

CHAPTERS

Optical Elements

Polarization Optics

Optical Isolators

Optical Systems

Optics Kits

SECTIONS

Spherical Lenses

Achromatic Lenses

Aspheric Lenses

Cylindrical Lenses

Mirrors

Spectral Filters

ND Filters

Beamsplitters

Prisms

Gratings

Windows

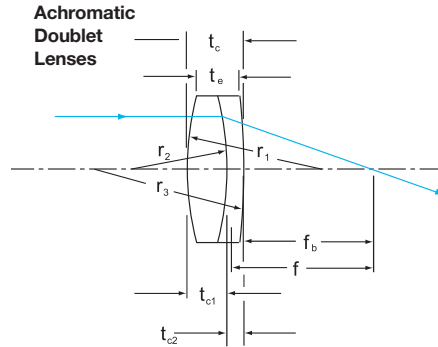
Diffusers

Near IR Achromatic Doublets (Page 1 of 2)

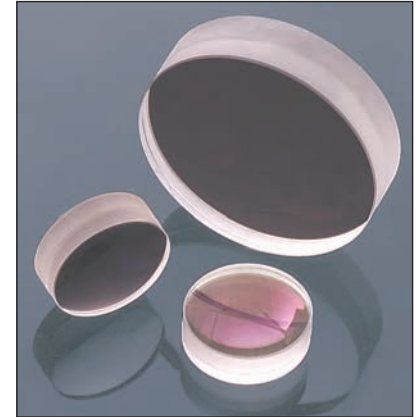
Using design wavelengths at 706.5, 855, and 1015 nm, these achromatic doublets are computer optimized at infinite conjugate ratios for applications in the near IR.

In many of the designs, diffraction-limited spots can be achieved if these doublets are used with a monochromatic light source. Please visit our website, www.thorlabs.com, to see individual specification sheets and Zemax® files.

Zemax® is the registered trademark of Zemax Corporation.



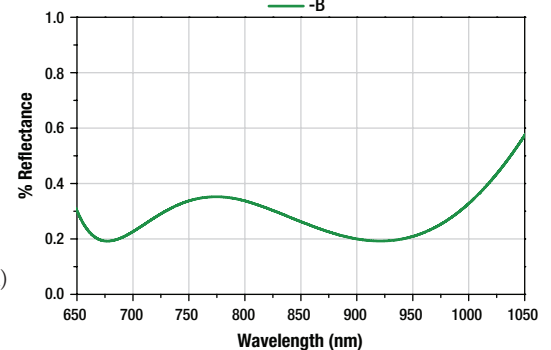
Please refer to our website for complete models and drawings.



Specifications

- **Design Wavelengths:** 706.5, 855, and 1015 nm
- **Diameter Tolerance:** +0.00/-0.10 mm
- **Focal Length Tolerance:** ±1%
- **Surface Quality:** 40-20 Scratch-Dig
- **Surface Power:** $3\lambda/2$
- **Surface Irregularity:** $\lambda/4$
- **Centration:** <3 arcmin
- **Clear Aperture:** >90% of Diameter
- **Coating:** $R_{avg} < 0.5\%$ from 650 – 1050 nm (B Coating Range)
- **Operating Temperature:** -40 to 85 °C
- **Damage Threshold:** 5.0 J/cm² (810 nm, 10 ns, 10 Hz, Ø0.155 mm)

Achromatic Doublet Broadband Antireflection Coating



Near IR Achromats: Infinite Conjugate Ratio

Please contact your local Thorlabs office for custom optical scans.

