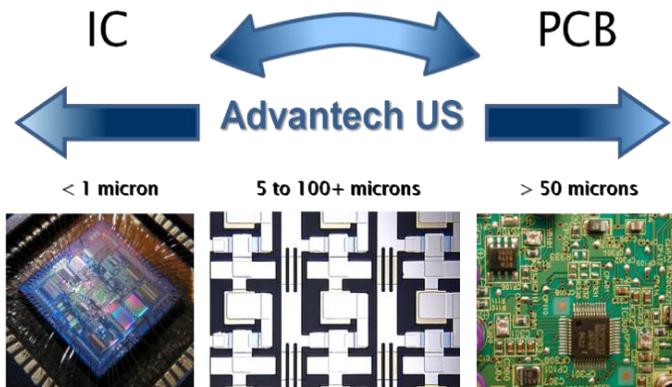


Bridging the Chip to PCB Gap, *Additively*

Rationale

In general, there are two feature sets in the world of electronics system fabrication. Features and devices below 5 microns are typically the realm of chips/VLSI. Features above 50 microns are the realm of traditional printed circuit and device technologies. The manufacturing processes of these two worlds do not largely intersect ... until now. Advantech US has developed an additive printing process technology called Evaporation Printing™ that allows these worlds to merge, and it is done additively.



Advantech U.S. Technology

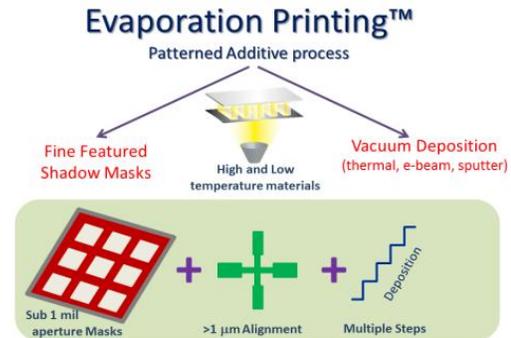
Advantech US has developed an *enabling* technology for the microelectronic industry to *additively manufacture* electronic sensors, devices, systems, and circuits. Like building blocks, this additive process deposits materials layer-by-layer to build components such as conducting lines, resistors, capacitors, and transistors.

The Advantech US process uses precision shadow masks combined with sub-micrometer registration and sputter, thermal, and e-beam deposition techniques to additively print sensors, circuits, and devices on a variety of rigid and flexible substrates.

Our additive process reduces the waste disposal and capital costs associated with photolithography and its complex etching processes.

Summary

Advantech U.S., Inc. is seeking strategic partners to develop and commercialize the manufacture of electronic devices and systems that enable the currently un-addressed PCB to VLSI feature size gap.



The use of bulk materials, not inks, takes full advantage of proven material properties and performance and expands the material set that can be used to complete the build. The components are typically printed directly onto/into conducting lines, reducing design complexity, size and weight. An additional advantage of the process is that it allows for the inclusion of unique materials and alloys that are not currently available or, if they are available, require complex, expensive and time consuming etch recipe development.

What is the benefit of this ignored feature size area; where does it have benefit?

- Embedding passive and active components directly into the conducting lines
- Reduces the need for chip level fabrication
- Reduces components on the circuit board
- Allows better signal transmission

While photolithography has the benefit of generating feature sizes into the tens of nanometers this may be overkill in both capital equipment expense and processing expense for many circuit board applications. Traditional screen printing is limited in feature size with features above 25 microns only having reliable yields.