Structure: Monocrystalline  
Conductive Type: N-type  
Orientation: <111>  
Typical Resistivity: 5-40 Ohm-cm

Typical transmission curve of 1mm thick Germanium (mono-crystalline)



**DATA SHEET**
**GERMANIUM UNCOATED 1MM THICK**

|   |                                       |
|---|---------------------------------------|
| <b>Physical electronic properties:</b>  |                                       |
| Atom Number   | 32                                    |
| Atom Weight   | 72.6                                  |
| Crystal Structure   | diamond cubic                         |
| Grating Parameter, A  | 5.657                                 |
| Density (298°K), g/cm <sup>3</sup>  | 5.323                                 |
| Atomic Density, atoms/cm <sup>3</sup>   | 4.42*10 <sup>22</sup>                 |
| Melting Temperature, °C   | 937                                   |
| Boiling Temperature, °C   | 2830                                  |
| Specific Thermal Capacity (0-100°C), kal/g*degree   | 0.074                                 |
| Latent Heat of Fusion, kal/mol  | 8100                                  |
| Coefficient of Linear Thermal Expansion (293°K), cm/degree                                      | 6.1*10 <sup>-6</sup>                  |
| Mohs Hardness   | 6                                     |
| Band Gap, direct (300°K), e. V.   | 0.67                                  |
| Intrinsic Carriers Concentration (300 °K), cm <sup>-6</sup>                                     | p,n=5.5*10 <sup>26*</sup>             |
| Intrinsic Drift Mobility (300°K), cm <sup>2</sup> /v.s.:  |                                       |
| electrones  | 3800*                                 |
| holes   | 1820*                                 |
| Diffusion Coefficient (300°K), cm <sup>2</sup> /sec:  |                                       |
| electrones  | 101**                                 |
| holes   | 49**                                  |
| Intrinsic Resistivity (300°K), Ohm*cm   | 47                                    |
| <b>Optical Properties</b>   |                                       |
| Refraction coefficient at 20 °C and $\lambda=10 \mu\text{m}$ , "n".                             | n=4.0032 +/- 0.0002                   |
| Homogeneity of refractive coefficient, $\Delta n$   | $\leq 2 * 10^{-4}$                    |
| Temperature coefficient at 20-25 °C, dn/dT, C <sup>-1</sup>                                     | $\leq 4 * 10^{-4}$                    |
| Absorption coefficient (extinction indicator) at $\lambda=10.6 \mu\text{m}$ , $\alpha\lambda$ . | $\alpha\lambda$ not more than 0.03 cm |