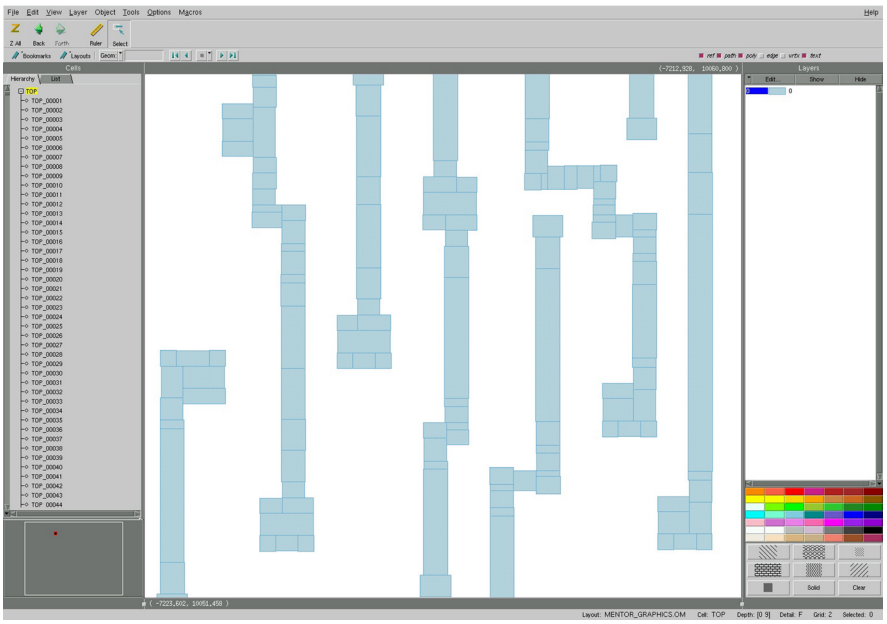
Manufacturability

Calibre FRACTUREv

OASIS.MASK Formatted Mask Data Export

D A T A S H E E T



Calibre FRACTUREv enables direct data export from the Calibre database into OASIS.MASK format. The illustration shows a section of a formatted file in the Calibre viewing tool.

Mask Data Preparation for OASIS.MASK Format

Calibre® FRACTUREv™ exports fractured mask data in the OASIS.MASK (SEMI P44) format. As part of the mask data preparation (MDP) tool suite, Calibre FRACTUREv supports multiple usage models in the complex post tape-out flow. OASIS.MASK is designed for direct input to state-of-the-art mask writing, metrology and inspection tools. OASIS.MASK may also be converted to native fracture formats to support legacy tools and flow transitions via a simple format translation without re-fracturing.

Increase Productivity with OASIS.MASK

Managing the data volumes is becoming a burden using established data format specifications. Design complexity and increased deployment of resolution enhancement techniques (RET) result in rapidly growing file sizes that increase mask making costs and impact yield. These factors have turned what used to be the relatively simple MDP flow into a real bottleneck.

