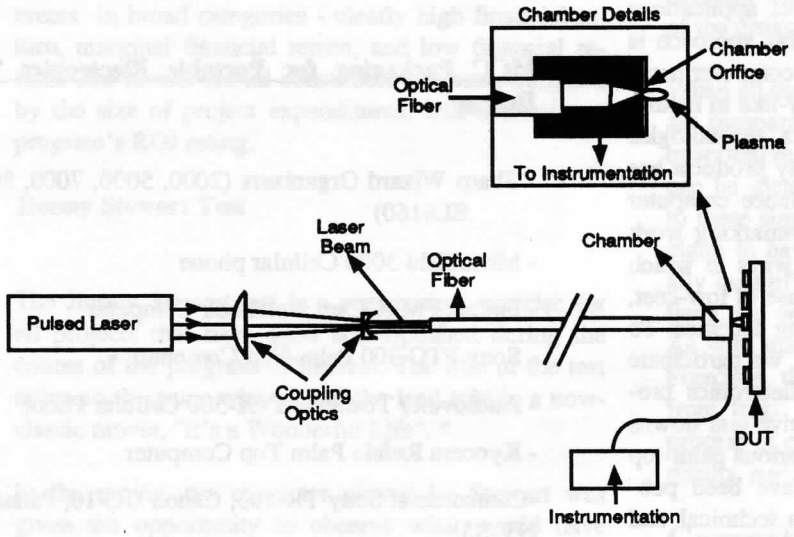
Technical Update Corner

....Drew LePage

LASER PLASMA TEST CONCEPT



As part of an effort to develop methods of performing non-contact electrical tests, the use of electrically conductive plumes of ionized gas (i.e., plasma) has been investigated internally and in DEC funded research at Rensselaer Polytechnic Institute. In this concept, a short lived plume, a conductive plasma is used to form an electrical connection between a non-contacting probe and the DUT. Investigations to date have shown that laser induced plasmas are an excellent means of observing or injecting a variety of electrical signals with less damage to the DUT than is commonly observed with common contacting probe systems.

Current internal development on Laser Plasma Test (LPT) centers on the development of a chamber that is used to control the size and shape of the plasma. The principle behind this chamber's operation is simple: A short pulse of laser light (on the order of 10 nanoseconds long) is fed via a silica optical fiber into a small metallic chamber with a volume of less than one cubic millimeter. With the interior surface of the chamber acting as a source of seed electrons, the laser pulse instantly photoionizes the air inside the chamber forming a conductive plasma. As the heated plasma expands inside the chamber, it is forced through an orifice with a diameter of a few mils. This small plume of plasma acts as a conductive path for several microseconds allowing it to be used for non-contact probing. By varying the volume of the chamber, the size of the orifice, the laser pulse energy, and other system parameters, the size, shape and duration of the plasma can be controlled.

Q2 External Technical Publications/ Conference Presentations

.....Jeannie Flynn

The following external presentations have been reviewed and approved by the Technical Publications Review Committee (TPRC).

"Test Generation: A Boundary Scan Implementation for Interconnect Testing". Presented by Mark Lefebvre at the International Test Conference (ITC), October 1991.

"A Workstation Environment for Boundary Scan Interconnect Testing". Presented by Tim Moore at the International Test Conference (ITC), October 1991.

"A Product Information Access System for Verification, Test Diagnosis, and Repair of Electronic Assemblies". Presented by John McWha and Pete Kouklamanis at the International Test Conference (ITC), October 1991.

"Testing Connection to Non-JTAG Static RAMs with JTAG Boundary Scan". Presented by Dilip Bhavsar at the International Test Conference (ITC), October 1991.

"A Way to Avoid Stress Singularities in Multimaterial Elastic Bodies". Presented by Boris Mirman at ASME, December 1991.

" A 00 CIM Project - A Case Study". Presented by Mike Saylor at SEMATECH's "Advanced CIM Software Technologies" Conference, October 1991.

"Microelectronics and a Forgotten Theory" by Boris Mirman. Published in Transactions of ASME, Journal of Electrical Packaging.

"Electromagnetic Modeling of Computer Systems for Information Security". Presented by Bruce Archambeault at SEPI'91 Symposium, November, 1991.

"High Performance Tape Package". Presented by Les Fox at 1991 VLSI and GaAs Packaging Workshop, October, 1991.

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