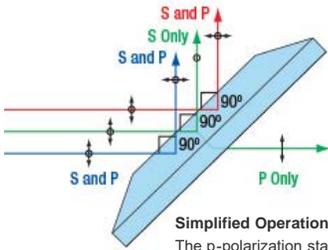


**FPB639-21 - November 14, 2019**

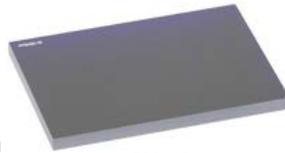
Item # FPB639-21 was discontinued on November 14, 2019. For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

**POLARIZING BANDPASS FILTERS**

- ▶ Wavelength Pass Band Only Contains P-Polarization
- ▶ Pass Band Transmission >85%
- ▶ 10<sup>6</sup>:1 Extinction Ratio
- ▶ Five Center Wavelength Options from 355 nm to 1064 nm



**Simplified Operation Drawing**  
 The p-polarization state is passed within the designed pass band, while the s-polarization state is rejected.



**FPB405-10**  
 Polarizing Bandpass Filter,  
 CWL = 405 nm



FPB639-21 Polarizing Bandpass Filter Mounted in a CM1-DCH Cage Cube Filter Mount

[Hide Overview](#)

**OVERVIEW**

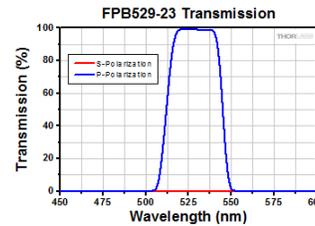
**Features**

- Extinction Ratio: 1 000 000:1
- 25.2 mm x 35.6 mm x 2.0 mm Unmounted Filters
- >85% Transmission Within the Pass Band
- Excellent Suppression in Blocking Regions (OD > 6)
- UV Fused Silica Substrate
- Five Center Wavelength Options at Popular Laser Lines:

- 355 nm +6 nm / -9 nm
- 405 nm ± 5 nm
- 532 nm +9 nm / -14 nm
- 633 nm +17 nm / -4.5 nm
- 1064 nm +17 nm / -26 nm

Common Specifications	
<b>Extinction Ratio<sup>a</sup></b>	1 000 000:1
<b>Optic Size</b>	25.2 mm x 35.6 mm
<b>Optic Thickness</b>	2 mm
<b>Dimensional Tolerance</b>	±0.1 mm
<b>Clear Aperture</b>	>21.41 mm x 30.26 mm
<b>Acceptance Angle<sup>b</sup></b>	45° ± 0.5°
<b>Surface Quality</b>	60-40 Scratch-Dig
<b>Coating</b>	Polarizing Bandpass Filter
<b>Substrate</b>	UV Fused Silica <sup>c</sup>

- The extinction ratio (ER) is the ratio of maximum to minimum transmission of a sufficiently linearly polarized input. When the transmission axis and input polarization are parallel, the transmission is at its maximum; rotate the polarizer by 90° for minimum transmission.
- The acceptance angle is wider at the center wavelength of the optic; see the table below for details.
- Click Link for Detailed Specifications on the Substrate



Transmission plot for the FPB529-23 Filter. Click the info icons (i) below for each filter's plots and downloadable data.

Thorlabs' Polarizing Bandpass Filters are designed to isolate key laser lines, such as Nd:YAG, HeNe, and diode, while also separating out the s- and p-polarization states. The p-polarized component is transmitted over a defined pass band and reflected (rejected) outside of the band, while the s-polarized component is reflected over the entire blocking region of the optic. Each offers a high extinction ratio of  $T_p:T_s > 10^6:1$ , high p-polarized transmission in the pass band (>85% for FPB353-15 and >95% for all other filters), and excellent suppression (OD > 6) in the blocking region.

Each filter is 25.2 mm x 35.6 mm and has a thickness of 2 mm. They are designed to be used at a 45° AOI; however, when used at the center wavelength, the incident angle can be widened without loss of performance. See the table below for details. The item number is engraved on the coated side of the filter, on which we recommend the beam be incident.



The unique design of these filters allows them to be used as a laser line filter, as an analyzer within a DIC microscopy system, or as wavelength selectors within harmonic generation setups or fluorescence imaging systems.