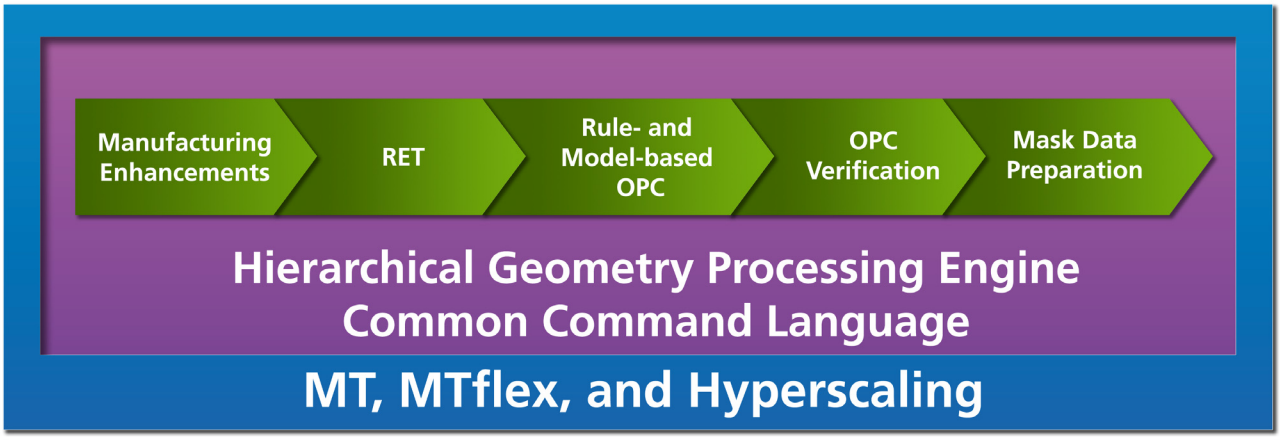
Calibre FRACTUREv improves the MDP flow by using OASIS.MASK as an all-purpose MDP file format. OASIS.MASK is a subset of OASIS, which is accepted by all Calibre tools and is the most efficient input format to the MDP flow. Calibre FRACTUREv is complemented by a dedicated verification command, MDPverify, which allows for an independent verification of the fractured results against the original GDS or OASIS file, or a previous version of the OASIS.MASK output.

Key Benefits

- Increases efficiency of the post tape-out flow by unifying the mask data format.
- Boosts processing speed with hierarchical fracturing, scaleable multi-threading, and dynamic memory allocation.
- Controls mask costs by minimizing shot count in fractured data.
- Improves mask quality with efficient supression of small figures.
- Achieves high throughput of mask manufacturing equipment.
- Reduces the file size of fractured data compared to native machine formats.
- Minimizes data transfer time by reducing hand-off file size.
- Provides vehicle for fast translation between fracture formats.

Product Features

- Built on Calibre's proven hierarchical geometry processing.
- Available for Linux and Sun platforms.
- Built-in verification of fractured data against original input or previous output version.
- Easy to integrate in OPC and verification flows.



A powerful hierarchical processing engine is at the heart of the Calibre GDSII-to-mask flow shown in this illustration. Calibre MT, MTflex, and hyperscaling functionalities provides a parallel processing data architecture for running multi-threaded Calibre tools on distributed networked computers.

Proven Design-to-Silicon Solution

Mentor Graphics offers fully integrated, best-in-class tools for IC verification and sign-off, design for manufacturing, computational lithography, mask process correction, and mask data preparation.

The Calibre nm platform, with the Calibre nmDRC™ and Calibre LVS tools, has become the golden standard for verification of advanced ICs. Mentor's comprehensive DFM solution is tightly integrated with the Calibre platform for proven control of manufacturing variability in cell libraries as well as full-chip layouts. The Calibre DFM solution includes the Calibre LFD™ product, which provides accurate modeling of lithographic process and etch characteristics, and is the standard sign-off flow for litho hotspot and variability analysis for IP and full-chip applications. It is fully integrated with the Calibre nmDRC, Calibre LVS and Calibre xRC™ products, allowing critical device and interconnect characteristics to be extracted based on accurately-modeled, "as-built" contour geometries. The resulting physical data can be plugged into Mentor's Eldo high-performance SPICE simulator to produce an accurate timing simulation of how physical blocks will actually perform.

The Calibre RET tools employ advanced computational lithography techninques to deliver optical and process correction, phase shift mask, scatter bars, off-axis illumination, and double-patterning decomposition with the fastest turn-around-time and excellent yield.

Mentor's mask data preparation (MDP) solution is fully compatible with the Calibre platform, enabling you to complete all resolution enhancement processing and mask data format conversion tasks in one mask fabrication batch run using a single control language.

Family of Calibre MDP Tools

Calibre FRACTURE family

Calibre MDPmerge

Calibre MDPverify

Calibre MDPview

Calibre MAPI

Calibre MASKOPT

Calibre nmMPC

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