ITEM #	DIA (mm)	f (mm)	f _b (mm)	r ₁ (mm)	r ₂ (mm)	r ₃ (mm)	t _{c1} (mm)	t _{c2} (mm)	t _c (mm)	MATERIALS	\$	£	€	RMB
AC050-008-B	5.0	7.5	4.8	4.6	-3.9	-34.0	2.8	1.8	3.8	N-BAF10/N-SF6HT	\$ 41.00	£ 29.52	€ 35.67	¥ 326.77
AC050-010-B	5.0	10.0	8.0	6.6	-5.3	-24.9	2.2	1.6	3.2	N-LAK22/N-SF6HT	\$ 41.00	£ 29.52	€ 35.67	¥ 326.77
AC050-015-B	5.0	15.0	13.0	10.3	-7.6	-32.1	2.3	1.7	3.6	N-LAK22/N-SF6HT	\$ 41.00	£ 29.52	€ 35.67	¥ 326.77
AC060-010-B	6.0	10.0	8.1	7.1	-5.3	-19.5	2.5	1.5	3.1	N-LAK22/N-SF6HT	\$ 41.00	£ 29.52	€ 35.67	¥ 326.77
AC064-013-B	6.35	12.7	10.7	8.6	-6.7	-29.0	2.5	1.4	3.1	N-LAK22/N-SF6HT	\$ 41.00	£ 29.52	€ 35.67	¥ 326.77
AC064-015-B	6.35	15.0	13.1	10.3	-7.8	-32.9	2.4	1.5	3.2	N-LAK22/N-SF6HT	\$ 41.00	£ 29.52	€ 35.67	¥ 326.77
AC080-010-B	8.0	10.0	7.0	7.6	-4.6	-30.6	4.5	1.3	4.4	N-LAK10/N-SF6HT	\$ 41.00	£ 29.52	€ 35.67	¥ 326.77
AC080-016-B	8.0	16.0	14.0	11.0	-8.6	-35.8	2.5	1.5	3.0	N-LAK22/N-SF6HT	\$ 41.00	£ 29.52	€ 35.67	¥ 326.77
AC080-020-B	8.0	20.0	18.2	13.5	-10.6	-47.8	2.3	1.3	2.8	N-LAK22/N-SF6HT	\$ 41.00	£ 29.52	€ 35.67	¥ 326.77
AC127-019-B	12.7	19.0	15.5	12.2	-10.6	-77.4	4.5	1.5	3.9	N-BAF10/N-SF6HT	\$ 54.00	£ 38.88	€ 46.98	¥ 430.38
AC127-025-B	12.7	25.0	21.1	16.2	-13.3	-68.5	5.0	2.0	5.4	N-LAK22/N-SF6HT	\$ 54.00	£ 38.88	€ 46.98	¥ 430.38
AC127-030-B	12.7	30.0	27.3	19.8	-16.2	-79.1	3.5	1.5	3.7	N-LAK22/N-SF6HT	\$ 54.00	£ 38.88	€ 46.98	¥ 430.38
AC127-050-B	12.7	50.0	46.2	24.2	-26.8	-250.0	3.5	1.5	4.2	N-BAF10/N-SF6HT	\$ 54.00	£ 38.88	€ 46.98	¥ 430.38
AC127-075-B	12.7	75.0	72.0	36.2	-40.4	-398.1	2.5	1.5	3.5	N-BAF10/N-SF6HT	\$ 54.00	£ 38.88	€ 46.98	¥ 430.38
AC254-030-B	25.4	30.0	23.0	21.1	-16.2	-79.1	12.0	1.5	8.3	N-BAF10/N-SF6HT	\$ 83.00	£ 59.76	€ 72.21	¥ 661.51
AC254-035-B	25.4	35.0	28.4	24.0	-18.6	-97.3	10.5	1.5	7.6	N-BAF10/N-SF6HT	\$ 83.00	£ 59.76	€ 72.21	¥ 661.51
AC254-040-B	25.4	40.0	32.8	26.1	-21.3	-137.1	10.0	2.5	8.7	N-BAF10/N-SF6HT	\$ 83.00	£ 59.76	€ 72.21	¥ 661.51
AC254-045-B	25.4	45.0	39.6	29.4	-25.1	-127.1	7.8	1.6	6.0	N-LAK22/N-SF6HT	\$ 83.00	£ 59.76	€ 72.21	¥ 661.51
AC254-050-B	25.4	50.0	45.0	33.6	-27.1	-125.6	7.5	1.8	6.2	N-LAK22/N-SF6HT	\$ 83.00	£ 59.76	€ 72.21	¥ 661.51
AC254-060-B	25.4	60.0	55.8	39.5	-33.0	-165.2	6.0	1.7	5.2	N-LAK22/N-SF6HT	\$ 83.00	£ 59.76	€ 72.21	¥ 661.51
AC254-075-B	25.4	75.0	69.9	36.9	-42.2	-417.8	5.0	1.6	4.6	N-BAF10/N-SF6HT	\$ 83.00	£ 59.76	€ 72.21	¥ 661.51
AC254-100-B	25.4	100.0	97.1	66.7	-53.7	-259.4	4.0	1.5	4.0	N-LAK22/N-SF6HT	\$ 83.00	£ 59.76	€ 72.21	¥ 661.51
AC254-150-B	25.4	150.0	144.6	83.6	-89.3	-1330.5	4.0	3.5	6.5	N-LAK22/N-SF6HT	\$ 83.00	£ 59.76	€ 72.21	¥ 661.51
AC254-200-B	25.4	200.0	194.8	106.4	-96.6	-2000.0	4.0	4.0	7.3	N-LAK22/SF10	\$ 83.00	£ 59.76	€ 72.21	¥ 661.51
AC254-250-B	25.4	250.0	237.5	52.0	-65.3	-111.5	4.0	1.5	4.7	SF5/N-SF6HT	\$ 83.00	£ 59.76	€ 72.21	¥ 661.51
AC254-300-B	25.4	300.0	290.0	62.4	-77.4	-134.0	4.0	2.0	5.3	SF5/N-SF6HT	\$ 83.00	£ 59.76	€ 72.21	¥ 661.51
AC254-400-B	25.4	400.0	391.1	83.6	-106.4	-181.6	3.5	1.8	4.8	SF5/N-SF6HT	\$ 83.00	£ 59.76	€ 72.21	¥ 661.51
AC254-500-B	25.4	500.0	480.8	60.6	-62.8	-87.6	4.0	2.0	5.6	SF10/N-SF6HT	\$ 83.00	£ 59.76	€ 72.21	¥ 661.51
AC300-050-B	30.0	50.0	42.9	30.8	-27.9	-272.9	9.5	2.0	7.2	N-BAF10/N-SF6HT	\$ 87.00	£ 62.64	€ 75.69	¥ 693.39
AC300-080-B	30.0	80.0	75.3	52.5	-42.7	-216.3	6.5	2.0	5.8	N-LAK22/N-SF6HT	\$ 87.00	£ 62.64	€ 75.69	¥ 693.39
AC300-100-B	30.0	100.0	94.0	49.1	-55.3	-557.4	6.0	2.0	5.9	N-BAF10/N-SF6HT	\$ 87.00	£ 62.64	€ 75.69	¥ 693.39

