APPLICATION NOTE

AE-AN-SK-008 SK Series PCB Footprint and Mounting Specifications

Purpose:
This Application Note will go over Amphenol Ardent's SK Series™ socket footprints. It will focus on the layout and design of the PCB footprint below the installed socket as well as mounting and tooling requirements.

The Technology:

The key to Amphenol Ardent's success lies in our patented core technology. Our contact sets provide the fastest, most electrically efficient connection thanks to the utilization of dual sided compression mount technology.

In our SK Series™ sockets these contacts are housed within the interface portion of the socket. They are the electrical connection bridging the gap between the device under test and the PCB below. See *Figure 1* for a display of the different sections of our socket.

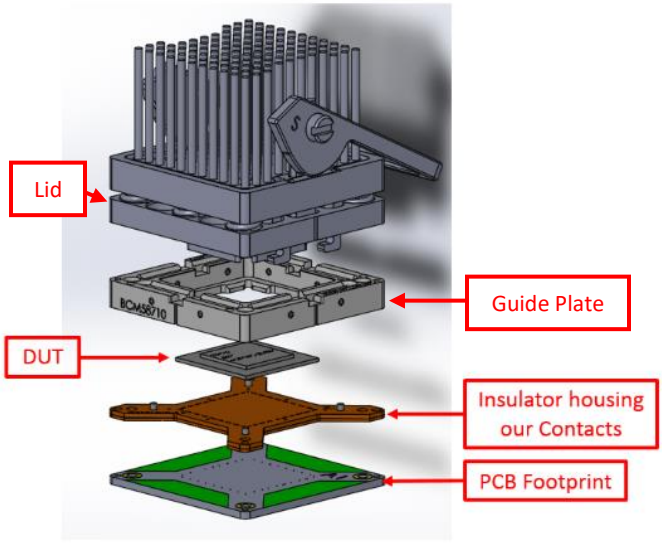

Figure 1

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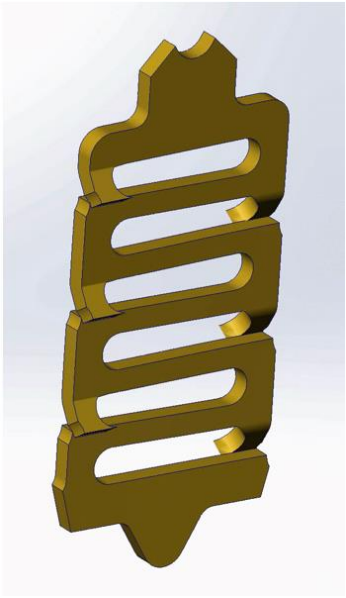
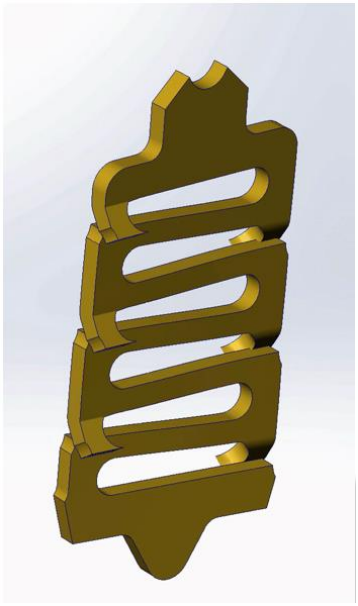
Amphenol Ardent's contacts have two states: free length and compressed. When compressed, the wire forms of the contact touch down on one another and, through this wiping action, initiates an electrical short. The electrical short created in this compressed state allows for shortest path possible for the signal to travel, resulting in industry-leading performance and speed.

RC Connect-R™

Free



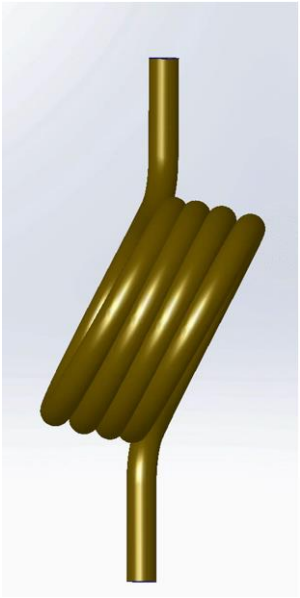
Compressed



Spring Probe™

Free

Compressed



Therefore, planarity of the board is vital when using Amphenol Ardent's SK series™ sockets. To ensure total compression of the contacts evenly over the area of a socket, the tolerances and callouts of our footprints should be followed. If not, contacts may be unable to reach full compression and performance could suffer. In some cases, slightly decompressed contacts may not touch their designated pads, causing an open. To avoid loss of signal integrity and performance, we ask our customers to adhere to the callouts designated in all our footprint drawings.

