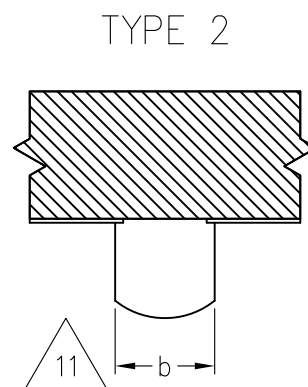
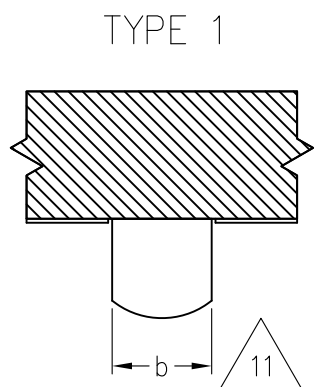
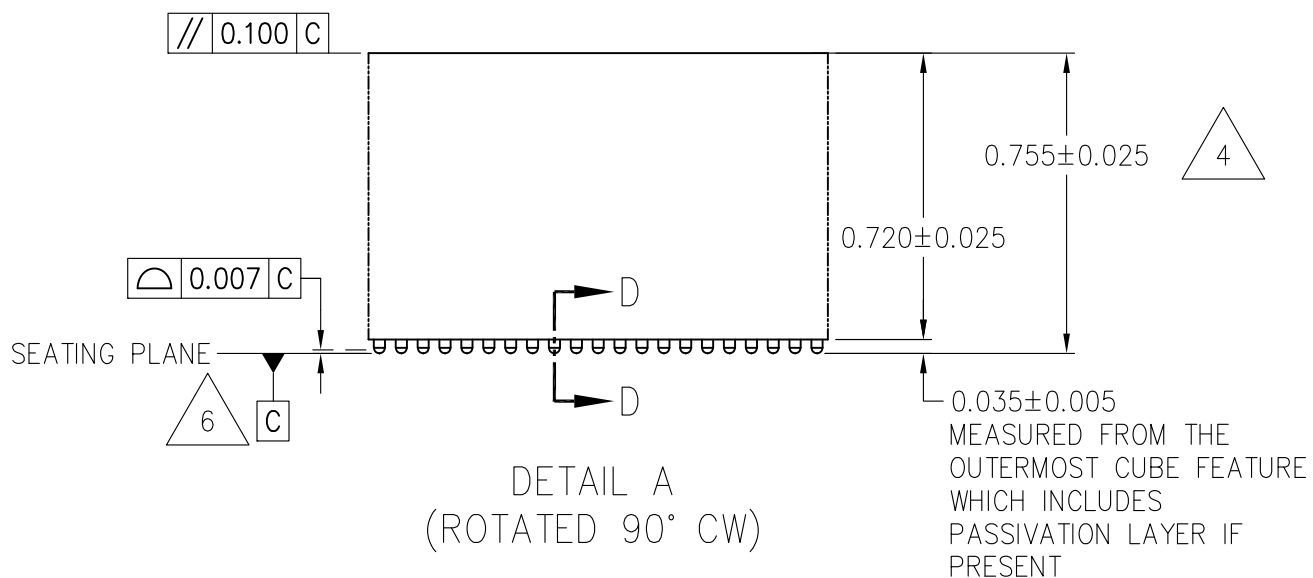
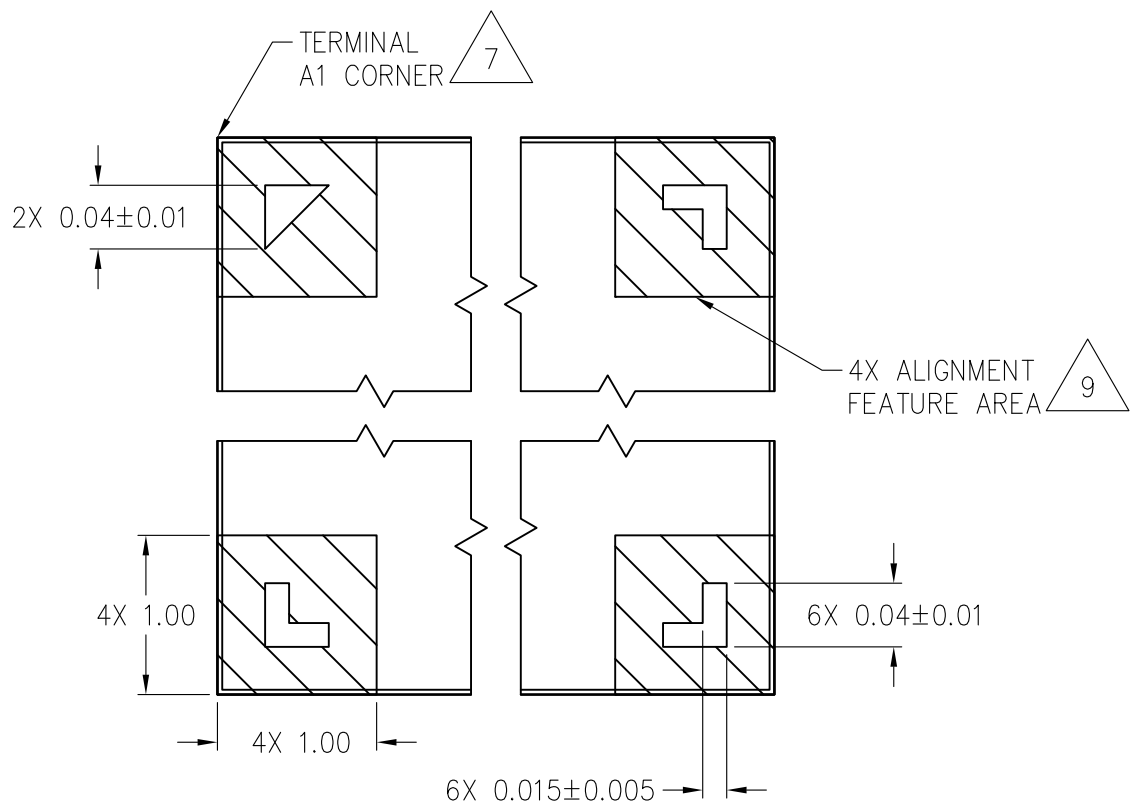


