

Condura® Metal Ceramic Substrates with Pre-applied Solder

Pre-application of flux-free solder pads on Condura® DCB substrates is one of the processing features under Condura®+. As a result, the die soldering process is dramatically simplified, since solder paste printing and flux residues cleaning are not needed anymore.

Pre-applied DCBs allow for significant cost reduction for die attachment and open ways to an improved overall process yield.

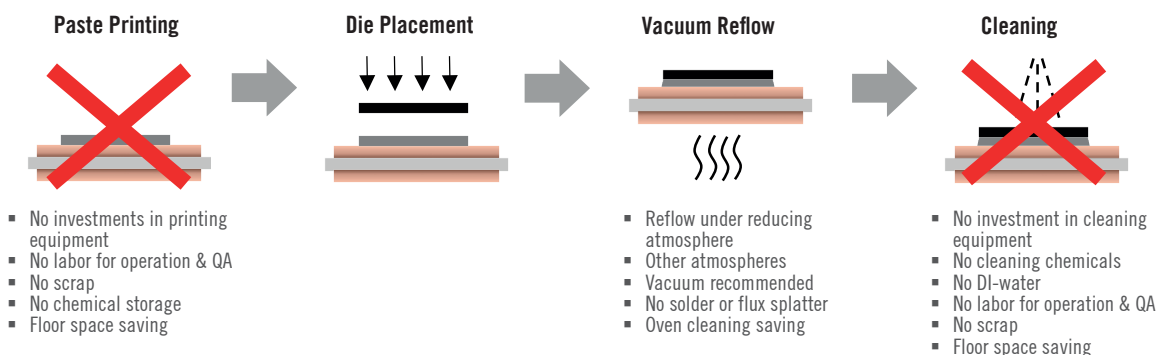
The solder material is perfectly matched to the DCB substrate, which is applied in right volume and at right position and form.

Fixation dots deposited on the solder pads ensure that the dies do not move once placed. Upon reflow, the fixation material vaporizes without leaving any residue. The dimples and solder stop in the previous designs can be removed enabling higher packaging density and improved reliability.

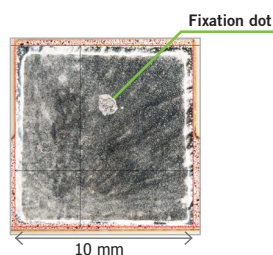
Key Features

- 50 % fewer process steps for die soldering
- No cleaning steps required
- Lower investment
- No solder or flux splatters
- No need of solder stop (e.g. dimples) on DCB
- Improved yield
- Lower production risks
- Production cost savings

The die attachment process is dramatically simplified

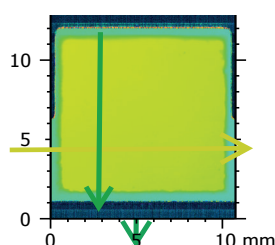


Die attachment process using DCBs with pre-applied solder



Pre-applied solder pad

- Flux-free solder is brought onto the DCB surface
- A fixation dot applied on top of the pad will ensure that the placed dies remain in place when transferred to the reflow oven



Levelness

- The process is done in a way that ensures a flat solder pad



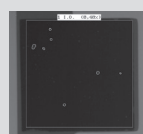
Die attachment

- The die is simply placed on top of the pre-applied solder pad
- The reflow is done under formic acid; vacuum is recommended
- No splatter visible

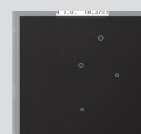
The fixation dot

Solder layer X-ray after die attach

Without fixation dot



With fixation dot



Auger investigations after die attach

No contamination related to the fixation dots could be detected on top of or besides the die or on the bonding pads

Bonding wire pull & shear tests after die attach

Results are comparable to those obtained with a solder paste based process

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