

**TECHSPEC® 40mm Dia. x 2.0mm Thick 8-12µm AR Coated, Ge Window**



Germanium (Ge) Windows

Stock #23-156 **6 In Stock**

A\$2,256<sup>00</sup>

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**General**

Protective Window **Type:**

Crystal **Type of Window:**

**Physical & Mechanical Properties**

36.00 **Clear Aperture CA (mm):**

40.00 +0.0/-0.1 **Diameter (mm):**

2.00 ±0.1	<b>Thickness (mm):</b>
<1	<b>Parallelism (arcmin):</b>
Protective as needed	<b>Bevel:</b>
90.00	<b>Clear Aperture (%):</b>
Fine Ground	<b>Edges:</b>
0.28	<b>Poisson's Ratio:</b>
102.7	<b>Young's Modulus (GPa):</b>
780.00	<b>Knoop Hardness (kg/mm<sup>2</sup>):</b>

## Optical Properties

BBAR (8000-12000nm)	<b>Coating:</b>
Germanium (Ge)	<b>Substrate:</b> <input type="checkbox"/>
4.002 @ 11µm	<b>Index of Refraction (n<sub>d</sub>):</b>
60-40	<b>Surface Quality:</b>
R <sub>avg</sub> <3.0% @ 8 - 12µm	<b>Coating Specification:</b>
8000 - 12000	<b>Wavelength Range (nm):</b>
λ/10 @ 10.6µm	<b>Surface Flatness (P-V):</b>

## Material Properties

5.33	<b>Density (g/cm<sup>3</sup>):</b>
6.1	<b>Coefficient of Thermal Expansion CTE (10<sup>-6</sup>/°C):</b>

## Regulatory Compliance

<b>Compliant</b>	<b>RoHS 2015:</b>
<b>View</b>	<b>Certificate of Conformance:</b>
<b>Compliant</b>	<b>REACH 241:</b>

## Need different specs or modifications?

Edmund Optics offers comprehensive custom manufacturing services for optical and imaging components tailored to your specific application requirements. Whether in the prototyping phase or preparing for full-scale production, we provide flexible solutions to meet your needs. Our experienced engineers are here to assist—from concept to completion.

Our capabilities include:

- Custom dimensions, materials, coatings, and more
- High-precision surface quality and flatness
- Tight tolerances and complex geometries
- Scalable production—from prototype to volume

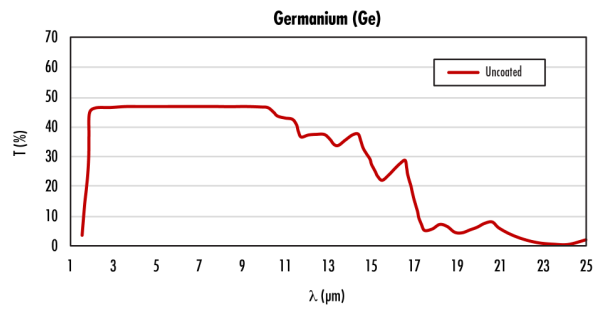
Learn more about our [custom manufacturing capabilities](#) or submit an inquiry [here](#).

## Product Details

- Uncoated or with AR Coatings Designed for a Variety of IR Ranges
- Minimal Chromatic Aberration Due to Low Dispersion
- Ideal for Infrared Applications Requiring Rugged Optics
- **DLC Coated Germanium Windows** are also Available
- Due to material supply chain disruptions with germanium, there may be increased lead times and price changes on our germanium products. For more information, please contact our [customer service team](#).
- Edmund Optics has limited remaining inventory of this part number and no raw material available to supply more once this is depleted. Please contact our Product Support Engineers to help with an alternate solution for your needs. Customer Service can provide you the latest price and availability.

