



Figure 1A - Adhesive Tape



Figure 1B – First Chip Attachment

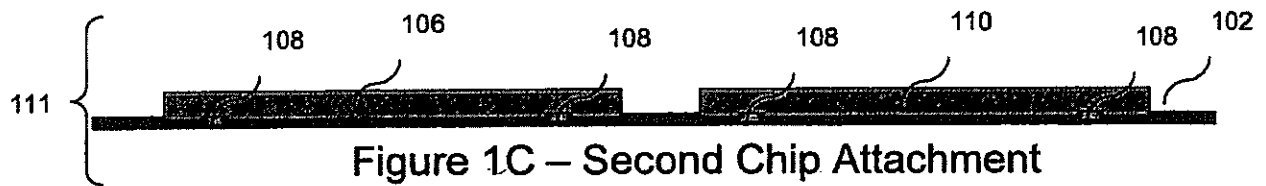


Figure 1C – Second Chip Attachment

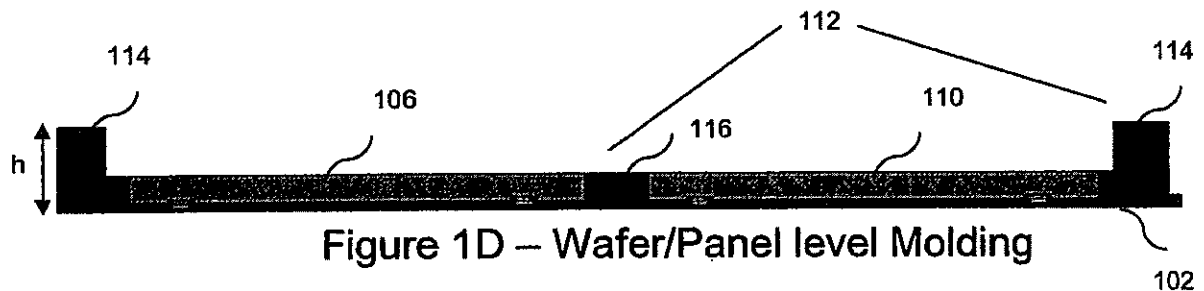


Figure 1D – Wafer/Panel level Molding



Figure 1E – Tape Removal

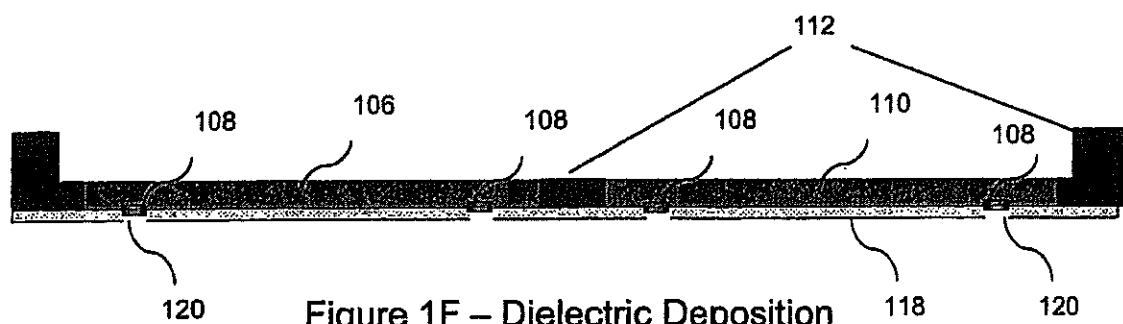


