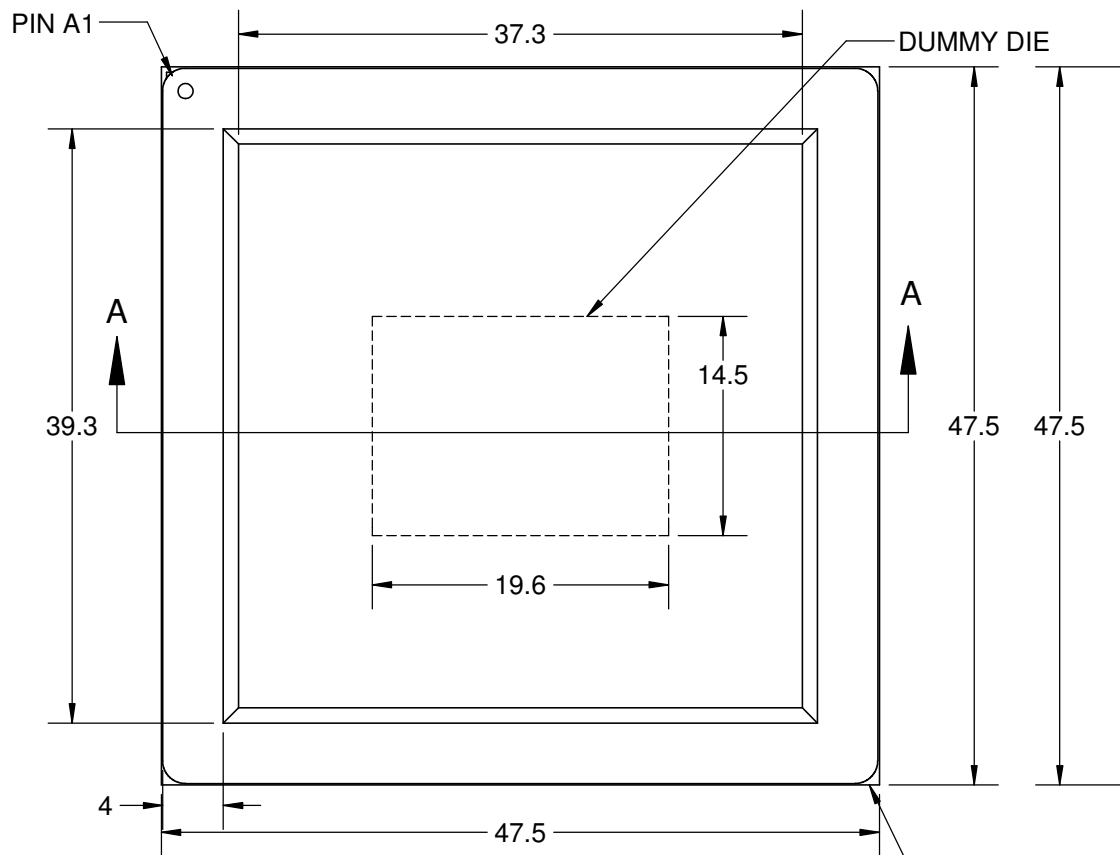
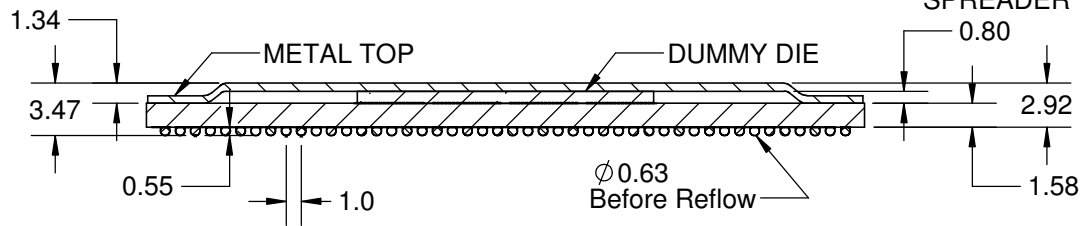
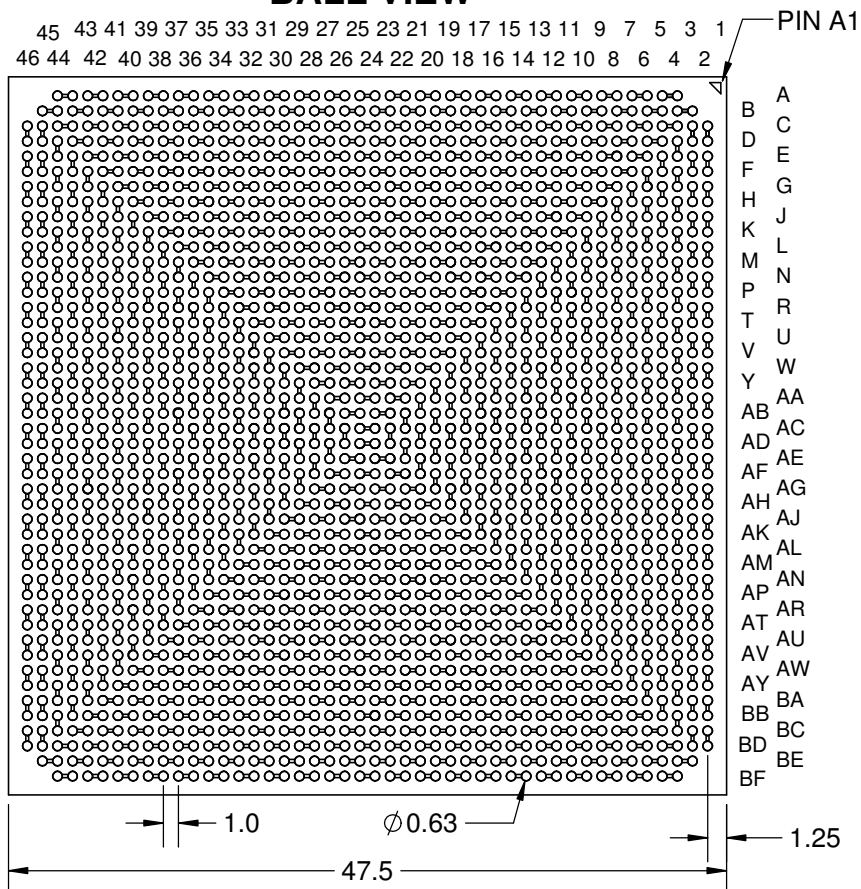


