

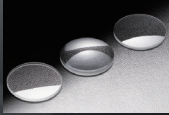
L e n s e s



## Lenses Selection Guide

**C107**

Plano Convex Lenses



Plano Convex Lens  
SLB-P/SLSQ-P/SLSQK-P

**C108**

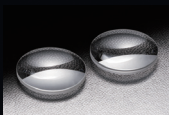
Plano Concave Lenses



Plano Concave Lenses  
SLB-N/SLSQ-N/SLSQK-N

**C118**

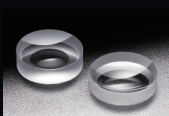
Biconvex Lenses



Biconvex Lenses  
SLB-B-P/SLSQ-B-P

**C123**

Biconcave Lenses



Biconcave Lenses  
SLB-B-N/SLSQ-B-N

**C129**

Kit

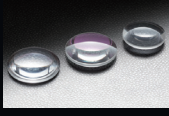


$\phi$  25.4 (BK7) Lens Kit  
SLB-25.4-SET

**C132**

Contact sheet for Special Order for spherical lens **C133**

Reasonable Lens



Reasonable Plano Convex Lens  
S-SLB-P/S-SLB-B-P

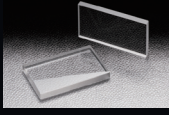
**C134**



Reasonable Plano Concave Lens  
S-SLB-N/S-SLB-B-N

**C138**

Cylindrical Lenses



Cylindrical Plano-convex Lenses  
CLB-P/CLSQ-P

**C140**



Cylindrical Plano-concave Lenses  
CLB-N/CLSQ-N

**C147**

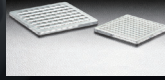
Contact sheet for Special Order for spherical lens **C150**



Rod Lenses  
RODB

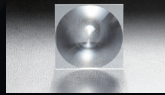
**C151**

Others



Fly-Eye Lens  
FEL

**C152**



Fresnel Lens  
FRL

**C153**



Micro Spheres  
MS

**C154**



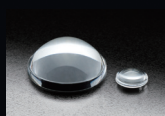
Micro Lens  
SLM

**C156**



Aspheric Plano Convex Lens  
AGL-15/AGL-20

**C158**



Aspheric Condenser Lenses  
AGL

**C159**



Aspheric Micro Lens  
AGL2

**C160**



FAC Collimated Lens  
Custom-made

**C161**



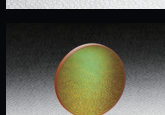
Calcium Fluoride Plano Convex Lens  
SLCFU

**C162**



Sapphire Plano Convex Lens  
SLSH

**C163**



Single Lenses for CO<sub>2</sub> Lasers  
Meniscus Lens for CO<sub>2</sub> Laser  
SLZS

**C164**



Silicon Plano Convex Lens  
SLSI

**C166**



Germanium Single Lens  
SLGE

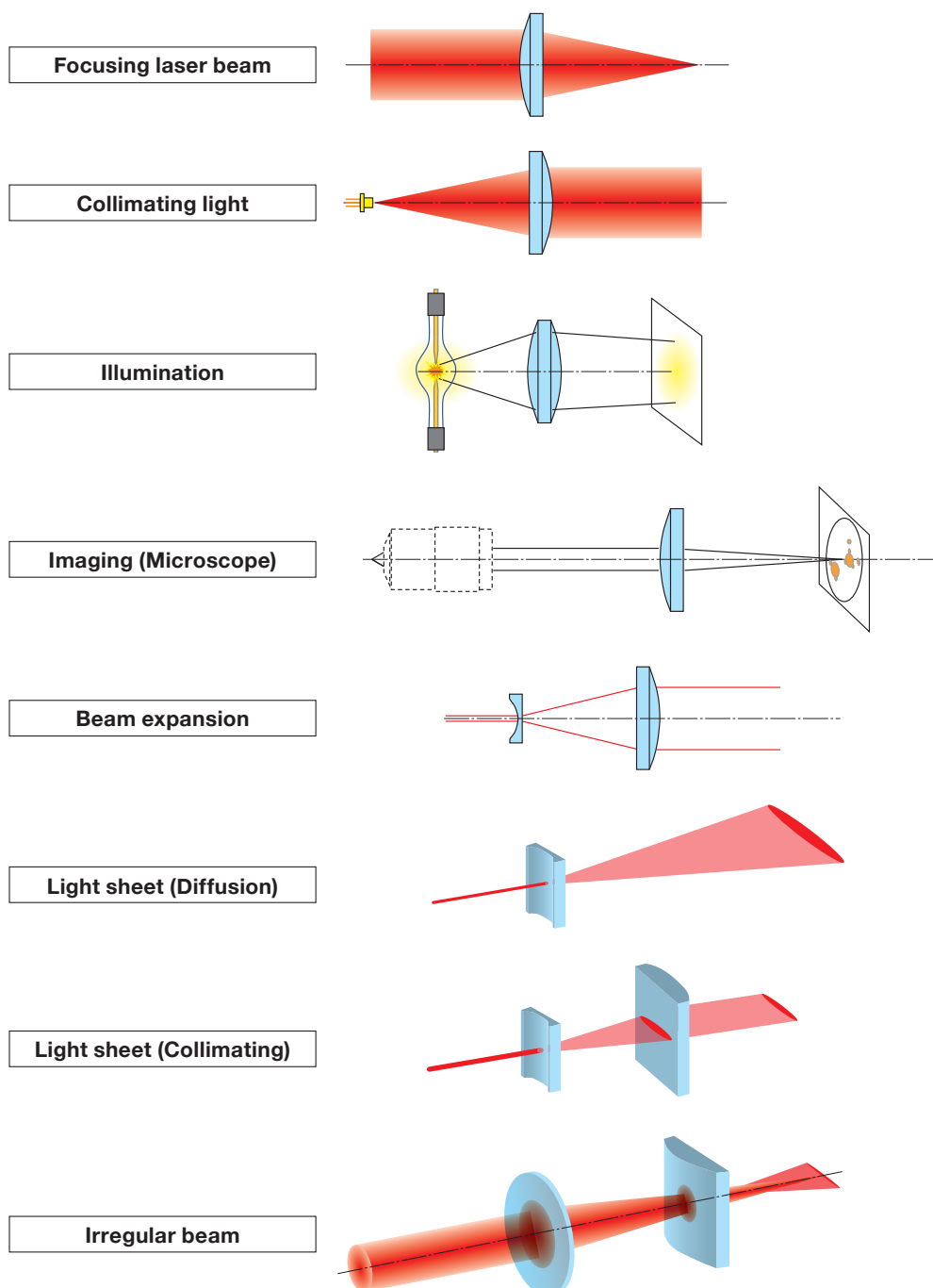
**C167**

Contact sheet for Special Order for Lenses **C168**

# Lenses Selection Guide

These Lenses listed here are a single lens polished to a spherical shape different to multi-element lens for cameras or telescopes. The performance is reduced to minimum with a wide range of applications at low cost.

Application	Type of Lens	Features	Relevance information
<b>Focus · Image formation</b>			
Focused laser beam	Plano Convex Lenses <a href="#">Reference</a> B108	Low cost. Small spot size.	High performance product → Achromatic Lenses
Collimated light		Spherical aberration is small.	High performance product → Achromatic Lenses
Illumination	Biconvex Lenses <a href="#">Reference</a> B123 Plano Convex Lenses	Compact. High numerical aperture.	High numerical aperture → Aspheric Lenses
Image formation (Microscope)	Biconvex Lenses, Plano Convex Lenses	Low cost. Observation of a narrow field of view.	High performance product → Achromatic Lenses, Camera Lenses
<b>Beam Shaping Diffusers</b>			
Beam expansion	Plano Convex Lenses + Plano Concave Lenses <a href="#">Reference</a> B118	Low cost. Low magnification.	High performance products → Beam Expanders
Light sheet	Cylindrical Lenses <a href="#">Reference</a> B140	Low cost. Diverging beam uniaxial.	
Irregular beam	Plano Convex Lenses + Cylindrical Lenses	Varying the Beam Diameter and, Aspect ratio, Beam Divergence Aspect ratio.	



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Plano Convex Lenses  
Plano Concave Lenses

Biconvex Lenses

Biconcave Lenses

Kit

Reasonable Lens

Cylindrical

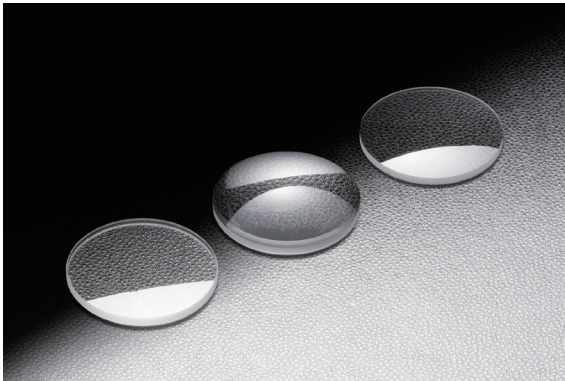
Others

# Plano Convex Lenses | SLB-P/SLSQ-P/SLSQK-P

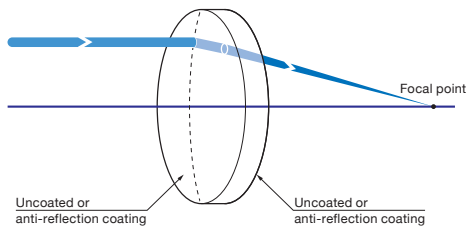
RoHS

Simple shape lenses for laser experiment with a little reduced spherical aberration. These are available for imaging experiment using a monochromatic light source or using as focusing a laser beam on the detector.

- There are three types available; BK7 for from visible range to infrared wavelength range, high-strength synthetic fused silica which has high laser damage threshold used in less than 350nm ultraviolet light, and synthetic fused silica lens for excimer laser corresponding to the excimer laser such as Kr\*F (248nm) and Ar\*F (193nm).
- BK7 lenses are also available with three types of anti-reflection coating, visible wavelength range, in the near-infrared range and in the infrared range.
- From among the wide variations of products that have been subdivided in outside diameter and focal length, possible to select according to required specifications.

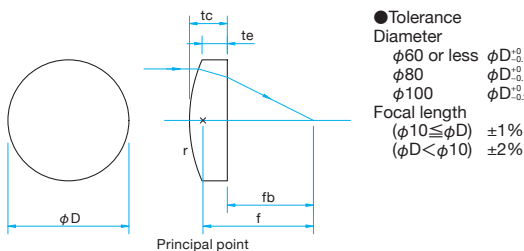


## Schematic



## Outline Drawing

(in mm)



## How to specify the anti-reflection coating

In case of specifying a anti-reflection coating 633nm – 1064nm to near infrared lens of SLB-100-500P.  
 $\Rightarrow$  SLB-100-500PIR1

Type of AR Coat	Part Number	Wavelength Range [nm]	Transmittance [%]
Visible range	SLB-100-500PM	400 – 700	> Average 99
Near-infrared	SLB-100-500PIR1	633 – 1064	> Average 98.5
Infrared	SLB-100-500PIR2	750 – 1550	> Average 98.5

! Part of the above is an example of if you want to coat anti-reflective coating on the lens of the SLB-100-500P.

! Anti-reflection coating can be available to the lens of all of SLB.

## Specifications

Material	SLB: BK7 SLSQ: Synthetic fused silica SLSQK: Synthetic fused silica for Excimer Laser
Design wavelength	546.1nm
Refractive index	BK7: $n_D=1.519$ Synthetic fused silica: $n_D=1.460$
Coating	Uncoated: the end of the part number 'P' Anti-reflection coating: the end of the part number 'PM', 'PIR1', 'PIR2'
Laser Damage Threshold	Anti-reflection coating: $4\text{J}/\text{cm}^2$ Laser pulse with 10ns, repetition frequency 20Hz
Clear aperture	90% of actual aperture: Uncoated 85% of actual aperture: with coating, $\phi 10 \leq D$ 83% of actual aperture: with coating, $D < \phi 10$
Surface Quality (Scratch-Dig)	20-10 $\phi 10 \leq D$ 40-20 $D < \phi 10$

## Guide

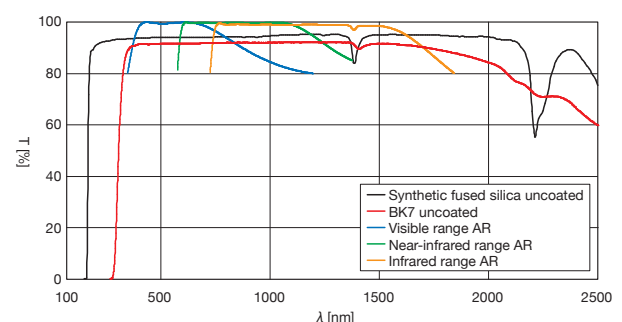
- ▶ It is available other than the products which listed in the catalog such as focal length and outer diameter size.
- ▶ Production is also available with a specific wavelength of anti-reflective coating on the lens of no coated.
- ▶ It is also available the Achromatic lenses (DLB) which are chromatic aberration correction. [Reference](#) B172

## Attention

- ▶ The plano convex lens has a chromatic aberration, and the focal length will vary depending on the wavelength. Please check the "wavelength characteristic of the focal length data" on the Web for the focal lengths of each wavelength. [WEB Reference](#) [Catalog Code](#) W3041
- ▶ There is a direction to put light on the plano convex lens. Please let the parallel light incident from the convex side always. May increase the spherical aberration in reverse, the focused spot may enlarge, image will appear out of focus.
- ▶ Losses due to reflection of the front and rear surfaces of the lens, the transmittance of no coated lens is about 90%.

## Typical Transmittance Data

T: Transmission





**BK7  $\phi 5 - \phi 12.7$**

Part Number	How to specify the anti-reflection coating			Diameter $\phi D$ [mm]	Focal length $f$ [mm]	Thickness of the edge $t_e$ [mm]	Thickness of the center $t_c$ [mm]	Back focal length $f_b$ [mm]	Radius of curvature $r$ [mm]	Centration [']
	Uncoated	Visible 400 - 700nm	Near-infrared 633 - 1064nm							
SLB-05-08P	M	IR1	IR2	$\phi 5$	8	1.4	2.3	6.5	4.15	<3
SLB-05-10P	M	IR1	IR2	$\phi 5$	10	1.3	2.0	8.7	5.19	<3
SLB-05-12P	M	IR1	IR2	$\phi 5$	12	1.2	1.8	10.8	6.23	<3
SLB-05-15P	M	IR1	IR2	$\phi 5$	15	1.2	1.6	13.9	7.79	<3
SLB-05-20P	M	IR1	IR2	$\phi 5$	20	1.1	1.4	19.1	10.38	<3
SLB-05-25P	M	IR1	IR2	$\phi 5$	25	1.1	1.4	24.1	12.98	<3
SLB-05-30P	M	IR1	IR2	$\phi 5$	30	1.1	1.3	29.1	15.57	<3
SLB-06-08P	M	IR1	IR2	$\phi 6$	8	1.0	2.3	6.5	4.15	<3
SLB-06-09P	M	IR1	IR2	$\phi 6$	9	1.0	2.1	7.6	4.67	<3
SLB-06-10P	M	IR1	IR2	$\phi 6$	10	1.0	2.0	8.7	5.19	<3
SLB-06-12P	M	IR1	IR2	$\phi 6$	12	1.0	1.8	10.8	6.23	<3
SLB-06-15P	M	IR1	IR2	$\phi 6$	15	1.0	1.6	13.9	7.79	<3
SLB-06-20P	M	IR1	IR2	$\phi 6$	20	1.0	1.4	19.1	10.38	<3
SLB-06-25P	M	IR1	IR2	$\phi 6$	25	1.0	1.4	24.1	12.98	<3
SLB-06-30P	M	IR1	IR2	$\phi 6$	30	1.0	1.3	29.1	15.57	<3
SLB-07-10P	M	IR1	IR2	$\phi 7$	10	2.0	3.4	7.8	5.19	<3
SLB-07-12P	M	IR1	IR2	$\phi 7$	12	1.9	3.0	10.1	6.23	<3
SLB-07-15P	M	IR1	IR2	$\phi 7$	15	1.8	2.6	13.3	7.79	<3
SLB-07-20P	M	IR1	IR2	$\phi 7$	20	1.7	2.3	18.5	10.38	<3
SLB-07-25P	M	IR1	IR2	$\phi 7$	25	1.7	2.1	23.6	12.98	<3
SLB-07-30P	M	IR1	IR2	$\phi 7$	30	1.6	2.0	28.7	15.57	<3
SLB-07-40P	M	IR1	IR2	$\phi 7$	40	1.6	1.9	38.8	20.76	<3
SLB-07-50P	M	IR1	IR2	$\phi 7$	50	1.6	1.8	48.8	25.95	<3
SLB-08-10P	M	IR1	IR2	$\phi 8$	10	1.5	3.4	7.8	5.19	<3
SLB-08-12P	M	IR1	IR2	$\phi 8$	12	1.5	3.0	10.1	6.23	<3
SLB-08-15P	M	IR1	IR2	$\phi 8$	15	1.5	2.6	13.3	7.79	<3
SLB-08-20P	M	IR1	IR2	$\phi 8$	20	1.5	2.3	18.5	10.38	<3
SLB-08-25P	M	IR1	IR2	$\phi 8$	25	1.5	2.1	23.6	12.98	<3
SLB-08-30P	M	IR1	IR2	$\phi 8$	30	1.5	2.0	28.7	15.57	<3
SLB-08-40P	M	IR1	IR2	$\phi 8$	40	1.5	1.9	38.8	20.76	<3
SLB-08-50P	M	IR1	IR2	$\phi 8$	50	1.5	1.8	48.8	25.95	<3
SLB-10-15P	M	IR1	IR2	$\phi 10$	15	2.0	3.8	12.5	7.79	<1
SLB-10-20P	M	IR1	IR2	$\phi 10$	20	2.0	3.3	17.8	10.38	<1
SLB-10-25P	M	IR1	IR2	$\phi 10$	25	2.0	3.0	23.0	12.98	<1
SLB-10-30P	M	IR1	IR2	$\phi 10$	30	2.0	2.8	28.1	15.57	<1
SLB-10-40P	M	IR1	IR2	$\phi 10$	40	2.0	2.6	38.3	20.76	<1
SLB-10-50P	M	IR1	IR2	$\phi 10$	50	2.0	2.5	48.4	25.95	<1
SLB-10-60P	M	IR1	IR2	$\phi 10$	60	2.0	2.4	58.4	31.14	<1
SLB-10-70P	M	IR1	IR2	$\phi 10$	70	2.0	2.3	68.5	36.33	<1
SLB-10-80P	M	IR1	IR2	$\phi 10$	80	2.0	2.3	78.5	41.52	<1
SLB-10-100P	M	IR1	IR2	$\phi 10$	100	2.0	2.2	98.5	51.90	<1
SLB-12.7-20P	M	IR1	IR2	$\phi 12.7$	20	2.0	4.2	17.2	10.38	<1
SLB-12.7-25P	M	IR1	IR2	$\phi 12.7$	25	2.0	3.7	22.6	12.98	<1
SLB-12.7-30P	M	IR1	IR2	$\phi 12.7$	30	2.0	3.4	27.8	15.57	<1
SLB-12.7-40P	M	IR1	IR2	$\phi 12.7$	40	2.0	3.0	38.0	20.76	<1
SLB-12.7-50P	M	IR1	IR2	$\phi 12.7$	50	2.0	2.8	48.4	25.95	<1
SLB-12.7-60P	M	IR1	IR2	$\phi 12.7$	60	2.0	2.7	58.4	31.14	<1
SLB-12.7-70P	M	IR1	IR2	$\phi 12.7$	70	2.0	2.6	68.5	36.33	<1
SLB-12.7-80P	M	IR1	IR2	$\phi 12.7$	80	2.0	2.5	78.5	41.52	<1
SLB-12.7-100P	M	IR1	IR2	$\phi 12.7$	100	2.0	2.4	98.6	51.90	<1

**Compatible Optic Mounts**

LHF-10S / MLH-10, -15

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BK7  $\phi 15 - \phi 25.4$ 

Application Systems	Uncoated			How to specify the anti-reflection coating			Diameter $\phi D$ [mm]	Focal length $f$ [mm]	Thickness of the edge $t_e$ [mm]	Thickness of the center $t_c$ [mm]	Back focal length $f_b$ [mm]	Radius of curvature $r$ [mm]	Centration [']
	Part Number	Visible 400 - 700nm	Near-infrared 633 - 1064nm	Infrared 750 - 1550nm									
Optics & Optical Coatings	SLB-15-20P	M	IR1	IR2	$\phi 15$	20	2.0	5.2	16.6	10.38	<1		
	SLB-15-25P	M	IR1	IR2	$\phi 15$	25	2.0	4.4	22.1	12.98	<1		
	SLB-15-30P	M	IR1	IR2	$\phi 15$	30	2.0	3.9	27.4	15.57	<1		
	SLB-15-40P	M	IR1	IR2	$\phi 15$	40	2.0	3.4	37.8	20.76	<1		
	SLB-15-50P	M	IR1	IR2	$\phi 15$	50	2.0	3.1	48.0	25.95	<1		
	SLB-15-60P	M	IR1	IR2	$\phi 15$	60	2.0	2.9	58.1	31.14	<1		
	SLB-15-70P	M	IR1	IR2	$\phi 15$	70	2.0	2.8	68.2	36.33	<1		
	SLB-15-80P	M	IR1	IR2	$\phi 15$	80	2.0	2.7	78.2	41.52	<1		
	SLB-15-90P	M	IR1	IR2	$\phi 15$	90	2.0	2.6	88.3	46.71	<1		
	SLB-15-100P	M	IR1	IR2	$\phi 15$	100	2.0	2.5	98.3	51.90	<1		
Holders	SLB-15-120P	M	IR1	IR2	$\phi 15$	120	2.0	2.5	118.4	62.28	<1		
	SLB-15-150P	M	IR1	IR2	$\phi 15$	150	2.0	2.4	148.4	77.85	<1		
	SLB-20-25P	M	IR1	IR2	$\phi 20$	25	2.0	6.7	20.6	12.98	<1		
	SLB-20-30P	M	IR1	IR2	$\phi 20$	30	2.0	5.6	26.3	15.57	<1		
	SLB-20-40P	M	IR1	IR2	$\phi 20$	40	2.0	4.6	37.0	20.76	<1		
	SLB-20-50P	M	IR1	IR2	$\phi 20$	50	2.0	4.0	47.4	25.95	<1		
	SLB-20-60P	M	IR1	IR2	$\phi 20$	60	2.0	3.6	57.6	31.14	<1		
	SLB-20-70P	M	IR1	IR2	$\phi 20$	70	2.0	3.4	67.8	36.33	<1		
	SLB-20-80P	M	IR1	IR2	$\phi 20$	80	2.0	3.2	77.9	41.52	<1		
	SLB-20-90P	M	IR1	IR2	$\phi 20$	90	2.0	3.1	88.0	46.71	<1		
Bases	SLB-20-100P	M	IR1	IR2	$\phi 20$	100	2.0	3.0	98.0	51.90	<1		
	SLB-20-120P	M	IR1	IR2	$\phi 20$	120	2.0	2.8	118.2	62.28	<1		
	SLB-20-150P	M	IR1	IR2	$\phi 20$	150	2.0	2.6	148.3	77.85	<1		
	SLB-20-170P	M	IR1	IR2	$\phi 20$	170	2.0	2.6	168.2	88.23	<1		
	SLB-20-200P	M	IR1	IR2	$\phi 20$	200	2.0	2.5	198.4	103.8	<1		
	SLB-25-30P	M	IR1	IR2	$\phi 25$	30	2.0	8.3	24.5	15.57	<1		
	SLB-25-35P	M	IR1	IR2	$\phi 25$	35	2.0	7.0	30.4	18.17	<1		
	SLB-25-40P	M	IR1	IR2	$\phi 25$	40	2.0	6.2	36.0	20.76	<1		
	SLB-25-50P	M	IR1	IR2	$\phi 25$	50	2.0	5.2	46.6	25.95	<1		
	SLB-25-60P	M	IR1	IR2	$\phi 25$	60	2.0	4.6	57.0	31.14	<1		
Manual Stages	SLB-25-70P	M	IR1	IR2	$\phi 25$	70	2.0	4.2	67.2	36.33	<1		
	SLB-25-80P	M	IR1	IR2	$\phi 25$	80	2.0	3.9	77.4	41.52	<1		
	SLB-25-90P	M	IR1	IR2	$\phi 25$	90	2.0	3.7	87.6	46.71	<1		
	SLB-25-100P	M	IR1	IR2	$\phi 25$	100	2.0	3.5	97.7	51.9	<1		
	SLB-25-120P	M	IR1	IR2	$\phi 25$	120	2.0	3.3	117.8	62.28	<1		
	SLB-25-150P	M	IR1	IR2	$\phi 25$	150	2.0	3.0	148.0	77.85	<1		
	SLB-25-170P	M	IR1	IR2	$\phi 25$	170	2.0	2.9	168.1	88.23	<1		
	SLB-25-200P	M	IR1	IR2	$\phi 25$	200	2.0	2.8	198.2	103.8	<1		
	SLB-25-220P	M	IR1	IR2	$\phi 25$	220	2.0	2.7	218.2	114.18	<1		
	SLB-25-250P	M	IR1	IR2	$\phi 25$	250	2.0	2.6	248.3	129.75	<1		
Actuators	SLB-25.4-30P	M	IR1	IR2	$\phi 25.4$	30	1.7	8.3	24.5	15.57	<1		
	SLB-25.4-35P	M	IR1	IR2	$\phi 25.4$	35	1.8	7.0	30.4	18.17	<1		
	SLB-25.4-40P	M	IR1	IR2	$\phi 25.4$	40	1.9	6.2	36.0	20.76	<1		
	SLB-25.4-50P	M	IR1	IR2	$\phi 25.4$	50	1.9	5.2	46.6	25.95	<1		
	SLB-25.4-60P	M	IR1	IR2	$\phi 25.4$	60	1.9	4.6	57.0	31.14	<1		
	SLB-25.4-70P	M	IR1	IR2	$\phi 25.4$	70	1.9	4.2	67.2	36.33	<1		
	SLB-25.4-80P	M	IR1	IR2	$\phi 25.4$	80	1.9	3.9	77.4	41.52	<1		
	SLB-25.4-90P	M	IR1	IR2	$\phi 25.4$	90	1.9	3.7	87.6	46.71	<1		
	SLB-25.4-100P	M	IR1	IR2	$\phi 25.4$	100	1.9	3.5	97.7	51.90	<1		
	SLB-25.4-120P	M	IR1	IR2	$\phi 25.4$	120	2.0	3.3	117.8	62.28	<1		
Motoeized Stages	SLB-25.4-150P	M	IR1	IR2	$\phi 25.4$	150	2.0	3.0	148.0	77.85	<1		
	SLB-25.4-170P	M	IR1	IR2	$\phi 25.4$	170	2.0	2.9	168.1	88.23	<1		
	SLB-25.4-200P	M	IR1	IR2	$\phi 25.4$	200	2.0	2.8	198.2	103.80	<1		
	SLB-25.4-250P	M	IR1	IR2	$\phi 25.4$	250	2.0	2.6	248.3	129.75	<1		
	SLB-25.4-300P	M	IR1	IR2	$\phi 25.4$	300	2.0	2.5	298.4	155.70	<3		
	SLB-25.4-500P	M	IR1	IR2	$\phi 25.4$	500	2.0	2.3	498.4	259.50	<3		
	SLB-25.4-700P	M	IR1	IR2	$\phi 25.4$	700	2.0	2.2	698.5	363.30	<3		
	SLB-25.4-1000P	M	IR1	IR2	$\phi 25.4$	1000	2.0	2.2	998.5	519.00	<3		

## Compatible Optic Mounts

LHF-15S, -20S, -25.4S



BK7 $\phi 30 - \phi 40$										
Uncoated	How to specify the anti-reflection coating			Diameter $\phi D$ [mm]	Focal length $f$ [mm]	Thickness of the edge $t_e$ [mm]	Thickness of the center $t_c$ [mm]	Back focal length $f_b$ [mm]	Radius of curvature $r$ [mm]	Centration [']
Part Number	Visible 400 - 700nm	Near-infrared 633 - 1064nm	Infrared 750 - 1550nm							
SLB-30-35P	M	IR1	IR2	$\phi 30$	35	2.0	9.9	28.5	18.17	<1
SLB-30-40P	M	IR1	IR2	$\phi 30$	40	2.0	8.4	34.5	20.76	<1
SLB-30-50P	M	IR1	IR2	$\phi 30$	50	2.0	6.8	45.5	25.95	<1
SLB-30-60P	M	IR1	IR2	$\phi 30$	60	2.0	5.9	56.1	31.14	<1
SLB-30-70P	M	IR1	IR2	$\phi 30$	70	2.0	5.2	66.5	36.33	<1
SLB-30-80P	M	IR1	IR2	$\phi 30$	80	2.0	4.8	76.8	41.52	<1
SLB-30-90P	M	IR1	IR2	$\phi 30$	90	2.0	4.5	87.1	46.71	<1
SLB-30-100P	M	IR1	IR2	$\phi 30$	100	2.0	4.2	97.2	51.90	<1
SLB-30-120P	M	IR1	IR2	$\phi 30$	120	2.0	3.8	117.5	62.28	<1
SLB-30-150P	M	IR1	IR2	$\phi 30$	150	2.0	3.5	147.7	77.85	<1
SLB-30-170P	M	IR1	IR2	$\phi 30$	170	2.0	3.3	167.8	88.23	<1
SLB-30-200P	M	IR1	IR2	$\phi 30$	200	2.0	3.1	198.0	103.80	<1
SLB-30-220P	M	IR1	IR2	$\phi 30$	220	2.0	3.0	218.0	114.18	<1
SLB-30-250P	M	IR1	IR2	$\phi 30$	250	2.0	2.9	248.1	129.75	<1
SLB-30-300P	M	IR1	IR2	$\phi 30$	300	2.0	2.7	298.2	155.70	<1
SLB-30-350P	M	IR1	IR2	$\phi 30$	350	2.0	2.6	348.3	181.65	<3
SLB-30-400P	M	IR1	IR2	$\phi 30$	400	2.0	2.5	398.2	207.60	<3
SLB-30-450P	M	IR1	IR2	$\phi 30$	450	2.0	2.5	448.4	233.55	<3
SLB-30-500P	M	IR1	IR2	$\phi 30$	500	2.0	2.4	498.4	259.50	<3
SLB-30-600P	M	IR1	IR2	$\phi 30$	600	2.0	2.4	598.4	311.40	<3
SLB-30-700P	M	IR1	IR2	$\phi 30$	700	2.0	2.3	698.5	363.30	<3
SLB-30-800P	M	IR1	IR2	$\phi 30$	800	2.0	2.3	798.5	415.20	<3
SLB-30-900P	M	IR1	IR2	$\phi 30$	900	2.0	2.2	898.5	467.10	<3
SLB-30-1000P	M	IR1	IR2	$\phi 30$	1000	2.0	2.2	998.5	519.00	<3
SLB-30-1200P	M	IR1	IR2	$\phi 30$	1200	2.0	2.2	1198.6	622.80	<3
SLB-30-1500P	M	IR1	IR2	$\phi 30$	1500	2.0	2.1	1498.6	778.50	<3
SLB-30-2000P	M	IR1	IR2	$\phi 30$	2000	2.0	2.1	1998.6	1038.00	<3
SLB-30-2500P	M	IR1	IR2	$\phi 30$	2500	2.0	2.1	2498.6	1297.50	<3
SLB-30-3000P	M	IR1	IR2	$\phi 30$	3000	2.0	2.1	2998.6	1557	<3
SLB-30-4000P	M	IR1	IR2	$\phi 30$	4000	2.0	2.1	3998.6	2076	<3
SLB-30-5000P	M	IR1	IR2	$\phi 30$	5000	2.0	2.1	4998.6	2595	<3
SLB-40-50P	M	IR1	IR2	$\phi 40$	50	2.0	11.4	42.5	25.95	<1
SLB-40-60P	M	IR1	IR2	$\phi 40$	60	2.0	9.3	53.9	31.14	<1
SLB-40-70P	M	IR1	IR2	$\phi 40$	70	2.0	8.0	64.7	36.33	<1
SLB-40-80P	M	IR1	IR2	$\phi 40$	80	2.0	7.1	75.3	41.52	<1
SLB-40-90P	M	IR1	IR2	$\phi 40$	90	2.0	6.5	85.7	46.71	<1
SLB-40-100P	M	IR1	IR2	$\phi 40$	100	2.0	6.0	96.0	51.90	<1
SLB-40-120P	M	IR1	IR2	$\phi 40$	120	2.0	5.3	116.5	62.28	<1
SLB-40-150P	M	IR1	IR2	$\phi 40$	150	2.0	4.6	147.0	77.85	<1
SLB-40-170P	M	IR1	IR2	$\phi 40$	170	2.0	4.3	167.2	88.23	<1
SLB-40-200P	M	IR1	IR2	$\phi 40$	200	2.0	3.9	197.4	103.80	<1
SLB-40-250P	M	IR1	IR2	$\phi 40$	250	2.0	3.6	247.7	129.75	<1
SLB-40-300P	M	IR1	IR2	$\phi 40$	300	2.0	3.3	297.7	155.70	<1
SLB-40-350P	M	IR1	IR2	$\phi 40$	350	2.0	3.1	348.0	181.65	<1
SLB-40-400P	M	IR1	IR2	$\phi 40$	400	2.0	3.0	398.0	207.60	<1
SLB-40-450P	M	IR1	IR2	$\phi 40$	450	2.0	2.9	448.1	233.55	<3
SLB-40-500P	M	IR1	IR2	$\phi 40$	500	2.0	2.8	498.2	259.50	<3
SLB-40-1000P	M	IR1	IR2	$\phi 40$	1000	2.0	2.4	998.4	519.00	<3

**Compatible Optic Mounts**

LHF-30S, -40S

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# Plano Convex Lenses

SLB-P/SLSQ-P/SLSQK-P

Catalog Code W3044

BK7 $\phi 50 - \phi 60$											
Application Systems	Uncoated	How to specify the anti-reflection coating			Diameter $\phi D$ [mm]	Focal length $f$ [mm]	Thickness of the edge $t_e$ [mm]	Thickness of the center $t_c$ [mm]	Back focal length $f_b$ [mm]	Radius of curvature $r$ [mm]	Centration [ ' ]
	Part Number	Visible 400 - 700nm	Near-infrared 633 - 1064nm	Infrared 750 - 1550nm							
Optics & Optical Coatings	SLB-50-70P	M	IR1	IR2	$\phi 50$	70	3.0	13.0	61.5	36.33	<1
	SLB-50-80P	M	IR1	IR2	$\phi 50$	80	3.0	11.4	72.5	41.52	<1
	SLB-50-90P	M	IR1	IR2	$\phi 50$	90	3.0	10.3	83.2	46.71	<1
Holders	SLB-50-100P	M	IR1	IR2	$\phi 50$	100	3.0	9.4	93.8	51.90	<1
	SLB-50-120P	M	IR1	IR2	$\phi 50$	120	3.0	8.2	114.6	62.28	<1
	SLB-50-150P	M	IR1	IR2	$\phi 50$	150	3.0	7.1	145.3	77.85	<1
Bases	SLB-50-170P	M	IR1	IR2	$\phi 50$	170	3.0	6.6	165.6	88.23	<1
	SLB-50-200P	M	IR1	IR2	$\phi 50$	200	3.0	6.1	196.0	103.80	<1
Manual Stages	SLB-50-220P	M	IR1	IR2	$\phi 50$	220	3.0	5.8	216.2	114.18	<1
	SLB-50-250P	M	IR1	IR2	$\phi 50$	250	3.0	5.4	246.4	129.75	<1
Actuators	SLB-50-300P	M	IR1	IR2	$\phi 50$	300	3.0	5.0	296.7	155.70	<1
	SLB-50-350P	M	IR1	IR2	$\phi 50$	350	3.0	4.7	346.9	181.65	<1
Motorized Stages	SLB-50-400P	M	IR1	IR2	$\phi 50$	400	3.0	4.5	397.0	207.60	<1
	SLB-50-450P	M	IR1	IR2	$\phi 50$	450	3.0	4.3	447.1	233.55	<1
	SLB-50-500P	M	IR1	IR2	$\phi 50$	500	3.0	4.2	497.2	259.50	<1
Light Sources	SLB-50-600P	M	IR1	IR2	$\phi 50$	600	3.0	4.0	597.4	311.40	<3
	SLB-50-700P	M	IR1	IR2	$\phi 50$	700	3.0	3.9	697.5	363.30	<3
	SLB-50-800P	M	IR1	IR2	$\phi 50$	800	3.0	3.8	797.4	415.20	<3
Index	SLB-50-900P	M	IR1	IR2	$\phi 50$	900	3.0	3.7	897.6	467.10	<3
	SLB-50-1000P	M	IR1	IR2	$\phi 50$	1000	3.0	3.6	997.6	519.00	<3
	SLB-50-1200P	M	IR1	IR2	$\phi 50$	1200	3.0	3.5	1197.7	622.80	<3
Guide	SLB-50-1500P	M	IR1	IR2	$\phi 50$	1500	3.0	3.4	1497.8	778.50	<3
	SLB-50-2000P	M	IR1	IR2	$\phi 50$	2000	3.0	3.3	1997.8	1038.00	<3
	SLB-50-2500P	M	IR1	IR2	$\phi 50$	2500	3.0	3.2	2497.9	1297.5	<3
Mirrors	SLB-50-3000P	M	IR1	IR2	$\phi 50$	3000	3.0	3.2	2997.9	1557.00	<3
	SLB-50-4000P	M	IR1	IR2	$\phi 50$	4000	3.0	3.2	3997.9	2076.00	<3
Beamsplitters	SLB-50-5000P	M	IR1	IR2	$\phi 50$	5000	3.0	3.1	4997.9	2595.00	<3
	SLB-50-8-70P	M	IR1	IR2	$\phi 50.8$	70	3.0	13.4	61.2	36.33	<1
Lenses	SLB-50-8-80P	M	IR1	IR2	$\phi 50.8$	80	3.0	11.7	72.3	41.52	<1
	SLB-50-8-90P	M	IR1	IR2	$\phi 50.8$	90	3.0	10.3	83.2	46.71	<1
	SLB-50-8-100P	M	IR1	IR2	$\phi 50.8$	100	3.0	9.6	93.7	51.90	<1
Multi-Element Optics	SLB-50-8-120P	M	IR1	IR2	$\phi 50.8$	120	2.8	8.2	114.6	62.28	<1
	SLB-50-8-150P	M	IR1	IR2	$\phi 50.8$	150	2.8	7.1	145.3	77.85	<1
Filters	SLB-50-8-170P	M	IR1	IR2	$\phi 50.8$	170	3.0	6.6	165.7	88.23	<1
	SLB-50-8-200P	M	IR1	IR2	$\phi 50.8$	200	2.9	6.1	196.0	103.8	<1
Prisms	SLB-50-8-250P	M	IR1	IR2	$\phi 50.8$	250	2.9	5.4	246.4	129.75	<1
	SLB-50-8-300P	M	IR1	IR2	$\phi 50.8$	300	2.9	5.0	296.7	155.70	<1
Substrates/Windows	SLB-50-8-400P	M	IR1	IR2	$\phi 50.8$	400	3.0	4.5	397.0	207.60	<1
	SLB-50-8-500P	M	IR1	IR2	$\phi 50.8$	500	3.0	4.2	497.2	259.50	<1
Optical Data	SLB-50-8-700P	M	IR1	IR2	$\phi 50.8$	700	3.0	3.9	697.4	363.30	<3
	SLB-50-8-1000P	M	IR1	IR2	$\phi 50.8$	1000	3.0	3.6	997.6	519.00	<3
Maintenance	SLB-60-70P	M	IR1	IR2	$\phi 60$	70	3.0	18.8	57.6	36.33	<1
	SLB-60-80P	M	IR1	IR2	$\phi 60$	80	3.0	15.8	69.6	41.52	<1
Selection Guide	SLB-60-90P	M	IR1	IR2	$\phi 60$	90	3.0	13.9	80.8	46.71	<1
	SLB-60-100P	M	IR1	IR2	$\phi 60$	100	3.0	12.5	91.7	51.90	<1
Plano Convex Lenses	SLB-60-120P	M	IR1	IR2	$\phi 60$	120	3.0	10.7	113.0	62.28	<1
	SLB-60-150P	M	IR1	IR2	$\phi 60$	150	3.0	9.0	144.1	77.85	<1
Plano Concave Lenses	SLB-60-170P	M	IR1	IR2	$\phi 60$	170	3.0	8.3	164.6	88.23	<1
	SLB-60-200P	M	IR1	IR2	$\phi 60$	200	3.0	7.4	195.1	103.80	<1
Biconvex Lenses	SLB-60-250P	M	IR1	IR2	$\phi 60$	250	3	6.5	245.7	129.75	<1
	SLB-60-300P	M	IR1	IR2	$\phi 60$	300	3.0	5.9	296.1	155.70	<1
Biconcave Lenses	SLB-60-400P	M	IR1	IR2	$\phi 60$	400	3.0	5.2	396.6	207.60	<1
	SLB-60-500P	M	IR1	IR2	$\phi 60$	500	3.0	4.7	496.9	259.50	<1
Kit	SLB-60-600P	M	IR1	IR2	$\phi 60$	600	3.0	4.4	597.1	311.40	<1
	SLB-60-1000P	M	IR1	IR2	$\phi 60$	1000	3.0	3.9	997.5	519.00	<3
Reasonable Lens											
Cylindrical											
Others											

Compatible Optic Mounts

LHF-50S, -50.8S, -60S





BK7 $\phi 80 - \phi 100$										
Uncoated	How to specify the anti-reflection coating			Diameter $\phi D$ [mm]	Focal length $f$ [mm]	Thickness of the edge $t_e$ [mm]	Thickness of the center $t_c$ [mm]	Back focal length $f_b$ [mm]	Radius of curvature $r$ [mm]	Centration [']
Part Number	Visible 400 - 700nm	Near-infrared 633 - 1064nm	Infrared 750 - 1550nm							
SLB-80-100P	M	IR1	IR2	$\phi 80$	100	3.0	21.8	85.6	51.90	<1
SLB-80-150P	M	IR1	IR2	$\phi 80$	150	3.0	14.1	140.8	77.85	<1
SLB-80-200P	M	IR1	IR2	$\phi 80$	200	3.0	11.0	192.7	103.80	<1
SLB-80-250P	M	IR1	IR2	$\phi 80$	250	3.0	9.3	243.9	129.75	<1
SLB-80-300P	M	IR1	IR2	$\phi 80$	300	3.0	8.2	294.6	155.70	<1
SLB-80-350P	M	IR1	IR2	$\phi 80$	350	3.0	7.5	345.1	181.65	<1
SLB-80-400P	M	IR1	IR2	$\phi 80$	400	3.0	6.9	395.5	207.60	<1
SLB-80-500P	M	IR1	IR2	$\phi 80$	500	3.0	6.1	496.0	259.50	<1
SLB-80-700P	M	IR1	IR2	$\phi 80$	700	3.0	5.2	696.6	363.30	<1
SLB-80-800P	M	IR1	IR2	$\phi 80$	800	3.0	4.9	796.8	415.20	<1
SLB-80-1000P	M	IR1	IR2	$\phi 80$	1000	3.0	4.5	997.0	519.00	<3
SLB-100-150P	M	IR1	IR2	$\phi 100$	150	3.0	21.2	136.1	77.85	<1
SLB-100-200P	M	IR1	IR2	$\phi 100$	200	3.0	15.8	189.6	103.80	<1
SLB-100-250P	M	IR1	IR2	$\phi 100$	250	3.0	13.0	241.4	129.75	<1
SLB-100-300P	M	IR1	IR2	$\phi 100$	300	3.0	11.2	292.6	155.70	<1
SLB-100-350P	M	IR1	IR2	$\phi 100$	350	3.0	10.0	343.4	181.65	<1
SLB-100-400P	M	IR1	IR2	$\phi 100$	400	3.0	9.1	394.4	207.60	<1
SLB-100-500P	M	IR1	IR2	$\phi 100$	500	3.0	7.9	494.8	259.50	<1
SLB-100-600P	M	IR1	IR2	$\phi 100$	600	3.0	7.0	595.4	311.40	<1
SLB-100-700P	M	IR1	IR2	$\phi 100$	700	3.0	6.5	695.7	363.30	<1
SLB-100-800P	M	IR1	IR2	$\phi 100$	800	3.0	6.0	796.0	415.20	<1
SLB-100-1000P	M	IR1	IR2	$\phi 100$	1000	3.0	5.4	996.4	519.00	<1