Figure 1F – Dielectric Deposition



Figure 1G – Metallization

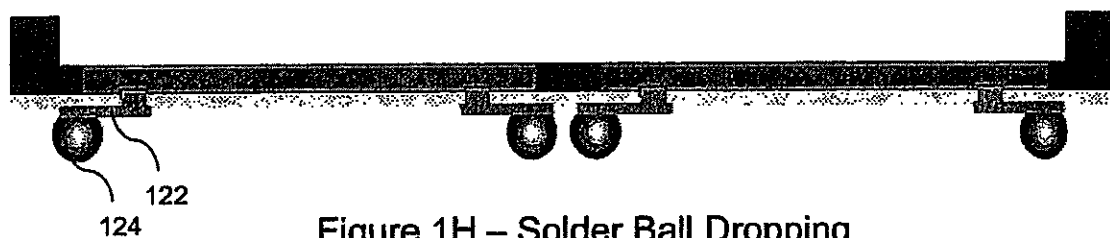


Figure 1H – Solder Ball Dropping

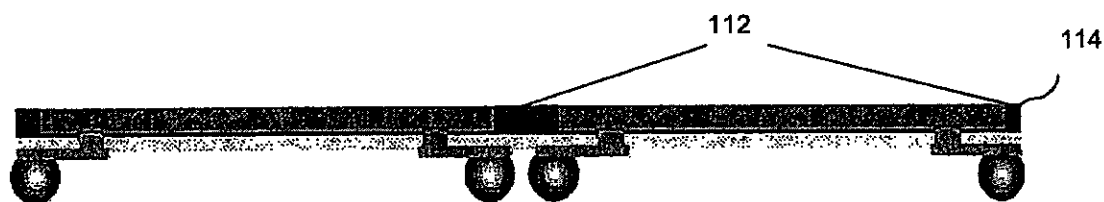


Figure 11 – Edge Ring Cutting

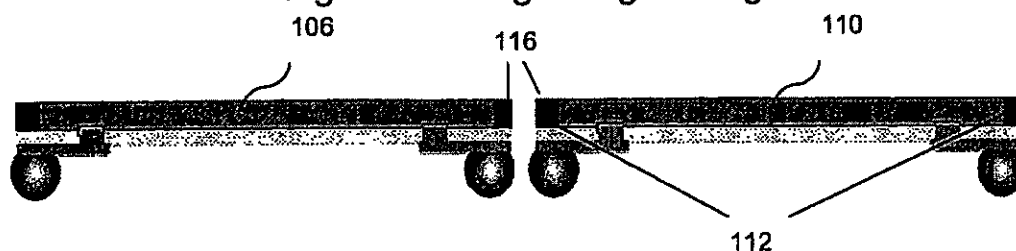
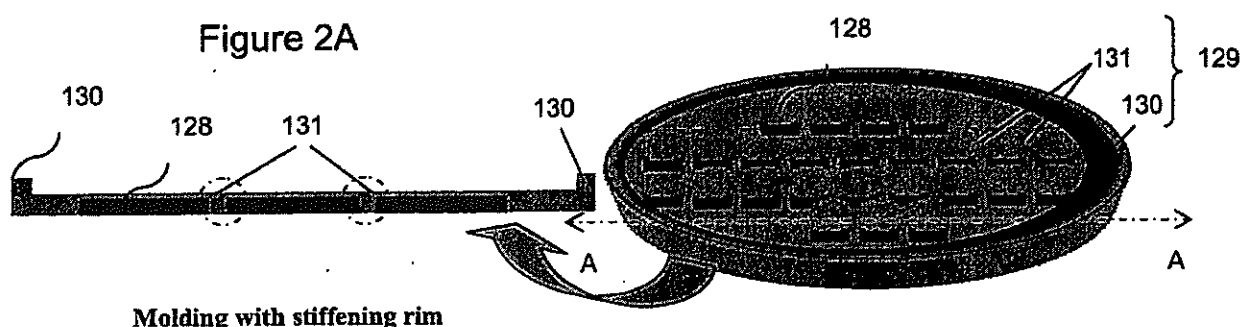