### TOP VIEW



### BALL VIEW



SECTION A-A

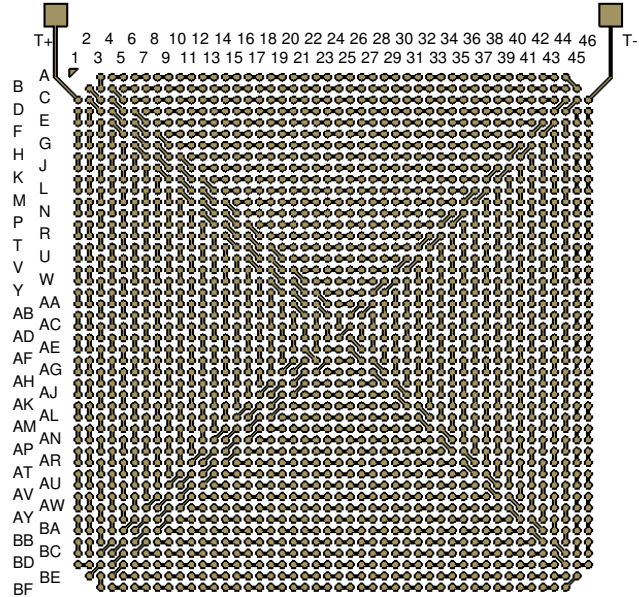
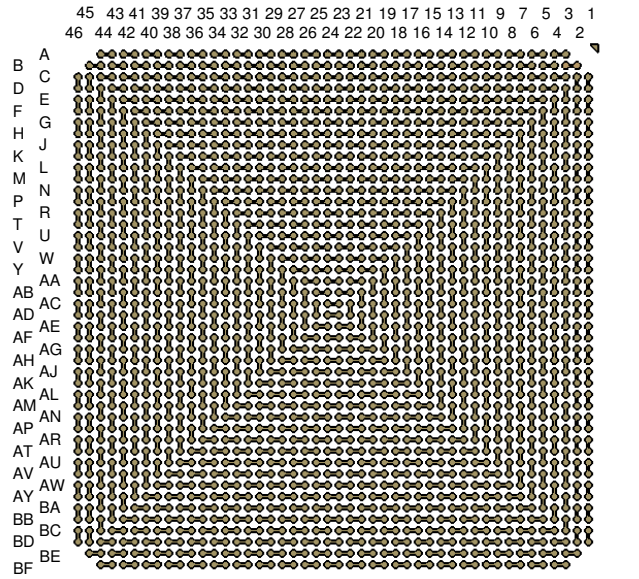
Notes: (Unless Otherwise Specified).

- 1) ALL DIMENSIONS ARE IN MM.
- 2) SOLDER BALL ALLOY: SEE PART NUMBER TABLE.
- 3) BALL DIAMETER (BEFORE REFLOW): 0.635mm (25 MIL).
- 4) SOLDER MASK DEFINED PAD OPENING: 0.508mm (20 MIL).
- 5) PAD Cu DIAMETER: 0.635mm (25 MIL).
- 6) SUBSTRATE MATERIAL: FR4 (ALTERNATE BT or Polyimide).
- 7) DUMMY DIE IS OPTIONAL.
- 8) DAISY CHAIN PATTERN (SEE PAGE 2).
- 9) MSL-3 RECOMMENDED BAKING 24 HOURS @ 125 °C TO REMOVE MOISTURE PRIOR SOLDERING TO PC BOARD.

| PART NUMBER TABLE    |                    |            |      |        |
|----------------------|--------------------|------------|------|--------|
| PART NUMBER          | BALL ALLOY         | BALL ALLOY | RoHS | Si DIE |
| SBGA2104T1.0C-DC467D | Sn96.5/Ag3.0/Cu0.5 | SAC305     | YES  | YES    |
| SBGA2104T1.0-DC467D  | Sn63/Pb37          | Sn63       | NO   | YES    |

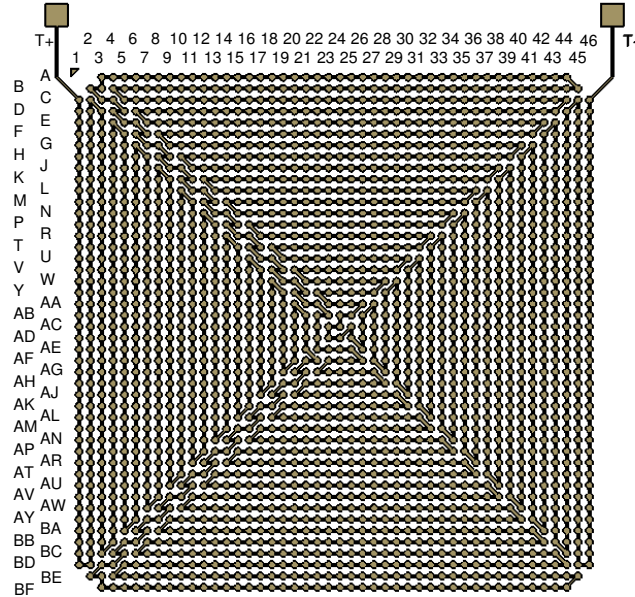
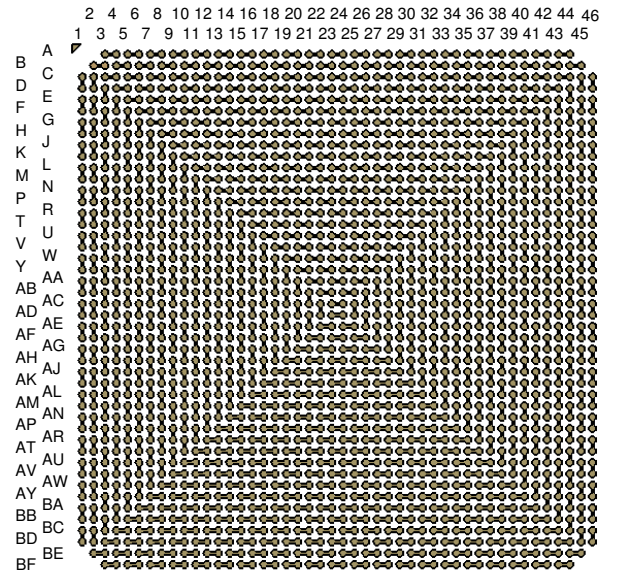
|             |           |                      |      |  |               |
|-------------|-----------|----------------------|------|--|---------------|
| APPROVALS   | DATE      | <b>TopLine®</b>      |      |  |               |
| DRAWN T. Au | 4/22/2017 |                      |      |  |               |
| ENG M. Hart | 4/22/2017 | TITLE                |      | SBGA2104T1.0-DC467D<br>DAISY CHAIN DUMMY |               |
| MFG         |           | SCALE                | SIZE | DRAWING NO.                              | REV           |
| QA          |           | 2:1                  | A    | 514675                                   | A             |
| CUST        |           | DO NOT SCALE DRAWING |      |  | SHEET 1 OF 12 |
| REVISED     |           |                      |      |  |               |