Things to Follow:
When designing the footprint for your socket, there are some specifications to take note of that are listed below. These specifications are important to guarantee optimal performance of our socket. Items in bold are necessary for planarity:

- **Pad to pad to mounting donut coplanarity to be within 0.001”**
- Tooling holes to be non-plated thru holes drilled and reamed to size
- Recommended plating for pads is 0.00508 mm (0.0002”) nickel under 0.00127 mm (0.00005”) hard gold minimum. ENIG and ENEPIG are both acceptable as well. For alternative methods, please contact support@ardentconcepts.com
- **No solder mask over the socket footprint**
- **Any VIPPO (Via In Pad Plated Over) must be filled and coplanar to 0.025 mm (0.001”) with pad and mounting donut.**

Mounting and Tooling Procedures:

Board Requirements:
Attaching Amphenol Ardent’s SK series™ connectors to your PCB requires a minimum of two locating dowel pins, which supply the fine alignment of the contacts within the insulator to the capture pads of the board. These are used in addition to four mounting screws for a total of 6 holes per PCB to meet the minimum for a socket design.

Figure 2 shows the bottom of a socket. As you can see, there are four mounting screws in addition to the two alignment dowels.

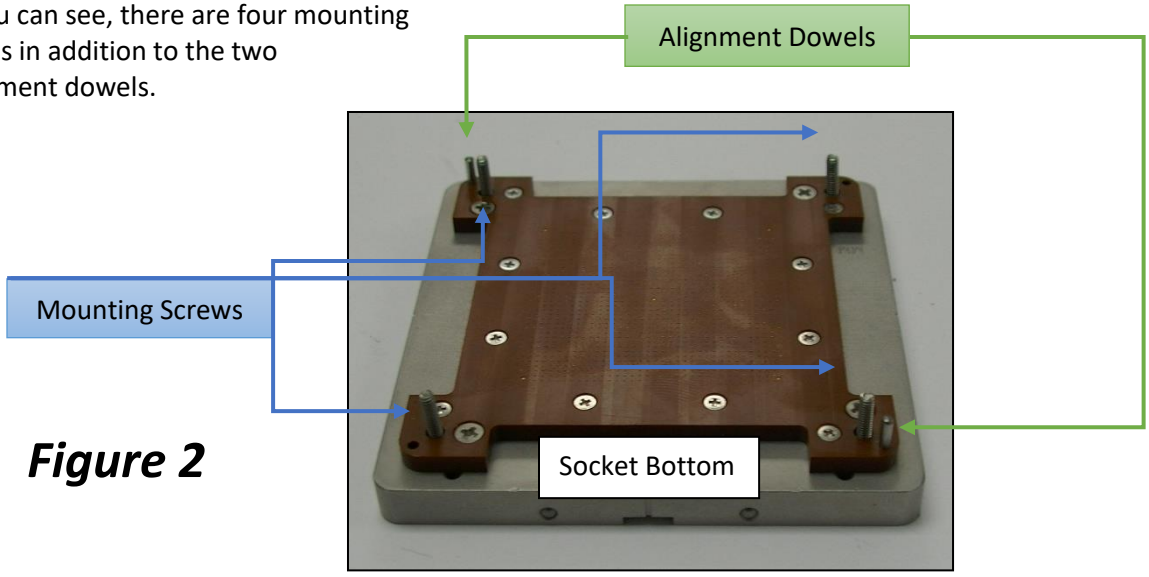


Figure 2

Figure 3 shows the top of the socket, mounting screws, and the dowel hole pin locations, while *Figure 4* shows how the screws settle in and pull the board stiffener into the back of the PCB. This secures the socket and helps with planarity.