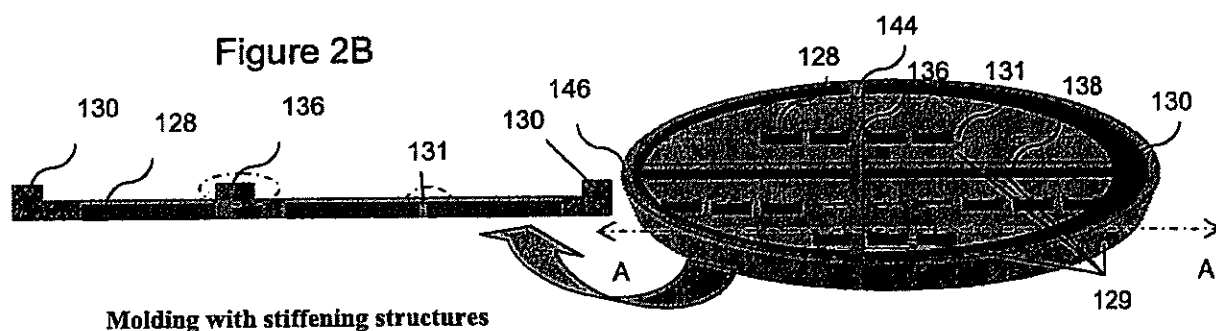
Figure 1J – Package Singulation

Figure 2A



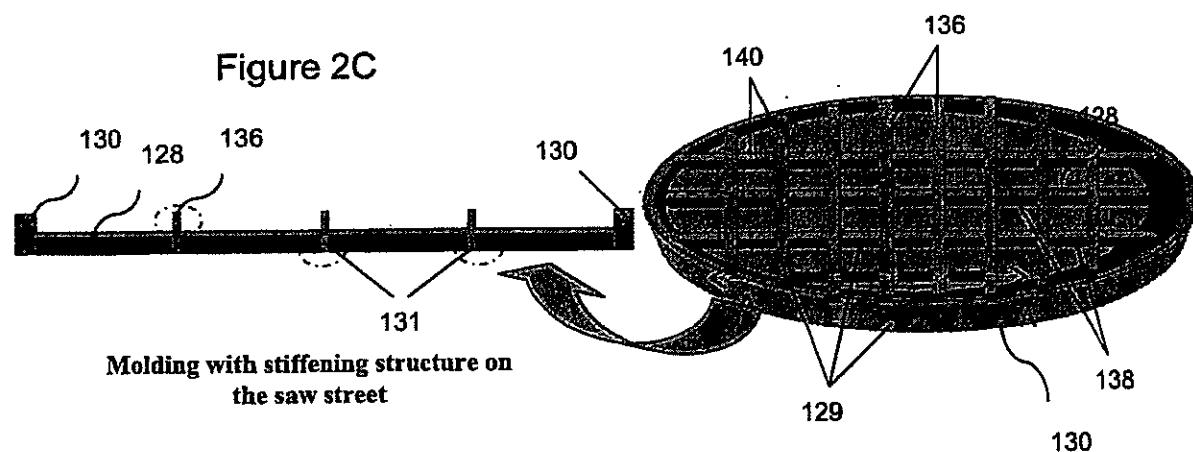
Molding with stiffening rim

Figure 2B



Molding with stiffening structures

Figure 2C



