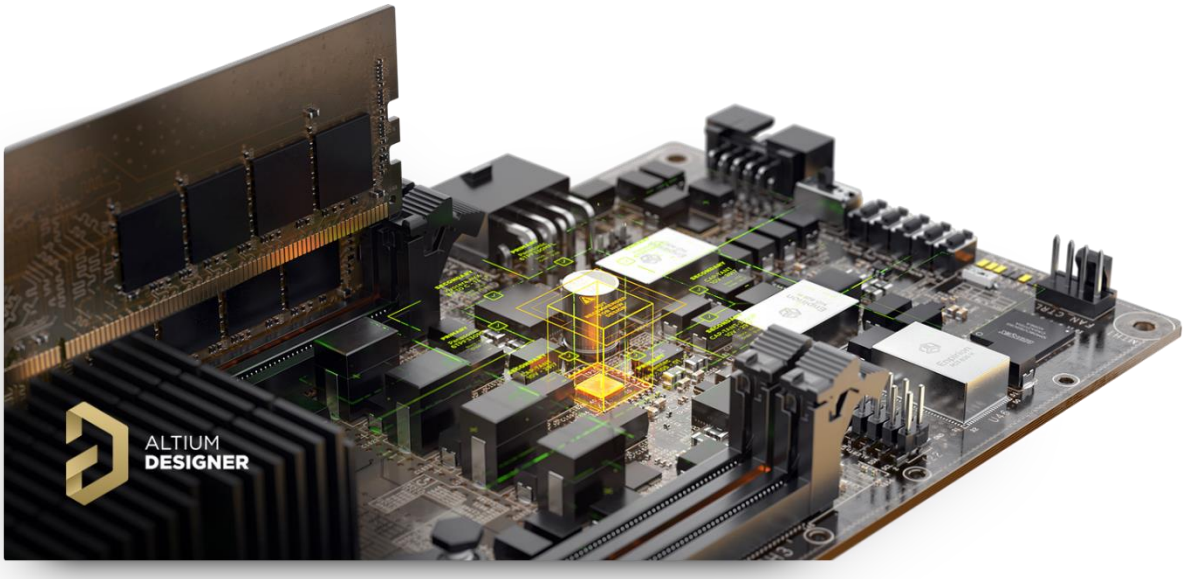

Altium Designer

Advanced Course

Module: Teardrops

Table of Contents

Teardrops

1.1 Purpose

Teardrops are often used at the connection point between a track and a pad to prevent drill breakout during board manufacture.

1.2 Shortcuts

Shortcuts when working with Teardrops

F1:	**Help**
T-E:	**Teardrops**
R-M / Ctrl+M:	**Measure Distance**
L:	**View Configuration Panel**
Shift+C:	**Clear**
CTRL+S:	**Save Document**

1.3 Preparation

1. **Close all existing projects and documents.**
2. Open the `Teardrops.PrjPCB` project found in its respective folder of the Advanced Training.

1.4 Teardrop Menu

1.4.1 Teardrop Application

3. Open the PCB `Teardrops.PcbDoc`.
4. Click **Tools » Teardrops** to open the Teardrops dialog as show in the Figure 1 below.
5. Select the **Add** radio button in the *Working Mode* section to enable the generation of teardrops in the example.
6. Select the **All** radio button in the *Objects section* to have teardrops added to all applicable objects.

