orbotech® The Language of Electronics

# Application Brief

Enabling SiP Miniaturization

More functionality, less space: The increasing popularity of System-in- Package (SiP) in micro-electronics manufacturing has created a need for cost-effective and accurately-placed dams. These dams are used to construct a barrier or seal around function-specific dies or passive components to prevent leakage of materials, such as underfill, beyond its area.

Inkjet 3D printing provides a highly flexible alternative to costly traditional solder mask patterning or ink dispensers while saving package space.
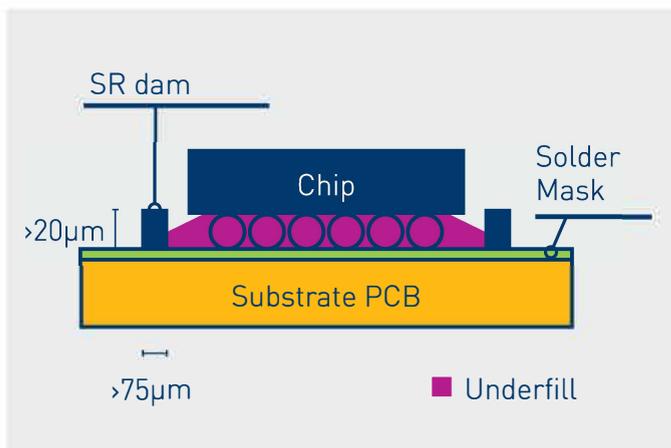
■ Underfill / Paste
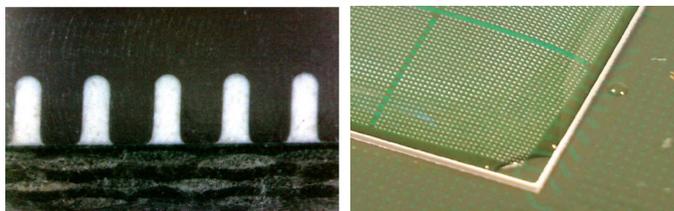
Orbotech 3D Inkjet Printing for Dams

Orbotech's 3D inkjet printing technology for dams allows manufacturers to save space and costs when depositing a protective barrier and sealing off the surrounding die area. Using 3D inkjet printing to create this protective barrier ensures more accurate and cost-efficient results than other traditional methods. 3D inkjet printing also saves valuable package space and is suitable for flip-chip CSP, BGA, and Fan-Out processes. The 3D inkjet printing, which can include multiple dams with different specifications, can be done before or after component assembly of advanced SiP modules.

Benefits of Orbotech's 3D inkjet printing for dams include:
- Enables the printing of dams and other 3D structures with high aspect ratio (> 1:4), from 20µm to 0.5mm in height and from 75µm in width
- Provides excellent adhesion on different substrates (IC substrate PI/PBO, solder mask, EMC and metals)
- Supports strip and tray
- Adheres to Semi industry standards and SECS/GEM II interface
- High T/P, lowest total cost of ownership (TCO) in the market (over 20% savings)
- Overlay accuracy of 35µm enabling the reduction of dam pitch
- On-the-fly registration and accuracy correction for die misplacement on carriers, including JEDEC trays and others.

CAM Data   Strip   Imaging
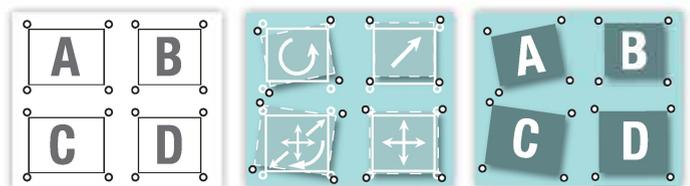
Partial Scaling enables sub-area registration and printing in one shot