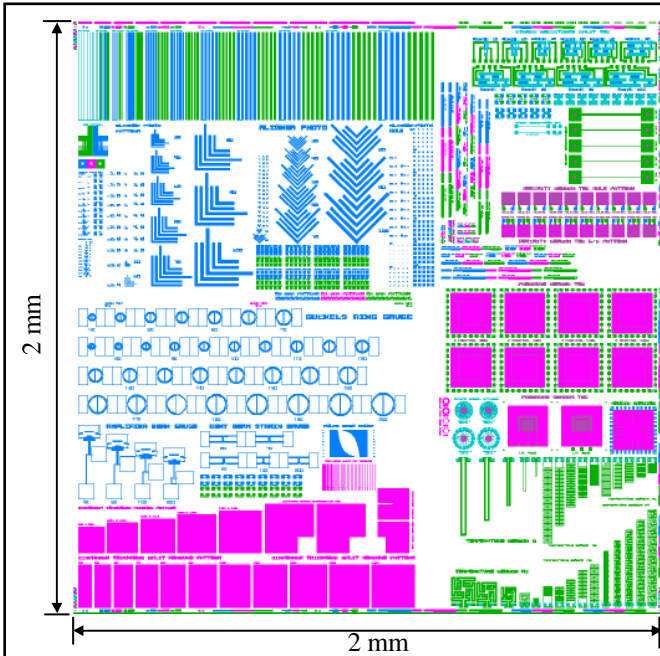


SKW Associates, Inc.

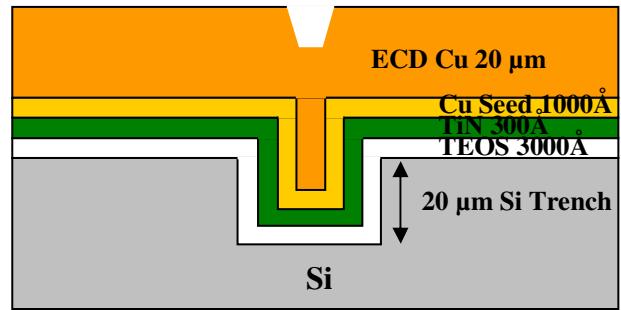
2920 Scott Blvd.
Santa Clara, CA 95054
Phone (408) 919-0094
Fax (408) 919-0097
Email: skw@testwafer.com
<http://www.testwafer.com>