# BALL VIEW



# TEST VEHICLE BOARD

# BOTTOM SIDE (TOP X-RAY VIEW)



# AFTER MOUNTING

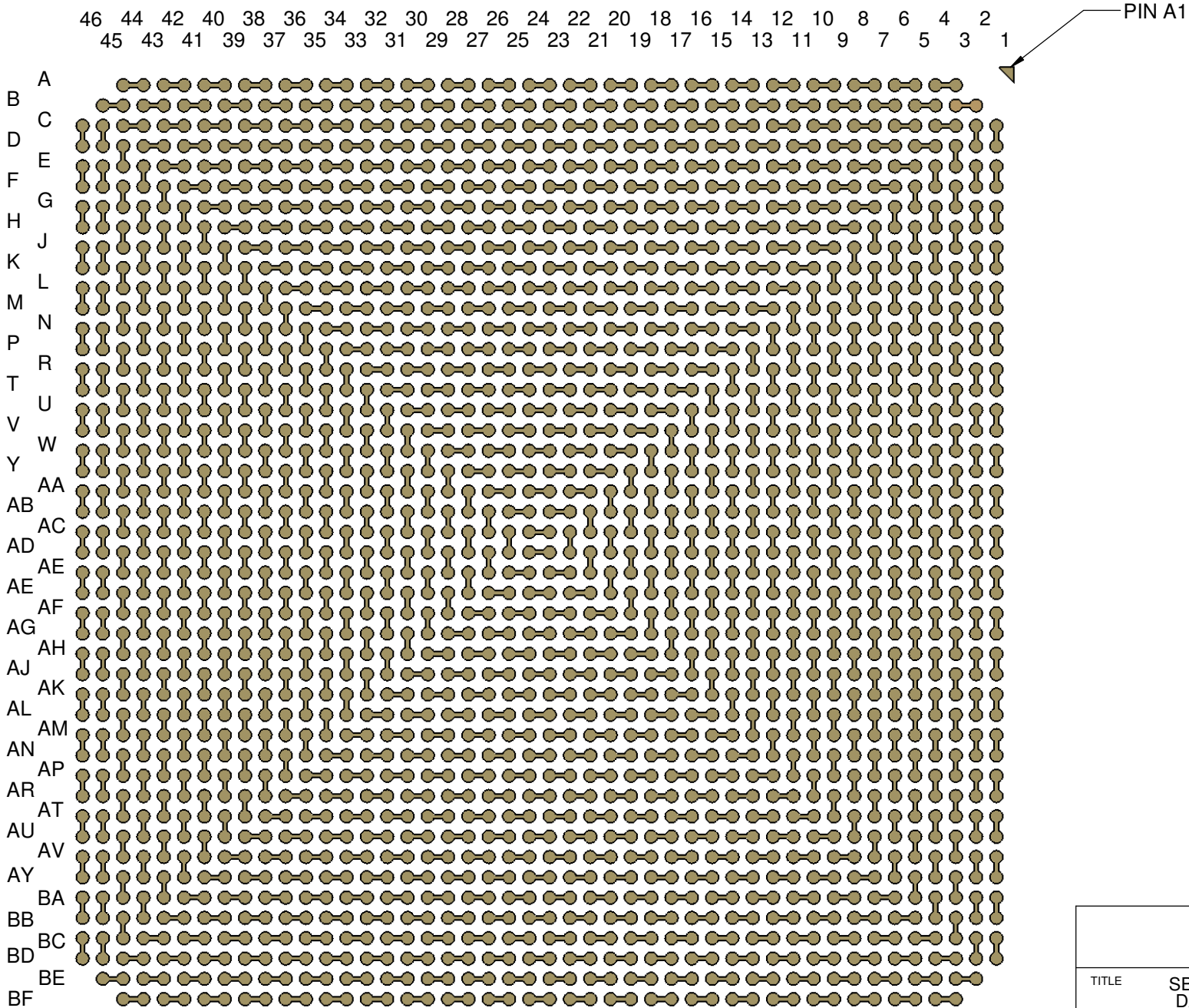
### Notes:

- 1) PCB BOARD DIMENSIONS ARE PRESENTD ONLY AS A GUIDELINE. DESIGNERS SHOULD USE THEIR OWN EXPERIENCE WHEN DESIGNING PCB.
- 2) PCB Cu BALL PAD DIAMETER 0.635mm [25 MIL].
- 3) PCB DAISY CHAIN TRACING LINE WIDTH 0.204mm [8 MIL].
- 4) SMD (SOLDER MASK DEFINED) PAD OPENING 0.508mm [20 MIL].



|  |      |             |               |
|--|------|-------------|---------------|
| TITLE                                    |      |             |               |
| SBGA2104T1.0-DC467D<br>DAISY CHAIN DUMMY |      |             |               |
| SCALE                                    | SIZE | DRAWING NO. | REV           |
| 3:2                                      | A    | 514675      | A             |
| DO NOT SCALE DRAWING                     |      |             | SHEET 2 OF 12 |

# BALL VIEW



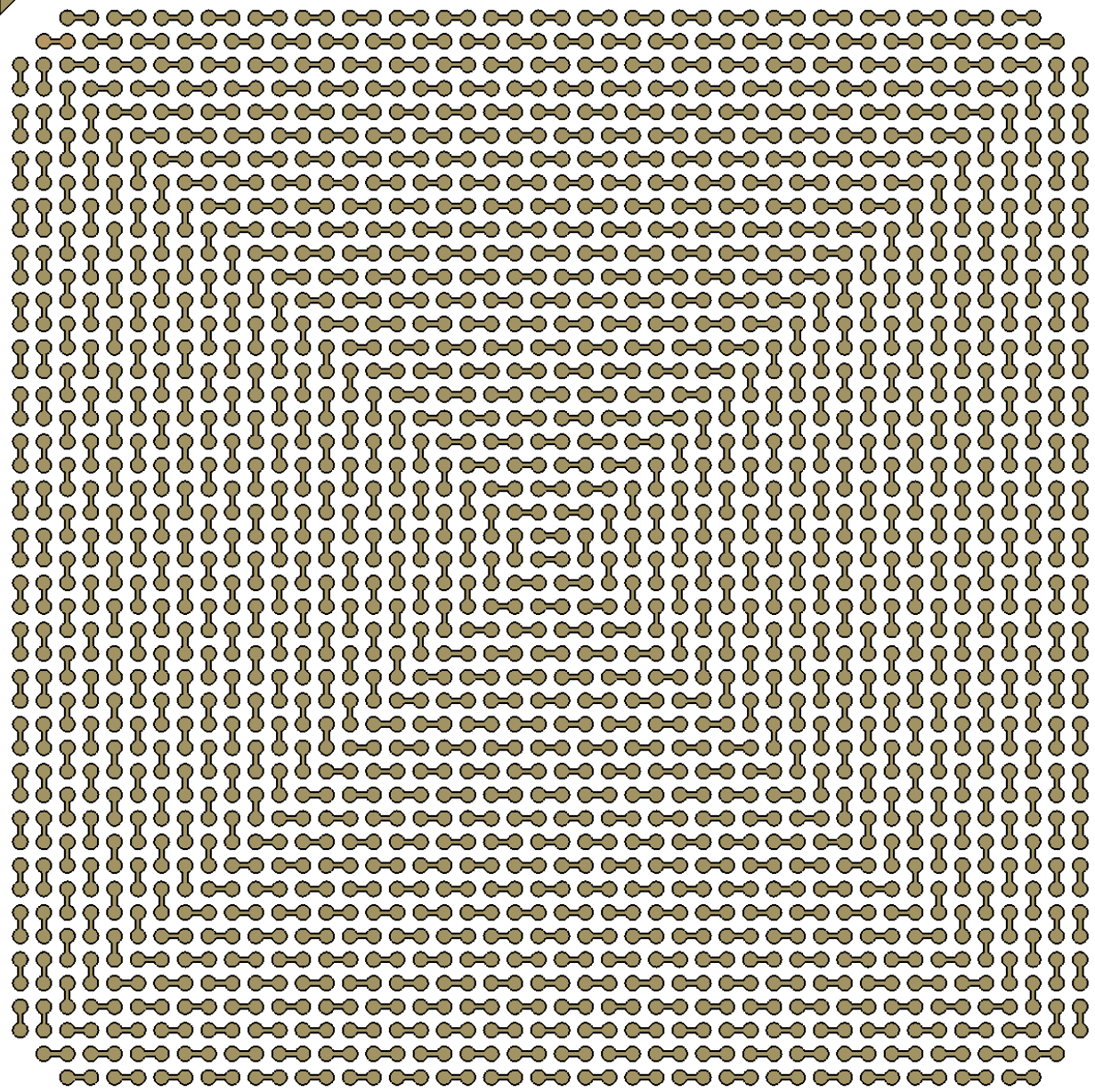
|  |           |                       |          |
|--|-----------|-----------------------|----------|
| <b>TopLine®</b>                                |           |                       |          |
| TITLE SBGA2104T1.0-DC467D<br>DAISY CHAIN DUMMY |           |                       |          |
| SCALE<br>3.5:1                                 | SIZE<br>A | DRAWING NO.<br>514675 | REV<br>A |
| DO NOT SCALE DRAWING                           |           | SHEET 3 OF 12         |          |

