

Problem Description:

Customer was having various issues with LED device, their message was: **“The current stencil design as per manufacturer recommendation but still create a lot defects (Solder Bridge, Solder Balls, Component Tilt, Skew... etc.)”**

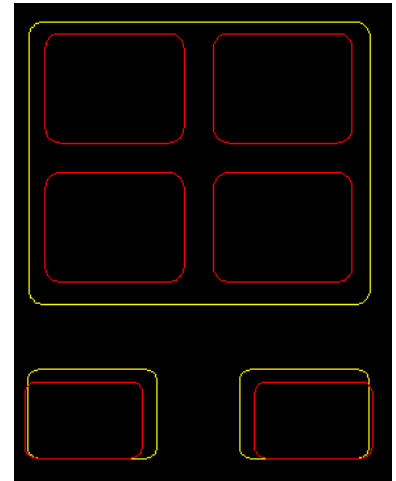


Recommendation:

I recommended the design shown in the picture to the right (Red pads are stencil Apertures and Yellow ones are SMT Pads).

The 4 windows would help getting a uniform distribution of paste volume underneath the large pads, instead of centering solder in the middle using one brick, as that what might be causing the tilt & skew. With four bricks, solder would wet uniformly and not cause such defects.

For the terminal apertures, I recommend reducing the size of the apertures to reduce the volume of solder paste, and to move them apart to reduce the possibility of bridging, also to shift the apertures downward to help eliminating solder balls of being formed underneath the chip.



Customer Feedback:

After running the assembly, customer sent the following feedback:

The stencil design is working fine.

There was 20% void on the LED's large aperture but meet the customer specification.

Problem Description:

Customer was having a problem with a LED lamp device not wetting on one of the terminals as shown in the picture. The problem was happening randomly, not happen every time and not at the same location every time they run the assembly!

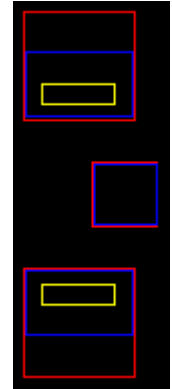


Recommendation:

Although poor wetting issues are usually due to the finish of the SMT pads and/or the finish of the component terminals, but I read once that reducing solder volume might help, so we can give this a try to hopefully resolve the defect.

When comparing the component terminals in the datasheet to the SMT pads, there are too much paste would be released at the outer edge of the component as shown in the image which has SMT pads in Red and terminal in Yellow, that amount can be reduced to something more acceptable.

I recommend the design shown in the image which has the apertures in Blue, I reduced solder volume by reducing the aperture size at the back end of the terminals.



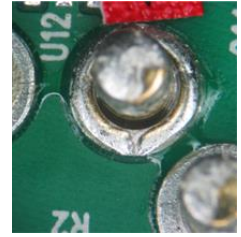
Customer Feedback:

After running the assembly, customer sent the following feedback:

Modification works well, please apply this to all coming stencils!

Problem Description:

Customer stated that their product historically had insufficient solder fill on the pogo pins at some connector locations. Their old stencil was 5 mil and the aperture was cut 1:1. They wanted to redesign the bottom side stencil (where the pins are placed) to have 100% fill solder of the barrels and try to eliminate the touchup that was required for their assembly.



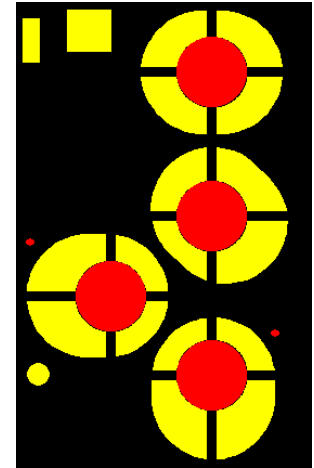
Recommendation:

100% barrel fill is very hard to achieve as it would require very big apertures or too thick stencil, and considering the other components around the through hole components in this assembly the only option would be to use a step up stencil.

The other issue with this assembly is that the pins are too wide and pushing solder paste through the barrel to the other side of the PCB, for such application we may use a wagon wheel design to not print over the pins.

For PIP applications the stencil should print double the required solder paste volume as solder paste is 50% solder powered and 50% flux. To get 100% barrel fill, the stencil needs to be stepped up to 10mil thickness for the area where the connectors are, and to enlarge the apertures by 40% more than the old stencil aperture. Due to the very big apertures, the location of them needs to be shifted to maintain at least 15mil gap.

The image to the right shows the recommended stencil apertures (Yellow) aligned with the through hole pads (Red)



Customer Feedback:

After running the assembly, customer sent the following feedback:

I'm please to share with you all that the recent stencil you designed and provided to us was a great success! I'm including a picture of the new stencil results, as you can see, the new stencil achieved what we had hoped for (complete barrel fill). There were no other issues reported with the other locations and the production team is quite happy that they no longer are required to touchup these assemblies. Great job and thank-you very much!

