



FIB Circuit and Debug

Speed up your product development cycle with quick and easy FIB edits

Focused Ion Beam (FIB) circuit edit enables us to cut traces or add metal connections on ICs. FIB circuit edit can be used to test and debug design edits prior to committing to mask changes and to get functional prototypes samples in customer and internal development groups hands. FIB circuit edit can enable you to accelerate your product development cycle.

FIB edits can be done quickly and easily, at a small fraction of the cost of a new lot of wafers in a fab. Circuit edits are often performed once a design flaw has been identified, to ensure that the proposed fix will solve the complete problem. With our state of the art equipment, we can edit circuits at leading edge technology nodes and on multiple layer metal stacks. Our engineers have many years of industry experience and have the knowledge and capability necessary to accommodate the most demanding requests on the most complex of packages and technologies.

Why Eurofins | EAG Laboratories?

Eurofins | EAG Laboratories provides the specialized support and services you need to accelerate time to market, fill equipment and expertise gaps, and manage risk associated with product development.

- Speed time to market and eliminate product revisions with FIB Circuit Edit
- Full range of debug tools to solve complex failures
- Expertise to accommodate the most demanding circuit edit challenges
- Cut traces, add metal connections, and analyze failures

FIB Circuit Edit Capabilities

Our services include sample preparation, sample analysis, fault isolation, and circuit modifications. The FIB's unique capabilities include the following processes, all of

which can be performed with nanometer-scale accuracy:

- Metal deposition
- Dielectric deposition
- Metal and dielectric etch; including material-specific chemical etch enhancement
- Imaging of the device using the incident ion beam

These capabilities allow FIB to perform some key functions:

- Circuit edit by connecting and cutting signal lines in order to modify the logic of circuitry.
- Probe pad formation at specific locations by exposing the desired trace and connecting to a newly formed probe pad.
- Increase or decrease resistance in a circuit.
- Failure Analysis: FIB Passive Voltage Contrast (PVC) defect localization is more sensitive and more reproducible than the corresponding SEM technique. When an interesting feature is observed, the FIB is capable of providing additional information to help determine root cause.
 - The defective region can be marked in the FIB for further characterization.
 - The defect can be cross-sectioned and imaged in the FIB.

- The defect can be isolated by cutting the appropriate adjacent circuit components.

FIB Circuit Edit employs a finely focused Ga⁺ ion beam to image, etch and deposit materials on an integrated circuit. The beam 5 nm resolution allows for extremely precise edits to be made. FIB circuit edit can be used to cut and connect circuitry within an IC to validate design changes and debug new devices quickly without incurring the costs of a new mask set. It can dramatically speed time to market, eliminating multiple cycles of product revisions.

Engineering Sciences

- ATE Test Development and Pilot / Production Test
- Burn-in and Reliability Qualification
- ESD and Latch-up Testing
- Debug and FIB Circuit Edit
- Failure Analysis
- Advanced Microscopy (SEM, TEM, FIB/SEM)
- PCB Design and Hardware

Eurofins | EAG Laboratories delivers comprehensive design, development, test, analysis and debug services that are differentiated by expert engineering capability and comprehensive capital equipment and processes.