SKW6-TSV4-20u Wafer Specifications

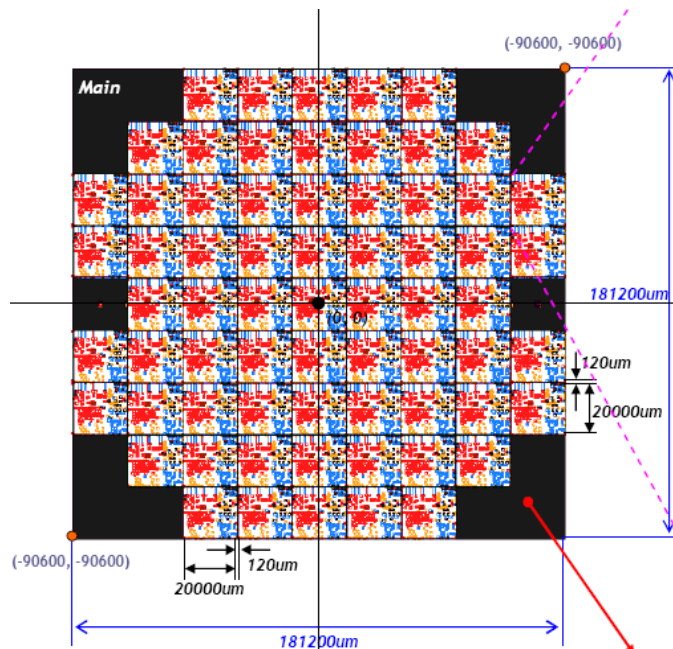
DATE: February 8, 2010



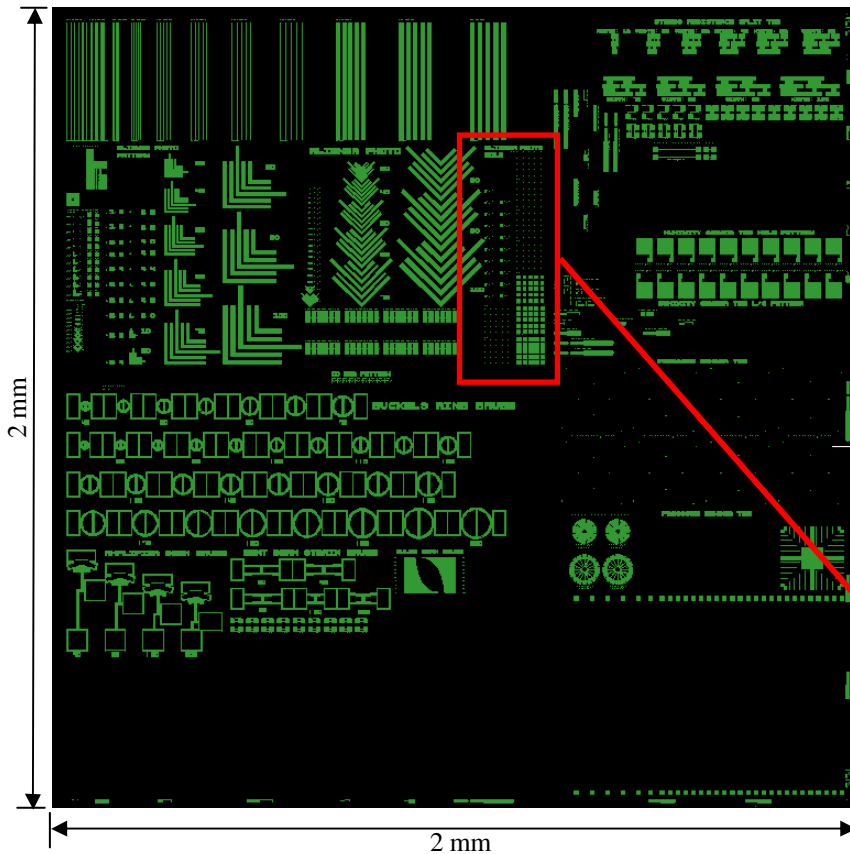
SKW6-TSV4-20u Mask Floor Plan



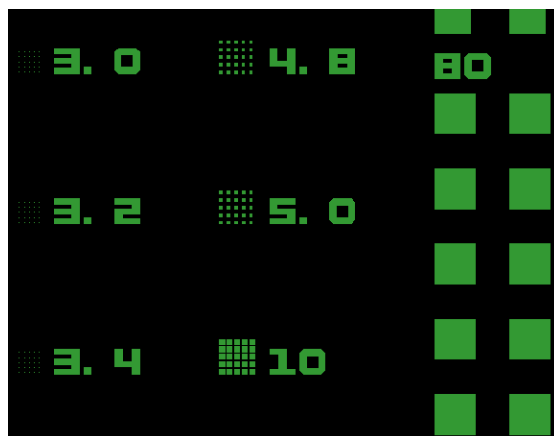
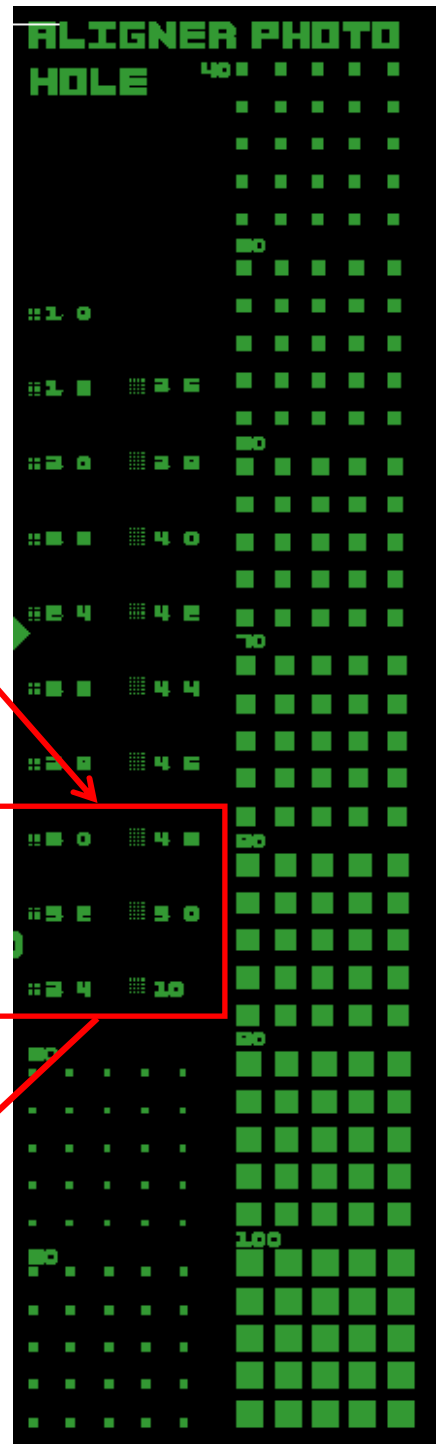
Cross Sectional View