Near-IR Achromatic Doublets (Page 2 of 2)

Near-IR Achromats: Infinite Conjugate Ratio (Continued)

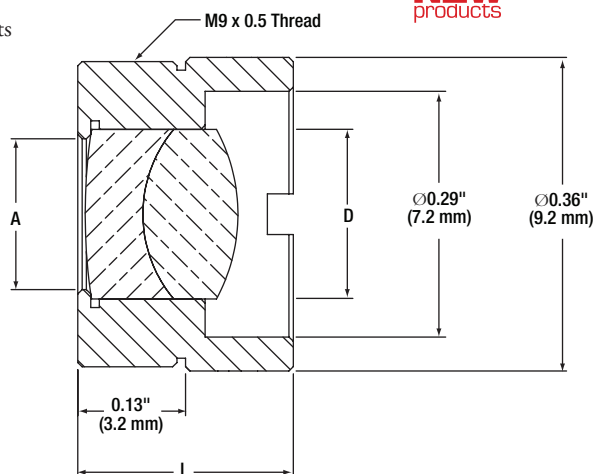
ITEM #	DIA (mm)	f (mm)	f _b (mm)	r ₁ (mm)	r ₂ (mm)	r ₃ (mm)	t _{c1} (mm)	t _{c2} (mm)	t _c (mm)	MATERIALS	\$	£	€	RMB
AC508-075-B	50.8	75.0	65.7	51.8	-93.1	-291.1	12.0	5.0	9.2	N-LAK22/N-SF6HT	\$ 125.00	£ 90.00	€ 108,75	¥ 996.25
AC508-080-B	50.8	80.0	69.5	51.8	-44.6	-312.6	16.0	2.0	10.3	N-BAF10/N-SF6HT	\$ 125.00	£ 90.00	€ 108,75	¥ 996.25
AC508-100-B	50.8	100.0	91.5	65.8	-56.0	-280.6	13.0	2.0	8.7	N-LAK22/N-SF6HT	\$ 125.00	£ 90.00	€ 108,75	¥ 996.25
AC508-150-B	50.8	150.0	145.3	112.2	-95.9	-325.1	8.2	5.0	9.3	N-LAK22/N-SF6HT	\$ 125.00	£ 90.00	€ 108,75	¥ 996.25
AC508-200-B	50.8	200.0	193.2	134.0	-109.2	-515.2	8.2	5.0	10.1	N-LAK22/N-SF6HT	\$ 125.00	£ 90.00	€ 108,75	¥ 996.25
AC508-250-B	50.8	250.0	252.3	121.2	-146.1	1235.9	6.6	2.6	6.8	N-BAF10/N-SF6HT	\$ 125.00	£ 90.00	€ 108,75	¥ 996.25
AC508-300-B	50.8	300.0	295.1	201.8	-161.5	-760.0	6.6	2.6	7.2	N-LAK22/N-SF6HT	\$ 125.00	£ 90.00	€ 108,75	¥ 996.25
AC508-400-B	50.8	400.0	393.6	280.6	-208.0	-859.0	4.5	2.6	5.6	N-LAK22/N-SF6HT	\$ 125.00	£ 90.00	€ 108,75	¥ 996.25
AC508-500-B	50.8	500.0	497.0	346.7	-259.4	-1132.4	4.5	2.6	5.9	N-LAK22/N-SF6HT	\$ 125.00	£ 90.00	€ 108,75	¥ 996.25
AC508-750-B	50.8	750.0	744.8	376.8	-291.1	2910.0	4.2	2.5	6.0	N-BAF10/SF10	\$ 125.00	£ 90.00	€ 108,75	¥ 996.25
AC508-1000-B	50.8	1000.0	993.6	494.3	-398.1	3440.0	4.2	2.8	6.4	N-BAF10/SF10	\$ 125.00	£ 90.00	€ 108,75	¥ 996.25

