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## Printed circuit boards (PCBs)

Flexible, rigid-flexible and rigid printed circuit boards

For over 50 years, Cicor has been developing and producing sophisticated flexible, rigid-flexible and rigid printed circuit boards (PCBs), from the idea, through prototypes, to large-series production. Thanks to a comprehensive expertise in multilayer boards (MLBs), multi-chip modules (MCMs), high-density interconnects (HDIs) and reel-to-reel technology, Cicor develops innovative and reliable solutions for demanding applications in medical, aerospace and defence, automotive, communication, industrial, watches

and consumer markets. Thin materials and line width and spacing down to 25  $\mu\text{m}$  enable extreme miniaturization and ultra-HDI advanced solutions. DenciTec<sup>®</sup> technology opens up completely new possibilities. Innovative circuits can be produced by combining PCB processes with thin-film technology.





## Portfolio

### Flexible PCB

- Ultra-high density interconnect
- Flex circuits (1 to 8 layers)
- Polyimide foil thickness from 12.5  $\mu\text{m}$
- Adhesive bond ply thickness from 15  $\mu\text{m}$
- Stacked vias and via-in-pad structures enabled by copper-filled blind vias
- High-precision laser contour cutting

### Rigid-flexible PCB

- High-end/quality base materials, like high TG/low CTE FR4, combined with polyimide foils
- Replace rigid PCBs, connectors, cables or separate flexible circuit boards by integrating the connection of different parts in one single rigid-flex PCB
- Reduce the size of assemblies and enable 3-dimensional installation of assembled PCBs
- Improving signal integrity and reliability, especially in environments where vibration, acceleration and other severe conditions are involved
- Improved signal integrity
- Reduced logistic effort by replacing several components by one single PCB

### Rigid PCB

- Rigid PCB with 1-20 layers with a clear focus on miniaturization in x, y and z axis
- (Ultra) thin high-end base materials, with CTE values in x and y axis down to below 8 ppmK-1

### DenciTec®

- Line widths and spacings down to 25  $\mu\text{m}$
- Copper thicknesses of  $20 \pm 5 \mu\text{m}$  on all layers
- Laser-via diameters of 30  $\mu\text{m}$
- Annular rings of 30  $\mu\text{m}$  for the inner layers and 20  $\mu\text{m}$  for the outer layers
- Copper-filled blind vias with the option of via stacking and vias-in-pads
- Ultra-thin circuits are possible, using a 12.5  $\mu\text{m}$  polyimide core material (4-layer flex circuits less than 120  $\mu\text{m}$  thick)

### 3D-MID

- Injection molding
- Laser activation
- Metallization
- Assembly
- Final testing
- Industrialization

## Markets

-  Industrial
-  Medical
-  Aerospace and defence
-  Watches and consumer
-  Automotive and transport
-  Communication



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The Cicor Group is a globally active development and manufacturing partner with innovative technology solutions for the electronics industry. With about 2100 employees at ten production sites, Cicor offers highly complex printed circuit boards, printed electronics, hybrid circuits and substrates as well as comprehensive electronic manufacturing services (EMS) including microelectronic assembly and plastic injection molding. Cicor supplies customized products and services from design to the finished product from one source.



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