

SKW6-TSV3 Wafer Specification

SKW ASSOCIATES, INC.

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SKW6-TSV3 Feature Types

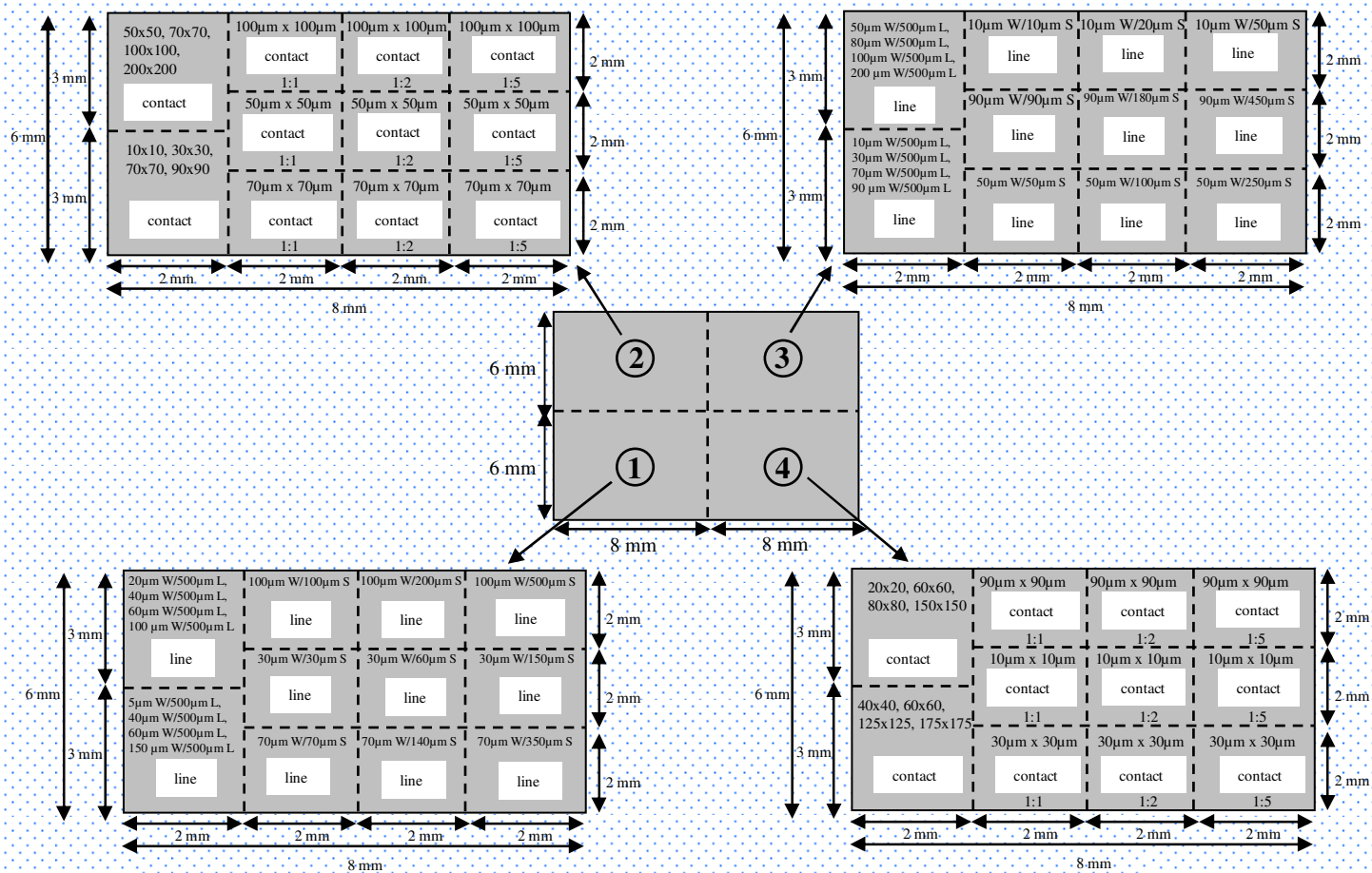
1. Contact

- **Layout Types: Isolated and Array Structures**
- **Contact Feature Size: 10 μm \longrightarrow 200 μm**
- **Contact Array Spacing: 1:1 \longrightarrow 1:5**

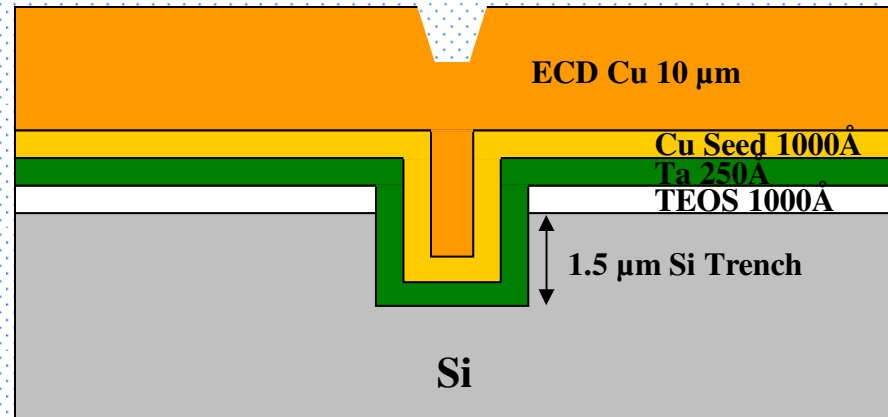
2. Line

- **Layout Types: Isolated and Array Structures**
- **Isolated Line Feature Size (Width/Length): 5 μm /500 μm \longrightarrow 200 μm /500 μm**
- **Line Array Pattern Density: 17% \longrightarrow 50%**