# BOTTOM SIDE (TOP X-RAY VIEW)

PIN A1

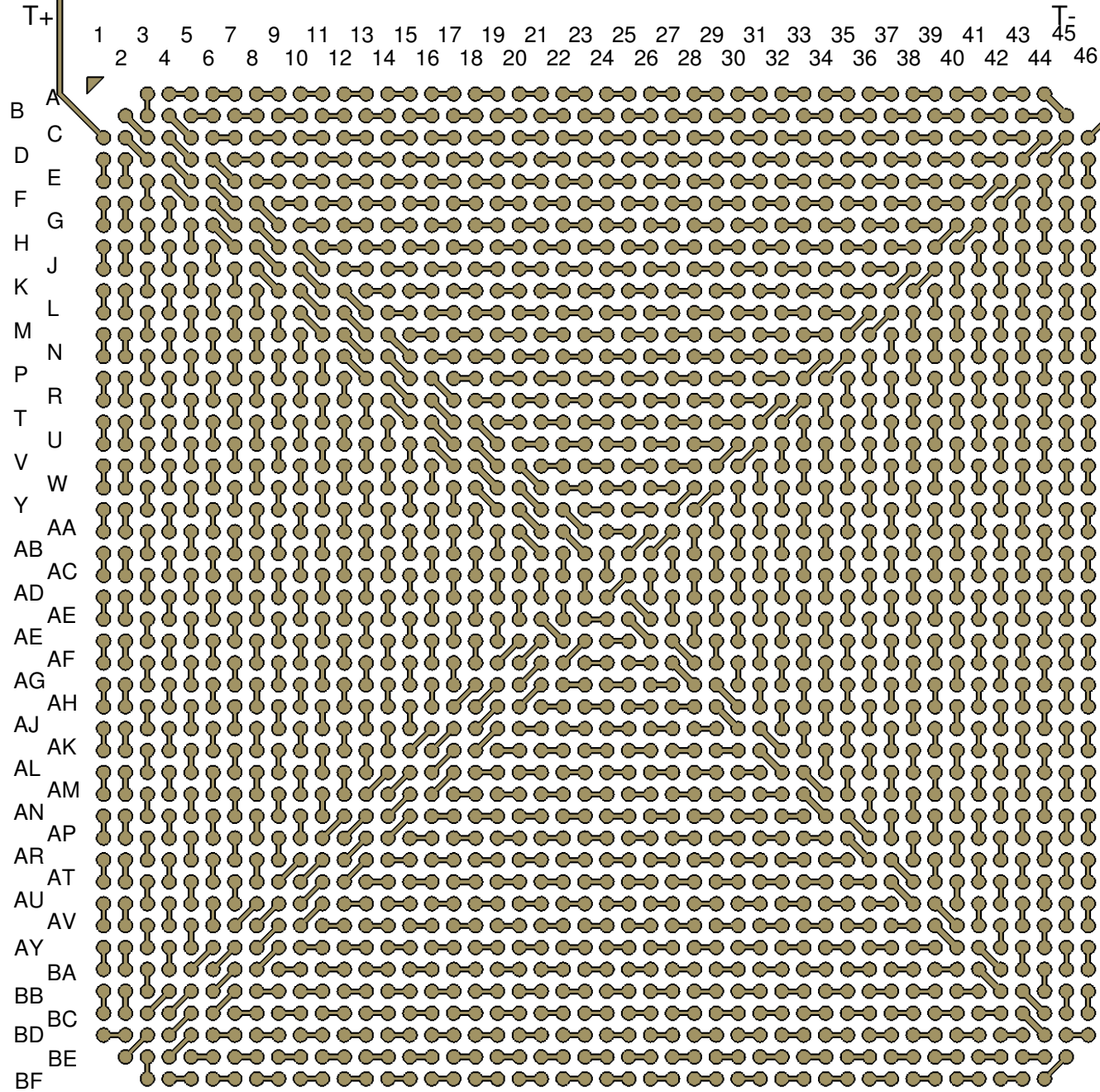
1   3   5   7   9   11   13   15   17   19   21   23   25   27   29   31   33   35   37   39   41   43   45  
 2   4   6   8   10   12   14   16   18   20   22   24   26   28   30   32   34   36   38   40   42   44   46

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|---|------|-------------|---------------|
| <b>TopLine®</b>                                   |      |             |               |
| TITLE    SBGA2104T1.0-DC467D<br>DAISY CHAIN DUMMY |      |             |               |
| SCALE   | SIZE | DRAWING NO. | REV           |
| 3.5:1   | A    | 514675      | A             |
| DO NOT SCALE DRAWING                              |      |             | SHEET 4 OF 12 |

