

FLEXIBLE PRINTED CIRCUIT FPC
YFLEX

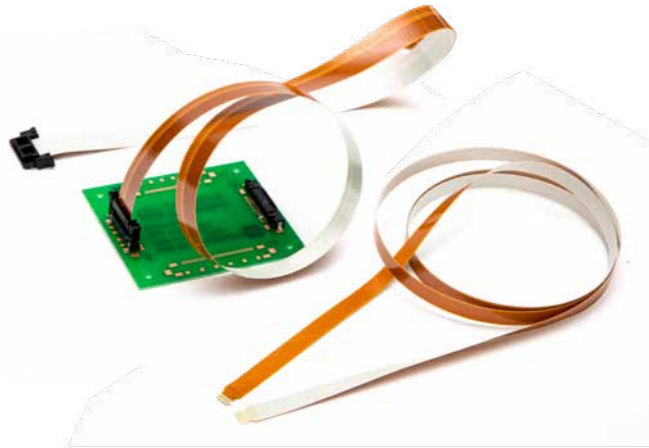


SINGLE-SIDED, LONG AND HIGHLY FLEXIBLE FPC

Single-sided, long and highly flexible FPC YFLEX consist of copper layer, polyimide cover films and LCP as base material.

YOUR ADVANTAGES

- Performance of High-Speed transmission as Gbps band with low loss
- Bending characteristics of 10 million times or more at R = 5.0 mm
- Manufacture of lengths up to a maximum of 1,150 mm
- Accurate impedance matching is possible due to the coplanar structure
- Combination of YFLEX and our High-Speed connector series HF513, HF509, HF601 and HF507 possible



DOUBLE-SIDED HIGH-SPEED FPC

Double-sided FPC consists of two copper layers with top and bottom cover films.

YOUR ADVANTAGES

- High-speed transmission up to 112 Gbps is possible with low loss
- FPC resistant to noise by using two conductor layers
- Precise impedance matching with microstrip structure
- Combination of YFLEX and our High-Speed connector series HF513, HF509, HF601 and HF507 available
- Manufacture of lengths up to a maximum of 460 mm



EMI PREVENTION FPC

EMI prevention FPC can be used in wiring areas with concerns about communications quality degradation due to noise in electronic devices. EMI prevention FPC perform excellent noise resistance.

YOUR ADVANTAGES

- Supports transmission over 1 Gbps such as LVDS/eDP/MIPI
- Custom wiring design is possible such as impedance matching design, low loss, low crosstalk etc.
- Total quality assurance in combination with our FPC connector



OIL RESISTANT FPC

Ideal for environments where cutting oil and other chemicals are sprayed. Use case: Internal wiring connection of products sprayed with industrial lubricating oil such as industrial equipment and processing equipment.

YOUR ADVANTAGES

- Maintains conductivity even when immersed in alkali and sulfur oil for 100 hours
- High oil resistance suppresses wiring breakage due to sulfurization



ULTRA-THIN FPC

Providing extremely thin thickness of FPC.

YOUR ADVANTAGES

- Total thickness: 39.5 μm (single-sided wiring)
- Possibility of installation in extremely small spaces, curved surfaces and bends
- Component mounting on FPC possible



SLIT & BUNDLE FPC

Slit & Bundle combines the flexibility of a FPC with the bundling feature of twinax or coax cables. YFLEX is a special High-Speed FPC (Flexible Printed Circuit) which can transmit up to 56 Gbps-PAM4 with differential impedance of 100 Ohm. This high performance is given by different features, like LCP as base material, the contacting of different layers done by silver bumps and the special production process.

YOUR ADVANTAGES

- SLIT & BUNDLE FPC does not block airflow inside of the chassis by several slits
- Various cable routing is possible by bundling with tape
- Transmission rate 56 Gbps-PAM4
- Yamaichi non-ZIF connector HF512 or HF513 is available
- Lower skew when compared to coax or twinax cables
- Low loss material (up to 460 mm length)
- Low cross talk design for bidirectional transmission



HEATER FPC

Heater FPCs generate heat by passing electricity through a conductor (conductor: stainless steel or copper). By affixing heater to the application, it can be protected from fogging, condensation and temperature drop. The heater can handle a variety of shapes and can be used in tight spaces, bends etc.

YOUR ADVANTAGES

- Anti-fog and dew condensation on camera lenses
- Prevention of coagulation of liquids such as ink and blood
- Temperature and humidity adjustment



YFLEX - MANUFACTURING PROCESS

The manufacturing process described below is decisive for the high reliability and the remarkable data transmission characteristics of the YFLEX. In step 1 (see Figure 2a), the silver paste is applied in the form of a pyramid-like cone (silver bump) to a copper foil. Then, a film made of the LCP insulation material and another copper layer are laminated under vacuum and heat (see Figure 2b). These two steps assume key roles in the production process. Use of a specific silver bump height and defined lamination conditions result in optimal contacting and the required mechanical strength of the various copper layers. In steps 3 to 5 (see Figure 2c), the YFLEX is prepared for precision etching through the application and development of a photoresist coating and then etched. The extremely precise removal of the unneeded copper allows for maximum accuracy and freedom of design of the conductive traces. Cleaning and application of a protective layer in steps 6 to 8 (see Figure 2c) give the YFLEX stability and insulating protection.

Fig. 2a: Step 1:
Application of the silver paste to the copper foil (100x and 200x magnification)

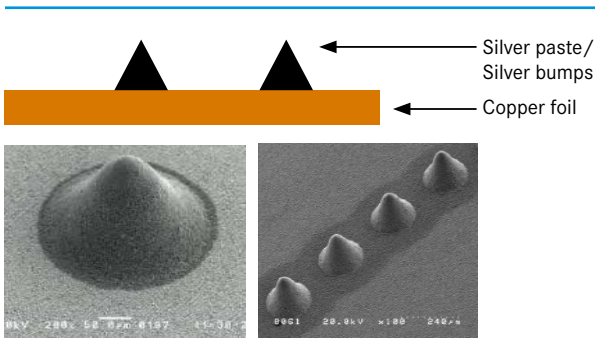


Fig. 2b: Step 2:
Thermal lamination of the different layers

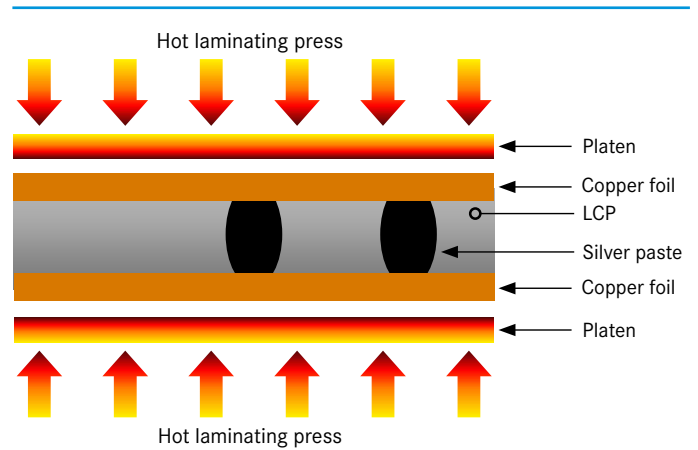
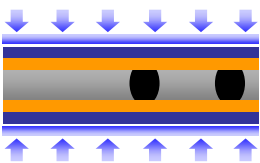


Fig. 2c: Steps: 3-8: Precision etching and coating

3 Application of photoresist



4 Development



5 Etching



6 Removal of the photoresist



7 Application of the protective layer



8 Surface treatment



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The specifications are subject to change without notice.

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