SKW6-TSV3 Mask Floor Plan



SKW6-TSV3 Wafer Cross Section



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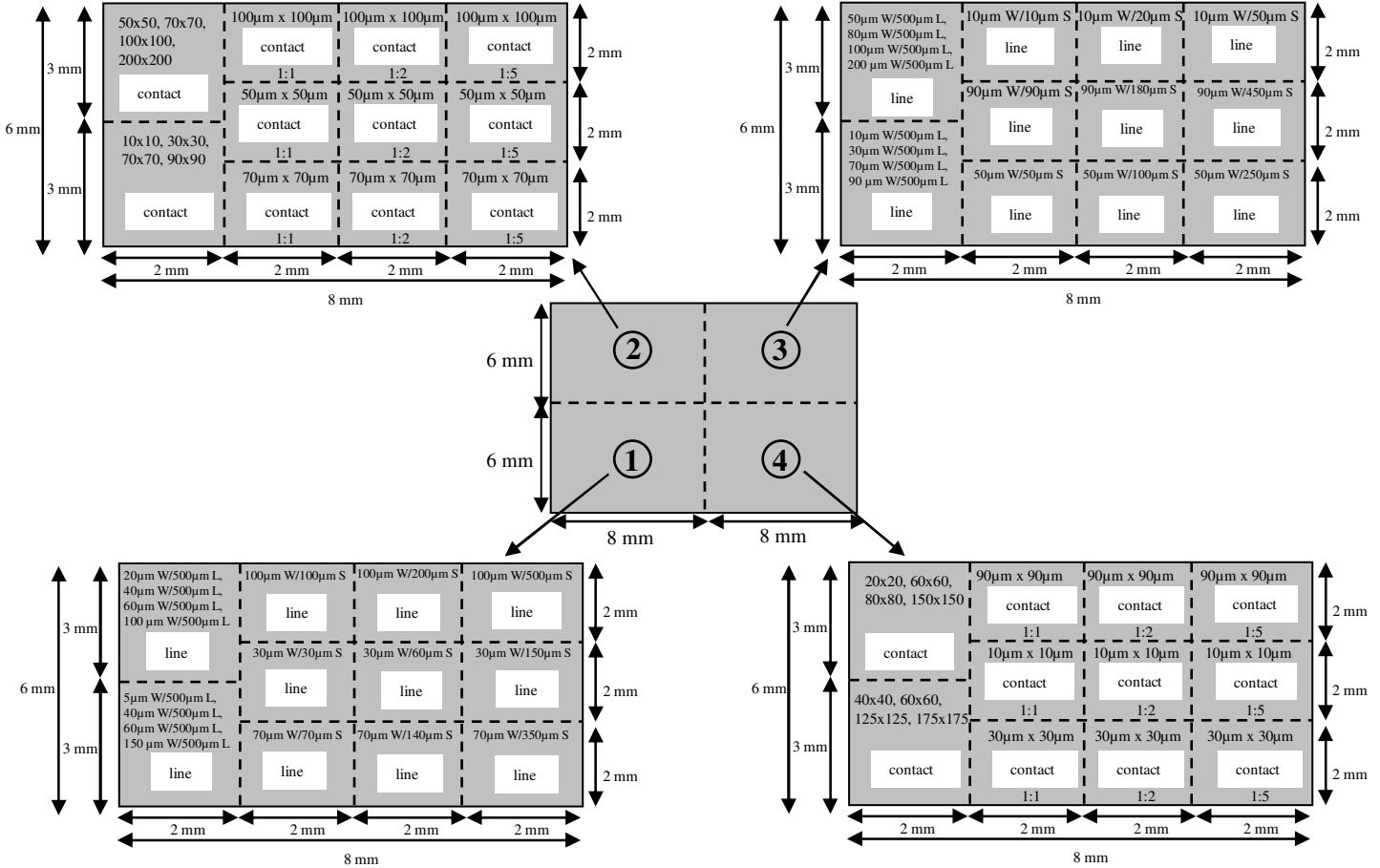
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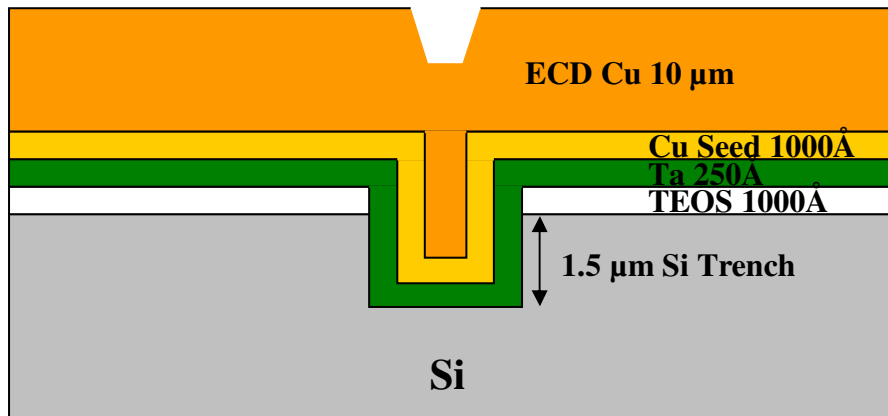
<http://www.testwafer.com>

