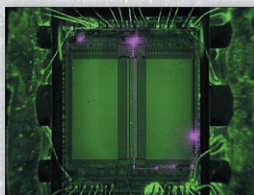
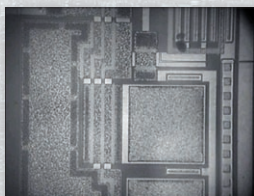


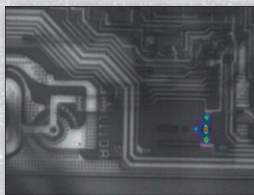
VisGaAs/InGaAs



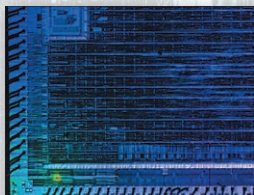
FMI Thermal



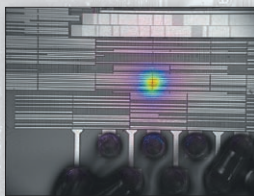
CCD Backside



InSb



SIFT

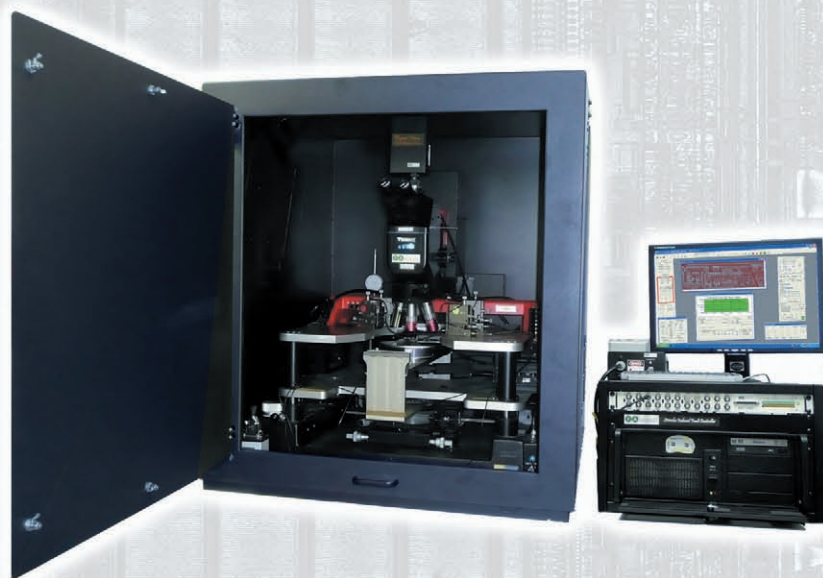


FMI Thermal



Color

Open the Door to Better Analytical Techniques



F A Instruments

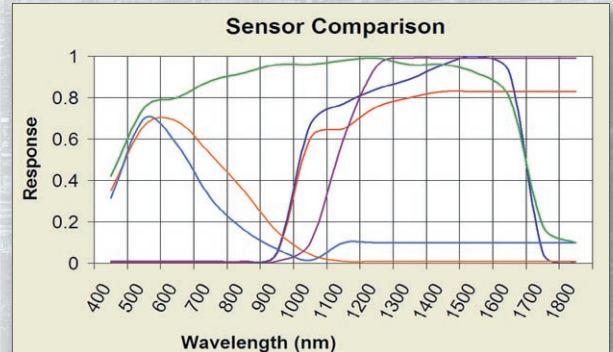
www.fainstruments.com

Choosing the Right System for Your Application

Look at the **F A C T S**

In failure analysis, there is no "one size fits all" for scientific sensors capable of locating the wide range of failure mechanisms. However, this sales approach has often been taken by other vendors -- with the result that many systems sold through the years have been 'overkill' or just plain wrong for many labs. The vast experience and core competence of FA Instruments' technical staff allows us to provide just what our customers need. We offer professional consultation with the customer throughout the sales process -- from initial meetings, which establish the precise needs and solutions for the semiconductor product & defect types, through analytical trials, right through to ongoing support provided after installation of a system.