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Compatible Optic Mounts

LHF-80, -100

Synthetic fused silica  $\phi 5 - \phi 20$ 

Application Systems	Part Number	Diameter $\phi D$ [mm]	Focal length $f$ [mm]	Thickness of the edge $t_e$ [mm]	Thickness of the center $t_c$ [mm]	Back focal length $f_b$ [mm]	Radius of curvature $r$ [mm]	Centration [']
Optics & Optical Coatings	SLSQ-05-08P	$\phi 5$	8	1.6	2.5	6.3	3.68	<3
	SLSQ-05-09P	$\phi 5$	9	1.4	2.3	7.6	4.14	<3
	SLSQ-05-10P	$\phi 5$	10	1.4	2.1	8.6	4.60	<3
HOLDERS	SLSQ-05-12P	$\phi 5$	12	1.3	1.9	10.7	5.52	<3
	SLSQ-05-15P	$\phi 5$	15	1.2	1.7	13.8	6.90	<3
	SLSQ-05-20P	$\phi 5$	20	1.2	1.5	19.0	9.20	<3
	SLSQ-05-30P	$\phi 5$	30	1.1	1.3	29.1	13.80	<3
BASES	SLSQ-06-08P	$\phi 6$	8	1.0	2.5	6.3	3.68	<3
	SLSQ-06-10P	$\phi 6$	10	1.0	2.1	8.6	4.60	<3
	SLSQ-06-12P	$\phi 6$	12	1.0	1.9	10.7	5.52	<3
MANUAL STAGES	SLSQ-06-15P	$\phi 6$	15	1.0	1.7	13.8	6.90	<3
	SLSQ-06-20P	$\phi 6$	20	1.0	1.5	19.0	9.20	<3
	SLSQ-06-25P	$\phi 6$	25	1.0	1.4	24.0	11.50	<3
	SLSQ-06-30P	$\phi 6$	30	1.0	1.3	29.1	13.80	<3
ACTUATORS	SLSQ-07-10P	$\phi 7$	10	2.2	3.8	7.4	4.60	<3
	SLSQ-07-12P	$\phi 7$	12	2.0	3.2	9.8	5.52	<3
MOTOEIZED STAGES	SLSQ-07-15P	$\phi 7$	15	1.8	2.8	13.1	6.90	<3
	SLSQ-07-20P	$\phi 7$	20	1.7	2.4	18.3	9.20	<3
	SLSQ-07-30P	$\phi 7$	30	1.6	2.1	28.6	13.80	<3
LIGHT SOURCES	SLSQ-07-40P	$\phi 7$	40	1.6	1.9	38.7	18.40	<3
	SLSQ-07-50P	$\phi 7$	50	1.6	1.9	48.7	23.00	<3
INDEX	SLSQ-08-10P	$\phi 8$	10	1.5	3.8	7.4	4.60	<3
	SLSQ-08-12P	$\phi 8$	12	1.5	3.2	9.8	5.52	<3
	SLSQ-08-15P	$\phi 8$	15	1.5	2.8	13.1	6.90	<3
	SLSQ-08-20P	$\phi 8$	20	1.5	2.4	18.3	9.20	<3
	SLSQ-08-25P	$\phi 8$	25	1.5	2.2	23.5	11.50	<3
	SLSQ-08-30P	$\phi 8$	30	1.5	2.1	28.6	13.80	<3
GUIDE	SLSQ-10-15P	$\phi 10$	15	2.0	4.1	12.2	6.90	<1
MIRRORS	SLSQ-10-20P	$\phi 10$	20	2.0	3.5	17.6	9.20	<1
	SLSQ-10-25P	$\phi 10$	25	2.0	3.1	22.8	11.50	<1
BEAMSPLITTERS	SLSQ-10-30P	$\phi 10$	30	2.0	2.9	28.0	13.80	<1
	SLSQ-10-40P	$\phi 10$	40	2.0	2.7	38.2	18.40	<1
POLARIZERS	SLSQ-10-50P	$\phi 10$	50	2.0	2.6	48.3	23.00	<1
LENSES	SLSQ-10-60P	$\phi 10$	60	2.0	2.5	58.3	27.60	<1
	SLSQ-10-70P	$\phi 10$	70	2.0	2.4	68.4	32.20	<1
MULTI-ELEMENT OPTICS	SLSQ-10-80P	$\phi 10$	80	2.0	2.3	78.4	36.80	<1
	SLSQ-10-100P	$\phi 10$	100	2.0	2.3	98.4	46.00	<1
FILTERS	SLSQ-12.7-15P	$\phi 12.7$	15	2.0	6.2	10.8	6.90	<1
	SLSQ-12.7-20P	$\phi 12.7$	20	2.0	4.5	16.9	9.20	<1
PRISMS	SLSQ-12.7-25P	$\phi 12.7$	25	2.0	3.9	22.3	11.50	<1
SUBSTRATES/WINDOWS	SLSQ-12.7-40P	$\phi 12.7$	40	2.0	3.1	37.9	18.40	<1
	SLSQ-12.7-50P	$\phi 12.7$	50	2.0	2.9	48.0	23.00	<1
OPTICAL DATA	SLSQ-15-20P	$\phi 15$	20	2.0	5.9	16.0	9.20	<1
	SLSQ-15-25P	$\phi 15$	25	2.0	4.8	21.7	11.50	<1
MAINTENANCE	SLSQ-15-30P	$\phi 15$	30	2.0	4.2	27.1	13.80	<1
	SLSQ-15-40P	$\phi 15$	40	2.0	3.6	37.5	18.40	<1
	SLSQ-15-50P	$\phi 15$	50	2.0	3.3	47.8	23.00	<1
SELECTION GUIDE	SLSQ-15-60P	$\phi 15$	60	2.0	3.0	57.9	27.60	<1
	SLSQ-15-70P	$\phi 15$	70	2.0	2.9	68.0	32.20	<1
PLANO CONVEX LENSES	SLSQ-15-80P	$\phi 15$	80	2.0	2.8	78.1	36.80	<1
PLANO CONCAVE LENSES	SLSQ-15-90P	$\phi 15$	90	2.0	2.7	88.2	41.40	<1
BICONVEX LENSES	SLSQ-15-100P	$\phi 15$	100	2.0	2.6	98.3	46.00	<1
BICONCAVE LENSES	SLSQ-20-25P	$\phi 20$	25	2.0	7.8	19.6	11.50	<1
	SLSQ-20-30P	$\phi 20$	30	2.0	6.3	25.7	13.80	<1
	SLSQ-20-40P	$\phi 20$	40	2.0	5.0	36.6	18.40	<1
KIT	SLSQ-20-50P	$\phi 20$	50	2.0	4.3	47.1	23.00	<1
REASONABLE LENS	SLSQ-20-60P	$\phi 20$	60	2.0	3.9	57.3	27.60	<1
CYLINDRICAL	SLSQ-20-70P	$\phi 20$	70	2.0	3.6	67.5	32.20	<1
	SLSQ-20-80P	$\phi 20$	80	2.0	3.4	77.7	36.80	<1
OTHERS	SLSQ-20-90P	$\phi 20$	90	2.0	3.2	87.8	41.40	<1
	SLSQ-20-100P	$\phi 20$	100	2.0	3.1	97.9	46.00	<1
	SLSQ-20-120P	$\phi 20$	120	2.0	2.9	118.0	55.20	<1
	SLSQ-20-150P	$\phi 20$	150	2.0	2.7	148.1	69.00	<1
	SLSQ-20-170P	$\phi 20$	170	2.0	2.6	168.2	78.20	<1
	SLSQ-20-200P	$\phi 20$	200	2.0	2.5	198.3	92.00	<1

## Compatible Optic Mounts

LHF-10S, -15S, -20S / MLH-10, -15 / LHF-12.7



**Synthetic fused silica  $\phi 25 - \phi 30$**

Part Number	Diameter $\phi D$ [mm]	Focal length $f$ [mm]	Thickness of the edge $t_e$ [mm]	Thickness of the center $t_c$ [mm]	Back focal length $f_b$ [mm]	Radius of curvature $r$ [mm]	Centration [']
SLSQ-25-30P	$\phi 25$	30	2.0	10.0	23.2	13.80	<1
SLSQ-25-35P	$\phi 25$	35	2.0	8.0	29.6	16.10	<1
SLSQ-25-40P	$\phi 25$	40	2.0	6.9	35.3	18.40	<1
SLSQ-25-50P	$\phi 25$	50	2.0	5.7	46.1	23.00	<1
SLSQ-25-60P	$\phi 25$	60	2.0	5.0	56.6	27.60	<1
SLSQ-25-70P	$\phi 25$	70	2.0	4.5	66.9	32.20	<1
SLSQ-25-80P	$\phi 25$	80	2.0	4.2	77.1	36.80	<1
SLSQ-25-90P	$\phi 25$	90	2.0	3.9	87.3	41.40	<1
SLSQ-25-100P	$\phi 25$	100	2.0	3.7	97.4	46.00	<1
SLSQ-25-120P	$\phi 25$	120	2.0	3.4	117.6	55.20	<1
SLSQ-25-150P	$\phi 25$	150	2.0	3.1	147.8	69.00	<1
SLSQ-25-170P	$\phi 25$	170	2.0	3.0	167.9	78.20	<1
SLSQ-25-200P	$\phi 25$	200	2.0	2.9	198.0	92.00	<1
SLSQ-25-220P	$\phi 25$	220	2.0	2.8	218.1	101.20	<1
SLSQ-25-250P	$\phi 25$	250	2.0	2.7	248.2	115.00	<1
SLSQ-25.4-30P	$\phi 25.4$	30	1.6	10.0	23.2	13.80	<1
SLSQ-25.4-35P	$\phi 25.4$	35	1.8	8.0	29.5	16.10	<1
SLSQ-25.4-40P	$\phi 25.4$	40	1.8	6.9	35.3	18.40	<1
SLSQ-25.4-50P	$\phi 25.4$	50	1.9	5.7	46.1	23.00	<1
SLSQ-25.4-60P	$\phi 25.4$	60	1.9	5.0	56.6	27.60	<1
SLSQ-25.4-70P	$\phi 25.4$	70	1.9	4.5	66.9	32.20	<1
SLSQ-25.4-80P	$\phi 25.4$	80	1.9	4.2	77.1	36.80	<1
SLSQ-25.4-90P	$\phi 25.4$	90	1.9	3.9	87.3	41.40	<1
SLSQ-25.4-100P	$\phi 25.4$	100	1.9	3.7	97.5	46.00	<1
SLSQ-25.4-150P	$\phi 25.4$	150	1.9	3.1	147.9	69.00	<1
SLSQ-25.4-200P	$\phi 25.4$	200	1.9	2.9	198.0	92.00	<1
SLSQ-25.4-250P	$\phi 25.4$	250	1.9	2.7	248.2	115.00	<1
SLSQ-25.4-300P	$\phi 25.4$	300	1.9	2.5	298.3	138.00	<3
SLSQ-25.4-400P	$\phi 25.4$	400	1.9	2.3	398.4	184.00	<3
SLSQ-25.4-500P	$\phi 25.4$	500	1.9	2.3	498.0	230.00	<3
SLSQ-25.4-1000P	$\phi 25.4$	1000	1.9	2.1	998.6	460.00	<3
SLSQ-30-35P	$\phi 30$	35	2.0	12.3	26.6	16.10	<1
SLSQ-30-40P	$\phi 30$	40	2.0	9.7	33.3	18.40	<1
SLSQ-30-50P	$\phi 30$	50	2.0	7.6	44.8	23.00	<1
SLSQ-30-60P	$\phi 30$	60	2.0	6.4	55.6	27.60	<1
SLSQ-30-70P	$\phi 30$	70	2.0	5.7	66.1	32.20	<1
SLSQ-30-80P	$\phi 30$	80	2.0	5.2	76.4	36.80	<1
SLSQ-30-90P	$\phi 30$	90	2.0	4.8	86.7	41.40	<1
SLSQ-30-100P	$\phi 30$	100	2.0	4.5	96.9	46.00	<1
SLSQ-30-120P	$\phi 30$	120	2.0	4.1	117.2	55.20	<1
SLSQ-30-150P	$\phi 30$	150	2.0	3.7	147.5	69.00	<1
SLSQ-30-170P	$\phi 30$	170	2.0	3.5	167.6	78.20	<1
SLSQ-30-200P	$\phi 30$	200	2.0	3.2	197.8	92.00	<1
SLSQ-30-220P	$\phi 30$	220	2.0	3.1	217.9	101.20	<1
SLSQ-30-250P	$\phi 30$	250	2.0	3.0	248.0	115.00	<1
SLSQ-30-300P	$\phi 30$	300	2.0	2.8	298.1	138.00	<1
SLSQ-30-350P	$\phi 30$	350	2.0	2.7	348.2	161.00	<3
SLSQ-30-400P	$\phi 30$	400	2.0	2.6	398.2	184.00	<3
SLSQ-30-450P	$\phi 30$	450	2.0	2.5	448.3	207.00	<3
SLSQ-30-500P	$\phi 30$	500	2.0	2.5	498.3	230.00	<3
SLSQ-30-600P	$\phi 30$	600	2.0	2.4	598.4	276.00	<3
SLSQ-30-700P	$\phi 30$	700	2.0	2.4	698.4	322.00	<3
SLSQ-30-800P	$\phi 30$	800	2.0	2.3	798.4	368.00	<3
SLSQ-30-900P	$\phi 30$	900	2.0	2.3	898.4	414.00	<3
SLSQ-30-1000P	$\phi 30$	1000	2.0	2.2	998.5	460.00	<3
SLSQ-30-1200P	$\phi 30$	1200	2.0	2.2	1198.5	552.00	<3
SLSQ-30-1500P	$\phi 30$	1500	2.0	2.2	1498.5	690.00	<3
SLSQ-30-2000P	$\phi 30$	2000	2.0	2.1	1998.5	920.00	<3
SLSQ-30-2500P	$\phi 30$	2500	2.0	2.1	2498.6	1150.00	<3
SLSQ-30-3000P	$\phi 30$	3000	2.0	2.1	2998.6	1380.00	<3
SLSQ-30-4000P	$\phi 30$	4000	2.0	2.1	3998.6	1840.00	<3
SLSQ-30-5000P	$\phi 30$	5000	2.0	2.1	4998.6	2300.00	<3

**Compatible Optic Mounts**

LHF-25S, -25.4S, -30S

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Synthetic fused silica  $\phi 40 - \phi 50.8$ 

Application Systems	Part Number	Diameter $\phi D$ [mm]	Focal length $f$ [mm]	Thickness of the edge $t_e$ [mm]	Thickness of the center $t_c$ [mm]	Back focal length $f_b$ [mm]	Radius of curvature $r$ [mm]	Centration [']			
Optics & Optical Coatings	SLSQ-40-50P	$\phi 40$	50	2.0	13.6	40.7	23.00	<1			
	SLSQ-40-60P	$\phi 40$	60	2.0	10.6	52.8	27.60	<1			
	SLSQ-40-70P	$\phi 40$	70	2.0	9.0	63.9	32.20	<1			
	SLSQ-40-80P	$\phi 40$	80	2.0	7.9	74.6	36.80	<1			
	SLSQ-40-90P	$\phi 40$	90	2.0	7.2	85.1	41.40	<1			
Holders	SLSQ-40-100P	$\phi 40$	100	2.0	6.6	95.5	46.00	<1			
	SLSQ-40-120P	$\phi 40$	120	2.0	5.8	116.1	55.20	<1			
	SLSQ-40-150P	$\phi 40$	150	2.0	5.0	146.6	69.00	<1			
	SLSQ-40-170P	$\phi 40$	170	2.0	4.6	166.8	78.20	<1			
	SLSQ-40-200P	$\phi 40$	200	2.0	4.2	197.1	92.00	<1			
Bases	SLSQ-40-220P	$\phi 40$	220	2.0	4.0	217.3	101.20	<1			
	SLSQ-40-250P	$\phi 40$	250	2.0	3.8	247.4	115.00	<1			
	SLSQ-40-300P	$\phi 40$	300	2.0	3.5	297.6	138.00	<1			
	SLSQ-40-350P	$\phi 40$	350	2.0	3.2	347.8	161.00	<1			
	SLSQ-40-400P	$\phi 40$	400	2.0	3.1	397.9	184.00	<1			
Manual Stages	SLSQ-40-450P	$\phi 40$	450	2.0	3.0	448.0	207.00	<3			
	SLSQ-40-500P	$\phi 40$	500	2.0	2.9	498.0	230.00	<3			
	Actuators	SLSQ-50-70P	$\phi 50$	70	3.0	14.9	59.8	32.20	<1		
		SLSQ-50-80P	$\phi 50$	80	3.0	12.8	71.2	36.80	<1		
		SLSQ-50-90P	$\phi 50$	90	3.0	11.4	82.2	41.40	<1		
SLSQ-50-100P		$\phi 50$	100	3.0	10.4	92.9	46.00	<1			
SLSQ-50-120P		$\phi 50$	120	3.0	9.0	113.8	55.20	<1			
Motoeized Stages	SLSQ-50-150P	$\phi 50$	150	3.0	7.7	144.7	69.00	<1			
	SLSQ-50-170P	$\phi 50$	170	3.0	7.1	165.1	78.20	<1			
	SLSQ-50-200P	$\phi 50$	200	3.0	6.5	195.6	92.00	<1			
	SLSQ-50-220P	$\phi 50$	220	3.0	6.1	215.8	101.20	<1			
	SLSQ-50-250P	$\phi 50$	250	3.0	5.8	246.1	115.00	<1			
Light Sources	SLSQ-50-300P	$\phi 50$	300	3.0	5.3	296.4	138.00	<1			
	SLSQ-50-350P	$\phi 50$	350	3.0	5.0	346.6	161.00	<1			
	SLSQ-50-400P	$\phi 50$	400	3.0	4.7	396.8	184.00	<1			
	SLSQ-50-450P	$\phi 50$	450	3.0	4.5	446.9	207.00	<1			
	SLSQ-50-500P	$\phi 50$	500	3.0	4.4	497.0	230.00	<1			
Index	SLSQ-50-600P	$\phi 50$	600	3.0	4.1	597.2	276.00	<3			
	SLSQ-50-700P	$\phi 50$	700	3.0	4.0	697.3	322.00	<3			
	SLSQ-50-800P	$\phi 50$	800	3.0	3.9	797.4	368.00	<3			
	SLSQ-50-900P	$\phi 50$	900	3.0	3.8	897.4	414.00	<3			
	SLSQ-50-1000P	$\phi 50$	1000	3.0	3.7	997.5	460.00	<3			
Guide	SLSQ-50-1200P	$\phi 50$	1200	3.0	3.6	1197.6	552.00	<3			
	SLSQ-50-1500P	$\phi 50$	1500	3.0	3.5	1497.6	690.00	<3			
	SLSQ-50-2000P	$\phi 50$	2000	3.0	3.3	1997.7	920.00	<3			
	SLSQ-50-2500P	$\phi 50$	2500	3.0	3.3	2497.8	1150.00	<3			
	SLSQ-50-3000P	$\phi 50$	3000	3.0	3.2	2997.8	1380.00	<3			
Mirrors	SLSQ-50-4000P	$\phi 50$	4000	3.0	3.2	3997.8	1840.00	<3			
	SLSQ-50-5000P	$\phi 50$	5000	3.0	3.1	4997.9	2300.00	<3			
	Beamsplitters	SLSQ-50-8-70P	$\phi 50.8$	70	2.5	14.9	59.8	32.20	<1		
		SLSQ-50-8-80P	$\phi 50.8$	80	2.6	12.8	71.2	36.80	<1		
		SLSQ-50-8-90P	$\phi 50.8$	90	2.7	11.4	82.2	41.40	<1		
SLSQ-50-8-100P		$\phi 50.8$	100	2.8	10.4	92.9	46.00	<1			
SLSQ-50-8-120P		$\phi 50.8$	120	2.8	9.0	113.8	55.20	<1			
Polarizers	SLSQ-50-8-150P	$\phi 50.8$	150	2.9	7.7	144.7	69.00	<1			
	SLSQ-50-8-170P	$\phi 50.8$	170	2.9	7.1	165.1	78.20	<1			
	SLSQ-50-8-200P	$\phi 50.8$	200	2.9	6.5	195.6	92.00	<1			
	SLSQ-50-8-250P	$\phi 50.8$	250	2.9	5.7	246.1	115.00	<1			
	SLSQ-50-8-300P	$\phi 50.8$	300	2.9	5.3	296.4	138.00	<1			
Lenses	SLSQ-50-8-400P	$\phi 50.8$	400	2.9	4.7	396.8	184.00	<1			
	SLSQ-50-8-500P	$\phi 50.8$	500	3.0	4.4	497.0	230.00	<1			
	SLSQ-50-8-1000P	$\phi 50.8$	1000	3.0	3.7	997.5	460.00	<3			
	Multi-Element Optics	Plano Concave Lenses	SLSQ-50-8-70P	$\phi 50.8$	70	2.5	14.9	59.8	32.20	<1	
			SLSQ-50-8-80P	$\phi 50.8$	80	2.6	12.8	71.2	36.80	<1	
SLSQ-50-8-90P			$\phi 50.8$	90	2.7	11.4	82.2	41.40	<1		
SLSQ-50-8-100P			$\phi 50.8$	100	2.8	10.4	92.9	46.00	<1		
SLSQ-50-8-120P			$\phi 50.8$	120	2.8	9.0	113.8	55.20	<1		
Filters	Biconvex Lenses	SLSQ-50-8-150P	$\phi 50.8$	150	2.9	7.7	144.7	69.00	<1		
		SLSQ-50-8-170P	$\phi 50.8$	170	2.9	7.1	165.1	78.20	<1		
		SLSQ-50-8-200P	$\phi 50.8$	200	2.9	6.5	195.6	92.00	<1		
		SLSQ-50-8-250P	$\phi 50.8$	250	2.9	5.7	246.1	115.00	<1		
		SLSQ-50-8-300P	$\phi 50.8$	300	2.9	5.3	296.4	138.00	<1		
Prisms	Biconcave Lenses	SLSQ-50-8-400P	$\phi 50.8$	400	2.9	4.7	396.8	184.00	<1		
		SLSQ-50-8-500P	$\phi 50.8$	500	3.0	4.4	497.0	230.00	<1		
		SLSQ-50-8-1000P	$\phi 50.8$	1000	3.0	3.7	997.5	460.00	<3		
		Substrates/Windows	Kit	SLSQ-50-8-70P	$\phi 50.8$	70	2.5	14.9	59.8	32.20	<1
				SLSQ-50-8-80P	$\phi 50.8$	80	2.6	12.8	71.2	36.80	<1
SLSQ-50-8-90P	$\phi 50.8$			90	2.7	11.4	82.2	41.40	<1		
SLSQ-50-8-100P	$\phi 50.8$			100	2.8	10.4	92.9	46.00	<1		
SLSQ-50-8-120P	$\phi 50.8$			120	2.8	9.0	113.8	55.20	<1		
Optical Data	Reasonable Lens	SLSQ-50-8-150P	$\phi 50.8$	150	2.9	7.7	144.7	69.00	<1		
		SLSQ-50-8-170P	$\phi 50.8$	170	2.9	7.1	165.1	78.20	<1		
		SLSQ-50-8-200P	$\phi 50.8$	200	2.9	6.5	195.6	92.00	<1		
		SLSQ-50-8-250P	$\phi 50.8$	250	2.9	5.7	246.1	115.00	<1		
		SLSQ-50-8-300P	$\phi 50.8$	300	2.9	5.3	296.4	138.00	<1		
Maintenance	Cylindrical	SLSQ-50-8-400P	$\phi 50.8$	400	2.9	4.7	396.8	184.00	<1		
		SLSQ-50-8-500P	$\phi 50.8$	500	3.0	4.4	497.0	230.00	<1		
		SLSQ-50-8-1000P	$\phi 50.8$	1000	3.0	3.7	997.5	460.00	<3		
		Selection Guide	Others	SLSQ-50-8-70P	$\phi 50.8$	70	2.5	14.9	59.8	32.20	<1
				SLSQ-50-8-80P	$\phi 50.8$	80	2.6	12.8	71.2	36.80	<1
SLSQ-50-8-90P	$\phi 50.8$			90	2.7	11.4	82.2	41.40	<1		
SLSQ-50-8-100P	$\phi 50.8$			100	2.8	10.4	92.9	46.00	<1		
SLSQ-50-8-120P	$\phi 50.8$			120	2.8	9.0	113.8	55.20	<1		

## Compatible Optic Mounts

LHF-40S, -50S, -50.8S



**Synthetic fused silica  $\phi 60 - \phi 100$**

Part Number	Diameter $\phi D$ [mm]	Focal length $f$ [mm]	Thickness of the edge $t_e$ [mm]	Thickness of the center $t_c$ [mm]	Back focal length $f_b$ [mm]	Radius of curvature $r$ [mm]	Centration [']
SLSQ-60-80P	$\phi 60$	80	3.0	18.5	67.3	36.80	<1
SLSQ-60-90P	$\phi 60$	90	3.0	15.9	79.1	41.40	<1
SLSQ-60-100P	$\phi 60$	100	3.0	14.1	90.3	46.00	<1
SLSQ-60-120P	$\phi 60$	120	3.0	11.9	111.9	55.20	<1
SLSQ-60-150P	$\phi 60$	150	3.0	9.9	143.2	69.00	<1
SLSQ-60-170P	$\phi 60$	170	3.0	9.0	163.8	78.20	<1
SLSQ-60-200P	$\phi 60$	200	3.0	8.0	194.5	92.00	<1
SLSQ-60-220P	$\phi 60$	220	3.0	7.5	214.8	101.20	<1
SLSQ-60-250P	$\phi 60$	250	3.0	7.0	245.2	115.00	<1
SLSQ-60-300P	$\phi 60$	300	3.0	6.3	295.7	138.00	<1
SLSQ-60-350P	$\phi 60$	350	3.0	5.8	346.0	161.00	<1
SLSQ-60-400P	$\phi 60$	400	3.0	5.5	396.3	184.00	<1
SLSQ-60-450P	$\phi 60$	450	3.0	5.2	446.5	207.00	<1
SLSQ-60-500P	$\phi 60$	500	3.0	5.0	496.6	230.00	<1
SLSQ-100-200P	$\phi 100$	200	3.0	17.8	187.8	92.00	<1
SLSQ-100-250P	$\phi 100$	250	3.0	14.4	240.1	115.00	<1
SLSQ-100-300P	$\phi 100$	300	3.0	12.4	291.5	138.00	<1
SLSQ-100-350P	$\phi 100$	350	3.0	11.0	342.5	161.00	<1
SLSQ-100-400P	$\phi 100$	400	3.0	9.9	393.2	184.00	<1
SLSQ-100-500P	$\phi 100$	500	3.0	8.5	494.2	230.00	<1
SLSQ-100-600P	$\phi 100$	600	3.0	7.6	594.8	276.00	<1
SLSQ-100-700P	$\phi 100$	700	3.0	6.9	695.3	322.00	<1
SLSQ-100-800P	$\phi 100$	800	3.0	6.4	795.6	368.00	<1
SLSQ-100-1000P	$\phi 100$	1000	3.0	5.7	995.1	460.00	<1

**Synthetic fused silica for Excimer Laser  $\phi 30, \phi 50$**

Part Number	Diameter $\phi D$ [mm]	Focal length $f$ [mm]	Thickness of the edge $t_e$ [mm]	Thickness of the center $t_c$ [mm]	Back focal length $f_b$ [mm]	Radius of curvature $r$ [mm]	Centration [']
SLSQK-30-40P	$\phi 30$	40	2.0	9.7	33.3	18.40	<1
SLSQK-30-50P	$\phi 30$	50	2.0	7.6	44.8	23.00	<1
SLSQK-30-60P	$\phi 30$	60	2.0	6.4	55.6	27.60	<1
SLSQK-30-80P	$\phi 30$	80	2.0	5.2	76.4	36.80	<1
SLSQK-30-100P	$\phi 30$	100	2.0	4.5	96.9	46.00	<1
SLSQK-30-150P	$\phi 30$	150	2.0	3.7	147.5	69.00	<1
SLSQK-30-200P	$\phi 30$	200	2.0	3.2	197.8	92.00	<1
SLSQK-30-300P	$\phi 30$	300	2.0	2.8	298.1	138.00	<1
SLSQK-50-70P	$\phi 50$	70	3.0	14.9	59.8	32.20	<1
SLSQK-50-100P	$\phi 50$	100	3.0	10.4	92.9	46.00	<1
SLSQK-50-150P	$\phi 50$	150	3.0	7.7	144.7	69.00	<1
SLSQK-50-200P	$\phi 50$	200	3.0	6.5	195.6	92.00	<1
SLSQK-50-300P	$\phi 50$	300	3.0	5.3	296.4	138.00	<1
SLSQK-50-400P	$\phi 50$	400	3.0	4.7	396.8	184.00	<1
SLSQK-50-500P	$\phi 50$	500	3.0	4.4	497.0	230.00	<1

**Compatible Optic Mounts**

LHF-60S, -100 / LHF-30S, -50S

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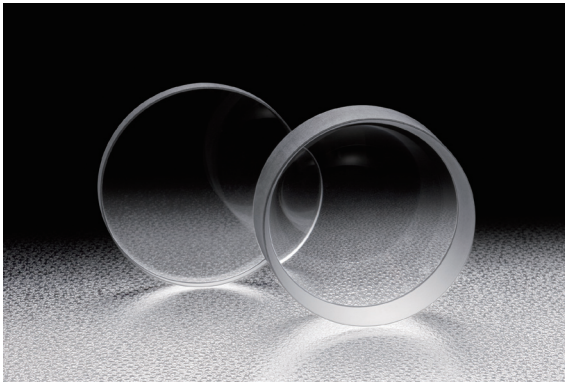
# Plano Concave Lenses | SLB-N/SLSQ-N/SLSQK-N

RoHS

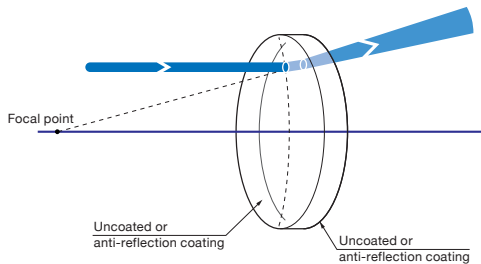
Simple shape lenses for spreading the collimated laser beam.

These are available for expanding the beam diameter or in combination with convex, expanding the irradiation area of illumination light.

- There are three types available; BK7 for from visible range to infrared wavelength range, high-strength synthetic fused silica which has high laser damage threshold used in less than 350nm ultraviolet light, and synthetic fused silica lens for excimer laser corresponding to the excimer laser such as Kr\*F (248nm) and Ar\*F (193nm).
- BK7 lenses are also available with three types of anti-reflection coating, visible wavelength range, in the near-infrared range and in the infrared range.
- From among the wide variations of products that have been subdivided in outside diameter and focal length, you can make selection according to your specifications.

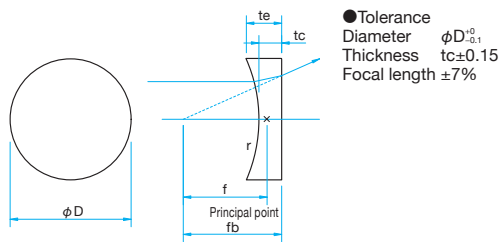


## Schematic



## Outline Drawing

(in mm)



## How to specify the anti-reflection coating

In case of specifying an anti-reflection coating 633nm – 1064nm to near infrared lens of SLB-50.8-200N.  
⇒ SLB-50.8-200NIR1

Type of AR Coat	Part Number	Wavelength Range [nm]	Transmittance [%]
Visible range	SLB-50.8-200NM	400 – 700	> Average 99
Near-infrared	SLB-50.8-200NIR1	633 – 1064	> Average 98.5
Infrared	SLB-50.8-200NIR2	750 – 1550	> Average 98.5

! Part of the above is an example of if you want to coat anti-reflective coating on the lens of the SLB-50.8-200N.

! Anti-reflection coating can be available to the lens of all of SLB.

## Specifications

Material	SLB: BK7 SLSQ: Synthetic fused silica SLSQK: Synthetic fused silica for Excimer Laser
Design wavelength	546.1nm
Refractive index	BK7: $n_D=1.519$ Synthetic fused silica: $n_D=1.460$
Coating	Uncoated: the end of the part number 'N' Anti-reflection coating: the end of the part number 'NM', 'NIR1', 'NIR2'
Laser Damage Threshold	Anti-reflection coating: $4\text{J}/\text{cm}^2$ Laser pulse with 10ns, repetition frequency 20Hz
Clear aperture	90% of actual aperture (Uncoated) 85% of actual aperture (BMAR)
Surface Quality (Scratch-Dig)	20-10

## Guide

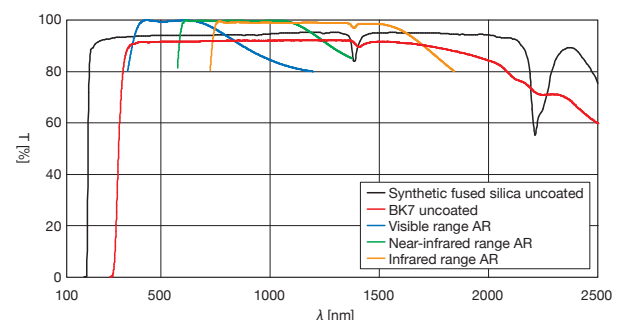
- ▶ It is available other than the products which listed in the catalog such as focal length and outer diameter size.
- ▶ Production is also available with a specific wavelength of anti-reflective coating on the lens of no coated.

## Attention

- ▶ In the single concave lens will not be able to converge the light and can not be projected image. Make sure to use it in combination with a convex lens.
- ▶ The plano-concave lens has a chromatic aberration, the focal length will vary depending on the wavelength. Please check the "data wavelength characteristic of the focal length" on the WEB of the focal length of each wavelength. [WEB Reference](#) [Catalog Code](#) W3050
- ▶ There is a direction to put light in a plano-concave lens. Please let the incident parallel light from the concave side. There is a possibility that the spherical aberration increases when in reverse, the optical performance of the system will not be appropriate.
- ▶ When using a high power pulsed laser, the spark may occur at the focal point on the optical path connecting the light reflected by the concave surface. Only if used in the pulsed laser, please make sure to use the incident laser beam from the side of the plane.
- ▶ Losses due to reflection of the front and rear surfaces of the lens, the transmittance of no coated is about 90%.
- ▶ The outer periphery of the ridge concave is chamfered. It may be smaller than the edge thickness for the design. Please use the back of the plane surface as the reference plane.

## Typical Transmittance Data

T: Transmission





BK7 $\phi 10 - \phi 25$										
Uncoated	How to specify the anti-reflection coating			Diameter $\phi D$ [mm]	Focal length $f$ [mm]	Thickness of the edge $t_e$ [mm]	Thickness of the center $t_c$ [mm]	Back focal length $f_b$ [mm]	Radius of curvature $r$ [mm]	Centration [']
Part Number	Visible 400 - 700nm	Near-infrared 633 - 1064nm	Infrared 750 - 1550nm							
SLB-10-15N	M	IR1	IR2	$\phi 10$	-15	3.8	2.0	-16.3	7.79	<1
SLB-10-20N	M	IR1	IR2	$\phi 10$	-20	3.3	2.0	-21.3	10.38	<1
SLB-10-25N	M	IR1	IR2	$\phi 10$	-25	3.0	2.0	-26.3	12.98	<1
SLB-10-30N	M	IR1	IR2	$\phi 10$	-30	2.8	2.0	-31.3	15.57	<1
SLB-10-40N	M	IR1	IR2	$\phi 10$	-40	2.6	2.0	-41.3	20.76	<1
SLB-10-50N	M	IR1	IR2	$\phi 10$	-50	2.5	2.0	-51.3	25.95	<1
SLB-10-60N	M	IR1	IR2	$\phi 10$	-60	2.4	2.0	-61.3	31.14	<1
SLB-10-70N	M	IR1	IR2	$\phi 10$	-70	2.3	2.0	-71.3	36.33	<1
SLB-10-80N	M	IR1	IR2	$\phi 10$	-80	2.3	2.0	-81.3	41.52	<1
SLB-10-90N	M	IR1	IR2	$\phi 10$	-90	2.3	2.0	-91.3	46.71	<1
SLB-10-100N	M	IR1	IR2	$\phi 10$	-100	2.2	2.0	-101.3	51.90	<1
SLB-12.7-15N	M	IR1	IR2	$\phi 12.7$	-15	5.3	2.0	-16.3	7.79	<1
SLB-12.7-20N	M	IR1	IR2	$\phi 12.7$	-20	4.2	2.0	-21.3	10.38	<1
SLB-12.7-25N	M	IR1	IR2	$\phi 12.7$	-25	3.7	2.0	-26.3	12.98	<1
SLB-12.7-30N	M	IR1	IR2	$\phi 12.7$	-30	3.4	2.0	-31.3	15.57	<1
SLB-15-20N	M	IR1	IR2	$\phi 15$	-20	5.2	2.0	-21.3	10.38	<1
SLB-15-25N	M	IR1	IR2	$\phi 15$	-25	4.4	2.0	-26.3	12.98	<1
SLB-15-30N	M	IR1	IR2	$\phi 15$	-30	3.9	2.0	-31.3	15.57	<1
SLB-15-40N	M	IR1	IR2	$\phi 15$	-40	3.4	2.0	-41.3	20.76	<1
SLB-15-50N	M	IR1	IR2	$\phi 15$	-50	3.1	2.0	-51.3	25.95	<1
SLB-15-60N	M	IR1	IR2	$\phi 15$	-60	2.9	2.0	-61.3	31.14	<1
SLB-15-70N	M	IR1	IR2	$\phi 15$	-70	2.8	2.0	-71.3	36.33	<1
SLB-15-80N	M	IR1	IR2	$\phi 15$	-80	2.7	2.0	-81.3	41.52	<1
SLB-15-100N	M	IR1	IR2	$\phi 15$	-100	2.5	2.0	-101.3	51.90	<1
SLB-20-25N	M	IR1	IR2	$\phi 20$	-25	6.7	2.0	-26.3	12.98	<1
SLB-20-30N	M	IR1	IR2	$\phi 20$	-30	5.6	2.0	-31.3	15.57	<1
SLB-20-40N	M	IR1	IR2	$\phi 20$	-40	4.6	2.0	-41.3	20.76	<1
SLB-20-50N	M	IR1	IR2	$\phi 20$	-50	4.0	2.0	-51.3	25.95	<1
SLB-20-60N	M	IR1	IR2	$\phi 20$	-60	3.6	2.0	-61.3	31.14	<1
SLB-20-70N	M	IR1	IR2	$\phi 20$	-70	3.4	2.0	-71.3	36.33	<1
SLB-20-80N	M	IR1	IR2	$\phi 20$	-80	3.2	2.0	-81.3	41.52	<1
SLB-20-90N	M	IR1	IR2	$\phi 20$	-90	3.1	2.0	-91.3	46.71	<1
SLB-20-100N	M	IR1	IR2	$\phi 20$	-100	3.0	2.0	-101.3	51.90	<1
SLB-20-120N	M	IR1	IR2	$\phi 20$	-120	2.8	2.0	-121.3	62.28	<1
SLB-20-150N	M	IR1	IR2	$\phi 20$	-150	2.6	2.0	-151.3	77.85	<1
SLB-25-30N	M	IR1	IR2	$\phi 25$	-30	8.3	2.0	-31.3	15.57	<1
SLB-25-35N	M	IR1	IR2	$\phi 25$	-35	7.0	2.0	-36.3	18.17	<1
SLB-25-40N	M	IR1	IR2	$\phi 25$	-40	6.2	2.0	-41.3	20.76	<1
SLB-25-50N	M	IR1	IR2	$\phi 25$	-50	5.2	2.0	-51.3	25.95	<1
SLB-25-60N	M	IR1	IR2	$\phi 25$	-60	4.6	2.0	-61.3	31.14	<1
SLB-25-70N	M	IR1	IR2	$\phi 25$	-70	4.2	2.0	-71.3	36.33	<1
SLB-25-80N	M	IR1	IR2	$\phi 25$	-80	3.9	2.0	-81.3	41.52	<1
SLB-25-90N	M	IR1	IR2	$\phi 25$	-90	3.7	2.0	-91.3	46.71	<1
SLB-25-100N	M	IR1	IR2	$\phi 25$	-100	3.5	2.0	-101.3	51.90	<1
SLB-25-120N	M	IR1	IR2	$\phi 25$	-120	3.3	2.0	-121.3	62.28	<1
SLB-25-150N	M	IR1	IR2	$\phi 25$	-150	3.0	2.0	-151.3	77.85	<1
SLB-25-170N	M	IR1	IR2	$\phi 25$	-170	3.0	2.0	-171.3	88.23	<1
SLB-25-200N	M	IR1	IR2	$\phi 25$	-200	2.8	2.0	-201.3	103.80	<1

