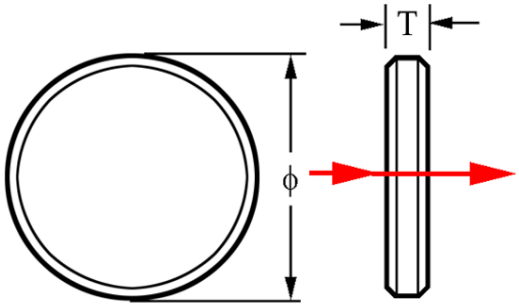
Window

- Protective Window

NOTE: Windows of special sizes and materials are available upon request.

Silicon, Germanium, and ZnSe are three popular and useful IR materials. Si can be used from 1.2 to 7um. It has peak performance in the 3-5um region. Ge is ideal for thermal imaging applications and is popular for its high refraction index at about 4.0 from 2 to 14um. ZnSe is commonly used in thermal resistance application. ZnSe has wide usage in high power CO2 laser systems.

Specifications	
Diameter Tolerance:	+0.0, -0.13 mm
Thickness Tolerance:	±0.25mm
Clear Aperture:	>80%
Parallelism:	<3 arc min
Surface Quality:	40-20 scratch and dig
Flatness	λ /4 per 1"Dia @632.8nm



Protection Window for 9.4/10.6 um

Part No.	Material	Ø (mm)	Thk. (mm)
WZ-0.5-2	ZnSe	12.7	2.0
WZ-0.75-3	ZnSe	19.1	3.0
WZ-1-3	ZnSe	25.4	3.0
WZ-1.1-3	ZnSe	27.9	3.0
WZ-1.5-3	ZnSe	38.1	3.0
WZ-1.5-5	ZnSe	38.1	5.0
WZ-50-4	ZnSe	50.0	4.0
WZ-2-5	ZnSe	50.8	5.0
WZ-55-3	ZnSe	55.0	3.0
WZ-75-3	ZnSe	75.0	3.0
WZ-88-3	ZnSe	88.0	3.0
WZ-90-3	ZnSe	90.0	3.0
WZ-110-5	ZnSe	110.0	5.0
WZ-65x85x3	ZnSe	65x85	3.0
WZ-60x90x3	ZnSe	60x90	3.0
WZ-95X95X3	ZnSe	95x95	3.0
WGE-75-2.5	Ge	75.0	2.5
WGE-90-2.5	Ge	90.0	2.5
WGA-60-1	GaAs	60.0	1.0
WGA-109.5-4	GaAs	109.5	4.0

Protection Window for Broad Band

Part No.	Material	Ø (mm)	Thk. (mm)	Wavelength (um)
WZ-15-1-BB	ZnSe	15.0	1.0	3-13
WZ-84X27X3.4-BB	ZnSe	84X27	3.4	8-14
WZ-84X27X3.4-BB1	ZnSe	84X27	3.4	3-5
WGE-25-3-BB	Ge	25.0	3.0	8-12
WGE-1.5-3-BB	Ge	38.1	3.0	8-12
WGE-42-2-BB	Ge	42.0	2.0	8-12
WGE-55-5-BB	Ge	55.0	5.0	8-12
WGE-100-3-BB	Ge	100.0	3.0	8-12
WGE-120-4-BB	Ge	120.0	4.0	8-12
WGE-124-4-BB	Ge	124.0	4.0	8-12

Protection Window for 755 nm

Part No.	Material	Ø (mm)	Thk. (mm)	Wavelength (nm)
WBK-15.97-1.6-A	BK7	15.9	1.6	755
WBK-16-1-A	BK7	16.0	1.0	755

Protection Window for 2940/1064/532/355/266 nm

Part No.	Material	Ø (mm)	Thk. (mm)	Used in Scan Lens
WFS-3.5-1-E	Fused Silicon	3.5	1.0	2940nm
WFS-15-2	Fused Silicon	15.0	2.0	1064nm
WFS-18-3	Fused Silicon	18.0	3.0	1064nm
WFS-20-2	Fused Silicon	20.0	2.0	1064nm
WFS-1-3	Fused Silicon	25.4	3.0	1064nm
WFS-36-2	Fused Silicon	36.0	2.0	1064nm
WFS-1.5-5	Fused Silicon	38.1	5.0	1064nm
WFS-74-2.5	Fused Silicon	74.0	2.5	SL-532-70-100, SL-532-115-165
WFS-76-3	Fused Silicon	76.0	3.0	SL-1064-70-100, SL-1064-112-163
WFS-80-2.5	Fused Silicon	80.0	2.5	SL-1064-114-163R1
WFS-97-2.5	Fused Silicon	97.0	2.5	SL-1064-175-254, SL-1064-180-260
WFS-98-2.5	Fused Silicon	98.0	2.5	SL-1064-205-330
WFS-110-2.5	Fused Silicon	110.0	2.5	SL-1064-300-420

- ZnSe/Ge Brewster Window

Brewster windows are uncoated substrate used in an optical system at Brewster Angle. It is used to separate the S polarization from the P polarization.

Specifications	
Diameter Tolerance:	+0.0, -0.13 mm
Thickness Tolerance:	±0.25mm
Clear Aperture:	>80%
Parallelism:	<3 arc min
Surface Quality:	40-20 scratch and dig
Flatness	λ /4 per 1"Dia @632.8nm

Part No.	Material	Width x Length (mm)	Thickness (mm)
WZB-0.5x1.3-2	ZnSe	12.7x33.0	2.0
WZB-0.6x1.5-2	ZnSe	15.2x38.1	2.0
WZB-0.7x1.8-2	ZnSe	17.8x45.7	2.0
WZB-1.0x2.6-3	ZnSe	25.4x66.0	3.0
WZB-1.5x3.9-4	ZnSe	38.1x99.1	4.0
WZB-2.0x5.2-5	ZnSe	50.8x132.1	5.0
WBG-0.5x2-2	Ge	12.7x50.8	2.0
WBG-0.6x2.5-2	Ge	15.2x63.5	2.0
WBG-0.7x2.9-2	Ge	17.8x73.7	2.0
WBG-1.0x4.1-3	Ge	25.4x104.1	3.0
WBG-1.5x3.9-4	Ge	38.1x99.1	4.0
WBG-2.0x5.2-5	Ge	50.8x132.1	5.0

The angle which p reflectance drops to zero, termed brewster's Angle, can be calculated from:

$$\Theta_b = \tan\text{-}1(n)$$

Where Θ_b is Brewster's Angle and n is the material's index of refraction.
ZnSe, brewster angle 67.4 degree @ 10.6um
GaAs, brewster angle 73 degree @10.6um
Ge, brewster angle 76 degree @10.6um