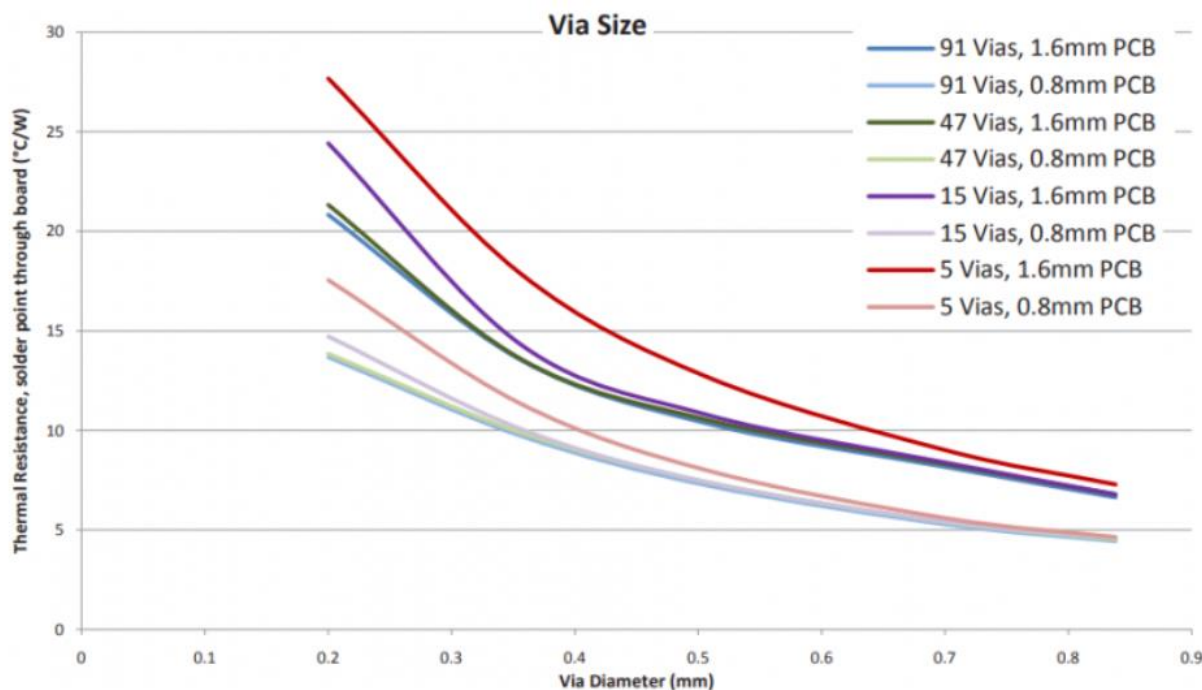


## 1. Thermal Via Types

To include thermal vias in the PCB, the PCB manufacturing process should be carefully considered.

Sizing thermal vias play a crucial role at selecting the right via but it is difficult to make specific recommendations on thermal via sizes without conducting a thermal simulation, one can make some general statements regarding the placement and size of thermal vias in a circuit board. In addition to opting for more thermal vias where available, longer vias should be used for a given via diameter. This will help minimize thermal resistance of the underlying layer.

For a given via length, wider vias should be used, although this will limit the number of vias that can be used with a given component. The graph below shows a summary of these design guidelines and their effect on thermal resistance in an FR4 substrate.



## 2. Applications

Thermal vias are used

- In QFP packages
- When many boards are placed on FR4 (fiberglass-reinforced epoxy-laminated sheets used in printed circuit board manufacturing).