



# Polarizing Beamsplitter Plate

## PBS Plate Series Datasheet



PBS Beamsplitters  
(mounting optional)

ProFlux® beamsplitter Nanowire® Technology is optimized to operate at 45°, providing durable polarizing beamsplitters. These beamsplitters can be used for a variety of both imaging and non-imaging applications for display products and scientific instruments. The ProFlux polarizing beamsplitter's wide angular aperture, excellent performance and exceptional reliability offer an excellent design choice.

Made with highly durable materials, ProFlux provides pure polarization that gives a high contrast and bright image for the life of the projector. The ProFlux polarization mechanism aligns ideally with the LC display and has excellent polarization uniformity even over large apertures, providing bright, high contrast, long-lasting displays.

### Applications

- Head-Mounted Display (HMD)
- Head-Up Display (HUD)
- 2D & 3D Projection Display
- Interferometry
- Medical/Dental Imaging

### Standard Product Options

Product Name	Description
PBS02A	Standard PBS-No AR
PBS02C	Standard PBS-AR
PBF02A	PBF-No AR
PBF02C	PBF-AR
PBFF2C	PBF-UF-AR on Fused Silica
PBF02C-UF	PBF-UF-AR
FBF04C	High Contrast PBF

\*See OPT-DATA-1011 for size and mounting options

Features	Benefits
Nanowire® Technology	Brightness and contrast uniformity
	Excellent for optical designs with $f/\# < f/2.0$
	Wavelength and AOI independent
	$\pm 20^\circ$ AOI without depolarization
	Broadband
Inorganic	High heat resistance

### General Specifications

	PBS	PBF	PBF-UF	
<b>Wavelength Range:</b>	420-700nm	420-700nm	420-700nm	420-700nm
<b>Substrate Type:</b>	Display Glass	Borofloat®	Borofloat®	Fused Silica
<b>Substrate Flatness:</b>	N/A	12.35µm PV over 90mm diameter	3µm PV over 90mm diameter	2µm PV over 90mm diameter
<b>Thickness:</b>	0.7 ± 0.07mm	1.6 ± 0.1mm	1.6 ± 0.1mm	1.6 ± 0.1mm
<b>Index of Refraction:</b>	435.8nm: 1.598 643.8nm: 1.5078	588nm: 1.472	588nm: 1.472	532nm: 1.461
<b>Thermal Expansion:</b>	37.6 x 10 <sup>-7</sup> /°C (0-300°C)	3.25 x 10 <sup>-6</sup> /°C (20-300°C)	3.25 x 10 <sup>-6</sup> /°C (20-300°C)	6.5 x 10 <sup>-7</sup> /°C (15-200°C)
<b>AOI (Angle of Incidence):</b>	45° ± 15°	45° ± 15°	45° ± 15°	45° ± 15°
<b>AR Coating:</b>	Optional	Optional	Visible	Visible
<b>Maximum Temperature:</b>	200°C > 5000 hrs	200°C > 5000 hrs	200°C > 5000 hrs	200°C > 5000 hrs
<b>Transmission Axis (TA):</b>	Referenced to long side of part	Referenced to long side of part	Referenced to long side of part	Referenced to long side of part
<b>TA Tolerance:</b>	± 1°	± 1°	± 1°	± 1°
<b>Dimensional Tolerance:</b>	± 0.2mm	± 0.4mm	± 0.4mm	± 0.4mm
<b>Edge Exclusion:</b>	2mm	2mm	2mm	2mm
<b>RoHS:</b>	Compliant	N/A	N/A	N/A