SKW6TSV3 Wafer Specifications

DATE: June 11, 2009



SKW6TSV3 Mask Floor Plan

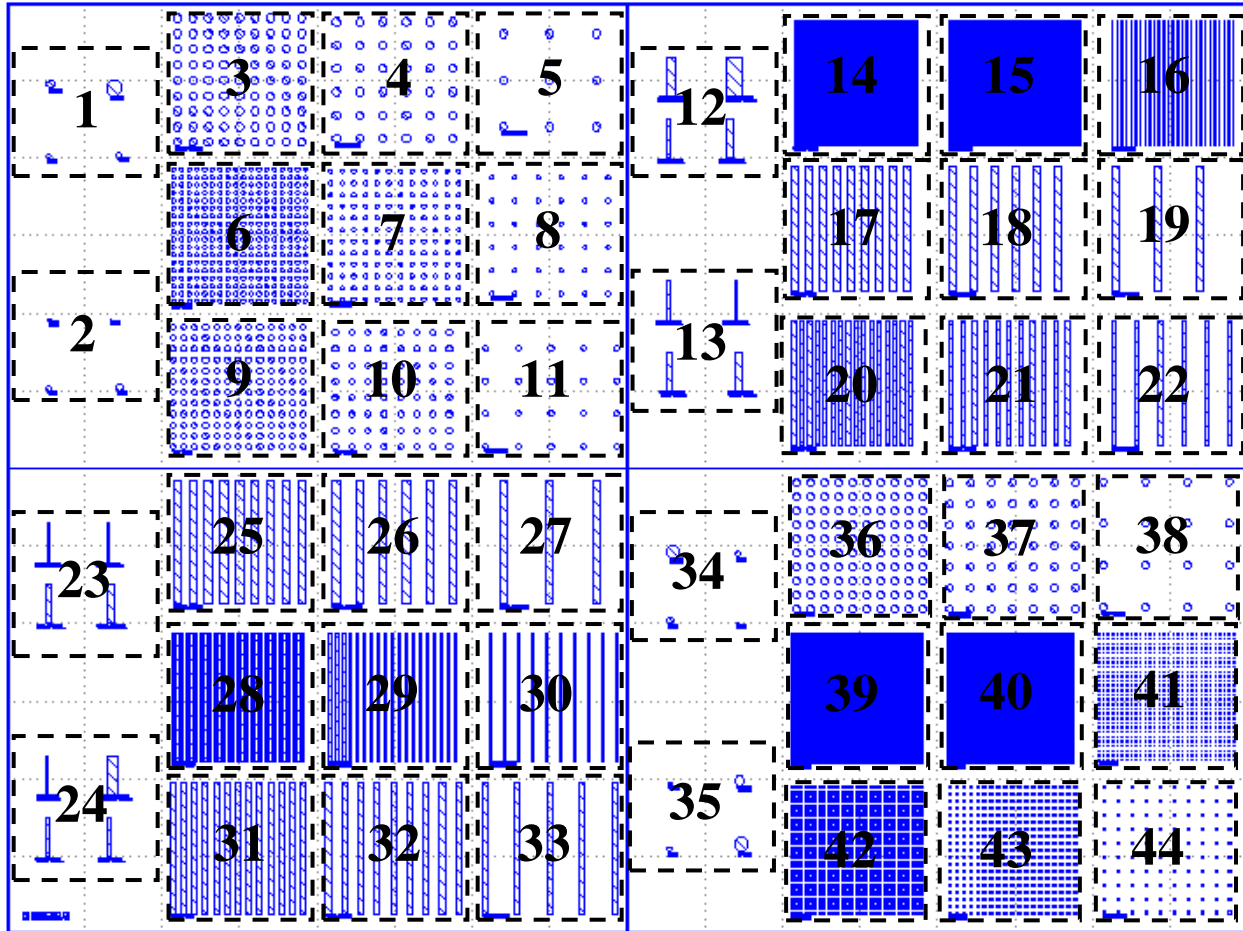


Cross Sectional View

PARAMETER	NOMINAL	TOLERANCE
Patterning		
Die Size: X	16 mm	+/- 10 μm
Die Size: Y	12 mm	+/- 10 μm
Die Stepping (X /Y)	360 / 180 μm	+/- 10%
TEOS Oxide film thickness		
Lot-to-Lot	1,000 \AA	+/- 5 %
Within-Lot (Wafer-to-Wafer)		+/- 5 %
Within-Wafer		+/- 3 %
Within-Die		+/- 3 %
PVD Ta film thickness		
Lot-to-Lot	250 \AA	+/- 10 %
Within-Lot (Wafer-to-Wafer)		+/- 10 %
Within-Wafer		+/- 5 %
Within-Die		+/- 5 %
PVD Cu film thickness		
Lot-to-Lot	1000 \AA	+/- 10 %
Within-Lot (Wafer-to-Wafer)		+/- 10 %
Within-Wafer		+/- 5 %
Within-Die		+/- 5 %
ECD Cu film thickness		
Lot-to-Lot	10 μm	+/- 10 %
Within-Lot (Wafer-to-Wafer)		+/- 10 %
Within-Wafer		+/- 5 %
Within-Die		+/- 5 %
Silicon Trench Depth		
Lot-to-Lot	1.5 μm	+/- 10 %
Within-Lot (Wafer-to-Wafer)		+/- 10 %
Within-Wafer		+/- 10 %
Within-Die		+/- 10 %

Cu Plating Process Conditions:

- 1. Tool: Novellus SabreXT**
- 2. Chemistry: Enthone Low Acid Via Fill Chemistry**



