

Germanium Domes

Features

- Maximum Diameter: 280mm
- Wide wavelength range of 2-14 μ m
- Fit for both MWIR (3-5 micro) and LWIR (8-12 micro) thermal imaging cameras
- Especially for defense, security and aerospace application
- A Variety of coating for option

Descriptions:

Germanium domes is a special type of windows which is ideal for IR applications(especially for defense and aerospace application) with its broad transmission range and opacity in the visible portion of the spectrum. Germanium domes is commonly used in IR thermal imaging cameras typically operating in the 2 μ m to 14 μ m spectral range, covers the LWIR (8-12 μ m) and MWIR (3-5 μ m) thermal imaging wavelength range. Germanium windows can be AR coated with Diamond (DLC coating or Hard carbon coating) producing an extremely tough front optic.

A Variety of coating for option:

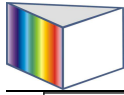
- AR/AR@7-14 μ m;
- AR/AR@3-5 μ m;
- DLC (diamond or hard carbon coating)/AR@7-14 μ m;
- BBAR/BBAR@3-12 μ m;
- Customized coating;

Specifications:

Materials	Optical grade germanium single crystals	Diameter Range	~300mm
Thickness Tolerance	± 0.2 mm (Optional: ± 0.1 mm or ± 0.05 mm)	Surface Quality	60/40 S/D
Frings (N)	customized	Irregularity (delta N)	customized
Chamfer	0.1~0.3mmx45degree	Coating(optional)	AR/AR@7-14 μ m DLC/AR@7-14 μ m BBAR/BBAR@3-12 μ m See the curves below

Physical and Optical Properties

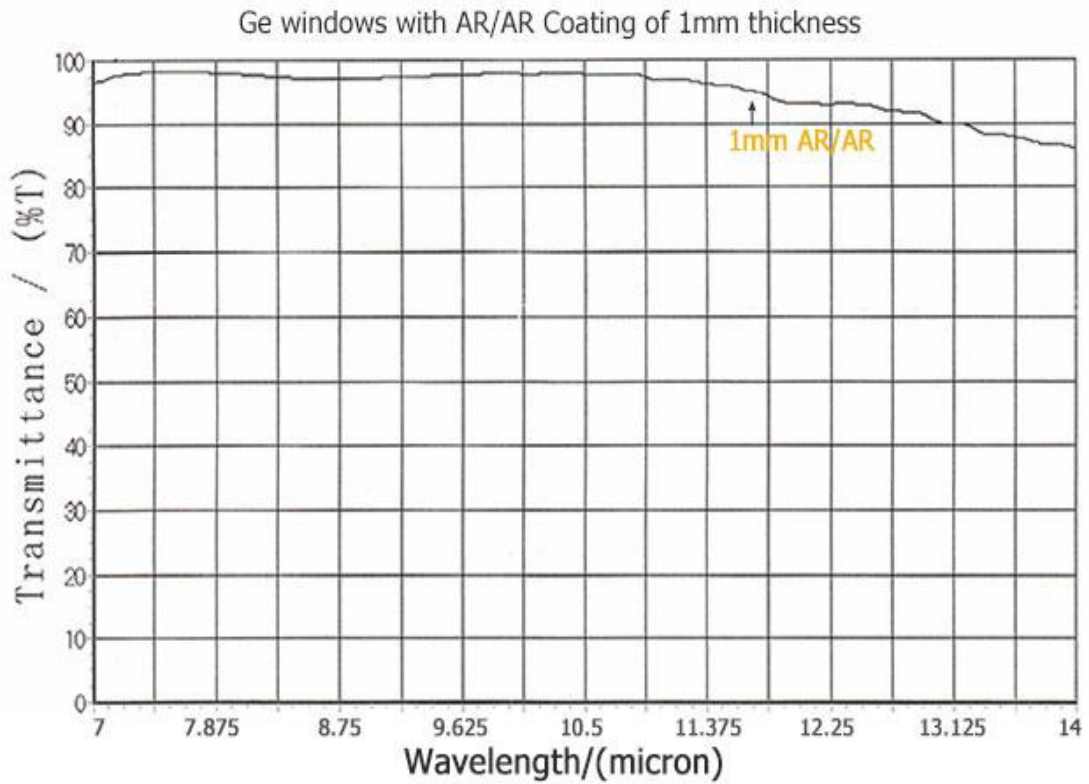
Transmission Range	1.8 to 23 μ m (1)	Refractive Index	4.0026 at 11 μ m (1)(2)
Reflection Loss	53% at 11 μ m (2 surfaces)	Absorption Coefficient	<0.027 cm ⁻¹ @ 10.6 μ m
Reststrahlen Peak	n/a	dn/dT	396 x 10 ⁻⁶ /°C (2)(6)
dn/d μ = 0	Almost constant	Density	5.33 g/cc