Molding with stiffening structure on the saw street

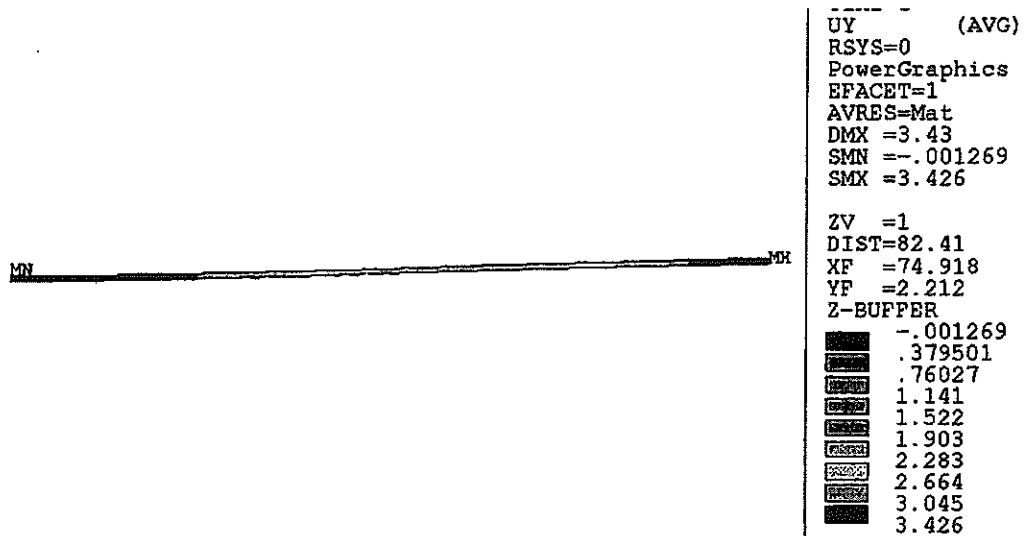


Figure 3A Case 1 (Conventional Molding)

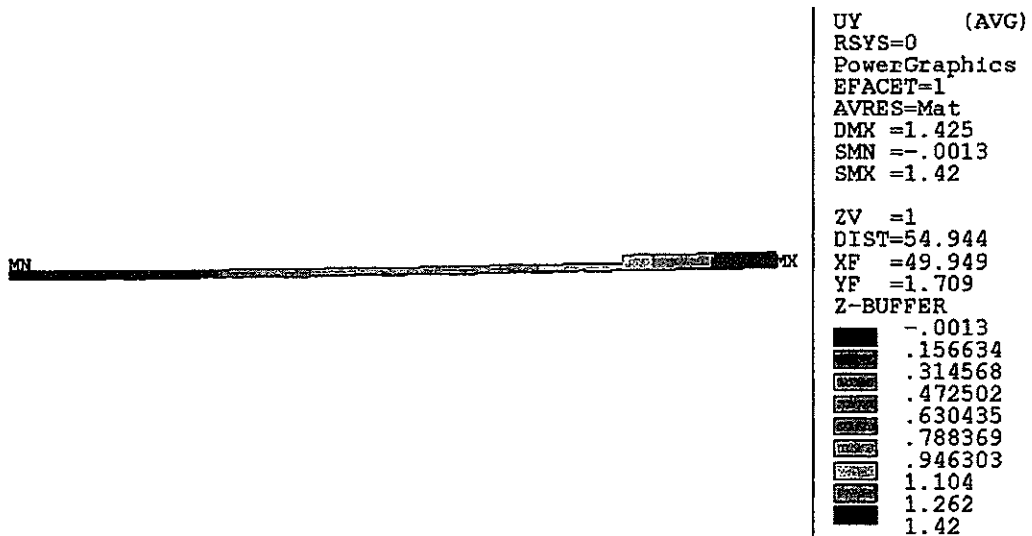


Figure 3B Case 2 (With stiffening rim)

