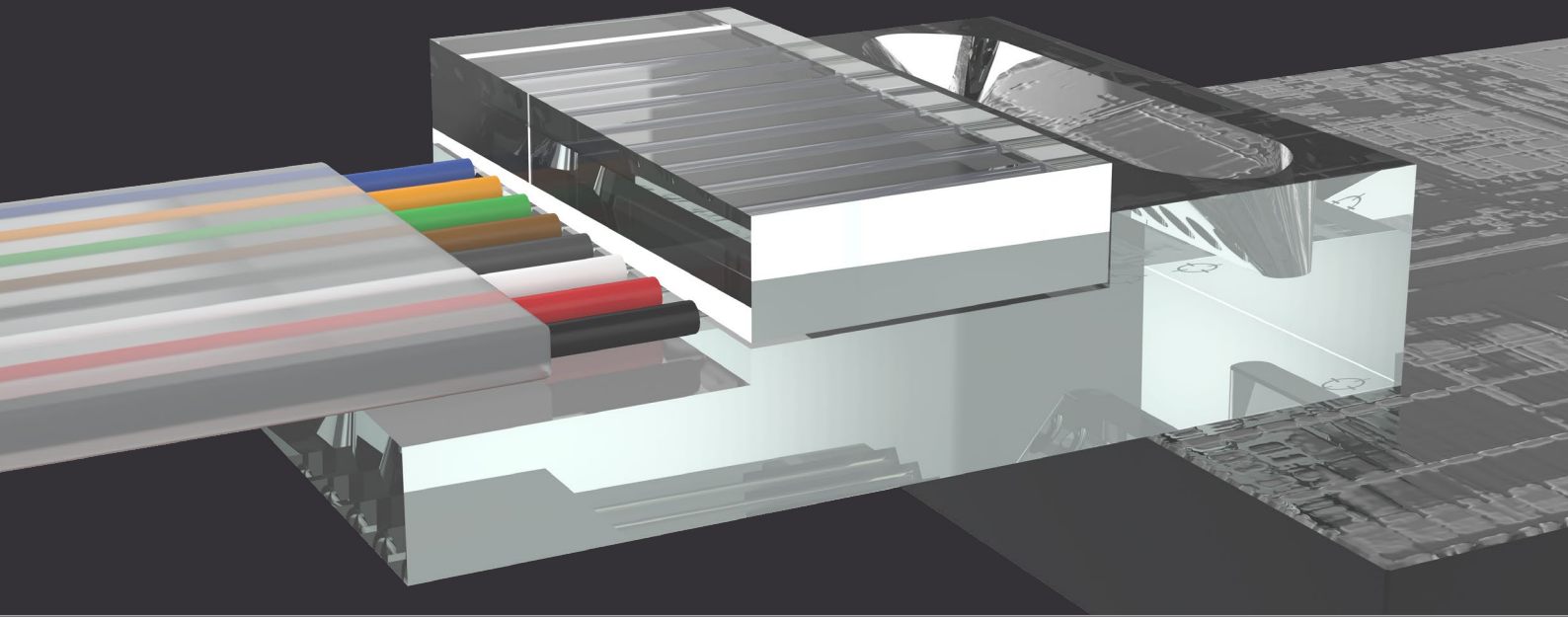


OptoCplrLT™ Fiber-to-SiPh Coupling



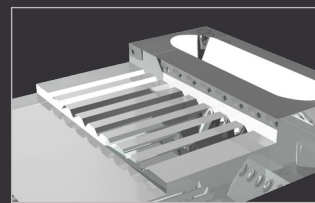
A perfect storm of factors is driving data center operators and transceiver manufacturers to search for novel solutions that can address fiber-to-SiPh chip coupling challenges, to enable high-volume automated assembly and to drive down costs.

Using a proprietary high-speed laser writing technique, Optoscribe has produced a monolithic glass chip – **OptoCplrLT™** – for low-loss coupling to SiPh grating couplers. Optoscribe's solution uses low-loss light turning curved mirrors formed in the glass, instead of bent fiber arrays, to direct the light to or from the SiPh grating couplers. The curved mirrors simultaneously redirect and focus the light for optimal coupling to and from the Photonic Integrated Circuit (PIC) grating couplers. This prevents the need for bend-tolerant fiber solutions, which are often expensive, challenging and have some significant limitations in size and profile.

