

**LUCINTEL INSIGHT
OCTOBER 2021**

FIVE TRENDS SHAPING THE FUTURE OF THE HDI PCB MARKET

Technologies in the HDI PCB market have undergone significant changes in recent years, ranging from traditional low-density to advanced high-density PCBs. The rising wave of 10+ layer HDI PCB and multilayer HDI PCB technologies is creating significant potential in various smartphone, computer and tablet, telecommunication, consumer electronic, and automotive industries. The major growth drivers for this market are the boom in the consumer electronic

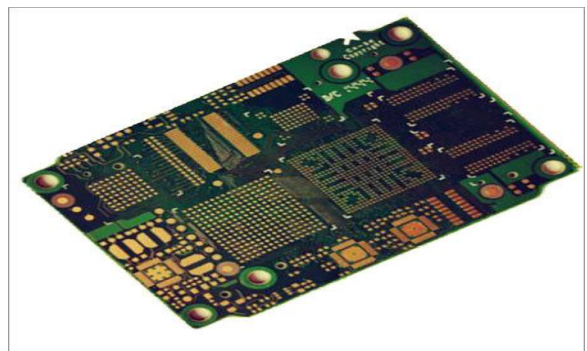
market, miniaturization of electronic devices, and increasing demand for high-performance devices.

The HDI PCB market is divided into several segments, such as 4-6 layer, 8-10 layer, and 10+ layer. Key players in the HDI PCB market include Unimicron, AT&S, Samsung Electro-Mechanics, Tripod, Compeq, Unitech, NOK Corporation, Zhen Ding Technology, Flexium Interconnect, Fujikura, Nitto Denko, and Young Poong Electronics. These have been working on different strategies to drive sales using highly influential marketing approaches; however, as we examine the challenges and opportunities ahead in this market, companies can benefit from a strategy of developing multilayer HDI PCBs and flex HDI PCBs along with the key target market trends we have identified. Lucintel predicts the global HDI PCB market will be valued at \$16.4 billion by 2025, with an expected CAGR of approx. 7.0% between 2020 and 2025.

Lucintel identifies five trends set to influence the global HDI PCB market. Most of the industry players and experts agree that these five trends will accelerate developments in the HDI PCB industry in the near future. In terms of the widespread knowledge about the HDI PCB market already on the horizon, there is still a lack of unified perspective on the direction the industry is moving to proactively address developments. To help bring more clarity to this gap, our study aims to provide insights concerning the direction that changes are taking and how these changes will impact the HDI PCB market.

1. Any-Layer HDI PCB

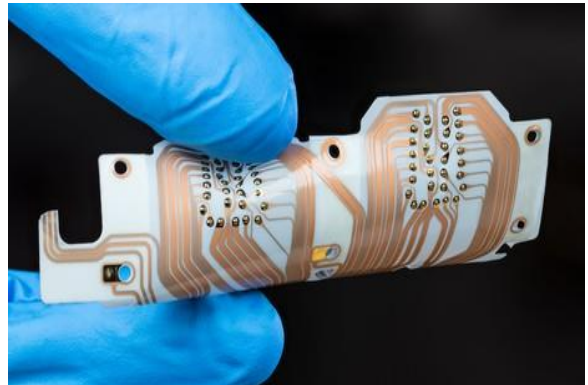
Any-layer HDI PCB is the most complex HDI PCB design structure in which all layers are high-density interconnection layers, allowing the conductors on any layer of the PCB to be interconnected freely with copper-filled stacked microvia structures. This structure provides a reliable interconnect solution for



highly complex, large pin-count devices, such as CPU and GPU chips in handheld and mobile devices, and these offer superior electrical characteristics. Some examples of usage include smartphones, ultra-mobile PCs, MP3s, GPS, memory cards, and small electronic devices.

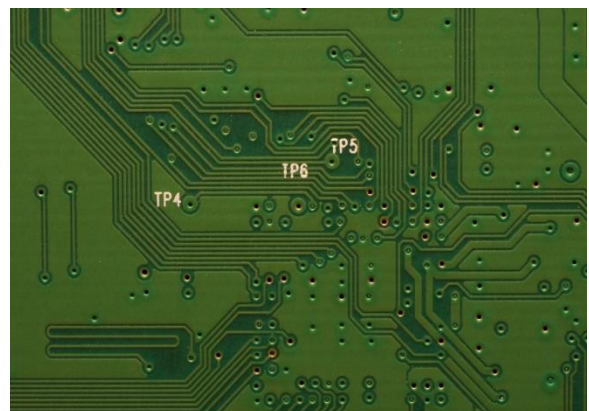
2. Flex HDI PCBs

Flex HDI PCBs are composed of flexible plastic. This material permits the board to form different shapes. This offers many benefits compared to rigid boards. The board's flexibility allows easy motion and bending during the application process without damage to the circuits on the board. The heavy wiring found in advanced equipment such as satellites can be replaced with these PCBs. Flex HDI PCBs are lighter and make better use of minimal space, making them ideal for a variety of applications. Another benefit of flex HDI PCBs is their range of different designs, from multilayer, to single-sided and double-sided designs.