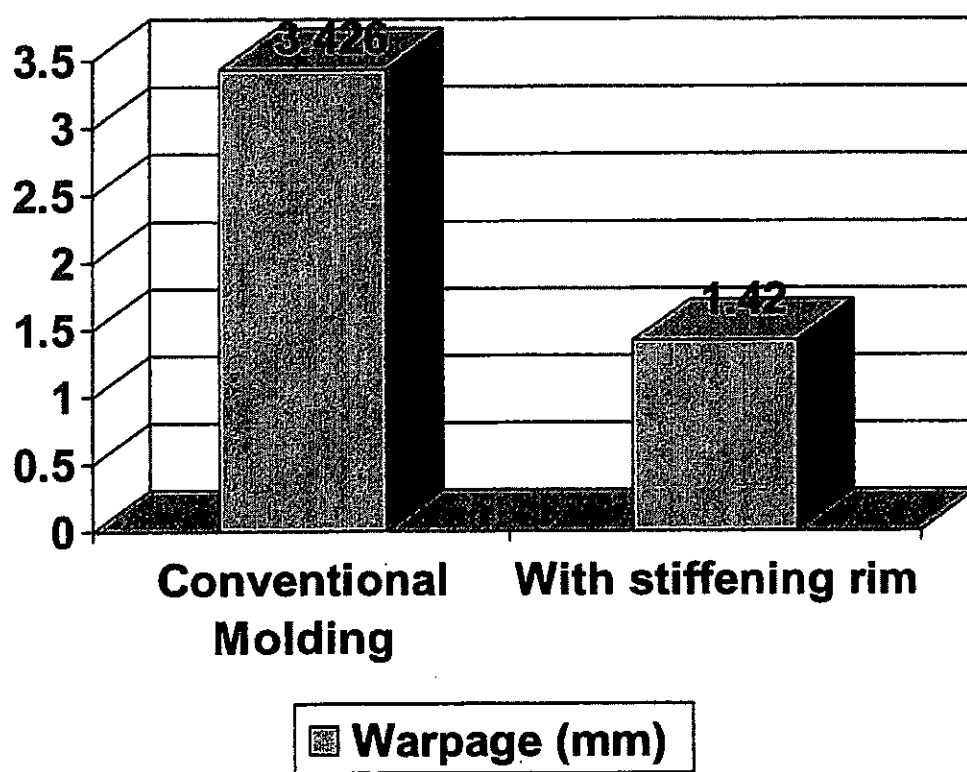


Figure 4

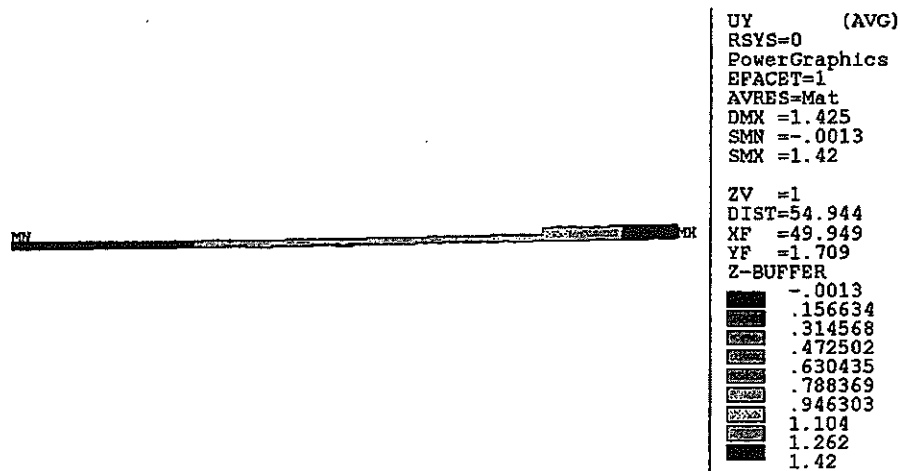


Figure 5A Warpage = 1.42mm for rim width = 20mm

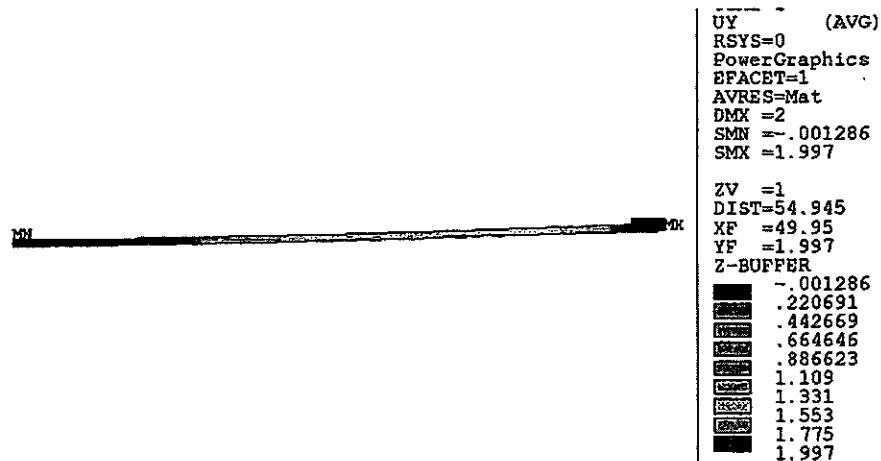
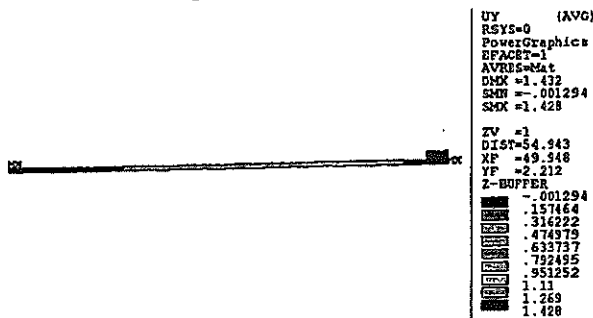


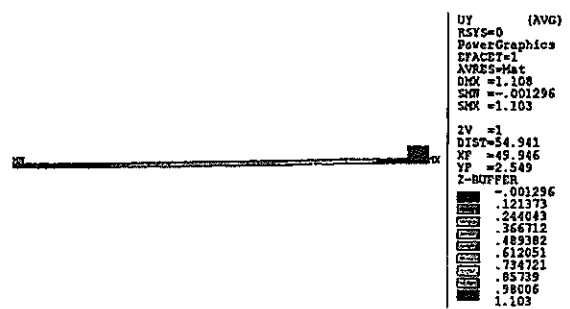
Figure 5B Warpage = 1.997mm for rim width = 5mm

