

NEW

Swift Optical Shutters

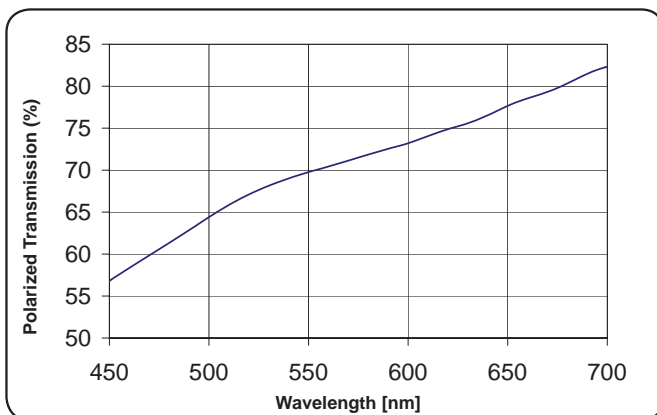


Fig. 4-20 Polarized transmission of the Swift Optical Shutter in the open state

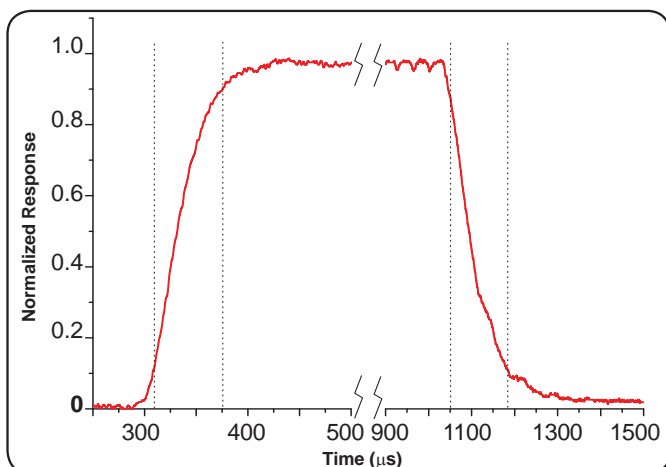


Fig. 4-21 Swift LC Response Time Plot

ORDERING INFORMATION			
Diameter, D (in.)	Clear Aperture, CA (in.)	Thickness t (in.)	Part Number
2.00	0.70	0.75	SCS - 200

Key Benefits

- No mechanical motion
- Computer control capability
- Noiseless
- High speed

This liquid crystal shutter is a vibration-free alternative to mechanical shutters for use in high-speed shutter applications. It uses a Swift LC cell between crossed polarizers to provide sub-millisecond switching for both opening and closing. Switching time is 125 microseconds to open and 125 microseconds to close. The switching times are less than 50 microseconds if the shutter is heated to 40° C. The D3060HV controller provides this temperature control capability. These shutters show some haziness in the liquid crystal layer in the blue and green wavelengths. The light loss from this haze is about 1% at 700 nm but increases monotonically to about 10% loss at 450 nm. Scatter at wavelengths above 700 nm is negligible. The shutter is supplied with integral dichroic visible polarizers that function over the wavelength range of 450 nm to 700 nm to provide an average contrast ratio of better than 200:1. Shutters with larger aperture sizes and with wavelength coverage to 2.1 microns are available on a custom basis. Please call with your special requirements.

SPECIFICATIONS	
Retarder Material	Polymer stabilized nematic liquid crystals
Substrate Material	Optical quality synthetic fused silica
Polarizer Material	Dichroic Polymer
Wavelength Range	450-700 nm
Contrast Ratio (average)	200:1
Angular Field of View	± 5° incidence angle
Switching Time (10% to 90%) at room temperature	
Closed to open:	150 μs
Open to closed	150 μs
Switching Time (10% to 90%) at 40° C	50 μs
Transmitted Wavefront Distortion (at 632.8 nm)	≤ λ/2
Surface Quality	60-40 scratch and dig
Reflectance (per surface):	≤ 0.5% at normal incidence
Beam Deviation	≤ 5 arc min
Recommended Safe Operating Limit	1 W/cm ² , CW 300 mJ/cm ² , 10 ns, visible
Glass Thickness	0.48 — 0.52 inches
Polarization Direction	Vertical on input face, horizontal on output face
Storage temperature	-20° C to +70° C
Operating temperature	-10° C to +60° C