Application Note

Center Pad on SAW Filter Packages

Center Pad on SAW Filter Packages

Some of TriQuint's ceramic packages for Surface Acoustic Wave (SAW) components, exhibit an additional pad at the center of their bottom layer (Figure 1). Depending on the package, this middle pad may be shaped as a rectangle or a "dog bone."

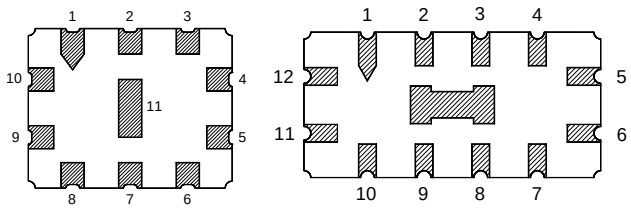

Figure 1 – Examples of TriQuint's ceramic packages for SAW filters

What is the purpose of the center pad?

The center pad on SAW filter packages has been in use from the early 90's and although it is not an official industry standard, it is used by most SAW suppliers, especially in larger packages for IF filters.
The pad is typically a *package ground* and it is internally connected to other grounds for the purpose of improving RF performance, which may manifest itself as improvements in rejection and isolation.

Should I solder the center pad to my PCB?

No. TriQuint recommends leaving solder mask in the area directly underneath this pad and treat it as an exclusion zone from vias and traces. As mentioned before, the pad is internally connected to the proper grounds so an external electrical connection is not necessary for proper operation. For a recommended PCB footprint please refer to the TriQuint datasheet for your specific device.

What are the effects of soldering the center pad to the PCB?

For most designs, there will be no impact on electrical performance. However, there is an increased reliability risk associated with heat transfer during the reflow process. Because the SAW crystal substrate and the ceramic package have different coefficients of thermal expansion (CTE), the application of a steep heat gradient could cause the crystal die to fracture.