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**Compatible Optic Mounts**

LHF-10S, -15S, -20S, -25S, -25.4S / MLH-10, -15

BK7  $\phi 25.4 - \phi 50.8$ 

Application Systems	Uncoated			How to specify the anti-reflection coating			Diameter $\phi D$ [mm]	Focal length $f$ [mm]	Thickness of the edge $t_e$ [mm]	Thickness of the center $t_c$ [mm]	Back focal length $f_b$ [mm]	Radius of curvature $r$ [mm]	Centration [']
	Part Number	Visible 400 - 700nm	Near-infrared 633 - 1064nm	Infrared 750 - 1550nm									
Optics & Optical Coatings	SLB-25.4-30N	M	IR1	IR2	$\phi 25.4$	-30	8.6	2.0	-31.3	15.57	<1		
	SLB-25.4-40N	M	IR1	IR2	$\phi 25.4$	-40	6.3	2.0	-41.3	20.76	<1		
	SLB-25.4-50N	M	IR1	IR2	$\phi 25.4$	-50	5.3	2.0	-51.3	25.95	<1		
Holders	SLB-25.4-60N	M	IR1	IR2	$\phi 25.4$	-60	4.7	2.0	-61.3	31.14	<1		
	SLB-25.4-70N	M	IR1	IR2	$\phi 25.4$	-70	4.3	2.0	-71.3	36.33	<1		
	SLB-25.4-80N	M	IR1	IR2	$\phi 25.4$	-80	4.0	2.0	-81.3	41.52	<1		
Bases	SLB-25.4-90N	M	IR1	IR2	$\phi 25.4$	-90	3.8	2.0	-91.3	46.71	<1		
	SLB-25.4-100N	M	IR1	IR2	$\phi 25.4$	-100	3.6	2.0	-101.3	51.90	<1		
Manual Stages	SLB-25.4-150N	M	IR1	IR2	$\phi 25.4$	-150	3.0	2.0	-151.3	77.85	<1		
	SLB-25.4-200N	M	IR1	IR2	$\phi 25.4$	-200	2.8	2.0	-201.3	103.80	<1		
Actuators	SLB-30-35N	M	IR1	IR2	$\phi 30$	-35	9.9	2.0	-36.3	18.17	<1		
	SLB-30-40N	M	IR1	IR2	$\phi 30$	-40	8.4	2.0	-41.3	20.76	<1		
	SLB-30-50N	M	IR1	IR2	$\phi 30$	-50	6.8	2.0	-51.3	25.95	<1		
Motorized Stages	SLB-30-60N	M	IR1	IR2	$\phi 30$	-60	5.9	2.0	-61.3	31.14	<1		
	SLB-30-70N	M	IR1	IR2	$\phi 30$	-70	5.2	2.0	-71.3	36.33	<1		
	SLB-30-80N	M	IR1	IR2	$\phi 30$	-80	4.8	2.0	-81.3	41.52	<1		
Light Sources	SLB-30-90N	M	IR1	IR2	$\phi 30$	-90	4.5	2.0	-91.3	46.71	<1		
	SLB-30-100N	M	IR1	IR2	$\phi 30$	-100	4.2	2.0	-101.3	51.90	<1		
	SLB-30-120N	M	IR1	IR2	$\phi 30$	-120	3.8	2.0	-121.3	62.28	<1		
Index	SLB-30-150N	M	IR1	IR2	$\phi 30$	-150	3.5	2.0	-151.3	77.85	<1		
	SLB-30-170N	M	IR1	IR2	$\phi 30$	-170	3.3	2.0	-171.3	88.23	<1		
	SLB-30-200N	M	IR1	IR2	$\phi 30$	-200	3.1	2.0	-201.3	103.80	<1		
Guide	SLB-30-220N	M	IR1	IR2	$\phi 30$	-220	3.0	2.0	-221.3	114.18	<1		
	SLB-30-250N	M	IR1	IR2	$\phi 30$	-250	2.9	2.0	-251.3	129.75	<1		
	SLB-40-50N	M	IR1	IR2	$\phi 40$	-50	11.4	2.0	-51.3	25.95	<1		
Mirrors	SLB-40-60N	M	IR1	IR2	$\phi 40$	-60	9.3	2.0	-61.3	31.14	<1		
	SLB-40-70N	M	IR1	IR2	$\phi 40$	-70	8.0	2.0	-71.3	36.33	<1		
Beamsplitters	SLB-40-80N	M	IR1	IR2	$\phi 40$	-80	7.1	2.0	-81.3	41.52	<1		
	SLB-40-100N	M	IR1	IR2	$\phi 40$	-100	6.0	2.0	-101.3	51.90	<1		
Polarizers	SLB-50-70N	M	IR1	IR2	$\phi 50$	-70	13.0	3.0	-72.0	36.33	<1		
	SLB-50-80N	M	IR1	IR2	$\phi 50$	-80	11.4	3.0	-82.0	41.52	<1		
Lenses	SLB-50-90N	M	IR1	IR2	$\phi 50$	-90	10.3	3.0	-92.0	46.71	<1		
	SLB-50-100N	M	IR1	IR2	$\phi 50$	-100	9.4	3.0	-102.0	51.90	<1		
	SLB-50-120N	M	IR1	IR2	$\phi 50$	-120	8.2	3.0	-122.0	62.28	<1		
Multi-Element Optics	SLB-50-150N	M	IR1	IR2	$\phi 50$	-150	7.1	3.0	-152.0	77.85	<1		
	SLB-50-170N	M	IR1	IR2	$\phi 50$	-170	6.6	3.0	-172.0	88.23	<1		
	SLB-50-200N	M	IR1	IR2	$\phi 50$	-200	6.1	3.0	-202.0	103.80	<1		
Filters	SLB-50-220N	M	IR1	IR2	$\phi 50$	-220	5.8	3.0	-222.0	114.18	<1		
	SLB-50-250N	M	IR1	IR2	$\phi 50$	-250	5.4	3.0	-252.0	129.75	<1		
	SLB-50-300N	M	IR1	IR2	$\phi 50$	-300	5.0	3.0	-302.0	155.70	<1		
Prisms	SLB-50.8-70N	M	IR1	IR2	$\phi 50.8$	-70	13.4	3.0	-72.0	36.33	<1		
	SLB-50.8-80N	M	IR1	IR2	$\phi 50.8$	-80	11.7	3.0	-82.0	41.52	<1		
	SLB-50.8-90N	M	IR1	IR2	$\phi 50.8$	-90	10.5	3.0	-92.0	46.71	<1		
Substrates/Windows	SLB-50.8-100N	M	IR1	IR2	$\phi 50.8$	-100	9.6	3.0	-102.0	51.90	<1		
	SLB-50.8-150N	M	IR1	IR2	$\phi 50.8$	-150	7.3	3.0	-152.0	77.85	<1		
	SLB-50.8-200N	M	IR1	IR2	$\phi 50.8$	-200	6.2	3.0	-202.0	103.80	<1		
Optical Data	SLB-50.8-250N	M	IR1	IR2	$\phi 50.8$	-250	5.5	3.0	-252.0	129.75	<1		
	SLB-50.8-300N	M	IR1	IR2	$\phi 50.8$	-300	5.1	3.0	-302.0	155.70	<1		
	SLB-50.8-70N	M	IR1	IR2	$\phi 50.8$	-70	13.4	3.0	-72.0	36.33	<1		
Maintenance	SLB-50.8-80N	M	IR1	IR2	$\phi 50.8$	-80	11.7	3.0	-82.0	41.52	<1		
	SLB-50.8-90N	M	IR1	IR2	$\phi 50.8$	-90	10.5	3.0	-92.0	46.71	<1		
	SLB-50.8-100N	M	IR1	IR2	$\phi 50.8$	-100	9.6	3.0	-102.0	51.90	<1		
Selection Guide	SLB-50.8-150N	M	IR1	IR2	$\phi 50.8$	-150	7.3	3.0	-152.0	77.85	<1		
	SLB-50.8-200N	M	IR1	IR2	$\phi 50.8$	-200	6.2	3.0	-202.0	103.80	<1		
	SLB-50.8-250N	M	IR1	IR2	$\phi 50.8$	-250	5.5	3.0	-252.0	129.75	<1		
Plano Convex Lenses	SLB-50.8-300N	M	IR1	IR2	$\phi 50.8$	-300	5.1	3.0	-302.0	155.70	<1		
	SLB-50.8-70N	M	IR1	IR2	$\phi 50.8$	-70	13.4	3.0	-72.0	36.33	<1		
	SLB-50.8-80N	M	IR1	IR2	$\phi 50.8$	-80	11.7	3.0	-82.0	41.52	<1		
Plano Concave Lenses	SLB-50.8-90N	M	IR1	IR2	$\phi 50.8$	-90	10.5	3.0	-92.0	46.71	<1		
	SLB-50.8-100N	M	IR1	IR2	$\phi 50.8$	-100	9.6	3.0	-102.0	51.90	<1		
	SLB-50.8-150N	M	IR1	IR2	$\phi 50.8$	-150	7.3	3.0	-152.0	77.85	<1		
Biconvex Lenses	SLB-50.8-200N	M	IR1	IR2	$\phi 50.8$	-200	6.2	3.0	-202.0	103.80	<1		
	SLB-50.8-250N	M	IR1	IR2	$\phi 50.8$	-250	5.5	3.0	-252.0	129.75	<1		
	SLB-50.8-300N	M	IR1	IR2	$\phi 50.8$	-300	5.1	3.0	-302.0	155.70	<1		
Biconcave Lenses	SLB-50.8-70N	M	IR1	IR2	$\phi 50.8$	-70	13.4	3.0	-72.0	36.33	<1		
	SLB-50.8-80N	M	IR1	IR2	$\phi 50.8$	-80	11.7	3.0	-82.0	41.52	<1		
	SLB-50.8-90N	M	IR1	IR2	$\phi 50.8$	-90	10.5	3.0	-92.0	46.71	<1		
Kit	SLB-50.8-100N	M	IR1	IR2	$\phi 50.8$	-100	9.6	3.0	-102.0	51.90	<1		
	SLB-50.8-150N	M	IR1	IR2	$\phi 50.8$	-150	7.3	3.0	-152.0	77.85	<1		
	SLB-50.8-200N	M	IR1	IR2	$\phi 50.8$	-200	6.2	3.0	-202.0	103.80	<1		
Reasonable Lens	SLB-50.8-250N	M	IR1	IR2	$\phi 50.8$	-250	5.5	3.0	-252.0	129.75	<1		
	SLB-50.8-300N	M	IR1	IR2	$\phi 50.8$	-300	5.1	3.0	-302.0	155.70	<1		
	SLB-50.8-70N	M	IR1	IR2	$\phi 50.8$	-70	13.4	3.0	-72.0	36.33	<1		
Cylindrical	SLB-50.8-80N	M	IR1	IR2	$\phi 50.8$	-80	11.7	3.0	-82.0	41.52	<1		
	SLB-50.8-90N	M	IR1	IR2	$\phi 50.8$	-90	10.5	3.0	-92.0	46.71	<1		
	SLB-50.8-100N	M	IR1	IR2	$\phi 50.8$	-100	9.6	3.0	-102.0	51.90	<1		
Others	SLB-50.8-150N	M	IR1	IR2	$\phi 50.8$	-150	7.3	3.0	-152.0	77.85	<1		
	SLB-50.8-200N	M	IR1	IR2	$\phi 50.8$	-200	6.2	3.0	-202.0	103.80	<1		
	SLB-50.8-250N	M	IR1	IR2	$\phi 50.8$	-250	5.5	3.0	-252.0	129.75	<1		

## Compatible Optic Mounts

LHF-30S, -40S, -50S, -50.8S





**Synthetic fused silica  $\phi 10 - \phi 25.4$**

Part Number	Diameter $\phi D$ [mm]	Focal length $f$ [mm]	Thickness of the edge $t_e$ [mm]	Thickness of the center $t_c$ [mm]	Back focal length $f_b$ [mm]	Radius of curvature $r$ [mm]	Centration [']
SLSQ-10-15N	$\phi 10$	-15	4.1	2.0	-16.4	6.90	<1
SLSQ-10-20N	$\phi 10$	-20	3.5	2.0	-21.4	9.20	<1
SLSQ-10-25N	$\phi 10$	-25	3.1	2.0	-26.4	11.50	<1
SLSQ-10-30N	$\phi 10$	-30	2.9	2.0	-31.4	13.80	<1
SLSQ-10-40N	$\phi 10$	-40	2.7	2.0	-41.4	18.40	<1
SLSQ-10-50N	$\phi 10$	-50	2.6	2.0	-51.4	23.00	<1
SLSQ-10-60N	$\phi 10$	-60	2.5	2.0	-61.4	27.60	<1
SLSQ-10-70N	$\phi 10$	-70	2.4	2.0	-71.4	32.20	<1
SLSQ-10-80N	$\phi 10$	-80	2.3	2.0	-81.4	36.80	<1
SLSQ-10-90N	$\phi 10$	-90	2.3	2.0	-91.4	41.40	<1
SLSQ-10-100N	$\phi 10$	-100	2.3	2.0	-101.4	46.00	<1
SLSQ-12.7-20N	$\phi 12.7$	-20	4.5	2.0	-21.4	9.20	<1
SLSQ-12.7-25N	$\phi 12.7$	-25	3.9	2.0	-26.4	11.50	<1
SLSQ-12.7-30N	$\phi 12.7$	-30	3.5	2.0	-31.4	13.80	<1
SLSQ-12.7-40N	$\phi 12.7$	-40	3.1	2.0	-41.4	18.40	<1
SLSQ-15-20N	$\phi 15$	-20	5.9	2.0	-21.4	9.20	<1
SLSQ-15-25N	$\phi 15$	-25	4.8	2.0	-26.4	11.50	<1
SLSQ-15-30N	$\phi 15$	-30	4.2	2.0	-31.4	13.80	<1
SLSQ-15-40N	$\phi 15$	-40	3.6	2.0	-41.4	18.40	<1
SLSQ-15-50N	$\phi 15$	-50	3.3	2.0	-51.4	23.00	<1
SLSQ-15-60N	$\phi 15$	-60	3.0	2.0	-61.4	27.60	<1
SLSQ-15-70N	$\phi 15$	-70	2.9	2.0	-71.4	32.20	<1
SLSQ-15-80N	$\phi 15$	-80	2.8	2.0	-81.4	36.80	<1
SLSQ-15-90N	$\phi 15$	-90	2.7	2.0	-91.4	41.40	<1
SLSQ-15-100N	$\phi 15$	-100	2.6	2.0	-101.4	46.00	<1
SLSQ-20-25N	$\phi 20$	-25	7.8	2.0	-26.4	11.50	<1
SLSQ-20-30N	$\phi 20$	-30	6.3	2.0	-31.4	13.80	<1
SLSQ-20-40N	$\phi 20$	-40	5.0	2.0	-41.4	18.40	<1
SLSQ-20-50N	$\phi 20$	-50	4.3	2.0	-51.4	23.00	<1
SLSQ-20-60N	$\phi 20$	-60	3.9	2.0	-61.4	27.60	<1
SLSQ-20-70N	$\phi 20$	-70	3.6	2.0	-71.4	32.20	<1
SLSQ-20-80N	$\phi 20$	-80	3.4	2.0	-81.4	36.80	<1
SLSQ-20-90N	$\phi 20$	-90	3.2	2.0	-91.4	41.40	<1
SLSQ-20-100N	$\phi 20$	-100	3.1	2.0	-101.4	46.00	<1
SLSQ-20-120N	$\phi 20$	-120	2.9	2.0	-121.4	55.20	<1
SLSQ-20-150N	$\phi 20$	-150	2.7	2.0	-151.4	69.00	<1
SLSQ-25-30N	$\phi 25$	-30	10.0	2.0	-31.4	13.80	<1
SLSQ-25-35N	$\phi 25$	-35	8.0	2.0	-36.4	16.10	<1
SLSQ-25-40N	$\phi 25$	-40	6.9	2.0	-41.4	18.40	<1
SLSQ-25-50N	$\phi 25$	-50	5.7	2.0	-51.4	23.00	<1
SLSQ-25-60N	$\phi 25$	-60	5.0	2.0	-61.4	27.60	<1
SLSQ-25-70N	$\phi 25$	-70	4.5	2.0	-71.4	32.20	<1
SLSQ-25-80N	$\phi 25$	-80	4.2	2.0	-81.4	36.80	<1
SLSQ-25-90N	$\phi 25$	-90	3.9	2.0	-91.4	41.40	<1
SLSQ-25-100N	$\phi 25$	-100	3.7	2.0	-101.4	46.00	<1
SLSQ-25-120N	$\phi 25$	-120	3.4	2.0	-121.4	55.20	<1
SLSQ-25-150N	$\phi 25$	-150	3.1	2.0	-151.4	69.00	<1
SLSQ-25-170N	$\phi 25$	-170	3.0	2.0	-171.4	78.20	<1
SLSQ-25-200N	$\phi 25$	-200	2.9	2.0	-201.4	92.00	<1
SLSQ-25.4-30N	$\phi 25.4$	-30	10.4	2.0	-31.4	13.80	<1
SLSQ-25.4-35N	$\phi 25.4$	-35	8.2	2.0	-36.4	16.1	<1
SLSQ-25.4-40N	$\phi 25.4$	-40	7.1	2.0	-41.4	18.40	<1
SLSQ-25.4-50N	$\phi 25.4$	-50	5.8	2.0	-51.4	23.00	<1
SLSQ-25.4-60N	$\phi 25.4$	-60	5.1	2.0	-61.4	27.60	<1
SLSQ-25.4-70N	$\phi 25.4$	-70	4.6	2.0	-71.4	32.20	<1
SLSQ-25.4-80N	$\phi 25.4$	-80	4.3	2.0	-81.4	36.80	<1
SLSQ-25.4-90N	$\phi 25.4$	-90	4.0	2.0	-91.4	41.40	<1
SLSQ-25.4-100N	$\phi 25.4$	-100	3.8	2.0	-101.4	46.00	<1
SLSQ-25.4-150N	$\phi 25.4$	-150	3.2	2.0	-151.4	69.00	<1
SLSQ-25.4-200N	$\phi 25.4$	-200	2.9	2.0	-201.4	92.00	<1

**Compatible Optic Mounts**

LHF-10S, -15S, -20S, -25S, -25.4S, -30S / MLH-10, -15

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## Plano Concave Lenses

SLB-N/SLSQ-N/SLSQK-N

Catalog Code W3053

Synthetic fused silica  $\phi 30 - \phi 50.8$ 

Part Number	Diameter $\phi D$ [mm]	Focal length $f$ [mm]	Thickness of the edge $t_e$ [mm]	Thickness of the center $t_c$ [mm]	Back focal length $f_b$ [mm]	Radius of curvature $r$ [mm]	Centration [']
SLSQ-30-35N	$\phi 30$	-35	12.3	2.0	-36.4	16.10	<1
SLSQ-30-40N	$\phi 30$	-40	9.7	2.0	-41.4	18.40	<1
SLSQ-30-50N	$\phi 30$	-50	7.6	2.0	-51.4	23.00	<1
SLSQ-30-60N	$\phi 30$	-60	6.4	2.0	-61.4	27.60	<1
SLSQ-30-70N	$\phi 30$	-70	5.7	2.0	-71.4	32.20	<1
SLSQ-30-80N	$\phi 30$	-80	5.2	2.0	-81.4	36.80	<1
SLSQ-30-90N	$\phi 30$	-90	4.8	2.0	-91.4	41.40	<1
SLSQ-30-100N	$\phi 30$	-100	4.5	2.0	-101.4	46.00	<1
SLSQ-30-120N	$\phi 30$	-120	4.1	2.0	-121.4	55.20	<1
SLSQ-30-150N	$\phi 30$	-150	3.7	2.0	-151.4	69.00	<1
SLSQ-30-170N	$\phi 30$	-170	3.5	2.0	-171.4	78.20	<1
SLSQ-30-200N	$\phi 30$	-200	3.2	2.0	-201.4	92.00	<1
SLSQ-30-220N	$\phi 30$	-220	3.1	2.0	-221.4	101.20	<1
SLSQ-30-250N	$\phi 30$	-250	3.0	2.0	-251.4	115.00	<1
SLSQ-40-50N	$\phi 40$	-50	13.6	2.0	-51.4	23.00	<1
SLSQ-40-60N	$\phi 40$	-60	10.6	2.0	-61.4	27.60	<1
SLSQ-40-70N	$\phi 40$	-70	9.0	2.0	-71.4	32.20	<1
SLSQ-40-100N	$\phi 40$	-100	6.6	2.0	-101.4	46.00	<1
SLSQ-40-120N	$\phi 40$	-120	5.8	2.0	-121.4	55.20	<1
SLSQ-40-150N	$\phi 40$	-150	5.0	2.0	-151.4	69.00	<1
SLSQ-40-200N	$\phi 40$	-200	4.2	2.0	-201.4	92.00	<1
SLSQ-40-250N	$\phi 40$	-250	3.8	2.0	-251.4	115.00	<1
SLSQ-50-70N	$\phi 50$	-70	14.9	3.0	-72.1	32.20	<1
SLSQ-50-80N	$\phi 50$	-80	12.8	3.0	-82.1	36.80	<1
SLSQ-50-90N	$\phi 50$	-90	11.4	3.0	-92.1	41.40	<1
SLSQ-50-100N	$\phi 50$	-100	10.4	3.0	-102.1	46.00	<1
SLSQ-50-120N	$\phi 50$	-120	9.0	3.0	-122.1	55.20	<1
SLSQ-50-150N	$\phi 50$	-150	7.7	3.0	-152.1	69.00	<1
SLSQ-50-170N	$\phi 50$	-170	7.1	3.0	-172.1	78.20	<1
SLSQ-50-200N	$\phi 50$	-200	6.5	3.0	-202.1	92.00	<1
SLSQ-50-220N	$\phi 50$	-220	6.1	3.0	-222.1	101.20	<1
SLSQ-50-250N	$\phi 50$	-250	5.8	3.0	-252.1	115.00	<1
SLSQ-50-300N	$\phi 50$	-300	5.3	3.0	-302.1	138.00	<1
SLSQ-50.8-70N	$\phi 50.8$	-70	15.4	3.0	-72.1	32.20	<1
SLSQ-50.8-80N	$\phi 50.8$	-80	13.2	3.0	-82.1	36.80	<1
SLSQ-50.8-90N	$\phi 50.8$	-90	11.7	3.0	-92.1	41.40	<1
SLSQ-50.8-100N	$\phi 50.8$	-100	10.6	3.0	-102.1	46.00	<1
SLSQ-50.8-150N	$\phi 50.8$	-150	7.8	3.0	-152.1	69.00	<1
SLSQ-50.8-200N	$\phi 50.8$	-200	6.6	3.0	-202.1	92.00	<1
SLSQ-50.8-250N	$\phi 50.8$	-250	5.8	3.0	-252.1	115.00	<1
SLSQ-50.8-300N	$\phi 50.8$	-300	5.4	3.0	-302.1	138.00	<1

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Catalog Code W3054

Synthetic fused silica for Excimer Laser  $\phi 30, \phi 50$ 

Part Number	Diameter $D$ [mm]	Focal length $f$ [mm]	Thickness of the edge $t_e$ [mm]	Thickness of the center $t_c$ [mm]	Back focal length $f_b$ [mm]	Radius of curvature $r$ [mm]	Centration [']
SLSQK-30-50N	$\phi 30$	-50	7.6	2.0	-51.4	23.00	<1
SLSQK-30-60N	$\phi 30$	-60	6.4	2.0	-61.4	27.60	<1
SLSQK-30-70N	$\phi 30$	-70	5.7	2.0	-71.4	32.20	<1
SLSQK-30-100N	$\phi 30$	-100	4.5	2.0	-101.4	46.00	<1
SLSQK-30-150N	$\phi 30$	-150	3.7	2.0	-151.4	69.00	<1
SLSQK-50-70N	$\phi 50$	-70	14.9	3.0	-72.1	32.20	<1
SLSQK-50-80N	$\phi 50$	-80	12.8	3.0	-82.1	36.80	<1
SLSQK-50-100N	$\phi 50$	-100	10.4	3.0	-102.1	46.00	<1
SLSQK-50-150N	$\phi 50$	-150	7.7	3.0	-152.1	69.00	<1
SLSQK-50-200N	$\phi 50$	-200	6.5	3.0	-202.1	92.00	<1

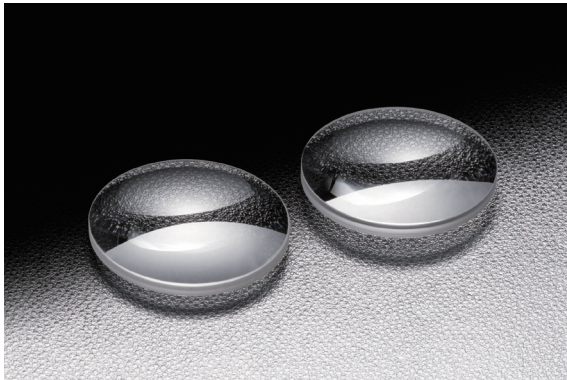
## Compatible Optic Mounts

LHF-30S, -40S, -50S, -50.8S

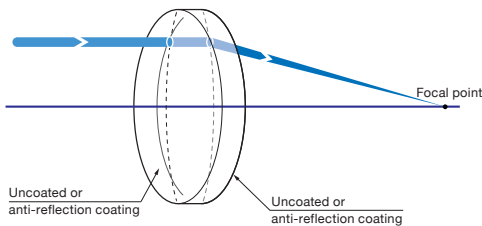
With its both convex surfaces the biconvex lens refracts light efficiently in a small space, more light is focused.

The particular feature of biconvex Lens is that it enables to focus light at a short distance and also enable it to focus dispersed. Light at an optimal condition with low loss light.

- There are two types available; BK7 for from visible range to infrared wavelength range, high-strength synthetic fused silica which has high laser damage threshold used in less than 350nm ultraviolet light.
- Made of BK7 lenses are also available with three types of anti-reflection coating in the infrared wavelength, near-infrared wavelength and visible wavelength.
- From among the wide variations that have been subdivided in outside diameter and focal length, you can make selection according to your specifications.

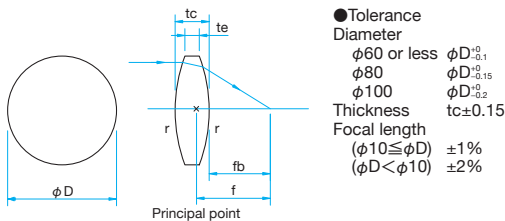


### Schematic



### Outline Drawing

(in mm)



### Specifications

Material	SLB: BK7 SLSQ: Synthetic fused silica
Design wavelength	546.1nm
Refractive index	BK7: $n_e=1.519$ Synthetic fused silica: $n_e=1.460$
Coating	Uncoated: the end of the part number 'P' Anti-reflection coating: the end of the part number 'PM', 'PIR1', 'PIR2'
Laser Damage Threshold	Anti-reflection coating: $4J/cm^2$ Laser pulse with 10ns, repetition frequency 20Hz
Clear aperture	90% of actual aperture: Uncoated 85% of actual aperture: with coating, $\phi 10 \leq D$ 83% of actual aperture: with coating, $D < \phi 10$
Surface Quality (Scratch-Dig)	20-10 $\phi 10 \leq D$ 40-20 $D < \phi 10$

### Guide

- ▶ It is available other than the products which listed in the catalog such as focal length and outer diameter size.
- ▶ Production is also available with a specific wavelength of anti-reflective coating on the lens of no coated.
- ▶ It is also available the Achromatic lenses (DLB) which are chromatic aberration correction. [Reference](#) ▶ B172

### Attention

- ▶ The biconvex spherical lens has a chromatic aberration, and the focal length will vary depending on the wavelength. Please check the "wavelength characteristic of the focal length data" on the Web for the focal lengths of each wavelength. [WEB Reference](#) [Catalog Code](#) W3055
- ▶ Biconvex spherical aberration is larger than that of the plano-convex lens, so focal spot may not gather at one point.
- ▶ Losses due to reflection of the front and rear surfaces of the lens, the transmittance of no coated is about 90%.

### How to specify the anti-reflection coating

In case of specifying a anti-reflection coating 633nm – 1064nm to near infrared lens of SLB-100B-500P.

⇒ SLB-100B-500PIR1

Type of AR Coat	Part Number	Wavelength Range [nm]	Transmittance [%]
Visible range	SLB-100B-500PM	400 – 700	> Average 99
Near-infrared	SLB-100B-500PIR1	633 – 1064	> Average 98.5
Infrared	SLB-100B-500PIR2	750 – 1550	> Average 98.5

! Part of the above is an example of if you want to coat anti-reflective coating on the lens of the SLB-100B-500P.

! Anti-reflection coating can be available to the lens of all of SLB.

### BK7 φ5

Part Number	How to specify the anti-reflection coating			Diameter φD [mm]	Focal length f [mm]	Thickness of the edge te [mm]	Thickness of the center tc [mm]	Back focal length fb [mm]	Radius of curvature r [mm]	Centration [ ' ]
	Visible 400 – 700nm	Near-infrared 633 – 1064nm	Infrared 750 – 1550nm							
SLB-05B-06P	M	IR1	IR2	φ5	6.4	1.5	2.5	5.6	6.23	<3
SLB-05B-08P	M	IR1	IR2	φ5	8.4	1.4	2.1	7.6	8.30	<3
SLB-05B-10P	M	IR1	IR2	φ5	10.3	1.3	1.9	9.7	10.38	<3
SLB-05B-12P	M	IR1	IR2	φ5	12.3	1.2	1.7	11.7	12.46	<3
SLB-05B-15P	M	IR1	IR2	φ5	15.3	1.2	1.6	14.7	15.57	<3
SLB-05B-20P	M	IR1	IR2	φ5	20.2	1.1	1.4	19.8	20.76	<3
SLB-05B-25P	M	IR1	IR2	φ5	25.2	1.1	1.3	24.8	25.95	<3

### Compatible Optic Mounts

MLH-10, -15

# Biconvex Lenses | SLB-B-P/SLSQ-B-P

Catalog Code **W3055**

BK7 $\phi 6 - \phi 20$											
Application Systems	Uncoated	How to specify the anti-reflection coating			Diameter $\phi D$ [mm]	Focal length $f$ [mm]	Thickness of the edge $t_e$ [mm]	Thickness of the center $t_c$ [mm]	Back focal length $f_b$ [mm]	Radius of curvature $r$ [mm]	Centration [']
	Part Number	Visible 400 - 700nm	Near-infrared 633 - 1064nm	Infrared 750 - 1550nm							
Optics & Optical Coatings	SLB-06B-06P	M	IR1	IR2	$\phi 6$	6.4	1.0	2.5	5.6	6.23	<3
	SLB-06B-08P	M	IR1	IR2	$\phi 6$	8.4	1.0	2.1	7.6	8.30	<3
	SLB-06B-10P	M	IR1	IR2	$\phi 6$	10.3	1.0	1.9	9.7	10.38	<3
Holders	SLB-06B-12P	M	IR1	IR2	$\phi 6$	12.3	1.0	1.7	11.7	12.46	<3
	SLB-06B-15P	M	IR1	IR2	$\phi 6$	15.3	1.0	1.6	14.7	15.57	<3
	SLB-06B-20P	M	IR1	IR2	$\phi 6$	20.2	1.0	1.4	19.8	20.76	<3
Bases	SLB-07B-08P	M	IR1	IR2	$\phi 7$	8.6	2.0	3.6	7.4	8.30	<3
	SLB-07B-10P	M	IR1	IR2	$\phi 7$	10.5	1.9	3.1	9.5	10.38	<3
	SLB-07B-12P	M	IR1	IR2	$\phi 7$	12.5	1.8	2.8	11.5	12.46	<3
Manual Stages	SLB-07B-15P	M	IR1	IR2	$\phi 7$	15.4	1.7	2.5	14.6	15.57	<3
	SLB-07B-20P	M	IR1	IR2	$\phi 7$	20.4	1.7	2.3	19.6	20.76	<3
	SLB-08B-08P	M	IR1	IR2	$\phi 8$	8.6	1.5	3.6	7.4	8.30	<3
Actuators	SLB-08B-10P	M	IR1	IR2	$\phi 8$	10.5	1.5	3.1	9.5	10.38	<3
	SLB-08B-12P	M	IR1	IR2	$\phi 8$	12.5	1.5	2.8	11.5	12.46	<3
	SLB-08B-15P	M	IR1	IR2	$\phi 8$	15.4	1.5	2.5	14.6	15.57	<3
Motorized Stages	SLB-08B-20P	M	IR1	IR2	$\phi 8$	20.4	1.5	2.3	19.6	20.76	<3
	SLB-08B-25P	M	IR1	IR2	$\phi 8$	25.4	1.5	2.1	24.6	25.95	<3
	SLB-10B-10P	M	IR1	IR2	$\phi 10$	10.8	2.0	4.6	9.2	10.38	<1
Light Sources	SLB-10B-15P	M	IR1	IR2	$\phi 10$	15.6	2.0	3.6	14.4	15.57	<1
	SLB-10B-20P	M	IR1	IR2	$\phi 10$	20.5	2.0	3.2	19.5	20.76	<1
	SLB-10B-25P	M	IR1	IR2	$\phi 10$	25.5	2.0	3.0	24.5	25.95	<1
Index	SLB-10B-30P	M	IR1	IR2	$\phi 10$	30.5	2.0	2.8	29.5	31.14	<1
	SLB-10B-40P	M	IR1	IR2	$\phi 10$	40.4	2.0	2.6	39.6	41.52	<1
	SLB-10B-50P	M	IR1	IR2	$\phi 10$	50.4	2.0	2.5	49.6	51.90	<1
Guide	SLB-10B-60P	M	IR1	IR2	$\phi 10$	60.4	2.0	2.4	59.6	62.28	<1
	SLB-10B-70P	M	IR1	IR2	$\phi 10$	70.4	2.0	2.3	69.6	72.66	<1
	SLB-10B-80P	M	IR1	IR2	$\phi 10$	80.4	2.0	2.3	79.6	83.04	<1
Mirrors	SLB-10B-90P	M	IR1	IR2	$\phi 10$	90.4	2.0	2.3	89.6	93.42	<1
	SLB-10B-100P	M	IR1	IR2	$\phi 10$	100.4	2.0	2.2	99.6	103.80	<1
	SLB-12.7B-12P	M	IR1	IR2	$\phi 12.7$	12.7	2.0	3.7	11.4	12.46	<1
Polarizers	SLB-12.7B-20P	M	IR1	IR2	$\phi 12.7$	20.5	2.0	3.0	19.5	20.76	<1
	SLB-12.7B-25P	M	IR1	IR2	$\phi 12.7$	25.5	2.0	2.8	24.6	25.95	<1
	SLB-12.7B-30P	M	IR1	IR2	$\phi 12.7$	30.5	2.0	2.7	29.6	31.14	<1
Multi-Element Optics	SLB-12.7B-40P	M	IR1	IR2	$\phi 12.7$	40.4	2.0	2.5	39.6	41.52	<1
	SLB-12.7B-50P	M	IR1	IR2	$\phi 12.7$	50.4	2.0	2.4	49.6	51.90	<1
	SLB-12.7B-60P	M	IR1	IR2	$\phi 12.7$	60.4	2.0	2.3	59.7	62.28	<1
Filters	SLB-12.7B-70P	M	IR1	IR2	$\phi 12.7$	70.4	2.0	2.3	69.7	72.66	<1
	SLB-15B-15P	M	IR1	IR2	$\phi 15$	16.0	2.0	5.9	14.0	15.57	<1
	SLB-15B-20P	M	IR1	IR2	$\phi 15$	20.8	2.0	4.8	19.2	20.76	<1
Prisms	SLB-15B-25P	M	IR1	IR2	$\phi 15$	25.7	2.0	4.2	24.3	25.95	<1
	SLB-15B-30P	M	IR1	IR2	$\phi 15$	30.6	2.0	3.8	29.4	31.14	<1
	SLB-15B-40P	M	IR1	IR2	$\phi 15$	40.6	2.0	3.4	39.4	41.52	<1
Substrates/Windows	SLB-15B-50P	M	IR1	IR2	$\phi 15$	50.5	2.0	3.1	49.5	51.90	<1
	SLB-15B-60P	M	IR1	IR2	$\phi 15$	60.5	2.0	2.9	59.5	62.28	<1
	SLB-15B-70P	M	IR1	IR2	$\phi 15$	70.5	2.0	2.8	69.5	72.66	<1
Optical Data	SLB-15B-80P	M	IR1	IR2	$\phi 15$	80.4	2.0	2.7	79.6	83.04	<1
	SLB-15B-90P	M	IR1	IR2	$\phi 15$	90.4	2.0	2.6	89.6	93.42	<1
	SLB-15B-100P	M	IR1	IR2	$\phi 15$	100.4	2.0	2.5	99.6	103.80	<1
Maintenance	SLB-20B-20P	M	IR1	IR2	$\phi 20$	21.2	2.0	7.1	18.8	20.76	<1
	SLB-20B-25P	M	IR1	IR2	$\phi 20$	26.0	2.0	6.0	24.0	25.95	<1
	SLB-20B-30P	M	IR1	IR2	$\phi 20$	31.0	2.0	5.3	29.1	31.14	<1
Selection Guide	SLB-20B-40P	M	IR1	IR2	$\phi 20$	40.7	2.0	4.4	39.3	41.52	<1
	SLB-20B-50P	M	IR1	IR2	$\phi 20$	50.7	2.0	3.9	49.3	51.90	<1
	SLB-20B-60P	M	IR1	IR2	$\phi 20$	60.6	2.0	3.6	59.4	62.28	<1
Biconvex Lenses	SLB-20B-70P	M	IR1	IR2	$\phi 20$	70.6	2.0	3.4	69.4	72.66	<1
	SLB-20B-80P	M	IR1	IR2	$\phi 20$	80.5	2.0	3.2	79.5	83.04	<1
	SLB-20B-90P	M	IR1	IR2	$\phi 20$	90.5	2.0	3.1	89.5	93.42	<1
Biconcave Lenses	SLB-20B-100P	M	IR1	IR2	$\phi 20$	100.5	2.0	3.0	99.5	103.80	<1
	SLB-20B-120P	M	IR1	IR2	$\phi 20$	120.5	2.0	2.8	119.5	124.56	<1
	SLB-20B-150P	M	IR1	IR2	$\phi 20$	150.4	2.0	2.6	149.6	155.70	<1

**Compatible Optic Mounts**

LHF-10S, -15S, -20S / MLH-10, -15



**BK7  $\phi 25 - \phi 50$**

Part Number	How to specify the anti-reflection coating			Diameter $\phi D$ [mm]	Focal length $f$ [mm]	Thickness of the edge $t_e$ [mm]	Thickness of the center $t_c$ [mm]	Back focal length $f_b$ [mm]	Radius of curvature $r$ [mm]	Centration [']
	Uncoated	Visibe 400 - 700nm	Near-infrared 633 - 1064nm							
SLB-25B-25P	M	IR1	IR2	$\phi 25$	26.5	2.0	8.4	23.5	25.95	<1
SLB-25B-30P	M	IR1	IR2	$\phi 25$	31.2	2.0	7.2	28.8	31.14	<1
SLB-25B-35P	M	IR1	IR2	$\phi 25$	36.1	2.0	6.4	33.9	36.33	<1
SLB-25B-40P	M	IR1	IR2	$\phi 25$	41.0	2.0	5.9	39.0	41.52	<1
SLB-25B-50P	M	IR1	IR2	$\phi 25$	50.8	2.0	5.1	49.2	51.90	<1
SLB-25B-60P	M	IR1	IR2	$\phi 25$	60.8	2.0	4.5	59.2	62.28	<1
SLB-25B-70P	M	IR1	IR2	$\phi 25$	70.7	2.0	4.2	69.3	72.66	<1
SLB-25B-80P	M	IR1	IR2	$\phi 25$	80.6	2.0	3.9	79.4	83.04	<1
SLB-25B-90P	M	IR1	IR2	$\phi 25$	90.6	2.0	3.7	89.4	93.42	<1
SLB-25B-100P	M	IR1	IR2	$\phi 25$	100.6	2.0	3.5	99.4	103.80	<1
SLB-25B-150P	M	IR1	IR2	$\phi 25$	150.5	2.0	3.0	149.5	155.70	<1
SLB-25B-170P	M	IR1	IR2	$\phi 25$	170.5	2.0	2.9	169.5	176.46	<1
SLB-25B-200P	M	IR1	IR2	$\phi 25$	200.5	2.0	2.8	199.5	207.60	<1
SLB-25.4B-25P	M	IR1	IR2	$\phi 25.4$	26.5	1.8	8.4	23.6	25.95	<1
SLB-25.4B-30P	M	IR1	IR2	$\phi 25.4$	31.2	1.8	7.2	28.7	31.14	<1
SLB-25.4B-35P	M	IR1	IR2	$\phi 25.4$	36.1	1.8	6.4	33.9	36.33	<1
SLB-25.4B-40P	M	IR1	IR2	$\phi 25.4$	41.0	1.9	5.9	39.0	41.52	<1
SLB-25.4B-50P	M	IR1	IR2	$\phi 25.4$	50.8	1.9	5.1	49.2	51.90	<1
SLB-25.4B-60P	M	IR1	IR2	$\phi 25.4$	60.8	1.9	4.5	59.2	62.28	<1
SLB-25.4B-70P	M	IR1	IR2	$\phi 25.4$	70.7	1.9	4.1	69.3	72.66	<1
SLB-25.4B-80P	M	IR1	IR2	$\phi 25.4$	80.6	1.9	3.9	79.3	83.04	<1
SLB-25.4B-100P	M	IR1	IR2	$\phi 25.4$	100.6	1.9	3.5	99.4	103.80	<1
SLB-25.4B-150P	M	IR1	IR2	$\phi 25.4$	150.5	2.0	3.0	149.5	155.70	<1
SLB-25.4B-200P	M	IR1	IR2	$\phi 25.4$	200.5	2.0	2.8	199.6	207.60	<1
SLB-30B-30P	M	IR1	IR2	$\phi 30$	31.7	2.0	9.7	28.3	31.14	<1
SLB-30B-35P	M	IR1	IR2	$\phi 30$	36.5	2.0	8.5	33.5	36.33	<1
SLB-30B-40P	M	IR1	IR2	$\phi 30$	41.3	2.0	7.6	38.7	41.52	<1
SLB-30B-50P	M	IR1	IR2	$\phi 30$	51.1	2.0	6.4	48.9	51.90	<1
SLB-30B-60P	M	IR1	IR2	$\phi 30$	60.9	2.0	5.7	59.1	62.28	<1
SLB-30B-70P	M	IR1	IR2	$\phi 30$	70.9	2.0	5.1	69.1	72.66	<1
SLB-30B-80P	M	IR1	IR2	$\phi 30$	80.8	2.0	4.7	79.2	83.04	<1
SLB-30B-100P	M	IR1	IR2	$\phi 30$	100.7	2.0	4.2	99.3	103.80	<1
SLB-30B-120P	M	IR1	IR2	$\phi 30$	120.6	2.0	3.8	119.4	124.56	<1
SLB-30B-150P	M	IR1	IR2	$\phi 30$	150.6	2.0	3.4	149.4	155.70	<1
SLB-30B-170P	M	IR1	IR2	$\phi 30$	170.5	2.0	3.3	169.5	176.46	<1
SLB-30B-200P	M	IR1	IR2	$\phi 30$	200.5	2.0	3.1	199.5	207.60	<1
SLB-30B-250P	M	IR1	IR2	$\phi 30$	250.5	2.0	2.9	249.5	259.50	<1
SLB-40B-40P	M	IR1	IR2	$\phi 40$	42.1	2.0	12.3	37.9	41.52	<1
SLB-40B-50P	M	IR1	IR2	$\phi 40$	51.7	2.0	10.0	48.3	51.90	<1
SLB-40B-60P	M	IR1	IR2	$\phi 40$	61.4	2.0	8.6	58.6	62.28	<1
SLB-40B-70P	M	IR1	IR2	$\phi 40$	71.3	2.0	7.6	68.7	72.66	<1
SLB-40B-80P	M	IR1	IR2	$\phi 40$	81.2	2.0	6.9	78.8	83.04	<1
SLB-40B-90P	M	IR1	IR2	$\phi 40$	91.1	2.0	6.3	88.9	93.42	<1
SLB-40B-100P	M	IR1	IR2	$\phi 40$	101.0	2.0	5.9	99.0	103.80	<1
SLB-40B-120P	M	IR1	IR2	$\phi 40$	120.9	2.0	5.2	119.1	124.56	<1
SLB-40B-150P	M	IR1	IR2	$\phi 40$	150.8	2.0	4.6	149.2	155.70	<1
SLB-40B-170P	M	IR1	IR2	$\phi 40$	170.7	2.0	4.3	169.3	176.46	<1
SLB-40B-200P	M	IR1	IR2	$\phi 40$	200.6	2.0	3.9	199.4	207.60	<1
SLB-40B-250P	M	IR1	IR2	$\phi 40$	250.6	2.0	3.5	249.4	259.50	<1
SLB-50B-50P	M	IR1	IR2	$\phi 50$	52.7	3.0	15.8	47.3	51.90	<1
SLB-50B-60P	M	IR1	IR2	$\phi 50$	62.3	3.0	13.5	57.7	62.28	<1
SLB-50B-70P	M	IR1	IR2	$\phi 50$	72.0	3.0	11.9	68.0	72.66	<1
SLB-50B-80P	M	IR1	IR2	$\phi 50$	81.8	3.0	10.7	78.2	83.04	<1
SLB-50B-90P	M	IR1	IR2	$\phi 50$	91.6	3.0	9.8	88.4	93.42	<1
SLB-50B-100P	M	IR1	IR2	$\phi 50$	101.5	3.0	9.1	98.5	103.80	<1
SLB-50B-120P	M	IR1	IR2	$\phi 50$	121.3	3.0	8.0	118.7	124.56	<1
SLB-50B-150P	M	IR1	IR2	$\phi 50$	151.2	3.0	7.0	148.8	155.70	<1
SLB-50B-170P	M	IR1	IR2	$\phi 50$	171.1	3.0	6.6	168.9	176.46	<1
SLB-50B-200P	M	IR1	IR2	$\phi 50$	201.0	3.0	6.0	199.0	207.60	<1
SLB-50B-220P	M	IR1	IR2	$\phi 50$	220.9	3.0	5.7	219.1	228.36	<1
SLB-50B-250P	M	IR1	IR2	$\phi 50$	251.0	3.0	5.4	249.1	259.50	<1
SLB-50B-300P	M	IR1	IR2	$\phi 50$	300.8	3.0	5.0	299.2	311.40	<1