SKW6-TSV4-20u Wafer Die Map



SKW6-TSV4-20u Mask Floor Plan



Enlarged View of Via Hole Structures

| PARAMETER | NOMINAL | TOLERANCE |
|--|-------------------------------------|----------------------|
| Patterning | | |
| Die Size: X | 2 mm | +/- 10 μm |
| Die Size: Y | 2 mm | +/- 10 μm |
| Die Stepping (X /Y) | 120 / 120 μm | +/- 10% |
| CD Variation (measured on 10 μm and 50 μm hole structures) | | |
| Lot-to-Lot | 10 μm , 50 μm | +/- 5 % |
| Within-Lot (Wafer-to-Wafer) | | +/- 5 % |
| Within-Wafer | | +/- 5 % |
| Within-Die | | +/- 5 % |
| TEOS Oxide film thickness | | |
| Lot-to-Lot | 3000 Å | +/- 5 % |
| Within-Lot (Wafer-to-Wafer) | | +/- 5 % |
| Within-Wafer | | +/- 3 % |
| Within-Die | | +/- 3 % |
| PVD TiN film thickness | | |
| Lot-to-Lot | 300 Å | +/- 5 % |
| Within-Lot (Wafer-to-Wafer) | | +/- 5 % |
| Within-Wafer | | +/- 3 % |
| Within-Die | | +/- 3 % |
| PVD Cu film thickness | | |
| Lot-to-Lot | 1000 Å | +/- 5 % |
| Within-Lot (Wafer-to-Wafer) | | +/- 5 % |
| Within-Wafer | | +/- 3 % |
| Within-Die | | +/- 3 % |
| ECD Cu film thickness | | |
| Lot-to-Lot | 20 μm | +/- 10 % |
| Within-Lot (Wafer-to-Wafer) | | +/- 10 % |
| Within-Wafer | | +/- 5 % |
| Within-Die | | +/- 5 % |

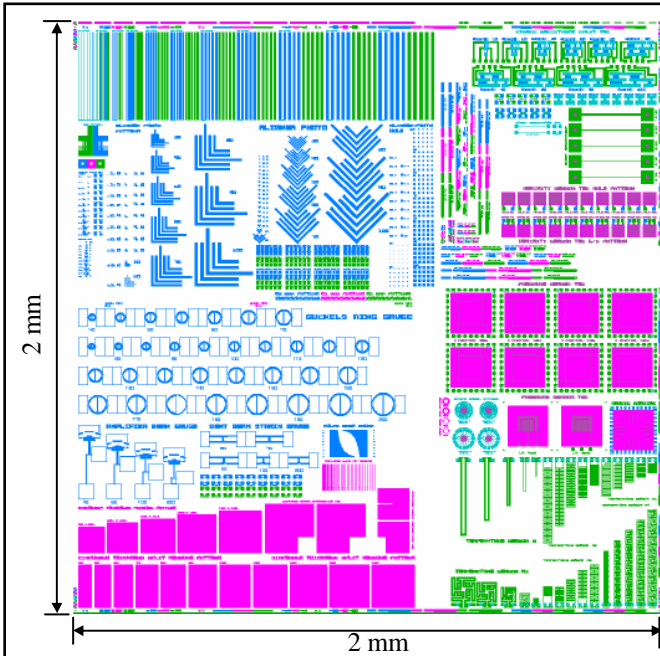
| PARAMETER | NOMINAL | TOLERANCE |
|-----------------------------|------------------|-----------|
| Silicon Trench Depth | | |
| Lot-to-Lot | 20 μm | +/- 10 % |
| Within-Lot (Wafer-to-Wafer) | | +/- 10 % |
| Within-Wafer | | +/- 10 % |
| Within-Die | | +/- 10 % |

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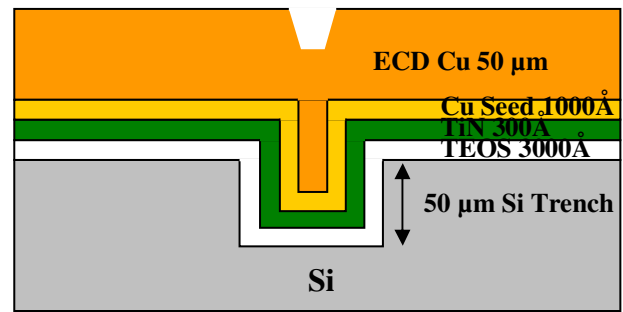
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SKW6-TSV4-50u Wafer Specifications