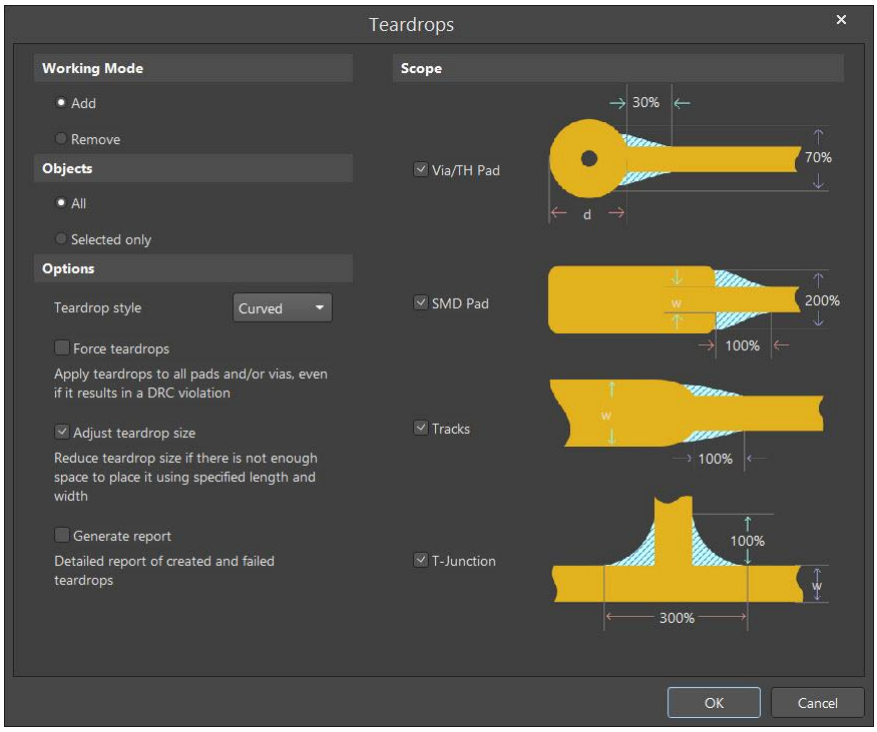

Figure 1.Teardrops dialog

7. Set the *Teardrop style* dropdown menu to **Curved**, as shown in Figure 2 below. This will create arc teardrops on all applicable objects such as Vias, SMD Pads, Tracks, and T-Junctions.
8. At the *Options* dialog, make sure to enable **Adjust teardrop size** and then disable all other options. This will be revisited later. See Figure 2 below.

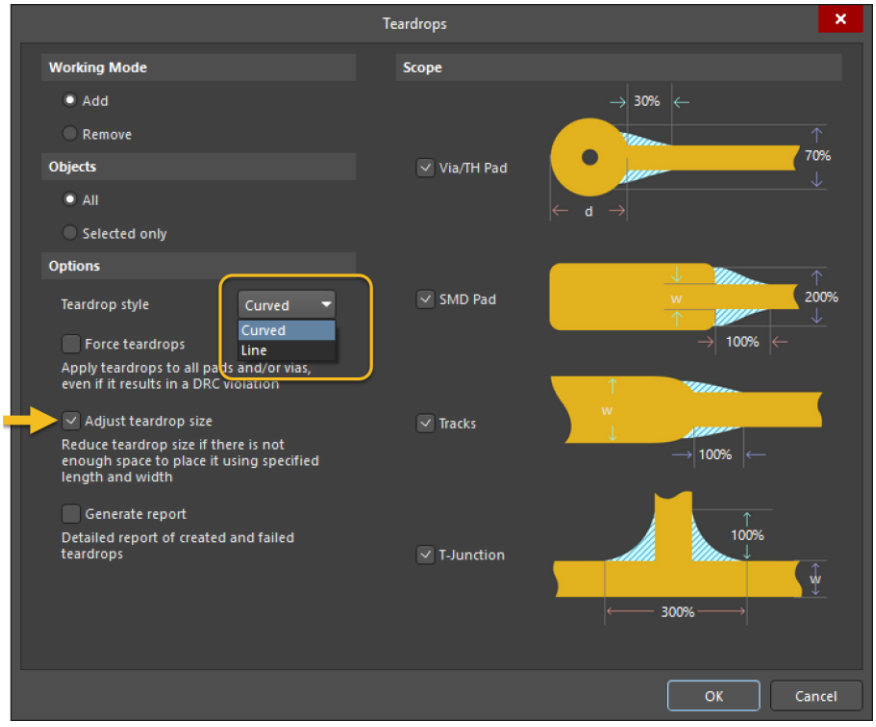

Figure 2. Teardrop Options Dialog

9. Click the **OK** button.

1.4.2 **Teardrop Check**

10. Navigate to the Through Hole Pad example in the PcbDoc and observe if the Pad acquired teardrops around the Via. The trace should be connected as shown in Figure 3 below.

