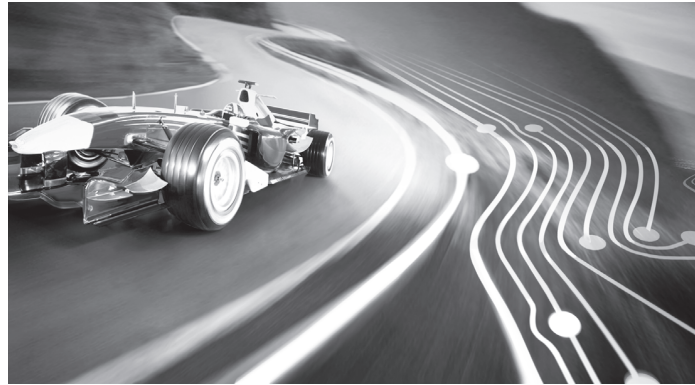## EREMEX

TopoR

**We develop CAD software which allows to reduce your production cost and time to market**

TopoR is a powerful high-performance topological PCB router. TopoR considerably reduces production costs and time to market by using an innovative approach to routing and highly efficient software implementation of specifically designed models and algorithms.

Distinguishing features

- Extremely fast comprehensive routing with unsurpassed quality
- Absence of preferred routing directions in layers considerably reduces wire parallelism, which in its turn reduces electromagnetic crosstalks
- Best results for electromagnetic compatibility and interference immunity of PCBs
- Smooth wires without dog-legs
- Compatibility with popular CAD software
- Optimal price/performance ratio

Main features

- Route the wiring topology automatically and flexibly (directions are not limited by 90° and 45°).

- Wire length and shape are optimized automatically. Each wire has the shortest possible length and keeps appropriate clearance for circling pads.

- Multiple topology versions are optimized simultaneously. You can adhere to the topological configuration of your choice.

- Automatic placement can be done for the entire board or for a selection of components.

- You can specify minumum and preferred clearance values for each net.

- TopoR automatically reduces width of a wire that approaches a narrow pad (or one with a diameter that is less than the width of the wire), or when it passes through bottlenecks (for example, between the pads of a component).

- Wire-to-pad transitions use teardrop-style smoothing.

- You can manually move components around on a previously autorouted board, preserving layout integrity and clearance constraints.

- TopoR guarantees (within a particular layout) the absolute minumum of vias. It is is very effective for routing single-layer printed circuit boards, because during routing, TopoR either finds a single-layer solution or an alternative with as few vias as possible.

- You can choose to have a polygonal layout. This means that in a board that has been routed, all wires have been converted to polygons and widened as much as possible. Polygonal routing is useful for power devices.
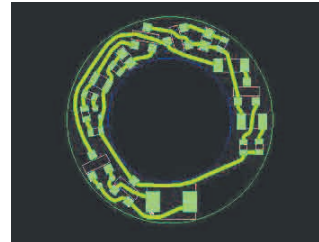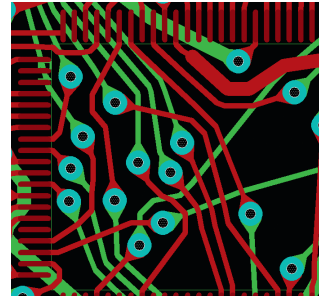
- Online design rule check (DRC) is performed automatically during autorouting, during manual routing, and for the output file.

- Smart BGA component routing is used.
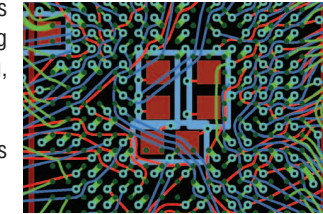
Design of complex and high-speed PCBs

Signal Delay Equalization

TopoR CAD System allows to set limitations for signal lengths and group of signals as well as adjust length of signals related to any group with specified precision.

As opposed to other CAD Systems which make wire stretching by adjusting the "serpentine" to the orthogonal area with 45-degrees angle orientation, TopoR uses randomly-oriented trapezoids for this purpose. This allows to use PCB surface more efficiently.
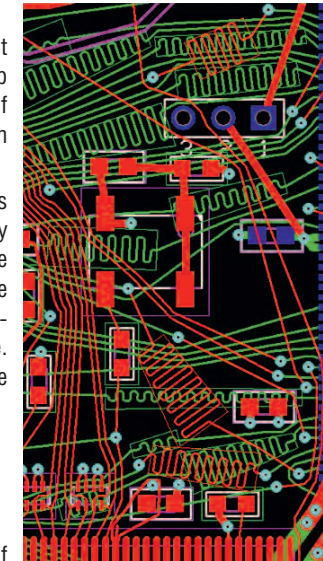
Efficient work with differential pairs

TopoR offers efficient autorouting of differential pairs. Equality of wires length in a pair is provded with the preciseness level which was set in the routing rules.

Length limitation can be set both for single wires and for differential pairs. As well as it is possible to set equalization to length for several differential pairs belonging to one bus.
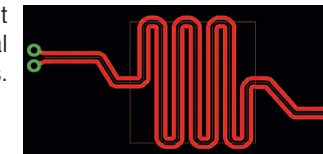
Other features

- An efficient solution for designing both multi-layer and single-layer layouts.

- The user is free to choose from two ways to calculate the wire shape: with or without arcs. The first method involves wires consisting of lines only. The other makes wires keep appropriate clearance when circling pads and consist of arcs and lines.

- TopoR uses two layout modes: full control over design constraints and partial control – the latter makes it possible to create more routes among unfixed components for subsequent rearrangement.

- TopoR includes tools for local rerouting while components are moved – wires geometry is optimized in the process.

Tools and functuonality

- Design Properties Editor, which speficies the primary design constraints (wire width, wire clearance, pad shape etc.) In particular, unlike other systems, TopoR lets you set both minimal and the desired (nominal) clearance for each net.

- Placement Editor, which highlights connections between components. Tools for quick component placement. TopoR has an automatic component placement feature. The procedure can be used either for all components of the board or only for components in a specific area.

- Two topology editing modes. The first one is a conventional editor - Manual Editor, the second – Freestyle Editor, does not let you edit the wire geometry but makes it possible to move components around while preserving layout integrity and automatically reconfiguring wire shapes.

- Compatibility with a variety of CAD software: import and export of PCAD ASCII PCB, DSN/SES (Specctra, Electra) and HKP (Expedition), import of PADS ASCII PCB

- Output of design results in DXF, Excellon (drill) and Gerber format.