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Fault Simulation Task Assistant

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Fault Simulation Task Assistant

Fault simulations in ADE Assembler provide the capability to run defect-oriented tests on analog IC designs. These tests allow you to evaluate the ability to eliminate a die with manufacturing defects and resulting test escapes that cause field failures. It can also be used to optimize wafer test, reducing the number of tests required to achieve the target defect coverage by eliminating over-testing and potentially reducing the number of tests.

The following topics describe the important tasks you can perform for fault simulation:

- How to inject faults in a design?
- How to preview the fault list for simulation?
- How does fault sampling affect the fault list?
- How to implement automatic fault dropping during simulation run?
- Is it possible to merge results from multiple fault simulations?

Related Content: Running Fault Simulations

How to inject faults in a design?

The Fault Setup Assistant provides the following methods to specify the faults to be injected:

- Using Fault Rules
- Creating Individual Faults
- Using Fault Files
- Importing Fault Rules from Other Cellviews

Related Topic: Injecting Faults

How to preview the fault list for simulation?

Before running a fault simulation, you can preview the fault list :

1. Select a fault group in the *Fault Group to Run* drop-down list on top of the Fault Setup assistant.
2. Click *Preview all faults for fault group selected to run* on the Faults Setup assistant.

   ADE Assembler runs Spectre info analysis to identify the fault list. If available, it also applies the sampling options to arrive at the final list of fault samples in the *Faults* table.
   It then displays the list in the Fault Group Preview window.

Related Topic: Previewing Faults

How does fault sampling affect the fault list?

When the fault universe consists of a large number of faults, it is practically impossible to run simulations for all the faults. Sampling helps in selecting a subset of fewer faults that can represent the whole fault universe. This helps in estimating the overall coverage with very less simulations.

In ADE Assembler, you can use the following sampling methods supported by Spectre:

- random
- randomuniform
- randomweighted
- weightsorted

Related Help Topic

Sampling Options

How to implement automatic fault dropping during simulation run?

You can create a run plan using the fault setup to run multiple simulations, one for each test, in a sequence where each subsequent run in the plan uses a reduced list of faults that were not detected in the previous run. This way of dropping faults that are detected by the previous run helps in focusing on fault coverage and also saves time because the simulation is not run for the faults that are already detected.

Related Topic: Automatic Fault Dropping Using Run Plan

Is it possible to merge results from multiple fault simulations?

You can merge the results of multiple fault simulation histories to view the consolidated results in one history.
This feature saves the time required to rerun simulations in the following scenarios:

- After running a fault simulation, you modify the fault rules or the test setup, or make any other change in the active setup, and run simulation. You can merge the results saved before and after making these changes and view a consolidated report.
- You want to check the fault detection rate by dropping faults in subsequent runs, and then want to merge results of all runs. For more details, refer to Checking Fault Detection Rate.

Related Topic: Merging Results from Multiple Fault Simulations