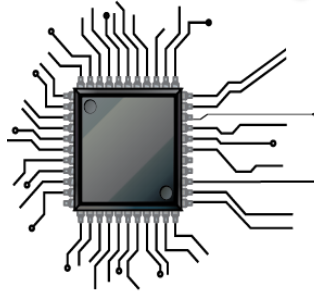


Welcome !

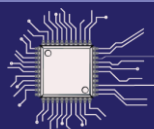


MivaCon

2021



Dart Technology Segment begins at 1:00 pm Eastern US Time



MivaCon

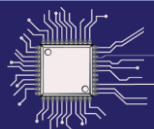
2021

“Every man builds his world in his own image. He has the power to choose, but no power to escape the necessity of choice.”



■ DART Technology

- **DART:** Digitally Adaptive Rasterization Technology
- **Speed:** Ability to Rasterize at Imaging Speed
- **Precision:** Rasterization and adjustments occur at 10x imaging resolution to increase precision and eliminate pixilation error.
- **Flexible:** Permits feature measurement after develop, etch or plating.



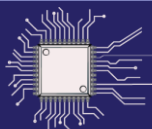
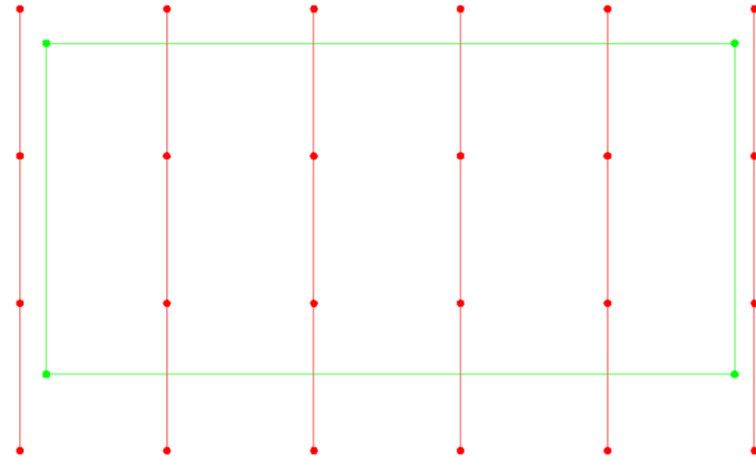
Warp: Fast Scale Method

■ Single Rasterization per Job

- High speed eliminates the panel-by-panel rasterization time
- Dx/Dy points mapped to strip positions
- Light Engine 'warps' local pixels in native resolution to alter image.
- Zones and panel are not true-scaled but remapped to an approximate grid.

■ Results

- Trade-off precision for speed

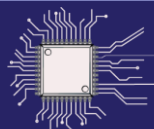




Scale on the Fly

- **DART Compliance:** Each panel is completely re-rasterized for maximum precision.
 - Measurements identify Dx,Dy in the as-built
 - Gerber data is directly scaled at the global/zone level
 - Strips are rasterized at 10x actual resolution
 - Strips are snapped to imaging resolution to eliminate pixilation
 - First strip is uploaded, imaging begins, next strip is rasterized and uploaded during strip imaging for zero delay.

- **Results:**
 - Increased scale accuracy and less pixilation





Optimization Suite : First Article

■ First Article Tool

- Converts machine into QC Tool
- Auto measure feature size at coupons
- System suggested LWC to adjust
- Post-develop or etch

■ Feedback Loop:

- Confirm feature size through total process
- Latent Image - Post-develop - Post-etch

• Coming Soon:

- Offline measurement : AB Registration and DART tools

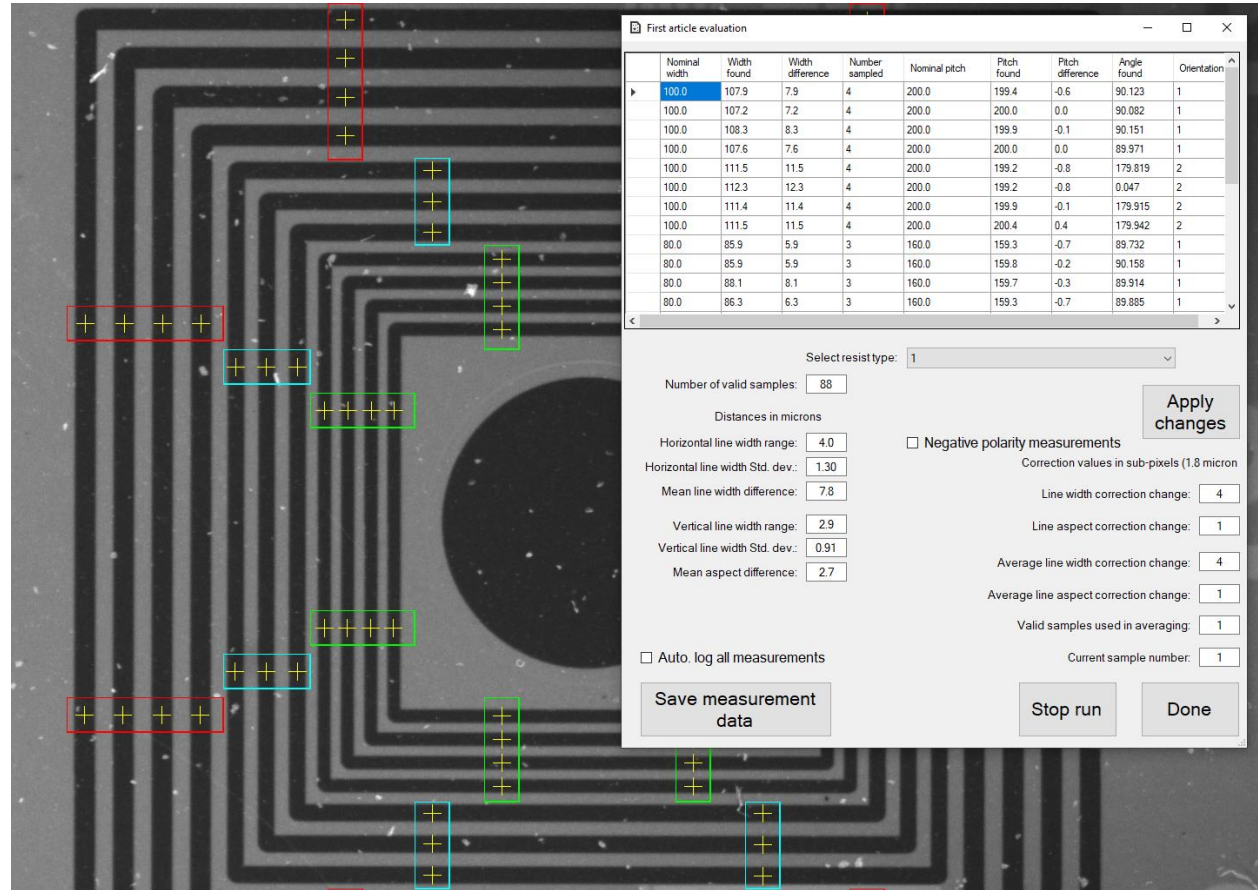




Optimize : First Article

Auto-measure:

- 96 points
- Develop or etch
- Aspect Ratio





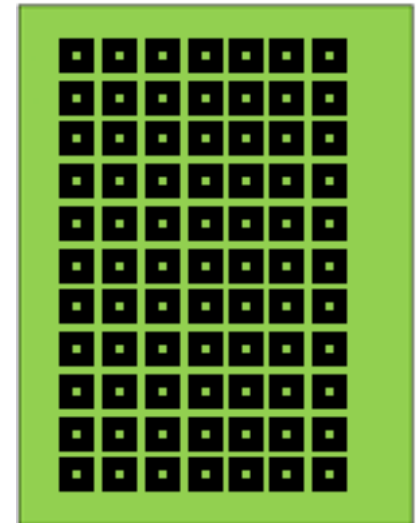
Optimization Suite : Process Control

- **Process Control Tool:**

- Standard matrix of coup elements
- Topographical map of feature size distribution
- Allows for improved adjustment and understand of process capabilities for etch and develop.

- **Feedback Loop:**

- Determine the source of feature variation
- Latent Image - Post-develop - Post-etch





Optimization Suite : Process Control

- **Real Digital Imaging:**

- DART permits digital adjustment of features and scale on the fly.
- Optimization Suite provides the feedback loop to include Develop-Etch-Plate

- **Feedback Loop:**

- Determine the source of feature variation
- Latent Image - Post-develop - Post-etch