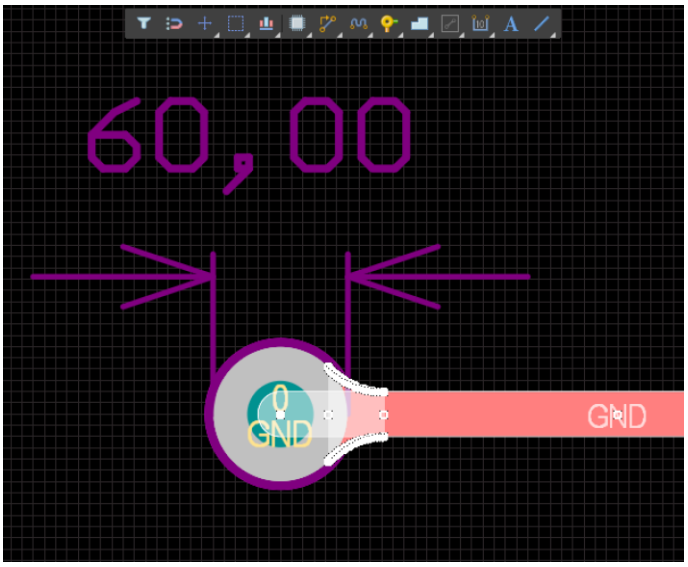

Figure 3. Via with teardrop

11. To confirm if the applied teardrop followed the specifications set forth in the teardrop dialog, open the *View Configuration* panel using the **Panels** button.
12. Click on the *View Options* tab in the *View Configuration* panel and then Click on the **Pads Draft** check box. See Figure 4 below.

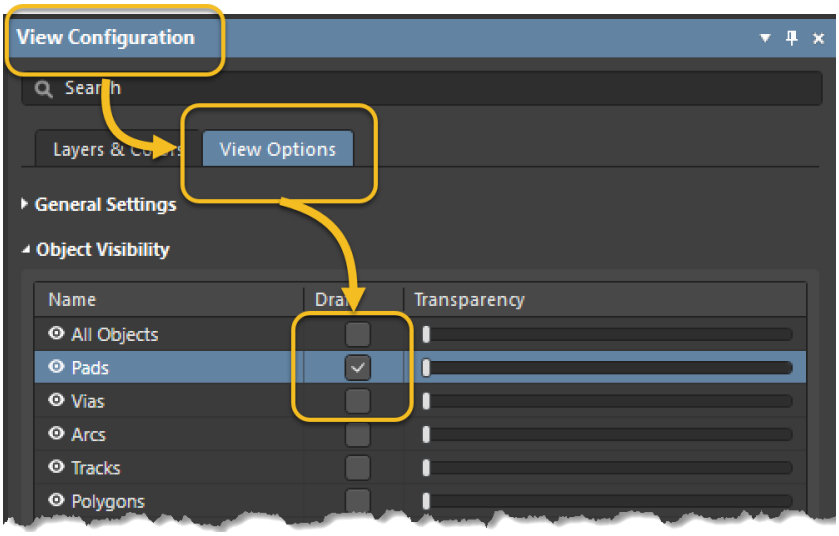

Figure 4. View Configuration Dialog

13. Setting objects into draft mode will change the appearance of an object from a solid to an outline view. See Figure 5 below.

