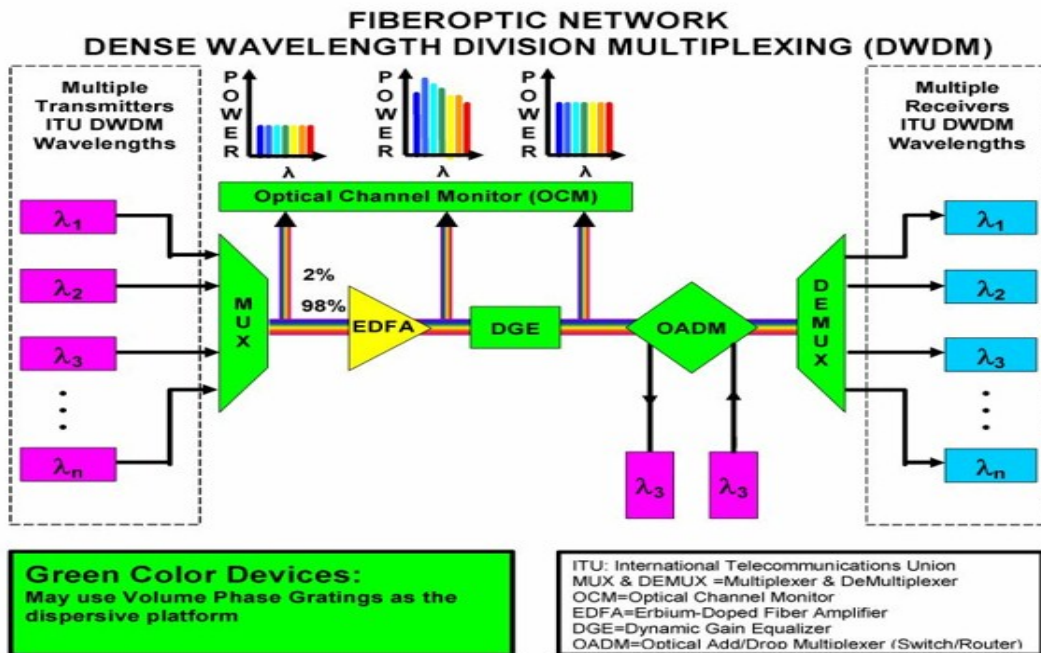


体吸收凝胶全息衍射光栅在 DWDM 中应用

Description

Dickson® Gratings are advanced forms of VPH gratings. Many DWDM devices and subsystems vendors can utilize Volume Phase Holographic Gratings (VPHGs) for their dispersive optical platforms. These applications are shown by the green colored devices in the diagram below. (详见后面文章)

Dickson® and VPH Grating Benefits for DWDM Customers				
	Dickson® Gratings	Surface Relief Gratings	Thin Film & Fiber Bragg	AWG
Hi-Channel Counts	Yes: 80+	Yes: 80+	No: < 32	Yes: up to 40
Cost/Channel	Very Low	Low	Higher	Low
Thermal Stability	A-Thermal	Maybe	A-Thermal	Requires Controls
Hi-Channel Performance	Low IL , Low PDL	Med. IL & PDL	NA	Higher IL & PDL
Channel Separation Method	Parallel	Parallel	Serial	Parallel
Footprint Size	Very Small	Very Small	Large	Small
Packaging Ease	Good	Good	Good	Medium
Integration Ease	Good	Good	Medium	Good
Agile Wavelength Tunability	Yes	No	No	No
Basic Technology >25 Years Old	Yes	Yes	Yes/No	No
Rugged, Scratch Resistant	Yes	No	Yes	Yes



更多信息请联系: 上海光傲

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DWDM systems transmit and receive multiple signals over a fiberoptic network. Each signal, containing separate data streams, is assigned to a different wavelength of laser light. This leverages the existing fiberoptic infrastructure by multiplying the amount of information that can be sent, thereby providing a migration path for telecom companies.

- **DWDM Multiplexer (Mux):** A transmitter that combines (multiplexes) many laser light signals of different wavelengths coming from individual glass fibers and inputs them into an optical fiber transmission line. This can also be performed through free space, without fiberoptic lines.
- **DWDM Demultiplexer (DeMux):** A receiver that separates (demultiplexes) many laser light signals of different wavelengths coming from an optical fiber transmission line and outputs them into individual glass fibers. This can also be performed through free space, without fiberoptic lines.
- **Dynamic Gain Equalizer (DGE):** DGEs correct the power imbalance in multiple channels, through user-selectable criteria, and without bit-stream interruption. To ensure low data-error rates, it is critical that all DWDM channels have approximately the same power level.
- **Optical Channel Monitor (OCM):** A spectrometer module for identifying DWDM channels along with measurements of wavelength, power, and OSNR (Optical Signal to Noise Ratio).
- **Optical Add/Drop Multiplexer (OADM):** A switching/routing device that adds and drops multiple wavelengths at various locations along an optical network.
- **Reconfigurable Optical Add/Drop Multiplexer (R-OADM):** A dynamically configurable switching/routing device that adds and drops multiple wavelengths at various locations along an optical network.

