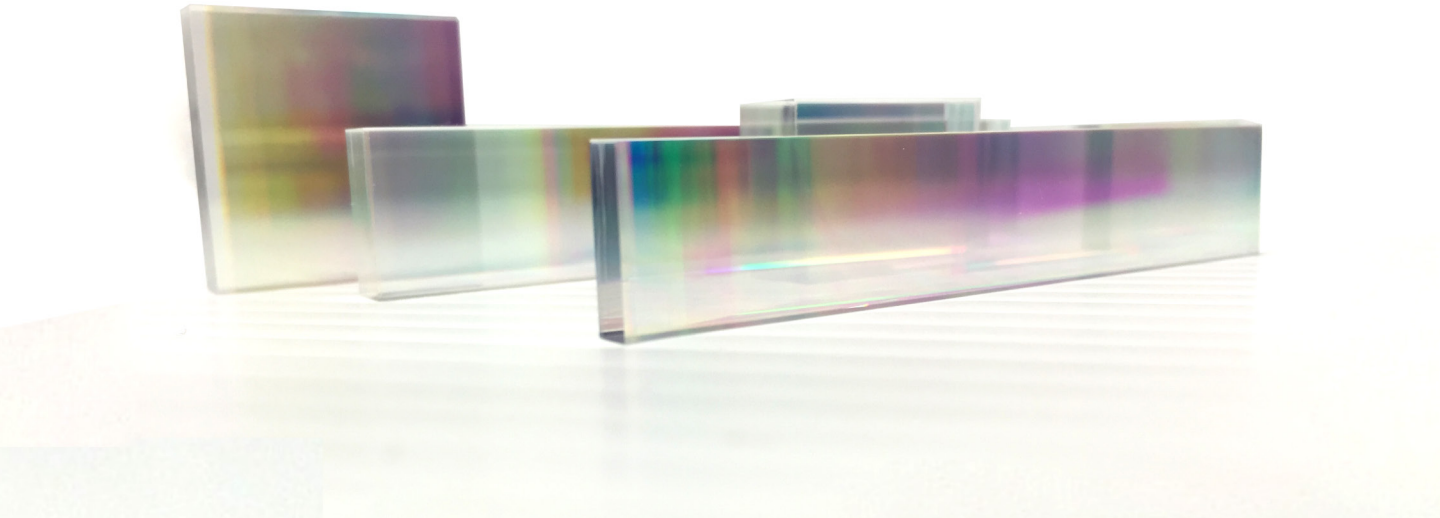
HIGH-EFFICIENCY TRANSMISSION DIFFRACTION GRATING

T-1739-1035s Series

T-1739-1035s series lithographically patterned transmission diffraction grating is designed to be used in demanding industrial applications (spectroscopy, pulse compression and high power beam combining). It is characterized by high efficiency, long term stability and high power handling. The groove density is precise and uniform across the entire grating; the grating is stitch-free for an excellent diffracted wavefront control. Gratings produced by Coherent undergo extensive quality assurance, have proven reliability track record and competitively priced.



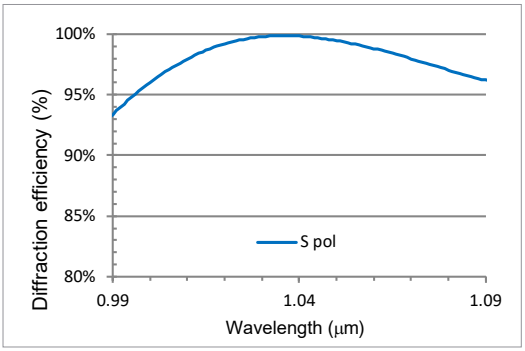
PRODUCT KEY

T - 1739 - 1035s - 100x15x6.3 - 97

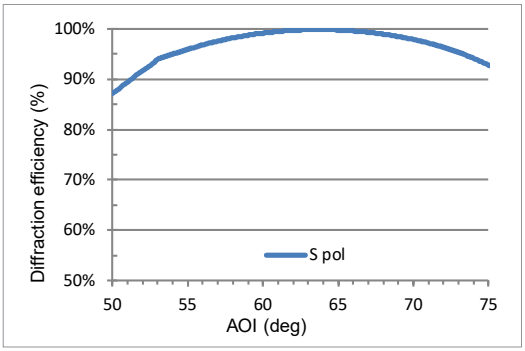
- T: Transmission
- 1739: Grooves/mm
- 1035s: Central Wavelength, nm
- 100x15x6.3: Width x Height x Thickness, mm; Groove || to Height
- 97: Min efficiency, %

COHERENT

The S-polarization optimized transmission grating has 1739.13 lines/mm and designed to operate near 1035 nm central wavelength at 64.2° angle of incidence (AOI). Extended wavelength range performance and angular sensitivity information is provided below.

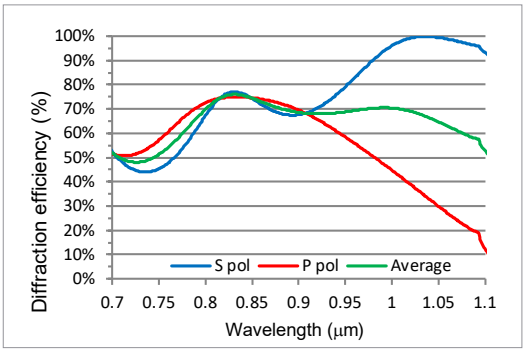


Typical absolute diffraction efficiency at AOI 64.2° *

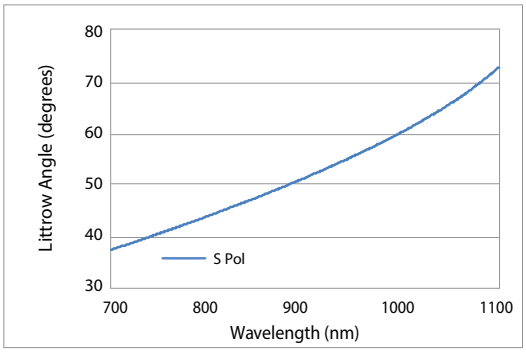


Diffraction efficiency at 1035 nm as a function of AOI *

Extended operational range: The grating may operate over broader wavelength range and for both polarizations provided that suitable antireflective coating and angle of incidence is used. The plot below shows simulated performance* over extended range assuming fixed input angle (designed Littrow angle of 64.2°), not accounting for AR coating losses. Optimal input angle for each wavelength is shown on the right.



Typical absolute diffraction efficiency at AOI 64.2° *



Optimal input angle for each wavelength (Littrow condition)

* simulated performance shown (for guidance only)

Specifications

Description		
Line Density	1739.13	Lines/mm
Line Density Uniformity	0.001	Lines/mm
Angle of Incidence (AOI) [1]	64.2 ±1	°
Wavelength Range	1035 ±10	nm
Optimal polarization [2]	S	
Diffraction Efficiency [3]	>97.0	%
Diffracted wavefront error @1035 nm [4]	0.16	Waves
Dimension tolerances	±0.2 for grating size and width	
Substrate Thickness	Options 0.95 or 6.35 ±0.050 mm	
Material	Fused silica, dielectric layers, no polymers	
Scratch/Dig [5]	60/40 standard, 40/20 and 20/10 custom	

Notes:
[1] Optical grating performance will remain similar over larger variation in angle of incidence. See plot.
[2] S-polarization: electric field vector is parallel to the grating lines.
[3] Worst case in the operational wavelength range for optimal polarization.
[4] Within any 25 mm diameter aperture; measured at 650 nm
[5] As per MIL-PRF-1380B in the clear aperture; no requirements outside of the clear aperture.

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