

JEDEC SOLID STATE
PRODUCT OUTLINE
Copyright © 2022 JEDEC

THIS **REGISTERED OUTLINE** HAS BEEN PREPARED BY THE JEDEC JC-11 COMMITTEE
AND REFLECTS A PRODUCT WITH ANTICIPATED USAGE IN THE ELECTRONICS INDUSTRY;
CHANGES ARE LIKELY TO OCCUR

TITLE PLASTIC BOTTOM GRID
ARRAY BALL, 0.40MM PITCH
RECTANGULAR FAMILY PACKAGE

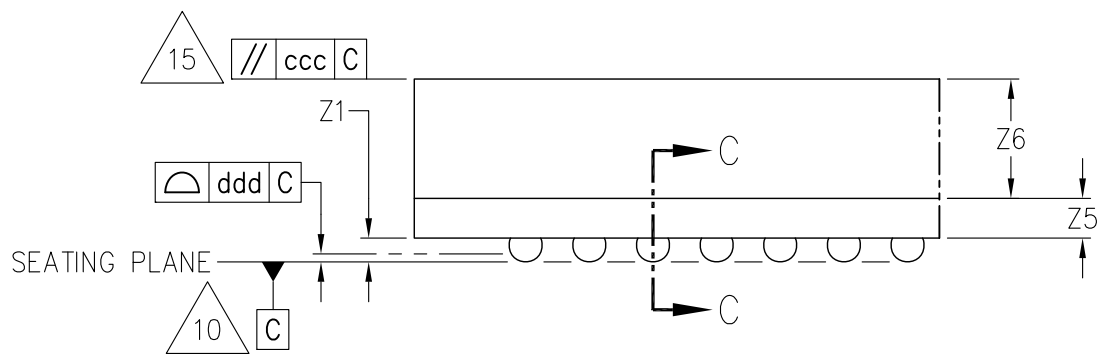
PACKAGE DESIGNATOR
PBGA-B#[#]
_l0p4...

NUMBER
MO-352

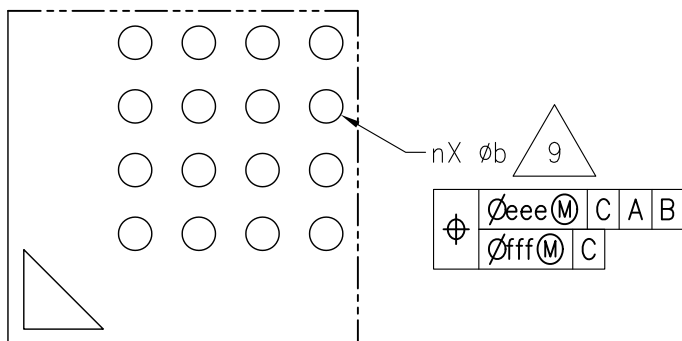
ISSUE
A

DATE
AUG 2022

SHEET
1 OF 9



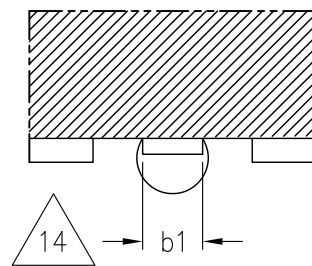
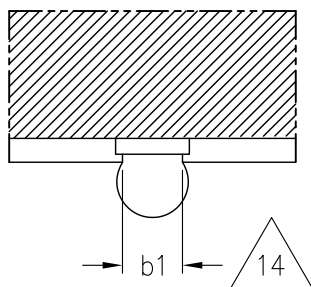
DETAIL A
(ROTATED 90° CW)



DETAIL B

TYPE 1 – SMD
(SOLDER MASK DEFINED)

TYPE 2 – NSMD
(NON SOLDER MASK DEFINED)



SECTION C-C

TABLE 1

| COMMON DIMENSIONS | | |
|-------------------|------------------|-----------------------------|
| SYMBOL | | |
| Z | | PACKAGE SPECIFIC |
| Z2 | $b(NOM) = 0.275$ | $Z2(MAX) = Z(MAX) - Z1$ |
| Z5 | | OPTIONAL – PACKAGE SPECIFIC |
| Z6 | | OPTIONAL – PACKAGE SPECIFIC |
| e | | 0.40 BASIC |
| | | |
| NOTES | | 2, 8, 17 |
| REF | | 11–1006A |
| ISSUE | | A |

