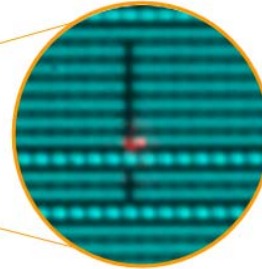
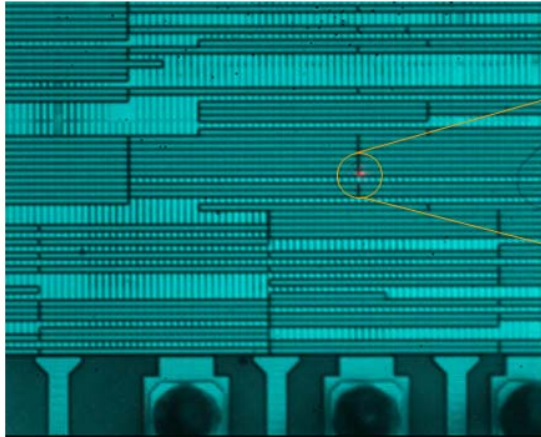




Choose your Crystal wisely!

InGaAs Detectors improve sensitivity

Up to 1000X Sensitivity Improvements



Crystal Vision InGaAs image of an ohmic short. The Data obtained is thermal, not recombinant.

InGaAs sensors have a typical 10% better quantum efficiency than Mercad sensors and are considerably more reliable than Mercad sensors. The waveband most commonly used for backside photon emission in FA ranges from 1000nm to 1400nm. The InGaAs sensor is ideally suited for this waveband with a bandpass ranging from 900nm to 1700nm. InGaAs is stable and with proper design can perform with long integration times without LN2 dewars increasing the safety and reliability of the overall system. Thermal emission is acquired by elevating the substrate temperature of the failing device and acquiring the thermal difference data.

Let's Look at the....



Comparing Sensors

Type of radiation	Back-illuminated "pure" CCD	Depletion-enhanced CCD	MgCdTe	InGaAs	InGaAs improvement vs depletion-enhanced CCD	MgCdTe improvement vs depletion-enhanced CCD	InGaAs improvement vs backthinned "pure" CCD
Frontside Si							
Recombinant Forward Bias	5sec	1sec	35msec	32msec	32X	28X	156X
Reverse Bias	330msec	66msec	73msec	66msec	1X	0.9X	5X
Saturation	5sec	1sec	35msec	32msec	32X	28X	156X
Oxide Integrity *a	330msec	66msec	73msec	66msec	1X	0.9X	5X
Thermal Detection *b					>500X	>500X	>1000X
Backside thinned Si							
Recombinant Forward Bias	2.5sec	.5sec	4.4msec	4msec	125X	113X	625X
Reverse Bias	2sec	0.4sec	2.2msec	2msec	200X	182X	1000X
Saturation	2.5sec	0.5sec	4.4msec	4msec	125X	113X	625X
Oxide Integrity *a	2sec	0.4sec	2.5msec	2msec	200X	160X	1000X
Thermal Detection *b					>500X	>500X	>1000X

NOTES

InGaAs general improvement over MgCdTe is 10%

Moire is 100X more sensitive in thermal mode than InGaAs or MgCdTe

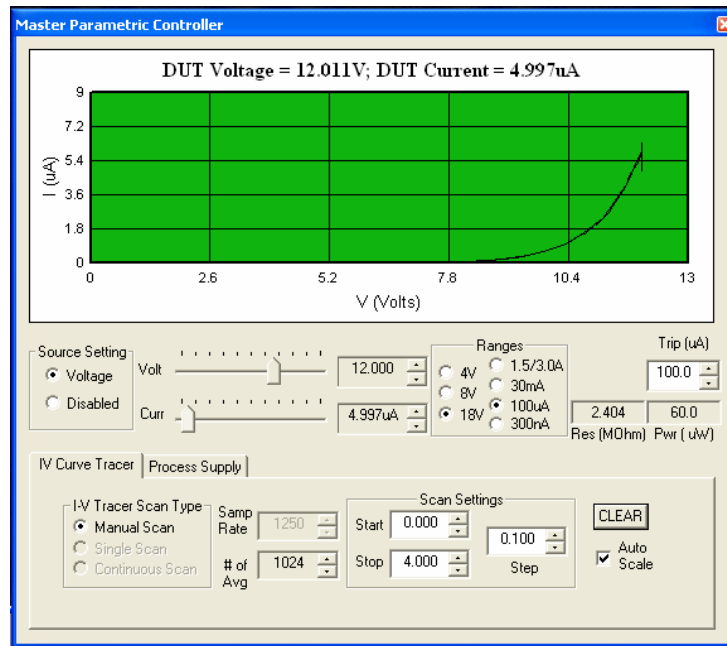
*a - Oxide integrity defects are spectrum variant. Results will vary.