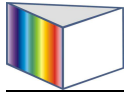


Melting Point	936 °C (3)	Thermal Conductivity	58.61 W m ⁻¹ K ⁻¹ at 293K (6)
Thermal Expansion	6.1 x 10 ⁻⁶ /°C at 298K (3)(4)(6)	Hardness	Knoop 780
Specific Heat Capacity	310 J Kg ⁻¹ K ⁻¹ (3)	Dielectric Constant	16.6 at 9.37 GHz at 300K
Youngs Modulus (E)	102.7 GPa (4) (5)	Shear Modulus (G)	67 GPa (4) (5)
Bulk Modulus (K)	77.2 GPa (4)	Elastic Coefficients	C11=129; C12=48.3; C44=67.1 (5)
Apparent Elastic Limit	89.6 MPa (13000 psi)	Poisson Ratio	0.28 (4) (5)
Solubility	Insoluble in water	Molecular Weight	72.59
Class/Structure	Cubic Diamond, Fd3m		

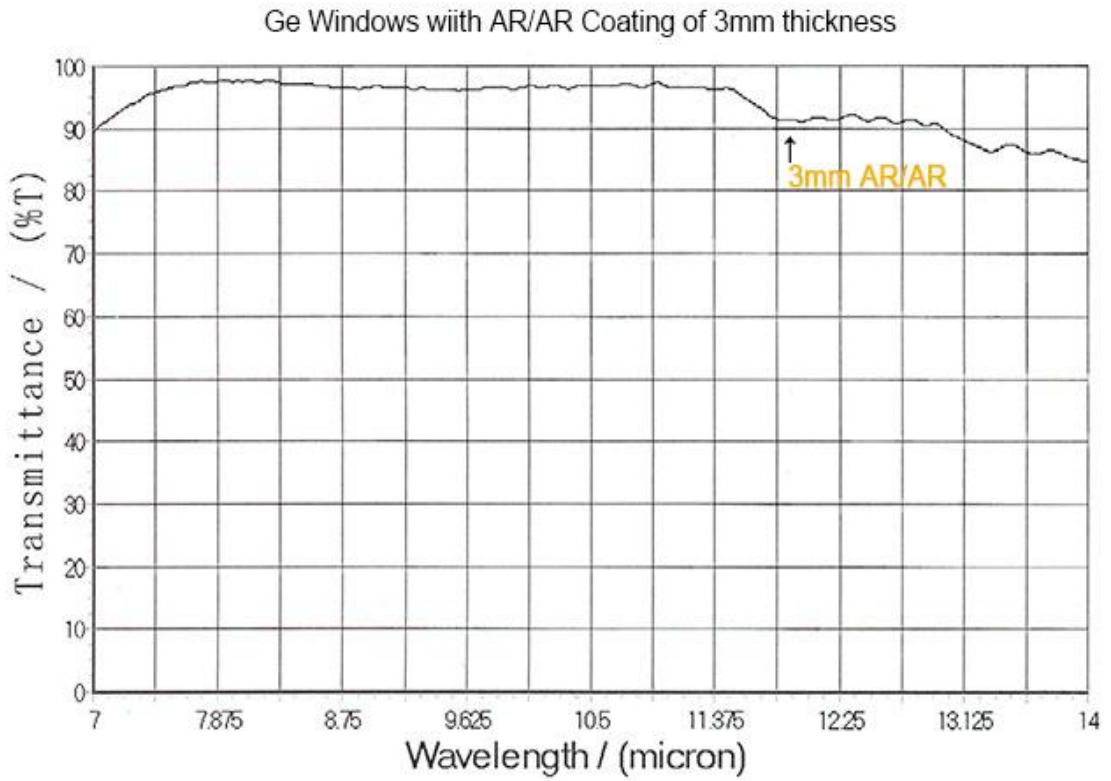
Technical Images:

1. Transmission curve for Ge windows with coating AR/AR of 1mm thickness

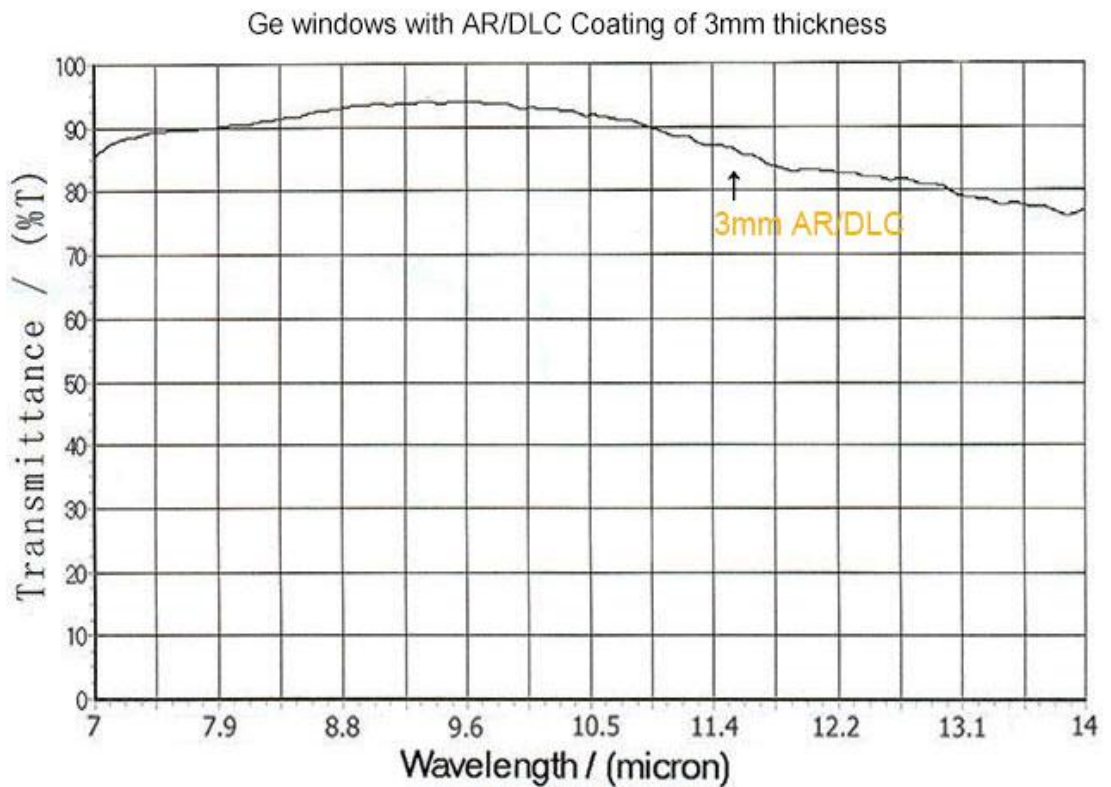


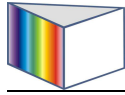


2. Transmission curve for Ge windows with coating AR/AR of 3mm thickness



3. Transmission curve for Ge windows with coating AR/DLC of 3mm thickness





Related products:

- 1) Infrared domes-> hot-pressed MgF2
- 2) Infrared domes -> Sapphire domes
- 3) Infrared windows-> Germanium windows