Figure 6A

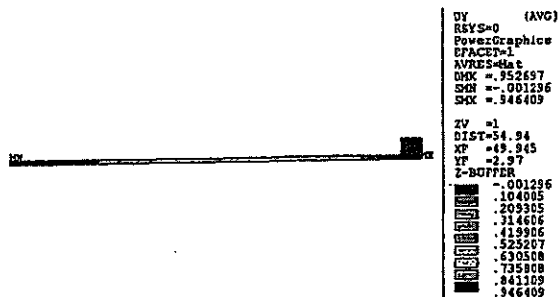


Warpage = 1.428 mm for molding
 rim thickness = 2mm, width 5mm

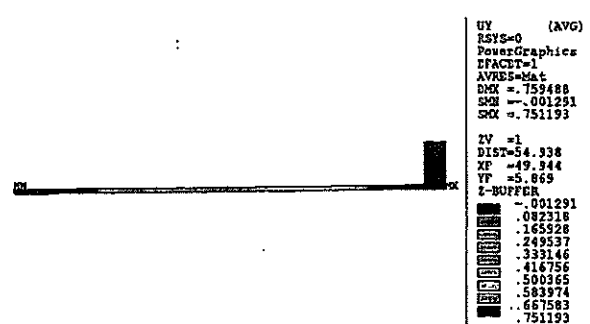
Figure 6B



Warpage = 1.103 mm for molding
 rim thickness = 3mm, width 5mm