THIS **REGISTERED OUTLINE** WAS PREPARED BY THE JEDEC JC-11 COMMITTEE AND REFLECTS A PRODUCT FOR ANTICIPATED USE IN THE ELECTRONICS INDUSTRY. CHANGES ARE LIKELY TO OCCUR. USERS ASSUME ALL RISK AND LIABILITY RESULTING FROM THE USE OF THIS OUTLINE.

SHEET
1 OF 6



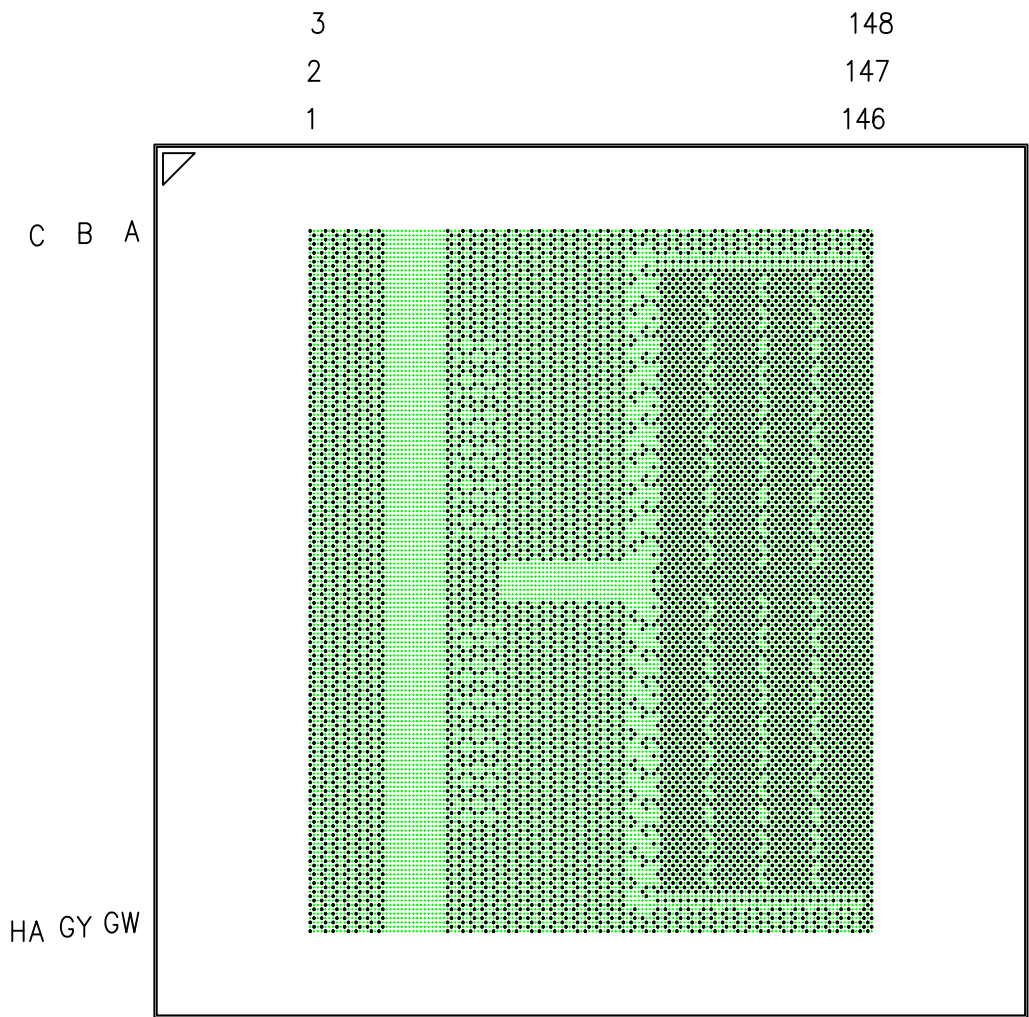
SECTION D-D



BOTTOM VIEW

ALIGNMENT FEATURE AREA 

SEE JESD238 FOR X,Y LOCATIONS
HIGH BANDWIDTH MEMORY (HBM3)



7775 TERMINAL PATTERN



+ = DEPOPULATED TERMINAL POSITIONS

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5–2009.
THIS OUTLINE CONFORMS TO JEP95, SECTION 4.26.

2. ALL DIMENSIONS ARE IN MILLIMETERS.



3. TERMINAL POSITION DESIGNATION PER JEP95 SECTION 3, SPP–010.



4. PACKAGE HEIGHT (0.755 ± 0.025) INCLUDES TERMINAL HEIGHT (0.035 ± 0.005) AND PACKAGE BODY THICKNESS (0.720 ± 0.025) BUT DOES NOT INCLUDE ATTACHED FEATURES, e.g., EXTERNAL HEATSINK. AN INTEGRAL HEATSLUG IS NOT CONSIDERED AN ATTACHED FEATURE.



5. TERMINAL DIMENSION ($0.028 + 0.004 / -0.003$) IS MEASURED AT THE MAXIMUM TERMINAL DIAMETER PARALLEL TO PRIMARY DATUM C.