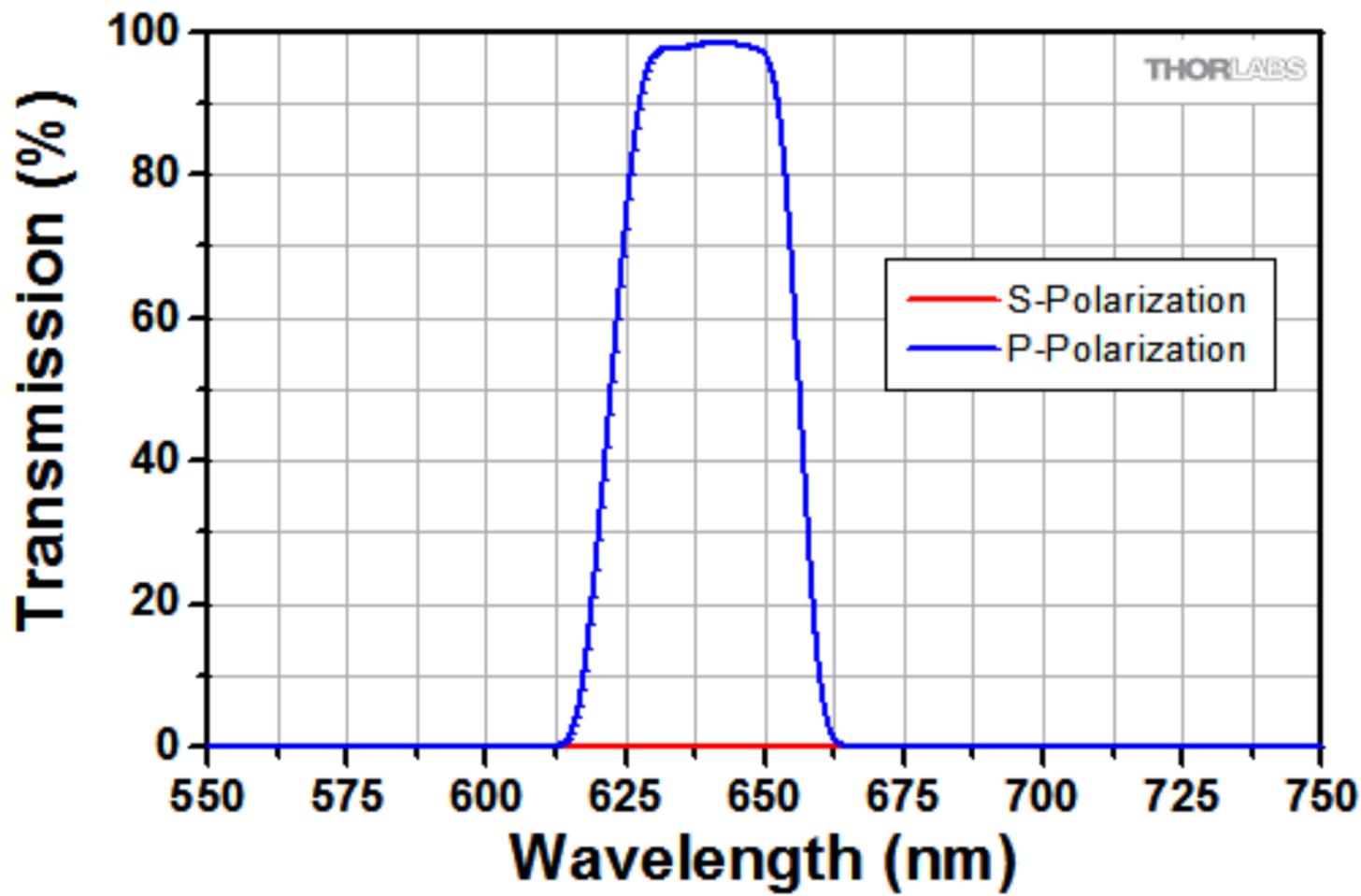
**Polarizing Bandpass Filters**

Item #	Center Wavelength	Bandwidth	Transmission (P-Pol., over Bandwidth)	Blocking (Reflection) Regions		Transmission/OD Data <sup>a</sup>	Acceptance Angle	Laser Lines
				P-Pol.	S-Pol.			
FPB353-15	355 nm	+6 nm / -9 nm	>85%	300 - 339 nm: OD > 6 369 - 434 nm: OD > 6	300 - 455 nm: OD > 6		45° ± 0.5° 45° ± 7° at 355 nm	Nd:YAG
				434 - 1100 nm: OD > 2				
FPB405-10	405 nm	±5 nm	>95%	322 - 388 nm: OD > 6 422 - 490 nm: OD > 6	320 - 516 nm: OD > 6		45° ± 0.5° 45° +6° / -4° at 405 nm	Diode
				300 - 332 nm: OD > 2 490 - 1100 nm: OD > 2				
FPB529-23	532 nm	+9 nm / -14 nm	>95%	418 - 502 nm: OD > 6 557 - 664 nm: OD > 6	400 - 695 nm: OD > 6		45° ± 0.5° 45° ± 7° at 532 nm	Nd:YAG HeNe
				1064 nm: OD > 5 300 - 418 nm: OD > 2 664 - 1100 nm: OD > 2				
FPB639-21	633 nm	+17 nm / -4.5 nm	>95%	511 - 602 nm: OD > 6 675 - 795 nm: OD > 6	488 - 840 nm: OD > 6		45° ± 0.5° 45° +6° / -4.5° at 633 nm	HeNe Diode Krypton
				300 - 511 nm: OD > 2 795 - 1100 nm: OD > 2				
FPB1059-43	1064 nm	+17 nm / -26 nm	>95%	851 - 996 nm: OD > 6 1120 - 1307 nm: OD > 6	720 - 1393 nm: OD > 6		45° ± 0.5° 45° ± 6° at 1064 nm	Nd:YAG
				355 nm & 532 nm: OD > 6 300 - 851 nm: OD > 2.5 1307 - 1750 nm: OD > 2.5				

• Click on for a plot and downloadable data.

Part Number	Description	Price	Availability
FPB353-15	Polarizing Bandpass Filter, CWL = 355 nm, Bandwidth = +6 nm / -9 nm	\$896.46	Today
FPB405-10	Polarizing Bandpass Filter, CWL = 405 nm, Bandwidth = ±5 nm	\$896.46	Today
FPB529-23	Polarizing Bandpass Filter, CWL = 532 nm, Bandwidth = +9 nm / -14 nm	\$896.46	Today
FPB639-21	Polarizing Bandpass Filter, CWL = 633 nm, Bandwidth = +17 nm / -4.5 nm	\$896.46	Lead Time
FPB1059-43	Polarizing Bandpass Filter, CWL = 1064 nm, Bandwidth = +17 nm / -26 nm	\$1,002.55	5-8 Days

# FPB639-21 Transmission



# FPB639-21 Optical Density

