

SMT Perimeter Connector Reduces Space in Military Application

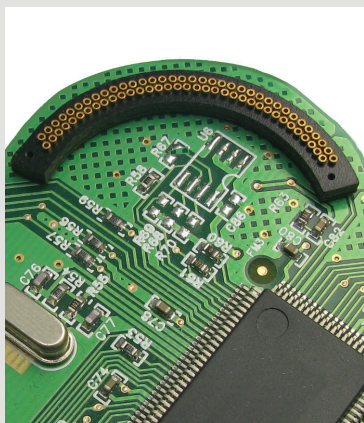
THE CHALLENGE

As electronic equipment continues to get smaller, the demand for lower profile and finer pitch connectors is increasing. In addition, circular boards and PCBs with cut-outs, present unique board space challenges. Rectangular connectors, especially those with leadframe contacts, often require too much space on odd shaped PC boards. Between the connector itself and the geometric mis-match, valuable PCB real estate is unusable for other components.

As an approved supplier of customized interconnect solutions for military applications, Advanced Interconnections was tasked to create a surface mount connector that would maximize board space with a low profile, 6mm stack height. The mission-critical application demanded proven performance and long-term reliability.

THE ADVANCED® SOLUTION

Advanced's design engineers literally thought outside of the box on this project – foregoing traditional rectangular configurations for a semicircle connector which utilizes the perimeter of the PC board.



Rugged SMT connectors can be easily customized for special radius board shapes and cut-outs.

FR-4 insulator material was chosen for its flexibility – no mold was required, eliminating expensive tooling costs and allowing for multiple design revisions and fast prototypes while the project evolved.



Mating 1.00mm pitch surface mount connector utilizes the perimeter of a circular circuit board, maximizing board space while providing a low, 6mm stack height in a keyed and polarized FR-4 insulator.

Proven Screw-machined Pin in Socket Design

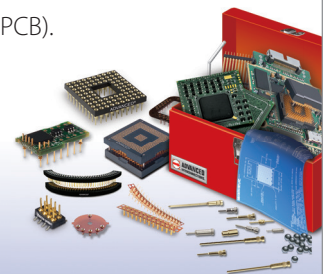
To provide the necessary reliability while further reducing the connector's overall size, Advanced recommended its field-proven, 1.0mm pitch ball grid array socket adapter contact system with solder ball interface to the PC board. Screw-machined terminals with multi-finger contacts provide superior reliability and performance over stamped-and-formed pins, and can accommodate a variety of low voltage (LVDS) requirements for power, signal, and ground options.

The proprietary solder ball terminal design provides a stronger solder joint while compensating for minor coplanarity issues between the boards. In addition to greater elasticity, solder balls provide more solder on each joint and the overall configuration takes up less space than typical lead frame technology (lead to trace or pad on PCB).

Continued on reverse side.



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Drawing from the Advanced® Tool Box – Concept to Prototype in 5 Days!

Drawing from our tool box of easily customized FR-4 insulators, existing fine pitch BGA Socket Adapter terminals (available down to 0.50mm pitch), and in-house, precision CNC machining, Advanced provided a quick design and rough samples for electrical and mechanical testing in less than 5 days. The prototype connector was created from FR-4 on an in-house driller/router machine and incorporates 1.0mm pitch solder ball terminals on both the male header and the mating female connector (socket). Vertical integration and existing screw-machined terminal designs eliminate the need for expensive tooling and set-up costs such as stamping dies — making customized solutions affordable, even in low volumes as projects ramp up.

KEY SPECS

- Mission-critical reliability
- Maximize board space
- Ability to key and polarize
- Low profile and light weight
- Minimal tooling/ set up costs
- Quick turnaround

The 70 position SMT Perimeter Connector reduced required board space while meeting the specification for a low profile, 6mm stack height. Compact and light weight, the efficient design incorporates alignment pins for a fully keyed and polarized solution to facilitate blind mating. Designed with flexibility in mind, this connector solution can be easily and quickly reconfigured to meet future board revisions and other applications.



Advanced Interconnections specializes in customized Board to Board Connectors, designed to solve difficult design challenges.

Advanced's ability to provide a flexible, customized solution incorporating a proven contact system reduced the customer's overall costs and time to market.



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