Warpage = 0.9464mm for molding
 rim thickness = 4mm, width 5mm



Warpage = 0.7512 mm for molding
 rim thickness = 10mm, width 5mm

Figure 6C

Figure 6D

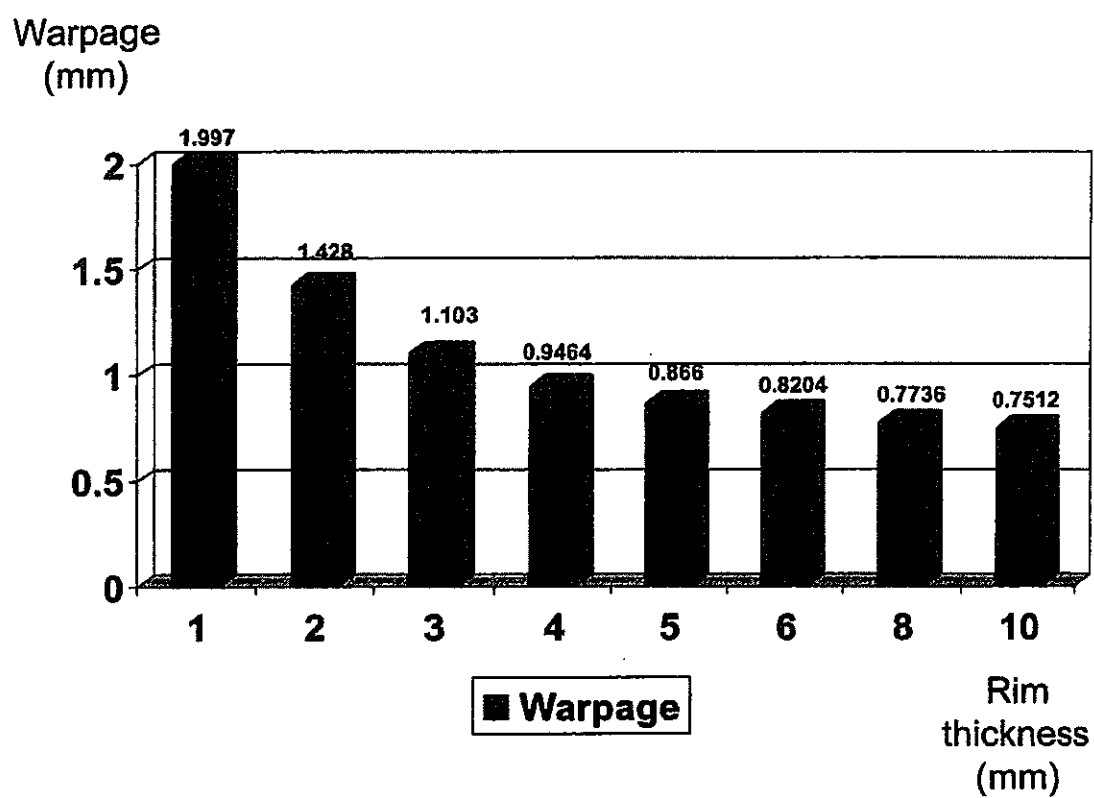


Figure 7

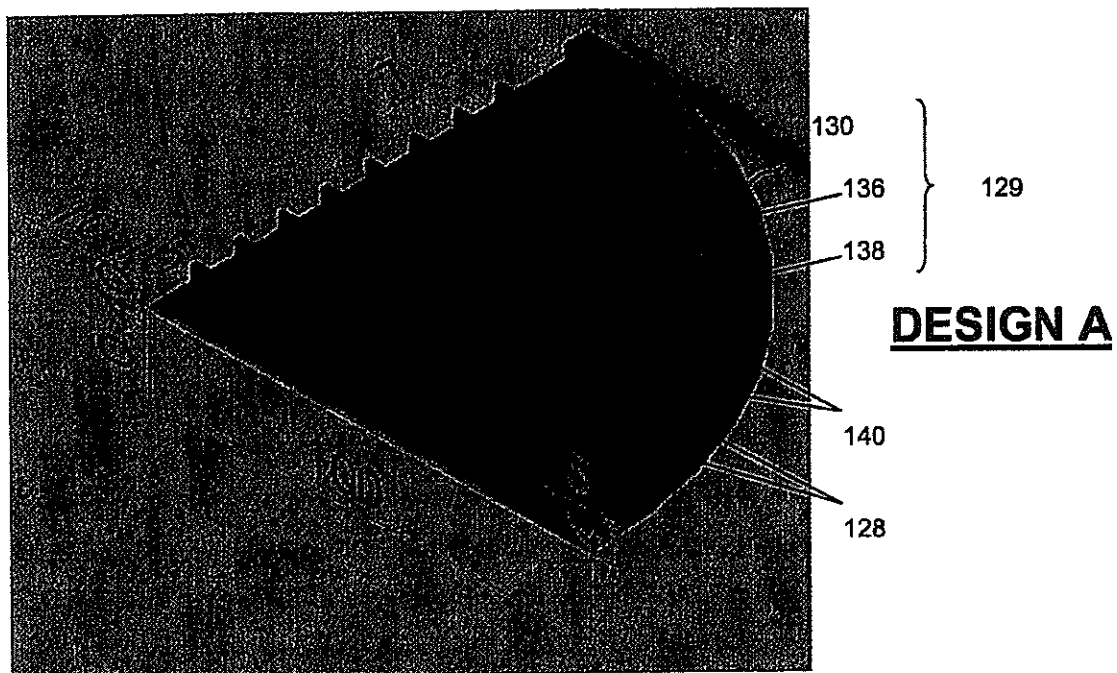


Figure 8A

