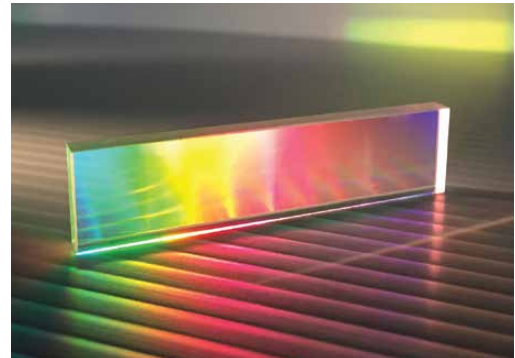


High Efficiency NIR Transmission Grating (700 to 1100 nm)

LightSmyth Technologies' transmission gratings are fabricated on fused silica substrates and robust dielectric films by state-of-the-art projection photolithography and reactive ion etch. These high fidelity semiconductor fabrication methods enable precise realization of sophisticated proprietary grating designs that provide diffraction efficiency close to 100% and line spacing control to 1 part per million.

No other grating technology is capable of achieving this degree of performance combined with the cost effectiveness and reproducibility afforded by semiconductor volume fabrication technology.

LightSmyth Technologies (founded in year 2000, ISO 9001:2008 certified) pioneered use of semiconductor fabrication tools for commercial fabrication of optical diffractive products and became an industry leader in lithographically patterned high efficiency diffraction gratings.



Features:

The robust manufacturing process and proprietary design by LightSmyth offers a number of advantages over other gratings available on the market, namely:

- Very high Diffraction Efficiency (95% typical) over broad wavelength range and range of angles.
- Can be made polarization independent for use with non-polarized sources.
- Excellent feature fidelity and groove density spatial uniformity.
- Only Fused Silica and robust dielectrics are used, no polymers.
- Proven track record for extreme environmental stability. Telcordia qualified.
- Excellent power handling.
- Each grating is a master: low light scatter, no ghosting.
- Very competitive pricing.

Applications:

- Pulse Compression
 - Excellent diffraction efficiency, long term reliability and power handling, cost effective solution.
- High Power beam splitters/combiners
 - Premium fused silica substrate, low power dissipation and substrate heating for KW-class lasers.
- Spectroscopy
 - Superior light collection efficiency and signal to noise ratio,
 - Custom aberration control possible using VLS and curved grooves
 - Double pass for increased dispersion and reduced size spectrometers.
- Remote Sensing and Consumer Applications
 - Excellent technology for reliable mass production of high quality optical components for affordable consumer products.

High Efficiency NIR Transmission Grating (700 to 1100 nm)

Optical					
P/N prefix	Optimal Wavelength Range ¹ (nm)	Line Density (Lines/mm)	Angle of Incidence ¹ (°)	Operational Polarization ²	Diffraction Efficiency ³ (%)
T-1400-800	800±20	1398.6	34.0±1	Any	> 94
T-1850-800s	800±20	1851.85	47.8±1	S	> 94
T-1200-850s	850±20	1208.46	30.7±1	S	> 94
T-1500-875	875±20	1503.76	41.0±1	Any	> 94
T-1702-895	895±20	1702.13	49.5±1	Any	> 94
T-1850-915s	915±10	1851.85	57.9±1	S	> 93
T-1500-930	930±20	1500.38	44.2±1	Any	> 94
T-1600-970s	976±10	1600.00	51.3±1	S	> 94
T-1850-970s	970±10	1851.85	63.9±1	S	> 93
T-1000-1040	1040±20	1000.00	31.0±1	Any	> 94
T-1600-1030s	1030±10	1600.00	55.5±1	S	> 94
T-1702-1030s	1030±10	1702.13	61.2 ±1	S	> 93
T-1739-1030s	1030±10	1739.13	63.6±1	S	> 93
T-1600-1060s	1060±20	1600.00	58.0±1	S	> 94

Notes: ¹ Optical grating performance will remain similar over larger variation in angle of incidence. See datasheet.

² P-polarization: incident electric field vector perpendicular to grating lines. S-polarization: incident electric field vector parallel to grating lines.

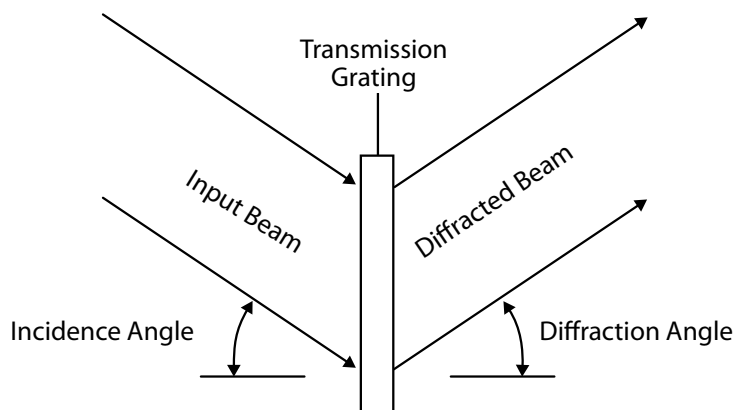
³ Worst case in the operational wavelength range for operational polarization. For gratings supporting both S and P polarizations, the diffraction efficiency is the average of S and P polarization efficiencies at any given wavelength.

Mechanical ⁴		
Parameter	Value	Units
Width and height tolerance	±0.2	mm
Thickness	0.675±0.050 or 0.95±0.050 (up to 10 mm custom thickness available)	mm
Grating clear aperture (CA)	Centered	
Surface quality in CA	60/40 (up to 20/10 available)	scratch/dig
Surface quality outside of CA	No requirement	
Substrate	Fused silica, dielectric films	
Size	Sizes up to 140 mm diameter are available	

Note: ⁴ Better tolerances and surface quality available for custom products.

Typical Optical Layout

The transmission grating is designed to operate in Littrow configuration, where the angle of incidence and diffraction are the same for the central operational wavelength. Light is dispersed in the plane perpendicular to the grooves.



FINISAR[®]

Direct line for Diffractive Optics inquiry: + 1-541-431-0026

Email: diffractiveoptics@finisar.com

www.finisar.com/diffractiveoptics

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