**Compatible Optic Mounts**

LHF-25S, -25.4S, -30S, -40S, -50S

- Application Systems
- Optics & Optical Coatings
- Holders
- Bases
- Manual Stages
- Actuators
- MotORIZED Stages
- Light Sources
- Index
- Guide
- Mirrors
- Beamsplitters
- Polarizers
- Lenses
- Multi-Element Optics
- Filters
- Prisms
- Substrates/Windows
- Optical Data
- Maintenance
- Selection Guide
- Plano Convex Lenses
- Plano Concave Lenses
- Biconvex Lenses
- Biconcave Lenses
- Kit
- Reasonable Lens
- Cylindrical
- Others

## Biconvex Lenses | SLB-B-P/SLSQ-B-P

Catalog Code W3057

BK7  $\phi 50.8 - \phi 100$ 

Application Systems	Uncoated			How to specify the anti-reflection coating			Diameter $\phi D$ [mm]	Focal length $f$ [mm]	Thickness of the edge $t_e$ [mm]	Thickness of the center $t_c$ [mm]	Back focal length $f_b$ [mm]	Radius of curvature $r$ [mm]	Centration [']
	Part Number	Visible 400 - 700nm	Near-infrared 633 - 1064nm	Infrared 750 - 1550nm									
Optics & Optical Coatings	SLB-50.8B-50P	M	IR1	IR2	$\phi 50.8$	52.7	3.0	16.3	47.1	51.90	<1		
	SLB-50.8B-60P	M	IR1	IR2	$\phi 50.8$	62.3	3.0	13.8	57.7	62.28	<1		
	SLB-50.8B-70P	M	IR1	IR2	$\phi 50.8$	72.0	3.0	12.2	68.0	72.66	<1		
Holders	SLB-50.8B-80P	M	IR1	IR2	$\phi 50.8$	81.8	3.0	11.0	78.2	83.04	<1		
	SLB-50.8B-90P	M	IR1	IR2	$\phi 50.8$	91.6	2.8	9.8	88.3	93.42	<1		
	SLB-50.8B-100P	M	IR1	IR2	$\phi 50.8$	101.5	3.0	9.3	98.5	103.80	<1		
Bases	SLB-50.8B-120P	M	IR1	IR2	$\phi 50.8$	121.3	2.8	8.0	118.6	124.56	<1		
	SLB-50.8B-150P	M	IR1	IR2	$\phi 50.8$	151.2	2.8	7.0	148.9	155.70	<1		
	SLB-50.8B-170P	M	IR1	IR2	$\phi 50.8$	171.1	2.4	6.1	169.0	176.46	<1		
Manual Stages	SLB-50.8B-200P	M	IR1	IR2	$\phi 50.8$	201.0	2.9	6.0	199.0	207.60	<1		
	SLB-50.8B-250P	M	IR1	IR2	$\phi 50.8$	251.0	2.9	5.4	249.1	259.50	<1		
	SLB-50.8B-300P	M	IR1	IR2	$\phi 50.8$	300.8	2.9	5.0	299.1	311.40	<1		
Actuators	SLB-60B-60P	M	IR1	IR2	$\phi 60$	63.2	3.0	18.4	56.8	62.28	<1		
	SLB-60B-70P	M	IR1	IR2	$\phi 60$	72.7	3.0	16.0	67.3	72.66	<1		
	SLB-60B-80P	M	IR1	IR2	$\phi 60$	82.4	3.0	14.2	77.6	83.04	<1		
Motorized Stages	SLB-60B-90P	M	IR1	IR2	$\phi 60$	92.2	3.0	13.0	87.8	93.42	<1		
	SLB-60B-100P	M	IR1	IR2	$\phi 60$	102.0	3.0	11.9	98.0	103.80	<1		
	SLB-60B-120P	M	IR1	IR2	$\phi 60$	121.7	3.0	10.3	118.3	124.56	<1		
Light Sources	SLB-60B-150P	M	IR1	IR2	$\phi 60$	151.5	3.0	8.8	148.5	155.70	<1		
	SLB-60B-170P	M	IR1	IR2	$\phi 60$	171.4	3.0	8.1	168.7	176.46	<1		
	SLB-60B-200P	M	IR1	IR2	$\phi 60$	201.2	3.0	7.4	198.8	207.60	<1		
Index	SLB-60B-250P	M	IR1	IR2	$\phi 60$	251.1	3.0	6.5	248.9	259.50	<1		
	SLB-60B-300P	M	IR1	IR2	$\phi 60$	301.0	3.0	5.9	299.0	311.40	<1		
	SLB-80B-100P	M	IR1	IR2	$\phi 80$	103.2	3.0	19.0	96.8	103.80	<1		
Guide	SLB-80B-150P	M	IR1	IR2	$\phi 80$	152.2	3.0	13.5	147.8	155.70	<1		
	SLB-80B-200P	M	IR1	IR2	$\phi 80$	201.8	3.0	10.8	198.2	207.60	<1		
	SLB-80B-250P	M	IR1	IR2	$\phi 80$	251.5	3.0	9.2	248.5	259.50	<1		
Mirrors	SLB-80B-300P	M	IR1	IR2	$\phi 80$	301.3	3.0	8.2	298.7	311.40	<1		
	SLB-80B-400P	M	IR1	IR2	$\phi 80$	401.1	3.0	6.9	398.9	415.20	<1		
	SLB-80B-500P	M	IR1	IR2	$\phi 80$	501.0	3.0	6.1	499.0	519.00	<1		
Beamsplitters	SLB-80B-700P	M	IR1	IR2	$\phi 80$	700.9	3.0	5.2	699.1	726.60	<1		
	SLB-80B-1000P	M	IR1	IR2	$\phi 80$	1000.7	3.0	4.5	999.3	1038.00	<1		
	SLB-100B-150P	M	IR1	IR2	$\phi 100$	153.3	3.0	19.5	146.7	155.70	<1		
Lenses	SLB-100B-200P	M	IR1	IR2	$\phi 100$	202.5	3.0	15.2	197.5	207.60	<1		
	SLB-100B-250P	M	IR1	IR2	$\phi 100$	252.1	3.0	12.7	247.9	259.50	<1		
	SLB-100B-300P	M	IR1	IR2	$\phi 100$	301.8	3.0	11.1	298.2	311.40	<1		
Multi-Element Optics	SLB-100B-400P	M	IR1	IR2	$\phi 100$	401.5	3.0	9.0	398.5	415.20	<1		
	SLB-100B-500P	M	IR1	IR2	$\phi 100$	501.3	3.0	7.8	498.7	519.00	<1		
	SLB-100B-700P	M	IR1	IR2	$\phi 100$	701.1	3.0	6.4	698.9	726.60	<1		
Filters	SLB-100B-1000P	M	IR1	IR2	$\phi 100$	1001.0	3.0	5.4	999.1	1038.00	<1		
	SLB-100B-150P	M	IR1	IR2	$\phi 100$	153.3	3.0	19.5	146.7	155.70	<1		
	SLB-100B-200P	M	IR1	IR2	$\phi 100$	202.5	3.0	15.2	197.5	207.60	<1		
Prisms	SLB-100B-250P	M	IR1	IR2	$\phi 100$	252.1	3.0	12.7	247.9	259.50	<1		
	SLB-100B-300P	M	IR1	IR2	$\phi 100$	301.8	3.0	11.1	298.2	311.40	<1		
	SLB-100B-400P	M	IR1	IR2	$\phi 100$	401.5	3.0	9.0	398.5	415.20	<1		
Substrates/Windows	SLB-100B-500P	M	IR1	IR2	$\phi 100$	501.3	3.0	7.8	498.7	519.00	<1		
	SLB-100B-700P	M	IR1	IR2	$\phi 100$	701.1	3.0	6.4	698.9	726.60	<1		
	SLB-100B-1000P	M	IR1	IR2	$\phi 100$	1001.0	3.0	5.4	999.1	1038.00	<1		

Catalog Code W3058

Synthetic fused silica  $\phi 5 - \phi 6$ 

Part Number	Diameter $\phi D$ [mm]	Focal length $f$ [mm]	Thickness of the edge $t_e$ [mm]	Thickness of the center $t_c$ [mm]	Back focal length $f_b$ [mm]	Radius of curvature $r$ [mm]	Centration [']
SLSQ-05B-06P	$\phi 5$	6.5	1.6	2.8	5.5	5.52	<3
SLSQ-05B-08P	$\phi 5$	8.4	1.4	2.3	7.6	7.36	<3
SLSQ-05B-10P	$\phi 5$	10.4	1.3	2.0	9.6	9.20	<3
SLSQ-05B-12P	$\phi 5$	12.3	1.3	1.8	11.7	11.04	<3
SLSQ-05B-15P	$\phi 5$	15.3	1.2	1.7	14.7	13.80	<3
SLSQ-05B-20P	$\phi 5$	20.3	1.2	1.5	19.7	18.40	<3
SLSQ-05B-25P	$\phi 5$	25.2	1.1	1.4	24.8	23.00	<3
SLSQ-05B-30P	$\phi 5$	30.2	1.1	1.3	29.8	27.60	<3
SLSQ-06B-06P	$\phi 6$	6.5	1.0	2.8	5.5	5.52	<3
SLSQ-06B-08P	$\phi 6$	8.4	1.0	2.3	7.6	7.36	<3
SLSQ-06B-10P	$\phi 6$	10.4	1.0	2.0	9.6	9.20	<3
SLSQ-06B-12P	$\phi 6$	12.3	1.0	1.8	11.7	11.04	<3
SLSQ-06B-15P	$\phi 6$	15.3	1.0	1.7	14.7	13.80	<3
SLSQ-06B-20P	$\phi 6$	20.3	1.0	1.5	19.7	18.40	<3
SLSQ-06B-25P	$\phi 6$	25.2	1.0	1.4	24.8	23.00	<3
SLSQ-06B-30P	$\phi 6$	30.2	1.0	1.3	29.8	27.60	<3

## Compatible Optic Mounts

LHF-50.8S, -60S, -80, -100 / MLH-10, -15



**Synthetic fused silica  $\phi 7 - \phi 25$**

Part Number	Diameter $\phi D$ [mm]	Focal length $f$ [mm]	Thickness of the edge $t_e$ [mm]	Thickness of the center $t_c$ [mm]	Back focal length $f_b$ [mm]	Radius of curvature $r$ [mm]	Centration [']
SLSQ-07B-08P	$\phi 7$	8.7	2.1	3.9	7.3	7.36	<3
SLSQ-07B-10P	$\phi 7$	10.6	1.9	3.3	9.4	9.20	<3
SLSQ-07B-12P	$\phi 7$	12.5	1.9	3.0	11.5	11.04	<3
SLSQ-07B-15P	$\phi 7$	15.5	1.8	2.7	14.5	13.80	<3
SLSQ-07B-20P	$\phi 7$	20.4	1.7	2.4	19.6	18.40	<3
SLSQ-07B-25P	$\phi 7$	25.4	1.7	2.2	24.6	23.00	<3
SLSQ-07B-30P	$\phi 7$	30.4	1.6	2.1	29.6	27.60	<3
SLSQ-07B-40P	$\phi 7$	40.3	1.6	1.9	39.7	36.80	<3
SLSQ-07B-50P	$\phi 7$	50.3	1.6	1.8	49.7	46.00	<3
SLSQ-08B-08P	$\phi 8$	8.7	1.5	3.9	7.3	7.36	<3
SLSQ-08B-10P	$\phi 8$	10.6	1.5	3.3	9.4	9.20	<3
SLSQ-08B-12P	$\phi 8$	12.5	1.5	3.0	11.5	11.04	<3
SLSQ-08B-15P	$\phi 8$	15.5	1.5	2.7	14.5	13.80	<3
SLSQ-08B-20P	$\phi 8$	20.4	1.5	2.4	19.6	18.40	<3
SLSQ-08B-25P	$\phi 8$	25.4	1.5	2.2	24.6	23.00	<3
SLSQ-08B-30P	$\phi 8$	30.4	1.5	2.1	29.6	27.60	<3
SLSQ-08B-40P	$\phi 8$	40.3	1.5	1.9	39.7	36.80	<3
SLSQ-08B-50P	$\phi 8$	50.3	1.5	1.8	49.7	46.00	<3
SLSQ-10B-10P	$\phi 10$	10.9	2.0	5.0	9.1	9.20	<1
SLSQ-10B-15P	$\phi 10$	15.7	2.0	3.9	14.3	13.80	<1
SLSQ-10B-20P	$\phi 10$	20.6	2.0	3.4	19.4	18.40	<1
SLSQ-10B-25P	$\phi 10$	25.5	2.0	3.1	24.5	23.00	<1
SLSQ-10B-30P	$\phi 10$	30.5	2.0	2.9	29.5	27.60	<1
SLSQ-10B-40P	$\phi 10$	40.5	2.0	2.7	39.5	36.80	<1
SLSQ-10B-50P	$\phi 10$	50.4	2.0	2.5	49.6	46.00	<1
SLSQ-10B-60P	$\phi 10$	60.4	2.0	2.5	59.6	55.20	<1
SLSQ-10B-70P	$\phi 10$	70.4	2.0	2.4	69.6	64.40	<1
SLSQ-10B-80P	$\phi 10$	80.4	2.0	2.3	79.6	73.60	<1
SLSQ-10B-90P	$\phi 10$	90.4	2.0	2.3	89.6	82.80	<1
SLSQ-10B-100P	$\phi 10$	100.4	2.0	2.3	99.6	92.00	<1
SLSQ-15B-15P	$\phi 15$	16.2	2.0	6.4	13.8	13.80	<1
SLSQ-15B-20P	$\phi 15$	20.9	2.0	5.2	19.1	18.40	<1
SLSQ-15B-25P	$\phi 15$	25.8	2.0	4.5	24.2	23.00	<1
SLSQ-15B-30P	$\phi 15$	30.7	2.0	4.1	29.3	27.60	<1
SLSQ-15B-40P	$\phi 15$	40.6	2.0	3.5	39.4	36.80	<1
SLSQ-15B-50P	$\phi 15$	50.6	2.0	3.2	49.4	46.00	<1
SLSQ-15B-60P	$\phi 15$	60.5	2.0	3.0	59.5	55.20	<1
SLSQ-15B-70P	$\phi 15$	70.5	2.0	2.9	69.5	64.40	<1
SLSQ-15B-80P	$\phi 15$	80.5	2.0	2.8	79.5	73.60	<1
SLSQ-15B-90P	$\phi 15$	90.5	2.0	2.7	89.5	82.80	<1
SLSQ-15B-100P	$\phi 15$	100.5	2.0	2.6	99.6	92.00	<1
SLSQ-20B-20P	$\phi 20$	21.5	2.0	7.9	18.5	18.40	<1
SLSQ-20B-25P	$\phi 20$	26.2	2.0	6.6	23.8	23.00	<1
SLSQ-20B-30P	$\phi 20$	31.0	2.0	5.8	29.0	27.60	<1
SLSQ-20B-40P	$\phi 20$	40.8	2.0	4.8	39.2	36.80	<1
SLSQ-20B-50P	$\phi 20$	50.7	2.0	4.2	49.3	46.00	<1
SLSQ-20B-60P	$\phi 20$	60.7	2.0	3.8	59.3	55.20	<1
SLSQ-20B-70P	$\phi 20$	70.6	2.0	3.6	69.4	64.40	<1
SLSQ-20B-80P	$\phi 20$	80.6	2.0	3.4	79.4	73.60	<1
SLSQ-20B-90P	$\phi 20$	90.6	2.0	3.2	89.4	82.80	<1
SLSQ-20B-100P	$\phi 20$	100.5	2.0	3.1	99.5	92.00	<1
SLSQ-20B-120P	$\phi 20$	120.5	2.0	2.9	119.5	110.40	<1
SLSQ-20B-150P	$\phi 20$	150.5	2.0	2.7	149.5	138.00	<1
SLSQ-25B-25P	$\phi 25$	26.7	2.0	9.4	23.3	23.00	<1
SLSQ-25B-30P	$\phi 25$	31.4	2.0	8.0	28.6	27.60	<1
SLSQ-25B-35P	$\phi 25$	36.3	2.0	7.1	33.7	32.20	<1
SLSQ-25B-40P	$\phi 25$	41.1	2.0	6.4	38.9	36.80	<1
SLSQ-25B-50P	$\phi 25$	51.0	2.0	5.5	49.0	46.00	<1
SLSQ-25B-60P	$\phi 25$	60.8	2.0	4.9	59.2	55.20	<1
SLSQ-25B-70P	$\phi 25$	70.8	2.0	4.5	69.2	64.40	<1
SLSQ-25B-80P	$\phi 25$	80.7	2.0	4.1	79.3	73.60	<1
SLSQ-25B-90P	$\phi 25$	90.7	2.0	3.9	89.3	82.80	<1
SLSQ-25B-100P	$\phi 25$	100.6	2.0	3.7	99.4	92.00	<1
SLSQ-25B-120P	$\phi 25$	120.6	2.0	3.4	119.4	110.40	<1
SLSQ-25B-150P	$\phi 25$	150.5	2.0	3.1	149.5	138.00	<1
SLSQ-25B-170P	$\phi 25$	170.5	2.0	3.0	169.5	156.40	<1
SLSQ-25B-200P	$\phi 25$	200.5	2.0	2.9	199.5	184.00	<1

**Compatible Optic Mounts**

LHF-10S, -15S, -20S, -25S / MLH-10, -15

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## Biconvex Lenses | SLB-B-P/SLSQ-B-P

Catalog Code W3059

Synthetic fused silica  $\phi 25.4 - \phi 50.8$ 

Application Systems	Part Number	Diameter $\phi D$ [mm]	Focal length $f$ [mm]	Thickness of the edge $t_e$ [mm]	Thickness of the center $t_c$ [mm]	Back focal length $f_b$ [mm]	Radius of curvature $r$ [mm]	Centration [']
Optics & Optical Coatings	SLSQ-25.4B-25P	$\phi 25.4$	26.7	1.8	9.4	23.3	23.00	<1
	SLSQ-25.4B-30P	$\phi 25.4$	31.4	1.8	8.0	28.5	27.60	<1
	SLSQ-25.4B-35P	$\phi 25.4$	36.3	1.9	7.1	33.8	32.20	<1
Holders	SLSQ-25.4B-40P	$\phi 25.4$	41.1	1.9	6.4	38.8	36.80	<1
	SLSQ-25.4B-50P	$\phi 25.4$	51.0	1.9	5.5	49.1	46.00	<1
	SLSQ-25.4B-60P	$\phi 25.4$	60.9	1.9	4.9	59.0	55.20	<1
	SLSQ-25.4B-70P	$\phi 25.4$	70.8	1.9	4.4	69.1	64.40	<1
Bases	SLSQ-25.4B-80P	$\phi 25.4$	80.7	1.9	4.1	79.1	73.60	<1
	SLSQ-25.4B-90P	$\phi 25.4$	90.7	1.9	3.9	89.2	82.80	<1
	SLSQ-25.4B-100P	$\phi 25.4$	100.6	1.9	3.7	99.2	92.00	<1
Manual Stages	SLSQ-25.4B-150P	$\phi 25.4$	150.5	1.9	3.1	149.3	138.00	<1
	SLSQ-25.4B-200P	$\phi 25.4$	200.5	2.0	2.9	199.4	184.00	<1
	SLSQ-30B-30P	$\phi 30$	32.0	2.0	10.9	28.0	27.60	<1
Actuators	SLSQ-30B-35P	$\phi 30$	36.7	2.0	9.4	33.3	32.20	<1
	SLSQ-30B-40P	$\phi 30$	41.5	2.0	8.4	38.5	36.80	<1
	SLSQ-30B-50P	$\phi 30$	51.2	2.0	7.0	48.8	46.00	<1
Motorized Stages	SLSQ-30B-60P	$\phi 30$	61.1	2.0	6.2	58.9	55.20	<1
	SLSQ-30B-70P	$\phi 30$	71.0	2.0	5.5	69.0	64.40	<1
	SLSQ-30B-80P	$\phi 30$	80.9	2.0	5.1	79.1	73.60	<1
Light Sources	SLSQ-30B-90P	$\phi 30$	90.8	2.0	4.7	89.2	82.80	<1
	SLSQ-30B-100P	$\phi 30$	100.8	2.0	4.5	99.2	92.00	<1
	SLSQ-30B-120P	$\phi 30$	120.7	2.0	4.0	119.3	110.40	<1
Index	SLSQ-30B-150P	$\phi 30$	150.6	2.0	3.6	149.4	138.00	<1
	SLSQ-30B-170P	$\phi 30$	170.6	2.0	3.4	169.4	156.40	<1
	SLSQ-30B-200P	$\phi 30$	200.6	2.0	3.2	199.4	184.00	<1
Guide	SLSQ-30B-220P	$\phi 30$	220.5	2.0	3.1	219.5	202.40	<1
	SLSQ-30B-250P	$\phi 30$	250.5	2.0	3.0	249.5	230.00	<1
	SLSQ-40B-40P	$\phi 40$	42.5	2.0	13.8	37.5	36.80	<1
Mirrors	SLSQ-40B-50P	$\phi 40$	52.0	2.0	11.2	48.0	46.00	<1
	SLSQ-40B-60P	$\phi 40$	61.7	2.0	9.5	58.3	55.20	<1
Beamsplitters	SLSQ-40B-70P	$\phi 40$	71.5	2.0	8.4	68.5	64.40	<1
	SLSQ-40B-80P	$\phi 40$	81.3	2.0	7.5	78.7	73.60	<1
Polarizers	SLSQ-40B-90P	$\phi 40$	91.2	2.0	6.9	88.8	82.80	<1
	SLSQ-40B-100P	$\phi 40$	101.1	2.0	6.4	98.9	92.00	<1
Lenses	SLSQ-40B-120P	$\phi 40$	121.0	2.0	5.7	119.0	110.40	<1
	SLSQ-40B-150P	$\phi 40$	150.8	2.0	4.9	149.2	138.00	<1
	SLSQ-40B-170P	$\phi 40$	170.8	2.0	4.6	169.2	156.40	<1
Multi-Element Optics	SLSQ-40B-200P	$\phi 40$	200.7	2.0	4.2	199.3	184.00	<1
	SLSQ-40B-220P	$\phi 40$	220.7	2.0	4.0	219.3	202.40	<1
	SLSQ-40B-250P	$\phi 40$	250.6	2.0	3.7	249.4	230.00	<1
Filters	SLSQ-50B-50P	$\phi 50$	53.2	3.0	17.8	46.8	46.00	<1
	SLSQ-50B-60P	$\phi 50$	62.7	3.0	15.0	57.3	55.20	<1
	SLSQ-50B-70P	$\phi 50$	72.3	3.0	13.1	67.7	64.40	<1
Prisms	SLSQ-50B-80P	$\phi 50$	82.1	3.0	11.8	77.9	73.60	<1
	SLSQ-50B-90P	$\phi 50$	91.9	3.0	10.7	88.1	82.80	<1
	SLSQ-50B-100P	$\phi 50$	101.7	3.0	9.9	98.3	92.00	<1
Substrates/Windows	SLSQ-50B-120P	$\phi 50$	121.5	3.0	8.7	118.5	110.40	<1
	SLSQ-50B-150P	$\phi 50$	151.3	3.0	7.6	148.7	138.00	<1
	SLSQ-50B-170P	$\phi 50$	171.2	3.0	7.0	168.8	156.40	<1
Optical Data	SLSQ-50B-200P	$\phi 50$	201.1	3.0	6.4	198.9	184.00	<1
	SLSQ-50B-220P	$\phi 50$	221.0	3.0	6.1	219.0	202.40	<1
	SLSQ-50B-250P	$\phi 50$	251.0	3.0	5.7	249.0	230.00	<1
Maintenance	SLSQ-50B-300P	$\phi 50$	300.9	3.0	5.3	299.1	276.00	<1
	SLSQ-50.8B-50P	$\phi 50.8$	53.2	2.5	17.8	46.7	46.00	<1
	SLSQ-50.8B-60P	$\phi 50.8$	62.7	2.6	15.0	57.3	55.20	<1
Selection Guide	SLSQ-50.8B-70P	$\phi 50.8$	72.3	2.7	13.1	67.7	64.40	<1
	SLSQ-50.8B-80P	$\phi 50.8$	82.1	2.8	11.8	78.0	73.60	<1
	SLSQ-50.8B-90P	$\phi 50.8$	91.9	2.7	10.7	87.7	82.80	<1
Plano Convex Lenses	SLSQ-50.8B-100P	$\phi 50.8$	101.7	2.7	9.9	98.3	92.00	<1
	SLSQ-50.8B-120P	$\phi 50.8$	121.5	2.8	8.7	118.5	110.40	<1
	SLSQ-50.8B-150P	$\phi 50.8$	151.3	2.9	7.6	148.7	138.00	<1
Plano Concave Lenses	SLSQ-50.8B-200P	$\phi 50.8$	201.1	2.9	6.4	198.9	184.00	<1
	SLSQ-50.8B-250P	$\phi 50.8$	251.0	3.0	5.8	249.0	230.00	<1
	SLSQ-50.8B-300P	$\phi 50.8$	300.9	3.0	5.3	298.8	276.00	<1
Biconvex Lenses	SLSQ-50.8B-50P	$\phi 50.8$	53.2	2.5	17.8	46.7	46.00	<1
	SLSQ-50.8B-60P	$\phi 50.8$	62.7	2.6	15.0	57.3	55.20	<1
	SLSQ-50.8B-70P	$\phi 50.8$	72.3	2.7	13.1	67.7	64.40	<1
Biconcave Lenses	SLSQ-50.8B-80P	$\phi 50.8$	82.1	2.8	11.8	78.0	73.60	<1
	SLSQ-50.8B-90P	$\phi 50.8$	91.9	2.7	10.7	87.7	82.80	<1
	SLSQ-50.8B-100P	$\phi 50.8$	101.7	2.7	9.9	98.3	92.00	<1
Kit	SLSQ-50.8B-120P	$\phi 50.8$	121.5	2.8	8.7	118.5	110.40	<1
	SLSQ-50.8B-150P	$\phi 50.8$	151.3	2.9	7.6	148.7	138.00	<1
	SLSQ-50.8B-200P	$\phi 50.8$	201.1	2.9	6.4	198.9	184.00	<1
Reasonable Lens	SLSQ-50.8B-250P	$\phi 50.8$	251.0	3.0	5.8	249.0	230.00	<1
	SLSQ-50.8B-300P	$\phi 50.8$	300.9	3.0	5.3	298.8	276.00	<1
	SLSQ-50.8B-400P	$\phi 50.8$	400.8	3.0	5.0	400.0	400.00	<1
Cylindrical	SLSQ-50.8B-500P	$\phi 50.8$	500.7	3.0	4.8	500.0	500.00	<1
	SLSQ-50.8B-600P	$\phi 50.8$	600.6	3.0	4.6	600.0	600.00	<1
	SLSQ-50.8B-700P	$\phi 50.8$	700.5	3.0	4.4	700.0	700.00	<1
Others	SLSQ-50.8B-800P	$\phi 50.8$	800.4	3.0	4.2	800.0	800.00	<1
	SLSQ-50.8B-900P	$\phi 50.8$	900.3	3.0	4.0	900.0	900.00	<1
	SLSQ-50.8B-1000P	$\phi 50.8$	1000.2	3.0	3.8	1000.0	1000.00	<1

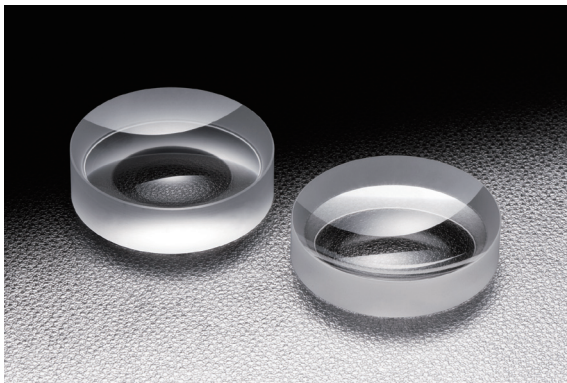
## Compatible Optic Mounts

LHF-25.4S, -30S, -40S, -50S, -50.8S

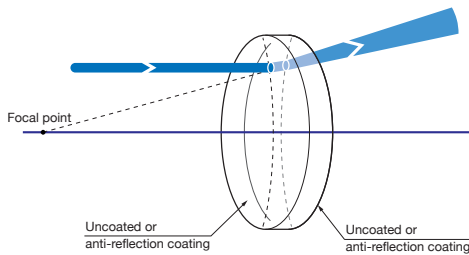


With its two concaves surface, the biconcave lens refracts light efficiently in a small space and spread widely the light. Possible to use it for enlarging the illumination area.

- There are two types available; BK7 for from visible range to infrared wavelength range, high-strength synthetic fused silica which has high laser damage threshold used in less than 350nm ultraviolet light.
- Made of BK7 lenses are also available with three types of anti-reflection coating in the infrared wavelength, near-infrared wavelength and visible wavelength.
- From among the wide variations that have been subdivided in outside diameter and focal length, you can make selection according to your specifications.

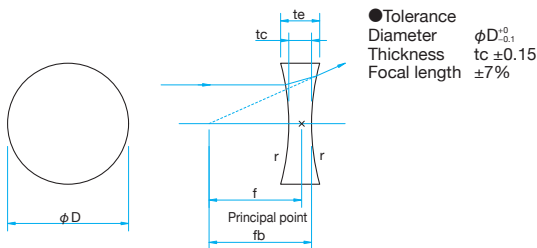


### Schematic



### Outline Drawing

(in mm)



### Specifications

Material	SLB: BK7 SLSQ: Synthetic fused silica
Design wavelength	546.1nm
Refractive index	BK7: $n_e=1.519$ Synthetic fused silica: $n_e=1.460$
Coating	Uncoated: the end of the part number 'N' Anti-reflection coating: the end of the part number 'NM', 'NIR1', 'NIR2'
Laser Damage Threshold	Anti-reflection coating: $4\text{J}/\text{cm}^2$ Laser pulse with 10ns, repetition frequency 20Hz
Clear aperture	90% of actual aperture: Uncoated 85% of actual aperture: with coating
Surface Quality (Scratch-Dig)	20-10

### Guide

- ▶ It is available other than the products which listed in the catalog such as focal length and outer diameter size.
- ▶ Production is also available with a specific wavelength of anti-reflective coating on the lens of no coated.

### Attention

- ▶ In the single concave lens will not be able to converge the light and can not be projected image. Make sure to use it in combination with a convex lens.
- ▶ The biconvex spherical lens has a chromatic aberration, and the focal length will vary depending on the wavelength. Please check the "wavelength characteristic of the focal length data" on the Web for the focal lengths of each wavelength. [▶ WEB Reference Catalog Code W3060](#)
- ▶ When using a high power pulsed laser, the spark may occur at the focal point on the optical path connecting the light reflected by the concave surface. Please use the plano-concave lens when used with a pulsed laser.
- ▶ Losses due to reflection of the front and rear surfaces of the lens, the transmittance of no coated is about 90%.
- ▶ The outer periphery of the ridge, concave side is chamfered. There is a possibility that it is smaller than the edge thickness for this design.

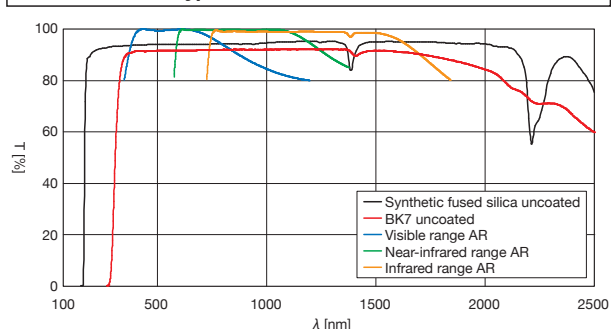
### How to specify the anti-reflection coating

In case of specifying a anti-reflection coating 633nm – 1064nm to near infrared lens of SLB-50.8B-200N.  
 ⇒ SLB-50.8B-200NIR1

Type of AR Coat	Part Number	Wavelength Range [nm]	Transmittance [%]
Visible range	SLB-50.8B-200NM	400 – 700	> Average 99
Near-infrared	SLB-50.8B-200NIR1	633 – 1064	> Average 98.5
Infrared	SLB-50.8B-200NIR2	750 – 1550	> Average 98.5

- ! Part of the above is an example of if you want to coat anti-reflective coating on the lens of the SLB-50.8B-200N.
- ! Anti-reflection coating can be available to the lens of all of SLB.

### Typical Transmittance Data T: Transmission



# Biconcave Lenses

## SLB-B-N/SLSQ-B-N

Catalog Code **W3060**

BK7 $\phi 10 - \phi 50.8$											
Application Systems	Uncoated	How to specify the anti-reflection coating			Diameter $\phi D$ [mm]	Focal length $f$ [mm]	Thickness of the edge $t_e$ [mm]	Thickness of the center $t_c$ [mm]	Back focal length $f_b$ [mm]	Radius of curvature $r$ [mm]	Centration [']
	Part Number	Visible 400 - 700nm	Near-infrared 633 - 1064nm	Infrared 750 - 1550nm							
Optics & Optical Coatings	SLB-10B-10N	M	IR1	IR2	$\phi 10$	-9.7	4.6	2.0	-10.3	10.38	<1
	SLB-10B-15N	M	IR1	IR2	$\phi 10$	-14.7	3.6	2.0	-15.3	15.57	<1
	SLB-10B-20N	M	IR1	IR2	$\phi 10$	-19.7	3.2	2.0	-20.3	20.76	<1
	SLB-10B-25N	M	IR1	IR2	$\phi 10$	-24.7	3.0	2.0	-25.3	25.95	<1
	SLB-10B-30N	M	IR1	IR2	$\phi 10$	-29.7	2.8	2.0	-30.3	31.14	<1
Holders	SLB-10B-40N	M	IR1	IR2	$\phi 10$	-39.7	2.6	2.0	-40.3	41.52	<1
	SLB-10B-50N	M	IR1	IR2	$\phi 10$	-49.7	2.5	2.0	-50.3	51.90	<1
	SLB-12.7B-10N	M	IR1	IR2	$\phi 12.7$	-9.7	6.3	2.0	-10.3	10.8	<1
	SLB-12.7B-15N	M	IR1	IR2	$\phi 12.7$	-14.7	4.7	2.0	-15.3	15.57	<1
	SLB-12.7B-20N	M	IR1	IR2	$\phi 12.7$	-19.7	4.0	2.0	-20.3	20.76	<1
Bases	SLB-12.7B-25N	M	IR1	IR2	$\phi 12.7$	-24.7	3.6	2.0	-25.3	25.95	<1
	SLB-15B-15N	M	IR1	IR2	$\phi 15$	-14.7	5.9	2.0	-15.3	15.57	<1
	SLB-15B-20N	M	IR1	IR2	$\phi 15$	-19.7	4.8	2.0	-20.3	20.76	<1
	SLB-15B-25N	M	IR1	IR2	$\phi 15$	-24.7	4.2	2.0	-25.3	25.95	<1
	SLB-15B-30N	M	IR1	IR2	$\phi 15$	-29.7	3.8	2.0	-30.3	31.14	<1
Manual Stages	SLB-15B-40N	M	IR1	IR2	$\phi 15$	-39.7	3.4	2.0	-40.3	41.52	<1
	SLB-15B-50N	M	IR1	IR2	$\phi 15$	-49.7	3.1	2.0	-50.3	51.90	<1
	SLB-20B-20N	M	IR1	IR2	$\phi 20$	-19.7	7.1	2.0	-20.3	20.76	<1
	SLB-20B-25N	M	IR1	IR2	$\phi 20$	-24.7	6.0	2.0	-25.3	25.95	<1
	SLB-20B-30N	M	IR1	IR2	$\phi 20$	-29.7	5.3	2.0	-30.3	31.14	<1
Actuators	SLB-20B-40N	M	IR1	IR2	$\phi 20$	-39.7	4.4	2.0	-40.3	41.52	<1
	SLB-20B-50N	M	IR1	IR2	$\phi 20$	-49.7	3.9	2.0	-50.3	51.90	<1
	SLB-25B-25N	M	IR1	IR2	$\phi 25$	-24.7	8.4	2.0	-25.3	25.95	<1
	SLB-25B-30N	M	IR1	IR2	$\phi 25$	-29.7	7.2	2.0	-30.3	31.14	<1
	SLB-25B-35N	M	IR1	IR2	$\phi 25$	-34.7	6.4	2.0	-35.3	36.33	<1
Motoeized Stages	SLB-25B-40N	M	IR1	IR2	$\phi 25$	-39.7	5.9	2.0	-40.3	41.52	<1
	SLB-25B-50N	M	IR1	IR2	$\phi 25$	-49.7	5.1	2.0	-50.3	51.90	<1
	SLB-25B-60N	M	IR1	IR2	$\phi 25$	-59.7	4.5	2.0	-60.3	62.28	<1
	SLB-25B-70N	M	IR1	IR2	$\phi 25$	-69.7	4.2	2.0	-70.3	72.66	<1
	SLB-25B-80N	M	IR1	IR2	$\phi 25$	-79.7	4.0	2.0	-80.3	83.04	<1
Light Sources	SLB-25B-100N	M	IR1	IR2	$\phi 25$	-99.7	3.5	2.0	-100.3	103.80	<1
	SLB-25.4B-25N	M	IR1	IR2	$\phi 25.4$	-24.7	8.6	2.0	-25.4	25.95	<1
	SLB-25.4B-30N	M	IR1	IR2	$\phi 25.4$	-29.7	7.4	2.0	-30.4	31.14	<1
	SLB-25.4B-40N	M	IR1	IR2	$\phi 25.4$	-39.7	6.0	2.0	-40.4	41.52	<1
	SLB-25.4B-50N	M	IR1	IR2	$\phi 25.4$	-49.7	5.2	2.0	-50.4	51.90	<1
Index	SLB-25.4B-60N	M	IR1	IR2	$\phi 25.4$	-59.7	4.6	2.0	-60.4	62.28	<1
	SLB-25.4B-70N	M	IR1	IR2	$\phi 25.4$	-69.7	4.2	2.0	-70.4	72.66	<1
	SLB-25.4B-80N	M	IR1	IR2	$\phi 25.4$	-79.7	4.0	2.0	-80.4	83.04	<1
	SLB-25.4B-100N	M	IR1	IR2	$\phi 25.4$	-99.7	3.6	2.0	-100.4	103.80	<1
	SLB-25.4B-150N	M	IR1	IR2	$\phi 25.4$	-149.7	3.0	2.0	-150.4	155.70	<1
Guide	SLB-25.4B-200N	M	IR1	IR2	$\phi 25.4$	-199.7	2.8	2.0	-200.4	207.60	<1
	SLB-30B-30N	M	IR1	IR2	$\phi 30$	-29.7	9.7	2.0	-30.3	31.14	<1
	SLB-30B-35N	M	IR1	IR2	$\phi 30$	-34.7	8.5	2.0	-35.3	36.33	<1
	SLB-30B-40N	M	IR1	IR2	$\phi 30$	-39.7	7.6	2.0	-40.3	41.52	<1
	SLB-30B-50N	M	IR1	IR2	$\phi 30$	-49.7	6.4	2.0	-50.3	51.90	<1
Mirrors	SLB-30B-100N	M	IR1	IR2	$\phi 30$	-99.7	4.2	2.0	-100.3	103.80	<1
	SLB-40B-40N	M	IR1	IR2	$\phi 40$	-39.7	12.3	2.0	-40.3	41.52	<1
	SLB-40B-50N	M	IR1	IR2	$\phi 40$	-49.7	10.0	2.0	-50.3	51.90	<1
	SLB-40B-100N	M	IR1	IR2	$\phi 40$	-99.7	5.9	2.0	-100.3	103.80	<1
	SLB-50B-50N	M	IR1	IR2	$\phi 50$	-49.5	15.8	3.0	-50.5	51.90	<1
Beam Splitters	SLB-50B-60N	M	IR1	IR2	$\phi 50$	-59.5	13.5	3.0	-60.5	62.28	<1
	SLB-50B-70N	M	IR1	IR2	$\phi 50$	-69.5	11.9	3.0	-70.5	72.66	<1
	SLB-50B-100N	M	IR1	IR2	$\phi 50$	-99.5	9.1	3.0	-100.5	103.80	<1
	SLB-50.8B-50N	M	IR1	IR2	$\phi 50.8$	-49.5	16.3	3.0	-50.5	51.90	<1
	SLB-50.8B-60N	M	IR1	IR2	$\phi 50.8$	-59.5	13.8	3.0	-60.5	62.28	<1
Polarizers	SLB-50.8B-100N	M	IR1	IR2	$\phi 50.8$	-99.5	9.3	3.0	-100.5	103.80	<1
	SLB-50.8B-150N	M	IR1	IR2	$\phi 50.8$	-149.5	7.2	3.0	-150.5	155.70	<1
	SLB-50.8B-200N	M	IR1	IR2	$\phi 50.8$	-199.5	6.1	3.0	-200.5	207.60	<1
	SLB-50.8B-250N	M	IR1	IR2	$\phi 50.8$	-249.5	5.5	3.0	-250.5	259.50	<1
	SLB-50.8B-300N	M	IR1	IR2	$\phi 50.8$	-299.5	5.1	3.0	-300.5	311.40	<1

