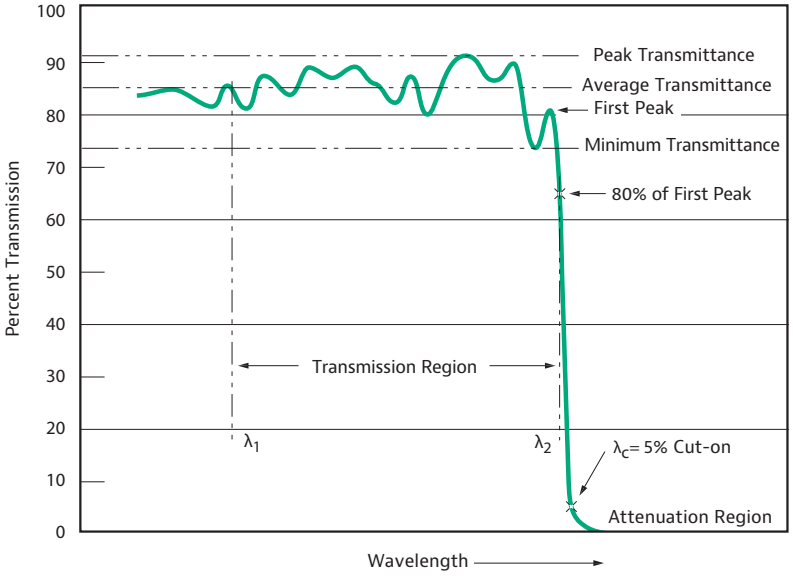
Infrared Short Wavepass Filters

Infrared Short Wavepass filters developed by Viavi Solutions provide high transmission at wavelengths shorter than the cut-off wavelength, and excellent blocking at wavelengths longer than the cut-off wavelength. Filter designs can be deposited on a variety of infrared transmitting substrates. The cut-off wavelength can be located anywhere in the infrared up to approximately 16 µm.



Key Features

- Excellent coating uniformity
- Tightly toleranced precision filter expertise
- Flat spectral profile
- High peak transmission value
- Excellent blocking
- Wide range of filters and assemblies for the infrared sensing and imaging instrumentation market
- High volume capability
- Expert application engineering support
- Available filter substrates are: Si, Ge, Glass, Sapphire, Quartz, Fused Silica, ZnS, ZnSe

Applications

- Gas monitoring
- Temperature sensing
- Thermal imaging

Standard

- Temperature, humidity, mild abrasion, adherence: MIL-F-48616

Spectral Characteristics

Parameter	Symbol	Conditions	Minimum	Maximum
Wavelength range[1]	λ_c	At 5% transmission, 25°C, 0° AOI	1 µm	16 µm
Nominal bandwidth[1, 2]	λ_2/λ_1	At 25°C, 0° AOI	1.3	1.9
Cut-on/Cut-off slope[1, 3]		At 25°C, 0° AOI	3%	6%
Absolute center wavelength drift vs temperature			0.002%/°C	0.01%/°C

Minimum Transmission

Center Wavelength Range	Nominal Bandwidth λ_1/λ_2	Minimum Average Transmittance[4,5]	Minimum Average Transmittance[4,5,6]
1.5 to 3 µm	1.2 1.4 1.8	75% 75% 70%	65% 65% 60%
3 to 8 µm	1.2 1.4 1.8	87% 85% 85%	80% 75% 75%
8 to 12 µm	1.2 1.4 1.8	87% 85% 85%	80% 78% 75%
12 to 15 µm	1.2 1.4 1.8	80% 78% 75%	70% 68% 65%

Filter Size

Type	Minimum	Maximum
Square or rectangle	2 mm	100 mm
Diameter	2 mm	150 mm
Thickness	0.3 mm	—
Thickness tolerance[7]	±0.025 mm	—

1. AOI: angle of incidence.
2. $\lambda 1$ is defined as λc + (3% to 6% of λc).
3. Cut-on/cut-off slopes ≥4% are for standard designs and are consistent with standard production yields.
4. All peak transmission values are minimal and consistent with standard production yields.
5. All transmission values are for filters attenuated above the cut-off wavelength to 1.4 λc to T ≤ 0.1% average.
6. Minimum Absolute Transmission is the value below which transmission will not fall for any wavelength in the wavelength region defined by λ_2/λ_1.
7. Thickness tolerance for standard design is ±0.1 mm.

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