6. PRIMARY DATUM C (SEATING PLANE) IS DEFINED BY THE PLANE ESTABLISHED BY THE CONTACT POINTS OF THREE OR MORE TERMINALS THAT SUPPORT THE DEVICE WHEN IT IS PLACED ON TOP OF A PLANAR SURFACE.



7. THE TERMINAL A1 CORNER SHOULD BE IDENTIFIED ON BOTH THE BOTTOM AND TOP SIDES OF THE PACKAGE, THE IDENTIFICATION FEATURE CAN BE MADE USING INK, METALIZED MARKINGS, OR OTHER FEATURES. DUE TO PACKAGE PROCESSING, THE TOP FEATURE MAY NOT BE PRESENT.



8. TERMINAL DEPOPULATION IS ALLOWED. DEPOPULATION IS THE OMISSION OF TERMINALS FROM A FULL MATRIX.



9. PACKAGE ALIGNMENT AREAS FOR SUBSEQUENT PROCESSING MUST BE LOCATED WITHIN THE DESIGNATED AREAS. ALL ALIGNMENT MARKS SHALL BE EQUIDISTANT FROM THE CENTER OF THE TERMINAL ARRAY.

A METAL-FREE CLEARANCE ZONE AROUND THE ALIGNMENT MARKS SHOULD BE A MINIMUM OF $1/2$ OF THE FEATURE SIZE (0.04 ± 0.01).



10. X (10.975) AND Y (10.975) DIMENSIONS ARE MEASURED ON THE SLANT CUT SIDE. DUE TO DIFFERENT VENDOR MANUFACTURING PROCESSES THE SLANT COULD BE ON THE TOP OR BOTTOM. SEE SUPPLIER FOR DETAILS.