**Compatible Optic Mounts**

LHF-10S, -15S, -20S, -25S, -25.4S, -30S, -40S, -50S, -50.8S / MLH-10, -15



**Synthetic fused silica  $\phi 10 - \phi 50.8$**

Part Number	Diameter $\phi D$ [mm]	Focal length $f$ [mm]	Thickness of the edge $t_e$ [mm]	Thickness of the center $t_c$ [mm]	Back focal length $f_b$ [mm]	Radius of curvature $r$ [mm]	Centration [']
SLSQ-10B-10N	$\phi 10$	-9.7	5.0	2.0	-10.3	9.20	<1
SLSQ-10B-15N	$\phi 10$	-14.7	3.9	2.0	-15.3	13.80	<1
SLSQ-10B-20N	$\phi 10$	-19.7	3.4	2.0	-20.3	18.40	<1
SLSQ-10B-25N	$\phi 10$	-24.7	3.1	2.0	-25.3	23.00	<1
SLSQ-10B-30N	$\phi 10$	-29.7	2.9	2.0	-30.3	27.60	<1
SLSQ-10B-40N	$\phi 10$	-39.7	2.7	2.0	-40.3	36.80	<1
SLSQ-10B-50N	$\phi 10$	-49.7	2.5	2.0	-50.3	46.00	<1
SLSQ-15B-15N	$\phi 15$	-14.7	6.4	2.0	-15.3	13.80	<1
SLSQ-15B-20N	$\phi 15$	-19.7	5.2	2.0	-20.3	18.40	<1
SLSQ-15B-25N	$\phi 15$	-24.7	4.5	2.0	-25.3	23.00	<1
SLSQ-15B-30N	$\phi 15$	-29.7	4.1	2.0	-30.3	27.60	<1
SLSQ-15B-40N	$\phi 15$	-39.7	3.5	2.0	-40.3	36.80	<1
SLSQ-15B-50N	$\phi 15$	-49.7	3.2	2.0	-50.3	46.00	<1
SLSQ-20B-20N	$\phi 20$	-19.7	7.9	2.0	-20.3	18.40	<1
SLSQ-20B-25N	$\phi 20$	-24.7	6.6	2.0	-25.3	23.00	<1
SLSQ-20B-30N	$\phi 20$	-29.7	5.8	2.0	-30.3	27.60	<1
SLSQ-20B-40N	$\phi 20$	-39.7	4.8	2.0	-40.3	36.80	<1
SLSQ-20B-50N	$\phi 20$	-49.7	4.2	2.0	-50.3	46.00	<1
SLSQ-25B-25N	$\phi 25$	-24.7	9.4	2.0	-25.3	23.00	<1
SLSQ-25B-30N	$\phi 25$	-29.7	8.0	2.0	-30.3	27.60	<1
SLSQ-25B-35N	$\phi 25$	-34.7	7.1	2.0	-35.3	32.20	<1
SLSQ-25B-40N	$\phi 25$	-39.7	6.4	2.0	-40.3	36.80	<1
SLSQ-25B-50N	$\phi 25$	-49.7	5.5	2.0	-50.3	46.00	<1
SLSQ-25B-60N	$\phi 25$	-59.7	4.9	2.0	-60.3	55.20	<1
SLSQ-25B-70N	$\phi 25$	-69.7	4.5	2.0	-70.3	64.40	<1
SLSQ-25B-80N	$\phi 25$	-79.7	4.1	2.0	-80.3	73.60	<1
SLSQ-25B-90N	$\phi 25$	-89.7	3.9	2.0	-90.3	82.80	<1
SLSQ-25B-100N	$\phi 25$	-99.7	3.7	2.0	-100.3	92.00	<1
SLSQ-25.4B-25N	$\phi 25.4$	-24.7	9.6	2.0	-25.4	23.00	<1
SLSQ-25.4B-30N	$\phi 25.4$	-29.7	8.2	2.0	-30.4	27.60	<1
SLSQ-25.4B-40N	$\phi 25.4$	-39.7	6.5	2.0	-40.4	36.80	<1
SLSQ-25.4B-50N	$\phi 25.4$	-49.7	5.6	2.0	-50.4	46.00	<1
SLSQ-25.4B-60N	$\phi 25.4$	-59.7	5.0	2.0	-60.4	55.20	<1
SLSQ-25.4B-70N	$\phi 25.4$	-69.7	4.5	2.0	-70.4	64.40	<1
SLSQ-25.4B-80N	$\phi 25.4$	-79.7	4.2	2.0	-80.4	73.60	<1
SLSQ-25.4B-90N	$\phi 25.4$	-89.7	4.0	2.0	-90.4	82.80	<1
SLSQ-25.4B-100N	$\phi 25.4$	-99.7	3.8	2.0	-100.4	92.00	<1
SLSQ-25.4B-150N	$\phi 25.4$	-149.7	3.2	2.0	-150.4	138.00	<1
SLSQ-25.4B-200N	$\phi 25.4$	-199.7	2.9	2.0	-200.4	184.00	<1
SLSQ-30B-30N	$\phi 30$	-29.7	10.9	2.0	-30.3	27.60	<1
SLSQ-30B-35N	$\phi 30$	-34.7	9.4	2.0	-35.3	32.20	<1
SLSQ-30B-40N	$\phi 30$	-39.7	8.4	2.0	-40.3	36.80	<1
SLSQ-30B-50N	$\phi 30$	-49.7	7.0	2.0	-50.3	46.00	<1
SLSQ-30B-60N	$\phi 30$	-59.7	6.2	2.0	-60.3	55.20	<1
SLSQ-30B-70N	$\phi 30$	-69.7	5.5	2.0	-70.3	64.40	<1
SLSQ-30B-80N	$\phi 30$	-79.7	5.1	2.0	-80.3	73.60	<1
SLSQ-30B-90N	$\phi 30$	-89.7	4.7	2.0	-90.3	82.80	<1
SLSQ-30B-100N	$\phi 30$	-99.7	4.5	2.0	-100.3	92.00	<1
SLSQ-40B-40N	$\phi 40$	-39.7	13.8	2.0	-40.3	36.80	<1
SLSQ-40B-50N	$\phi 40$	-49.7	11.2	2.0	-50.3	46.00	<1
SLSQ-40B-60N	$\phi 40$	-59.7	9.5	2.0	-60.3	55.20	<1
SLSQ-40B-70N	$\phi 40$	-69.7	8.4	2.0	-70.3	64.40	<1
SLSQ-40B-80N	$\phi 40$	-79.7	7.5	2.0	-80.3	73.60	<1
SLSQ-40B-90N	$\phi 40$	-89.7	6.9	2.0	-90.3	82.80	<1
SLSQ-40B-100N	$\phi 40$	-99.7	6.4	2.0	-100.3	92.00	<1
SLSQ-50B-50N	$\phi 50$	-49.5	17.8	3.0	-50.5	46.00	<1
SLSQ-50B-60N	$\phi 50$	-59.5	15.0	3.0	-60.5	55.20	<1
SLSQ-50B-70N	$\phi 50$	-69.5	13.1	3.0	-70.5	64.40	<1
SLSQ-50B-80N	$\phi 50$	-79.5	11.8	3.0	-80.5	73.60	<1
SLSQ-50B-90N	$\phi 50$	-89.5	10.7	3.0	-90.5	82.80	<1
SLSQ-50B-100N	$\phi 50$	-99.5	9.9	3.0	-100.5	92.00	<1
SLSQ-50.8B-50N	$\phi 50.8$	-49.5	18.3	3.0	-50.5	46.00	<1
SLSQ-50.8B-60N	$\phi 50.8$	-59.5	15.4	3.0	-60.5	55.20	<1
SLSQ-50.8B-70N	$\phi 50.8$	-69.5	13.4	3.0	-70.5	64.40	<1
SLSQ-50.8B-80N	$\phi 50.8$	-79.5	12.0	3.0	-80.5	73.60	<1
SLSQ-50.8B-90N	$\phi 50.8$	-89.5	11.0	3.0	-90.5	82.80	<1
SLSQ-50.8B-100N	$\phi 50.8$	-99.5	10.2	3.0	-100.5	92.00	<1
SLSQ-50.8B-150N	$\phi 50.8$	-149.5	7.7	3.0	-150.5	138.00	<1
SLSQ-50.8B-200N	$\phi 50.8$	-199.5	6.5	3.0	-200.5	184.00	<1
SLSQ-50.8B-250N	$\phi 50.8$	-249.5	5.8	3.0	-250.5	230.00	<1
SLSQ-50.8B-300N	$\phi 50.8$	-299.5	5.3	3.0	-300.5	276.00	<1

**Compatible Optic Mounts**

LHF-10S, -15S, -20S, -25S, -25.4S, -30S, -40S, -50S, -50.8S / MLH-10, -15

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Kit

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Others

This is a perfect lens kit in all areas from teaching materials to research and development. There is special case for a single lens that is commonly used such as plano convex (9 types), and biconvex, plano concave and biconcave (each 6 types), which are total 27 types. Four kinds of totally 27 lenses commonly used such as plano convex (9 types), and biconvex, plano concave and biconcave (each 6 types), are housed in a special box.

- Outer diameter of the lens has been unified with φ25.4mm.
- Focal length is divided into a wide range of -200 - 1,000 mm.
- Special case is made by wooden box in order for convenient storage.



## Specifications

Part Number	SLB-25.4-SET
Material	BK7
Design Wavelength	546.1nm
Refractive Index	$n_e=1.519$
Coating	Uncoated
Clear Aperture	90% of the diameter
Surface Quality (Scratch-Dig)	20-10

## Components

Shape of Lenses	Part Number	Diameter φD [mm]	Focal length f [mm]	Thickness of the edge te [mm]	Thickness of the center tc [mm]	Back focal length fb [mm]	Centration [']
Plano Convex Lenses	SLB-25.4-30P	φ25.4	30	1.7	8.3	24.5	<1
	SLB-25.4-50P	φ25.4	50	1.9	5.2	46.6	<1
	SLB-25.4-70P	φ25.4	70	1.9	4.2	67.2	<1
	SLB-25.4-100P	φ25.4	100	1.9	3.5	97.7	<1
	SLB-25.4-150P	φ25.4	150	2.0	3.0	148.0	<1
	SLB-25.4-200P	φ25.4	200	2.0	2.8	198.2	<1
	SLB-25.4-300P	φ25.4	300	2.0	2.5	298.4	<3
	SLB-25.4-500P	φ25.4	500	2.0	2.3	498.4	<3
	SLB-25.4-1000P	φ25.4	1000	2.0	2.2	998.5	<3
Biconvex Lenses	SLB-25.4B-25P	φ25.4	26.5	1.8	8.4	23.6	<1
	SLB-25.4B-50P	φ25.4	50.8	1.9	5.1	49.2	<1
	SLB-25.4B-70P	φ25.4	70.7	1.9	4.1	69.3	<1
	SLB-25.4B-100P	φ25.4	100.6	1.9	3.5	99.4	<1
	SLB-25.4B-150P	φ25.4	150.5	2.0	3.0	149.5	<1
	SLB-25.4B-200P	φ25.4	200.5	2.0	2.8	199.6	<1
Plano Concave Lenses	SLB-25.4-30N	φ25.4	-30	8.6	2.0	-31.3	<1
	SLB-25.4-50N	φ25.4	-50	5.3	2.0	-51.3	<1
	SLB-25.4-70N	φ25.4	-70	4.3	2.0	-71.3	<1
	SLB-25.4-100N	φ25.4	-100	3.6	2.0	-101.3	<1
	SLB-25.4-150N	φ25.4	-150	3.0	2.0	-151.3	<1
	SLB-25.4-200N	φ25.4	-200	2.8	2.0	-201.3	<1
Biconcave Lenses	SLB-25.4B-25N	φ25.4	-24.7	8.6	2.0	-25.4	<1
	SLB-25.4B-50N	φ25.4	-49.7	5.2	2.0	-50.4	<1
	SLB-25.4B-70N	φ25.4	-69.7	4.2	2.0	-70.4	<1
	SLB-25.4B-100N	φ25.4	-99.7	3.6	2.0	-100.4	<1
	SLB-25.4B-150N	φ25.4	-149.7	3.0	2.0	-150.4	<1
	SLB-25.4B-200N	φ25.4	-199.7	2.8	2.0	-200.4	<1



## Contact sheet for Special Order for spherical lens

Estimation  Order

Date

To: Sigma Koki Co., Ltd. **FAX +81-3-5638-6550**

Affiliation (Organization Name)						
Department						
TEL		FAX		E-mail		
Country/Address						
Name & Designation		(Tentative name is okay)				
Drawing Number			Estimate	<input type="checkbox"/> Yes: by Date <input type="checkbox"/> No		
Desired Delivery Date			Budget	JP Yen		
Specification of lens	Quantity					
	Selected from standard product	Part Number	If you are using a spherical lens of standard product, please fill in the product number.			
	Custom-made	Shape	<input type="checkbox"/> Plano Convex <input type="checkbox"/> Biconvex <input type="checkbox"/> Plano Concave <input type="checkbox"/> Biconcave <input type="checkbox"/> Meniscus <input type="checkbox"/> Other ( )			
		Material	<input type="checkbox"/> BK7 <input type="checkbox"/> Synthetic fused silica <input type="checkbox"/> Synthetic fused silica for Excimer Laser ( $\lambda =$ )			
		Focal length	f =	mm	●When there is no specification of the design wavelength, 546.1nm and standard products. ●May want to change the center thickness by the case of the production. ●If you do not specify the dimension tolerance, we will apply our standard tolerance instead.	
		Diameter	Diameter			
	Center Thickness		tc =			
Design wavelength	$\lambda =$	nm				
Specifications of Coating	Presence or absence of the coating	<input type="checkbox"/> Non <input type="checkbox"/> Single-layer anti-reflection coating <input type="checkbox"/> Broadband multi-layer anti-reflection coating <input type="checkbox"/> Other ( )				
	Type of AR (If required)					
Specifications of Light Source Used	Wavelength Range	$\lambda =$	nm	Type		
	Output or Energy	W	J	Beam Size	mm	
		Pulse width	s	Repetition frequency	Hz	
Incident angle	$\theta =$ °					
Other	* Write more detailed specifications here. (Rough illustration is acceptable.)					

Sigma Koki Co., Ltd.

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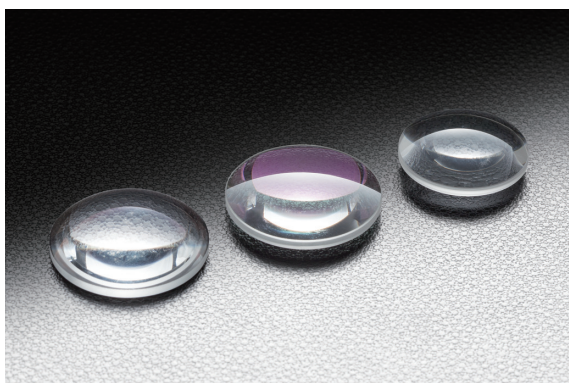
Kit

Reasonable Lenses

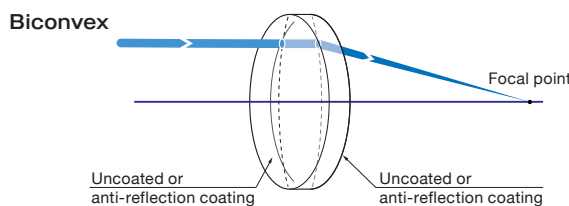
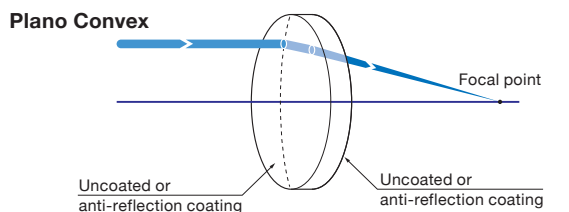
Cylindrical

Others

It is the product that was reduced by one rank from the surface quality of Plano Convex Lens (SLB-P). It can be used in an optical system such as observation or lighting applications that high surface quality is not required.



### Schematic

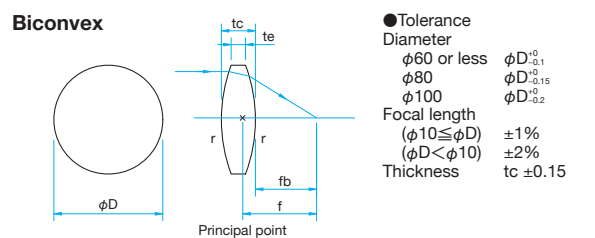
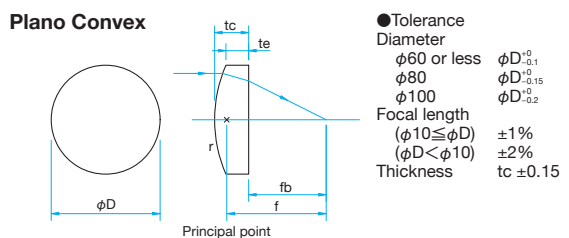


- It has the same specification of Plano Convex Lens (SLB-P) except the surface quality. Unless a laser is used for high-precision experiments, it is recommended.
- There are two types of lens. One is a Plano convex lens with low spherical aberration and the other is a biconvex lens that is possible to shorten the focal length by a large refraction.
- In addition to uncoated products, there are three types of anti-reflection coating for visible, near-infrared, and infrared.

Specifications	
Material	BK7
Design Wavelength	546.1nm
Refractive Index	$n_e=1.519$
Centration	<3'
Coating	Uncoated: the end of the part number 'P' Anti-reflection coating: the end of the part number 'PM', 'PIR1', 'PIR2'
Laser Damage Threshold	Anti-reflection coating: 4J/cm <sup>2</sup> Laser pulse with 10ns, repetition frequency 20Hz
Clear Aperture	90% of actual aperture: Uncoated 85% of actual aperture: with coating, $\phi 10 \leq D$ 83% of actual aperture: with coating, $D < \phi 10$
Surface Quality (Scratch-Dig)	60-40

- Attention**
- ▶ Plano convex lens and biconvex spherical lens have a chromatic aberration, and the focal length will vary depending on the wavelength. Please check the "wavelength characteristic data of the focal length" on the Web for the focal length of each wavelength.
  - ▶ There is a direction to put a light in the Plano convex lens. Please make sure to put the incident parallel light from the convex side. If it is reserved, the spherical aberration increases, the focused spot becomes large and the image looks blurred.
  - ▶ Loss occurs due to the reflection of the front and rear surfaces of the lens, the transmittance of uncoated lens is about 90%.

### Outline Drawing (in mm)



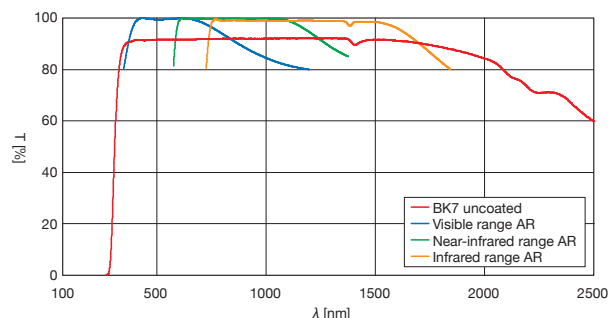
### How to specify the anti-reflection coating

In case of specifying an anti-reflection coating 633nm – 1064nm to near infrared lens of S-SLB-100-500P.  
 ⇒ S-SLB-100-500PIR1

Type of AR Coat	Part Number	Wavelength Range [nm]	Transmittance [%]
Visible range	S-SLB-100-500PM	400 – 700	> Average 99
Near-infrared	S-SLB-100-500PIR1	633 – 1064	> Average 98.5
Infrared	S-SLB-100-500PIR2	750 – 1550	> Average 98.5

- ⚠ Part of the above is an example of if you want to coat anti-reflection coating on the lens of the S-SLB-100-500P.
- ⚠ Anti-reflection coating can be available to the lens of all of S-SLB.

### Typical Transmittance Data T: Transmission





**Plano Convex Lens  $\phi 6 - \phi 25$**

Part Number	How to specify the anti-reflection coating			Diameter $\phi D$ [mm]	Focal length $f$ [mm]	Thickness of the edge $t_e$ [mm]	Thickness of the center $t_c$ [mm]	Back focal length $f_b$ [mm]	Radius of curvature $r$ [mm]
	Uncoated	Visible 400 - 700nm	Near-infrared 633 - 1064nm						
S-SLB-06-08P	M	IR1	IR2	$\phi 6$	8	1.0	2.3	6.5	4.15
S-SLB-06-10P	M	IR1	IR2	$\phi 6$	10	1.0	2.0	8.7	5.19
S-SLB-07-20P	M	IR1	IR2	$\phi 7$	20	1.7	2.3	18.5	10.38
S-SLB-07-40P	M	IR1	IR2	$\phi 7$	40	1.6	1.9	38.8	20.76
S-SLB-08-10P	M	IR1	IR2	$\phi 8$	10	1.5	3.4	7.8	5.19
S-SLB-08-15P	M	IR1	IR2	$\phi 8$	15	1.5	2.6	13.3	7.79
S-SLB-08-25P	M	IR1	IR2	$\phi 8$	25	1.5	2.1	23.6	12.98
S-SLB-08-40P	M	IR1	IR2	$\phi 8$	40	1.5	1.9	38.8	20.76
S-SLB-10-15P	M	IR1	IR2	$\phi 10$	15	2.0	3.8	12.5	7.79
S-SLB-10-20P	M	IR1	IR2	$\phi 10$	20	2.0	3.3	17.8	10.38
S-SLB-10-25P	M	IR1	IR2	$\phi 10$	25	2.0	3.0	23.0	12.98
S-SLB-10-30P	M	IR1	IR2	$\phi 10$	30	2.0	2.8	28.1	15.57
S-SLB-10-40P	M	IR1	IR2	$\phi 10$	40	2.0	2.6	38.3	20.76
S-SLB-10-50P	M	IR1	IR2	$\phi 10$	50	2.0	2.5	48.4	25.95
S-SLB-10-60P	M	IR1	IR2	$\phi 10$	60	2.0	2.4	58.4	31.14
S-SLB-10-70P	M	IR1	IR2	$\phi 10$	70	2.0	2.3	68.5	36.33
S-SLB-10-100P	M	IR1	IR2	$\phi 10$	100	2.0	2.2	98.5	51.90
S-SLB-15-20P	M	IR1	IR2	$\phi 15$	20	2.0	5.2	16.6	10.38
S-SLB-15-25P	M	IR1	IR2	$\phi 15$	25	2.0	4.4	22.1	12.98
S-SLB-15-30P	M	IR1	IR2	$\phi 15$	30	2.0	3.9	27.4	15.57
S-SLB-15-40P	M	IR1	IR2	$\phi 15$	40	2.0	3.4	37.8	20.76
S-SLB-15-50P	M	IR1	IR2	$\phi 15$	50	2.0	3.1	48.0	25.95
S-SLB-15-60P	M	IR1	IR2	$\phi 15$	60	2.0	2.9	58.1	31.14
S-SLB-15-70P	M	IR1	IR2	$\phi 15$	70	2.0	2.8	68.2	36.33
S-SLB-15-80P	M	IR1	IR2	$\phi 15$	80	2.0	2.7	78.2	41.52
S-SLB-15-90P	M	IR1	IR2	$\phi 15$	90	2.0	2.6	88.3	46.71
S-SLB-15-100P	M	IR1	IR2	$\phi 15$	100	2.0	2.5	98.3	51.90
S-SLB-15-120P	M	IR1	IR2	$\phi 15$	120	2.0	2.5	118.4	62.28
S-SLB-15-150P	M	IR1	IR2	$\phi 15$	150	2.0	2.4	148.4	77.85
S-SLB-20-25P	M	IR1	IR2	$\phi 20$	25	2.0	6.7	20.6	12.98
S-SLB-20-30P	M	IR1	IR2	$\phi 20$	30	2.0	5.6	26.3	15.57
S-SLB-20-40P	M	IR1	IR2	$\phi 20$	40	2.0	4.6	37.0	20.76
S-SLB-20-50P	M	IR1	IR2	$\phi 20$	50	2.0	4.0	47.4	25.95
S-SLB-20-60P	M	IR1	IR2	$\phi 20$	60	2.0	3.6	57.6	31.14
S-SLB-20-70P	M	IR1	IR2	$\phi 20$	70	2.0	3.4	67.8	36.33
S-SLB-20-80P	M	IR1	IR2	$\phi 20$	80	2.0	3.2	77.9	41.52
S-SLB-20-90P	M	IR1	IR2	$\phi 20$	90	2.0	3.1	88.0	46.71
S-SLB-20-100P	M	IR1	IR2	$\phi 20$	100	2.0	3.0	98.0	51.90
S-SLB-20-120P	M	IR1	IR2	$\phi 20$	120	2.0	2.8	118.2	62.28
S-SLB-20-150P	M	IR1	IR2	$\phi 20$	150	2.0	2.6	148.3	77.85
S-SLB-20-170P	M	IR1	IR2	$\phi 20$	170	2.0	2.6	168.2	88.23
S-SLB-20-200P	M	IR1	IR2	$\phi 20$	200	2.0	2.5	198.4	103.80
S-SLB-25-30P	M	IR1	IR2	$\phi 25$	30	2.0	8.3	24.5	15.57
S-SLB-25-35P	M	IR1	IR2	$\phi 25$	35	2.0	7.0	30.4	18.17
S-SLB-25-40P	M	IR1	IR2	$\phi 25$	40	2.0	6.2	36.0	20.76
S-SLB-25-50P	M	IR1	IR2	$\phi 25$	50	2.0	5.2	46.6	25.95
S-SLB-25-70P	M	IR1	IR2	$\phi 25$	70	2.0	4.2	67.2	36.33
S-SLB-25-80P	M	IR1	IR2	$\phi 25$	80	2.0	3.9	77.4	41.52
S-SLB-25-90P	M	IR1	IR2	$\phi 25$	90	2.0	3.7	87.6	46.71
S-SLB-25-100P	M	IR1	IR2	$\phi 25$	100	2.0	3.5	97.7	51.90
S-SLB-25-120P	M	IR1	IR2	$\phi 25$	120	2.0	3.3	117.8	62.28
S-SLB-25-150P	M	IR1	IR2	$\phi 25$	150	2.0	3.0	148.0	77.85
S-SLB-25-200P	M	IR1	IR2	$\phi 25$	200	2.0	2.8	198.2	103.80

**Compatible Optic Mounts**

LHF-10S, -15S, -20S, -25S / MLH-10, -15

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# Reasonable Plano Convex Lens

S-SLB-P/S-SLB-B-P

RoHS

Plano Convex Lens $\phi 30 - \phi 100$									
Part Number	How to specify the anti-reflection coating			Diameter $\phi D$ [mm]	Focal length $f$ [mm]	Thickness of the edge $t_e$ [mm]	Thickness of the center $t_c$ [mm]	Back focal length $f_b$ [mm]	Radius of curvature $r$ [mm]
	Uncoated	Visible 400 - 700nm	Near-infrared 633 - 1064nm						
S-SLB-30-35P	M	IR1	IR2	$\phi 30$	35	2.0	9.9	28.5	18.17
S-SLB-30-40P	M	IR1	IR2	$\phi 30$	40	2.0	8.4	34.5	20.76
S-SLB-30-50P	M	IR1	IR2	$\phi 30$	50	2.0	6.8	45.5	25.95
S-SLB-30-60P	M	IR1	IR2	$\phi 30$	60	2.0	5.9	56.1	31.14
S-SLB-30-70P	M	IR1	IR2	$\phi 30$	70	2.0	5.2	66.5	36.33
S-SLB-30-80P	M	IR1	IR2	$\phi 30$	80	2.0	4.8	76.8	41.52
S-SLB-30-90P	M	IR1	IR2	$\phi 30$	90	2.0	4.5	87.1	46.71
S-SLB-30-100P	M	IR1	IR2	$\phi 30$	100	2.0	4.2	97.2	51.90
S-SLB-30-120P	M	IR1	IR2	$\phi 30$	120	2.0	3.8	117.5	62.28
S-SLB-30-150P	M	IR1	IR2	$\phi 30$	150	2.0	3.5	147.7	77.85
S-SLB-30-170P	M	IR1	IR2	$\phi 30$	170	2.0	3.3	167.8	88.23
S-SLB-30-200P	M	IR1	IR2	$\phi 30$	200	2.0	3.1	198	103.80
S-SLB-30-250P	M	IR1	IR2	$\phi 30$	250	2.0	2.9	248.1	129.75
S-SLB-30-300P	M	IR1	IR2	$\phi 30$	300	2.0	2.7	298.2	155.70
S-SLB-30-350P	M	IR1	IR2	$\phi 30$	350	2.0	2.6	348.3	181.65
S-SLB-40-50P	M	IR1	IR2	$\phi 40$	50	2.0	11.4	42.5	25.95
S-SLB-40-60P	M	IR1	IR2	$\phi 40$	60	2.0	9.3	53.9	31.14
S-SLB-40-70P	M	IR1	IR2	$\phi 40$	70	2.0	8.0	64.7	36.33
S-SLB-40-80P	M	IR1	IR2	$\phi 40$	80	2.0	7.1	75.3	41.52
S-SLB-40-90P	M	IR1	IR2	$\phi 40$	90	2.0	6.5	85.7	46.71
S-SLB-40-100P	M	IR1	IR2	$\phi 40$	100	2.0	6.0	96	51.90
S-SLB-40-120P	M	IR1	IR2	$\phi 40$	120	2.0	5.3	116.5	62.28
S-SLB-40-150P	M	IR1	IR2	$\phi 40$	150	2.0	4.6	147	77.85
S-SLB-40-170P	M	IR1	IR2	$\phi 40$	170	2.0	4.3	167.2	88.23
S-SLB-40-200P	M	IR1	IR2	$\phi 40$	200	2.0	3.9	197.4	103.80
S-SLB-40-250P	M	IR1	IR2	$\phi 40$	250	2.0	3.6	247.7	129.75
S-SLB-40-1000P	M	IR1	IR2	$\phi 40$	1000	2.0	2.4	998.4	519.00
S-SLB-50-70P	M	IR1	IR2	$\phi 50$	70	3.0	13	61.5	36.33
S-SLB-50-90P	M	IR1	IR2	$\phi 50$	90	3.0	10.3	83.2	46.71
S-SLB-50-100P	M	IR1	IR2	$\phi 50$	100	3.0	9.4	93.8	51.90
S-SLB-50-120P	M	IR1	IR2	$\phi 50$	120	3.0	8.2	114.6	62.28
S-SLB-50-150P	M	IR1	IR2	$\phi 50$	150	3.0	7.1	145.3	77.85
S-SLB-50-170P	M	IR1	IR2	$\phi 50$	170	3.0	6.6	165.6	88.23
S-SLB-50-200P	M	IR1	IR2	$\phi 50$	200	3.0	6.1	196.0	103.80
S-SLB-60-70P	M	IR1	IR2	$\phi 60$	70	3.0	18.8	57.6	36.33
S-SLB-60-100P	M	IR1	IR2	$\phi 60$	100	3.0	12.5	91.7	51.90
S-SLB-60-120P	M	IR1	IR2	$\phi 60$	120	3.0	10.7	113.0	62.28
S-SLB-60-150P	M	IR1	IR2	$\phi 60$	150	3.0	9.0	144.1	77.85
S-SLB-80-150P	M	IR1	IR2	$\phi 80$	150	3.0	14.1	140.8	77.85
S-SLB-80-250P	M	IR1	IR2	$\phi 80$	250	3.0	9.3	243.9	129.75
S-SLB-100-150P	M	IR1	IR2	$\phi 100$	150	3.0	21.2	136.1	77.85
S-SLB-100-200P	M	IR1	IR2	$\phi 100$	200	3.0	15.8	189.6	103.80
S-SLB-100-250P	M	IR1	IR2	$\phi 100$	250	3.0	13.0	241.4	129.75
S-SLB-100-300P	M	IR1	IR2	$\phi 100$	300	3.0	11.2	292.6	155.70
S-SLB-100-500P	M	IR1	IR2	$\phi 100$	500	3.0	7.9	494.8	259.50
S-SLB-100-1000P	M	IR1	IR2	$\phi 100$	1000	3.0	5.4	996.4	519.00

Compatible Optic Mounts

LHF-30S, -40S, -50S, -60S, -100S





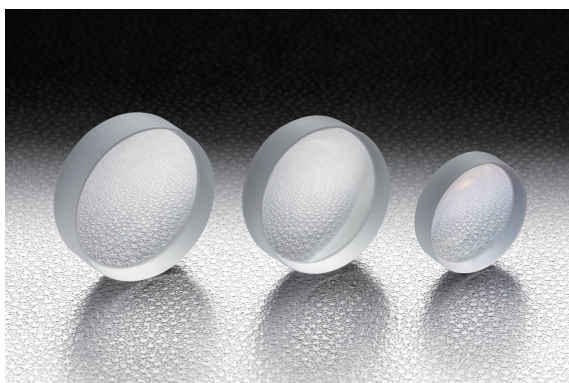
Biconvex Lens									
Part Number	How to specify the anti-reflection coating			Diameter $\phi D$ [mm]	Focal length $f$ [mm]	Thickness of the edge $t_e$ [mm]	Thickness of the center $t_c$ [mm]	Back focal length $f_b$ [mm]	Radius of curvature $r$ [mm]
	Uncoated	Visible 400 – 700nm	Near-infrared 633 – 1064nm						
S-SLB-05B-08P	M	IR1	IR2	$\phi 5$	8.4	1.4	2.1	7.6	8.30
S-SLB-05B-20P	M	IR1	IR2	$\phi 5$	20.2	1.1	1.4	19.8	20.76
S-SLB-06B-06P	M	IR1	IR2	$\phi 6$	6.4	1.0	2.5	5.6	6.23
S-SLB-08B-08P	M	IR1	IR2	$\phi 8$	8.6	1.5	3.6	7.4	8.30
S-SLB-10B-10P	M	IR1	IR2	$\phi 10$	10.8	2.0	4.6	9.2	10.38
S-SLB-10B-15P	M	IR1	IR2	$\phi 10$	15.6	2.0	3.6	14.4	15.57
S-SLB-10B-20P	M	IR1	IR2	$\phi 10$	20.5	2.0	3.2	19.5	20.76
S-SLB-10B-40P	M	IR1	IR2	$\phi 10$	40.4	2.0	2.6	39.6	41.52
S-SLB-15B-15P	M	IR1	IR2	$\phi 15$	16	2.0	5.9	14.0	15.57
S-SLB-15B-20P	M	IR1	IR2	$\phi 15$	20.8	2.0	4.8	19.2	20.76
S-SLB-15B-30P	M	IR1	IR2	$\phi 15$	30.6	2.0	3.8	29.4	31.14
S-SLB-15B-40P	M	IR1	IR2	$\phi 15$	40.6	2.0	3.4	39.4	41.52
S-SLB-20B-30P	M	IR1	IR2	$\phi 20$	31	2.0	5.3	29.1	31.14
S-SLB-20B-40P	M	IR1	IR2	$\phi 20$	40.7	2.0	4.4	39.3	41.52
S-SLB-20B-50P	M	IR1	IR2	$\phi 20$	50.7	2.0	3.9	49.3	51.90
S-SLB-25B-35P	M	IR1	IR2	$\phi 25$	36.1	2.0	6.4	33.9	36.33
S-SLB-25B-50P	M	IR1	IR2	$\phi 25$	50.8	2.0	5.1	49.2	51.90
S-SLB-25B-60P	M	IR1	IR2	$\phi 25$	60.8	2.0	4.5	59.2	62.28
S-SLB-25B-70P	M	IR1	IR2	$\phi 25$	70.7	2.0	4.2	69.3	72.66
S-SLB-30B-30P	M	IR1	IR2	$\phi 30$	31.7	2.0	9.7	28.3	31.14
S-SLB-30B-40P	M	IR1	IR2	$\phi 30$	41.3	2.0	7.6	38.7	41.52
S-SLB-40B-40P	M	IR1	IR2	$\phi 40$	42.1	2.0	12.3	37.9	41.52
S-SLB-40B-50P	M	IR1	IR2	$\phi 40$	51.7	2.0	10.0	48.3	51.90
S-SLB-40B-60P	M	IR1	IR2	$\phi 40$	61.4	2.0	8.6	58.6	62.28
S-SLB-40B-100P	M	IR1	IR2	$\phi 40$	101	2.0	5.9	99.0	103.80
S-SLB-40B-150P	M	IR1	IR2	$\phi 40$	150.8	2.0	4.6	149.2	155.70
S-SLB-50B-150P	M	IR1	IR2	$\phi 50$	151.2	3.0	7.0	148.8	155.70
S-SLB-50B-200P	M	IR1	IR2	$\phi 50$	201	3.0	6.0	199.0	207.60

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**Compatible Optic Mounts**

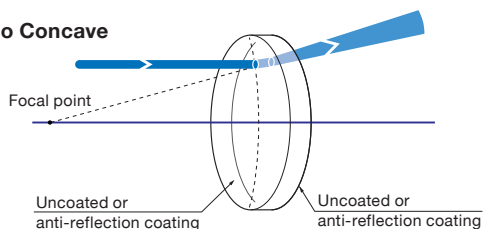
LHF-10S, -15S, -20S, -25S, -30S, -40S, -50S / MLH-10, -15

It is the product that was reduced by one rank from the surface quality of Plano Concave Lens (SLB-N). It can be used in an optical system such as observation or lighting applications that high surface quality is not required.

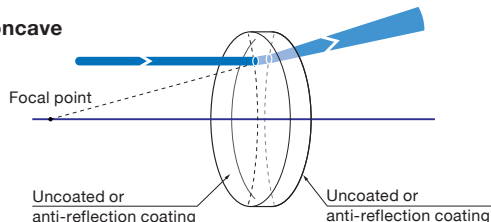


## Schematic

## Plano Concave



## Biconcave



- It has the same specification of Plano Concave Lens (SLB-N) except the surface quality. Unless a laser is used for high-precision experiments, it is recommended.
- There are two types of lens. One is a Plano concave lens with low spherical aberration and the other is a biconcave lens that is possible to shorten the focal length by a large refraction.
- In addition to uncoated products, there are three types of anti-reflection coating for visible, near-infrared, and infrared.

## Specifications

Material	BK7
Design Wavelength	546.1nm
Refractive Index	$n_e=1.519$
Centration	<3'
Coating	Uncoated: the end of the part number 'N' Anti-reflection coating: the end of the part number 'NM', 'NIR1', 'NIR2'
Laser Damage Threshold	Anti-reflection coating: $4\text{J}/\text{cm}^2$ Laser pulse with 10ns, repetition frequency 20Hz
Clear Aperture	90% of actual aperture: Uncoated 85% of actual aperture: with coating, $\phi 10 \leq D$ 83% of actual aperture: with coating, $D < \phi 10$
Surface Quality (Scratch-Dig)	60-40

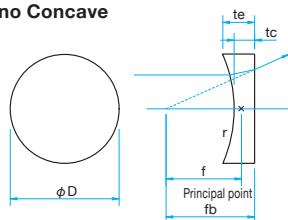
## Attention

- ▶ Biconcave lens has a chromatic aberration, and the focal length will vary depending on the wavelength. Please check the "wavelength characteristic data of the focal length" on the Web for the focal length of each wavelength. [WEB Reference](#) [Catalog Code](#) W3050
- ▶ Loss occurs due to the reflection of the front and rear surfaces of the lens, the transmittance of uncoated lens is about 90%.
- ▶ Chamfer has been given to an outer periphery of the concave ridge. This may cause to smaller than the edge thickness (te) of the design.

## Outline Drawing

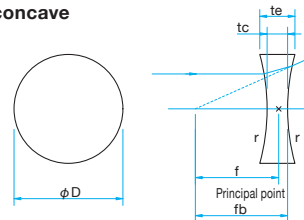
(in mm)

## Plano Concave



- Tolerance  
Diameter  $\phi D: \pm 0.1$   
Focal length  $\pm 1\%$   
Thickness  $tc \pm 0.15$

## Biconcave



- Tolerance  
Diameter  $\phi D: \pm 0.1$   
Focal length  $\pm 1\%$   
Thickness  $tc \pm 0.15$

## How to specify the anti-reflection coating

In case of specifying a anti-reflection coating 633nm – 1064nm to near infrared lens of S-SLB-30-200N.  
⇒ S-SLB-30-200NIR1

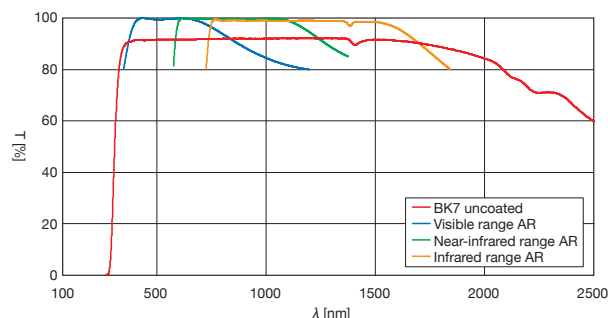
Type of AR Coat	Part Number	Wavelength Range [nm]	Transmittance [%]
Visible range	S-SLB-30-200NM	400 – 700	> Average 99
Near-infrared	S-SLB-30-200NIR1	633 – 1064	> Average 98.5
Infrared	S-SLB-30-200NIR2	750 – 1550	> Average 98.5

! Part of the above is an example of if you want to coat anti-reflective coating on the lens of the S-SLB-30-200N.

! Anti-reflection coating can be available to the lens of all of S-SLB.

## Typical Transmittance Data

T: Transmission



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**Plano Concave Lens**

Uncoated Part Number	How to specify the anti-reflection coating			Diameter $\phi$ D [mm]	Focal length f [mm]	Thickness of the edge te [mm]	Thickness of the center tc [mm]	Back focal length fb [mm]	Radius of curvature r [mm]
	Visibe 400 – 700nm	Near-infrared 633 – 1064nm	Infrared 750 – 1550nm						
S-SLB-10-15N	M	IR1	IR2	$\phi$ 10	-15	3.8	2.0	-16.3	7.79
S-SLB-10-20N	M	IR1	IR2	$\phi$ 10	-20	3.3	2.0	-21.3	10.38
S-SLB-10-30N	M	IR1	IR2	$\phi$ 10	-30	2.8	2.0	-31.3	15.57
S-SLB-10-100N	M	IR1	IR2	$\phi$ 10	-100	2.2	2.0	-101.3	51.90
S-SLB-15-25N	M	IR1	IR2	$\phi$ 15	-25	4.4	2.0	-26.3	12.98
S-SLB-15-30N	M	IR1	IR2	$\phi$ 15	-30	3.9	2.0	-31.3	15.57
S-SLB-20-25N	M	IR1	IR2	$\phi$ 20	-25	6.7	2.0	-26.3	12.98
S-SLB-20-30N	M	IR1	IR2	$\phi$ 20	-30	5.6	2.0	-31.3	15.57
S-SLB-20-40N	M	IR1	IR2	$\phi$ 20	-40	4.6	2.0	-41.3	20.76
S-SLB-20-50N	M	IR1	IR2	$\phi$ 20	-50	4.0	2.0	-51.3	25.95
S-SLB-20-60N	M	IR1	IR2	$\phi$ 20	-60	3.6	2.0	-61.3	31.14
S-SLB-25-40N	M	IR1	IR2	$\phi$ 25	-40	6.2	2.0	-41.3	20.76
S-SLB-30-60N	M	IR1	IR2	$\phi$ 30	-60	5.9	2.0	-61.3	31.14
S-SLB-30-200N	M	IR1	IR2	$\phi$ 30	-200	3.1	2.0	-201.3	103.80

**Biconcave Lens**

Uncoated Part Number	How to specify the anti-reflection coating			Diameter $\phi$ D [mm]	Focal length f [mm]	Thickness of the edge te [mm]	Thickness of the center tc [mm]	Back focal length fb [mm]	Radius of curvature r [mm]
	Visibe 400 – 700nm	Near-infrared 633 – 1064nm	Infrared 750 – 1550nm						
S-SLB-10B-10N	M	IR1	IR2	$\phi$ 10	-9.7	4.6	2.0	-10.3	10.38
S-SLB-15B-15N	M	IR1	IR2	$\phi$ 15	-14.7	5.9	2.0	-15.3	15.57
S-SLB-20B-50N	M	IR1	IR2	$\phi$ 20	-49.7	3.9	2.0	-50.3	51.90
S-SLB-30B-100N	M	IR1	IR2	$\phi$ 30	-99.7	4.2	2.0	-100.3	103.80

**Compatible Optic Mounts**

LHF-10S, -15S, -20S, -25S, -30S

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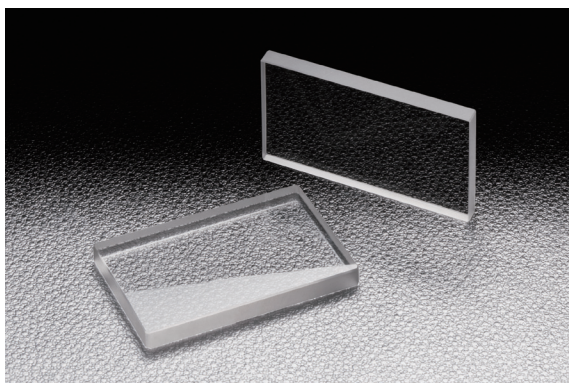
Cylindrical

Others

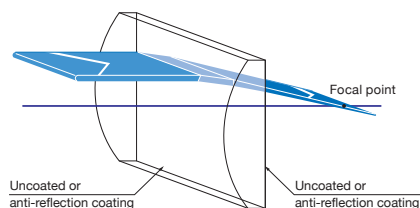
Cylindrical plano-convex lens has a convex curvature in the vertical direction and has no curvature in the horizontal direction.

