Linear Variable Filter

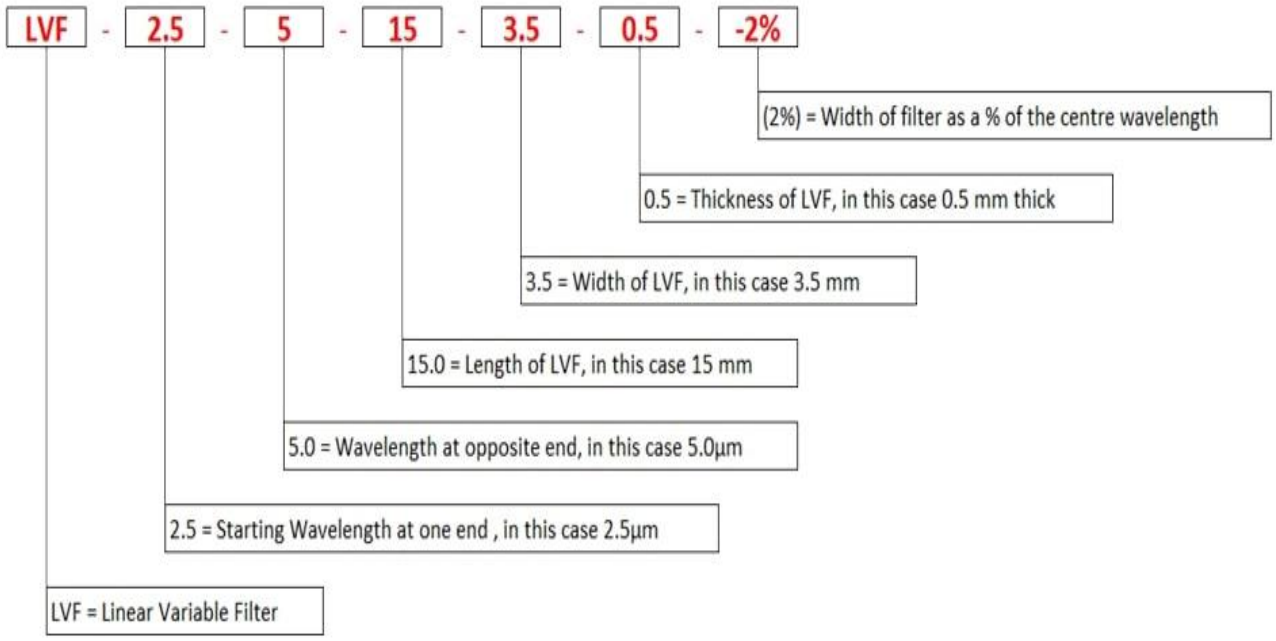
Our stock LVF s cover 3 ranges 0.9-1.7 µm, 1.3-2.5µm and 2.5-5.0µm , these can be purchased from our web-shop. We also manufacture custom LVF's, contact us to discuss further. Applications include mini-spectrometers, multi-gas analysis, industrial process monitoring and many more.

Introduction

Infrared Linear Variable Filters are narrow band filters where the Centre Wavelength (CWL) changes with distance along its length, this is shown in the diagram below for a 2.5-5.0 µm type. Our range of stock LVF s allow the user an opportunity to explore the technology but at a relatively low cost. Follow the link below to see our range of LVF's including our all new 'Generation 2' LVF s launching in 2021.

LVF Part Numbers Explained

Example: LVF 2.5 – 5.0 – 15.0 – 3.5 – 0.5



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The table below shows all of our LVF's including our all new for 2021, 2nd Generation LVF's.

Product Number	Range	Dimensions (Length x Width x Thickness)	Bandwidth (as a % of centre wavelength)
LVF 0.9-1.7-3.5-15-0.5-2%	0.9 – 1.7 µm	15 x 3.5 x 0.5 mm	2% (Generation 1)
LVF 1.3-2.6-3.5-15-0.5-2%	1.3-2.6 µm	15 x 3.5 x 0.5 mm	2% (Generation 1)
LVF 2.5-5.0-3.5-15-0.5-2%	2.5-5.0 µm	15 x 3.5 x 0.5 mm	2% (Generation 1)
LVF 0.9-1.7-3.5-15-0.5-1%	0.9 – 1.7 µm	15 x 3.5 x 0.5 mm	1% (Generation 2)
LVF 1.3-2.6-3.5-15-0.5-1%	1.3-2.6 µm	15 x 3.5 x 0.5 mm	1% (Generation 2)

Features of Generation 2 Infrared Linear Variable Filters

- 2 ranges covered, 0.9-1.7µm and 1.3-2.5 µm.
- Width/FWHM =1% x Centre Wavelength.
- Blocking greater than OD 3.5 average outside passband.
- Specifically for systems where higher signal to noise ratio is critical.