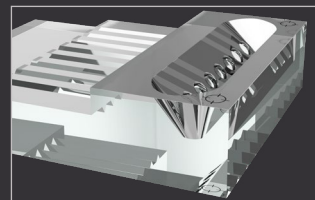
OptoCplrLT™ has a low-profile interface by design, ~1 mm device height and ~1.5 mm with cap, which allows compact interface layouts that alleviate packaging constraints. Optoscribe's solution is also compatible with industry standard materials and processes. For example, the glass chip has a coefficient of thermal expansion matched to the silicon chip, thereby maximising performance.

Key Advantages

- **Simple single-stage passive fiber assembly**
- **Uses low-loss light turning curved mirrors which are formed in the glass**
- **Low profile interface; ~1 mm device height and ~1.5 mm with cap, allowing compact interface layouts that alleviate packaging constraints**
- **Replaces difficult to assemble and expensive bent fiber arrays**



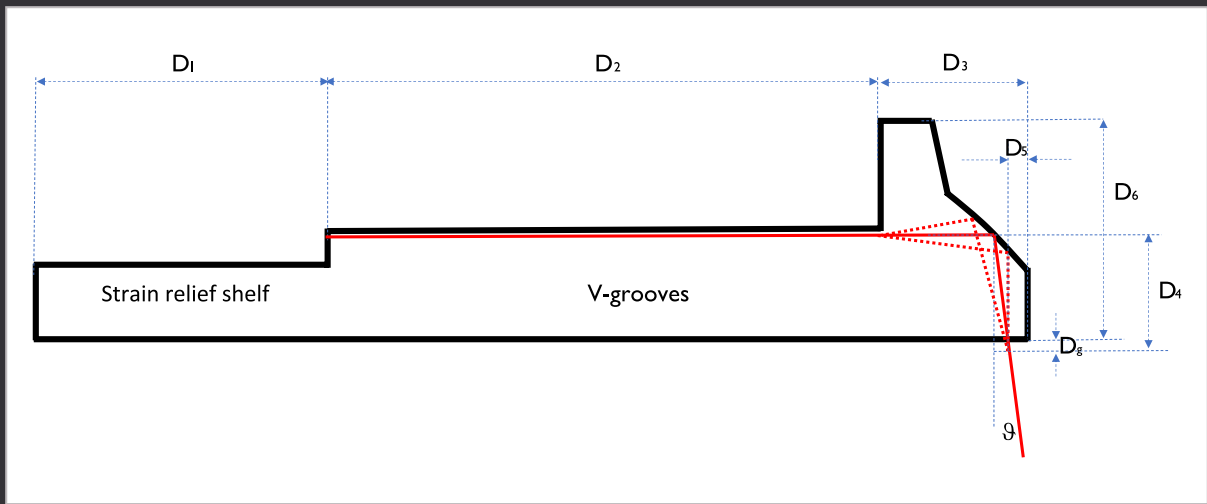
V-groove array for passive fiber alignment



Focussing mirrors for coupling to SiPh grating couplers and precision alignment fiducials

OptoCplrLT™ Specifications

Parameter	Value	Notes
Operating wavelength	1280nm – 1625nm	
Insertion Loss assembled	<0.5dB	
Number of channels	2, 4, 8	Other channel count configurations are available on request
Channel pitch	250µm	Other channel pitch options are available on request
Optical output angle	8 degrees to normal	Other angle options are available on request
Working distance of focal plane	24µm (SiPh)	Other working distances (0 - 30µm +) are available on request
OptoCplrLT™ height	~ 1mm	~ 1.5mm with cap
Glass substrate material	BF33	CTE 3.25 ppm/K
Fiber type	G657.A1 / G652	



Dimension	Distance (mm)
D_1	1.4
D_2	2.6
D_3	0.67
D_4	0.515
D_5	0.105
D_6	1.0
D_8	0.024
ϑ	8°

Schematic diagram with typical dimensions

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