# TEST VEHICLE BOARD

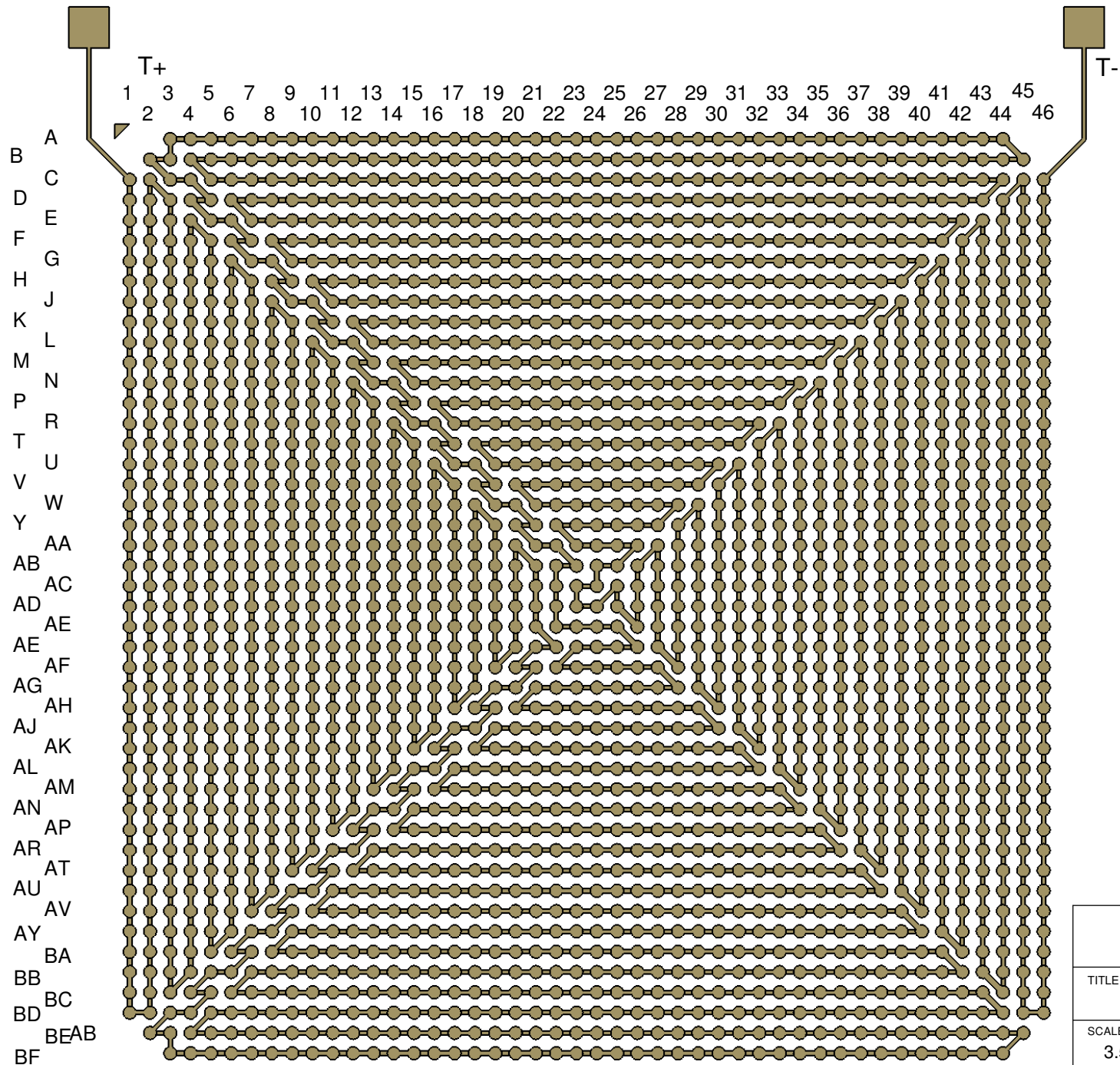


**Notes:**

- 1) PCB BOARD DIMENSIONS ARE PRESENTD ONLY AS A GUIDELINE. DESIGNERS SHOULD USE THEIR OWN EXPERIENCE WHEN DESIGNING PCB.
- 2) PCB Cu BALL PAD DIAMETER 0.635mm [25 MIL].
- 3) PCB DAISY CHAIN TRACING LINE WIDTH 0.204mm [8 MIL].
- 4) SMD (SOLDER MASK DEFINED) PAD OPENING 0.508mm [20 MIL].

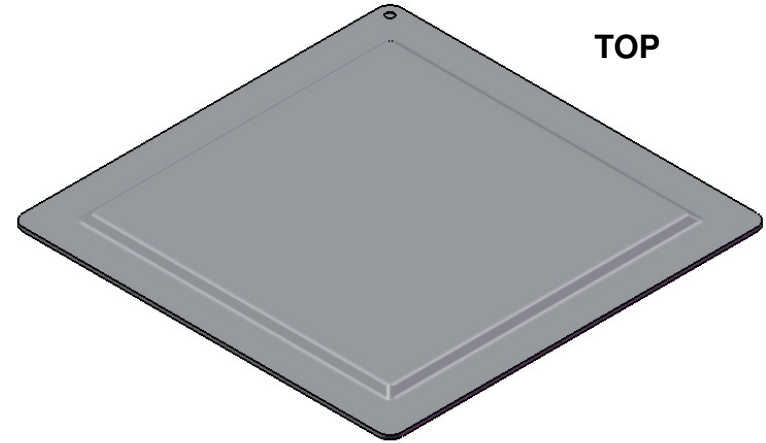
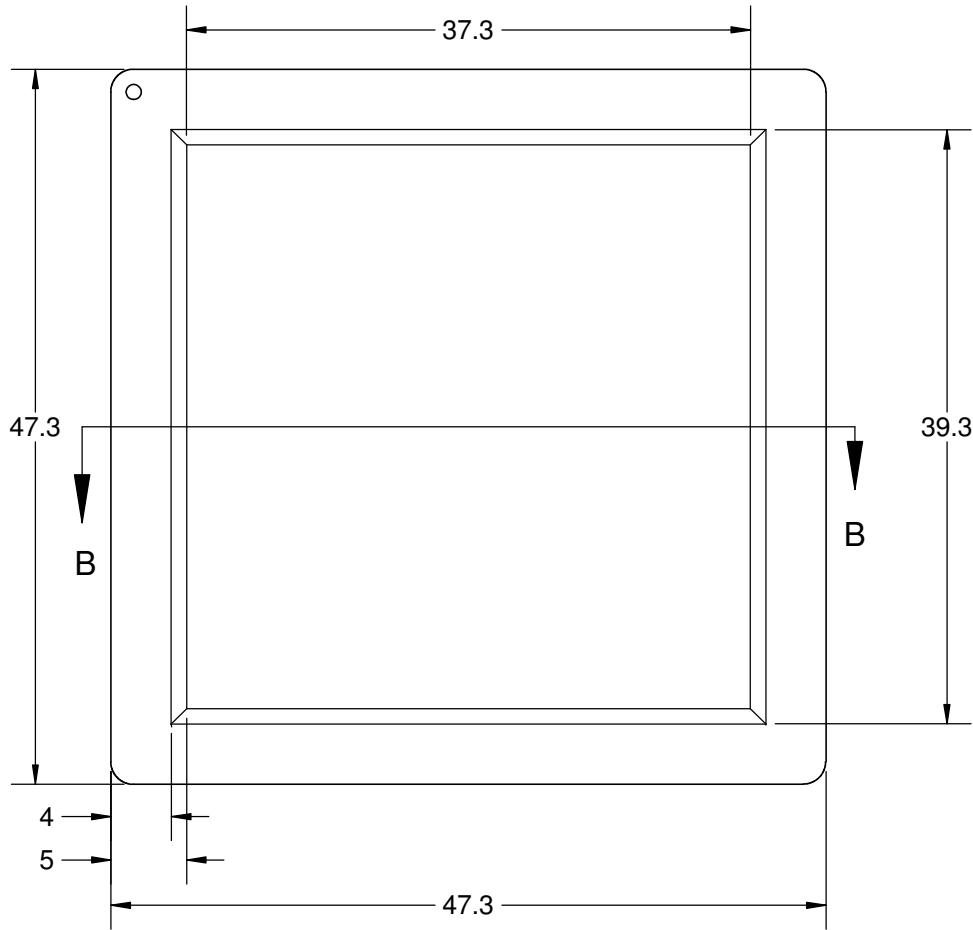
|  |           |                       |               |
|--|-----------|-----------------------|---------------|
| <b>TopLine®</b>                                |           |                       |               |
| TITLE SBGA2104T1.0-DC467D<br>DAISY CHAIN DUMMY |           |                       |               |
| SCALE<br>3.5:1                                 | SIZE<br>A | DRAWING NO.<br>514675 | REV<br>A      |
| DO NOT SCALE DRAWING                           |           |                       | SHEET 5 OF 12 |

