

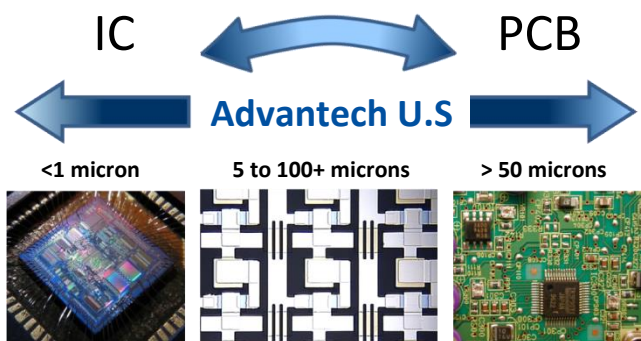
Additive Manufacturing of Logic Circuits

Advantech U.S. Technology

Advantech U.S., Inc. developed proprietary additive manufacturing of thin film transistors (TFTs) and passive thin film electronic components. Such semiconductor devices are fabricated in an **additive layer-by-layer process** using **precision shadow masks**, a **green, simple and cost-efficient process** compared to the photolithography processes used in the integrated circuit (IC) industry.

Avoiding ink, Advantech U.S. evaporates bulk materials. Using the Advantech U.S. mask alignment system, electronic devices with feature sizes down to 5 μm have been fabricated with a layer-to-layer alignment accuracy of 1 μm .

The Advantech U.S. process excels for feature sizes of 5 μm to 100 μm bridging the gap between integrated circuit (IC) and printed circuit board (PCB) manufacturing, and offers a good balance between feature size and fabrication cost.



TFT devices manufactured with the Advantech U.S. process achieve good electrical performance in terms of mobility, threshold voltage, on/off current ratio and leakage current.

Advantech U.S. is currently expanding their expertise into the development of custom, quick turn simple storage and logic products, such as basic memory and microcontroller devices based on the cost-efficient Advantech U.S. manufacturing technology.

Printed Logic Circuits and Thin Film Memory

Advantech U.S. has expanded its expertise to address the need for miniaturized storage and logic products. Particular focus areas are basic memory and microcontroller devices, which share matrix TFT working principles such as matrix digital switches, capacitors, bus-lines, etc.

Advantech U.S. technology targets energy-efficient 8-bit microcontrollers (MCUs). These devices replace the more expensive and power-hungry MCUs used widely in today's electronics.

Examples for applications of such low cost, low heat microcontrollers that require minimal computing power are

- microcontrollers for medical imaging and sensor applications paired with energy harvesting ICs and wireless data links,
- pH sensors,
- Doppler blood flow monitors,
- infrared remote controls,
- security alarms,
- miniature displays,

and other commercial, aerospace and defense electronics applications.

Summary

Advantech U.S., Inc. is seeking strategic partners to develop and commercialize low cost memory and microcontroller circuits for integrated medical and consumer electronic products.