It is used to make experimental and condensing a laser beam in a thin line, a wide light sheet used in the measurement, such as fluid.

- There are two types available; BK7 for from visible range to infrared wavelength range, high-strength synthetic fused silica which has high laser damage threshold used in less than 350nm ultraviolet light.
- Made of BK7 lenses are also available with three types of anti-reflection coating in the infrared wavelength, near-infrared wavelength and visible wavelength.
- By using a cylindrical lens in the optical system, it is available to change the shape and aspect ratio of the illumination light beam.

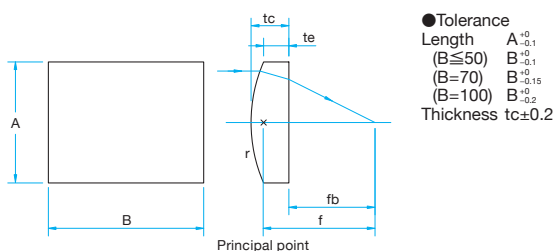


### Schematic



### Outline Drawing

(in mm)



### How to specify the anti-reflection coating

In case of specifying an anti-reflection coating 633nm – 1064nm to near infrared lens of CLB-30100-500P.  
⇒ CLB-30100-500PIR1

Type of AR Coat	Part Number	Wavelength Range [nm]	Transmittance [%]
Visible range	CLB-30100-500PM	400 – 700	> Average 99
Near-infrared	CLB-30100-500PIR1	633 – 1064	> Average 98.5
Infrared	CLB-30100-500PIR2	750 – 1550	> Average 98.5

! Part of the above is an example of if you want to coat anti-reflective coating on the lens of the CLB-30100-500P.

! Anti-reflection coating can be available to the lens of all of CLB.

### Compatible Optic Mounts

CHA-25, -60, -130

### Specifications

Material	CLB: BK7 CLSQ: Synthetic fused silica
Design wavelength	546.1nm
Refractive index	BK7: $n_e=1.519$ Synthetic fused silica: $n_e=1.460$
Coating	Uncoated: the end of the part number 'P' Anti-reflection coating: the end of the part number 'PM', 'PIR1', 'PIR2'
Laser Damage Threshold	Anti-reflection coating: $4\text{J}/\text{cm}^2$ Laser pulse with 10ns, repetition frequency 20Hz
Clear aperture	90% of square or rectangle to actual dimension
Surface Quality (Scratch-Dig)	20–10

### Guide

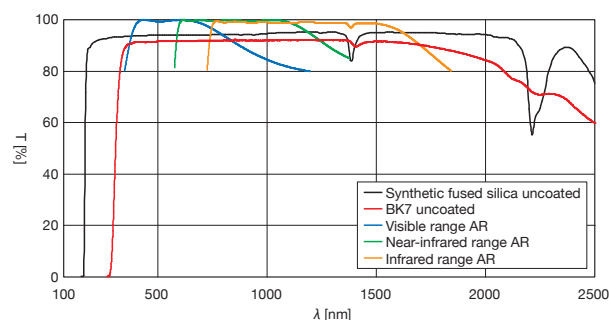
- ▶ It is also available other than the products which listed in the catalog such as focal length and outer diameter size.
- ▶ Production is also available with a specific wavelength of anti-reflective coating on the lens of no coated.
- ▶ To fix the cylindrical lenses, it is available cylindrical lens holders (cf. CHA). [Reference](#) C044

### Attention

- ▶ The plano-convex cylindrical lens has a chromatic aberration, and the focal length will vary depending on the wavelength. Please check the "wavelength characteristic of the focal length data" on the Web for the focal lengths of each wavelength. [WEB Reference](#) [Catalog Code](#) W3062
- ▶ There is a direction to put light in a plano-convex cylindrical lens. Please let the incident parallel light from the convex side. There is a possibility that the spherical aberration increases when in reverse, the optical performance of the system will not be appropriate.
- ▶ Losses due to reflection of the front and rear surfaces of the lens, the transmittance of no coated is about 90%.

### Typical Transmittance Data

T: Transmission





**BK7 10×10mm – 20×30mm**

Part Number	How to specify the anti-reflection coating			AxB [mm]	Focal length f [mm]	Thickness of the edge te [mm]	Thickness of the center tc [mm]	Back focal length fb [mm]	Radius of curvature r [mm]
	Uncoated	Visible 400 – 700nm	Near-infrared 633 – 1064nm						
CLB-1010-15P	M	IR1	IR2	10×10	15	2.2	4.0	12.4	7.79
CLB-1010-20P	M	IR1	IR2	10×10	20	1.7	3.0	18.0	10.38
CLB-1010-25P	M	IR1	IR2	10×10	25	2.0	3.0	23.0	12.98
CLB-1010-30P	M	IR1	IR2	10×10	30	2.2	3.0	28.0	15.57
CLB-1010-40P	M	IR1	IR2	10×10	40	2.4	3.0	38.0	20.76
CLB-1020-15P	M	IR1	IR2	10×20	15	2.2	4.0	12.4	7.79
CLB-1020-20P	M	IR1	IR2	10×20	20	1.7	3.0	18.0	10.38
CLB-1020-25P	M	IR1	IR2	10×20	25	2.0	3.0	23.0	12.98
CLB-1020-30P	M	IR1	IR2	10×20	30	2.2	3.0	28.0	15.57
CLB-1020-40P	M	IR1	IR2	10×20	40	2.4	3.0	38.0	20.76
CLB-1070-15P	M	IR1	IR2	10×70	15	2.2	4.0	12.4	7.79
CLB-1070-20P	M	IR1	IR2	10×70	20	1.7	3.0	18.0	10.38
CLB-1070-25P	M	IR1	IR2	10×70	25	2.0	3.0	23.0	12.98
CLB-1070-30P	M	IR1	IR2	10×70	30	2.2	3.0	28.0	15.57
CLB-1070-40P	M	IR1	IR2	10×70	40	2.4	3.0	38.0	20.76
CLB-1515-20P	M	IR1	IR2	15×15	20	1.8	5.0	16.7	10.38
CLB-1515-25P	M	IR1	IR2	15×15	25	2.6	5.0	21.7	12.98
CLB-1515-30P	M	IR1	IR2	15×15	30	2.1	4.0	27.4	15.57
CLB-1515-40P	M	IR1	IR2	15×15	40	2.6	4.0	37.4	20.76
CLB-1525-20P	M	IR1	IR2	15×25	20	1.8	5.0	16.7	10.38
CLB-1525-25P	M	IR1	IR2	15×25	25	2.6	5.0	21.7	12.98
CLB-1525-30P	M	IR1	IR2	15×25	30	2.1	4.0	27.4	15.57
CLB-1525-40P	M	IR1	IR2	15×25	40	2.6	4.0	37.4	20.76
CLB-1570-20P	M	IR1	IR2	15×70	20	1.8	5.0	16.7	10.38
CLB-1570-25P	M	IR1	IR2	15×70	25	2.6	5.0	21.7	12.98
CLB-1570-30P	M	IR1	IR2	15×70	30	2.1	4.0	27.4	15.57
CLB-1570-40P	M	IR1	IR2	15×70	40	2.6	4.0	37.4	20.76
CLB-2020-25P	M	IR1	IR2	20×20	25	2.3	7.0	20.4	12.98
CLB-2020-30P	M	IR1	IR2	20×20	30	2.4	6.0	26.1	15.57
CLB-2020-40P	M	IR1	IR2	20×20	40	2.4	5.0	36.7	20.76
CLB-2020-50P	M	IR1	IR2	20×20	50	2.0	4.0	47.4	25.95
CLB-2020-60P	M	IR1	IR2	20×20	60	2.4	4.0	57.3	31.14
CLB-2020-70P	M	IR1	IR2	20×20	70	2.6	4.0	67.4	36.33
CLB-2020-80P	M	IR1	IR2	20×20	80	2.8	4.0	77.4	41.52
CLB-2020-100P	M	IR1	IR2	20×20	100	3.0	4.0	97.4	51.90
CLB-2020-130P	M	IR1	IR2	20×20	130	3.3	4.0	127.4	67.47
CLB-2020-150P	M	IR1	IR2	20×20	150	3.4	4.0	147.4	77.85
CLB-2020-200P	M	IR1	IR2	20×20	200	3.5	4.0	197.4	103.80
CLB-2020-250P	M	IR1	IR2	20×20	250	3.6	4.0	247.4	129.75
CLB-2020-300P	M	IR1	IR2	20×20	300	3.7	4.0	297.4	155.70
CLB-2020-400P	M	IR1	IR2	20×20	400	3.8	4.0	397.4	207.60
CLB-2020-500P	M	IR1	IR2	20×20	500	3.8	4.0	497.4	259.50
CLB-2020-700P	M	IR1	IR2	20×20	700	3.9	4.0	697.4	363.30
CLB-2020-1000P	M	IR1	IR2	20×20	1000	3.9	4.0	997.4	519.00
CLB-2030-25P	M	IR1	IR2	20×30	25	2.3	7.0	20.4	12.98
CLB-2030-30P	M	IR1	IR2	20×30	30	2.4	6.0	26.1	15.57
CLB-2030-40P	M	IR1	IR2	20×30	40	2.4	5.0	36.7	20.76
CLB-2030-50P	M	IR1	IR2	20×30	50	2.0	4.0	47.4	25.95
CLB-2030-60P	M	IR1	IR2	20×30	60	2.4	4.0	57.3	31.14
CLB-2030-70P	M	IR1	IR2	20×30	70	2.6	4.0	67.4	36.33
CLB-2030-80P	M	IR1	IR2	20×30	80	2.8	4.0	77.4	41.52
CLB-2030-100P	M	IR1	IR2	20×30	100	3.0	4.0	97.4	51.90
CLB-2030-130P	M	IR1	IR2	20×30	130	3.3	4.0	127.4	67.47
CLB-2030-150P	M	IR1	IR2	20×30	150	3.4	4.0	147.4	77.85
CLB-2030-200P	M	IR1	IR2	20×30	200	3.5	4.0	197.4	103.80
CLB-2030-250P	M	IR1	IR2	20×30	250	3.6	4.0	247.4	129.75
CLB-2030-300P	M	IR1	IR2	20×30	300	3.7	4.0	297.4	155.70
CLB-2030-400P	M	IR1	IR2	20×30	400	3.8	4.0	397.4	207.60
CLB-2030-500P	M	IR1	IR2	20×30	500	3.8	4.0	497.4	259.50
CLB-2030-700P	M	IR1	IR2	20×30	700	3.9	4.0	697.4	363.30
CLB-2030-1000P	M	IR1	IR2	20×30	1000	3.9	4.0	997.4	519.00

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## Cylindrical Plano-convex Lenses

CLB-P/CLSQ-P

Catalog Code W3063

## BK7 20×40mm – 30×30mm

Application Systems	Uncoated	How to specify the anti-reflection coating			A×B [mm]	Focal length f [mm]	Thickness of the edge te [mm]	Thickness of the center tc [mm]	Back focal length fb [mm]	Radius of curvature r [mm]
	Part Number	Visible 400 – 700nm	Near-infrared 633 – 1064nm	Infrared 750 – 1550nm						
Optics & Optical Coatings	CLB-2040-25P	M	IR1	IR2	20×40	25	2.3	7.0	20.4	12.98
	CLB-2040-30P	M	IR1	IR2	20×40	30	2.4	6.0	26.1	15.57
	CLB-2040-40P	M	IR1	IR2	20×40	40	2.4	5.0	36.7	20.76
Holders	CLB-2040-50P	M	IR1	IR2	20×40	50	2.0	4.0	47.4	25.95
	CLB-2040-60P	M	IR1	IR2	20×40	60	2.4	4.0	57.3	31.14
	CLB-2040-70P	M	IR1	IR2	20×40	70	2.6	4.0	67.4	36.33
Bases	CLB-2040-80P	M	IR1	IR2	20×40	80	2.8	4.0	77.4	41.52
	CLB-2040-100P	M	IR1	IR2	20×40	100	3.0	4.0	97.4	51.90
Manual Stages	CLB-2040-130P	M	IR1	IR2	20×40	130	3.3	4.0	127.4	67.47
	CLB-2040-150P	M	IR1	IR2	20×40	150	3.4	4.0	147.4	77.85
Actuators	CLB-2040-200P	M	IR1	IR2	20×40	200	3.5	4.0	197.4	103.80
	CLB-2040-250P	M	IR1	IR2	20×40	250	3.6	4.0	247.4	129.75
Motorized Stages	CLB-2040-300P	M	IR1	IR2	20×40	300	3.7	4.0	297.4	155.70
	CLB-2040-400P	M	IR1	IR2	20×40	400	3.8	4.0	397.4	207.60
	CLB-2040-500P	M	IR1	IR2	20×40	500	3.8	4.0	497.4	259.50
Light Sources	CLB-2040-700P	M	IR1	IR2	20×40	700	3.9	4.0	697.4	363.30
	CLB-2040-1000P	M	IR1	IR2	20×40	1000	3.9	4.0	997.4	519.00
Index	CLB-2050-100P	M	IR1	IR2	20×50	100	3.0	4.0	97.4	51.90
	CLB-2050-130P	M	IR1	IR2	20×50	130	3.3	4.0	127.4	67.47
	CLB-2050-150P	M	IR1	IR2	20×50	150	3.4	4.0	147.4	77.85
Guide	CLB-2050-200P	M	IR1	IR2	20×50	200	3.5	4.0	197.4	103.80
	CLB-2050-250P	M	IR1	IR2	20×50	250	3.6	4.0	247.4	129.75
	CLB-2050-300P	M	IR1	IR2	20×50	300	3.7	4.0	297.4	155.70
Mirrors	CLB-2050-400P	M	IR1	IR2	20×50	400	3.8	4.0	397.4	207.60
	CLB-2050-500P	M	IR1	IR2	20×50	500	3.8	4.0	497.4	259.50
Beamsplitters	CLB-2050-700P	M	IR1	IR2	20×50	700	3.9	4.0	697.4	363.30
	CLB-2050-1000P	M	IR1	IR2	20×50	1000	3.9	4.0	997.4	519.00
Polarizers	CLB-2070-25P	M	IR1	IR2	20×70	25	2.3	7.0	20.4	12.98
	CLB-2070-30P	M	IR1	IR2	20×70	30	2.4	6.0	26.1	15.57
Lenses	CLB-2070-40P	M	IR1	IR2	20×70	40	2.4	5.0	36.7	20.76
	CLB-2070-50P	M	IR1	IR2	20×70	50	2.0	4.0	47.4	25.95
	CLB-2070-60P	M	IR1	IR2	20×70	60	2.4	4.0	57.3	31.14
Multi-Element Optics	CLB-2070-70P	M	IR1	IR2	20×70	70	2.6	4.0	67.4	36.33
	CLB-2070-80P	M	IR1	IR2	20×70	80	2.8	4.0	77.4	41.52
Filters	CLB-2070-100P	M	IR1	IR2	20×70	100	3.0	4.0	97.4	51.90
	CLB-2070-130P	M	IR1	IR2	20×100	130	3.3	4.0	127.4	67.47
Prisms	CLB-2070-150P	M	IR1	IR2	20×100	150	3.4	4.0	147.4	77.85
	CLB-2070-200P	M	IR1	IR2	20×100	200	3.5	4.0	197.4	103.80
Substrates/Windows	CLB-2070-300P	M	IR1	IR2	20×100	300	3.7	4.0	297.4	155.70
	CLB-2070-50P	M	IR1	IR2	30×30	50	2.2	7.0	45.4	25.95
Optical Data	CLB-2070-60P	M	IR1	IR2	30×30	60	2.1	6.0	56.0	31.14
	CLB-2070-70P	M	IR1	IR2	30×30	70	1.8	5.0	66.7	36.33
Maintenance	CLB-2070-80P	M	IR1	IR2	30×30	80	2.2	5.0	76.7	41.52
	CLB-2070-100P	M	IR1	IR2	30×30	100	2.8	5.0	96.7	51.90
Selection Guide	CLB-2070-130P	M	IR1	IR2	30×30	130	3.3	5.0	126.7	67.47
	CLB-2070-150P	M	IR1	IR2	30×30	150	3.5	5.0	146.7	77.85
Plano Convex Lenses	CLB-2070-200P	M	IR1	IR2	30×30	200	3.9	5.0	196.7	103.80
	CLB-2070-250P	M	IR1	IR2	30×30	250	4.0	5.0	246.7	129.75
Plano Concave Lenses	CLB-2070-300P	M	IR1	IR2	30×30	300	4.3	5.0	296.7	155.70
	CLB-2070-400P	M	IR1	IR2	30×30	400	4.5	5.0	396.7	207.60
Biconvex Lenses	CLB-2070-500P	M	IR1	IR2	30×30	500	4.6	5.0	496.7	259.50
	CLB-2070-700P	M	IR1	IR2	30×30	700	4.7	5.0	696.7	363.30
Biconcave Lenses	CLB-2070-1000P	M	IR1	IR2	30×30	1000	4.8	5.0	996.7	519.00
	CLB-3030-50P	M	IR1	IR2	30×30	50	2.2	7.0	45.4	25.95
Kit	CLB-3030-60P	M	IR1	IR2	30×30	60	2.1	6.0	56.0	31.14
	CLB-3030-70P	M	IR1	IR2	30×30	70	1.8	5.0	66.7	36.33
Reasonable Lens	CLB-3030-80P	M	IR1	IR2	30×30	80	2.2	5.0	76.7	41.52
	CLB-3030-100P	M	IR1	IR2	30×30	100	2.8	5.0	96.7	51.90
Cylindrical	CLB-3030-130P	M	IR1	IR2	30×30	130	3.3	5.0	126.7	67.47
	CLB-3030-150P	M	IR1	IR2	30×30	150	3.5	5.0	146.7	77.85
Others	CLB-3030-200P	M	IR1	IR2	30×30	200	3.9	5.0	196.7	103.80
	CLB-3030-250P	M	IR1	IR2	30×30	250	4.0	5.0	246.7	129.75
	CLB-3030-300P	M	IR1	IR2	30×30	300	4.3	5.0	296.7	155.70
	CLB-3030-400P	M	IR1	IR2	30×30	400	4.5	5.0	396.7	207.60
	CLB-3030-500P	M	IR1	IR2	30×30	500	4.6	5.0	496.7	259.50
	CLB-3030-700P	M	IR1	IR2	30×30	700	4.7	5.0	696.7	363.30
	CLB-3030-1000P	M	IR1	IR2	30×30	1000	4.8	5.0	996.7	519.00



**BK7 30×40mm – 30×100mm**

Part Number	How to specify the anti-reflection coating			A×B [mm]	Focal length f [mm]	Thickness of the edge te [mm]	Thickness of the center tc [mm]	Back focal length fb [mm]	Radius of curvature r [mm]
	Uncoated	Visible 400 – 700nm	Near-infrared 633 – 1064nm						
CLB-3040-50P	M	IR1	IR2	30×40	50	2.2	7.0	45.4	25.95
CLB-3040-60P	M	IR1	IR2	30×40	60	2.1	6.0	56.0	31.14
CLB-3040-70P	M	IR1	IR2	30×40	70	1.8	5.0	66.7	36.33
CLB-3040-80P	M	IR1	IR2	30×40	80	2.2	5.0	76.7	41.52
CLB-3040-100P	M	IR1	IR2	30×40	100	2.8	5.0	96.7	51.90
CLB-3040-130P	M	IR1	IR2	30×40	130	3.3	5.0	126.7	67.47
CLB-3040-150P	M	IR1	IR2	30×40	150	3.5	5.0	146.7	77.85
CLB-3040-200P	M	IR1	IR2	30×40	200	3.9	5.0	196.7	103.80
CLB-3040-250P	M	IR1	IR2	30×40	250	4.0	5.0	246.7	129.75
CLB-3040-300P	M	IR1	IR2	30×40	300	4.3	5.0	296.7	155.70
CLB-3040-400P	M	IR1	IR2	30×40	400	4.5	5.0	396.7	207.60
CLB-3040-500P	M	IR1	IR2	30×40	500	4.6	5.0	496.7	259.50
CLB-3040-700P	M	IR1	IR2	30×40	700	4.7	5.0	696.7	363.30
CLB-3040-1000P	M	IR1	IR2	30×40	1000	4.8	5.0	996.7	519.00
CLB-3050-50P	M	IR1	IR2	30×50	50	2.2	7.0	45.4	25.95
CLB-3050-60P	M	IR1	IR2	30×50	60	2.1	6.0	56.0	31.14
CLB-3050-70P	M	IR1	IR2	30×50	70	1.8	5.0	66.7	36.33
CLB-3050-80P	M	IR1	IR2	30×50	80	2.2	5.0	76.7	41.52
CLB-3050-100P	M	IR1	IR2	30×50	100	2.8	5.0	96.7	51.90
CLB-3050-130P	M	IR1	IR2	30×50	130	3.3	5.0	126.7	67.47
CLB-3050-150P	M	IR1	IR2	30×50	150	3.5	5.0	146.7	77.85
CLB-3050-200P	M	IR1	IR2	30×50	200	3.9	5.0	196.7	103.80
CLB-3050-250P	M	IR1	IR2	30×50	250	4.0	5.0	246.7	129.75
CLB-3050-300P	M	IR1	IR2	30×50	300	4.3	5.0	296.7	155.70
CLB-3050-400P	M	IR1	IR2	30×50	400	4.5	5.0	396.7	207.60
CLB-3050-500P	M	IR1	IR2	30×50	500	4.6	5.0	496.7	259.50
CLB-3050-700P	M	IR1	IR2	30×50	700	4.7	5.0	696.7	363.30
CLB-3050-1000P	M	IR1	IR2	30×50	1000	4.8	5.0	996.7	519.00
CLB-3070-50P	M	IR1	IR2	30×70	50	2.2	7.0	45.4	25.95
CLB-3070-60P	M	IR1	IR2	30×70	60	2.1	6.0	56.0	31.14
CLB-3070-70P	M	IR1	IR2	30×70	70	1.8	5.0	66.7	36.33
CLB-3070-80P	M	IR1	IR2	30×70	80	2.2	5.0	76.7	41.52
CLB-3070-100P	M	IR1	IR2	30×70	100	2.8	5.0	96.7	51.90
CLB-30100-130P	M	IR1	IR2	30×100	130	3.3	5.0	126.7	67.47
CLB-30100-150P	M	IR1	IR2	30×100	150	3.5	5.0	146.7	77.85
CLB-30100-200P	M	IR1	IR2	30×100	200	3.9	5.0	196.7	103.80

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## Cylindrical Plano-convex Lenses

CLB-P/CLSQ-P

Catalog Code W3065

## Synthetic fused silica 10×10mm – 20×30mm

Part Number	A×B [mm]	Focal length f [mm]	Thickness of the edge te [mm]	Thickness of the center tc [mm]	Back focal length fb [mm]	Radius of curvature r [mm]
CLSQ-1010-15P	10×10	15	1.9	4.0	12.3	6.90
CLSQ-1010-20P	10×10	20	1.5	3.0	17.9	9.20
CLSQ-1010-25P	10×10	25	1.9	3.0	22.9	11.50
CLSQ-1010-30P	10×10	30	2.1	3.0	27.9	13.80
CLSQ-1010-40P	10×10	40	2.3	3.0	37.9	18.40
CLSQ-1020-15P	10×20	15	1.9	4.0	12.3	6.90
CLSQ-1020-20P	10×20	20	1.5	3.0	17.9	9.20
CLSQ-1020-25P	10×20	25	1.9	3.0	22.9	11.50
CLSQ-1020-30P	10×20	30	2.1	3.0	27.9	13.80
CLSQ-1020-40P	10×20	40	2.3	3.0	37.9	18.40
CLSQ-1070-15P	10×70	15	1.9	4.0	12.3	6.90
CLSQ-1070-20P	10×70	20	1.5	3.0	17.9	9.20
CLSQ-1070-25P	10×70	25	1.9	3.0	22.9	11.50
CLSQ-1070-30P	10×70	30	2.1	3.0	27.9	13.80
CLSQ-1070-40P	10×70	40	2.3	3.0	37.9	18.40
CLSQ-1515-20P	15×15	20	2.1	6.0	16.0	9.20
CLSQ-1515-25P	15×15	25	2.2	5.0	21.6	11.50
CLSQ-1515-30P	15×15	30	1.8	4.0	27.3	13.80
CLSQ-1515-40P	15×15	40	2.4	4.0	37.3	18.40
CLSQ-1525-20P	15×25	20	2.1	6.0	16.0	9.20
CLSQ-1525-25P	15×25	25	2.2	5.0	21.6	11.50
CLSQ-1525-30P	15×25	30	1.8	4.0	27.3	13.80
CLSQ-1525-40P	15×25	40	2.4	4.0	37.3	18.40
CLSQ-1570-20P	15×70	20	2.1	6.0	16.0	9.20
CLSQ-1570-25P	15×70	25	2.2	5.0	21.6	11.50
CLSQ-1570-30P	15×70	30	1.8	4.0	27.3	13.80
CLSQ-1570-40P	15×70	40	2.4	4.0	37.3	18.40
CLSQ-2020-25P	20×20	25	1.2	7.0	20.2	11.50
CLSQ-2020-30P	20×20	30	1.7	6.0	25.9	13.80
CLSQ-2020-40P	20×20	40	2.0	5.0	36.6	18.40
CLSQ-2020-50P	20×20	50	1.7	4.0	47.3	23.00
CLSQ-2020-60P	20×20	60	2.1	4.0	57.3	27.60
CLSQ-2020-70P	20×20	70	2.4	4.0	67.3	32.20
CLSQ-2020-80P	20×20	80	2.6	4.0	77.3	36.80
CLSQ-2020-100P	20×20	100	2.9	4.0	97.3	46.00
CLSQ-2020-130P	20×20	130	3.2	4.0	127.3	59.80
CLSQ-2020-150P	20×20	150	3.3	4.0	147.3	69.00
CLSQ-2020-200P	20×20	200	3.5	4.0	197.3	92.00
CLSQ-2020-250P	20×20	250	3.6	4.0	247.3	115.00
CLSQ-2020-300P	20×20	300	3.6	4.0	297.3	138.00
CLSQ-2020-400P	20×20	400	3.7	4.0	397.3	184.00
CLSQ-2020-500P	20×20	500	3.7	4.0	497.3	230.00
CLSQ-2020-700P	20×20	700	3.8	4.0	697.3	322.00
CLSQ-2020-1000P	20×20	1000	3.8	4.0	997.3	460.00
CLSQ-2030-25P	20×30	25	1.2	7.0	20.2	11.50
CLSQ-2030-30P	20×30	30	1.7	6.0	25.9	13.80
CLSQ-2030-40P	20×30	40	2.0	5.0	36.6	18.40
CLSQ-2030-50P	20×30	50	1.7	4.0	47.3	23.00
CLSQ-2030-60P	20×30	60	2.1	4.0	57.3	27.60
CLSQ-2030-70P	20×30	70	2.4	4.0	67.3	32.20
CLSQ-2030-80P	20×30	80	2.6	4.0	77.3	36.80
CLSQ-2030-100P	20×30	100	2.9	4.0	97.3	46.00
CLSQ-2030-130P	20×30	130	3.2	4.0	127.3	59.80
CLSQ-2030-150P	20×30	150	3.3	4.0	147.3	69.00
CLSQ-2030-200P	20×30	200	3.5	4.0	197.3	92.00
CLSQ-2030-250P	20×30	250	3.6	4.0	247.3	115.00
CLSQ-2030-300P	20×30	300	3.6	4.0	297.3	138.00
CLSQ-2030-400P	20×30	400	3.7	4.0	397.3	184.00
CLSQ-2030-500P	20×30	500	3.7	4.0	497.3	230.00
CLSQ-2030-700P	20×30	700	3.8	4.0	697.3	322.00
CLSQ-2030-1000P	20×30	1000	3.8	4.0	997.3	460.00





**Synthetic fused silica 20x40mm – 30x30mm**

Part Number	AxB [mm]	Focal length f [mm]	Thickness of the edge te [mm]	Thickness of the center tc [mm]	Back focal length fb [mm]	Radius of curvature r [mm]
CLSQ-2040-25P	20x40	25	1.2	7.0	20.2	11.50
CLSQ-2040-30P	20x40	30	1.7	6.0	25.9	13.80
CLSQ-2040-40P	20x40	40	2.0	5.0	36.6	18.40
CLSQ-2040-50P	20x40	50	1.7	4.0	47.3	23.00
CLSQ-2040-60P	20x40	60	2.1	4.0	57.3	27.60
CLSQ-2040-70P	20x40	70	2.4	4.0	67.3	32.20
CLSQ-2040-80P	20x40	80	2.6	4.0	77.3	36.80
CLSQ-2040-100P	20x40	100	2.9	4.0	97.3	46.00
CLSQ-2040-130P	20x40	130	3.2	4.0	127.3	59.80
CLSQ-2040-150P	20x40	150	3.3	4.0	147.3	69.00
CLSQ-2040-200P	20x40	200	3.5	4.0	197.3	92.00
CLSQ-2040-250P	20x40	250	3.6	4.0	247.3	115.00
CLSQ-2040-300P	20x40	300	3.6	4.0	297.3	138.00
CLSQ-2040-400P	20x40	400	3.7	4.0	397.3	184.00
CLSQ-2040-500P	20x40	500	3.7	4.0	497.3	230.00
CLSQ-2040-700P	20x40	700	3.8	4.0	697.3	322.00
CLSQ-2040-1000P	20x40	1000	3.8	4.0	997.3	460.00
CLSQ-2050-100P	20x50	100	2.9	4.0	97.3	46.00
CLSQ-2050-130P	20x50	130	3.2	4.0	127.3	59.80
CLSQ-2050-150P	20x50	150	3.3	4.0	147.3	69.00
CLSQ-2050-200P	20x50	200	3.5	4.0	197.3	92.00
CLSQ-2050-250P	20x50	250	3.6	4.0	247.3	115.00
CLSQ-2050-300P	20x50	300	3.6	4.0	297.3	138.00
CLSQ-2050-400P	20x50	400	3.7	4.0	397.3	184.00
CLSQ-2050-500P	20x50	500	3.7	4.0	497.3	230.00
CLSQ-2050-700P	20x50	700	3.8	4.0	697.3	322.00
CLSQ-2050-1000P	20x50	1000	3.8	4.0	997.3	460.00
CLSQ-2070-25P	20x70	25	1.2	7.0	20.2	11.50
CLSQ-2070-30P	20x70	30	1.7	6.0	25.9	13.80
CLSQ-2070-40P	20x70	40	2.0	5.0	36.6	18.40
CLSQ-2070-50P	20x70	50	1.7	4.0	47.3	23.00
CLSQ-2070-60P	20x70	60	2.1	4.0	57.3	27.60
CLSQ-2070-70P	20x70	70	2.4	4.0	67.3	32.20
CLSQ-2070-80P	20x70	80	2.6	4.0	77.3	36.80
CLSQ-2070-100P	20x70	100	2.9	4.0	97.3	46.00
CLSQ-20100-130P	20x100	130	3.2	4.0	127.3	59.80
CLSQ-20100-150P	20x100	150	3.3	4.0	147.3	69.00
CLSQ-20100-200P	20x100	200	3.5	4.0	197.3	92.00
CLSQ-20100-250P	20x100	250	3.6	4.0	247.3	115.00
CLSQ-20100-300P	20x100	300	3.6	4.0	297.3	138.00
CLSQ-20100-400P	20x100	400	3.7	4.0	397.3	184.00
CLSQ-20100-500P	20x100	500	3.7	4.0	497.3	230.00
CLSQ-20100-700P	20x100	700	3.8	4.0	697.3	322.00
CLSQ-20100-1000P	20x100	1000	3.8	4.0	997.3	460.00
CLSQ-3030-50P	30x30	50	1.4	7.0	45.2	23.00
CLSQ-3030-60P	30x30	60	1.6	6.0	55.9	27.60
CLSQ-3030-70P	30x30	70	2.3	6.0	65.9	32.20
CLSQ-3030-80P	30x30	80	1.8	5.0	79.6	36.80
CLSQ-3030-100P	30x30	100	2.5	5.0	96.6	46.00
CLSQ-3030-130P	30x30	130	3.1	5.0	126.6	59.80
CLSQ-3030-150P	30x30	150	3.3	5.0	146.6	69.00
CLSQ-3030-200P	30x30	200	3.8	5.0	196.6	92.00
CLSQ-3030-250P	30x30	250	4.0	5.0	246.6	115.00
CLSQ-3030-300P	30x30	300	4.2	5.0	296.6	138.00
CLSQ-3030-400P	30x30	400	4.4	5.0	396.6	184.00
CLSQ-3030-500P	30x30	500	4.4	5.0	496.6	230.00
CLSQ-3030-700P	30x30	700	4.7	5.0	696.6	322.00
CLSQ-3030-1000P	30x30	1000	4.8	5.0	996.6	460.00

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## Synthetic fused silica 30×40mm – 30×100mm

Part Number	A×B [mm]	Focal length f [mm]	Thickness of the edge te [mm]	Thickness of the center tc [mm]	Back focal length fb [mm]	Radius of curvature r [mm]
CLSQ-3040-50P	30×40	50	1.4	7.0	45.2	23.00
CLSQ-3040-60P	30×40	60	1.6	6.0	55.9	27.60
CLSQ-3040-70P	30×40	70	2.3	6.0	65.9	32.20
CLSQ-3040-80P	30×40	80	1.8	5.0	79.6	36.80
CLSQ-3040-100P	30×40	100	2.5	5.0	96.6	46.00
CLSQ-3040-130P	30×40	130	3.1	5.0	126.6	59.80
CLSQ-3040-150P	30×40	150	3.3	5.0	146.6	69.00
CLSQ-3040-200P	30×40	200	3.8	5.0	196.6	92.00
CLSQ-3040-250P	30×40	250	4.0	5.0	246.6	115.00
CLSQ-3040-300P	30×40	300	4.2	5.0	296.6	138.00
CLSQ-3040-400P	30×40	400	4.4	5.0	396.6	184.00
CLSQ-3040-500P	30×40	500	4.4	5.0	496.6	230.00
CLSQ-3040-700P	30×40	700	4.7	5.0	696.6	322.00
CLSQ-3040-1000P	30×40	1000	4.8	5.0	996.6	460.00
CLSQ-3050-50P	30×50	50	1.4	7.0	45.2	23.00
CLSQ-3050-60P	30×50	60	1.6	6.0	55.9	27.60
CLSQ-3050-70P	30×50	70	2.3	6.0	65.9	32.20
CLSQ-3050-80P	30×50	80	1.8	5.0	79.6	36.80
CLSQ-3050-100P	30×50	100	2.5	5.0	96.6	46.00
CLSQ-3050-130P	30×50	130	3.1	5.0	126.6	59.80
CLSQ-3050-150P	30×50	150	3.3	5.0	146.6	69.00
CLSQ-3050-200P	30×50	200	3.8	5.0	196.6	92.00
CLSQ-3050-250P	30×50	250	4.0	5.0	246.6	115.00
CLSQ-3050-300P	30×50	300	4.2	5.0	296.6	138.00
CLSQ-3050-400P	30×50	400	4.4	5.0	396.6	184.00
CLSQ-3050-500P	30×50	500	4.4	5.0	496.6	230.00
CLSQ-3050-700P	30×50	700	4.7	5.0	696.6	322.00
CLSQ-3050-1000P	30×50	1000	4.8	5.0	996.6	460.00
CLSQ-30100-130P	30×100	130	3.1	5.0	126.6	59.80
CLSQ-30100-150P	30×100	150	3.3	5.0	146.6	69.00
CLSQ-30100-200P	30×100	200	3.8	5.0	196.6	92.00
CLSQ-30100-250P	30×100	250	4.0	5.0	246.6	115.00
CLSQ-30100-300P	30×100	300	4.2	5.0	296.6	138.00
CLSQ-30100-400P	30×100	400	4.4	5.0	396.6	184.00
CLSQ-30100-500P	30×100	500	4.4	5.0	496.6	230.00
CLSQ-30100-700P	30×100	700	4.7	5.0	696.6	322.00
CLSQ-30100-1000P	30×100	1000	4.8	5.0	996.6	460.00

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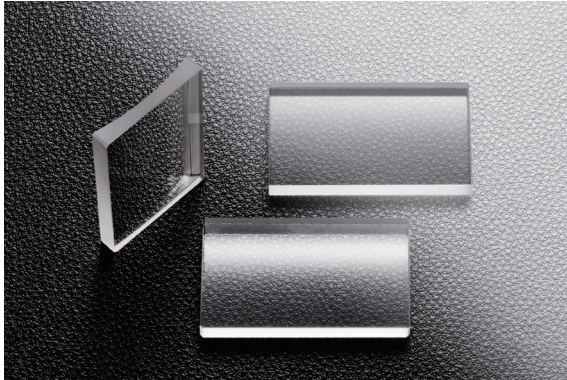
Cylindrical

Others

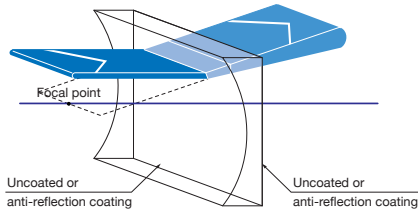
Cylindrical plano-concave lens has a concave curvature in the vertical direction and has no curvature in the horizontal direction.

Used in such applications in combination with a plano-convex cylindrical, elliptical shaped beam to a circular beam of semiconductor laser.

- There are two types available; BK7 for from visible range to infrared wavelength range, high-strength synthetic fused silica which has high laser damage threshold used in less than 350nm ultraviolet light.
- Made of BK7 lenses are also available with three types of anti-reflection coating in the infrared wavelength, near-infrared wavelength and visible wavelength.
- By using a cylindrical lens in the optical system, it is available to change the shape and aspect ratio of the illumination light beam.

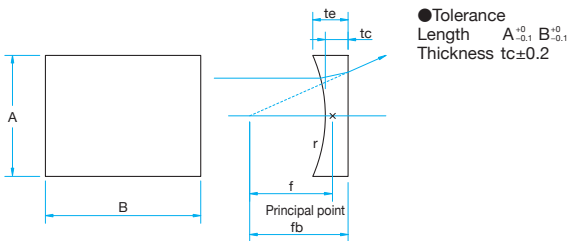


### Schematic



### Outline Drawing

(in mm)



### How to specify the anti-reflection coating

In case of specifying a anti-reflection coating 633nm – 1064nm to near infrared lens of CLB-3050-200N.  
 ⇒ CLB-3050-200NIR1

Type of AR Coat	Part Number	Wavelength Range [nm]	Transmittance [%]
Visible range	CLB-3050-200NM	400 – 700	> Average 99
Near-infrared	CLB-3050-200NIR1	633 – 1064	> Average 98.5
Infrared	CLB-3050-200NIR2	750 – 1550	> Average 98.5

- ! Part of the above is an example of if you want to coat anti-reflective coating on the lens of the CLB-3050-200N.
- ! Anti-reflection coating can be available to the lens of all of CLB.

### Compatible Optic Mounts

CHA-25, -60

### Specifications

Material	CLB: BK7 CLSQ: Synthetic fused silica
Design wavelength	546.1nm
Refractive index	BK: $n_e=1.519$ Synthetic fused silica: $n_e=1.460$
Coating	Uncoated: the end of the part number 'N' Anti-reflection coating: the end of the part number 'NM', 'NIR1', 'NIR2'
Laser Damage Threshold	Anti-reflection coating: $4J/cm^2$ Laser pulse with 10ns, repetition frequency 20Hz
Clear aperture	90% of square or rectangle to actual dimension
Surface Quality (Scratch-Dig)	20-10

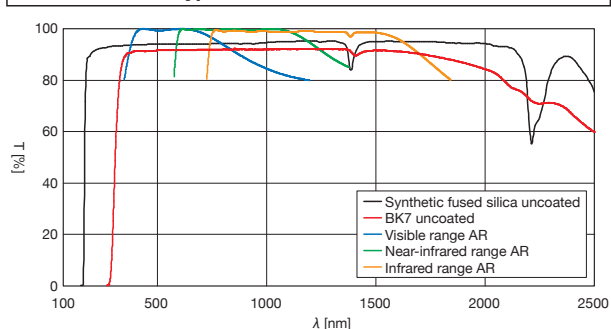
### Guide

- ▶ It is also available other than the products which listed in the catalog such as focal length and outer diameter size.
- ▶ Production is also available with a specific wavelength of anti-reflective coating on the lens or no coated.
- ▶ To fix the cylindrical lenses, it is available cylindrical lens holders (cf. CHA). [Reference](#) C044

### Attention

- ▶ The cylindrical plano-concave lens has chromatic aberration, the focal length will vary depending on the wavelength. Please check the "wavelength characteristic of the focal length data" on the Web for the focal lengths of each wavelength. [WEB Reference](#) [Catalog Code](#) W3068
- ▶ There is a direction to put light in a plano-concave cylindrical lens. Please let the incident parallel light from the concave side. There is a possibility that the spherical aberration increases when in reverse, the optical performance of the system will not be appropriate.
- ▶ Losses due to reflection of the front and rear surfaces of the lens, the transmittance of no coated is about 90%.