A Case in Point: From the data shown in the graph above, it appears that VisGaAs is the best sensor for all ic failure mechanisms. However Quantum Efficiency (QE) is, in itself, insufficient to evaluate a system's performance. Our engineers can provide full back-up to offer you the solution you need. We offer extensive sensor solutions from CCD-based, through to InGaAs and InSb to achieve the performance required.



- A: Dual Laser SIFT Head
- B: CCD-Based Cameras
- C: InGaAs / VisGaAs Cameras

Another technique we offer, Moiré Thermal Analysis has a lower thermal resolution than other techniques, but uniquely allows for Backside thermal analysis (FMI and liquid crystal techniques do not). We are proud to also offer 'reasoned' product solutions that are not necessarily based upon what is 'hot' in the industry at a particular time. We provide solutions that are right for solving our customers' day-to-day, year-to-year, FA problems.

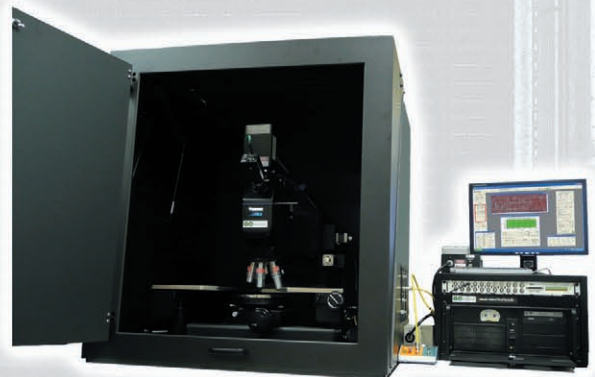
Advanced Hardware Design & Implementation

FAI offers Intelligent solutions for all types of customers -- from Bench-top to Tester-based, to full Probe Station-based, Dark Box installations.

To complete the hardware required to produce a complete system solution, we integrate our own manufactured products -- cameras, stepper-motor controls, illuminators etc. -- with industry-standard items -- microscope heads, objective lenses, probe stations etc. We consult with the microscope and probe station manufacturers to ensure compatibility of all-hardware and software. System design, manufacture, & integration takes place at our San Jose headquarters, for supply throughout the world, through our dedicated network of sales partners.



Portable Head



SIFT System Based on Signatone Probe Station

Portable → Test Head → Probe Station

Excellence in Software Design

Our proprietary **Crystal Vision** Software Suite has been designed from the ground-up to offer ease-of-use, coupled with the power to control all hardware and analytical variables. There are several modules which can be purchased initially or added when required which further extend Crystal Vision's novel interface.

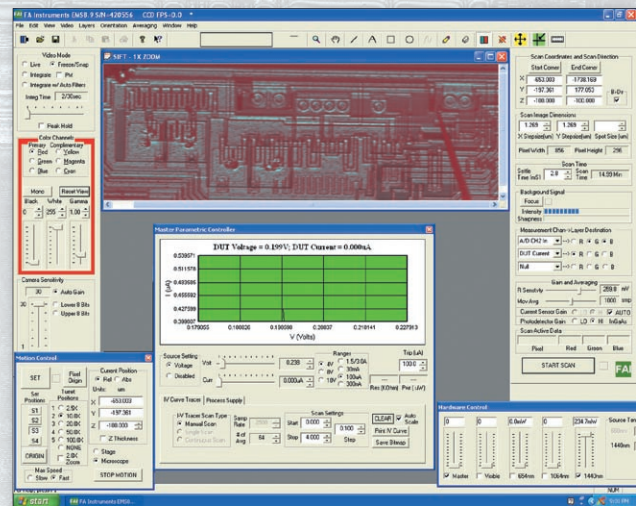
Our **Parametric Interface** is an unique module that allows the user to synchronize an electrical stimulus with the system's image capture.

