

## Standoff Height

Another problem created by a wide variation in fine pitch package construction is the control of standoff height, or the height a component sits above the PCB. This height is critical in some applications because of thermal adhesive bonding, air circulation for cooling, clearance for cleaning, or neighboring components, or visual inspection. On Figure 4, the reason that dimension "C" has a range from .140" to .165" is because the package vendor can't precisely control ceramic thickness and lead exit positions. Any variation in this body thickness dimension will produce a variation in standoff height ("H" on Figure 4) unless each package is measured prior to forming. Once a component is measured, the tool's anvils are adjusted either manually or automatically to produce a consistent standoff height.

## Co planarity

Coplanarity is the relationship between the lead-frame plane and the PCB plane. Most fine pitch parts are now machine placed, which requires coplanarity of .004" / .1016 mm / 101.6 Microns total deviation". The ability to meet this specification is a function of package construction and tool design. If the leads don't exit the package in one consistent plane, or if the edge distance is too narrow, the formed part may not be coplanar.

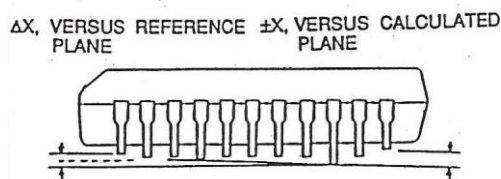


Figure 9: Lead Coplanarity