VPHGs Benefits

- **Low Polarization Dependent Loss (PDL):** over 40 nm C, S, or L Bands
- **Low Insertion Loss (IL):** over 40 nm C, S, or L Bands; reduced need for EDFAs
- **Higher Channel Counts:** high dispersion enables 40, 80, & 160 channels with close channel spacing (25, 50, & 100 GHz)
- **Smaller Package:** high dispersion enables small footprint
- **Wider Usable Bandwidth:** flat response allows increase in usable operating wavelength ranges
- **Lower System Costs:** extremely low pdl, low IL, a-thermal performance, and high dispersion produces a multiplicative reduction in overall cost. Reduces EDFAs, optical parts/surfaces, and maintenance
- **Scalability:** large quantities made quickly
- **Ease of Integration:**
- **Technology Maturity:** >25 years
- **Environmental Stability:** meets Telcordia GR-1221/1209 specs. Encapsulation provides a-thermal performance over -5 to 70°C, scratch resistance, and easy handling

Diffraction Efficiencies-S (TE) & P (TM) Polarizations Best Performance Plots

Designs below are for 1525-1565 nm
CWL (center or blaze wavelength) & Spatial Frequency

Dickson Gratings® highlighted in yellow

[940 lpmm Dickson grating \(transmission\)](#)

[940 lpmm Dickson grating Double Pass](#)

[940 lpmm \(tunable for agile networks\)](#)

[1550 nm at 600 lpmm \(2-pass reflection\)](#)

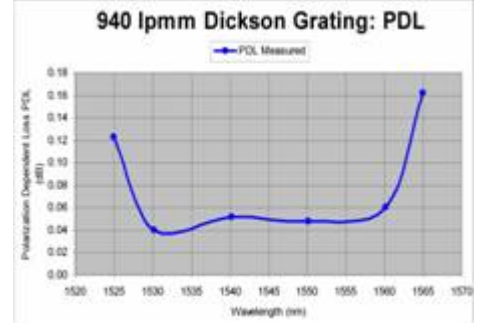
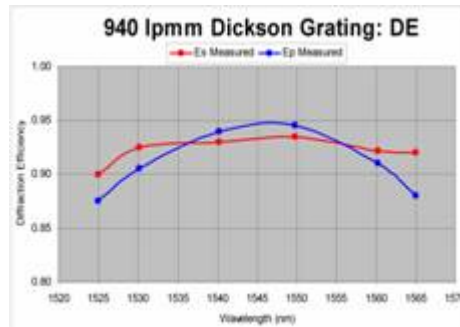
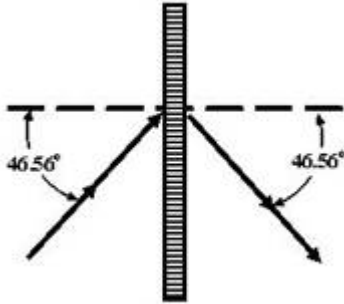
[1550 nm at 600 lpmm \(transmission\)](#)

940 lpmm (2-pass reflection)

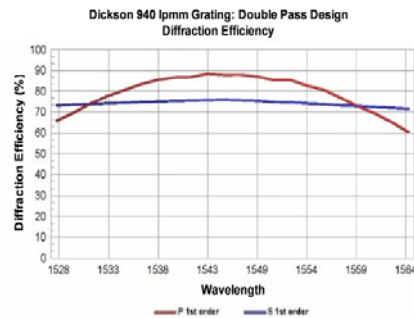
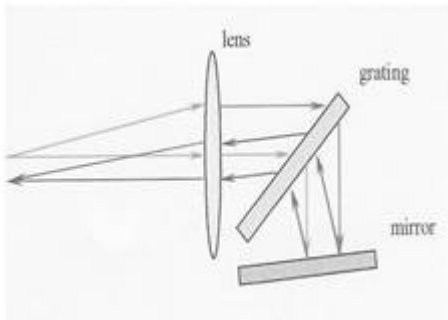
1550 nm at 300 lpmm (2-pass reflection)

These are just a few representative grating graphs. We can customize gratings for your specific needs.

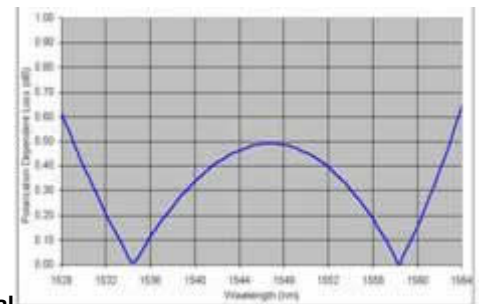
Dickson® 940 lpmm Grating: Dispersion = 3.14 degrees/40 nm



Dickson® 940 lpmm Grating (Double Pass Design): Dispersion = 6.28 degrees/40 nm



Double Pass PDL: Measured &



600 lpmm Volume Phase Holographic (VPH) Grating: Dispersion = 1.56 degrees/40 nm