Crystal Vision

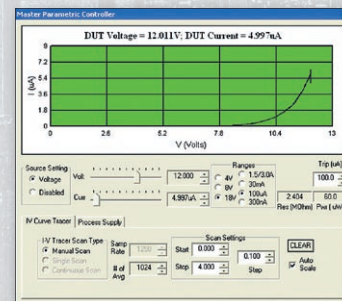
IC Analysis & Diagnostics Systems

Stimulus
Induced
Fault
Testing

Going Beyond
Thermal Laser Stimulus



Screen Shot of Main SIFT Console



Parametric Interface

Future-Proof with Advanced Modules

As our customers develop new devices and technologies, it is important to keep 'in step' with the analytical tools required to solve new failure analysis challenges. FA Instruments offers a wide range of hardware and software modules to help our systems be 'future-proof'. We strive to make sure existing users of our equipment can benefit from all key system upgrades.

Recent advances in laser and LED technologies have allowed us to widen our illuminator range for both topside and backside applications through the full spectrum of wavelengths.



UV Pod Illuminator -
For FMI & UV Imaging



ULTRASPEC III - Coherent
Three Laser Illuminator



UV / Thermal Controller

Note: The image used as the background to this brochure is taken from a full die SIFT Scan. The full sized image is 3168 x 3996 pixels.

Analytical Techniques

CASE STUDY Analysis of Ohmic Leakage



Background: One part submitted, showing approximately 2K leakage between pins VDD & ADIO.

Summary of Analysis: After verifying the reported leakage with the **FAI Parametric interface**, the part was subjected to several analytical techniques to determine the cause and nature of the defect. Three of these techniques are described.

InGaAs: A weak emission was detected at room temperature. The data obtained is thermal not recombinant. (See Image 1 below.)

Stabilized FMI: Imaged with **UV Pod Illuminator** at 385nm, after surface preparation with spin-on EUTTA. Biasing with data from **FAI Parametric Interface** provided a clear image of the failure. (See Image 2 below.)

SIFT: A full die SIFT scan at 1480nm revealed the defect area to be positioned at one corner of the die. A further scan of the (much smaller) corner area reveals the defect. (See Image 3 below.)

Conclusion: The part has a thermally unstable ohmic short which was clearly identified using FMI, SIFT and Thermal IR methods. The short appears to be sub-surface, near Metal 1, based on the spatial resolution of the FMI results.

Note: A full copy of this Case Study is available from FA Instruments.

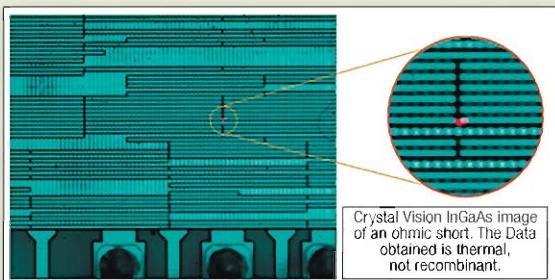


Image 1 - InGaAs

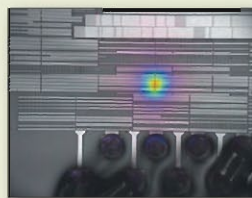


Image 2 - FMI

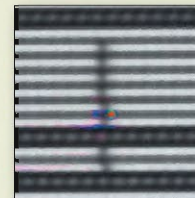


Image 3 - SIFT

ABOUT



FA Instruments, Inc. is committed to building a corporation that is recognized as an industry leader in test and failure analysis equipment as well as for technical support and service. Our core competencies include Electrical Engineering, Mechanical Engineering and Visual C++ programming coupled with a specialized understanding of Analytical Test and Failure Analysis of Semiconductors. Our relevant and significant past experiences include, inventor of the "vibe coupler", the "portable emission microscope" and technical creator of the FA1000. The original FA1000 liquid cooled camera was a huge success, selling on over 100 Emission Microscopes and almost 1500 systems for Life Sciences. We provide straightforward, powerful, modular and upgradeable tools for the semiconductor community.

Represented in your area by:

Extensive
Patent
Portfolio

FA Instruments, Inc. is proud to operate a continuous product improvement program. Product specifications and appearance are subject to modifications without prior notification.



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