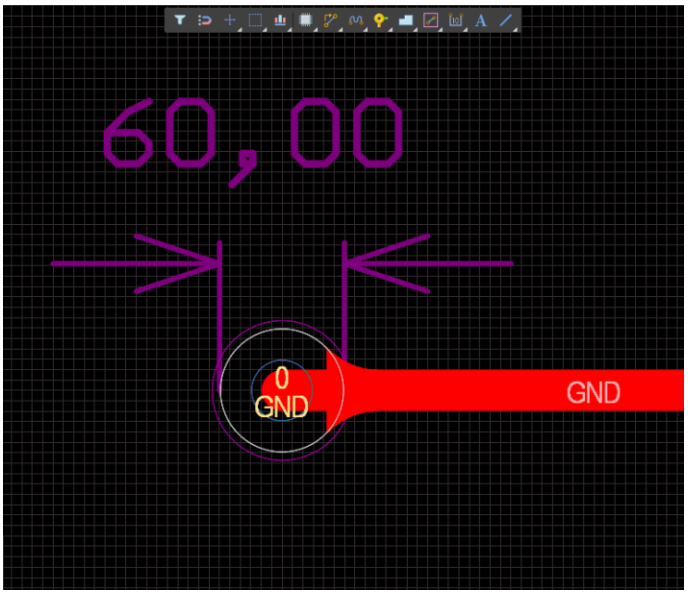

Figure 5. Draft Mode View

14. To measure the teardrop length and width accurately, set the snap grid to 1mil. You can set this by pressing **G » 1mil**.
15. Zoom in towards the circular Through-hole Pad
16. In the active bar, change the Objects for Snapping dropdown from **Custom**/**All-On** to **All-Off** (if needed). Then enable only the Regions option, Figure 6

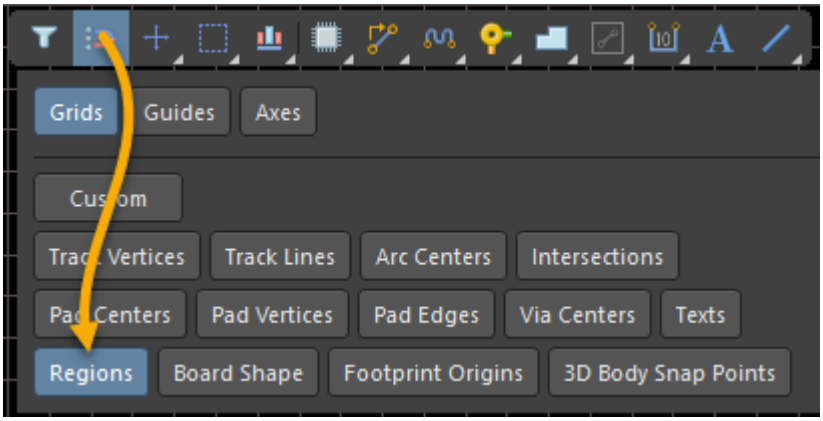

Figure 6. Active Toolbar with Snap Options

17. Access **Reports » Measure Distance**.
18. The mouse cursor will now turn into a crosshair. Begin selecting the top tip of the arc as your first point and then the bottom tip of the arc as your second click. See the Figure 7 below. Pressing **Ctrl** during Measure Distance allows you to temporarily deactivate the Snap to Grid, to position the cursor at the top tip and bottom tip of the arc.

