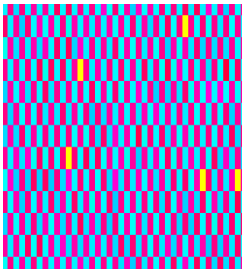


BarnieMAT

Unique Bitmap Analysis Software

Fast Learning of Array Effects

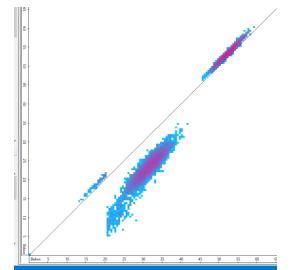
Hundreds of Ready-to-Use Array Processing Functions



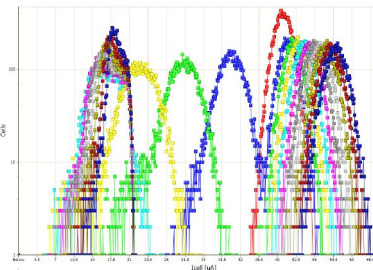
- Speed-optimized engine for large data volumes
- Cell classification using innovative filtering concept
 - Shape recognition

Best-in-Class Presentation Tools

- Analog bitmap viewer
- Interactive processing and cell highlight
- 2D and 3D distribution view and analysis



Automated Analysis using Python



- Easy integration via remote API
- Scalability for “quite-big-data” processing
 - Input generation for machine learning

Fast Track to Your NVM

analysis you've never dreamed of before

From Data to Information

BarnieMAT is a unique software tool providing all necessary functionality to process huge quantity of array measurement data on memory devices, image sensors and FPGAs.

BarnieMAT shortens the way to extract essential information interpretable for the human brain. Users obtain faster and more reliable results with minimal effort and can focus on their decision.

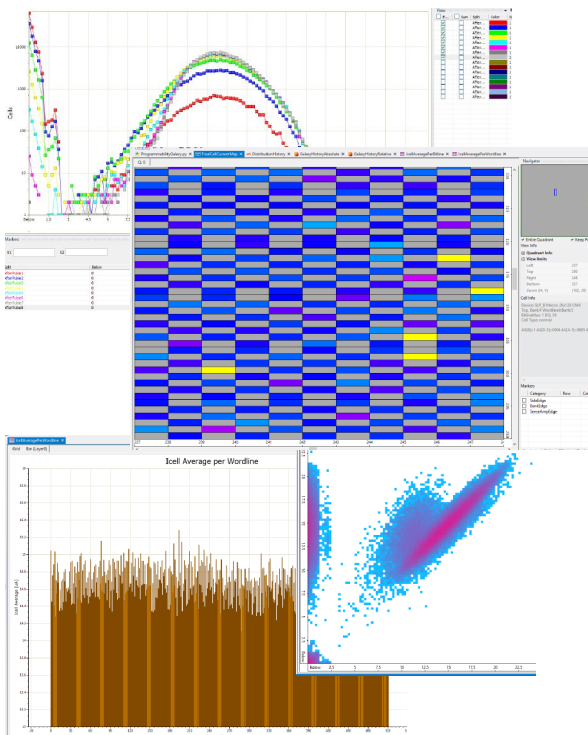
- Single graphical framework with strong focus on usability.
- Superfast algorithms for bitmap processing, supported by an innovative filtering engine.
- Easy configuration for any technology (large arrays, multilevel, 3D, ...).
- Analysis flow automation using Python.
- Easy integration in external processing environment via API and a remote control port.
- Open for user extensions for additional custom processing.

Hundreds of Built-in Functions

- Conversions (map to distribution, ...)
- Operations (cell-by-cell differential map, ...)
- Stacking (fail count from multiple arrays, ...)
- Signatures (Vt average per wordline, ...)
- Overlays (block fail density, ...)
- Compressions (fail count per page, ...)
- Shape recognitions (list of neighbor bit failures, ...)
- Trace-back (position of distribution tail cells, ...)
- SQL-like table processing

Best-in-Class Viewers

- Topologic view of the array data in 2D and in 3D
- Measured values shown with color schema
- Parallel zoom and pan of two or more maps
- Bookmarking of critical cells on a map
- 2D and 3D (galaxy) distributions
- On-the-fly distribution statistics
- Wide range of charting options



Formula-Driven Computing

Map processing is supported by a powerful filtering engine, to define the cells to include in the result and their grouping. Filters can be described by an easy-to-learn formula.

- ❖ **"SPLIT=WL%64"** splits the cells in 64 groups based on their wordline position.
- ❖ **"PAGE%2 = 0 AND DATA>5.5"** selects the cells having a high threshold value on even pages.

```
from BarnieMAT import BarnieMAT
barnie = BarnieMAT(Debug=False, Verbose=True)

# list of the thousands of imported bitmaps from a wafer test
mapPattern = "/Received/ABC01234_*"
mapList = barnie.DirectoryListObjects(MASK=mapPattern, FULLPATH=T

# stack the maps counting the fails per cell position
barnie.STACKMAP(INS=mapList, OUT="MyStackedMap", OP="sum")

# show what we created
barnie.View(OBJECT="MyStackedMap")
```