Features of 1st Generation Infrared Linear Variable Filters

- 3 ranges covered, 0.9-1.7µm, 1.3-2.5 µm and 2.5-5.0 µm.
- Width/FWHM =2% x Centre Wavelength.
- Blocking greater than OD 2.5 average outside passband

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Linear Variable Filter for 0.9-1.7 µm

This linear variable filter (LVF) has a narrow band profile (FWHM=2% x Peak Wavelength). The peak wavelength changes continuously from one side to the other across the range, see below in Fig 1. All of our filters exhibit high angular tolerance, extremely low change with temperature and very high resistance to thermal shock.

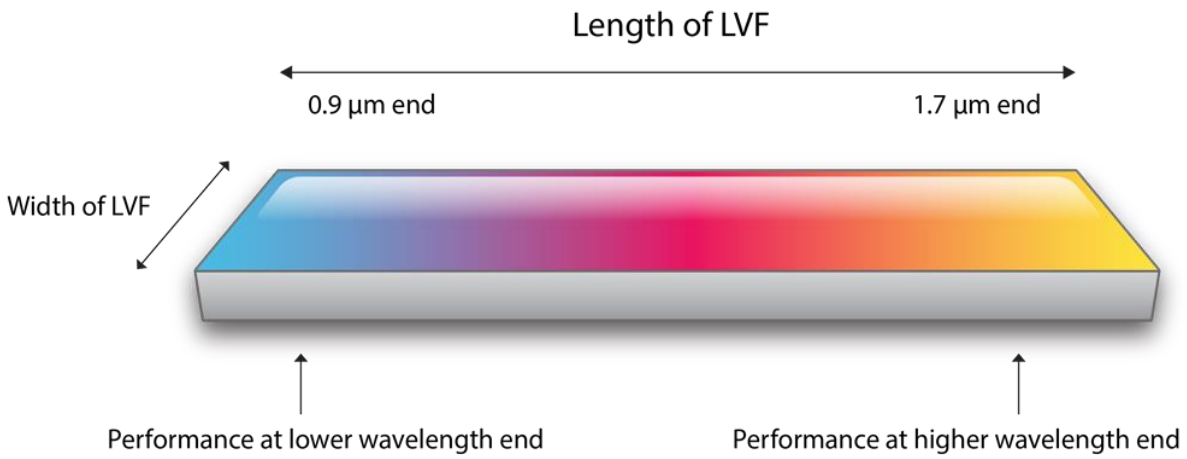
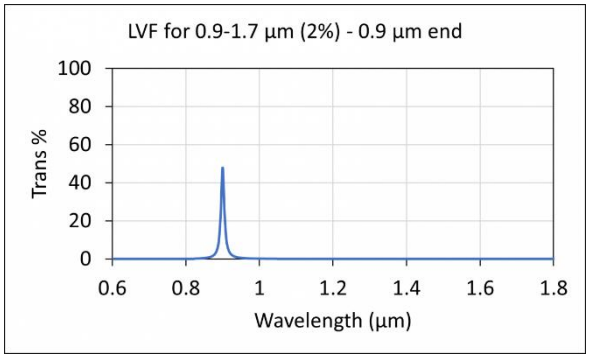
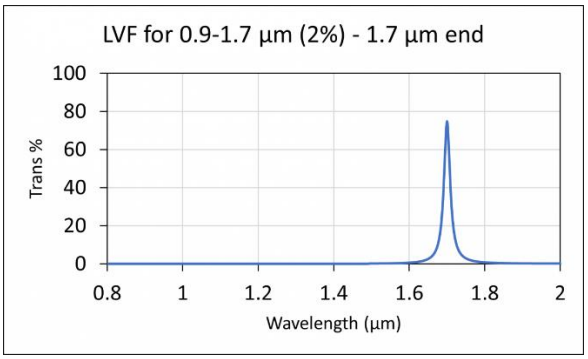