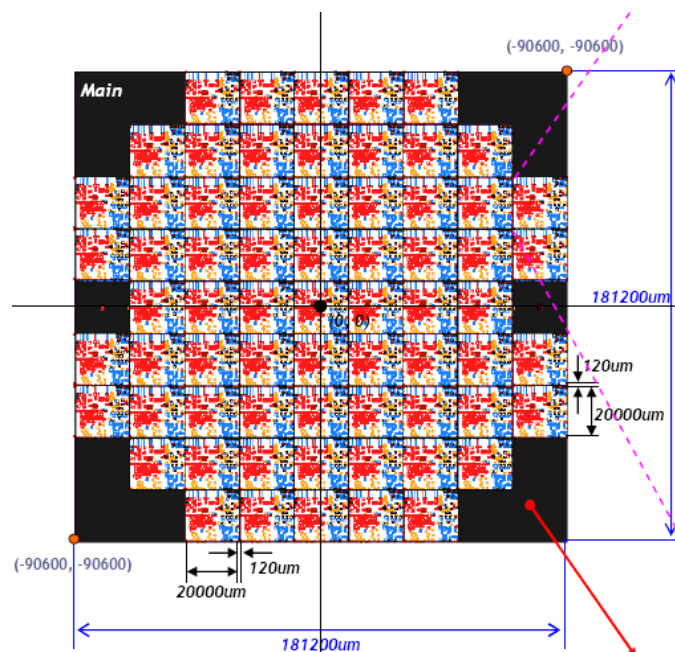
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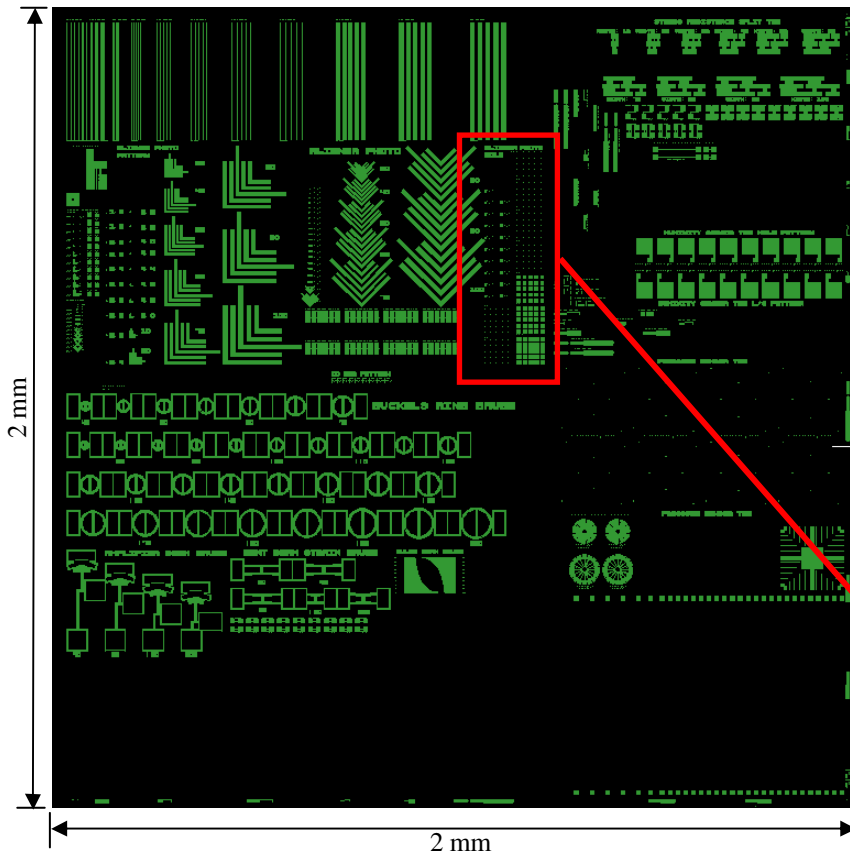
SKW6-TSV4-50u Mask Floor Plan



