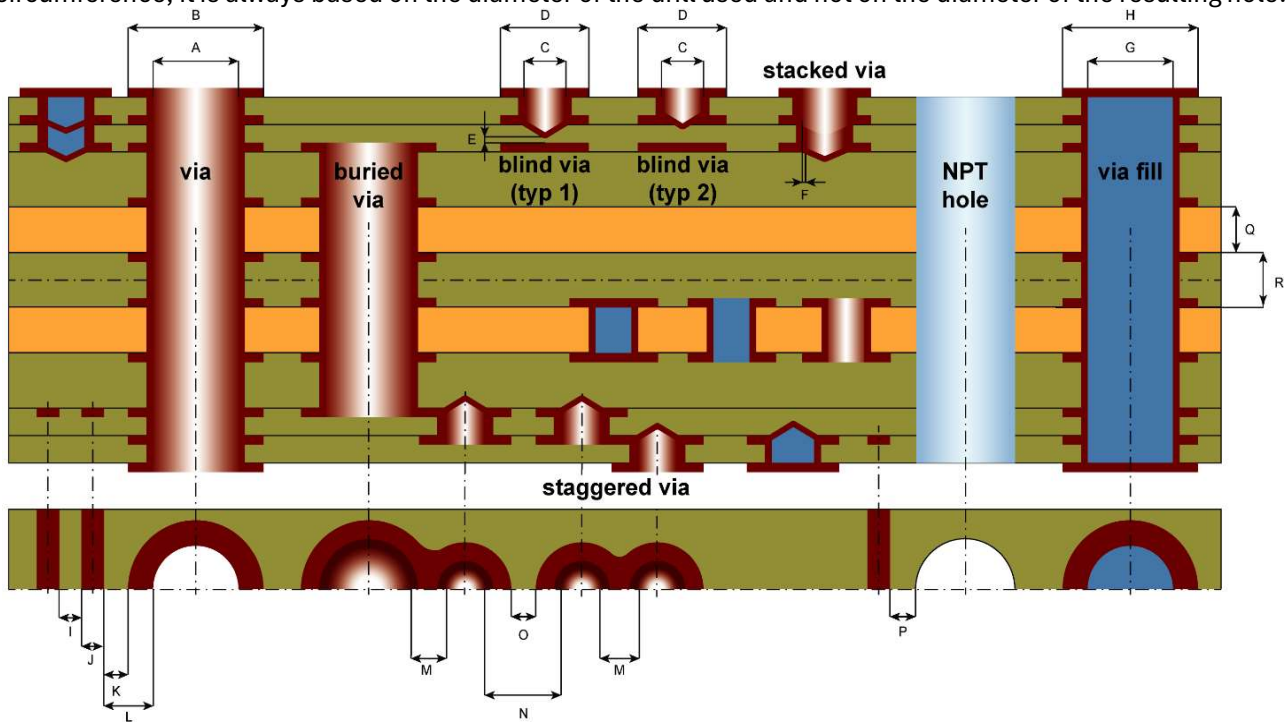


## Design rules

### Drilling and plating

#### Annular rings

The term annular ring refers to metallized solder pads and is the solderable ring left after drilling out the solder pad. The size of the circumference can be determined from the relationship  $AR = (PD - DD)/2$ , where PD is the diameter of the soldering pad and DD is the diameter of the drill used. To determine the size of the circumference, it is always based on the diameter of the drill used and not on the diameter of the resulting hole!



### Via & Blind & Buried & Aspect Ratio

#### VIA holes can be separated into categories

|                            |  |
|----------------------------|--|
| <p>Standard VIA holes:</p> | <p>These are the holes connecting all the PCB layers. In this case, the smallest drill bit of 0.15 mm can be used and the Aspect Ratio is 1:10 (or less).</p>  |
| <p>Buried VIA holes:</p>   | <p>These are holes connecting only the inner layers of the PCB, i.e. they are not visible from the outside on the finished PCB. In this case, the smallest drill bit of 0.15mm can be used and the Aspect Ratio is 1:10 (or less).</p> |

|                    |   |
|--------------------|---|
| Blind VIA holes:   | <p>These are holes connecting the outer layer of the PCB with one or more inner layers. In this case, the smallest drill bit of 0.12mm can be used and the Aspect Ratio is 1:15 (or less). Type 1 - the drill goes into the inner layer with almost its entire diameter, the minimum insulation distance (E) must be observed. Type 2 - the drill enters the inner layer only with the tip.</p> |
| Stacked VIA holes: | <p>Stacked VIAs are microvias created in an axis above each other. The radius of the hole to be connected on the outside must always be larger by a value (F) than the inside diameter of the hole. If the stacked VIA is filled, it is not necessary to increase the external connection hole.</p>   |

## Design rules

| Drilling and Plating |  |                |                            |
|----------------------|--|----------------|----------------------------|
| Legend               | Description  | Standard (min) | Advanced possibility (min) |
| A                    | Diameter of the drilled hole                               | 200 µm         | 150 µm                     |
| B                    | Diameter of pad  | 400 µm         | 300 µm                     |
| C                    | Diameter of drilled hole                                   | 200 µm         | 120 µm                     |
| D                    | Diameter of pad  | 400 µm         | 270 µm                     |
| E                    | Insulation distance of the tip of the drill to the surface | 100 µm         | 65 µm                      |
| F                    | The radius of the hole to be connected must be larger      | 75 µm          | 50 µm                      |
| G                    | Diameter of drilled hole                                   | 200 µm         | 150 µm                     |
| H                    | Diameter of pad  | 400 µm         | 300 µm                     |
| I                    | Isolations distance between tracks                         | 100 µm         | 75 µm                      |
| J                    | Width of track   | 100 µm         | 75 µm                      |
| K                    | Isolations distance between track and pad                  | 100 µm         | 75 µm                      |
| L                    | Isolation distance between drill tool and track            | 200 µm         | 150 µm                     |
| M                    | Distance of drilled holes on same net                      | 150 µm         | 100 µm                     |
| N                    | Distance of drilled holes on different net                 | 200 µm         | 150 µm                     |
| O                    | Isolation distance between pads                            | 100 µm         | 75 µm                      |
| P                    | Isolations distance between track and non-plated hole      | 200 µm         | 150 µm                     |
| Q                    | Thickness of core  | 100 µm         | -                          |
| R                    | Thickness of prepreg                                       | 100 µm         | 58 µm                      |