



## FlexPlane™ Optical Circuitry

- 106401** Standard
- 106404** Flame-Retardant
- 106406** 3D Compact Substrates

### *High-density FlexPlane Optical Circuitry provides high-density optical routing on PCBs or backplanes*

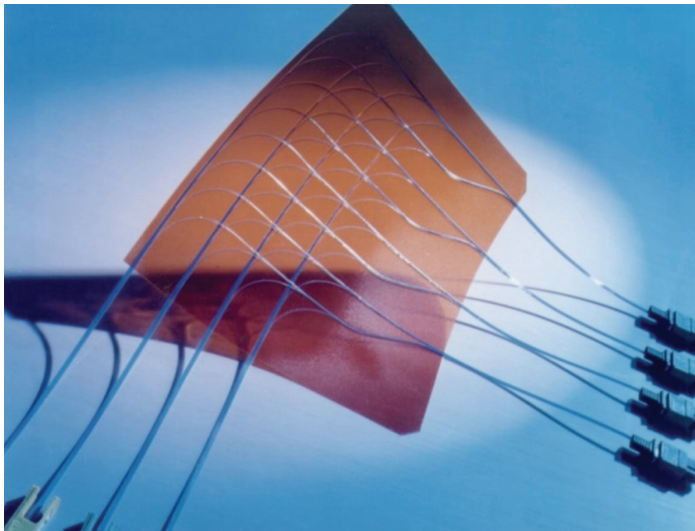
Molex's FlexPlane optical flex circuitry provides one of the highest density and versatile interconnect systems on the market today. For high fiber-count interconnects in backplanes and cross-connect systems, Molex's FlexPlane provides a manageable means of fiber routing from card-to-card or shelf-to-shelf. Designed for versatility, the standard FlexPlane (Series 106401) provides high-density routing on a flexible, flame-resistant substrate. Additional options are now available including flame-retardant assemblies and 3D versions.

As the industry requirements for flammability have become more stringent, Molex developed a custom flame-retardant FlexPlane assembly. The flame-retardant FlexPlane assembly (Series 106404) meets the UL Optical Branching Device Flammability requirements.

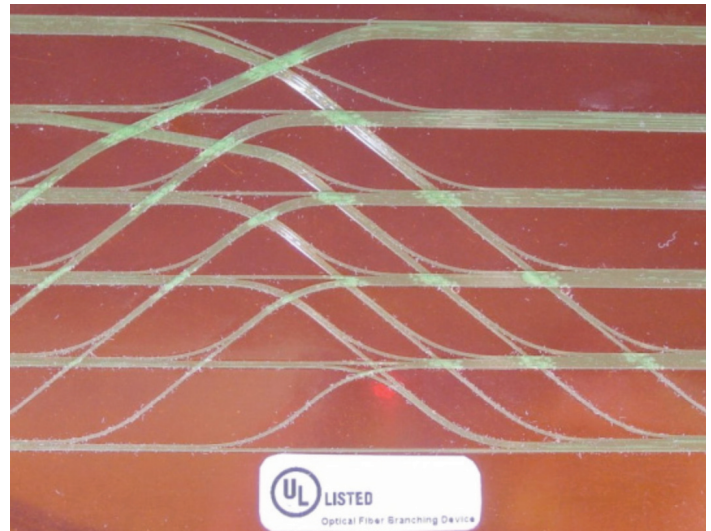
The 3D FlexPlane (Series 106406) provides almost a 50% substrate size reduction compared to the standard FlexPlane. This is critical, as board space and air flow continue to become a stringent part of OEM design requirements. Traditional FlexPlane flex circuits are routed on a single substrate. The 3D FlexPlane routes the fiber on multiple stacked substrates to achieve a compact routing area.

A variety of interconnects, including Blind Mate MTP (BMTPTM), High Density Blind Mate MT (HBMTM), Blind Mate LC (BLCM) and Blind Mate SC (BSCM) can be used to connect the optical flex circuits to individual cards in a shelf. Available in any routing scheme, fiber can be routed point-to-point, in a shuffle, or in a logical pattern to meet specific requirements. Direct or fusion-spliced terminations are available.