Fig 1

Linear Variable Filter for 0.9-1.7 µm (2%) graph





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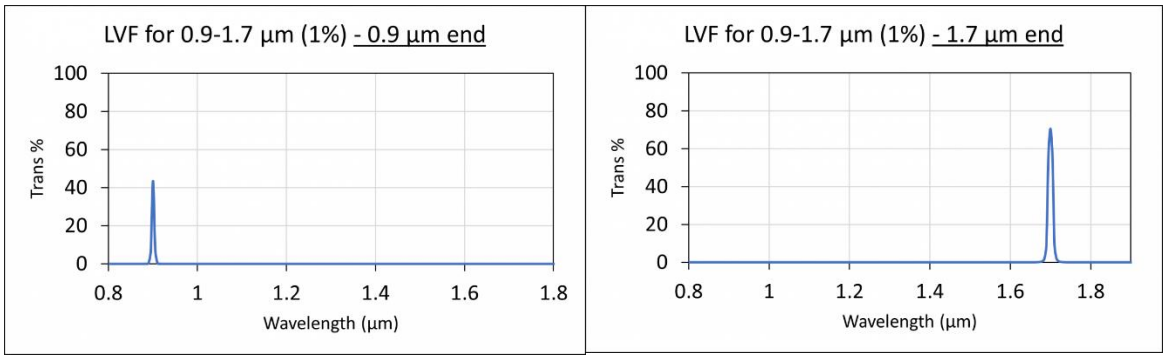
Linear Variable Filter for 0.9-1.7 µm (1%) graph



Optical Specifications

Model	Linear Variable Filter for 0.9-1.7 µm (2%)	Linear Variable Filter for 0.9-1.7 µm (1%)
Transmission	50-75% across the band	
Blocking Range	Basic range UV-1.8 µm, OD>2.5 ave. outside the transmission band. (to extend blocking range, a suitable bandpass filter may be added, for custom LVF s extra blocking can be added to the LVF itself)	Basic range UV-1.8 µm, OD>3.5 ave. outside the transmission band. (to extend blocking range a suitable bandpass filter may be added, for custom LVFs extra blocking can be added to the LVF itself)
Gradient of Change	60 nm/mm	
Angle Of Incidence	0°	
Substrate	15 mm x 3.5 mm x 0.5mm thick	
Surface Quality	Less than 60-40 Scratch-Dig	

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Linear Variable Filter for 1.3-2.6 µm

This linear variable filter (LVF) has a narrow band profile (FWHM=2% x Peak Wavelength). The peak wavelength changes continuously from one side to the other across the range, see below in Fig 2. All of our filters exhibit high angular tolerance, extremely low change with temperature and very high resistance to thermal shock.

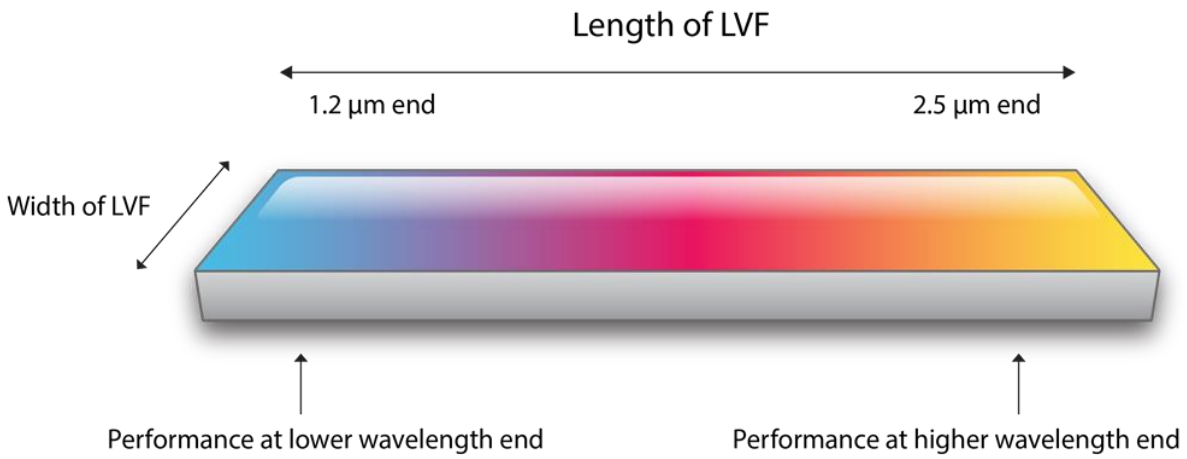
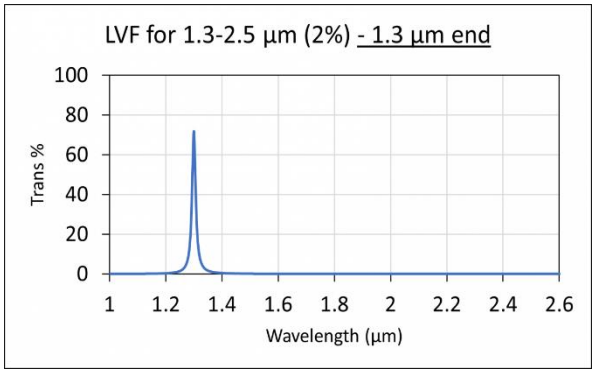
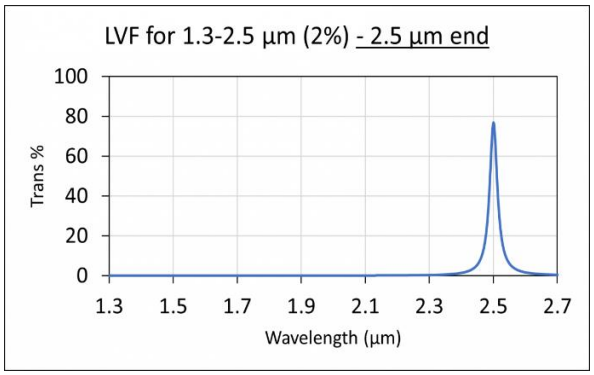


