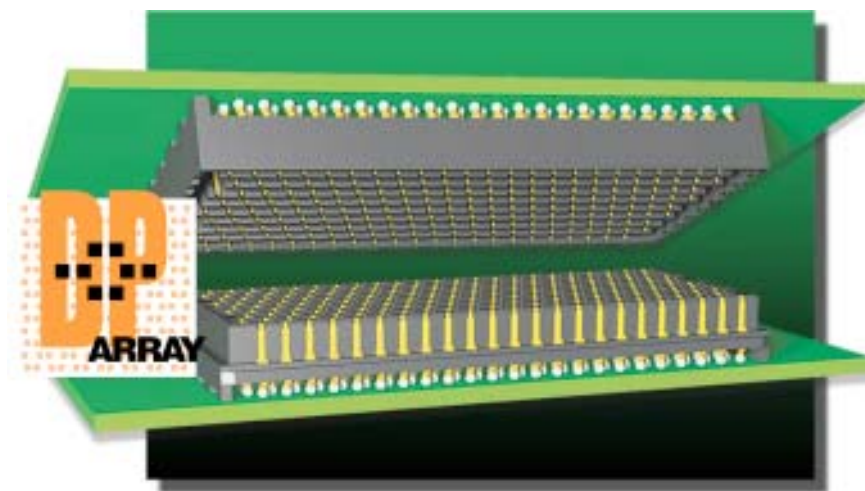


# HIGH SPEED CONNECTOR OPTIMIZES BANDWIDTH PER SQUARE INCH

*System allows 1 Terabit of data or 4 GHz per Differential Pair*



Samtec's DP Array™ system is a high density interconnect system for high speed applications. The DP Array™ is a differential pair configuration system with the pairs on a staggered layout. This staggered design reduces the number of ground pins required making board routing easier. Ground pins are located on the perimeter of the connectors.

This combination of differential pairs, staggered footprints, and perimeter grounds maximize bandwidth per square inch. For example, at a 10mm stack height, the connector set is rated at 4 GHz per pair. This rating assumes a 10% impedance mismatch and 3% near end cross talk (NEXT). Depending on system requirements, the DP Array™ can perform above 4 GHz per pair (approximately 8Gb/sec).

The maximum number of differential pairs available per set is 168. This equates to more than a terabit of data through one connector in a 2.63 square inch area or 340 GHz per square inch of PCB area.

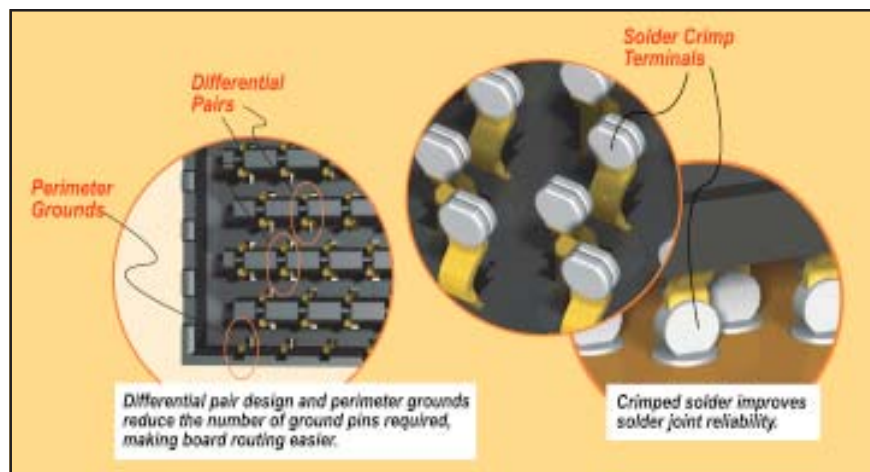
## Reliable Design

The contact system used in the DP Array™ was designed for excellent electrical performance. Geometry, material thickness, pitch, and pair positioning were all electrically modeled and simulated prior to the physical development of the connector to ensure the best possible high speed performance. Termination to the PCB is a major concern with high density array connectors. The DP Array™ system utilizes Samtec's patented solder crimp technology to allow for easy IR reflow termination with excellent

solder joint reliability. This technology is superior to standard BGA/solder ball attachment in that the connectors will only be subjected to extreme heat once - during assembly of the connector to the PCB as opposed to twice with solder ball attach methods. This becomes even more beneficial as the industry moves toward lead-free processing which requires elevated processing temperatures.

Final Inch® test kits are available for the DP Array™ system. Final Inch® is a "reference design" for one of the most difficult design issues on the board - the Breakout Region (BOR) around the connector. Samtec can provide empirical TDR and frequency domain data, test boards, and validated electrical models for the DP Array™ system.

A single ended version on .050" (1,27mm) pitch is in design. The DP Array™ concept is also being extended to an edge mount configuration; this is ideal for high density, right angle (90°) applications. The edge mount system has an estimated performance of 2.5 GHz per differential pair.



**AP Array Catalog Pages:** [DPAM](#) [DPAF](#)

**SPICE Models:** [DPAM](#) [DPAF](#)

**Application Note:** [DP Array Final Inch in Rapid IO Short Run Applications](#)