### Typical Transmittance Data



## Cylindrical Plano-concave Lenses

CLB-N/CLSQ-N

Catalog Code W3068

Application Systems		BK7 10×10mm – 30×50mm									
Part Number		How to specify the anti-reflection coating			A×B [mm]	Focal length f [mm]	Thickness of the edge te [mm]	Thickness of the center tc [mm]	Back focal length fb [mm]	Radius of curvature r [mm]	
		Uncoated	Visibe 400 – 700nm	Near-infrared 633 – 1064nm							Infrared 750 – 1550nm
Optics & Optical Coatings	CLB-1010-15N	M	IR1	IR2	10×10	-15	4.0	2.2	-16.4	7.79	
	CLB-1010-20N	M	IR1	IR2	10×10	-20	3.0	1.7	-21.1	10.38	
	CLB-1010-25N	M	IR1	IR2	10×10	-25	3.0	2.0	-26.3	12.98	
	CLB-1010-30N	M	IR1	IR2	10×10	-30	3.0	2.2	-31.4	15.57	
Holders	CLB-1010-40N	M	IR1	IR2	10×10	-40	3.0	2.4	-41.6	20.76	
	CLB-1020-15N	M	IR1	IR2	10×20	-15	4.0	2.2	-16.4	7.79	
Bases	CLB-1020-20N	M	IR1	IR2	10×20	-20	3.0	1.7	-21.1	10.38	
	CLB-1020-25N	M	IR1	IR2	10×20	-25	3.0	2.0	-26.3	12.98	
	CLB-1020-30N	M	IR1	IR2	10×20	-30	3.0	2.2	-31.4	15.57	
	CLB-1020-40N	M	IR1	IR2	10×20	-40	3.0	2.4	-41.6	20.76	
Manual Stages	CLB-1515-20N	M	IR1	IR2	15×15	-20	5.0	1.8	-21.2	10.38	
	CLB-1515-25N	M	IR1	IR2	15×15	-25	5.0	2.6	-26.7	12.98	
Actuators	CLB-1515-30N	M	IR1	IR2	15×15	-30	4.0	2.1	-31.4	15.57	
	CLB-1515-40N	M	IR1	IR2	15×15	-40	4.0	2.6	-41.7	20.76	
	CLB-1525-20N	M	IR1	IR2	15×25	-20	5.0	1.8	-21.2	10.38	
	CLB-1525-25N	M	IR1	IR2	15×25	-25	5.0	2.6	-26.7	12.98	
Motorized Stages	CLB-1525-30N	M	IR1	IR2	15×25	-30	4.0	2.1	-31.4	15.57	
	CLB-1525-40N	M	IR1	IR2	15×25	-40	4.0	2.6	-41.7	20.76	
Light Sources	CLB-2020-25N	M	IR1	IR2	20×20	-25	7.0	2.3	-26.5	12.98	
	CLB-2020-30N	M	IR1	IR2	20×20	-30	6.0	2.4	-31.6	15.57	
	CLB-2020-40N	M	IR1	IR2	20×20	-40	5.0	2.4	-41.6	20.76	
	CLB-2020-50N	M	IR1	IR2	20×20	-50	4.0	2.0	-51.3	25.95	
Index	CLB-2020-60N	M	IR1	IR2	20×20	-60	4.0	2.4	-61.5	31.14	
	CLB-2020-70N	M	IR1	IR2	20×20	-70	4.0	2.6	-71.7	36.33	
	CLB-2020-80N	M	IR1	IR2	20×20	-80	4.0	2.8	-81.8	41.52	
	CLB-2020-100N	M	IR1	IR2	20×20	-100	4.0	3.0	-102.0	51.90	
Guide	CLB-2020-130N	M	IR1	IR2	20×20	-130	4.0	3.3	-132.1	67.47	
	CLB-2020-150N	M	IR1	IR2	20×20	-150	4.0	3.4	-152.2	77.85	
	CLB-2020-200N	M	IR1	IR2	20×20	-200	4.0	3.5	-202.3	103.80	
	CLB-2020-250N	M	IR1	IR2	20×20	-250	4.0	3.6	-252.4	129.75	
Mirrors	CLB-2020-300N	M	IR1	IR2	20×20	-300	4.0	3.7	-302.4	155.70	
	CLB-2030-100N	M	IR1	IR2	20×30	-100	4.0	3.0	-102.0	51.90	
Beamsplitters	CLB-2030-130N	M	IR1	IR2	20×30	-130	4.0	3.3	-132.1	67.47	
	CLB-2030-150N	M	IR1	IR2	20×30	-150	4.0	3.4	-152.2	77.85	
Polarizers	CLB-2030-200N	M	IR1	IR2	20×30	-200	4.0	3.5	-202.3	103.80	
	CLB-2030-250N	M	IR1	IR2	20×30	-250	4.0	3.6	-252.4	129.75	
Lenses	CLB-2030-300N	M	IR1	IR2	20×30	-300	4.0	3.7	-302.4	155.70	
	CLB-2040-25N	M	IR1	IR2	20×40	-25	7.0	2.3	-26.5	12.98	
	CLB-2040-30N	M	IR1	IR2	20×40	-30	6.0	2.4	-31.6	15.57	
	CLB-2040-40N	M	IR1	IR2	20×40	-40	5.0	2.4	-41.6	20.76	
Filters	CLB-2040-50N	M	IR1	IR2	20×40	-50	4.0	2.0	-51.3	25.95	
	CLB-2040-60N	M	IR1	IR2	20×40	-60	4.0	2.4	-61.5	31.14	
Prisms	CLB-2040-70N	M	IR1	IR2	20×40	-70	4.0	2.6	-71.7	36.33	
	CLB-2040-80N	M	IR1	IR2	20×40	-80	4.0	2.8	-81.8	41.52	
Substrates/Windows	CLB-2050-100N	M	IR1	IR2	20×50	-100	4.0	3.0	-102.0	51.90	
	CLB-2050-130N	M	IR1	IR2	20×50	-130	4.0	3.3	-132.1	67.47	
	CLB-2050-150N	M	IR1	IR2	20×50	-150	4.0	3.4	-152.2	77.85	
	CLB-2050-200N	M	IR1	IR2	20×50	-200	4.0	3.5	-202.3	103.80	
Optical Data	CLB-2050-250N	M	IR1	IR2	20×50	-250	4.0	3.6	-252.4	129.75	
	CLB-2050-300N	M	IR1	IR2	20×50	-300	4.0	3.7	-302.4	155.70	
Maintenance	CLB-3030-50N	M	IR1	IR2	30×30	-50	7.0	2.2	-51.5	25.95	
	CLB-3030-60N	M	IR1	IR2	30×30	-60	6.0	2.1	-61.4	31.14	
	CLB-3030-70N	M	IR1	IR2	30×30	-70	5.0	1.8	-71.2	36.33	
	CLB-3030-80N	M	IR1	IR2	30×30	-80	5.0	2.2	-81.4	41.52	
Selection Guide	CLB-3030-100N	M	IR1	IR2	30×30	-100	5.0	2.8	-101.8	51.90	
	CLB-3030-130N	M	IR1	IR2	30×30	-130	5.0	3.3	-132.2	67.47	
Plano Convex Lenses	CLB-3030-150N	M	IR1	IR2	30×30	-150	5.0	3.5	-152.3	77.85	
	CLB-3030-200N	M	IR1	IR2	30×30	-200	5.0	3.9	-202.6	103.80	
Plano Concave Lenses	CLB-3030-250N	M	IR1	IR2	30×30	-250	5.0	4.1	-252.7	129.75	
	CLB-3030-300N	M	IR1	IR2	30×30	-300	5.0	4.3	-302.8	155.70	
Biconvex Lenses	CLB-3040-50N	M	IR1	IR2	30×40	-50	7.0	2.2	-51.5	25.95	
	CLB-3040-60N	M	IR1	IR2	30×40	-60	6.0	2.1	-61.4	31.14	
Biconcave Lenses	CLB-3040-70N	M	IR1	IR2	30×40	-70	5.0	1.8	-71.2	36.33	
	CLB-3040-80N	M	IR1	IR2	30×40	-80	5.0	2.2	-81.4	41.52	
Kit	CLB-3050-100N	M	IR1	IR2	30×50	-100	5.0	2.8	-101.8	51.90	
	CLB-3050-130N	M	IR1	IR2	30×50	-130	5.0	3.3	-132.2	67.47	
	CLB-3050-150N	M	IR1	IR2	30×50	-150	5.0	3.5	-152.3	77.85	
	CLB-3050-200N	M	IR1	IR2	30×50	-200	5.0	3.9	-202.6	103.80	
Reasonable Lens	CLB-3050-250N	M	IR1	IR2	30×50	-250	5.0	4.1	-252.7	129.75	
	CLB-3050-300N	M	IR1	IR2	30×50	-300	5.0	4.3	-302.8	155.70	
Cylindrical	CLB-3040-50N	M	IR1	IR2	30×40	-50	7.0	2.2	-51.5	25.95	
	CLB-3040-60N	M	IR1	IR2	30×40	-60	6.0	2.1	-61.4	31.14	
	CLB-3040-70N	M	IR1	IR2	30×40	-70	5.0	1.8	-71.2	36.33	
	CLB-3040-80N	M	IR1	IR2	30×40	-80	5.0	2.2	-81.4	41.52	
Others	CLB-3050-100N	M	IR1	IR2	30×50	-100	5.0	2.8	-101.8	51.90	
	CLB-3050-130N	M	IR1	IR2	30×50	-130	5.0	3.3	-132.2	67.47	
	CLB-3050-150N	M	IR1	IR2	30×50	-150	5.0	3.5	-152.3	77.85	
	CLB-3050-200N	M	IR1	IR2	30×50	-200	5.0	3.9	-202.6	103.80	
	CLB-3050-250N	M	IR1	IR2	30×50	-250	5.0	4.1	-252.7	129.75	
	CLB-3050-300N	M	IR1	IR2	30×50	-300	5.0	4.3	-302.8	155.70	



**Synthetic fused silica 10×10mm – 30×50mm**

Part Number	A×B [mm]	Focal length f [mm]	Thickness of the edge te [mm]	Thickness of the center tc [mm]	Back focal length fb [mm]	Radius of curvature r [mm]
CLSQ-1010-15N	10×10	-15	4.0	1.9	-16.3	6.90
CLSQ-1010-20N	10×10	-20	3.0	1.5	-21.0	9.20
CLSQ-1010-25N	10×10	-25	3.0	1.9	-26.3	11.50
CLSQ-1010-30N	10×10	-30	3.0	2.1	-31.4	13.80
CLSQ-1010-40N	10×10	-40	3.0	2.3	-41.6	18.40
CLSQ-1020-15N	10×20	-15	4.0	1.9	-16.3	6.90
CLSQ-1020-20N	10×20	-20	3.0	1.5	-21.0	9.20
CLSQ-1020-25N	10×20	-25	3.0	1.9	-26.3	11.50
CLSQ-1020-30N	10×20	-30	3.0	2.1	-31.4	13.80
CLSQ-1020-40N	10×20	-40	3.0	2.3	-41.6	18.40
CLSQ-1515-20N	15×15	-20	6.0	2.1	-21.5	9.20
CLSQ-1515-25N	15×15	-25	5.0	2.2	-26.5	11.50
CLSQ-1515-30N	15×15	-30	4.0	1.8	-31.2	13.80
CLSQ-1515-40N	15×15	-40	4.0	2.4	-41.6	18.40
CLSQ-1525-20N	15×25	-20	6.0	2.1	-21.5	9.20
CLSQ-1525-25N	15×25	-25	5.0	2.2	-26.5	11.50
CLSQ-1525-30N	15×25	-30	4.0	1.8	-31.2	13.80
CLSQ-1525-40N	15×25	-40	4.0	2.4	-41.6	18.40
CLSQ-2020-25N	20×20	-25	7.0	1.2	-25.8	11.50
CLSQ-2020-30N	20×20	-30	6.0	1.7	-31.2	13.80
CLSQ-2020-40N	20×20	-40	5.0	2.0	-41.4	18.40
CLSQ-2020-50N	20×20	-50	4.0	1.7	-51.2	23.00
CLSQ-2020-60N	20×20	-60	4.0	2.1	-61.5	27.60
CLSQ-2020-70N	20×20	-70	4.0	2.4	-71.6	32.20
CLSQ-2020-80N	20×20	-80	4.0	2.6	-81.8	36.80
CLSQ-2020-100N	20×20	-100	4.0	2.9	-102.0	46.00
CLSQ-2020-130N	20×20	-130	4.0	3.2	-132.2	59.80
CLSQ-2020-150N	20×20	-150	4.0	3.3	-152.2	69.00
CLSQ-2020-200N	20×20	-200	4.0	3.5	-202.4	92.00
CLSQ-2020-250N	20×20	-250	4.0	3.6	-252.4	115.00
CLSQ-2020-300N	20×20	-300	4.0	3.6	-302.5	138.00
CLSQ-2040-25N	20×40	-25	7.0	1.2	-25.8	11.50
CLSQ-2040-30N	20×40	-30	6.0	1.7	-31.2	13.80
CLSQ-2040-40N	20×40	-40	5.0	2.0	-41.4	18.40
CLSQ-2040-50N	20×40	-50	4.0	1.7	-51.2	23.00
CLSQ-2040-60N	20×40	-60	4.0	2.1	-61.5	27.60
CLSQ-2040-70N	20×40	-70	4.0	2.4	-71.6	32.20
CLSQ-2040-80N	20×40	-80	4.0	2.6	-81.8	36.80
CLSQ-2050-100N	20×50	-100	4.0	2.9	-102.0	46.00
CLSQ-2050-130N	20×50	-130	4.0	3.2	-132.2	59.80
CLSQ-2050-150N	20×50	-150	4.0	3.3	-152.2	69.00
CLSQ-2050-200N	20×50	-200	4.0	3.5	-202.4	92.00
CLSQ-2050-250N	20×50	-250	4.0	3.6	-252.4	115.00
CLSQ-2050-300N	20×50	-300	4.0	3.6	-302.5	138.00
CLSQ-3030-50N	30×30	-50	7.0	1.4	-51.0	23.00
CLSQ-3030-60N	30×30	-60	6.0	1.6	-61.1	27.60
CLSQ-3030-70N	30×30	-70	6.0	2.3	-71.6	32.20
CLSQ-3030-80N	30×30	-80	5.0	1.8	-81.2	36.80
CLSQ-3030-100N	30×30	-100	5.0	2.5	-101.7	46.00
CLSQ-3030-130N	30×30	-130	5.0	3.1	-132.1	59.80
CLSQ-3030-150N	30×30	-150	5.0	3.3	-152.3	69.00
CLSQ-3030-200N	30×30	-200	5.0	3.8	-202.6	92.00
CLSQ-3030-250N	30×30	-250	5.0	4.0	-252.8	115.00
CLSQ-3030-300N	30×30	-300	5.0	4.2	-302.9	138.00
CLSQ-3040-50N	30×40	-50	7.0	1.4	-51.0	23.00
CLSQ-3040-60N	30×40	-60	6.0	1.6	-61.1	27.60
CLSQ-3040-70N	30×40	-70	6.0	2.3	-71.6	32.20
CLSQ-3040-80N	30×40	-80	5.0	1.8	-81.2	36.80
CLSQ-3050-100N	30×50	-100	5.0	2.5	-101.7	46.00
CLSQ-3050-130N	30×50	-130	5.0	3.1	-132.1	59.80
CLSQ-3050-150N	30×50	-150	5.0	3.3	-152.3	69.00
CLSQ-3050-200N	30×50	-200	5.0	3.8	-202.6	92.00
CLSQ-3050-250N	30×50	-250	5.0	4.0	-252.8	115.00
CLSQ-3050-300N	30×50	-300	5.0	4.2	-302.9	138.00

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Biconvex Lenses

Biconcave Lenses

Kit

Reasonable Lens

Cylindrical

Others

# Contact sheet

Contact sheet for Special Order for spherical lens

Estimation  Order

Date

To: Sigma Koki Co., Ltd. **FAX +81-3-5638-6550**

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Reasonable Lens

**Cylindrical**

Others

Affiliation (Organization Name)					
Department					
TEL		FAX		E-mail	
Country/Address					
Name & Designation		(Tentative name is okay)			
Drawing Number		Estimate	<input type="checkbox"/> Yes: by Date		<input type="checkbox"/> No
Desired Delivery Date		Budget	JP Yen		
Specification of lens	Quantity				
	Selected from standard product	Part Number	If you are using a spherical lens of standard product, please fill in the product number.		
	Custom-made	Type	<input type="checkbox"/> Plano-convex <input type="checkbox"/> Plano-concave		
		Material	<input type="checkbox"/> BK7 <input type="checkbox"/> Synthetic fused silica <input type="checkbox"/> Synthetic fused silica for Excimer Laser ( $\lambda =$ ) <input type="checkbox"/> Other ( )		
	Focal length	$f =$	mm	●When there is no specification of the design wavelength, 546.1nm and standard products. ●May want to change the center thickness by the case of the production. ●If you do not specify the dimension tolerance, we will apply our standard tolerance instead.	
	Design wavelength	$\lambda =$	nm		
Diameter			a		
				b	mm
				tc	mm
Specifications of Coating	With or without coating	<input type="checkbox"/> Non <input type="checkbox"/> Single-layer anti-reflection coating <input type="checkbox"/> Broadband multi-layer anti-reflection coating <input type="checkbox"/> Other ( )			
	Wavelength Used	$\lambda =$	nm	Type of AR (If required)	
Other	* Write more detailed specifications here. (Rough illustration is acceptable.)				

Sigma Koki Co., Ltd.

**Cylindrical lens with its circumference surface polished.**

Applicable for laser focusing into a line, changing beam shape into sheet-shape, or irradiating at a distance with elongated line.

- Focal length shortened by reducing the rod lens diameter compared to cylindrical lenses.
- Distortion-free, flex free, straight line gain during projection is made from a distance. This is achieved by precise process and polishing.
- Suitable for collecting large sums of light by installing it in front of a line sensor.



Specifications	
Material	BK7
Design wavelength	546.1nm
Polish	Rod circumference surface polished
Coating	Uncoated
Surface Quality (Scratch-Dig)	40-20

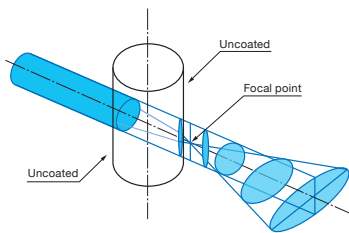
**Guide**

- ▶ Please contact our International Sales Division for rod lens with AR coating requirements.
- ▶ Please contact our International Sales Division for customized products. (customized on outer diameter, length, etc.)
- ▶ Please use MLH-10 (Small Lens Claw) or MLH-SF (Selfoc® Lens Claws) to hold cylindrical lens. [Reference](#) C042, C043

**Attention**

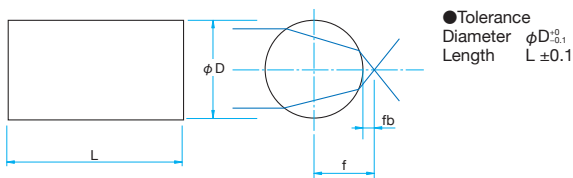
- ▶ Both ends are not polished. Introduce beam from circumference surface.
- ▶ Notable spherical aberration may occur due to the small curvature of rod lenses. Please use cylindrical lenses for precise optical system. [Reference](#) B138
- ▶ When diverging laser beam through rod lenses, operators' eyes may be exposed to diverged beam. Make sure to check the power of laser and to apply safety goggles before using rod lenses.
- ▶ Both rod lenses are not chamfered. Careful handling is required.

**Schematic**

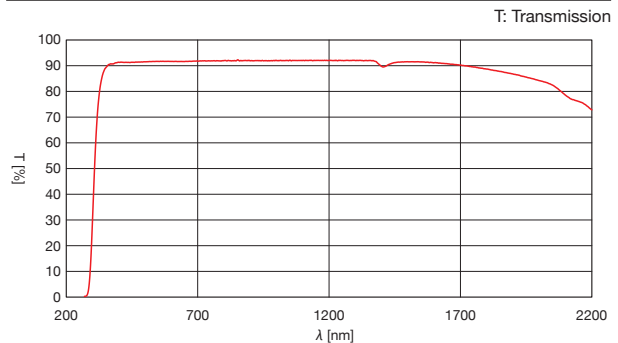


**Outline Drawing**

(in mm)



**BK7(Uncoated) Typical Transmittance Data**



**Specifications**

Part Number	Diameter φD [mm]	Length L [mm]	Focal length f [mm]	Back focal length fb [mm]
RODB-03L06	φ3	6	2.2	0.7
RODB-03L08	φ3	8	2.2	0.7
RODB-03L10	φ3	10	2.2	0.7
RODB-04L06	φ4	6	2.9	0.9
RODB-04L08	φ4	8	2.9	0.9
RODB-04L10	φ4	10	2.9	0.9
RODB-05L06	φ5	6	3.7	1.2
RODB-05L08	φ5	8	3.7	1.2
RODB-05L10	φ5	10	3.7	1.2

**Compatible Optic Mounts**

MLH-10 / MLH-SF + MLH-10ADP-2 + FOP-1

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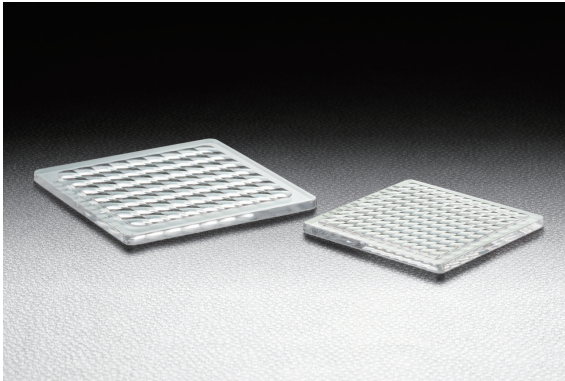
Reasonable Lens

Cylindrical

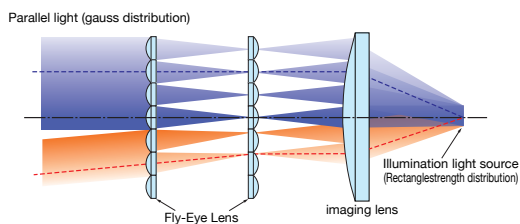
Others

Fly-Eye Lens is used when making illumination light of homogeneous brightness for projector and semiconductor manufacturing equipment. If used in fly-eye lenses of 2 pieces in pair, even strong diffusing light such as a lamp, it can be a light of rectangular intensity distribution.

- Two types are available for focal length of 42.07mm at the partition of 7×9 and 38.24mm at the partition of 10×13.
- With an anti-reflection coating, the incident light can be almost used the illumination light without loss of light
- By use of the press molding technology of glass lens, it was achieved for both high performance and low cost.



## Schematic



## Specifications

Material	B270® or equivalent
Coating	Anti-reflection coating (dielectric multilayer coating)
Design Wavelength	400 – 700nm
Incident Angle	0° (Coating specification)
Focal Length Tolerance	±3%
Optical Axis Center Position Tolerance	±1.5mm

\* B270® is a registered trademark of SCHOTT AG.

## Guide

- ▶ We can also produce for the lens array suitable for the requested number of divisions, the focal length, the size and using wavelength.
- ▶ We can also produce the optical system using fly lens array.

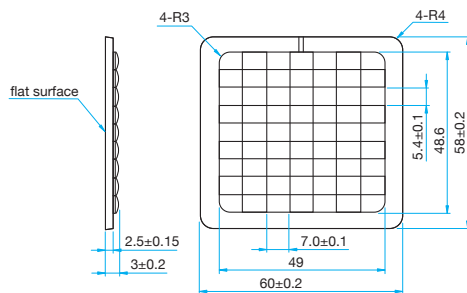
## Attention

- ▶ Imaging lens is not included in the specification. In addition, fly-eye lens array is sold one by one.
- ▶ When used in a laser with high coherence, noise may be generated in the intensity distribution due to the diffraction by the border line of the lens.

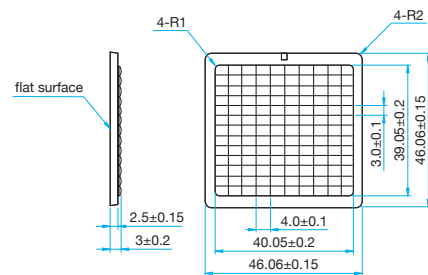
## Outline Drawing

(in mm)

FEL-5860R03-42.07PM



FEL-46S03-38.24PM



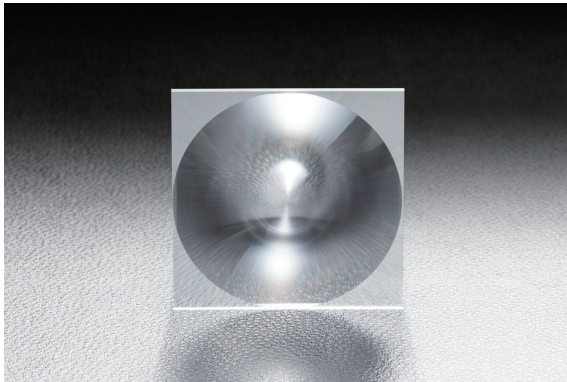
## Specifications

Part Number	Focal length [mm]	Curve of radius [mm]
FEL-5860R03-42.07PM	42.07	20.0
FEL-46S03-38.24PM	38.24	22.0



The lens of short focal length, which is thicker, has been made to a step structure and to a thin plate shape with the characteristics of the lens. It can be used as a substitute for the lens for a loupe and LED light.

- Since it is processed directly on the acrylic plate of 2mm thickness, it is difficult to be deformed and the performance is stable.
- There are four types of the focal length from 5mm to 20mm.
- Compared with the lens of the same focal length, it is lighter and lens will not protrude from the edge of holder.



Specifications	
Material	Acrylic CLAREX
Refractive Index	n=1.49
Focal Length Tolerance	±10% of focal length (in a clear aperture)

\* CLAREX is a registered trademark of Nitto Jushi Kogyo Co., Ltd..

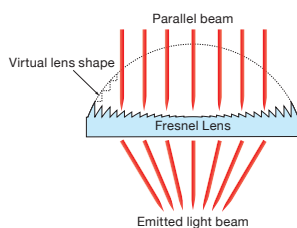
**Guide**

▶ It is also available for products with different focal length and size that are not listed in the catalog. Please contact our international sales division.

**Attention**

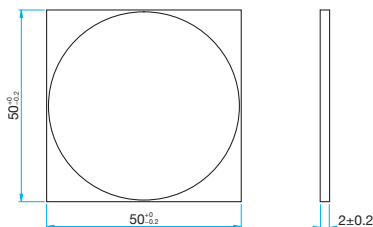
- ▶ There is a direction to the Fresnel lens. Surface that is processed is equivalent to convex.
- ▶ When used in laser, since diffracted light is generated in the step structure, some of the light will also leaked around the focused spot .
- ▶ Characteristics as the lens is obtained in the range of  $\phi 50\text{mm}$ , but it is not guaranteed the accuracy of the focal length out of the scope of the clear aperture.
- ▶ When rubbing strongly the processed surface of the fresnel lens, performance may be degraded. Please do not touch directly the surface.
- ▶ When exposed to high temperature of 80°C or more, it is deformed and performance can be severely degraded.
- ▶ Please do not use organic solvents such as acetone and chloroform. It is dissolved and the step structure will be broken.
- ▶ At the time of delivery, it is delivered that protection sheet is affixed to the surface. Please use it in stripped the protective sheet when using.

**Schematic**



**Outline Drawing**

(in mm)



**Specifications**

Part Number	Focal length [mm]	Prism pitch [mm]	Clear Aperture [mm]
FRL-50S-05P	5	0.05	$\phi 10$
FRL-50S-10P	10	0.05	$\phi 20$
FRL-50S-15P	15	0.05	$\phi 30$
FRL-50S-20P	20	0.08	$\phi 40$

# Micro Spheres | MS

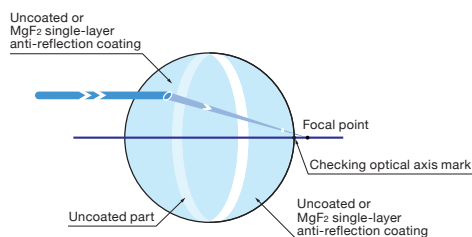
RoHS

Micro Spheres are mostly used for coupling optical fibers to laser diodes and other fibers or detectors.

- Since these ball lenses are much smaller than normal lenses and all the surfaces are polished, they must be handled carefully, but they contribute to reduction of size and weight of devices.
- Both AR coated and uncoated are available. Single layer  $MgF_2$  is chosen from 3 variations of bandwidths 400 – 700nm, 700 – 900nm and 1300 – 1550nm.
- Design wavelength for the focal lengths is 587.6nm (yellow helium line [d])



## Schematic



## Specifications

Material	LaSF9
Coating	Uncoated: MS-P Anti-reflection coating: MS-P1, -P2, -P3
Clear aperture	80% of actual aperture
Surface Quality (Scratch-Dig)	40-20

## Guide

- ▶ Please contact our International Sales Division for micro lenses with AR coatings.
- ▶ Please contact our International Sales Division for customized products. (customized on outer diameter, etc.)

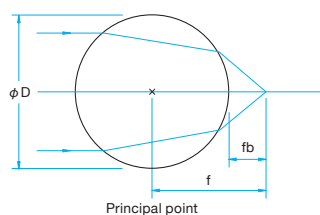
## Attention

- ▶ Small ball lenses with anti-reflective coating is marked at its optical axis so that you can see the direction of coating. After installation of a small spherical lens, clean the ball lens by wiping with alcohol and check marks on the optical axis.
- ▶ Small ball lens have a short focal length, so it is possible to focus the beam at a very large angle. However, since spherical aberration is large, the focused spot size will not be too small.

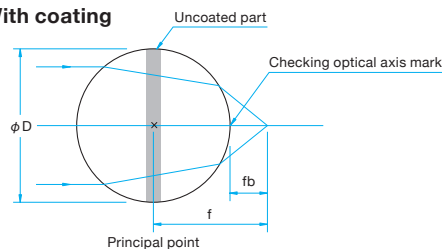
## Outline Drawing

(in mm)

### Uncoated



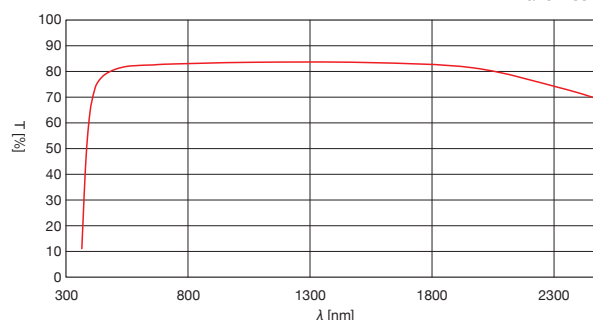
### With coating



- Tolerance Diameter  $\phi D \pm 0.001$

## LaSF9 (Uncoated) Typical Transmittance Data

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Reasonable Lens

Cylindrical

Others



Uncoated				
Part Number	Wavelength Range [nm]	Diameter $\phi$ D [mm]	f (588nm) [mm]	fb (588nm) [mm]
MS-00-0.54P	400 – 2000	$\phi$ 1	0.54	0.04
MS-02-1.1P	400 – 2000	$\phi$ 2	1.09	0.09
MS-03-1.7P	400 – 2000	$\phi$ 3	1.63	0.13
MS-05-2.8P	400 – 2000	$\phi$ 5	2.72	0.22
MS-08-4.35P	400 – 2000	$\phi$ 8	4.35	0.35

632.8nm with AR coating				
Part Number	Wavelength Range [nm]	Diameter $\phi$ D [mm]	f (633nm) [mm]	fb (633nm) [mm]
MS-01-0.54P1	400 – 700	$\phi$ 1	0.55	0.05
MS-02-1.1P1	400 – 700	$\phi$ 2	1.09	0.09
MS-03-1.7P1	400 – 700	$\phi$ 3	1.64	0.14
MS-05-2.8P1	400 – 700	$\phi$ 5	2.73	0.23
MS-08-4.35P1	400 – 700	$\phi$ 8	4.37	0.37

830nm with AR coating				
Part Number	Wavelength Range [nm]	Diameter $\phi$ D [mm]	f (830nm) [mm]	fb (830nm) [mm]
MS-01-0.54P2	700 – 900	$\phi$ 1	0.55	0.05
MS-02-1.1P2	700 – 900	$\phi$ 2	1.10	0.10
MS-03-1.7P2	700 – 900	$\phi$ 3	1.65	0.15
MS-05-2.8P2	700 – 900	$\phi$ 5	2.75	0.25
MS-08-4.35P2	700 – 900	$\phi$ 8	4.41	0.41

1300nm with AR coating				
Part Number	Wavelength Range [nm]	Diameter $\phi$ D [mm]	f (1300nm) [mm]	fb (1300nm) [mm]
MS-01-0.54P3	1300 – 1550	$\phi$ 1	0.56	0.06
MS-02-1.1P3	1300 – 1550	$\phi$ 2	1.11	0.11
MS-03-1.7P3	1300 – 1550	$\phi$ 3	1.67	0.17
MS-05-2.8P3	1300 – 1550	$\phi$ 5	2.78	0.28
MS-08-4.35P3	1300 – 1550	$\phi$ 8	4.45	0.45

Table of Focal Length Shifts According to Wavelength

Wavelength Range [nm]	LaSF9 Refractive index	Diameter $\phi$ D [mm]									
		$\phi$ 1		$\phi$ 2		$\phi$ 3		$\phi$ 5		$\phi$ 8	
		Focal length f [mm]	Back focal length fb [mm]	Focal length f [mm]	Back focal length fb [mm]	Focal length f [mm]	Back focal length fb [mm]	Focal length f [mm]	Back focal length fb [mm]	Focal length f [mm]	Back focal length fb [mm]
404.7	1.8984	0.53	0.03	1.06	0.06	1.58	0.08	2.64	0.14	4.23	0.23
435.8	1.8847	0.53	0.03	1.07	0.07	1.60	0.10	2.66	0.16	4.26	0.26
480	1.8706	0.54	0.04	1.07	0.07	1.61	0.11	2.69	0.19	4.30	0.30
546.1	1.8565	0.54	0.04	1.08	0.08	1.63	0.13	2.71	0.21	4.34	0.34
587.6	1.8503	0.54	0.04	1.09	0.09	1.63	0.13	2.72	0.22	4.35	0.35
632.8	1.8449	0.55	0.05	1.09	0.09	1.64	0.14	2.73	0.23	4.37	0.37
706.5	1.8383	0.55	0.05	1.10	0.10	1.64	0.14	2.74	0.24	4.39	0.39
830	1.8310	0.55	0.05	1.10	0.10	1.65	0.15	2.75	0.25	4.41	0.41
852.1	1.8300	0.55	0.05	1.10	0.10	1.65	0.15	2.76	0.26	4.41	0.41
1060	1.8229	0.55	0.05	1.11	0.11	1.66	0.16	2.77	0.27	4.43	0.43
1300	1.8176	0.56	0.06	1.11	0.11	1.67	0.17	2.78	0.28	4.45	0.45
1529.6	1.8136	0.56	0.06	1.11	0.11	1.67	0.17	2.79	0.29	4.46	0.46

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Cylindrical

Others

Micro lenses are spherical plano convex/biconvex lenses with diameters smaller than 4mm. These small lenses are designed to improve when assembling into present equipment and instruments that demands lighter and smaller footprint optics.

- There are types of lens as Plano convex and Plano concave with small spherical aberration, and as biconvex and biconcave lens with short focal length and large divergence angle.
- Since the edge (side) is cut, it can be relatively ease for grip and fixture of the lens.



### Specifications

Material	LaSF9, SK2, BK7
Design wavelength	587.6nm
Coating	Uncoated
Centration	<3'
Surface Quality (Scratch-Dig)	40-20

### Guide

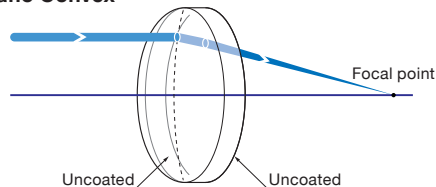
- ▶ Other than the products listed in the catalog, you may also request for different focal length and outer diameter size by contacting our International Sales Division.

### Attention

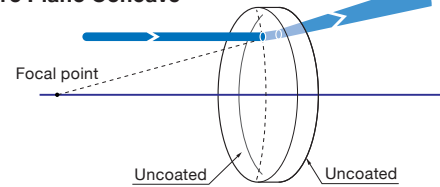
- ▶ There is a direction to put a light in the Plano convex and Plano concave. Please make sure to put the incident parallel light from the convex and concave side. If it is reserved, the spherical aberration is deteriorated and the focused spot becomes large.
- ▶ WEB Reference [Catalog Code W3072](#)
- ▶ There is a direction to put light on the plano convex lens. Please let the parallel light incident from the convex side always. This may increase the spherical aberration in reverse, the focused spot may enlarge and the image will appear out of focus.
- ▶ Since the anti-reflective coating is not applied with the lens, the transmittance is about 90% due to the loss of reflection of the front and rear surface of the lens.

### Schematic

Micro Plano Convex

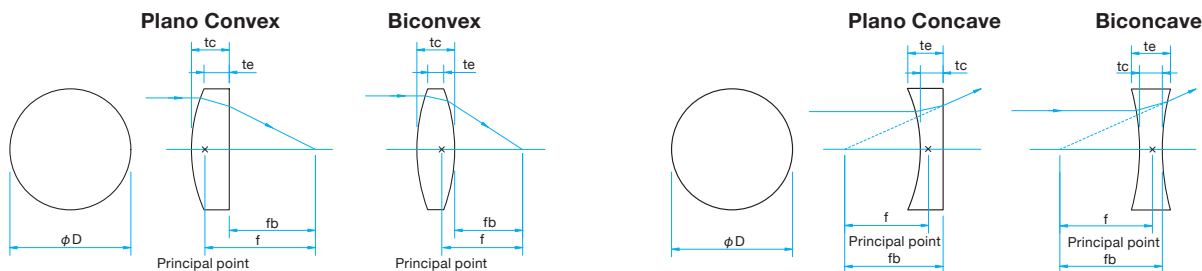


Micro Plano Concave



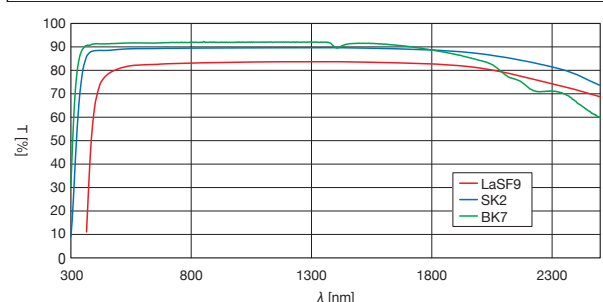
### Outline Drawing

(in mm)



- Tolerance  
Diameter  $\phi D$ :  $\pm 0.2$  Thickness  $t_c$ :  $\pm 0.2$  Focal length  $f$ :  $\pm 5\%$

### Typical Transmittance Data T: Transmission



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Cylindrical

Others



**Plano Convex**

Part Number	Diameter $\phi D$ [mm]	Focal length $f$ [mm]	Back focal length $f_b$ [mm]	Thickness of the edge $t_e$ [mm]	Thickness of the center $t_c$ [mm]	Material	Radius of curvature $r$ [mm]
SLM-1.5-01P	$\phi 1.5$	1	0.56	0.35	0.8	LaSF9	0.85
SLM-1.5-1.5P	$\phi 1.5$	1.5	0.44	1.65	1.9	LaSF9	1.25
SLM-02-1.5P	$\phi 2$	1.5	0.5	1.4	1.9	LaSF9	1.28
SLM-02-02P	$\phi 2$	2	1.2	1.2	1.5	LaSF9	1.70
SLM-02-2.5P	$\phi 2$	2.5	1.6	1.3	1.6	LaSF9	2.13
SLM-02-03P	$\phi 2$	3	2.2	1.0	1.3	LaSF9	2.55
SLM-03-2.5P	$\phi 3$	2.5	1.4	1.5	2.1	LaSF9	2.13
SLM-03-03P	$\phi 3$	3	1.9	1.5	2.0	LaSF9	2.55
SLM-03-04P	$\phi 3$	4	3.3	1.0	1.3	LaSF9	3.40
SLM-03-06P	$\phi 3$	6	5.1	1.1	1.4	SK2	3.64
SLM-04-04P	$\phi 4$	4	2.5	1.5	2.5	SK2	2.43
SLM-04-06P	$\phi 4$	6	5.0	0.7	1.3	SK2	3.64
SLM-04-08P	$\phi 4$	8	7.1	1.1	1.5	SK2	4.86
SLM-04-10P	$\phi 4$	10	9.1	1.2	1.5	SK2	6.07

**Biconvex**

Part Number	Diameter $\phi D$ [mm]	Focal length $f$ [mm]	Back focal length $f_b$ [mm]	Thickness of the edge $t_e$ [mm]	Thickness of the center $t_c$ [mm]	Material	Radius of curvature $r$ [mm]
SLM-03B-03P	$\phi 3$	3	2.4	1.1	1.8	SK2	3.26
SLM-03B-04P	$\phi 3$	4	3.4	1.2	1.8	BK7	3.80
SLM-03B-06P	$\phi 3$	6	5.5	1.1	1.5	BK7	5.93
SLM-04B-04P	$\phi 4$	4	3.2	1.2	2.2	SK2	4.40
SLM-04B-06P	$\phi 4$	6	5.4	1.2	1.9	BK7	5.86
SLM-04B-08P	$\phi 4$	8	7.4	1.2	1.7	BK7	7.97

**Plano Concave**

Part Number	Diameter $\phi D$ [mm]	Focal length $f$ [mm]	Back focal length $f_b$ [mm]	Thickness of the edge $t_e$ [mm]	Thickness of the center $t_c$ [mm]	Material	Radius of curvature $r$ [mm]
SLM-02-04N	$\phi 2$	-4	-4.40	0.95	0.8	LaSF9	-3.40
SLM-03-06N	$\phi 3$	-6	-6.39	1.03	0.8	LaSF9	-5.10
SLM-04-08N	$\phi 4$	-8	-8.37	1.10	0.8	LaSF9	-6.80

**Biconcave**

Part Number	Diameter $\phi D$ [mm]	Focal length $f$ [mm]	Back focal length $f_b$ [mm]	Thickness of the edge $t_e$ [mm]	Thickness of the center $t_c$ [mm]	Material	Radius of curvature $r$ [mm]
SLM-02B-02N	$\phi 2$	-2	-2.13	0.99	0.7	LaSF9	-3.50
SLM-04B-04N	$\phi 4$	-4	-4.16	1.39	0.8	LaSF9	-6.94

**Compatible Optic Mounts**

MLH-10, -15

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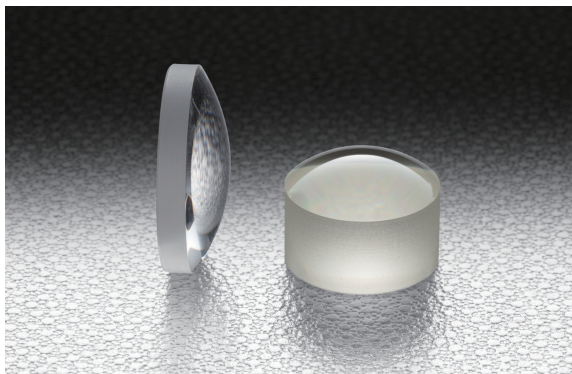
Reasonable Lens

Cylindrical

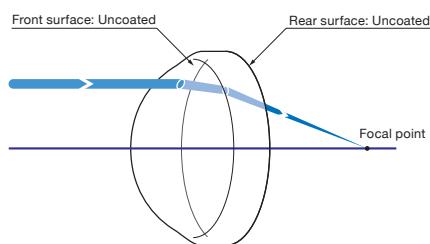
Others

It is a short focus lens with small spherical aberration by achieving the convex surface of the plano convex lens to an aspheric shape. It is used when squeezing small illumination light or condensing efficiently the light emanating from a single point.

- It can be used in a wide range from the visible to infrared of 1.5 $\mu$ m wavelength.
- There are two types of AGL-31.7P with a reduced spherical aberration by the plano convex lens of BK7 and AGL-12P with high NA using (FDS-90) high refractive index glass (FDS90).
- An aspheric shape can be produced by using a special polishing apparatus. Shrinkage, cracking and chipping do not occur when usually appearing in the pressed product..

