

JEDEC SOLID STATE
PRODUCT OUTLINE
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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.

PLASTIC BOTTOM GRID
ARRAY BALL, 0.75MM PITCH
RECTANGULAR FAMILY PACKAGE

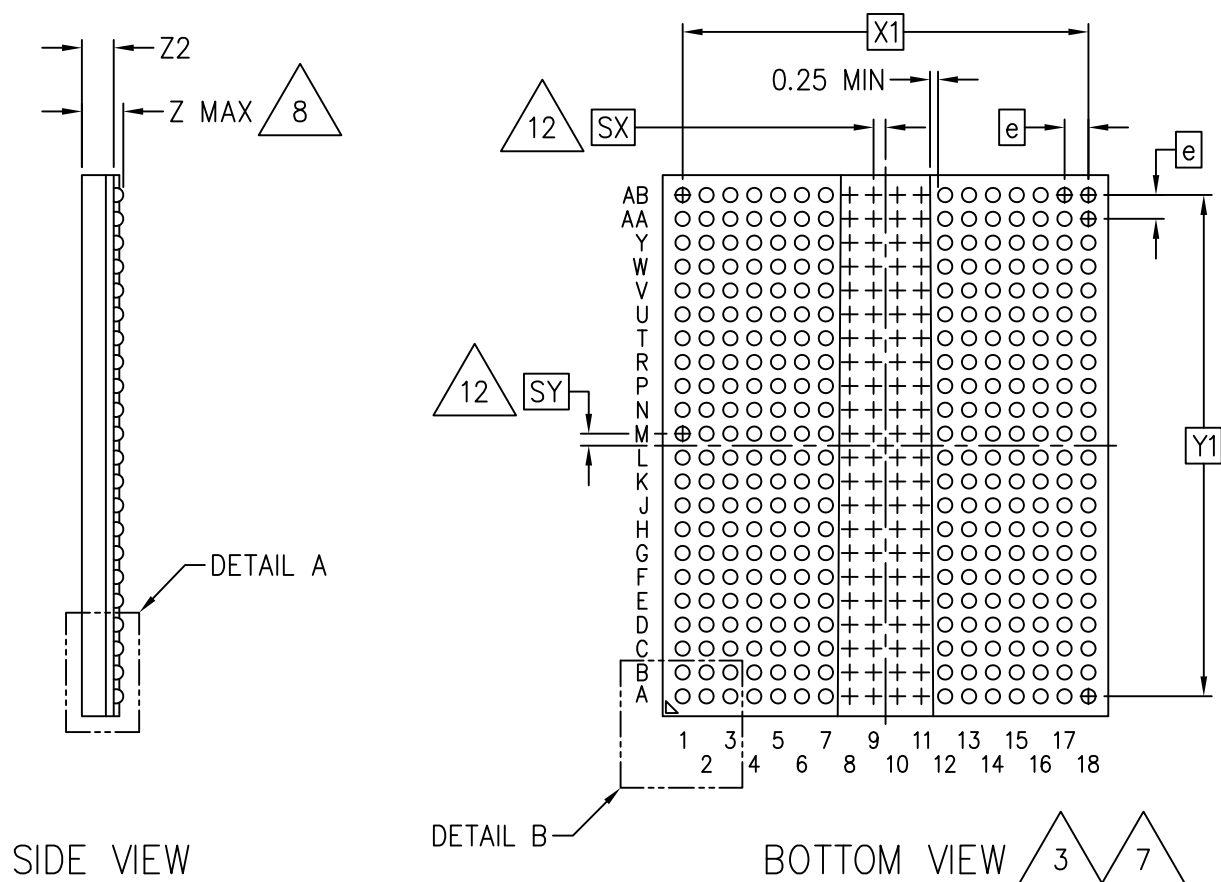
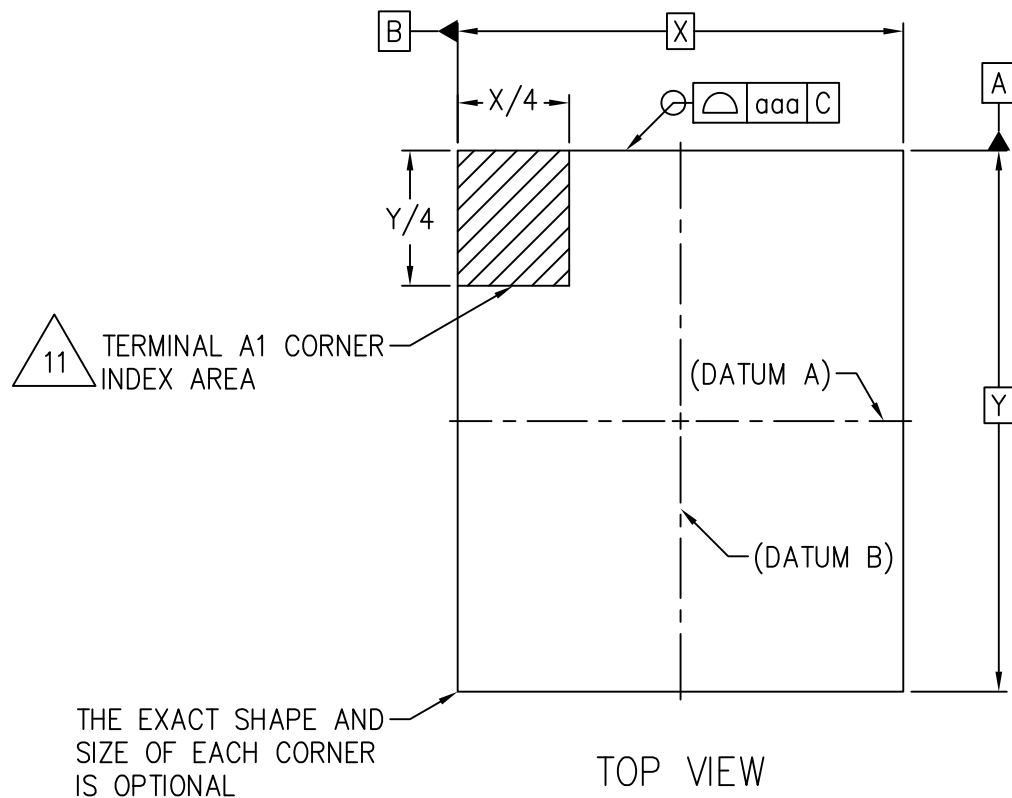
PACKAGE DESIGNATOR
PBGA-B#[#]
_I0p75...

