THE LEADER IN SOLID SOLDER DEPOSIT TECHNOLOGY!

Precision Pad Technology was developed to dramatically increase first pass yields at assembly. PPT improves fine pitch solderability by forming solid solder deposits on all surface mount sites on wafers, ceramics, PCBs and other rigid or flexible substrates. These provide an excellent mating surface for surface mount components and virtually eliminate solder paste related defects such as solder balls, slumping and shorts.

PPT is compatible with a wide array of surface finishes including HASL, organic coatings and gold. Solder paste is printed using conventional methods. The RPU-5200 Reflow and Planarization System then forms the deposits in a single, brief, thermal excursion. Solder deposits are formed with controlled thicknesses between 0.0005"-0.0300" and uniformity of @ +/- .0002". While eutectic solder paste is most commonly used, other alloys can be employed to enable the end user to stagger reflow profiles at assembly, i.e. Sn96.5/Ag3.5 (221-245°C) or Sn46/Pb46/Bi8 (166-178°C).

Prior to assembly an adhesive flux is applied via stencil, spray, immersion or using a dispensing system. Flux chemistries available include no-clean, water soluble and rosin based formulations. The flux has sufficient tack properties to preclude parts from skewing during assembly when Z axis forces are present.

APPLICATION NOTES:

Application: Computer/.020" Pitch

A manufacturer of computers introduced the PPT process on its double sided products to:

- Reduce Assembly Steps from 10 to 4
- Increase Line Efficiency
- Eliminate Lead Coplanarity Defects
- Ensure Superior Solderability of Pd Plated Component Leads
- Significantly Improve Yields & Reduce Costs

Using conventional processes voids are not uncommon and necessitate costly rework. PPT allows a defined volume of solder to wet the component and can compensate for up to +/- .007" lead coplanarity. This manufacturer demonstrated that the only defects observed were related to bent leads or inaccurate placement.

Application: Edge Connector

Manufacturers using multi-tiered edge connectors and straddle connectors have found that PPT solid solder deposits can simplify the hot bar reflow soldering process, eliminate solder paste smearing, improve efficiency and reduce labor costs. By applying an SSD to all component lands, including edge connectors, mass reflow can be accomplished.

If the edge connector is to be soldered after mass reflow a higher temperature alloy can be used to ensure solder planarity and enable the assembler to implement automatic equipment.

Application: Flex Circuits

Flex circuits pose significant difficulties with conventional solder paste application and assembly processes. Leading manufacturers have found that SSD's dramatically improve first pass yields.

Larger flats, or panels, can be run in the PPT process and then fabricated to individual boards or arrays prior to assembly, ensuring economies of scale.

Application: Chip Scale Packages

CSPs satisfy the evolutionary growth in I/O densities demanded by increasing levels of silicon performance and integration. They provide improved performance, miniturization and the reduction of package contribution to the overall module cost. PPT enables the surface mount industry's existing infrastructure to cost effectively produce CSPs.

PPT can contain inordinately high volumes of solder on fine pitch devices, i.e. .0055" deposits on .010" sites are formed on an array. Problems associated with warpage or delamination of CSPs are reduced. Impediments associated with hot air solder leveling due to its lack of planarity are overcome by completely encapsulating the land in a solid solder deposit.

Application: µBGA with Blind Vias

An end user found that conventional assembly processing of µBGA devices with blind vias produced poor yields. The depth of the staggered vias on the surface mount site varied, creating problems associated with solder volume.

Solder paste was overprinted in the PPT process, and excess paste wicked up above the mesh, used as a die or a mold, in the Planarization System. Solid solder deposits were formed within tolerances of +/- .0002" leading to excellent first pass yields.

For information please contact us at:
Mask Technology, Inc. * 2601 So. Oak St. * Santa Ana, CA 92707
Ph: (714)557-3383 * Fax: (714)557-4PPT * Website: masktek.com