SKW6-TSV3 Feature Block Descriptions

Block #	Description
1	Isolated Contact Structures: 50x50 μm^2 , 70x70 μm^2 , 100x100 μm^2 , 200x200 μm^2
2	Isolated Contact Structures: 10x10 μm^2 , 30x30 μm^2 , 70x70 μm^2 , 90x90 μm^2
3	100x100 μm^2 Contact Array (1:1 spacing)
4	100x100 μm^2 Contact Array (1:2 spacing)
5	100x100 μm^2 Contact Array (1:5 spacing)
6	50x50 μm^2 Contact Array (1:1 spacing)
7	50x50 μm^2 Contact Array (1:2 spacing)
8	50x50 μm^2 Contact Array (1:5 spacing)
9	70x70 μm^2 Contact Array (1:1 spacing)
10	70x70 μm^2 Contact Array (1:2 spacing)
11	70x70 μm^2 Contact Array (1:5 spacing)
12	Isolated Line Structures: 50 μm W/500 μm L, 80 μm W/500 μm L, 100 μm W/500 μm L, 200 μm W/500 μm L
13	Isolated Line Structures: 10 μm W/500 μm L, 30 μm W/500 μm L, 70 μm W/500 μm L, 90 μm W/500 μm L

Block #	Description
14	10 μ m LW/10 μ m LS Line Array
15	10 μ m LW/20 μ m LS Line Array
16	10 μ m LW/50 μ m LS Line Array
17	90 μ m LW/90 μ m LS Line Array
18	90 μ m LW/180 μ m LS Line Array
19	90 μ m LW/450 μ m LS Line Array
20	50 μ m LW/50 μ m LS Line Array
21	50 μ m LW/100 μ m LS Line Array
22	50 μ m LW/250 μ m LS Line Array
23	Isolated Line Structures: 20 μ m W/500 μ m L, 40 μ m W/500 μ m L, 60 μ m W/500 μ m L, 100 μ m W/500 μ m L
24	Isolated Line Structures: 5 μ m W/500 μ m L, 40 μ m W/500 μ m L, 60 μ m W/500 μ m L, 150 μ m W/500 μ m L
25	100 μ m LW/100 μ m LS Line Array
26	100 μ m LW/200 μ m LS Line Array
27	100 μ m LW/500 μ m LS Line Array
28	30 μ m LW/30 μ m LS Line Array
29	30 μ m LW/60 μ m LS Line Array
30	30 μ m LW/150 μ m LS Line Array
31	70 μ m LW/70 μ m LS Line Array
32	70 μ m LW/140 μ m LS Line Array
33	70 μ m LW/350 μ m LS Line Array
34	Isolated Contact Structures: 20x20 μ m ² , 60x60 μ m ² , 80x80 μ m ² , 100x100 μ m ²
35	Isolated Contact Structures: 40x40 μ m ² , 60x60 μ m ² , 125x125 μ m ² , 175x175 μ m ²
36	90x90 μ m ² Contact Array (1:1 spacing)
37	90x90 μ m ² Contact Array (1:2 spacing)
38	90x90 μ m ² Contact Array (1:5 spacing)
39	10x10 μ m ² Contact Array (1:1 spacing)
40	10x10 μ m ² Contact Array (1:2 spacing)
41	10x10 μ m ² Contact Array (1:5 spacing)
42	30x30 μ m ² Contact Array (1:1 spacing)
43	30x30 μ m ² Contact Array (1:2 spacing)
44	30x30 μ m ² Contact Array (1:5 spacing)

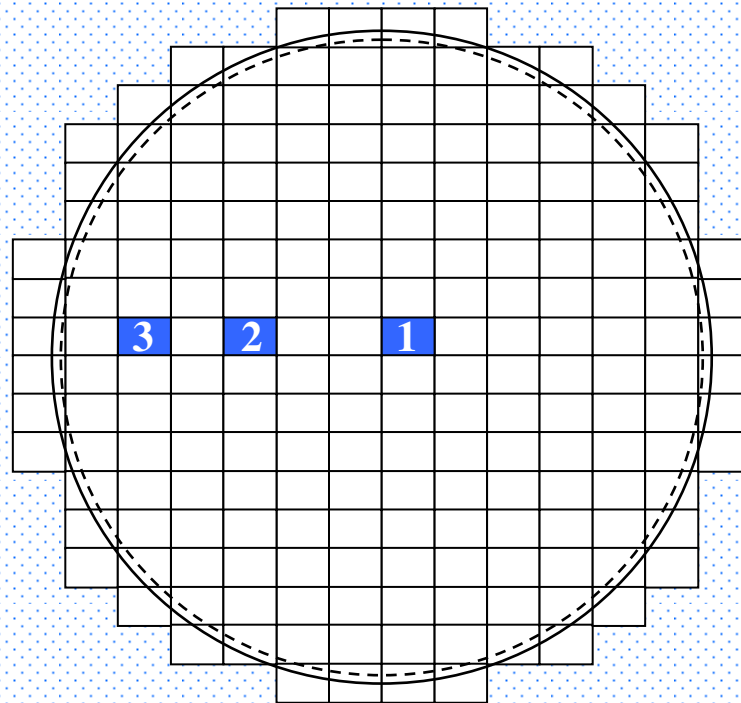
Suggested SKW6TSV3 Metrology Plan

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SKW6TSV3 Die Measurement Plan



SKW6TSV3 Structure Descriptions

Slide #	Feature Type	Description
3	Contact	Contact #1: 100x100 μm^2 , Contact #2: 200x200 μm^2 , Contact #3: 50x50 μm^2 , Contact #4: 70x70 μm^2
4	Contact	Contact #1: 30x30 μm^2 , Contact #2: 10x10 μm^2 , Contact #3: 70x70 μm^2 , Contact #4: 90x90 μm^2
5	Contact	100x100 μm^2 Contact Array (1:1)
6	Contact	100x100 μm^2 Contact Array (1:2)
7	Contact	100x100 μm^2 Contact Array (1:5)
8	Contact	50x50 μm^2 Contact Array (1:1)
9	Contact	50x50 μm^2 Contact Array (1:2)
10	Contact	50x50 μm^2 Contact Array (1:5)
11	Contact	70x70 μm^2 Contact Array (1:1)
12	Contact	70x70 μm^2 Contact Array (1:2)
13	Contact	70x70 μm^2 Contact Array (1:5)
14	Line	Line #1: 100 μm W/500 μm L, Line #2: 200 μm W/500 μm L, Line #3: 50 μm W/500 μm L, Line #4: 80 μm W/500 μm L
15	Line	Line #1: 30 μm W/500 μm L, Line #2: 10 μm W/500 μm L, Line #3: 70 μm W/500 μm L, Line #4: 90 μm W/500 μm L
16	Line	10 μm W/10 μm S Line Array
17	Line	10 μm W/20 μm S Line Array