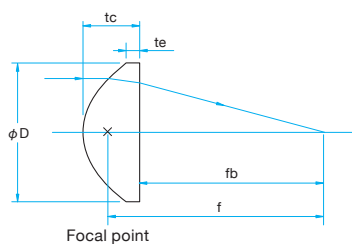


## Schematic



## Outline Drawing

(in mm)



- Tolerance Diameter  $\phi D_{\pm 0.2}$
- Thickness  $tc \pm 0.2$
- Focal length  $\pm 7\%$

## Specifications

Material	BK7, FDS90
Design Wavelength	587nm
Coating	Uncoated
Shape	Aspheric Plano Convex Polished Both Surfaces
Centration	<5'
Surface Quality (Scratch-Dig)	60-40

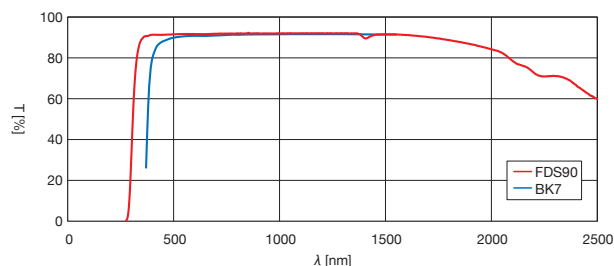
## Guide

- ▶ We also produce aspheric condenser lens with the anti-reflection coating.

## Attention

- ▶ When input the parallel light from the back surface (flat), the spherical aberration is not condensed on one point largely.
- ▶ Since an aspheric plano convex lens is a single lens, the focal length will change depending on the wavelength.
- ▶ Since there is not the anti-reflection coating on the lens, by the reflection loss of the front surface and the back surface, the transmittance is 90% or less.

## Typical Transmittance Data T: Transmission



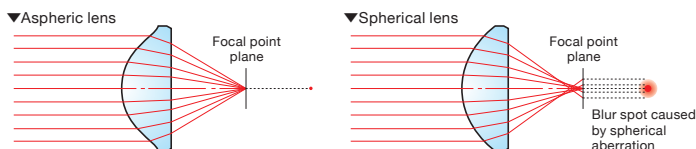
## Specifications

Part Number	Diameter $\phi D$ [mm]	Focal length $f$ [mm]	Back focal length $fb$ [mm]	NA* $(D/2 \times 0.8/f)$	Thickness of the edge $te$ [mm]	Thickness of the center $tc$ [mm]	Material
AGL-15-12P	$\phi 15$	12	6	0.50	8.1	11	FDS90
AGL-15-31.7P	$\phi 15$	31.7	28.7	0.19	2.7	4.5	BK7
AGL-20-12P	$\phi 20$	12	6	0.67	5.6	11	FDS90
AGL-20-31.7P	$\phi 20$	31.7	27.7	0.25	2.8	6	BK7

\* NA is calculated using 80% of the outer diameter of the lens.

## Aspheric and Spherical Lenses

When collecting a lot of light in a lens, it is required the lens which is short focal length and large diameter. However, when input the parallel light to the spherical lens of such conditions, there is the difference between the focal points of the rays passing through the vicinity of and periphery of the optical axis. This phenomenon is called the spherical aberration of the lens. In case of spherical lens, generally since the exceeding refraction occurs at the periphery area, it causes to be focused in closer point to the lens than the light beam of the vicinity of the optical axis. Therefore, if the lens shape is designed such as more gentle curvature of the lens away from the center of optical axis, all parallel light incident on the lens will be focused at one point.

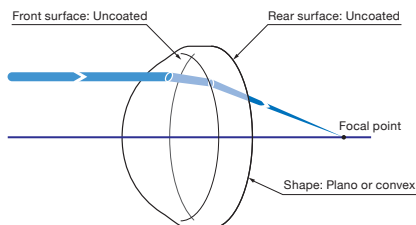


Aspheric condenser lens is a single lens for collection and condensing, which the radius of curvature of one side is changed according to the height from the optical axis to minimize spherical aberration. The other side is plano or convex.

- These lenses can condense light at a short focal length that cannot be achieved with spherical lenses.
- Since these lenses are molded polished from B270-Superwhite, the complex shapes that cannot be polished can be easily manufactured.
- These lenses are designed for the use at infinite conjugate ratios and focal lengths are designed at 587.6nm (yellow helium line [d]).

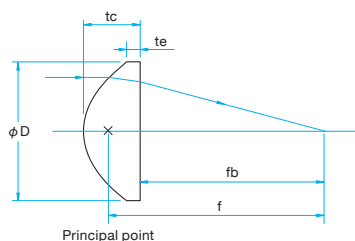


### Schematic



### Outline Drawing

(in mm)



- Tolerance Diameter  $\phi D \pm 0.5$
- Thickness  $t_c \pm 0.5$
- Focal length  $\pm 7\%$

### Specifications

Material	B270® ( $n_d=1.523$ )
Form	Front surface: Aspherical Rear surface: Plano or Convex
Coating	Uncoated
Maximum operating temperature	170°C
Surface Quality (Scratch-Dig)	80-50

### Guide

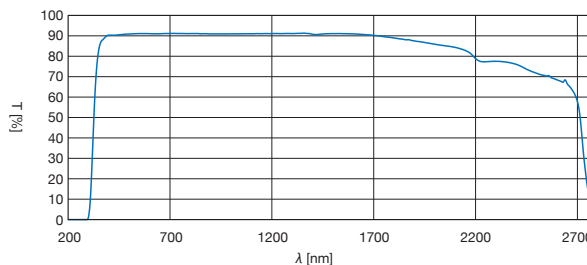
- ▶ Please contact our International Sales Division for Aspheric Condenser Lenses with anti-reflection coating.
- ▶ B270® is a registered trademark of SCHOTT AG Inc.

### Attention

- ▶ When the parallel light is incident from the rear (side of plane or large spherical curvature), spherical aberration will not condense into a large point.
- ▶ Aspheric condenser lens is used for illumination light source. It is not aberration-free for laser focusing.
- ▶ Since the anti-reflection coating is not applied with the lens, the transmittance is about 90% due to the loss reflection of the front and rear surfaces of the lens.

### Typical Transmittance Data

T: Transmission



### Specifications

Part Number	Diameter $\phi D$ [mm]	Focal length $f$ [mm]	Back focal length $f_b$ [mm]	NA* ( $D/2 \times 0.8/f$ )	Thickness of the edge $t_e$ [mm]	Thickness of the center $t_c$ [mm]	Rear surface
AGL-12-8.5P	$\phi 12$	8.5	5.8	0.56	1.6	5.5	Convex
AGL-12-10.5P	$\phi 12$	10.5	8.2	0.46	1.1	3.5	Plano
AGL-18-12P	$\phi 18$	12	6.9	0.60	3.3	8.8	Convex
AGL-19-17P	$\phi 19$	17	12.4	0.45	1.8	7.0	Plano
AGL-25-20P	$\phi 25$	20	15.1	0.50	1.2	7.5	Plano
AGL-30-23.5P	$\phi 30$	23.5	14.3	0.51	3.8	14.0	Plano
AGL-38-34.5P	$\phi 38$	34.5	26.6	0.44	1.5	12.0	Plano
AGL-50-39P	$\phi 50$	39	25.5	0.51	2.8	20.5	Plano

\* NA is calculated using 80% of the outer diameter of the lens.

### Compatible Optic Mounts

LHF-20S, -25S, -30S, -50S / LHA-25, 60 / SLH-25, -50 / MLH-15

## Aspheric Micro Lens | AGL2

RoHS

Catalog Code W3188

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Reasonable Lens

Cylindrical

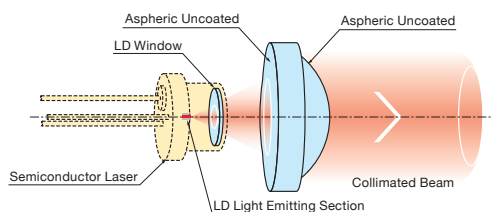
Others

This a precision aspherical lens that can condense the light into the range of diffraction limit when plane wave is incident. This is used when condensing the light of semiconductor laser into the parallel light and the parallel light into fiber.

- Aspheric micro lens is formed by pressing the glass in a precision mold. Since this is non-abrasive forming, flange surface (FD) as a reference surface is provided on the lens.
- It is designed that spherical aberration is minimized by consideration of a window of semiconductor laser ( $t=0.25\text{mm}$ ).
- Since outer diameter is small, it is possible to manufacture a compact optical system.

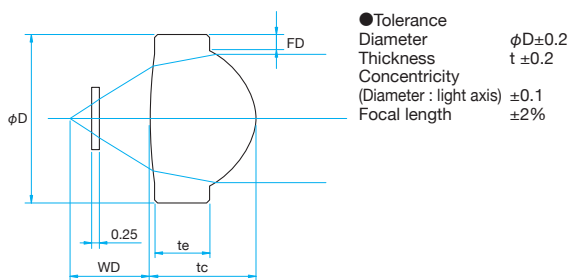


## Schematic



## Outline Drawing

(in mm)



## Specifications

Material	Corning C0550 (Low melting point glass)
Design Wavelength	780nm
Surface Accuracy	$\lambda/2$ ( $\lambda=780\text{nm}$ )
Coating	Uncoated (Both surfaces)
LD Window	Thickness : 0.25mm Refractive Index : 1.512
Surface Quality (Scratch-Dig)	40-20

## Guide

- ▶ Please contact our International Sales Division when specifying anti-reflecting coating.

## Attention

- ▶ If using wavelength is significantly different from the design wavelength, large wave front aberration occurs.
- ▶ Spherical aberration occurs when used without putting the LD window, collimated beam is not a plane wave.
- ▶ If the lens direction is used reversely, the lens, it will not be able to be condensed into collimated beam or one point.
- ▶ If there is slope when installing the lens, astigmatism and coma aberration can occur.
- ▶ Please use the flange (reference plane) and use it after adjustment to be accurately perpendicular to the optical axis.

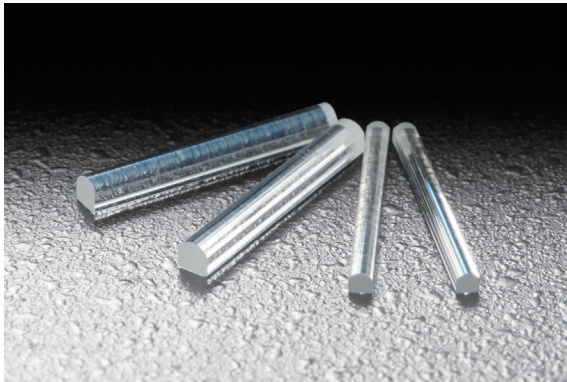
## Specifications

Part Number	Diameter $\phi D$ [mm]	Focal length $f$ [mm]	NA	Clear aperture $\phi A$ [mm]	WD [mm]	Thickness of the center $t_e$ [mm]	Thickness of the edge $t_c$ [mm]	Flange width FD [mm]
AGL2-03-02P	$\phi 3.0$	2.00	0.50	$\phi 2.0$	1.1	2.0	1.4	0.30
AGL2-4.7-6.16P	$\phi 4.7$	6.16	0.30	$\phi 3.7$	4.4	3.5	2.9	0.30
AGL2-6.33-4.51P	$\phi 6.3$	4.51	0.55	$\phi 5.0$	2.9	2.9	1.6	0.55
AGL2-6.5-18.4P	$\phi 6.5$	18.40	0.15	$\phi 5.5$	17.1	2.2	1.8	0.35
AGL2-7.2-6.24P	$\phi 7.2$	6.24	0.40	$\phi 5.0$	3.5	5.4	4.2	0.65
AGL2-7.2-11.11P	$\phi 7.2$	11.11	0.25	$\phi 5.5$	8.0	5.0	4.2	0.40



FAC collimated lens is an aspheric cylindrical lens designed for collimating the bar-type laser incident and to avoid light divergence. Because of the aspheric form of the lens, it offers a low spherical aberration.

- Because of its short back focus feature, it can be used with the light emitting section attach to the lens to perform the best focusing effects.
- Can also be used as a light capturing lens for line CCD sensor or as a laser line generator.
- Both sides have AR coating which limits the lost in illumination and have high focusing efficiency.



Specifications	
Material	High refractive index Barium-Lanthanum glass
Design wavelength	808nm
Refractive index	1.812 (Wavelength Range 808nm)
NA	>0.8
Clear aperture	The aperture of the flat-side is 90%
Coating	Anti-reflection coating

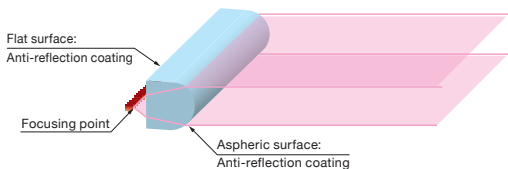
### Guide

- ▶ The pricing varies depending on the quantity of the order, please contact our International Sales Division.
- ▶ We accept low quantity order.

### Attention

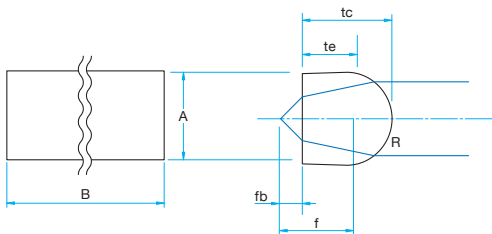
- ▶ The perfect collimated light can be obtained only with the type of high power Laser Diode Array light (TEM<sub>00</sub>).
- ▶ The back-focus (bf) is extremely short, the CAN type LD or LD with cover glass may face bad focusing problem.
- ▶ There is no focus effect on the long side of the lens; therefore, divergence problem may remain.
- ▶ The imaging points of the emitted light from the cylindrical lens are different from the vertical and the horizontal side.

### Schematic

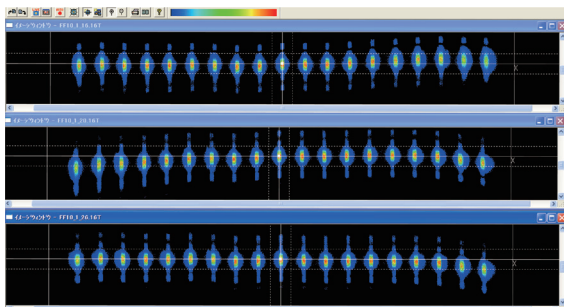


### Outline Drawing

(in mm)



### Data of bar-type focusing lens



This is to show the high uniformity of the lens from the right to left. A high manufacturing capability is approved. All lenses are inspected in our production line, guaranteeing a high level of customer satisfaction.

### Specifications

AxB [mm]	Focal length f [mm]	Thickness of the edge te [mm]	Thickness of the center tc [mm]	Back focal length fb [mm]
1.5x12	0.9	0.93	1.41	0.15
1.0x12	0.6	0.62	0.94	0.10

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Reasonable Lens

Cylindrical

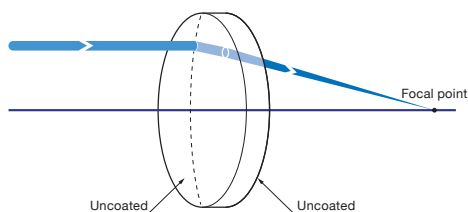
Others

Calcium fluoride ( $\text{CaF}_2$ ) is a crystal which has the excellent transmission characteristics in the wide wavelength range from ultraviolet (200nm) to near-infrared (8 $\mu\text{m}$ ). It is a plano convex lens of using this  $\text{CaF}_2$ .

- Impurities and crystal defects were reduced, and transmission characteristics in the ultraviolet region was increased.  $\text{CaF}_2$  is used for the range from the ultraviolet to the infrared.
- Compared with other crystals,  $\text{CaF}_2$  has high durable to moisture, and it can be treated as same as the general optical element.
- Since  $\text{CaF}_2$  is isotropic crystal, birefringence (polarization characteristics) does not occur.

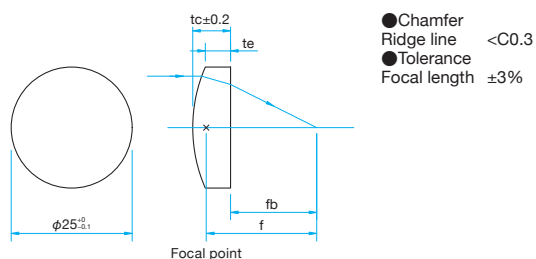


### Schematic



### Outline Drawing

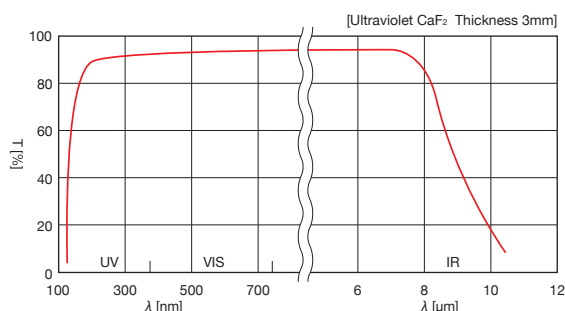
(in mm)



### Specifications

Part Number	Focal length f [mm]	Back focal length fb [mm]	Thickness of the edge te [mm]	Thickness of the center tc [mm]
SLCFU-25-50P	50	48	2.0	6.4
SLCFU-25-100P	100	98	2.0	4.1
SLCFU-25-150P	150	148	2.0	3.4
SLCFU-25-200P	200	198	2.0	3.0

### Typical Transmittance Data T: Transmission



### Specifications

Material	$\text{CaF}_2$ for Optical Crystal
Design Wavelength	5 $\mu\text{m}$
Coating	Uncoated
Surface Reflectance	3% (per side)
Shape	Spherical Plano Convex, Polished Both Surfaces
Centration	<3'
Clear Aperture	90% of diameter
Surface Quality (Scratch-Dig)	60-40

### Guide

- ▶ It is available for the AR coating to reduce the transmission loss at the requested wavelength.
- ▶ It is also available for products with different size and focal length that are not listed in the catalog.

### Attention

- ▶ It may be broken and be cleaved by a sudden temperature change and shock.  $\text{CaF}_2$  has low hardness and scratch upon contact with a metal and glass. Please use very carefully.
- ▶ There is not the anti-reflection coating on the surfaces. By the loss of surface reflection (3% per surface), the transmittance is about 94%.

### Wavelength dependency data of the focal length ( $\text{CaF}_2$ plano convex)

Wavelength	0.2 $\mu\text{m}$	0.6328 $\mu\text{m}$	1.064 $\mu\text{m}$	2.94 $\mu\text{m}$	5.0 $\mu\text{m}$	7.0 $\mu\text{m}$
Focal length f [mm]	40.4	46.2	47.7	47.8	50.0	54.2
	80.8	92.4	93.3	95.6	100.0	108.1
	121.2	138.6	140.0	143.4	150.0	162.5
	161.5	184.8	186.7	191.2	200.0	216.7

### Physics

Wavelength [nm]	Refractive Index
193.5	1.502
200.0	1.496
248.4	1.467
308.0	1.453
355.0	1.446
404.7	1.442
488.0	1.437
632.8	1.433
694.3	1.432
780.0	1.430
1064	1.429
2000	1.424
3000	1.418
4000	1.410
5000	1.399
6000	1.386
7000	1.369
8000	1.350
9000	1.327
Density	3.18g/cm <sup>3</sup>
Thermal Conductivity	9.71W·m <sup>-1</sup> K <sup>-1</sup>
Thermal Expansion Coefficient	24×10 <sup>-6</sup> /°C (20 - 60°C)

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Cylindrical

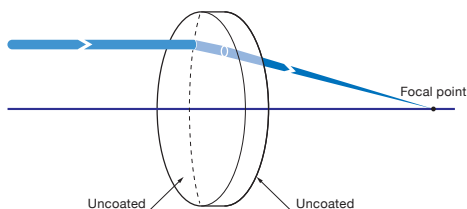
Others

Sapphire crystal is a transparent crystal without absorption from the visible to infrared wavelength of 5 $\mu$ m. In addition, there are features such as a high hardness and a rare scratch. It is a single lens which was made with the crystal.

- Sapphire crystal is very stable scientifically, so it is used in the optical equipment used in the field.
- Since there is no absorption (1.4 $\mu$ m, 2.2 $\mu$ m, 2.7 $\mu$ m) by water (OH radical), it can be used on a lens for the analyzer for near-infrared.

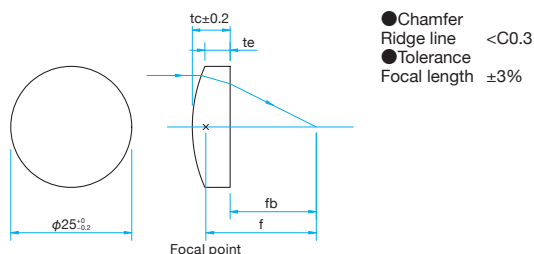


### Schematic



### Outline Drawing

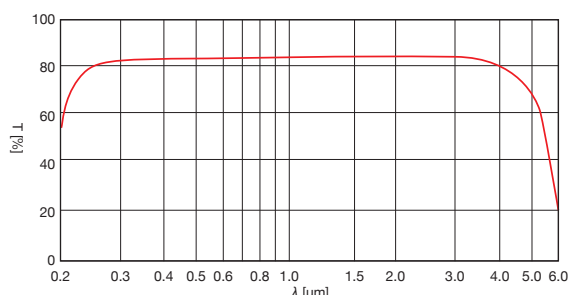
(in mm)



### Specifications

Part Number	Focal length f [mm]	Back focal length f <sub>b</sub> [mm]	Thickness of the edge t <sub>e</sub> [mm]	Thickness of the center t <sub>c</sub> [mm]
SLSH-25-50P	50	47.7	2.0	4.1
SLSH-25-100P	100	98.3	2.0	3.0
SLSH-25-200P	200	198.6	2.0	2.5

### Typical Transmittance Data T: Transmission



### Specifications

Material	Optical sapphire crystal (uniaxial crystal)
Design Wavelength	546.1nm
Coating	Uncoated
Shape	Spherical Plano Convex Polished Both Surfaces
Centration	<math>< 10'</math>
Clear Aperture	90% of diameter
Surface Quality (Scratch-Dig)	60-40

### Guide

- ▶ Sapphire jewelry is the thing that metal ions such as iron and titanium was mixed with natural sapphire crystal. The artificial sapphire crystal is colorless and transparent. It is available for the AR coating to reduce the transmission loss at the requested wavelength.
- ▶ It can be used safely because it is harmless to the human body.

### Attention

- ▶ There is not the anti-reflection coating on the surfaces. By the loss of surface reflection (7.7% per surface), the transmittance is about 86.5%.

### Physics

Wavelength [nm]	Refractive Index
248.4	1.834
325.0	1.804
365.0	1.794
404.7	1.786
587.6	1.769
694.3	1.764
1014	1.756
1800	1.742
2200	1.733
3400	1.699
4500	1.650
Density	3.98g/cm <sup>3</sup>
Thermal Conductivity	42W·m <sup>-1</sup> K <sup>-1</sup> (25°C)
Thermal Expansion Coefficient	6.9×10 <sup>-6</sup> /°C (Perpendicular to the C axis 200°C)
	7.6×10 <sup>-6</sup> /°C (Parallel to the C axis 200°C)

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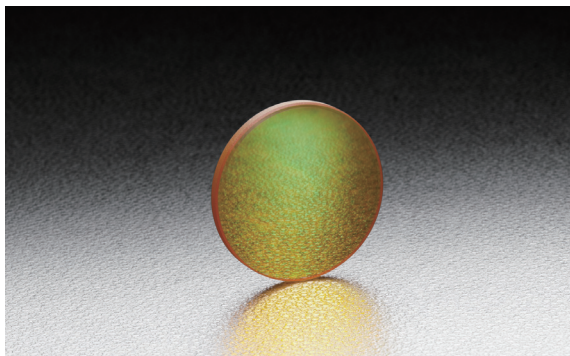
Reasonable Lens

Cylindrical

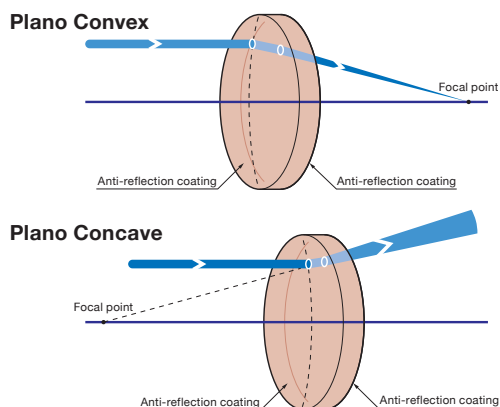
Others

Spherical single lenses are made of zinc selenide. In contrast to other optical materials for infrared wavelengths such as Ge (germanium) or Si (silicon), ZnSe lenses transmit some visible light, facilitating optical axis adjustment (alignment) of infrared laser systems and permitting use of cheaper He-Ne lasers. Lenses intended for use with CO<sub>2</sub> lasers have AR coatings.

- High powered lasers often emit laser light in the infrared region. Such systems require careful handling, since infrared laser light is invisible. Because of this laser light, preliminary alignment of optical parts in many cases are essential. While zinc selenide transmit some light in the visible spectrum, it allows easier alignment of other optical components.

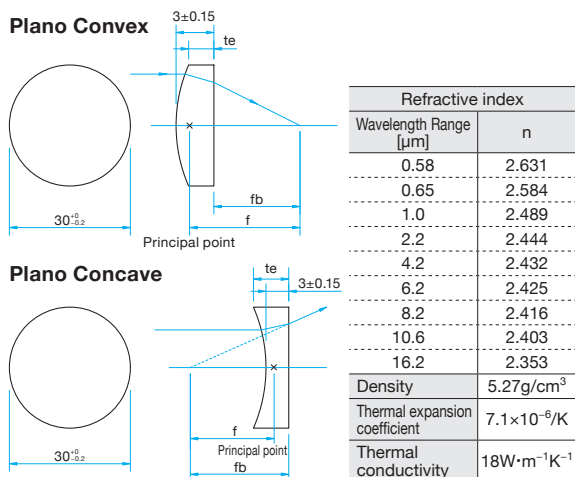


## Schematic



## Outline Drawing

(in mm)



## Important: Treatment of ZnSe optics

ZnSe (Zinc selenide) is Poisonous and Deleterious Substances classified as legal, Depending on the specifications, the certificate of delivery may be required acquisition of Poisonous and Deleterious Substances. **In addition, ZnSe Optics disposal after use is prohibited in general.**

**Lenses that are no longer needed, please return it to us.**

However, it is only in our products. The above is a case in Japan and please ask nearby sales contact about the case outside Japan.

## Specifications

Material	ZnSe crystal
Design wavelength	10.6μm
Coating	AR coating (both surfaces)
Transmittance	99% or more
Centration	<3'
Surface Quality (Scratch-Dig)	40-20

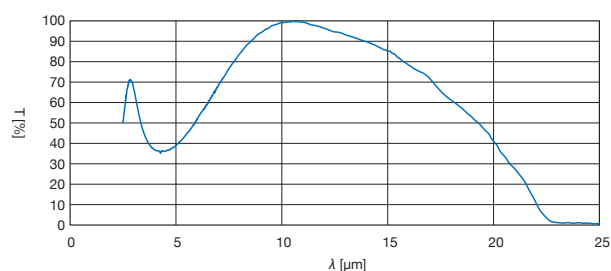
## Guide

- Other than the products listed in the catalog, you may also request for different focal length and outer diameter size by contacting our International Sales Division.

## Attention

- Hydrogen selenide is harmful when it comes to contact with strong acids! Do not immerse the lens in hydrochloric or sulphuric acid.
- When light is condensed on the surface of ZnSe, the high power laser beam may produce toxic gases due to the thermal decomposition. In addition, a large amount of gas and powder occurs when the ZnSe lens is damaged by the laser thermal runaway. In case of the ZnSe lens is damaged by any chance, DO NOT handle the lens with your bare hands. Collect the debris and be careful not to inhale the powder and steam generated.
- Please check the "wavelength characteristic of the focal length data" on our web-site. [WEB Reference](#) [Catalog Code](#) W3074
- There is a direction to put light on the plano convex side always. This may increase the spherical aberration in reverse. The focused spot may enlarge and the image will appear un-focused.

## Typical Transmittance Data T: Transmission



## Plano Convex

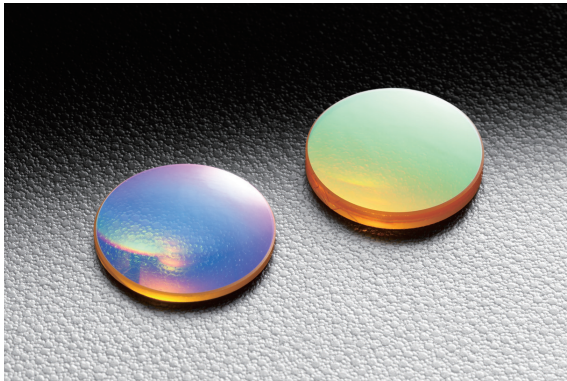
Part Number	Focal length f [mm]	Thickness of the edge te [mm]	Back focal length fb [mm]	Radius of curvature r [mm]
SLZS-30-100PCO2	100	2.2	98.8	140.3
SLZS-30-150PCO2	150	2.5	148.8	210.5
SLZS-30-200PCO2	200	2.6	198.8	280.6

## Plano Concave

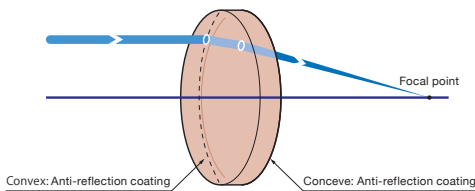
Part Number	Focal length f [mm]	Thickness of the edge te [mm]	Back focal length fb [mm]	Radius of curvature r [mm]
SLZS-30-50NCO2	-50	4.6	-51.2	-70.2

It is a condensing lens used zinc selenide (ZnSe) for CO<sub>2</sub> laser (10.6μm).  
It is processed into a meniscus shape having optimized spherical aberration.

- With anti-reflection coating, a loss due to surface reflection can be suppressed, and the laser light with high efficiency can be condensed.
- ZnSe crystal has little hygroscopic, it can be handled in the same way as a normal optical element.
- Since ZnSe crystal is a isotropic crystal, it does not occur birefringence (polarization characteristics).

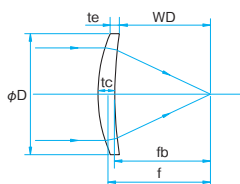


### Schematic



### Outline Drawing

(in mm)



- Tolerance
- Diameter  $\phi D_{\pm 0.1}$
- Thickness  $t_e \pm 0.1$
- Focal length  $\pm 1.5\%$

### Specifications

Material	ZnSe
Design Wavelength	10.6μm
Refractive Index	2.403
Centration	<3'
Coating	AR coating (Wavelength 10.6μm) (Diameter of φ25.4mm is wavelength of 650nm and 10.6μm)
Clear Aperture	90% of diameter
Surface Quality (Scratch-Dig)	40-20

### Guide

▶ We can also provide a window plate (OPZS / WZSA) used ZnSe for CO<sub>2</sub>. [Reference](#) ▶ B319

### Attention

- ▶ When the high power laser beam is condensed on the surface of ZnSe, due to the thermal decomposition, toxic gas may occur. In addition, a large amount of gas and powder occur when the ZnSe lens is damaged by the laser thermal run-away. If the ZnSe lens is damaged, DO NOT touch the lens by bare hands. Please collect the debris and be careful not to inhale the powder and steam generated.
- ▶ Since meniscus lens is a single lens, the focal length will be changed depending on the wavelength.
- ▶ There is a direction to put a light in the Plano convex lens. Please make sure to put the parallel light from the convex side. If it is reserved, the spherical aberration increases, the focused spot becomes large and the image looks blurred.

### Specifications

Part Number	Diameter φD [mm]	Focal length f [mm]	Thickness of the edge te [mm]	Thickness of the center tc [mm]	Back focal length fb [mm]	WD [mm]
SLZS2-19-38.1PCO2	φ19.05	38.1	2.0	2.85	36.1	35.6
SLZS2-19-50.8PCO2	φ19.05	50.8	2.0	2.64	49.0	48.6
SLZS2-19-63.5PCO2	φ19.05	63.5	2.0	2.51	61.8	61.5
SLZS2-20-38.1PCO2	φ20.00	38.1	2.0	2.94	36.1	35.5
SLZS2-20-50.8PCO2	φ20.00	50.8	2.0	2.70	48.9	48.5
SLZS2-20-63.5PCO2	φ20.00	63.5	2.0	2.58	61.7	61.4
SLZS2-25-38.1PCO2	φ25.40	38.1	3.0	4.52	35.0	34.1
SLZS2-25-63.5PCO2	φ25.40	63.5	3.0	3.91	60.9	60.3

### Important: Treatment of ZnSe optics

ZnSe (Zinc selenide) is Poisonous and Deleterious Substances classified as legal, Depending on the specifications, the certificate of delivery may be required acquisition of Poisonous and Deleterious Substances. **In addition, ZnSe Optics disposal after use is prohibited in general.**  
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# Silicon Plano Convex Lens | SLSI

RoHS Catalog Code W3192

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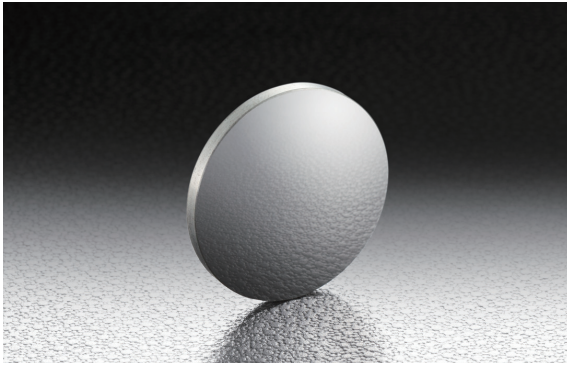
Reasonable Lens

Cylindrical

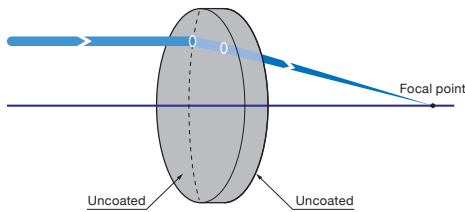
Others

The single crystal of silicon used in semiconductor has low absorption in the infrared wavelength of 1.2 - 6 $\mu$ m and it can be used as an optical element of infrared light. It is a spherical plano convex lens that was made with the silicon single crystal. It is used as a lens for receiving infrared and infrared sensors.

- It looks that a light does not transmit because of a metallic luster, but it is transmitted through the wide infrared range of 1.2 - 6 $\mu$ m.
- The wavelength of 1.2 $\mu$ m or less does not transmit, so it can also get the effect of infrared transmission filter.
- Since there is the refractive index of 3 or more, the curvature has slowed from the lens of glass.

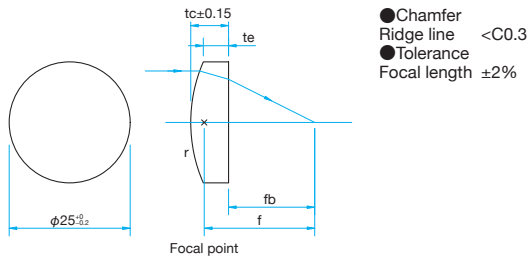


Schematic



Outline Drawing

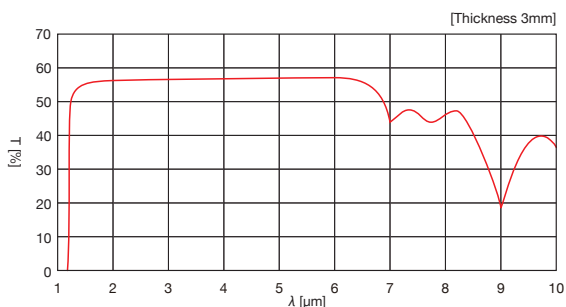
(in mm)



Specifications

Part Number	Focal length f [mm]	Back focal length f <sub>b</sub> [mm]	Thickness of the edge t <sub>e</sub> [mm]	Thickness of the center t <sub>c</sub> [mm]
SLSI-25-25P	25	23	2.0	3.3
SLSI-25-50P	50	48	2.0	2.6
SLSI-25-100P	100	98	2.0	2.3

Typical Transmittance Data T: Transmission



Specifications

Material	Silicon (Si)
Design Wavelength	5 $\mu$ m
Coating	Uncoated
Surface Reflectance	30% (per side)
Shape	Spherical Plano Convex Polished Both Surfaces
Centration	<3'
Clear Aperture	90% of diameter
Surface Quality (Scratch-Dig)	60-40

**Guide**

► It is available for the AR coating to reduce the transmission loss by reflection at the requested wavelength.

**Attention**

- Silicon lens has metallic luster so that visible light is reflected and absorbed. Because of this, no transmittance occurs.
- Silicon lens without an anti-reflection coating has a loss due to surface reflection. It causes that the transmittance is about 50%.

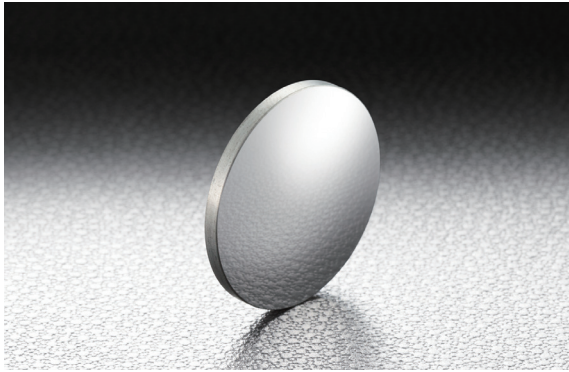
Physics

Wavelength [nm]	Refractive Index
1.2	3.519
1.3	3.503
1.4	3.494
1.5	3.483
1.6	3.473
1.8	3.462
2.0	3.454
2.2	3.449
2.4	3.445
2.6	3.441
2.8	3.437
3.0	3.435
3.4	3.433
3.6	3.431
3.8	3.431
4.0	3.430
4.5	3.428
5.0	3.426
5.5	3.425
6.0	3.424
Density	2.33g/cm <sup>3</sup>
Thermal Conductivity	129W·m <sup>-1</sup> ·K <sup>-1</sup> (40°C)
Thermal Expansion Coefficient	4.2×10 <sup>-6</sup> /°C (25°C)

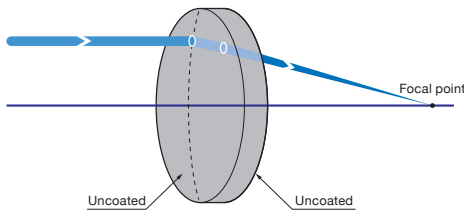


The single crystal of germanium used in the semiconductor is less absorption in the infrared wavelength of 2 - 20μm and it can be used as an optical element of the infrared light. It is a single lens which was made with the germanium crystal. It is used as a lens of a camera to observe the infrared, such as thermography.

- It looks that a light does not transmit because of a metallic luster, but it is transmitted through the wide infrared range of 2 - 20μm.
- A Light of the wavelength of 1.5μm or less does not transmit, so it can also get the effect of infrared transmission filter.
- Since there is the refractive index of 4 or more, the curvature is slower than the lens of glass.

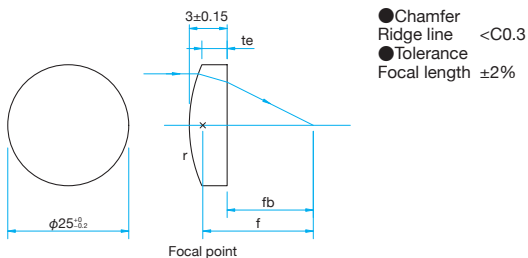


### Schematic



### Outline Drawing

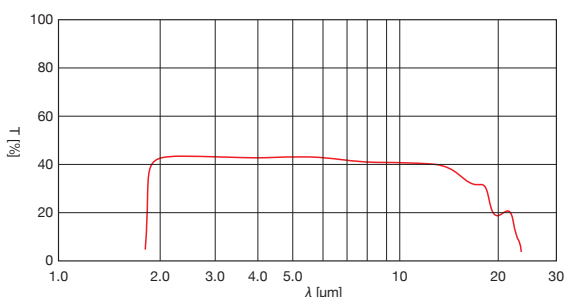
(in mm)



### Specifications

Part Number	Focal length f [mm]	Back focal length f <sub>b</sub> [mm]	Thickness of the edge t <sub>e</sub> [mm]
SLGE-25-25P	25	24.25	1.95
SLGE-25-50P	50	49.25	2.48
SLGE-25-100P	100	99.25	2.74

### Typical Transmittance Data T: Transmission



### Specifications

Material	Germanium (Ge)
Design Wavelength	10.6μm
Coating	Uncoated
Surface Reflectance	36% (per side)
Shape	Spherical Plano Convex Polished Both Surfaces
Centration	<math><3'</math>
Clear Aperture	90% of diameter
Surface Quality (Scratch-Dig)	60-40

### Guide

► It is available for the AR coating to reduce the transmission loss by the reflection at the requested wavelength.

### Attention

- Germanium lens can have metallic luster, so that visible light is reflected and absorbed. Because of this, no transmittance occurs.
- Germanium lens without an anti-reflection coating has a loss due to surface reflection. It causes that the transmittance is about 40%.
- For the observation of infrared wavelengths, it is necessary to consider the effect of the radiation spectrum by temperature. In case of using in an environment of 30°C or more, radiant light of infrared (near 9.6μm) is emitted from all substances, and it will not be able to properly observe the infrared spectrum to be observed.

### Physics

Wavelength [nm]	Refractive Index	Remarks column
1064	4.4100	YAG laser
1320	4.3050	communication LD
1550	4.2300	communication LD
2000	4.1200	
3000	4.0443	
4000	4.0250	
5000	4.0162	
6000	4.0115	
7000	4.0086	
8000	4.0067	
9000	4.0054	
9400	4.0049	CO <sub>2</sub> laser
10600	4.0035	CO <sub>2</sub> laser
12000	4.0029	
13000	4.0022	
14000	4.0018	
15000	4.0013	
16000	4.0009	
17000	4.0004	
18000	4.0000	
19000	3.9996	
20000	3.9992	
Density	5.33g/cm <sup>3</sup>	
Thermal Conductivity	58.6W·m <sup>-1</sup> K <sup>-1</sup> (20°C)	
Thermal Expansion Coefficient	5.5×10 <sup>-6</sup> /°C (25°C)	

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# Contact sheet

Contact sheet for Special Order for Lenses

Estimation  Order

Date

To: Sigma Koki Co., Ltd. **FAX +81-3-5638-6550**

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Affiliation (Organization Name)									
Department									
TEL		FAX		E-mail					
Country/Address									
Name & Designation									
		(Tentative name is okay)							
Drawing Number		Estimate	<input type="checkbox"/> Yes: by Date <input type="checkbox"/> No						
Desired Delivery Date		Budget	JP Yen						
Specifications of Lens	Quantity								
	Shape	<input type="checkbox"/> Ball Lens <input type="checkbox"/> Aspherical Lens <input type="checkbox"/> Lens for CO <sub>2</sub> Lasers							
		<input type="checkbox"/> Hemispherical Lens <input type="checkbox"/> Cylindrical Lens <input type="checkbox"/> Rod Lens							
Other ( )									
Specifications of Coating	Metal coating		<input type="checkbox"/> Al only <input type="checkbox"/> Al+MgF <sub>2</sub> <input type="checkbox"/> Cr+Au <input type="checkbox"/> Other ( )						
	Dielectric coating	Wavelength Range	$\lambda =$	nm	Incident angle	$\theta =$	°	Reflection rate	%
	Anti-reflection coating	Wavelength Range	$\lambda =$	nm	Incident angle	$\theta =$	°	<input type="checkbox"/> Single-layer AR coating <input type="checkbox"/> Multi-layer AR coating	
	Polarization conditions		<input type="checkbox"/> Unpolarized <input type="checkbox"/> P polarization <input type="checkbox"/> S polarization						
Other		<p>* Write more detailed specifications here. (Rough illustration is acceptable.)</p>							

Sigma Koki Co., Ltd.