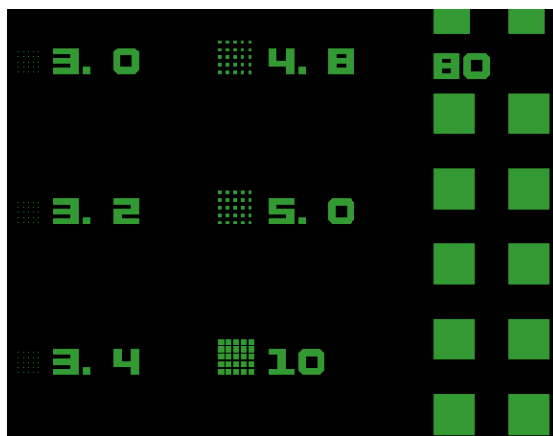
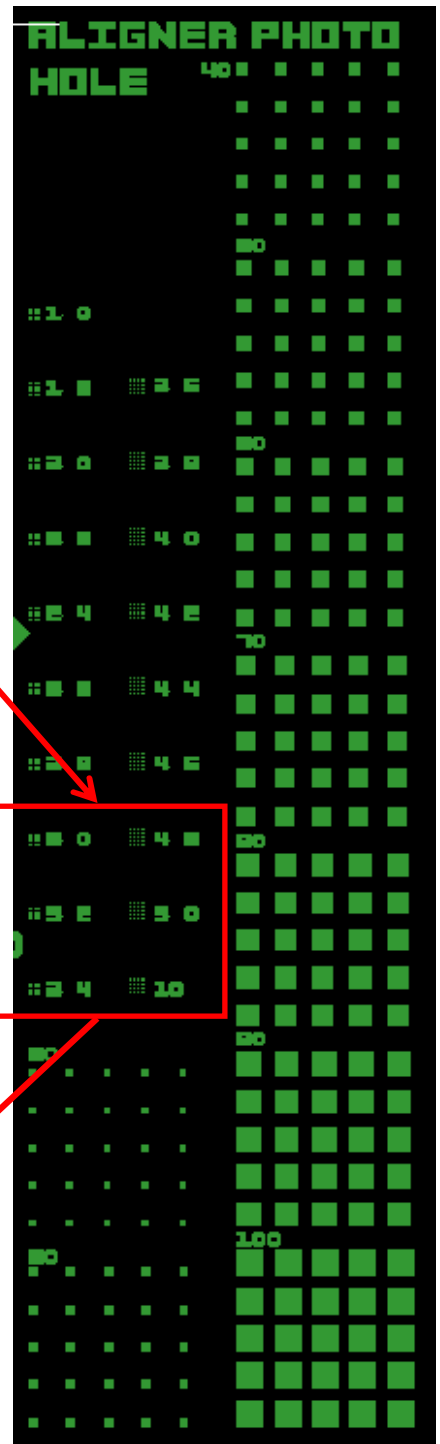
Cross Sectional View



SKW6-TSV4-50u Wafer Die Map



SKW6-TSV4-50u Mask Floor Plan



Enlarged View of Via Hole Structures

| PARAMETER | NOMINAL | TOLERANCE |
|--|-------------------------------------|----------------------|
| Patterning | | |
| Die Size: X | 2 mm | +/- 10 μm |
| Die Size: Y | 2 mm | +/- 10 μm |
| Die Stepping (X /Y) | 120 / 120 μm | +/- 10% |
| CD Variation (measured on 10 μm and 50 μm hole structures) | | |
| Lot-to-Lot | 10 μm , 50 μm | +/- 5 % |
| Within-Lot (Wafer-to-Wafer) | | +/- 5 % |
| Within-Wafer | | +/- 5 % |
| Within-Die | | +/- 5 % |
| TEOS Oxide film thickness | | |
| Lot-to-Lot | 3000 Å | +/- 5 % |
| Within-Lot (Wafer-to-Wafer) | | +/- 5 % |
| Within-Wafer | | +/- 3 % |
| Within-Die | | +/- 3 % |
| PVD TiN film thickness | | |
| Lot-to-Lot | 300 Å | +/- 5 % |
| Within-Lot (Wafer-to-Wafer) | | +/- 5 % |
| Within-Wafer | | +/- 3 % |
| Within-Die | | +/- 3 % |
| PVD Cu film thickness | | |
| Lot-to-Lot | 1000 Å | +/- 5 % |
| Within-Lot (Wafer-to-Wafer) | | +/- 5 % |
| Within-Wafer | | +/- 3 % |
| Within-Die | | +/- 3 % |
| ECD Cu film thickness | | |
| Lot-to-Lot | 50 μm | +/- 10 % |
| Within-Lot (Wafer-to-Wafer) | | +/- 10 % |
| Within-Wafer | | +/- 5 % |
| Within-Die | | +/- 5 % |

| PARAMETER | NOMINAL | TOLERANCE |
|-----------------------------|------------------|-----------|
| Silicon Trench Depth | | |
| Lot-to-Lot | 50 μm | +/- 10 % |
| Within-Lot (Wafer-to-Wafer) | | +/- 10 % |
| Within-Wafer | | +/- 10 % |
| Within-Die | | +/- 10 % |