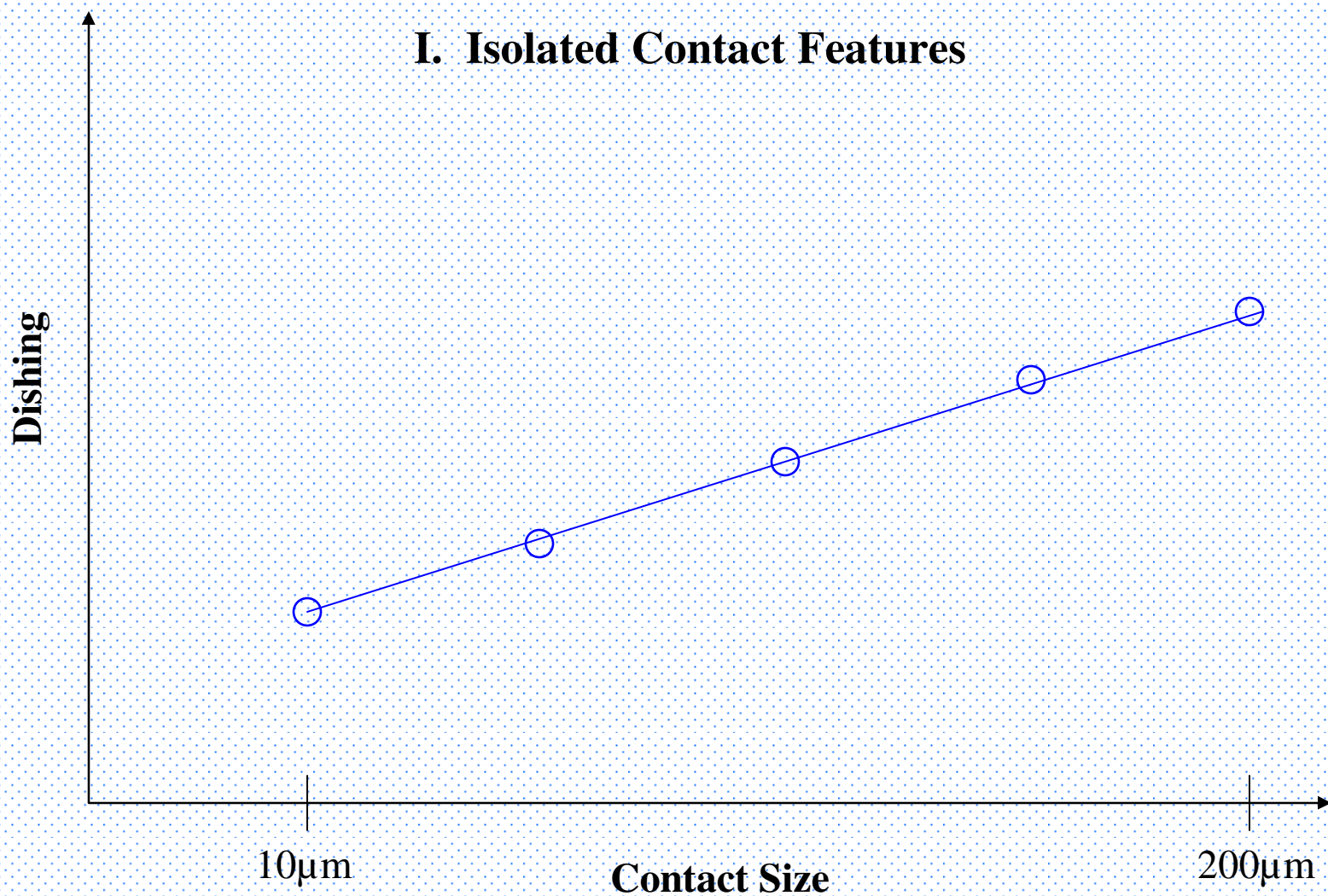
SKW6TSV3 Structure Descriptions

Slide #	Feature Type	Description
18	Line	10 μ m W/50 μ m S Line Array
19	Line	90 μ m W/90 μ m S Line Array
20	Line	90 μ m W/180 μ m S Line Array
21	Line	90 μ m W/450 μ m S Line Array
22	Line	50 μ m W/50 μ m S Line Array
23	Line	50 μ m W/100 μ m S Line Array
24	Line	50 μ m W/250 μ m S Line Array
25	Line	Line #1: 20 μ m W/500 μ m L, Line #2: 40 μ m W/500 μ m L, Line #3: 60 μ m W/500 μ m L, Line #4: 100 μ m W/500 μ m L
26	Line	Line #1: 5 μ m W/500 μ m L, Line #2: 150 μ m W/500 μ m L, Line #3: 40 μ m W/500 μ m L, Line #4: 60 μ m W/500 μ m L
27	Line	100 μ m W/100 μ m S Line Array
28	Line	100 μ m W/200 μ m S Line Array
29	Line	100 μ m W/500 μ m S Line Array
30	Line	30 μ m W/30 μ m S Line Array
31	Line	30 μ m W/60 μ m S Line Array
32	Line	30 μ m W/150 μ m S Line Array