# AFTER MOUNTING



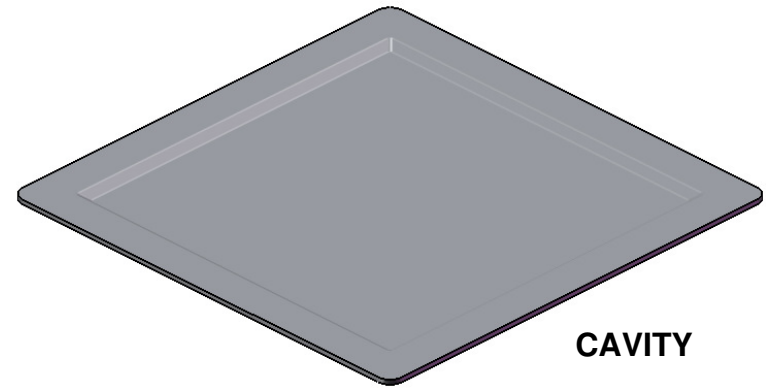
|                      |      |  |               |
|----------------------|------|--|---------------|
| <b>TopLine®</b>      |      |  |               |
| TITLE                |      | SBGA2104T1.0-DC467D<br>DAISY CHAIN DUMMY |               |
| SCALE                | SIZE | DRAWING NO.                              | REV           |
| 3.5:1                | A    | 514675                                   | A             |
| DO NOT SCALE DRAWING |      |  | SHEET 6 OF 12 |

# HEAT SPREADER

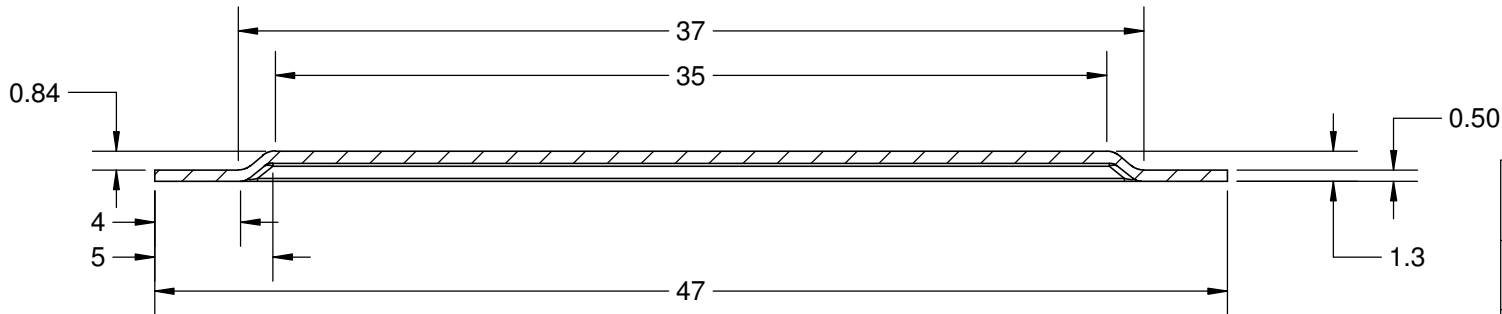


TOP

MODEL



CAVITY



SECTION B-B

**TopLine**<sup>®</sup>

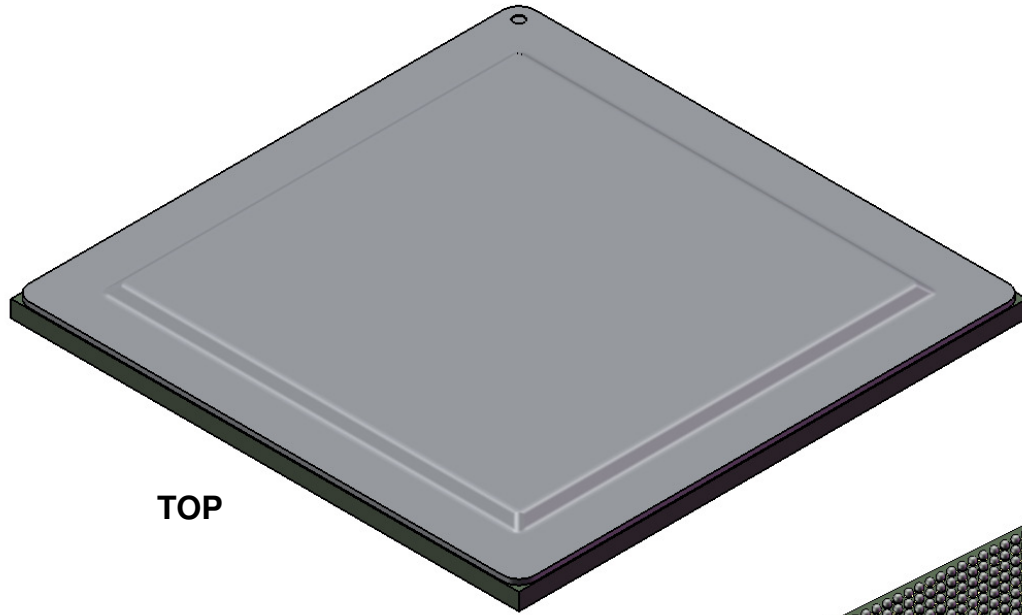
TITLE SBGA2104T1.0-DC467D  
DAISY CHAIN DUMMY

|              |           |                       |          |
|--------------|-----------|-----------------------|----------|
| SCALE<br>2:1 | SIZE<br>A | DRAWING NO.<br>514675 | REV<br>A |
|--------------|-----------|-----------------------|----------|

