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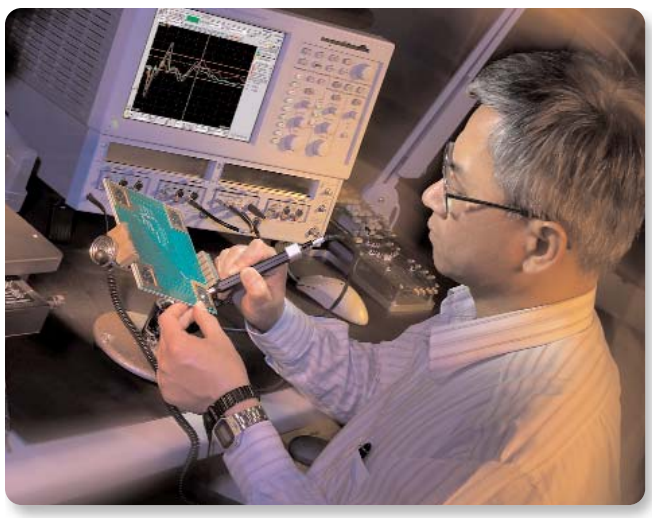
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55W_17699_0.qxd 8/9/04 1:44 PM Page 1

TDR Impedance Measurement Solutions Help Designers Find Unseen Problems



Tektronix Sampling Oscilloscopes and TDR Modules Set the Standard for Impedance Measurement

Designing today's high-speed systems requires more attention to detail than ever before. Even the smallest circuit features have impedance characteristics that affect your signals. You need to find, analyze, and resolve impedance-related issues:

- Impedance variations can cause timing problems, logic level margin reduction, and more
- Not all impedance problems are readily solved with traditional methods—differential signal paths complicate measurements
- More end-customers are requiring compliance with industry standards for impedance
- Multi-lane systems add requirements for a crosstalk measurement on multiple channels
- Impedance measurements can be time-consuming

Tektronix is the industry's leading innovator in impedance measurement. Tektronix Time Domain Reflectometer (TDR) modules and sampling oscilloscopes bring out the details you need to truly understand what's going on in your design.

Tektronix TDR Measurement Solutions

The importance of precise impedance measurements grows with each advancement in system data rates and edge speeds.

Tektronix TDS8200 and CSA8200 Series sampling oscilloscopes, paired with the 80E04 TDR sampling module, make up the most accurate, complete, and efficient solution for measuring impedances and diagnosing interconnect-related problems in high-speed systems.

- Proven high-bandwidth sampling mainframes (CSA8200/TDS8200) accept up to four TDR modules for total of eight TDR channels (or four true differential channels)
- The CSA8200/TDS8200 has the industry's fastest test throughput (at least 3X faster than other solutions), reducing test time and cost
- The 80E04 TDR sampling module delivers an acquisition rise time of 17.5 picoseconds or less, pacing today's fastest digital devices
- The 80E04 is the industry's only true differential TDR acquisition tool
- The 80A02 EOS/ESD Protection Module protects sampling devices from static discharge and other stresses
- The P8018 TDR probe integrates with the 80A02 to enable safe, accurate manual probing of test points to 20 GHz

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55W_17699_0.qxd 8/9/04 1:44 PM Page 2

TDR Impedance Measurement Solutions Help Designers Find Unseen Problems

► Application Fact Sheet

Pulse Performance is the Foundation

Only a fast TDR can help you discover the causes of impedance-related signal integrity problems. And ultra-fast pulse transitions put Tektronix TDRs at the head of their class.

- The 80E04 TDR module's incident pulse rise time of 17.5 ps or less is equivalent to 20 GHz bandwidth
- 25 ps reflected rise time ensures superior resolution of very short discontinuities

The Differential Advantage

Differential transmission paths are the norm in today's high-speed bus environments.

- The dual-channel 80E04 is the only available TDR solution that performs true differential measurements required by many industry standards
- The TDS8200 and CSA8200 can drive and measure four differential channels at once
- Crosstalk can be characterized by driving one transmission line while monitoring others
- Integrated rise time filtering enables characterization at "real-world" edge rates

TDR Solutions Speed Your Work

Only Tektronix offers a complete TDR solution including sampling mainframes, probing tools, static protection, and more—all with exceptional performance. Speed your work with:

- A TDR trace that can be scaled in distance rather than time—a roadmap that pinpoints the exact location of impedance faults!
- Industry-standard (IPC-TM650) PCB testing processes based on the free "TDRImpedMeas" package, downloadable from www.tektronix.com
- Multi-lane simultaneous measurements

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For Further Information

Tektronix maintains a comprehensive, constantly expanding collection of application notes, technical briefs and other resources to help engineers working on the cutting edge of technology. Please visit **www.tektronix.com/tdr**

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