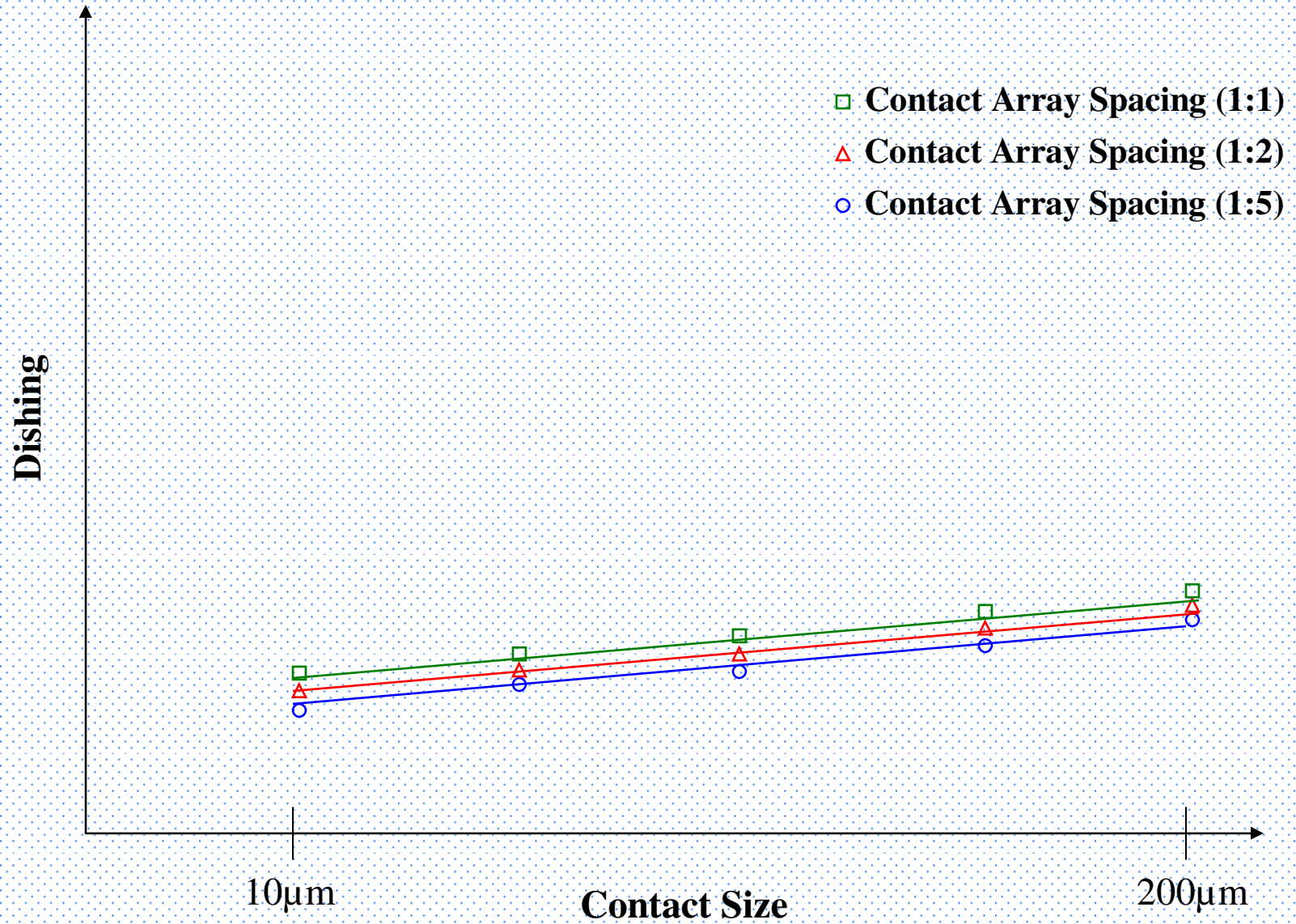
SKW6TSV3 Structure Descriptions

Slide #	Feature Type	Description
33	Line	70 μ m W/70 μ m S Line Array
34	Line	70 μ m W/140 μ m S Line Array
35	Line	70 μ m W/350 μ m S Line Array
36	Contact	Contact #1: 150x150 μ m ² , Contact #2: 60x60 μ m ² , Contact #3: 80x80 μ m ² , Contact #4: 20x20 μ m ²
37	Contact	Contact #1: 40x40 μ m ² , Contact #2: 125x125 μ m ² , Contact #3: 60x60 μ m ² , Contact #4: 175x175 μ m ²
38	Contact	90x90 μ m ² Contact Array (1:1)
39	Contact	90x90 μ m ² Contact Array (1:2)
40	Contact	90x90 μ m ² Contact Array (1:5)
41	Contact	10x10 μ m ² Contact Array (1:1)
42	Contact	10x10 μ m ² Contact Array (1:2)
43	Contact	10x10 μ m ² Contact Array (1:5)
44	Contact	30x30 μ m ² Contact Array (1:1)
45	Contact	30x30 μ m ² Contact Array (1:2)
46	Contact	30x30 μ m ² Contact Array (1:5)
47	Pattern Recognition Mark	Same as SKW6TSV2