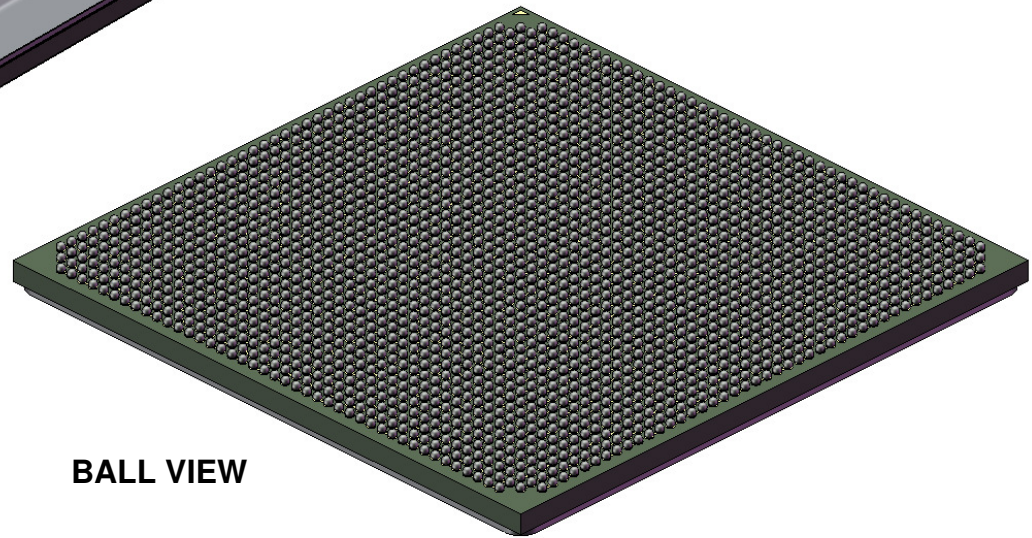
DO NOT SCALE DRAWING

SHEET 7 OF 12

# MODEL



TOP



BALL VIEW

**TopLine**<sup>®</sup>

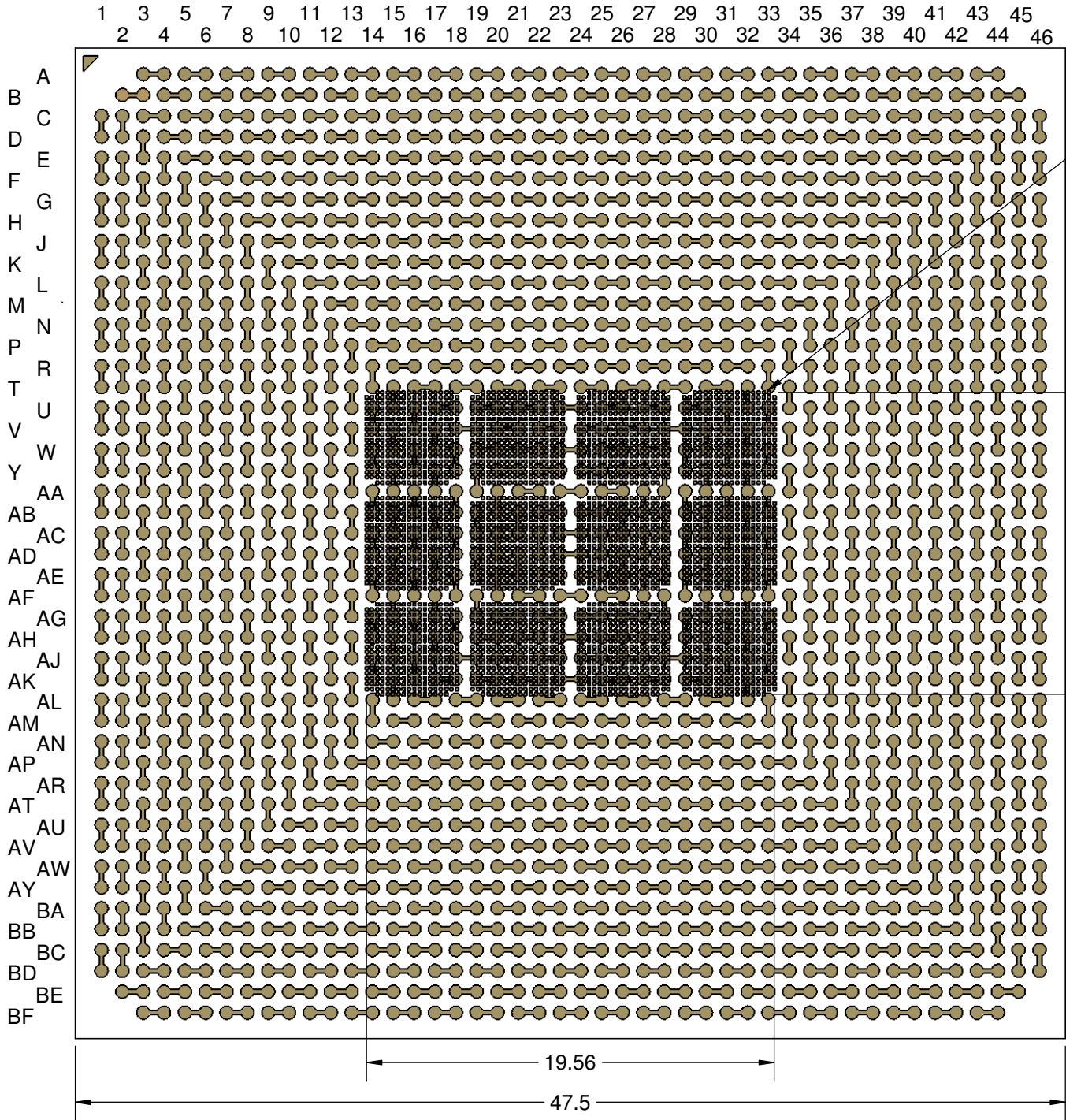
TITLE SBGA2104T1.0-DC467D  
DAISY CHAIN DUMMY

|              |           |                       |          |
|--------------|-----------|-----------------------|----------|
| SCALE<br>2:1 | SIZE<br>A | DRAWING NO.<br>514675 | REV<br>A |
|--------------|-----------|-----------------------|----------|