Near IR Negative Achromats: Infinite Conjugate Ratio

ITEM #	DIA (mm)	f (mm)	f _b (mm)	r ₁ (mm)	r ₂ (mm)	r ₃ (mm)	t _{c1} (mm)	t _{c2} (mm)	t _c (mm)	MATERIALS	\$	£	€	RMB
ACN127-020-B	12.7	-20.0	-22.5	-12.3	14.0	152.8	1.5	3.0	6.4	N-BAF10/N-SF6HT	\$ 54.00	£ 38.88	€ 46,98	¥ 430.38
ACN127-025-B	12.7	-25.0	-27.7	-13.6	17.1	-859.0	1.5	2.8	5.9	N-BAF10/N-SF6HT	\$ 54.00	£ 38.88	€ 46,98	¥ 430.38
ACN127-030-B	12.7	-30.0	-32.0	-19.3	18.4	106.4	1.5	2.5	5.3	N-LAK22/N-SF6HT	\$ 54.00	£ 38.88	€ 46,98	¥ 430.38
ACN127-050-B	12.7	-50.0	-52.5	-24.4	30.4	-291.1	1.5	2.0	4.3	N-BAF10/N-SF6HT	\$ 54.00	£ 38.88	€ 46,98	¥ 430.38
ACN254-040-B	25.4	-40.0	-43.4	-24.4	27.9	332.3	2.0	4.0	9.8	N-BAF10/N-SF6HT	\$ 81.00	£ 58.32	€ 70,47	¥ 645.57
ACN254-050-B	25.4	-50.0	-53.8	-27.1	33.9	-1330.5	2.0	4.0	9.1	N-BAF10/N-SF6HT	\$ 81.00	£ 58.32	€ 70,47	¥ 645.57
ACN254-075-B	25.4	-75.0	-78.9	-37.2	46.4	-494.3	2.0	3.8	7.9	N-BAF10/N-SF6HT	\$ 81.00	£ 58.32	€ 70,47	¥ 645.57
ACN254-100-B	25.4	-100.0	-103.9	-48.8	59.0	-580.8	2.0	3.4	6.9	N-BAF10/N-SF6HT	\$ 81.00	£ 58.32	€ 70,47	¥ 645.57

M9-Threaded Mounted Near IR Achromatic Doublets

- Holds Ø5.0 mm, Ø6.0 mm, and Ø6.35 mm Achromatic Doublets
- Cell Engraved with Part Number
- Easily adaptable to SM Lens Tube Systems (See Page 351)



ITEM #	D (mm)	f (mm)	L (mm)	A (mm)	MATERIALS	\$	£	€	RMB
AC050-008-B-ML	5.0	7.5	6.4	4.4	N-BAF10/N-SF6HT	\$ 61.00	£ 43.92	€ 53,07	¥ 486.17
AC050-010-B-ML	5.0	10.0	6.4	4.4	N-LAK22/N-SF6HT	\$ 61.00	£ 43.92	€ 53,07	¥ 486.17
AC050-015-B-ML	5.0	15.0	6.4	4.4	N-LAK22/N-SF6HT	\$ 61.00	£ 43.92	€ 53,07	¥ 486.17
AC060-010-B-ML	6.0	10.0	6.4	5.5	N-LAK22/N-SF6HT	\$ 61.00	£ 43.92	€ 53,07	¥ 486.17
AC064-013-B-ML	6.35	12.7	5.7	5.8	N-LAK22/N-SF6HT	\$ 61.00	£ 43.92	€ 53,07	¥ 486.17
AC064-015-B-ML	6.35	15.0	5.7	5.8	N-LAK22/N-SF6HT	\$ 61.00	£ 43.92	€ 53,07	¥ 486.17

Have you seen our...

Mounted Lens Adapters

See page 351

Thorlabs' lens adapters all convert the threading on our M9- and M12-threaded mounted achromats to SM05 or SM1 threading for easy integration into optical systems.