11. THE TERMINAL COLUMN MAY EXIST IN TWO FORMS.
TYPE 1 CONTAINS COLUMNS THAT ARE CONTAINED WITHIN THE PASSIVATION LAYER OPENING.
TYPE 2 CONTAINS COLUMNS THAT OVERLAP THE PASSIVATION LAYER OPENING.
THE COLUMN HEIGHT (0.035 ± 0.005) IS DEFINED BY THE DISTANCE BETWEEN THE SEATING PLANE AND SURFACE OF THE PASSIVATION LAYER FOR BOTH TYPES.

12. SEE JESD30 FOR EXPLANATION OF PACKAGE DESIGNATOR/VARIATION.

STP (3D) FILE RECORD

3D FILE NAMES MAY EXCEED LENGTH REQUIREMENTS FOR SOME SOFTWARE TOOLS.

STP FILE NAME	DATE	ITEM NUMBER
MO-349A_SBGA-M7775[23828]_D0p073-R10p975x10p975Z0p78-C0p032H0p03	AUG 2025	4-996 4-1084

TASK GROUP CONTRIBUTORS

SK HYNIX
MICRON TECHNOLOGY INC.
SAMSUNG SEMICONDUCTOR

JEDEC SOLID STATE PRODUCT OUTLINE <small>Copyright © 2025 JEDEC. All rights reserved. May not be reproduced without permission.</small>	TITLE SILICON BOTTOM GRID ARRAY COLUMN, 0.048 MM X 0.055 MM PITCH SQUARE PACKAGE (HBM3)	NUMBER MO-349	ISSUE B	DATE AUG 2025	SHEET ii
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CHANGE RECORD

IF THE CHANGE INVOLVES ANY WORDS ADDED OR DELETED (EXCLUDING DELETION OF ACCIDENTALLY REPEATED WORDS), THE CHANGE IS TO BE INCLUDED BELOW. PUNCTUATION CHANGES MAY OR MAY NOT BE INCLUDED.

INITIAL ISSUE: A	DATE: NOVEMBER 2021	ITEM NUMBER: 4-996
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CHANGE RECORD HISTORY:

ISSUE: A.01	DATE: AUGUST 2022	ITEM NUMBER: 4-966E
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LOCATION	CHANGED FROM:	CHANGED TO:
SHEET 8		ADDED SEE JESD238 HIGH BANDWIDTH MEMORY (HBM3)

ISSUE: B	DATE: AUGUST 2025	ITEM 4-1084
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LOCATION	CHANGED FROM:	CHANGED TO:
ALL SHEETS		ADDED (HBM3) TO TITLE
SHEET 1	X AND Y	10.975 AND 10.975 ADDED NOTE 10
	(Z)	(0.755)
		ADDED BUMP CENTER TO BUMP CENTER: X=7.056 AND Y=8.00
		ADDED NOTE 10 TO SLANT CUT
		ADDED A1 TERMINAL INDICATOR
		REDUCED DETAIL B SIZE REMOVED DETAIL C
		REMOVED 4X ALIGNMENT FEATURE AREA
	A1 CORNER: X/4 & Y/4	A1 CORNER: X=2.74 & Y=2.74
SHEET 2		NEW DETAIL B
SHEET 3	Z	0.755±0.025
	Z1	0.035±0.005
	COPLANARITY = 0.005	COPLANARITY = 0.007
SHEET 4		ADDED 4X ALIGNMENT FEATURE AREA REMOVED FROM SHEET 1
		DELETED TABLES 1 & 2
SHEETS 5		ADDED STANDARD TERMINAL PATTERN

CHANGE RECORD

IF THE CHANGE INVOLVES ANY WORDS ADDED OR DELETED (EXCLUDING DELETION OF ACCIDENTALLY REPEATED WORDS), THE CHANGE IS TO BE INCLUDED BELOW. PUNCTUATION CHANGES MAY OR MAY NOT BE INCLUDED.

LOCATION	CHANGED FROM:	CHANGED TO:
SHEET 6		CHANGED NOTES TO MATCH MO-362 NOTES
		ADDED NOTE 12
SHEET i	MO-349A_SBGA-M7775[23828] _I0p073-R10p975x10p975Z7p8 -C0p032Z0p03	MO-349A_SBGA-M7775[23828] _D0p073-R10p975x10p975Z0p78 -C0p032H0p03