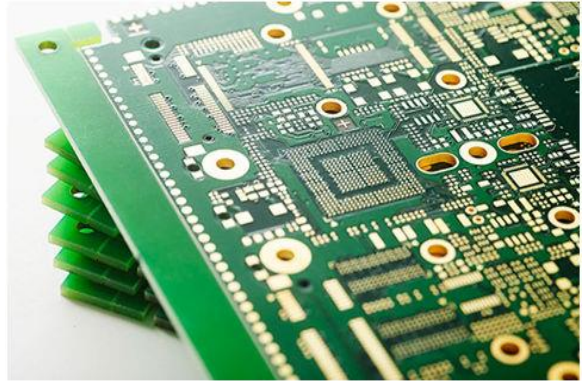
3. Multilayer HDI PCBs

Multilayer HDI PCBs have multiple-layer substrate boards with an insulating material separating these layers. Just like with HDI PCBs with double sides, either vias or through-holes can be used to connect the board's electric circuits. Multilayer HDI PCBs are extremely beneficial because they use less space. Standard applications using this HDI board type include servers, medical machinery, handheld devices, and computers.



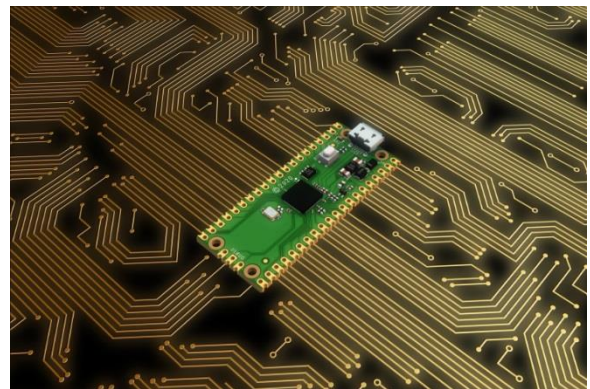
4. Microvia HDI PCBs

Vias are tiny conductive holes that connect multiple layers in a PCB and allow signals to flow through them easily. Microvias are the smallest vias, or holes with a diameter of less than 150 microns, drilled using a laser. Microvias are most commonly implemented in HDI PCBs, most often to connect one layer of the PCB to its adjacent layer. They have a very small diameter in comparison to mechanically drilled vias such as through-holes. Due to their size and ability to connect one layer to an adjacent one, they enable denser printed circuit boards with more complex designs.



5. Miniaturization

In 3C applications (computers/peripherals, consumer electronics, and communications), the demand for more compact, convenient, high-speed, cheaper, and efficient products is growing. In order to meet these requirements, manufacturers are designing sophisticated HDI PCBs in smaller sizes with higher component density which can perform at a higher speed.

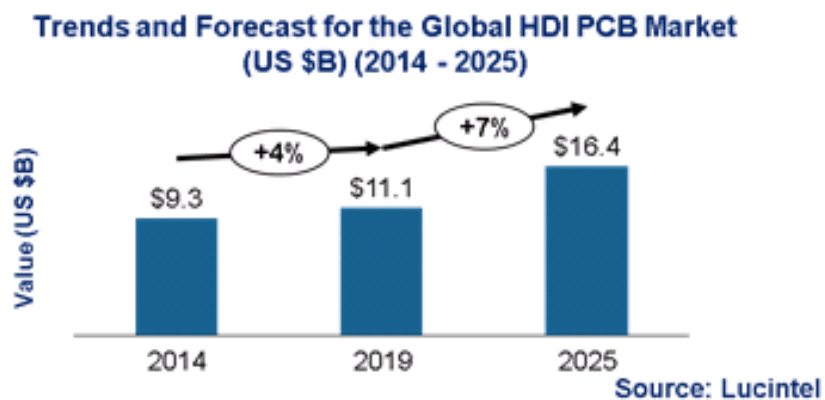


In the present scenario, the demand for smaller products with more features is on the rise and thereby pushing the market for advanced HDI PCBs and IC substrate product types. Miniaturization of HDI PCBs to meet the demand for compact devices with more features is expected to drive the market.



Strategic Considerations for Key Players in the HDI PCB Market

The HDI PCB industry is dynamic and ever-changing. Successful industry players are necessarily masters of innovation, change, and adaptation. To retain this status, they need to be attentive to current trends. We believe there will be promising opportunities for HDI PCBs in the smartphone, computer, telecommunication equipment, consumer electronic, and automotive industries. As per Lucintel's latest market research report (Source: <https://www.lucintel.com/high-density-interconnect-printed-circuit-board-market.aspx>), the [HDI PCB market](#) is expected to grow with a CAGR of approx. 7.0% between 2020 and 2025, and reach \$16.4 billion by 2025. This market is primarily driven by the growth in the consumer electronic market, miniaturization of electronic devices, and increasing demand for high-performance devices.



Whether you are new to the HDI PCB market or an experienced player, it is important to understand the trends that impact the development process, as these trends as listed above will lead players to create long-term strategy formulation that will allow them to remain competitive and successful in the long run. For example, to capture growth, some of the strategic considerations for players in the HDI PCB market are as follows:

- HDI PCB market players can increase their capabilities to develop multilayer HDI PCBs that require less space.



- Players can focus on any-layer HDI PCBs with reliable interconnect solutions for highly complex, large pin-count devices in handheld and mobile devices, which is expected to lead future trends.
- Investment to increase competencies in the development of HDI PCBs for miniaturized electronic products
- Research and development activities for the development of thinner, low-cost HDI PCBs

Note: In order to gain better understanding, and learn more about the scope, benefits, and companies researched, as well as other details in the HDI PCB market report from Lucintel, click on <https://www.lucintel.com/high-density-interconnect-printed-circuit-board-market.aspx>. This comprehensive report provides you in-depth analysis on market trends and forecast, segment analysis, regional analysis, competitive benchmarking and company profiling of key players. In addition, we also offer **strategic growth consulting** to meet your customized needs. We have worked with many PE firms and corporate customers in the process of their market entry and M & A initiatives.



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- Management comprised of PhDs, MBAs, and subject matter experts. Head quarter in Dallas, USA.

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