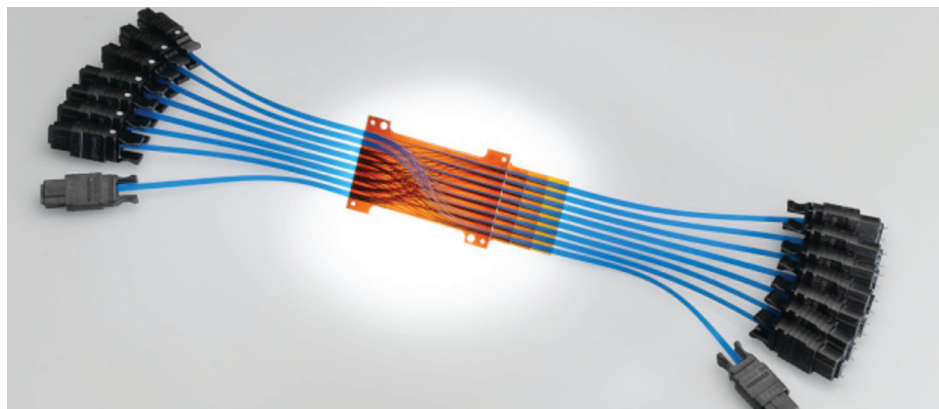
Packaging alternatives include standard bare flexible substrate, sandwiched in FR-4 or custom laminating. Each FlexPlane circuit can be fully tested down to the per port insertion loss and return loss. For more information on Molex's FlexPlane offering, visit: [www.molex.com/fiber/flexplane.html](http://www.molex.com/fiber/flexplane.html).



Standard FlexPlane (Series 106401)



Flame-Retardant FlexPlane (Series 106404)



3D FlexPlane (Series 106406)



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**Features and Benefits**

- Diverse substrate size, shape and packaging provides efficient and manageable solutions to high-fiber count systems
- Compatible with mass and discrete-fiber terminations to ensure customized solutions
- Available in virtually any routing scheme to provide a variety of design alternatives
- Direct or fusion splice terminations available to eliminate additional insertion loss
- Compatible with MT ferrules, an ideal solution for high-density applications using Molex's backplane HBMT and BMTP interconnect systems
- Singlemode, multimode or hybrid versions provide a variety of options
- Entire circuit is 100% insertion loss (IL) and continuity tested to ensure correct pin-out prior to shipment

**SPECIFICATIONS**

**Reference Information**

Packaging: Packaged flat in a box  
 Flame Retardant FlexPlane (Series 106404):  
 Meets UL Optical Fiber Branching Device  
 (File # E236312)  
 Mates With-Terminate with:  
 MT based connectors (MTP, HBMT™, BMTP™)  
 Single-fiber connectors (Series LC, SC, BLC™, BSC™)

**Optical**

Insertion Loss (IL): Dependant on terminated connector type  
 Fiber Type:  
 Singlemode – 9/125µm  
 Multimode – 50/125µm  
 Multimode – 62.5/125µm

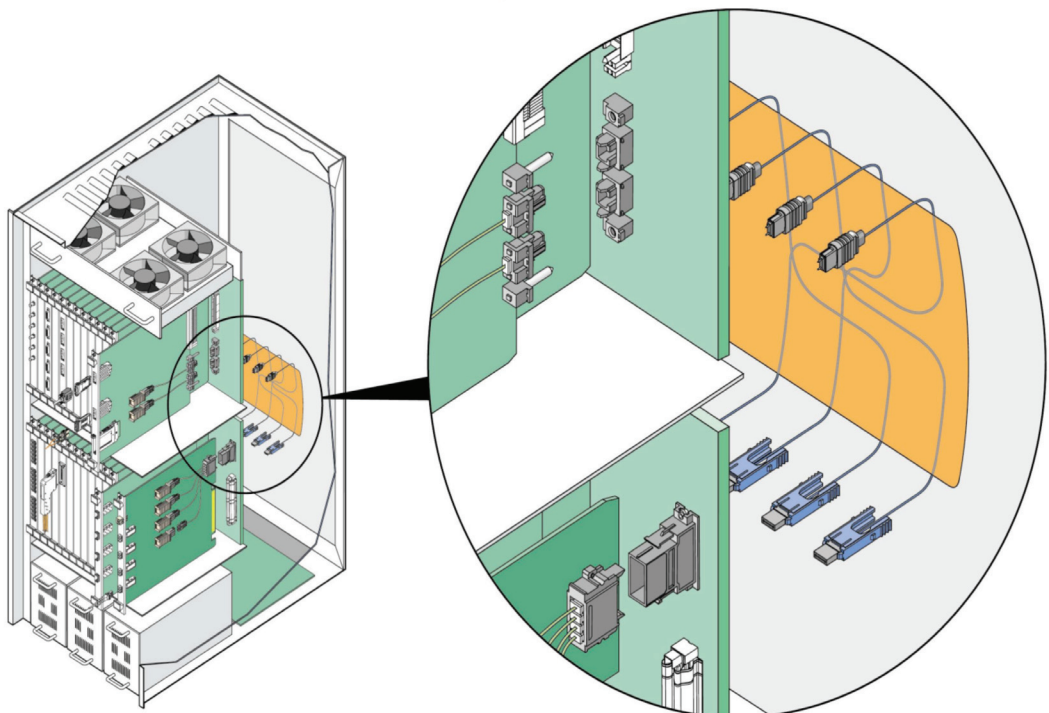
**Physical**

Substrate: Kapton\*  
 Thickness: Typical is less than 1.50mm (.059") per layer  
 Mounting: Mounting holes or devices are designed to customer requirements

