

Centroid / XYRLS / Pick and Place

Screaming Circuits

Call it what you may, but surface mount assembly robots need this magic file to determine where to place your components and how to orient them. We call it a Centroid. Others may call it something else, but it's all basically the same. In our case, the basic format is comma delimited, in mils:

```
Ref designator, Layer, LocationX, LocationY, Rotation  
C1 , Top , 0.5750 , 2.1000 , 90
```

That's not too difficult. Most CAD programs will automatically create this file for you. Eagle doesn't natively, but we have a ULP to do it for you in Eagle ([Downloaded here](#) [1]). Again, no problems here. Mostly...

I say mostly because, at this point, you are at the mercy of the person who created the CAD library part. Provided they center the origin and follow the IPC for orientation, everything should come out just fine. Unfortunately, we do find parts that don't follow those rules. We'll do our best to catch and correct such things here, but for maximum reliability, check you library components to make sure. We find the problem crops up most commonly with passives.

IPC says that zero orientation for two pin passives is horizontal, with pin one on the left. For polarized capacitors, pin one is (+). For diodes, pin one is the cathode. They note that pin one is always the polarity mark pin or cathode. Pin one is also on the left for resistors, inductors and non-polarized capacitors, but left vs right doesn't matter so much with non-polarized things. The most common orientation error we see is to have the "zero rotation" 270 degrees off from the IPC standard.

Every now and then we'll find that someone assumes that since usually the anode on a diode tends to be on the positive side, that the anode should be pin one. Nope. Nope. Nope.

Duane Benson

Is it pulling electrons or pushing holes?

[SOURCE](#) [2]

Source URL (retrieved on 11/28/2014 - 5:45pm):

<http://www.ecnmag.com/news/2011/04/centroid/xyrls/pick-and-place>

Links:

[1] <http://i.screamingcircuits.com/docs/ScreamingCircuits%20centroid%20ULP.zip>

[2] <http://blog.screamingcircuits.com/2011/04/centroid-xyrls-pick-and-place.html>