TABLE 2


| COMMON DIMENSIONS | | | | | | | | | | |
|-------------------|-------|--------------------------|-------|-------|-----|-----|-----|-----|-----|-----|
| SYMBOL | | (b) SOLDER BALL DIAMETER | | | | | | | | |
| | | MIN | NOM | MAX | MIN | NOM | MAX | MIN | NOM | MAX |
| Z1 | | PACKAGE SPECIFIC | --- | --- | --- | --- | --- | --- | --- | --- |
| b | | 0.225 | 0.275 | 0.325 | --- | --- | --- | --- | --- | --- |
| b1 | TYPE1 | 0.18 | --- | --- | --- | --- | --- | --- | --- | --- |
| | TYPE2 | 0.18 | --- | --- | --- | --- | --- | --- | --- | --- |
| | | | | | | | | | | |
| NOTES | | 2, 9, 17 | | | — | | | — | | |
| REF | | 11–1006A | | | — | | | — | | |
| ISSUE | | A | | | — | | | — | | |

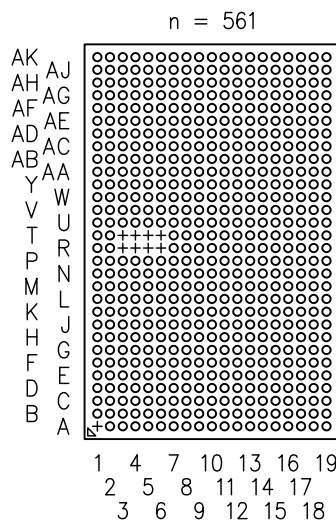
$$b1 = b(NOM) * 0.667$$

TABLE 3

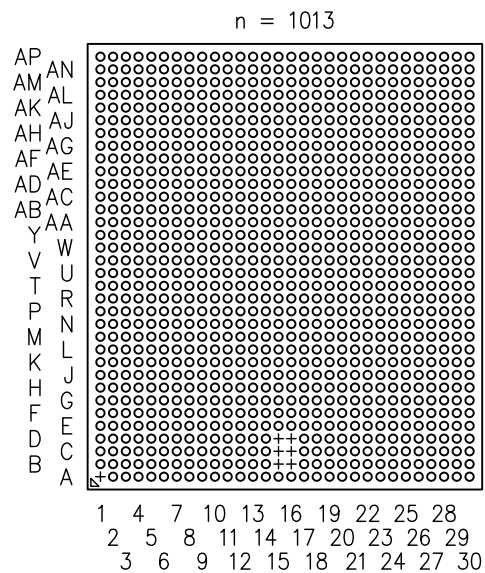
| TOLERANCE OF FORM AND POSITION | | | |
|--------------------------------|----------------|-----|-----|
| SYMBOL | VALUE | | |
| | øb NOM = 0.275 | --- | --- |
| aaa | 0.10 | --- | --- |
| ccc | 0.20 | --- | --- |
| ddd | 0.08 | --- | --- |
| eee | 0.15 | --- | --- |
| fff | 0.05 | --- | --- |
| | | | |
| NOTES | 2 | — | — |
| REF | 11-1006A | — | — |
| ISSUE | A | — | — |

TABLE 4

| $\phi b = 0.275$ NOMINAL | | | | | | | | | | | | | |
|---|------------|------------|-------------|-------------|----|----|-------------|-------------|-------|------|---------------------|----------|-------|
| NEW VARIATION | X BASIC | Y BASIC | X1 BASIC | Y1 BASIC | MX | MY | SX BASIC | SY BASIC | n | N | TERMINAL PATTERN | REF | ISSUE |
|  PBGA-B561[570]_I0p4- R8p0x12p4Z#-C0p325Z# | 8.00 | 12.40 | 6.30 | 11.60 | 19 | 30 | 0.00 | 0.20 | 561 | 570 | A | 11-1006A | A |
| PBGA-B1013[1020]_I0p4- R12p4x14p0Z#-C0p325Z# | 12.4 | 14.00 | 11.60 | 13.20 | 30 | 34 | 0.20 | 0.20 | 1013 | 1020 | B | 11-1006A | A |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| NOTES | 2 | 2 | 2 | 2 | 5 | 5 | 2, 12 | 2, 12 | 6, 13 | 6 | 13 | | |



TERMINAL PATTERN A



TERMINAL PATTERN B



+ = DEPOPULATED TERMINAL POSITIONS

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5–2009. THIS OUTLINE CONFORMS TO JEP95, SECTION 4.5.
2. ALL DIMENSIONS ARE IN MILLIMETERS.
3. SOLDER BALL POSITION DESIGNATION PER JEP95 SECTION 3, SPP–010.
4. eX REPRESENTS THE SOLDER BALL GRID PITCH IN X DIRECTION, eY REPRESENTS THE SOLDER BALL GRID PITCH IN Y DIRECTION.
5. MX AND MY REPRESENT THE MAXIMUM MATRIX SIZE CORRESPONDING TO THE X AND Y DIRECTIONS RESPECTIVELY.
6. n REPRESENTS THE ACTUAL NUMBER OF SOLDER BALLS AFTER DEPOPLUATION. N REPRESENTS THE MAXIMUM NUMBER OF SOLDER BALLS FOR A FULL MATRIX, $MD \times ME$.