Fig 2

Linear Variable Filter Graph for 1.3-2.6 µm (2%)





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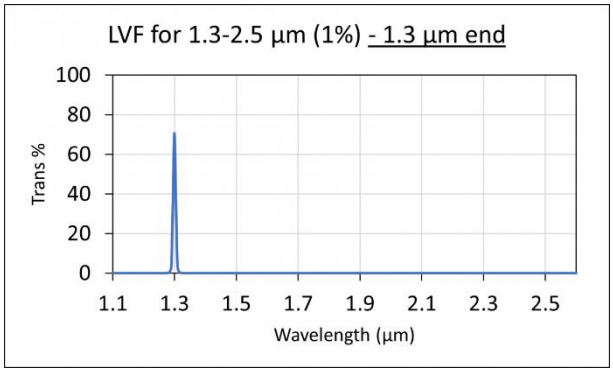
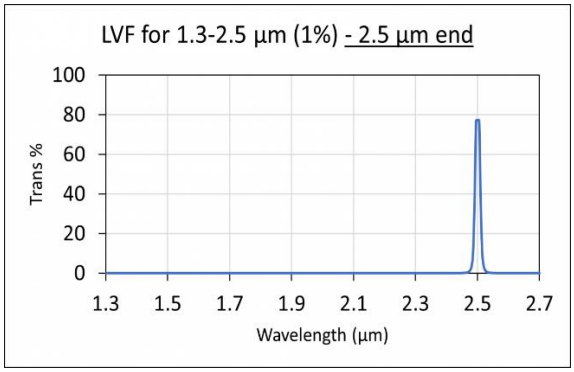
Linear Variable Filter Graph for 1.3-2.6 µm (1%)





Optical Specifications

Model	Linear Variable Filter for 1.3-2.6 µm (2%)	Linear Variable Filter for 1.3-2.6 µm (1%)
Transmission	50-75% across the band	
Blocking Range	Basic range 1.2-2.6 µm, OD>2.5 ave. outside the transmission band. (to extend blocking range a suitable bandpass filter may be added, for custom LVF s extra blocking can be added to the LVF itself)	Basic range 1.2-2.6 µm, OD>3.5 ave. outside the transmission band. (to extend blocking range a suitable bandpass filter may be added, for custom LVF s extra blocking can be added to the LVF itself)
Gradient of change	85 nm/mm	
Angle Of Incidence	0°	
Substrate	15 mm x 3.5 mm x 0.5mm thick	
Surface Quality	Less than 60-40 Scratch-Dig	

