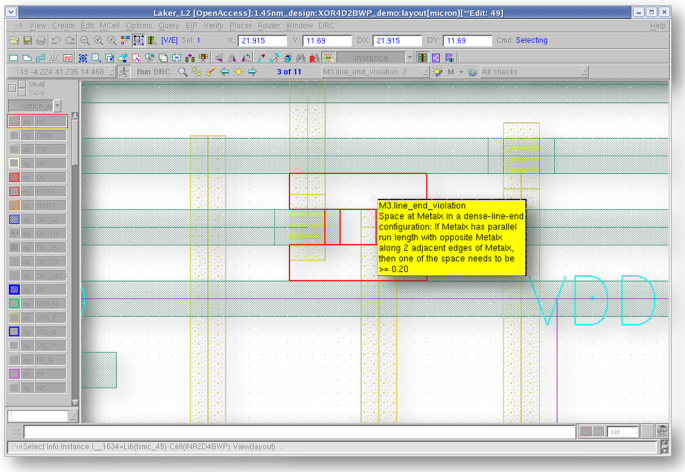
Calibre confidence in the custom/AMS flow

Calibre RealTime Custom

Physical Verification

D A T A S H E E T



The Calibre RealTime Custom platform completely changes the traditional layout-verification-simulation loop by bringing Calibre sign-off-quality verification into the custom and AMS design creation process.

Calibre signoff-quality DRC during custom/AMS design

The Calibre® RealTime Custom interface enables in-design signoff-quality Calibre design rule checking (DRC) for custom and analog/mixed-signal (AMS) design flows, improving both design speed and the quality of results by providing immediate feedback on design rule violations and recommended rule compliance. With this information readily available during layout, designers can optimize designs for increased performance without incurring numerous time-consuming design-verification iterations.

By providing the same automated check capabilities available in digital design checking, the Calibre RealTime Custom interface makes it easier for custom/AMS integrated circuit (IC) designers to produce high-quality designs while still meeting production schedules. Now, no matter how many drawn layers a design contains, or how many checks there are per layer, or even how complex those checks are, design groups working at the most advanced nodes can get to DRC-clean quickly and with Calibre confidence.

When integrated into a custom/AMS IC design and layout system, the Calibre RealTime Custom interface provides direct calls to Calibre analysis engines running foundry-qualified Calibre rule decks. These Calibre engines perform fast, incremental checking in the vicinity of shapes being edited, providing nearly instantaneous feedback on design rule violations, as well as potential systematic variation susceptibility (as measured by recommended rule compliance).

BENEFITS:

- Provides instantaneous feedback on signoff-level DRC violations during layout creation and editing.
- Reduces verification iterations and overall design time.
- Allows interactive editing of custom/AMS designs based on Calibre signoff rule decks.
- Enables designers to perform what-if analysis and optimize designs during layout creation.
- Integral part of design creation flow.
- Increases designer productivity by 2-5X.

FEATURES:

- Uses standard foundry-qualified Calibre rule decks.
- Built-in error review using toolbar and Calibre RealTime Custom results viewer enhances ease of use.
- Immediate Calibre nmDRC feedback after edits are made.
- OpenAccess run-time model enables integration with most custom design environments.
- In-memory checking ensures best performance.
- User-defined custom filters tied to layout interface.
- Complements existing built-in checkers.

With its ability to perform all checks that can be run with the Calibre nmDRC™ Platform, including recommended rules, pattern matching, equation-based DRC, preferred metal direction rules, and multi-patterning, the Calibre RealTime Custom interface lets custom/AMS IC designers perform fixes and what-if analysis during the layout process, then validate and adjust their designs to produce a design that is DRC-clean, resistant to manufacturing variability issues, and optimized for the most desirable performance and operational characteristics.

Use Models

Analog/Custom Design

Analog and custom design engineers can take advantage of the nearly instantaneous feedback from the Calibre RealTime Custom interface to implement the highest quality designs possible. Because they can iterate through signoff-quality DRC while they design, they can be confident that the high-performance design they create will also meet manufacturing standards.

Cell-Level Design

At the cell level, designers can use immediate feedback from the Calibre RealTime Custom interface to optimize the design for performance during layout creation and editing, while continuing to use batch Calibre runs for library characterization and final signoff.