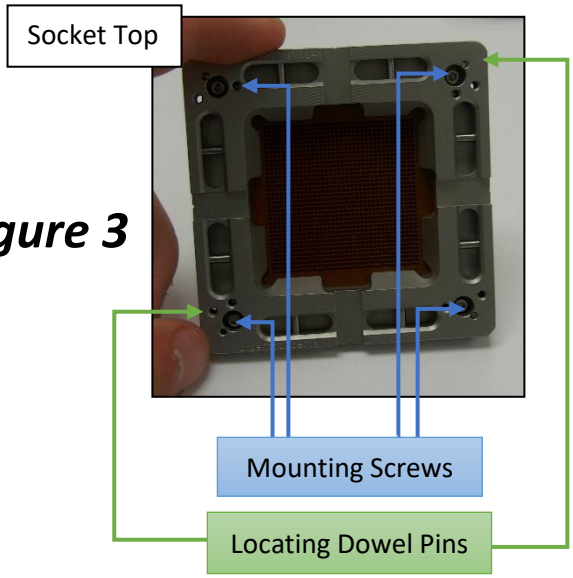


Figure 3

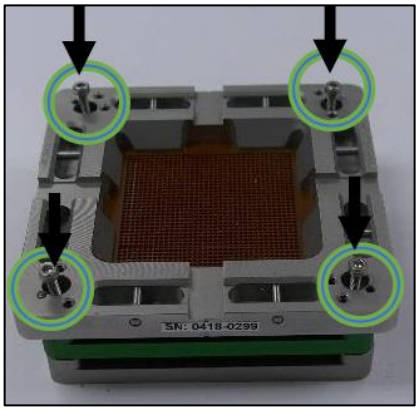


Figure 4

Figure 4 shows the mounting holes on an actual PCB. **6 holes that are required** to attach the socket to the board: Four mounting screw holes and two locating dowel pin holes. However, having 8 holes (such as the board shown below) does not effect the process.

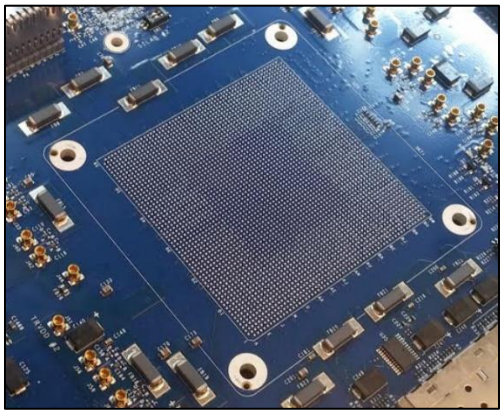


Figure 5

As for the location for all mounting and tooling, they should be included in the footprint file that has been provided to you by Amphenol Ardent Concepts. See *Figure 5* for an example of a typical footprint file we supply customers.

APPLICATION NOTE

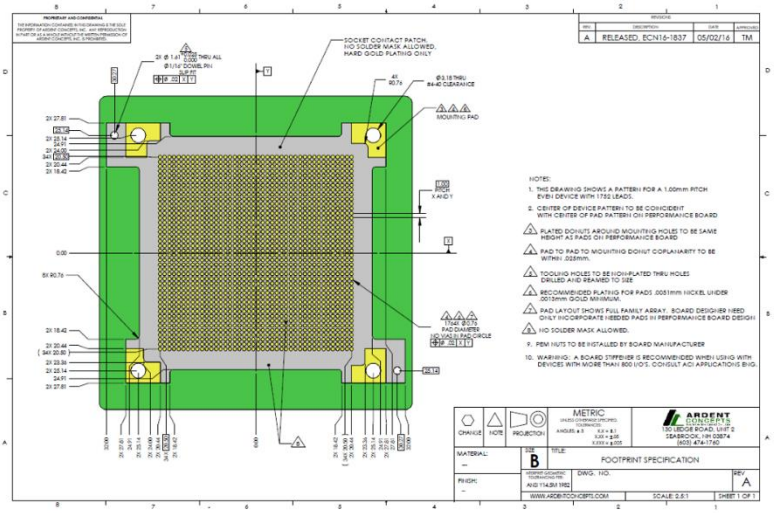


Figure 6

Application Note Summary:

Guidelines to follow when designing the Amphenol Ardent footprint onto your board.

- **Pad to pad to mounting donut coplanarity to be within 0.001”**
- Tooling holes to be non-plated thru holes drilled and reamed to size
- Recommended plating for pads is 0.00508 mm (0.0002”) nickel under 0.00127 mm (0.00005”) hard gold minimum. ENIG and ENEPIG are both acceptable as well. For alternative methods, please contact support@ardentconcepts.com
- **No solder mask over the socket footprint**
- **Any via in pad circle must be filled and coplanar to 0.025 mm (0.001”) with pad and mounting donut.**

NOTE: Following these instructions allows the smooth integration of our socket and will guarantee optimal performance. Failure to follow these procedures could result in lower performance and even opens in some cases.

If you have any questions, please contact our skilled Application Engineers at support@ardentconcepts.com.

Who is Amphenol Ardent Concepts?

Amphenol Ardent Concepts is a leading designer and manufacturer of high performance multicoax and coaxial assemblies, connectors, and sockets used in the development of next generation semiconductors and electronics systems. Our core technology is the smallest, fastest, most electrically efficient compression mount connector technology worldwide. As data rate requirements increase and devices and systems shrink, Ardent's products deliver superior signal integrity in a dense footprint that can be reusable across programs to maximize cost savings.