TECHSPEC® Germanium (Ge) Windows are available off-the-shelf with three anti-reflection coating options: 3 - 5µm for mid-infrared applications, 3 - 12µm for broadband multispectral applications, or 8 - 12µm for thermal imaging applications. Due to its high index of refraction (around 4.0 from 2 - 14µm), an anti-reflection coating is recommended on these germanium windows for sufficient transmission in the region of interest. Germanium is subject to thermal runaway, meaning the transmission decreases as temperature increases. As such, TECHSPEC Germanium (Ge) Windows should be used at temperatures below 100°C. Germanium's high density (5.33 g/cm<sup>3</sup>) should be considered when designing for weight-sensitive systems. The Knoop Hardness of germanium (780) is approximately twice that of magnesium fluoride, making it ideal for infrared applications requiring rugged optics.

## Technical Information



AR COATED GERMANIUM	
<p style="text-align: center;"><b>Ge with 3-5μm AR Coating</b> <b>Typical Transmission</b></p> <p style="text-align: center;">Y-axis: T (%) (0 to 100) X-axis: λ (μm) (2 to 16)</p>	<p>Typical transmission of a 3mm thick Ge window with BBAR (3000-5000nm) coating at 0° AOI.</p> <p>The blue shaded region indicates the coating design wavelength range, with the following specification:</p> <p style="text-align: center;"><math>R_{avg} &lt; 3\% @ 3000 - 5000nm</math></p> <p>Data outside this range is not guaranteed and is for reference only.</p> <p style="text-align: center;"><a href="#">Click Here to Download Data</a></p>
<p style="text-align: center;"><b>Ge with 3-12μm AR Coating</b> <b>Typical Transmission</b></p> <p style="text-align: center;">Y-axis: T (%) (0 to 100) X-axis: λ (μm) (2 to 16)</p>	<p>Typical transmission of a 3mm thick Ge window with BBAR (3000-12000nm) coating at 0° AOI.</p> <p>The blue shaded region indicates the coating design wavelength range, with the following specification:</p> <p style="text-align: center;"><math>R_{avg} &lt; 5.0\% @ 3 - 12\mu m</math></p> <p>Data outside this range is not guaranteed and is for reference only.</p> <p style="text-align: center;"><a href="#">Click Here to Download Data</a></p>
<p style="text-align: center;"><b>8-12μm AR Coated Germanium</b> <b>Typical Transmission</b></p> <p style="text-align: center;">Y-axis: T (%) (0 to 100) X-axis: λ (μm) (2 to 16)</p>	<p>Typical transmission of a 3mm thick Ge window with BBAR (8000-12000nm) coating at 0° AOI.</p> <p>The blue shaded region indicates the coating design wavelength range, with the following specification:</p> <p style="text-align: center;"><math>R_{avg} &lt; 3.0\% @ 8 - 12\mu m</math></p> <p>Data outside this range is not guaranteed and is for reference only.</p> <p style="text-align: center;"><a href="#">Click Here to Download Data</a></p>

## Special Handling

### Germanium Optics Handling and Cleaning Guidelines

Germanium optics require special handling and cleaning procedures. Always wear gloves during handling to prevent contamination, and wash hands afterward. Avoid contact between Germanium dust and the eyes, skin, or clothing. When not in use, store optics sealed and covered at temperatures between 20°C and 25°C. Do not expose them to temperatures exceeding 100°C when in use.

#### Handling Guidelines

- Always wear **gloves** to prevent damage from skin oils.
- If Germanium dust is present, take the following precautions:
  - Wear safety glasses to protect eyes.
  - Use a dust mask or face mask to avoid inhalation.
  - Wear **gloves** to prevent skin contact.

- Maintain storage temperature between 20°C and 25°C with humidity below 30%.
- Wrap Germanium optics in a [lens cloth](#) or [pouch](#) and seal in a [container](#) when not in use.
- Germanium is brittle and heavy—always place it on soft surfaces and avoid dropping it.

### Approved Cleaning Solvents

- Ethanol
  - Isopropyl Alcohol
  - Methanol
  - Reagent-Grade Acetone
  - Liquid CO<sub>2</sub>
  - [Shop Now](#)
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