PRODUCT DESCRIPTION

Dark mirror coatings absorb incident light, rather than reflecting or transmitting it. They exhibit both the low transmittance of a metal and the low reflectance of an antireflection coating. DSI dark mirrors are distinguished by their broadband spectral performance and exceptional environmental durability. They can be designed for use anywhere from the visible through the longwave infrared wavelength regions. In addition, DSI’s photolithography capability enables the production of dark mirrors in precise patterns ranging from circular to more complex geometries.

APPLICATIONS

Dark mirrors are typically used to define the aperture of an optical system where control of stray light or elimination of crosstalk is critical. Applications include high-performance imaging and display systems, as well as hyperspectral sensors.

TECHNICAL SPECIFICATIONS

DSI’s dark mirror coatings can be applied to virtually any substrate, in sizes up to 200mm diameter.

- Dark mirrors can be designed for low reflectance from the front of the optic (External), low reflectance at the substrate surface (Internal), or low reflectance from either direction (Bidirectional).

- Reflectance is often specified at less than 5%, but is generally held to much lower values. Achievable levels are highly dependent on the angle of incidence range as well as the wavelength range.

- Typical transmittance specifications range from < 1% to < 0.01%. Furthermore, since the coatings contain one or more metal layers, very high blocking levels are attainable over a broad wavelength range.

- Using photolithography, DSI can produce dark mirrors with feature sizes as small as 50µm, and with ±10µm placement accuracy.

- DSI’s dark mirrors pass the MIL-STD environmental tests of adhesion, humidity, and moderate abrasion.

At DSI, our engineers work closely with our customers to develop filter specifications that ensure their optical system will perform as desired. Let DSI engineer a solution for you.
Dark Mirror Coatings
Measured Typical Performance

Bidirectional VIS/NIR Dark Mirror on Borofloat, $T < 0.02\%$

Bidirectional SWIR Dark Mirror on Sapphire, $T < 0.1\%$

External SWIR/MWIR Dark Mirror on Zinc Sulfide, $T < 1\%$

External LWIR Dark Mirror on Germanium, $T < 0.01\%$

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