



FINELINE

The Global PCB Experts

Benefit and usage of thermal pads

Problem Solving through Technical Support

Customer case study Finnish region

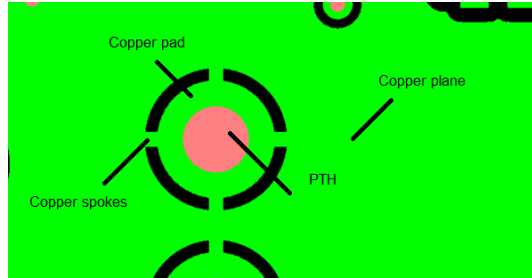
- Problem - Soldering of the PCB
- Goal - To create a more consistent process and thus, increased yield
- Solution - Eliminate the problem by amending the PCB design
- Additional Benefits - Fewer errors in AOI, saving time and giving higher yield and quality

Problems of soldering without thermal pads

When soldering PCBs with large copper planes where through hole components and SMD components are mounted, there is a risk that heat and soldering is lost in the large surrounding copper planes if the pads are in direct contact with the copper plane.

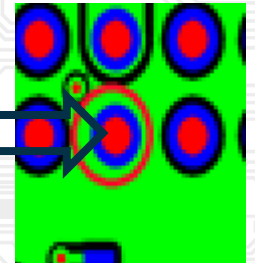
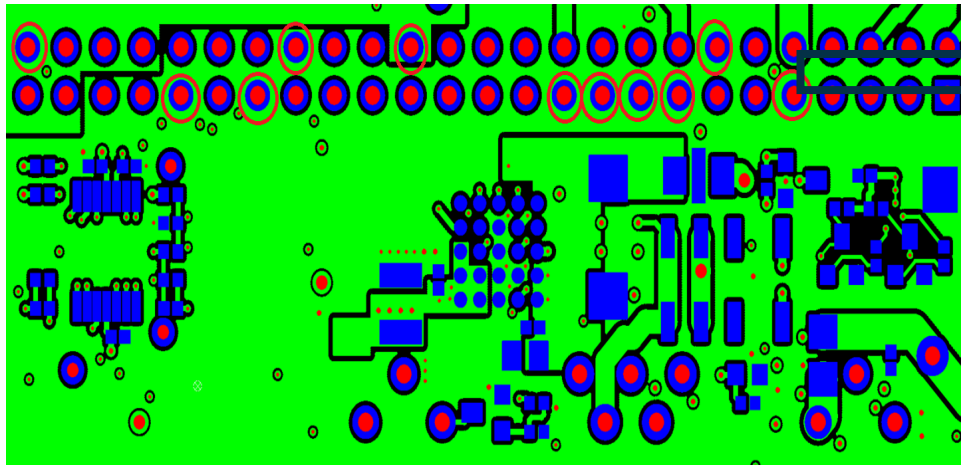
There is a risk that without thermal pads, weak solder joints may form.

Fineline recommend using thermal pads in the design for better heat distribution. A typical thermal pad for PTH is shown in the image below. A similar design is used for SMD pads.



Design without thermal pads

- Risk of weak solder joints
- Heat will be lost to the surrounding copper plane
- Requirement for more heat during soldering (increased stress, expansion etc)
- See image below for an example of a design without thermal pads



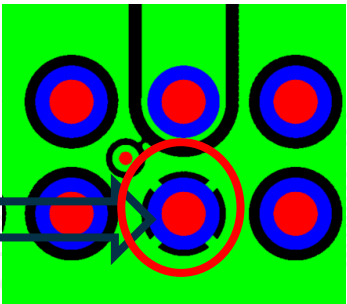
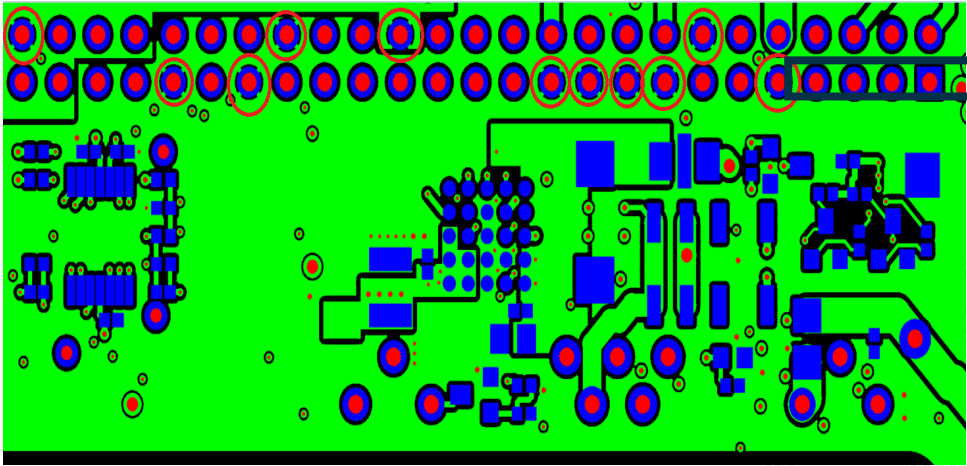
Benefit with thermal pads

Heat will be distributed into the pad, through hole, or SMD, creating a better and stronger solder joint.

With thermal pads there is no need to preheat the PCB or increase soldering temperatures more than normal in order to achieve good strong solder joints

Design with thermal pads

- Stronger solder joints
- No increased heat when soldering (reduced stress, expansion etc)
- See image below for an example of a design with thermal pads





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