

WHAT IS CLAIMED IS: CLAIMS

1. An interposer 100 comprising:
a plurality of optical conduits 501, each having an optical axis 105, wherein at least one of said optical conduits is a fiber having a substantially perpendicular end face;
a substrate 101 defining a plurality of grooves 102 having a terminal end 109, each optical conduit 501 being disposed in a single groove 102; and
a common angled surface 104 defined in said substrate and traversing two or more of said plurality of grooves 102 at said terminal end 109, at least a portion of the angled surface 104 proximate the optical axes 105 of the optical conduits 501 in said two or more grooves 102 is reflective, wherein a lower edge of said angled surface is higher than the bottom of said two or more grooves, thereby defining a step at said terminal end of said two or more grooves; and
one or more optical components 502 disposed above said angled surface 104, said optical components 502 and said optical conduits 501 being optically coupled by said angled surface 104; and
said step having a register surface adjacent said angled surface at said terminal end of each groove, said register surface configured to abut said end face of said optical conduit to align said end face axially with respect to said angled surface.
2. The interposer 100 of claim 1, wherein said angled surface 104 traverses all of said grooves 102.
3. The interposer 100 of claim 1, wherein said angled surface 104 has a discrete reflective surface for each optical conduit 501.
4. The interposer 100 of claim 1, wherein said angled surface 104 has a common reflective surface for all optical conduits 501.
5. The interposer 100 of claim 1, wherein said interposer 100 has two parallel edges and said angled surface 104 extends across said edges.
6. The interposer 100 of claim 1, wherein one of said optical components 502 corresponds to each optical conduit 501.

~~7. The interposer 100 of claim 1, wherein said optical conduit 501 is fiber.~~

~~8. The interposer 100 of claim 7, wherein said fiber 501 has a perpendicular end face 508.~~

~~9. The interposer 100 of claim 8, further comprising a step 401 between the bottom of said groove 102 and the lower edge of said angled surface 104, said step 401 providing a register surface against which the end face 508 of said optical conduit 501 abuts to align the end face 508 axially with respect to the angled surface 104.~~

~~10.7. The interposer 100 of claim 1, wherein said optical components 502 are OEDs.~~

~~11.8. The interposer 100 of claim 1, wherein said grooves 102 are V-grooves.~~

~~12.9. A substrate 101 for an interposer 100 comprising:~~

~~a plurality of optical conduits 501;~~

~~a plurality of grooves 102 having a terminal end 109, each optical conduit 501 being disposed in a single groove 102 each grove adapted for receiving an optical conduit, said optical conduit having a substantially perpendicular end face; and~~

~~a common angled surface 104 defined in said substrate and traversing two or more grooves of said plurality of grooves 102 at said terminal end 109, at least a portion of the angled surface 104 is treated to be reflective, wherein a lower edge of said angled surface is higher than the bottom of said two or more grooves, thereby defining a step at said terminal end of said two or more grooves; and~~

~~said step having a register surface adjacent said angled surface at said terminal end of each groove, said register surface configured to abut said end face of said optical conduit to align said end face axially with respect to said angled surface.~~

~~13.10. The substrate 101 of claim 129, wherein said angled surface 104 traverses all grooves of said plurality of grooves 102.~~

~~14.11. The substrate 101 of claim 129, wherein said angled surface 104 has a discrete reflective surface for each optical conduit 501.~~

~~15.12.~~ The substrate-101 of claim ~~12~~29, wherein said angled surface-104 has a common reflective surface for all optical conduits-501.

~~16.13.~~ The substrate of claim ~~12~~29, wherein said substrate-101 has two parallel edges and said angled surface-104 extends across said edges.

~~17.~~—The substrate-101 of claim ~~12~~, further comprising a step-401 between the bottom of said groove-102 and the lower edge of said angled surface-104, said step-401 providing a register surface against which the end face-508 of an optical conduit-501 abuts to align the end face-508 axially with respect to the angled surface-104.

~~18.14.~~ The substrate-101 of claim ~~12~~29, wherein said grooves-102 are V-grooves.

~~19.~~—A method of preparing an interposer-101 comprising:

~~etching grooves-102 in a substrate-101 to receive an optical conduit-501, said grooves-102 defining a terminal end-109 in said substrate-101;~~
~~machining an angled surface-104 across two or more of said grooves-102 at their terminal ends-109;~~

~~20.~~—The method of claim ~~19~~, wherein said machining step is performed using a dicing wheel.

~~21.~~—The method of claim ~~19~~, wherein said dicing wheel cuts across all the grooves-102 of the substrate-101.

~~22.~~—The method of claim ~~19~~, wherein said dicing wheel is held at a 45° relative to said substrate-101.

~~23.~~—The method of claim ~~19~~, wherein said dicing wheel is held perpendicular to said substrate-101.

~~24. The method of claim 19, wherein said machining step is performed at the wafer level and said angled surface 104 is cut across grooves 102 of different substrates 101 in a single step before individual substrates 101 are sectioned from said wafer.~~

~~25. The method of claim 19, wherein at least a portion of said angled surface 104 is coated to make it reflective.~~

15. The substrate of claim 9, wherein said common angled surface is a portion of a V-groove defined in said substrate.

16. The interposer of claim 1, wherein said common angled surface is a portion of a V-groove defined in said substrate.

17. A substrate for an interposer comprising:

at least one groove having a terminal end and adapted to receive an optical conduit having a substantially perpendicular end face;

an angled surface defined in said substrate and traversing said at least one groove at said terminal end, at least a portion of said angled surface is treated to be reflective, wherein a lower edge of said angled surface is higher than the bottom of said at least one groove, thereby defining a step at said terminal end of each groove; and

said step having a register surface adjacent said angled surface at said terminal end of said at least one groove, said register surface configured to abut said end face of said optical conduit to align said end face axially with respect to said angled surface.

18. The substrate of claim 17, wherein said at least one groove is a V-groove.

19. The substrate of claim 17, wherein said angled surface is a portion of a V-groove defined in said substrate.