

A New Innovation: Connectorless Probing Enables High Speed Serial Protocol Testing

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What is Connectorless Probing?

Connectorless probing is a method where pads are incorporated onto PCB traces to facilitate the non-intrusive probing of high speed serial interfaces. The pads, or footprints, remain on the PCB for the life of the product thereby allowing easy and high performance testing in the lab, manufacturing and the field.



Full sized PCI Express Gen 1 Footprint on a PC motherboard

Why adopt Connectorless Probing?

- Cost effective, no connector to purchase, stock, kit or assemble onto the PCB
- Provides the same functionality as a physical connector
- Ideally suited for high speed applications
- Rapidly being adopted by Semiconductor vendors around the globe
- Standardized so that multiple vendors' test equipment can connect to them
- Several connector and cable manufacturers to choose from
- Common standard among multiple serial standards provides for design and tool reuse

Where is Connectorless Probing being used today?

- PCI Express based PC motherboards and adapter cards
- Embedded PCI Express and Serial Rapid IO in different applications on different form factors
- ATCA carrier boards
- Advanced Mezzanine Cards
- General Purpose Logic Analyzer probing

Where will it be used in the near future?

- ATCA backplanes
- Soon to be proposed for XAUI and GigE by FuturePlus Systems
- FPGA serial development boards
- Proprietary serial interfaces



Samtec's Spirit™ Connectorless Technology Patent Pending

samtec

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What testability does Connectorless Probing enable?

Serial interconnects found in today's high speed systems have low voltage levels, encoded clocks and are in the range of 1.25Gbps to 5.2Gbps. Validating and debugging these interconnects with an oscilloscope reveals only eye diagrams and rudimentary 10b encoding. These serial interconnects are replacing parallel buses in today's systems and have sophisticated protocols and packetized architectures.

Protocol Analyzers are required to :

- Check for general system integrity
- Look for protocol errors to ensure specification compliance
- Find events that lead up to a system hang or lockup
- Measure device performance throughput

Connectorless Probing enables a quick, reliable connection to these electrically sensitive signals for debug and validation

A logic analyzer, used in conjunction with an Analysis Probe, acts as a Protocol Analyzer which debugs and validates both parallel and serial bus architectures.

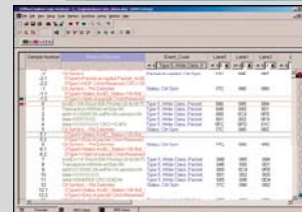
Protocol Testing for High Speed Serial Interconnects

Once the connection is made to the high speed serial interconnect the testing can begin. Today's tools feature easy to use protocol specific triggering that makes finding elusive problems easy.



Easy to use triggering, packet and protocol displays takes the complexity out of encoded serial interconnects

Photos courtesy of
FuturePlus® Systems
Power Tools for Bus Analysis



Engineers involved in high speed serial projects must plan ahead for debug and design validation. Connectorless probing incorporated into these designs will provide reliable testability throughout the product lifecycle. For more information on incorporating connectorless probing into PCI Express and Serial Rapid IO designs visit the FuturePlus Systems web site at

www.FuturePlus.com