

# EDGE PLATING AND CASTELLATIONS

## EDGE PLATING AND CASTELLATIONS

Edge plating or castellation refers to the copper plating that runs from the top to the bottom surfaces of the circuit board and extends to at least one of the perimeter edges.

Essentially, both edge plating and castellation processes take place during through-hole plating, the routing for the castellations where the “half holes” are created will take place during the profiling process.

**The main relevant steps during pcb manufacture for both processes will be as follows:**

- Drilling all holes that require through hole plating and routing of edges that require edge plating (including slots).
- Desmear (cleaning of hole walls and other surfaces that require plating, removing debris and smeared resin) in preparation for plating.
- Black hole (application of a conductive surface to facilitate the copper electroplating process).
- Electroplating with copper (hole walls, outer copper layers, and edges that require edge plating).
- Surface finishing, normally Electroless Nickel Immersion Gold.

### Edge Plating

As mentioned above, edge plating is the copper plating connecting the top to the bottom surface of a PCB, running along at least one of its perimeter edges, and can also sometimes involve connections to one or more internal layers of a pcb.

Edge plating is popular due to edge connections, EMI (electromagnetic interference) shielding, improving chassis ground systems, thermal distribution, and improving current handling capacity.

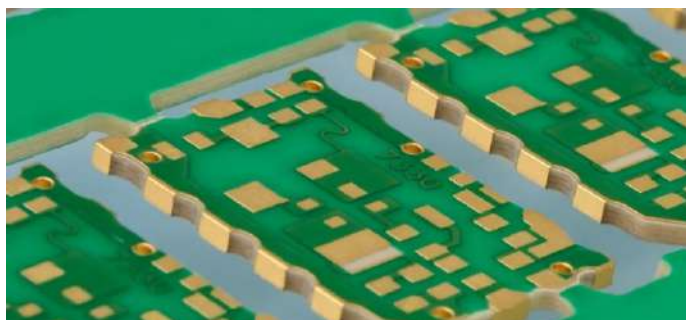


Fig 1. Edge Plating

As mentioned above, the areas requiring edge plating are routed before through-hole plating, the metallization of the edge takes place during the through-hole plating process. The preferred surface finish for edge plating is ENIG.

The main limitation relative to edge plating is that the entire pcb perimeter edge normally cannot be plated, this is due to the requirement of tabs so that the pcb can be firmly held in the production panel. There will therefore be some gaps in the pcb perimeter.



Fig 2. Edge Plating

# CASTELLATIONS

Castellated holes, also known as castellations or plated half holes are plated through holes on a PCB that are effectively cut in half. A sharp router bit is used along the edge of the pcb and when the process is completed then half of the pad remains.

Typically, these are applied to the outer edges of a board and are used to solder one board on top of another (pcb to pcb connections).

The concept of castellations first presented itself some time back and has now become even more popular today, especially because of IoT (Internet of Things) where hybrid modules (Wi-Fi, Bluetooth, etc.) are mounted onto the main pcb.

**The minimum specifications required for this process are as follows:**

- The minimum hole size is 0.5mm.
- The minimum pad diameter is 0.8mm (0.15mm annular ring).
- The minimum pitch between pads is 1mm.



Fig 3. Castellations



Fig 4. Castellations

## In Summary

Relative to both these processes, the copper plating thickness will be consistent with the IPC Class requirement specified relative to the design itself.

As far as cost goes, an additional fee will be charged should one or both processes be required in a design, castellations will more expensive than edge plating.

In both cases, if your design requires one or both processes, then please first speak to us relative to your requirement as early as possible in the design process so that we can establish a manufacturable solution that will work for you.

We sincerely trust that this has been informative.

## **CONTACT US**

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