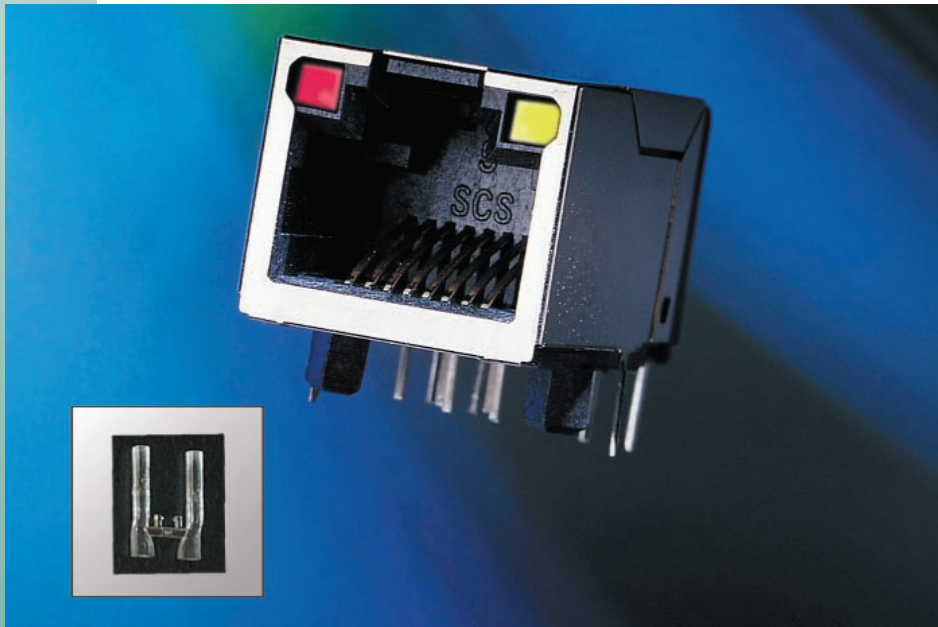


Application Highlight

Information Technology *Connector Light Guide*

Ticona



Add Caption 1 here

Customer Challenge

The name of the game in creating information systems hardware is to place more functionality in less space and still improve reliability. Stewart Connector Systems, a leading manufacturer of modular jacks and plugs, has done just this with its innovative line of MagJack® connectors. These standard-size RJ-11 and RJ-45 jacks integrate such magnetic components as isolation transformers and filters, protecting them from heat and other environmental insults. This integration replaces several parts with just one, saves precious space on printed circuit boards, and lowers noise level by putting magnetic elements within the connector shielding.

The company extended this line with its single-port LED MagJack products that add a diagnostic capability. These jacks have built-in light guides to transmit light from LEDs on the circuit board to the connector's face and indicate whether or not a circuit is operating. This allows LEDs to sit outside the connector's shield, eliminating LED-generated noise in the connector. They are especially useful in high-performance hubs, switches, routers and other networking equipment.

Customer

Stewart Connector Systems
Insilco Technologies Group

End User

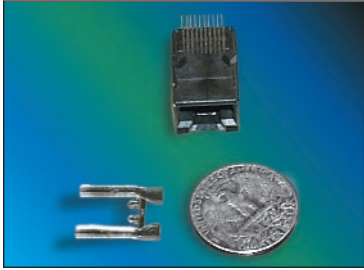
Telecommunication systems
High-speed computer
networks

Alternative Material

Polycarbonate

Topas® cyclic olefin copolymer

- Transparency
- Clarity
- Stiffness
- Strength
- Low moisture absorption
- Excellent dimensional stability



Insert Caption 2 here

Product Profile

Topas® COC

- High clarity and light transmittance
- Dimensionally stable
- Good heat resistance
- Low moisture absorption
- High stiffness and creep resistance
- High flow and low shrinkage in molding

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Innovation

In adding a light guide to its MagJack series, Stewart Connector needed a clear, transparent material that transmits red, yellow or green light well. Also, the material must maintain its integrity during processing steps that occur after the light pipes are inserted in the connector. For instance, it must hold ± 0.003 -inch tolerances during infrared reflow soldering, where temperatures reach as high as 240°C (464°F) for up to 10 seconds. The company first looked at polycarbonate, but this polymer temperature performance was inadequate as guides made from it bubbled and sagged during soldering.

Solution

Stewart Connector then evaluated Topas® cyclic olefin copolymer. This advanced plastic has a light transmittance of 92%, so it transmits the LED light at the brightness levels needed. It also has sufficiently high heat deflection temperature to satisfy the ± 0.003 -inch dimensional stability requirement during IR soldering.

Topas COC also processes well during injection molding, so the light guides have a low rejection rate. The 0.12-by-0.5-inch guides are molded to tolerances of ± 0.001 inch, a precision level aided by the resin's excellent melt flow and shrinkage of just 0.6 to 0.7%.

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Topas® cyclic olefin copolymer is not intended for use in medical or dental implants.