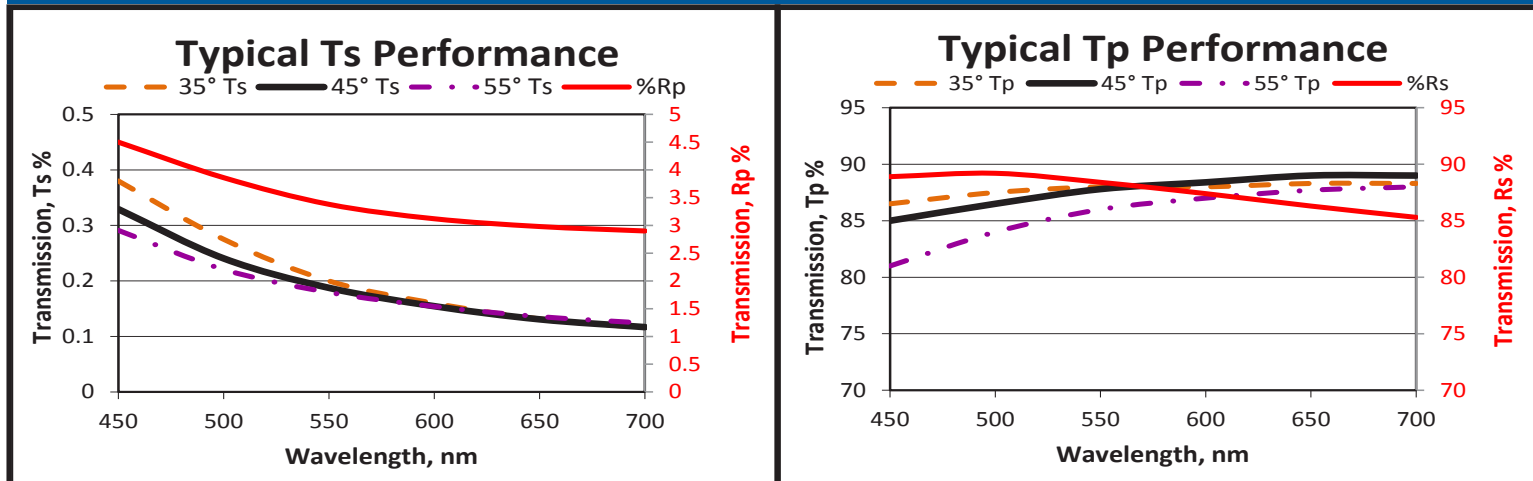
## Usage Recommendations

To obtain the best transmission and contrast, the beamsplitter should be used to transmit the p-polarization, using the standard definition of p-polarization and s-polarization. It is possible to use the beam splitter in the orthogonal orientation (transmission of the s-polarization), but with reduced efficiency and contrast. In a projection system it is recommended that the wire-grid surface be positioned to face the imager and projection lens to ensure the reflection is from the front surface of the beamsplitter.

## Beamsplitter Performance Table

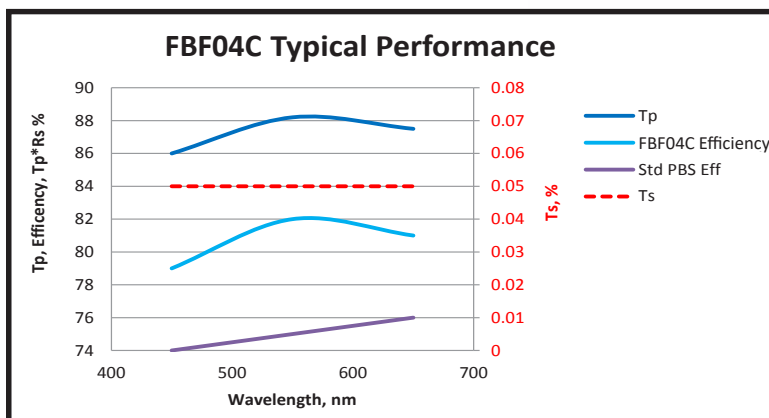
Product Type	450nm				550nm				650nm			
	MIN Tp (%)	MAX Ts (%)	MIN Eff (%)	MAX Rp (%)	MIN Tp (%)	MAX Ts (%)	MIN Eff (%)	MAX Rp (%)	MIN Tp (%)	MAX Ts (%)	MIN Eff (%)	MAX Rp (%)
PBS02A / PBS02C	82.5	0.39	74	-	86.8	0.22	75	-	86.8	0.15	75	-
PBF02A / PBF02C	83	0.5	75.5	-	85.5	0.3	76.7	-	85.5	0.2	77	-
FBF04C	83	0.05	75.5	3	85.5	0.05	76.7	3	88.5	0.05	77	3
PBFF2C	83	0.25	75.5	3	85.5	0.15	76.7	2	85.5	0.1	77	3

## Typical PBS and PBF Performance at 45°



## Typical FBF04C Performance at 45°

FBF04C (high contrast polarizing beamsplitter) performance comparison with standard PBF shows an increase in contrast of >10x.



For warranty and ordering information, please visit [www.moxtek.com](http://www.moxtek.com).



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