\*Kapton is a registered trademark of DuPont

**APPLICATIONS**

- Telecommunication
  - Hubs
  - Servers
  - Routers
  - Switches





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## Key Design Properties

Circuit shapes are fully customized to the mechanical requirements of the application

Optical fibers are routed to a substrate and locked into place with conformal coating

Proper bend-radius design ensures long lifetimes and no impact on optical performance

Ribbonized leads up to 2 meters long eliminate the need for splicing

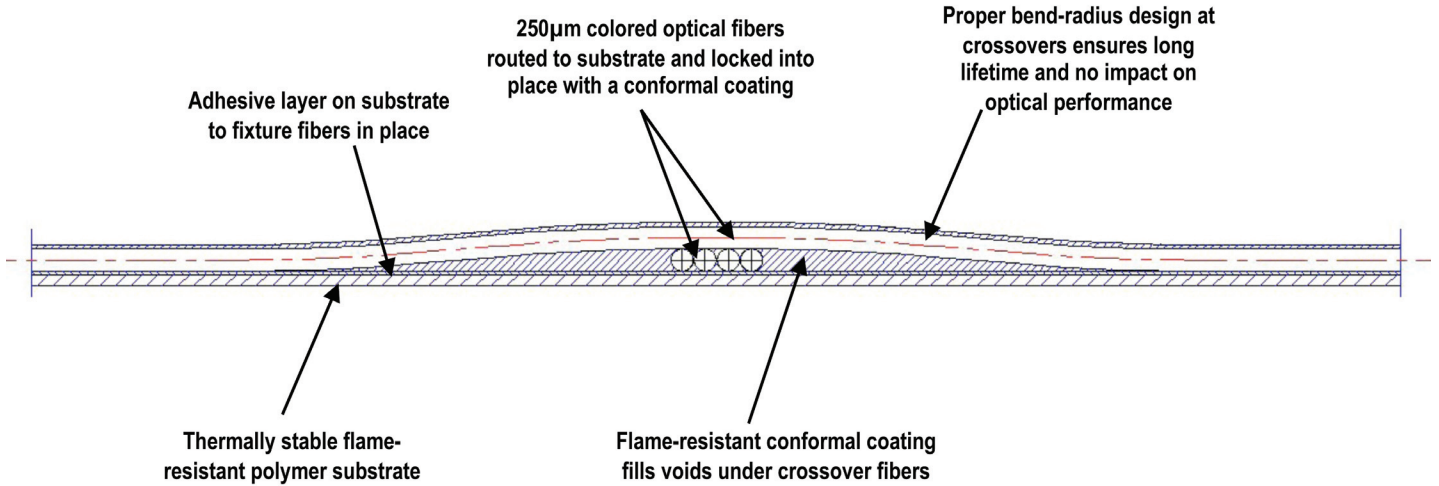
Flame-resistant substrate and materials meet UL-V1 (or better) flame ratings

Ribbon-fiber based interconnects such as MTP and HBMT are best suited for connecting the flex to other systems



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*Cross Section of a Typical FlexPlane Layer with Single Fiber Crossing*



**ORDERING INFORMATION**

Order No.	Description	Substrate Width	Substrate Length	Substrate Height
106401-0000 <sup>†</sup>	Standard Routing 8-by-8 Perfect Shuffle	74.00mm (2.193")	137.00mm (5.394")	1.50mm (.059")
106404 <sup>†</sup>	Flame-Retardant Standard Shuffle Series	Standard or 3D versions are also available as Flame-Retardant FlexPlane assemblies		
106406-0000 <sup>†</sup>	3D Routing 8-by-8 Perfect Shuffle	32.00mm (1.260")	71.00mm (2.795")	3.00mm (.118")
106404 <sup>†</sup>	Flame-Retardant 3D Shuffle Series	Standard or 3D versions are also available as Flame-Retardant FlexPlane assemblies		

<sup>†</sup> Only sold as terminated assemblies. Part numbers and sales drawings will be established based on specific customers design requirements.

[www.molex.com/fiber/flexplane.html](http://www.molex.com/fiber/flexplane.html)

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