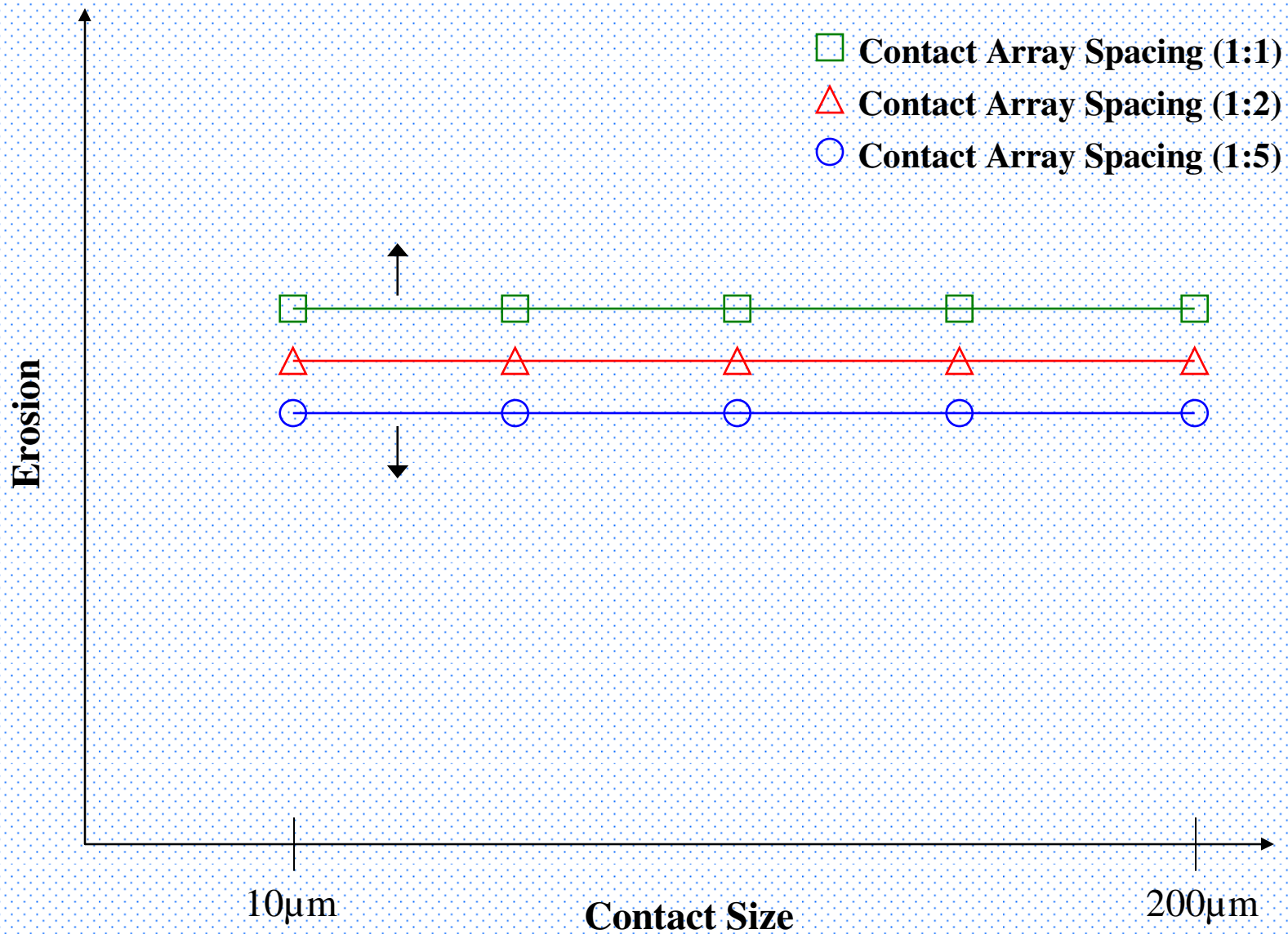
Typical Dishing and Erosion Characteristics of SKW6-TSV3 Test Patterned Wafer