*b - Based on Mitutoyo NIR glass optics (500nm-1800nm). This results in similar thermal performance between MgCdTe and InGaAs

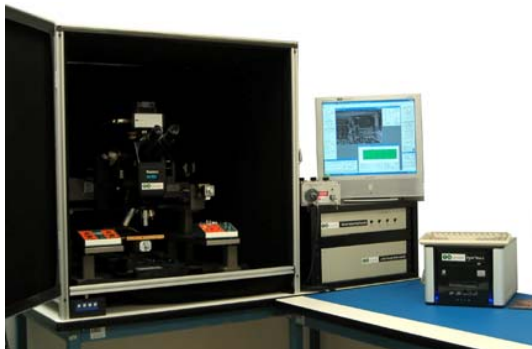
Software Parametric Analyzer

Crystal Vision software suite now incorporates an unique advanced parametric analysis tool

The parametric analyzer allows synchronized bias control to the emission data. This opens up a world of capabilities for both thermal and photon emission analyses. The supply is capable of a range from 3A down to 100pA and 0 to 18V allowing drive of ESD defects to core power supplies with continuous IV monitoring and overcurrent protection setpoints. Real-time readout of resistance and power simplifies the analytical process.



From Desktop Units to “Big Box” Solutions – FA Instruments is your premier FA Microscopy provider!



Crystal Vision

IC Analysis & Diagnostics Systems

FA Instruments is committed to building a corporation that is recognized as an industry leader in test and failure analysis equipment as well as technical support and service. This commitment is fully backed with a proven track record of excellence in both product design and implementation.

Our product offerings already include:

Photon emission Microscopes: both visible and near infrared from 400nm to 1700nm. This waveband limits unwanted thermal noise from the glass optics in the optical path resulting in optimized detection capabilities for recombinant emission. Wider waveband cameras such as Mercad are thermal noise limited by the optics themselves.

Thermal microscopes: FAI offers the industry's widest range of thermal solutions. From liquid crystal and scintillation liquid crystal to fluorescence microthermal imaging (FMI) for frontside and Moiré thermal to InGaAs thermal for backside.

Thermal control is achieved with a precision controller from -10°C to +150°C. This controller can run peltier or heat lamp based elements in closed or open loop mode. Substrate diodes can be used as sensors if direct die temperature measurement is desired.

UV sources: Our UV sources are focusable solid state diode high brightness for use as flood or coaxial illumination sources for FMI.

Laser Illuminator: This low energy flood source allows monochromatic imaging without the LSM. Real time imaging means easy navigation and Moiré thermal mapping from the backside.

SIFT: Stimulus Induced Fault Test. This is the superset tool of all Laser based stimulus techniques -- both parametric and functional. Modules allow electrostatic and magnetic mapping as well as traditional laser scan methods. **We do not tile images together.** The scan is rastered outside the objective to maintain constant power and known position of the laser as a function of stimulus of the defect.

Advanced Applications Facility in Silicon Valley



Our demonstration laboratory is fully equipped with the full range of FA Instruments' microscopy solutions as well as a full range of sample preparation systems and analytical tools.

This allows us to offer an unique fully integrated approach to solve your problems. Schedule a visit to see how we can help you improve your failure analysis capabilities.

Contact us to schedule a demonstration. **Tel: 1 408 428 9353** or e-mail info@fainstruments.com

Thank you for your time! We look forward to talking with you in the near future.



www.fainstruments.com

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