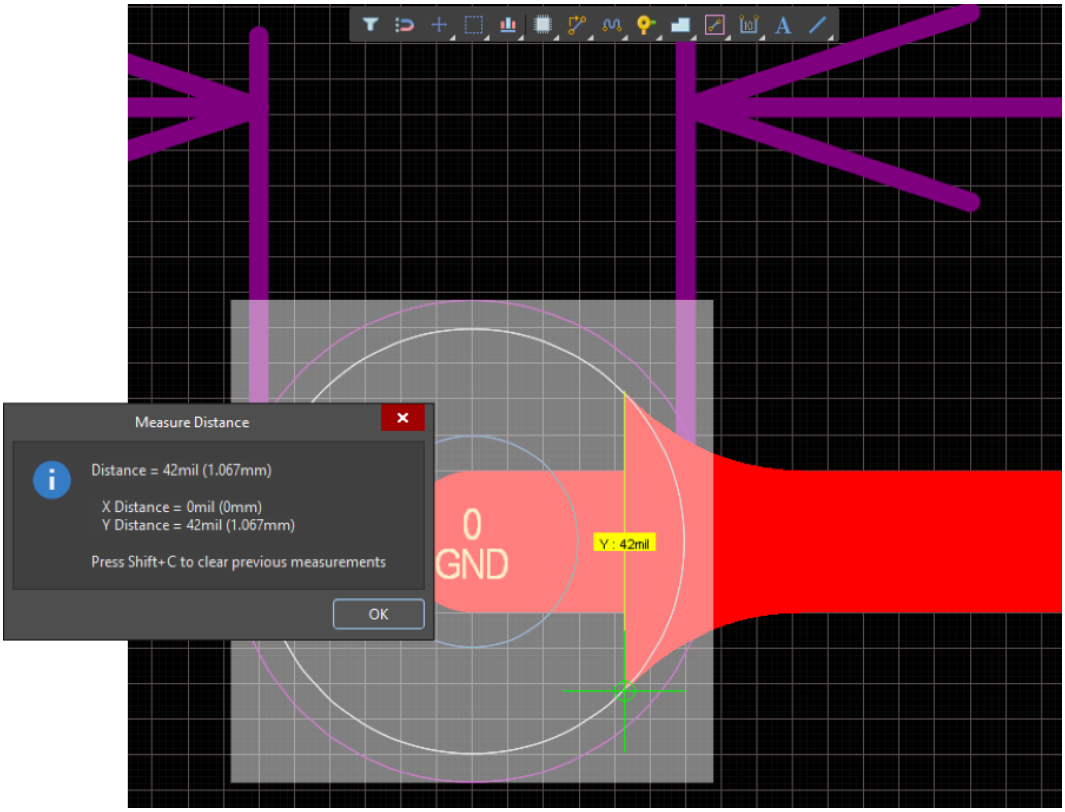

Figure 7. Measuring Teardrop Height

19. The diameter of the Pad is 60mil. By default, the value for Via or Through-hole Pad teardrops is set to 70% for width and 30% for the length. Confirm if the measurement from teardrop tip to tip is at least 70% of the width.
20. Set Object for Snapping back to snap for all objects.
21. Press **Shift+C** to remove the overlay information from the measure command.

1.5 Removing Teardrops

22. Access **Tools » Teardrops** to open the Teardrop dialog.
23. Select the **Remove** radio button in the *Working Mode* section to remove the teardrops we created in this exercise.
24. Select the **All** radio button in the *Objects dialog* to have all applicable objects remove teardrops.
25. Click the **OK** Button.
26. Ensure that you have completely remove all teardrops in the design.

1.6 Generating Teardrop Report

27. Access **Tools » Teardrops** to open the Teardrop dialog.
28. Select the **Add** radio button in the *Working Mode section* to initiate the generation of teardrops in the next example.
29. Select the **All** radio button in the *Objects* section to add teardrops to all applicable objects on the PCB.
30. In the *Options* dialog, enable **Adjust teardrop size** and **Generate report**. See Figure 8 below.