7 A FULLY POPULATED 32 X 40 MATRIX SIZE IS SHOWN FOR ILLUSTRATION ONLY.

8 DIMENSION Z INCLUDES STAND–OFF HEIGHT $Z1$, PACKAGE BODY THICKNESS AND LID HEIGHT, BUT DOES NOT INCLUDE ATTACHED FEATURES, e.g., EXTERNAL HEATSINK. AN INTEGRAL HEATSLUG IS NOT CONSIDERED AN ATTACHED FEATURE.

9 DIMENSION b IS MEASURED AT THE MAXIMUM SOLDER BALL DIAMETER PARALLEL TO PRIMARY DATUM C.

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

11 THE $Z1$ TERMINAL CORNER MUST BE IDENTIFIED ON BOTH THE BOTTOM AND TOP SIDES OF THE PACKAGE, THE IDENTIFICATION FEATURE CAN BE MADE USING INK, METALIZED MARKINGS, IDENTATIONS, OR OTHER FEATURES.

12 DIMENSIONS SX AND SY ARE MEASURED WITH RESPECT TO DATUMS A AND B AND DEFINE THE POSITION OF THE CENTER SOLDER BALLS.
WHEN THERE IS AN ODD NUMBER OF SOLDER BALLS, SX OR $SY = 0.00$.
WHEN THERE IS IS AN EVEN NUMBER OF SOLDER BALLS, $SX = eX/2$ OR $SY = eY/2$.

13 SOLDER BALL DEPOPULATION IS ALLOWED. DEPOPULATION IS THE OMISSION OF BALLS FROM A FULL MATRIX ($MX \times MY$).

14 THE SOLDERABLE SURFACE MAY BE DEFINED BY AN OPENING IN THE SOLDER RESIST LAYER (TYPE 1) OR BY THE SIZE OF A METALIZED PAD (TYPE 2). IT MAY BE ELLIPITACL PROVIDED THE RATIO OF THE MAJOR TO MINOR AXES IS NO GREATER THAN 2/1, AND THE SURFACE AREA IS NO LESS THEN THE MINIMUM FOR A CIRCULAR PAD. FOR TYPE 2 DESIGNS, EXPOSED COPPER TRACES ARE PERMITTED OUTSIDE THE $b1$ PAD AREA.

NOTES CONTINUED:

15 FOR GLOB TOP AND FLIP CHIP CONFIGURATIONS, PARALLELISM (ccc) APPLIES ONLY TO THE SURFACE DIRECTLY ABOVE THE DIE AREA. THE PARALLELISM SPECIFICALLY WILL NOT APPLY TO ANY FILLET OR SLOPED REGION OF THE ENCAPSULANT.

16 SEE JESD30 FOR EXPLANATION OF VARIATION SCHEME.
PACKAGE HEIGHT IS THE MAXIMUM PACKAGE THICKNESS.

17. THE Z1 HEIGHT NEEDS TO BE ACCEPTABLE TO MANUFACTURING STANDARDS.

STP (3D) FILE RECORD
3D FILE NAMES MAY EXCEED LENGTH REQUIREMENTS FOR SOME SOFTWARE TOOLS.

| STP FILE NAME | DATE | ITEM NUMBER |
|---|----------|----------------|
| MO-352A_PBGA-B561[570]_I0p4-R8p0X12p4Z#-C0p325Z# | AUG 2022 | 11-1006A |
| MO-352A_PBGA-B1013[1020]_I0p4-R12p4x14p0Z#-C0p325Z# | AUG 2022 | 11-1006A |
| | | |
| | | |

TASK GROUP CONTRIBUTORS

MICRON TECHNOLOGY, INC

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: AUGUST 2022 | ITEM NUMBER: 11-1006A |
|------------------|-------------------|-----------------------|

| |
|------------------------|
| CHANGE RECORD HISTORY: |
|------------------------|

| | | |
|----------|---------|----------------|
| ISSUE: - | DATE: - | ITEM NUMBER: - |
|----------|---------|----------------|

| LOCATION: | CHANGED FROM: | CHANGED TO: |
|-----------|---------------|-------------|
| | | |
| | | |
| | | |
| | | |
| | | |