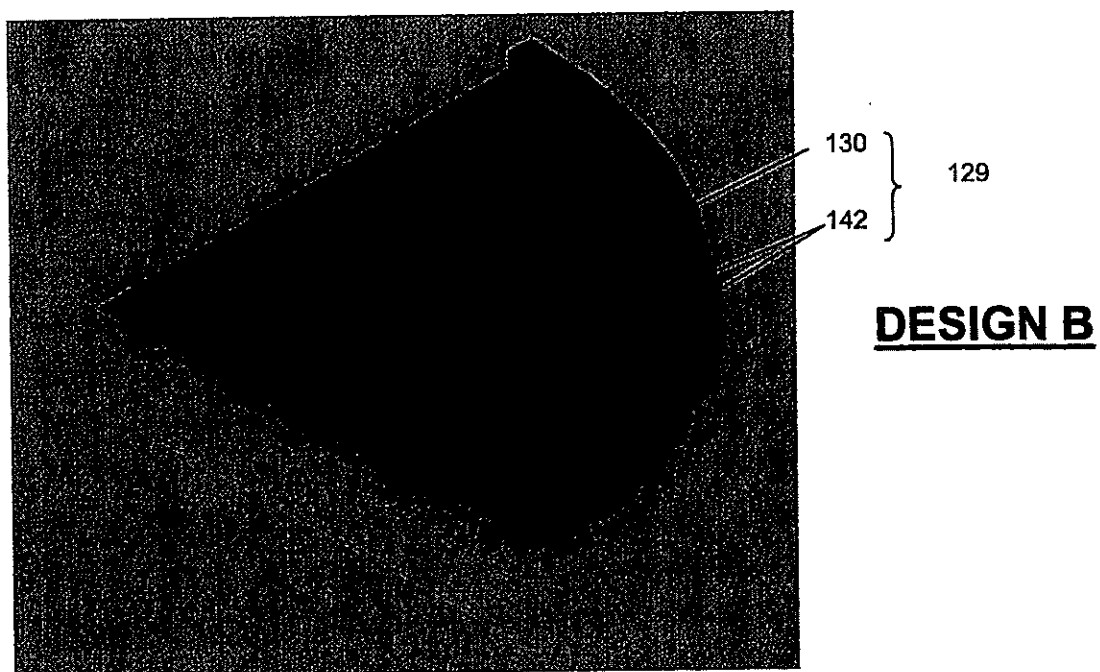


Figure 8B

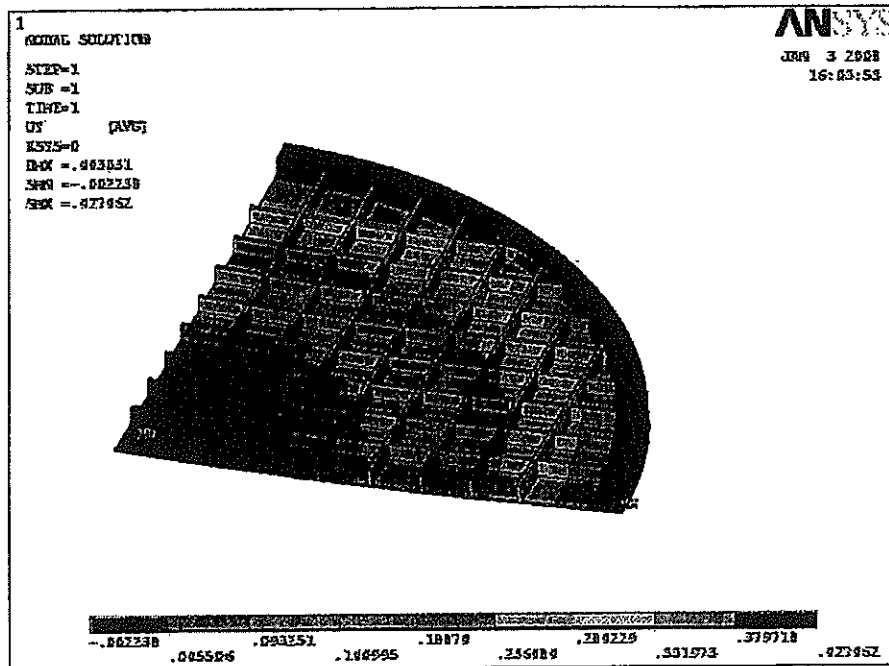
DESIGN A

Figure 9A

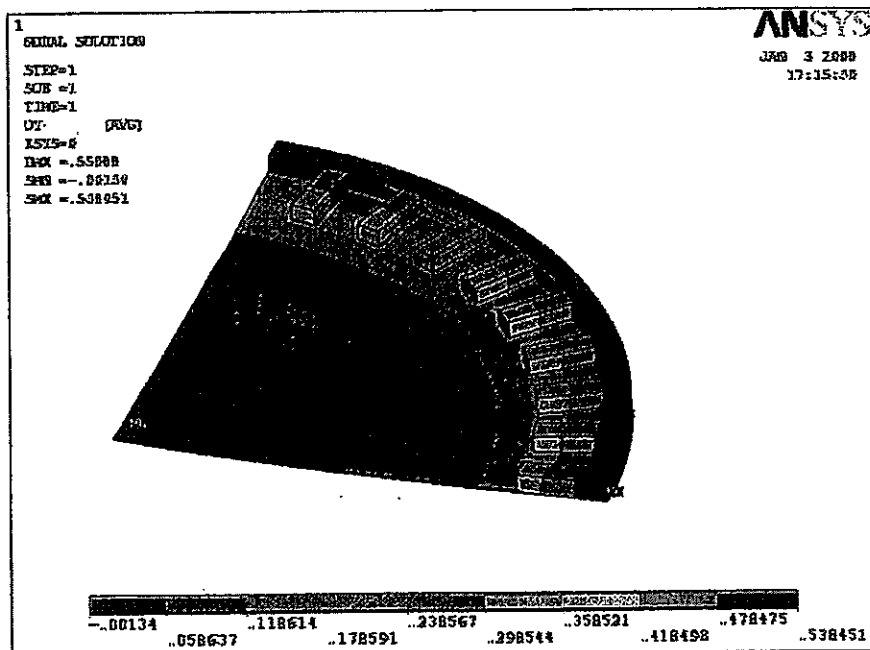
DESIGN B

Figure 9B

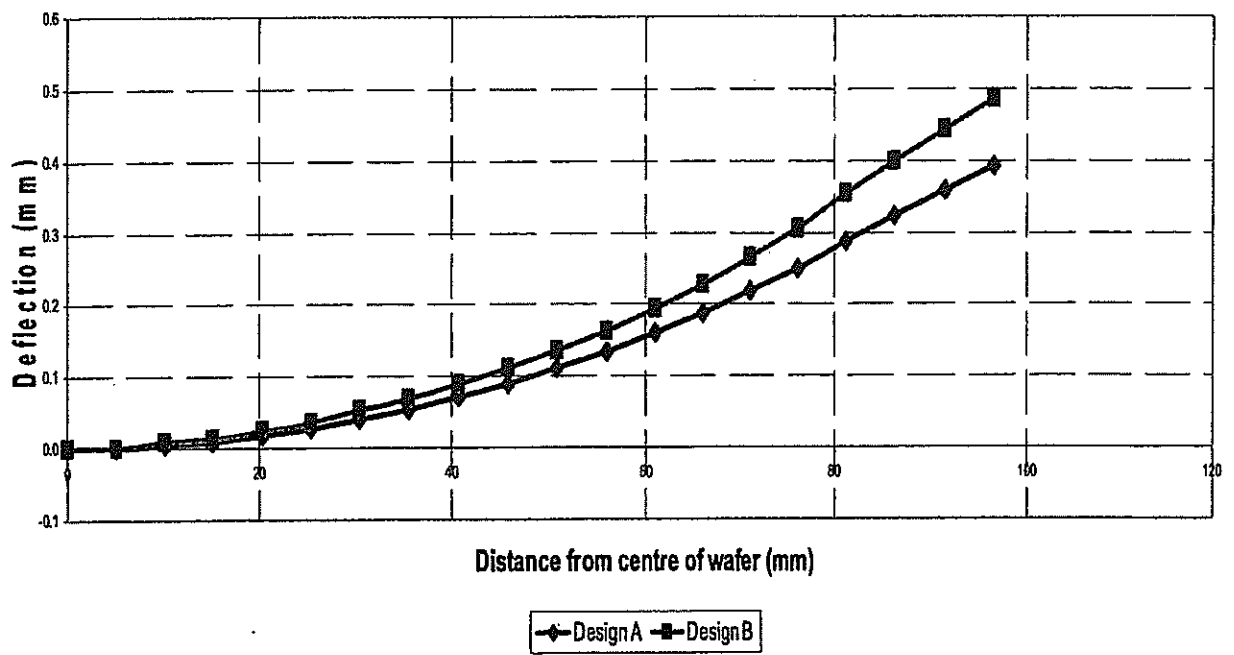
Warpage result

Figure 10