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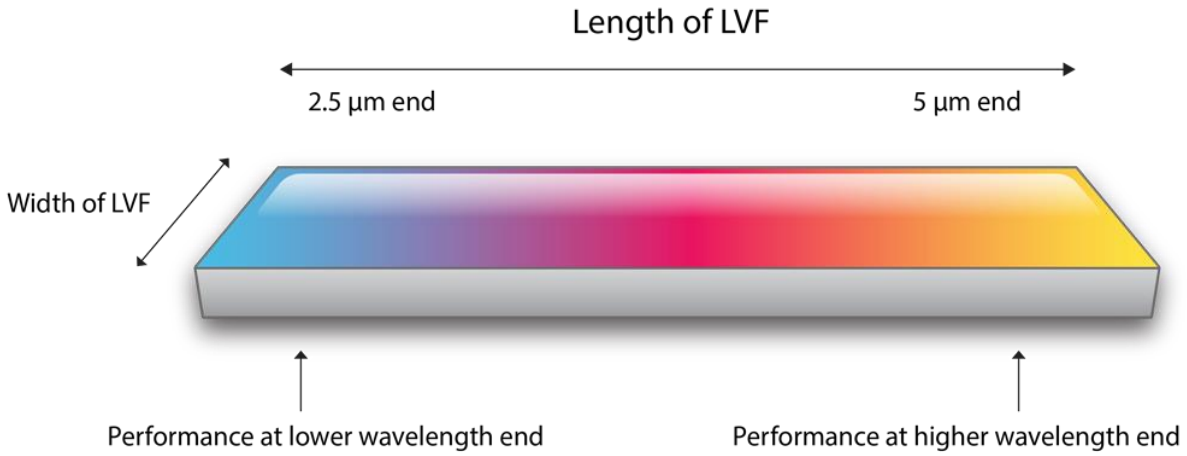
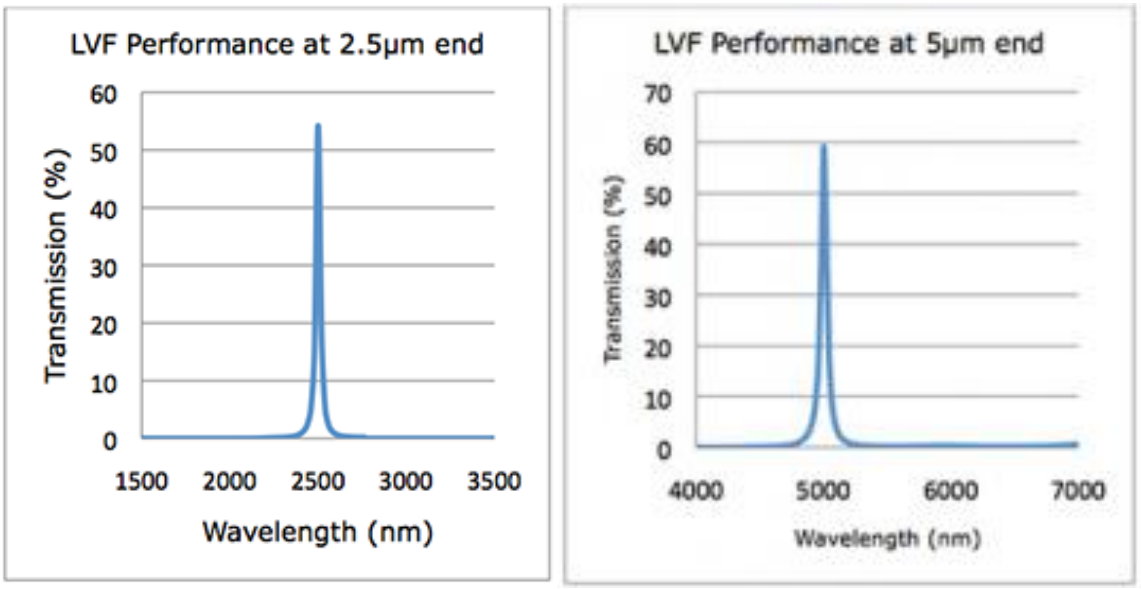
Linear Variable Filter for 2.5-5.0 µm

This linear variable filter (LVF) has a narrow band profile (FWHM=2% x Peak Wavelength). The peak wavelength changes continuously from one side to the other across the range, see right in Fig 3. All of our filters exhibit high angular tolerance, extremely low change with temperature and very high resistance to thermal shock.



Linear Variable Filter Graph for 2.5-5.0 µm (2%)



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Optical Specifications

Model	Linear Variable Filter for 2.5-5.0 µm (2%)
Transmission	50-75% across the band
Blocking Range	Basic range 1.8-5.5 µm, OD>2.5 ave. outside the transmission band. (to extend blocking range a suitable bandpass filter may be added, for custom LVF s extra blocking can be added to the LVF itself)
Gradient of change	165 nm/mm
Angle Of Incidence	0°
Substrate	15 mm x 3.5 mm x 0.5mm thick
Surface Quality	Less than 60-40 Scratch-Dig

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