Macro Design

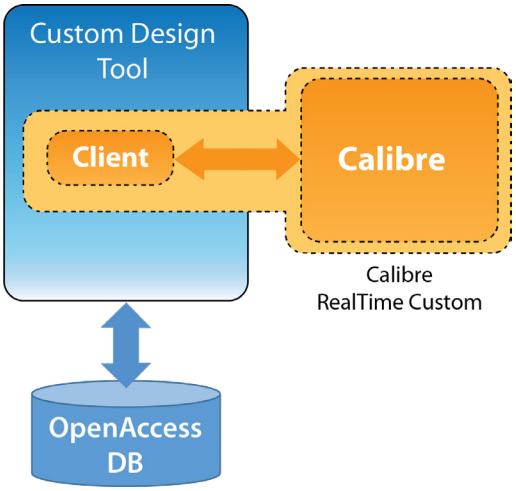
The primary use model for in-design DRC is to run it on cell and block designs, as its efficiency declines with increasing design size. The Calibre RealTime Custom interface better bridges this gap between cell/block and macro design verification by automatically launching a Calibre batch DRC run when you exceed a user-defined verification limit. Designers launch Calibre RealTime Custom DRC verification as usual, and the tool seamlessly and automatically determines when to launch a batch job. The batch DRC results debug is still performed in the Calibre RealTime Custom environment to allow users to get immediate feedback as they fix any DRC errors.

DRC Repair for Full-Chip Verification

By combining the Calibre RealTime Custom interface with batch Calibre DRC runs and Calibre RVE™ results viewing to identify and correct DRC violations during layout, designers can minimize the need for full-chip verification runs, shortening the production schedule when it is most critical—at tapeout.

Ease of Use

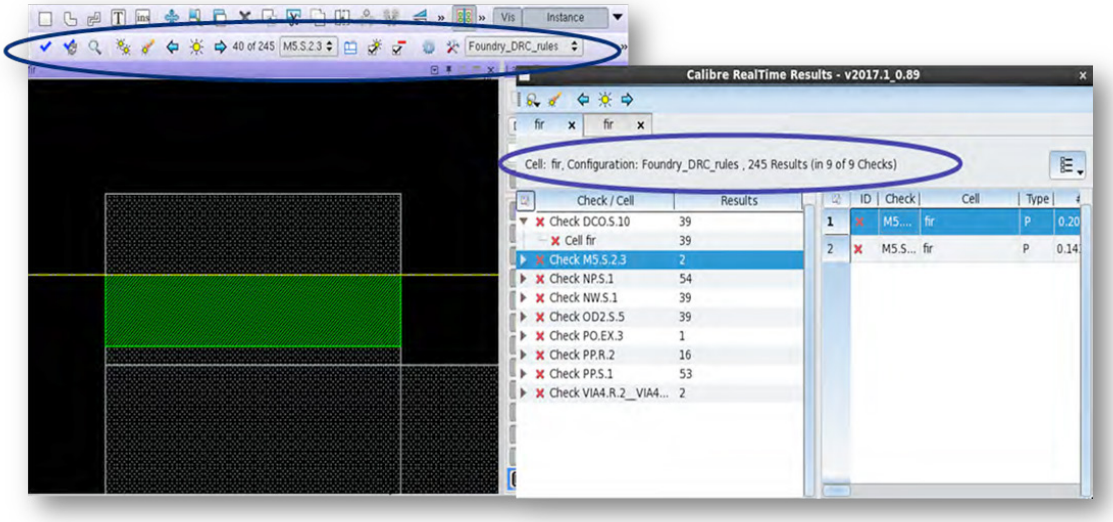
The Calibre RealTime Custom interface provides a tight integration between the Calibre physical verification platform and custom/AMS IC design and layout systems, based on the OpenAccess industry standard. Calibre nmDRC™ verification is transparently implemented, so users can begin enjoying the advantages of signoff-quality DRC without the usual learning curve.



The Calibre Realtime Custom interface offers immediate signoff-quality DRC to custom and AMS designers through the OpenAccess API.

The Calibre RealTime Custom interface eliminates any gaps between the custom layout tool's built-in design rules and the foundry-qualified rule deck, so designers know they are getting accurate, up-to-date foundry information at the best possible time—while they are creating their design. At the same time, because it is integrated in addition to the built-in checker, users have the freedom to use either or both checking processes, as desired.

The Calibre RealTime Custom built-in error review toolbar eliminates window clutter and enhances ease of use for custom/AMS designers. Designers can also use the Calibre RealTime results viewing environment to view all error data, and debug errors in a systematic way based on DRC error type. User-defined custom filters allow designers to limit which checks are run, based on design requirements and organizational processes, without having to modify the foundry-qualified rule deck.



Designers can highlight results using either the Calibre RealTime Custom toolbar or the Calibre RealTime Custom results window.

Superior Product Support

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