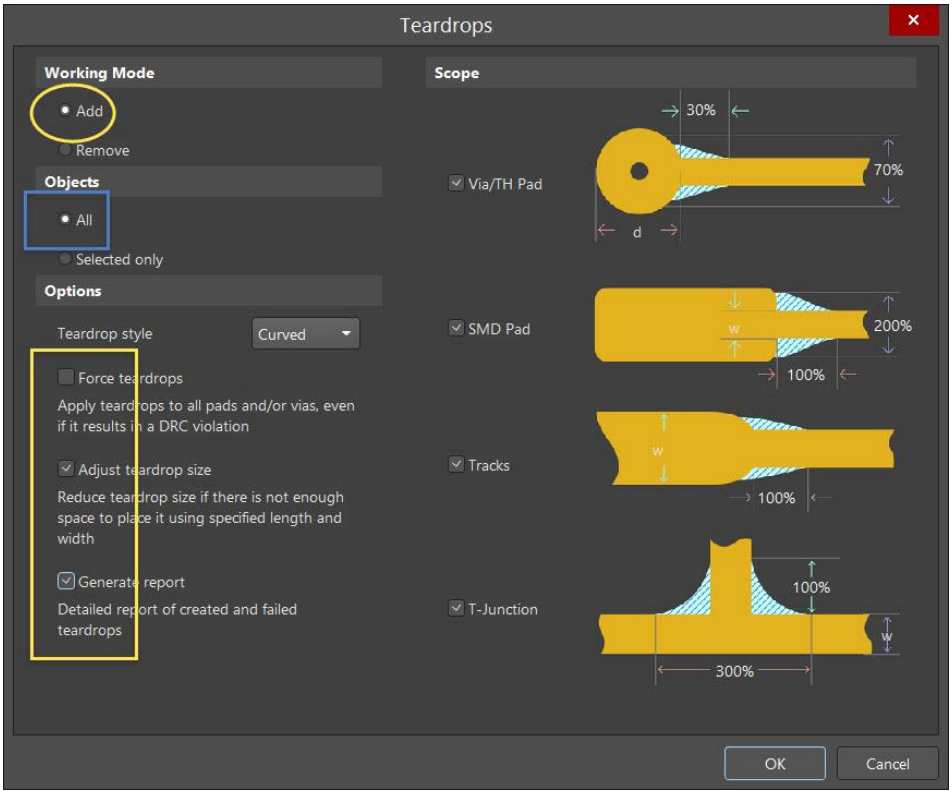

Figure 8. Generating a Teardrop Report

31. Click the **OK** button.
32. After executing the Teardrop command, a text report will be generated that indicates how many vias, and/or pads were modified by the teardropping algorithm, as well as a detailed listing of failures.

33. The report also provides the X & Y coordinates of all modified Pads or Via's in the workspace. See the Figure 9.

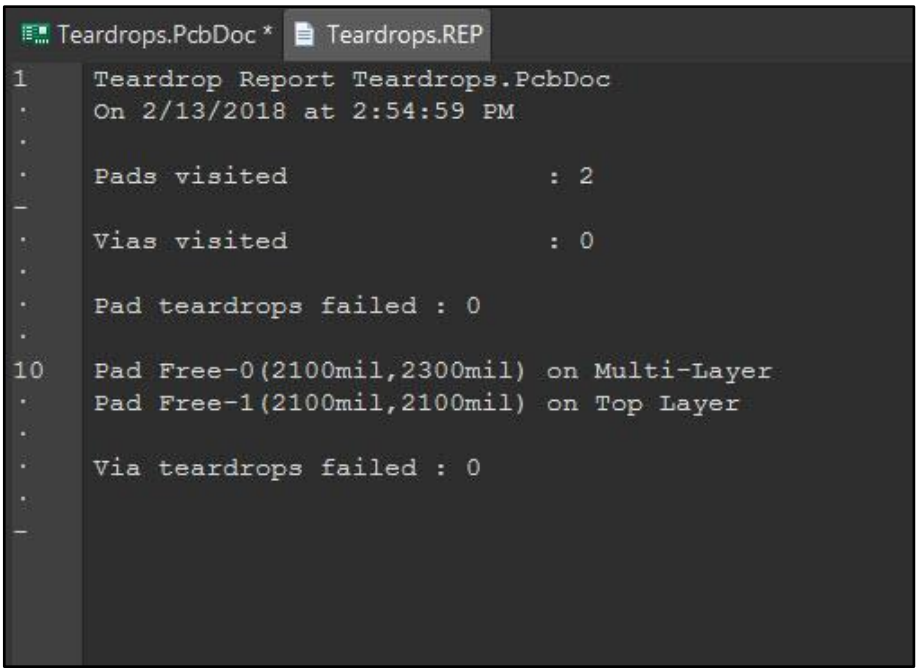

Figure 9. Teardrop Report

34. Close the project and any open documents.

Congratulations on completing module

Teardrops

from the

Altium Designer Advanced Course

Thank you for choosing Altium Designer