

0201 Chips

(red: 0201 chip package, blue: copper layer, magenta: stencil)

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To eliminate the insufficient solder volume problem, the stencil aperture volume needs to be increased to cover the additional solderable area. This will also help to minimize tomb stone and skewing problems by preventing the solder from wetting away from the 0201 termination to fill the additional solderable area. As the solder wets away from the termination, it can shift the 0201 package. This shift creates uneven wetting forces on the 0201 terminations.

The oven settings also have a huge influence on tomb stone problems. If the temperature increases too quickly, the flux does not have enough time to thoroughly remove the oxidation from the terminations and land pads. Any oxidation on the surface will slow down the wetting rate of the molten solder.

A profile length that is too long also has a negative effect. The flux can be exhausted prior to liquidus and oxidation starts to build back up again on the metal surfaces. A nitrogen atmosphere minimizes the oxidation build up, but can actually worsen the tomb stone problem by keeping the metal surfaces cleaner for a longer time. This increases the wetting strength of the solder across the land pad and termination.

This solution will most likely involve the recommended stencil changes as well as modifications to the oven settings.