DO NOT SCALE DRAWING

SHEET 8 OF 12

# TOP LAYER - LAYER 1



SEE DETAIL B

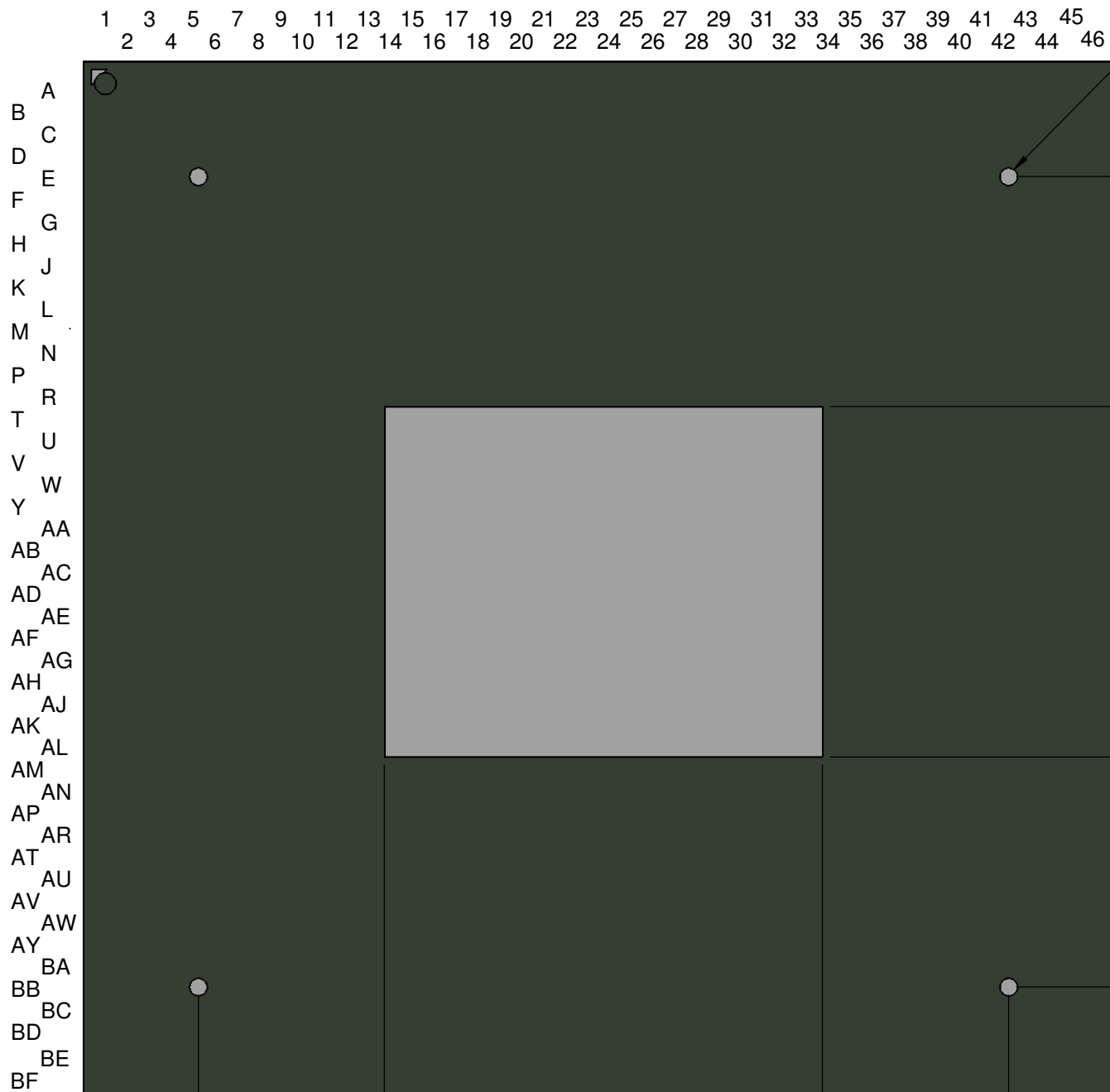
15.42

19.56

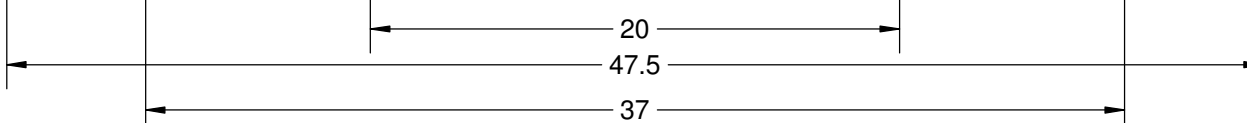
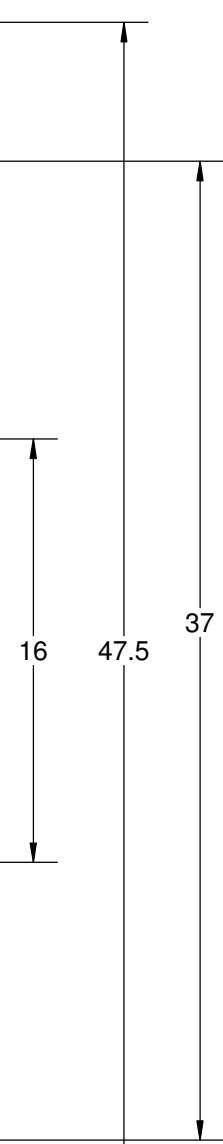
47.5

|  |           |                       |               |
|--|-----------|-----------------------|---------------|
| <b>TopLine®</b>                                |           |                       |               |
| TITLE SBGA2104T1.0-DC467D<br>DAISY CHAIN DUMMY |           |                       |               |
| SCALE<br>3.75:1                                | SIZE<br>A | DRAWING NO.<br>514675 | REV<br>A      |
| DO NOT SCALE DRAWING                           |           |                       | SHEET 9 OF 12 |

# SOLDER MASK TOP



MASK OPEN FIDUCIAL  
4 PLACES  $\phi 0.8$



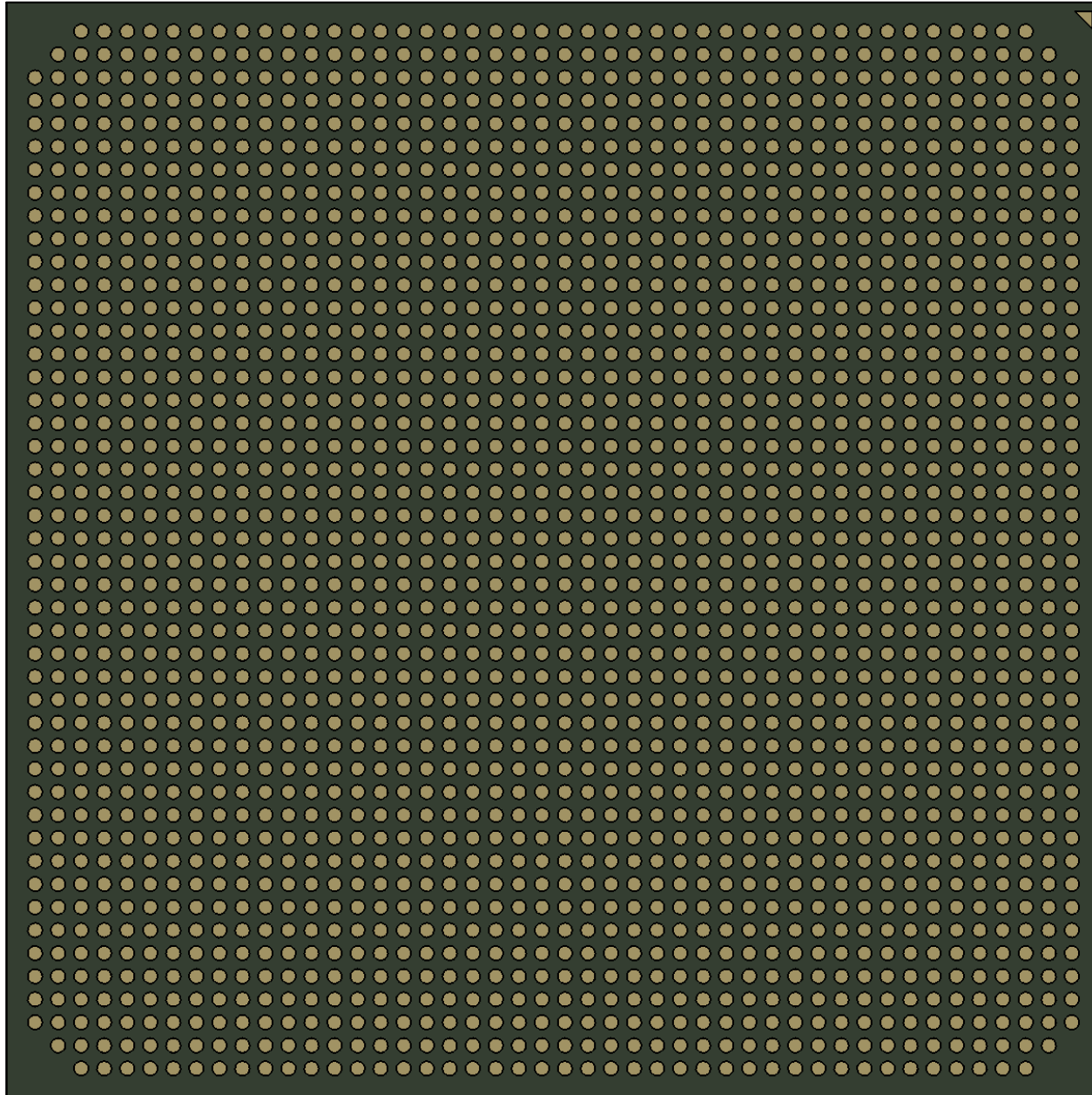
**TopLine**<sup>®</sup>

|  |      |             |                |
|--|------|-------------|----------------|
| TITLE                                    |      |             |                |
| SBGA2104T1.0-DC467D<br>DAISY CHAIN DUMMY |      |             |                |
| SCALE                                    | SIZE | DRAWING NO. | REV            |
| 3.75:1                                   | A    | 514675      | A              |
| DO NOT SCALE DRAWING                     |      |             | SHEET 10 OF 12 |

# BOTTOM SOLDER MASK (RIGHT READING)

46 44 42 40 38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2  
45 43 41 39 37 35 33 31 29 27 25 23 21 19 17 15 13 11 9 7 5 3 1

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|--|-----------|-----------------------|----------------|
| <b>TopLine®</b>                                |           |                       |                |
| TITLE SBGA2104T1.0-DC467D<br>DAISY CHAIN DUMMY |           |                       |                |
| SCALE<br>3.75:1                                | SIZE<br>A | DRAWING NO.<br>514675 | REV<br>A       |
| DO NOT SCALE DRAWING                           |           |                       | SHEET 11 OF 12 |

