

Optics



Optical Systems

PPLN Devices

Spherical Singlets

Multi-element Lenses

Cylindrical Lenses

Aspheric Lenses

Mirrors

Windows & Diffusers

Prisms

Gratings

Diffraction Optics

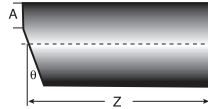
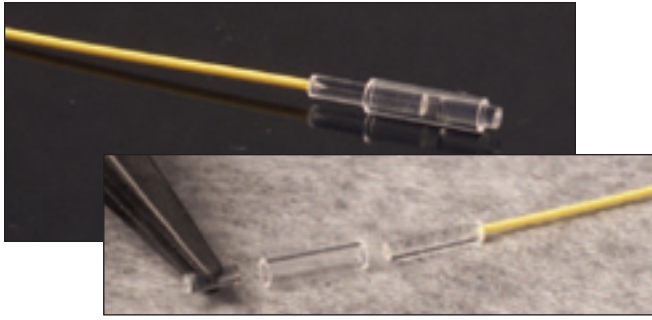
Polarization Optics

Beamsplitters

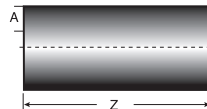
Filters & Attenuators

Gas Cells

GRIN Lenses



The 0.23 pitch lenses include an 8° angled facet to minimize back reflection and compensate for the angular beam deviation from angled fiber ferrules



The 0.29 pitch lenses includes 0° end faces with AR coatings to minimize back reflection.

GRIN Specifications

- **Pitch:** 0.23 & 0.29
- **Lens Diameter:** 1.8mm
- **Operating Wavelength:** 1300nm & 1560 Regions
- **On Axis NA:** 0.46
- **Transmittance:** >89%, 380 - 2000nm
- **Polarization Preservation:** 0.99
- **Material:** Oxide Glass
- **Operating Temperature:** <350°C

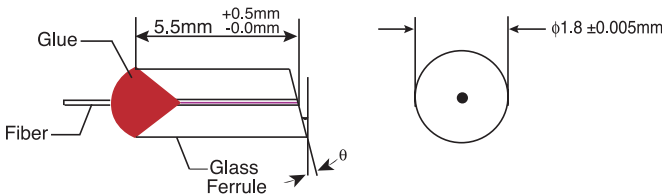
Thorlabs offers a selection of graded index (GRIN) lenses for applications at 1300nm and 1560nm regions. GRIN lenses are typically used in fiber-based passive and active components for coupling laser light from one fiber through a free space optical system, such as an optical isolator, and back into fiber to propagate through the rest of the system. GRIN lenses can also be used for coupling laser diodes into fiber, coupling laser light onto a detector, and focusing/collimating laser light.

ITEM#	PITCH	NA	DIAMETER	DESIGN WAVELENGTH	INDEX (n _o)	LENGTH (Z)	EFFECTIVE FOCAL LENGTH	GLASS MATERIAL
GRIN2313A	0.23	0.46	Ø1.8mm	1300nm	1.5916	4.42mm	1.94mm	Oxide Glass
GRIN2315A	0.23	0.46	Ø1.8mm	1560nm	1.5901	4.43mm	1.94mm	Oxide Glass
GRIN2913	0.29	0.46	Ø1.8mm	1300nm	1.5916	5.57mm	1.98mm	Oxide Glass
GRIN2915	0.29	0.46	Ø1.8mm	1560nm	1.5906	5.59mm	1.99mm	Oxide Glass

GRIN Lenses

ITEM #	\$	£	€	¥	DESCRIPTION
GRIN2313A	\$ 27.00	£ 20.25	€ 28,35	¥ 4,590	GRIN Lens, Ø1.8mm, 0.23 Pitch, 1300nm, AR Coated
GRIN2315A	\$ 27.00	£ 20.25	€ 28,35	¥ 4,590	GRIN Lens, Ø1.8mm, 0.23 Pitch, 1560nm, AR Coated
GRIN2913	\$ 25.00	£ 18.75	€ 26,25	¥ 4,250	GRIN Lens, Ø1.8mm, 0.29 Pitch, 1300nm, AR Coated
GRIN2915	\$ 25.00	£ 18.75	€ 26,25	¥ 4,250	GRIN Lens, Ø1.8mm, 0.29 Pitch, 1560nm, AR Coated

Pigtails Ferrules



These pigtailed glass ferrules include 1.5 meters of SMF-28 fiber and an 8° angled, AR coated face to minimize back-reflection (return-loss), making them ideal for numerous applications.

Pigtail Specifications

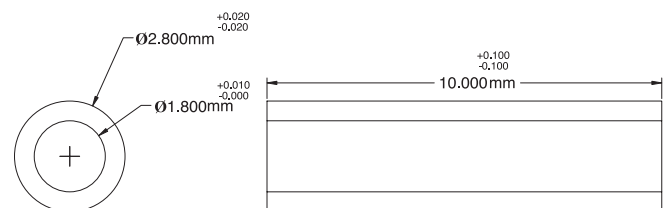
- **Ferrule Diameter:** 1.800mm ± 5µm
- **Ferrule Length:** 5.5mm +0.5/-0.0mm
- **Wedge Angle:** 8.0°
- **Wedge Tolerance:** ±0.2°
- **Fiber Type:** SMF-28
- **AR Coating:** <0.25%, 1310nm ±40nm or 1550nm ±40nm
- **Fiber Length:** 1.5m

Pigtails Ferrules

ITEM #	\$	£	€	¥	DESCRIPTION
SMPF0113	\$ 14.50	£ 10.88	€ 15,23	¥ 2,465	Pigtails Ferrule, Ø1.8mm, 8°, 1310nm, AR Coated
SMPF0115	\$ 14.50	£ 10.88	€ 15,23	¥ 2,465	Pigtails Ferrule, Ø1.8mm, 8°, 1550nm, AR Coated

GRIN/Ferrule Sleeves

The 51-2800-1800 sleeve allows one to easily integrate one of the GRIN lenses and one of the pigtailed fibers above. The glass material is transparent in the UV region for curing UV adhesives.



GRIN / Ferrule Sleeve

ITEM #	\$	£	€	¥	DESCRIPTION
51-2800-1800	\$ 4.00	£ 3.00	€ 4,20	¥ 680	Sleeve for GRIN Lens & Ferrules, 1.8mm I.D., 10mm Long, Borosilicate Glass