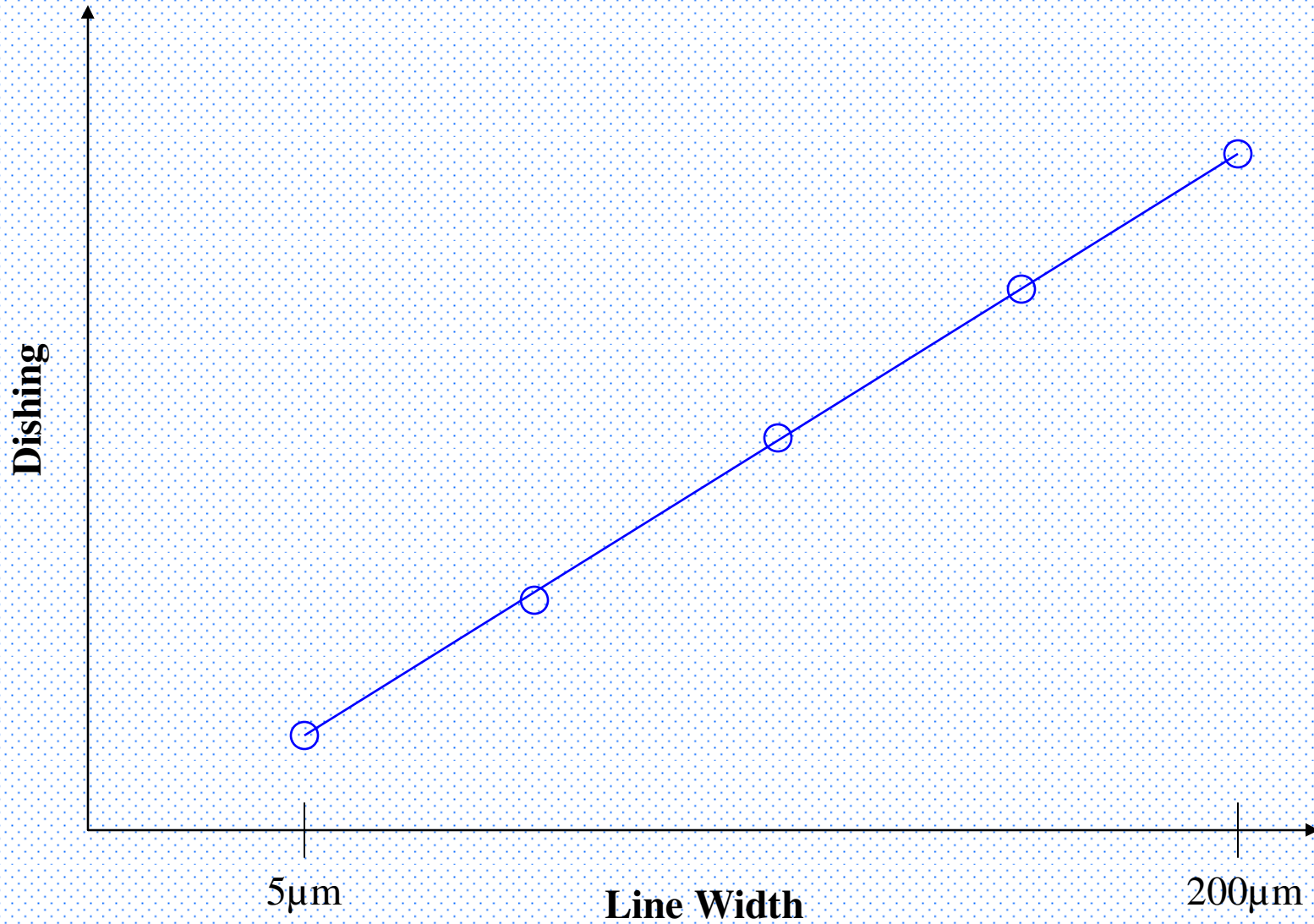
II. Contact Arrays



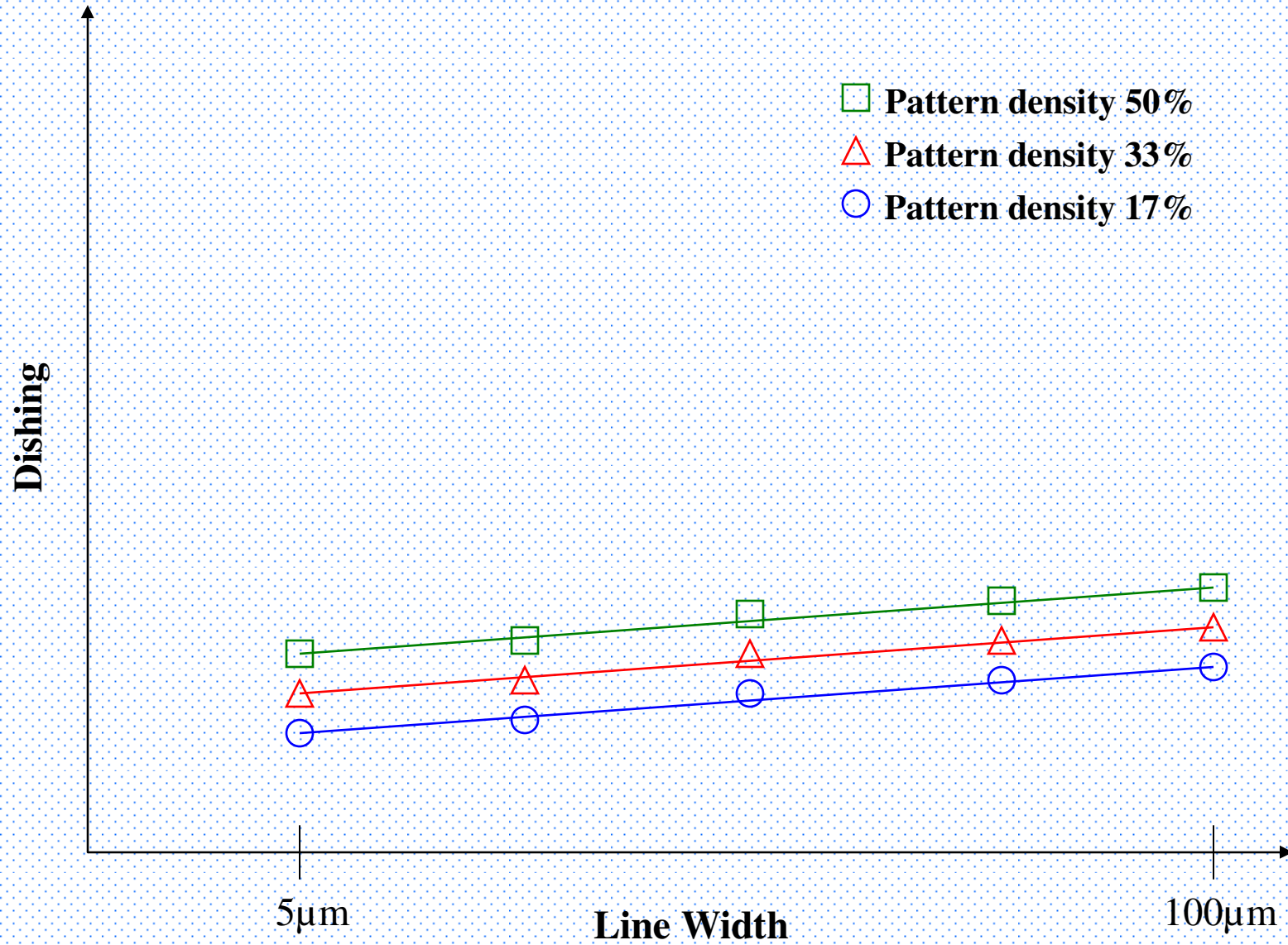
II. Contact Arrays (cont'd)



III. Isolated Line Features



IV. Line/Spacing Arrays



IV. Line/Spacing Arrays (cont'd)