ITEM
MO-328

ISSUE
B

DATE
FEB 2020

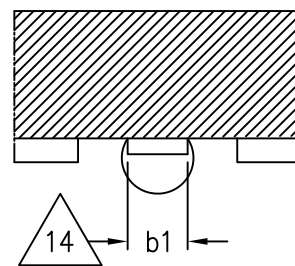
SHEET
1 OF 9



OPTIONAL BOTTOM LID VARIATION



TYPE 2 – NSMD
(NON SOLDER MASK DEFINED)



SECTION C-C

TABLE 1

| COMMON DIMENSIONS | | |
|-------------------|------------------|-------------------------------|
| SYMBOL | | |
| Z | | PACKAGE SPECIFIC |
| Z2 | $b(NOM) = 0.450$ | $Z2(MAX) = Z(MAX) - Z1(0.22)$ |
| Z5 | | OPTIONAL – PACKAGE SPECIFIC |
| Z6 | | OPTIONAL – PACKAGE SPECIFIC |
| e | | 0.75 BASIC |
| | | |
| NOTES | | 2, 8 |
| REF | | 11–979 |
| ISSUE | | B |

TABLE 2

| COMMON DIMENSIONS | | | | | | |
|-------------------|----------------------|-------|-------|------|------|------|
| SYMBOL | SOLDER BALL DIAMETER | | | | | |
| | MIN | NOM | MAX | MIN | NOM | MAX |
| Z1 | 0.22 | ---- | ---- | ---- | ---- | ---- |
| b | 0.375 | 0.450 | 0.525 | ---- | ---- | ---- |
| b1 | TYPE 1 | 0.30 | ---- | ---- | ---- | ---- |
| | TYPE 2 | 0.30 | ---- | ---- | ---- | ---- |
| | | | | | | |
| NOTES | 2, 9 | | | ---- | | |
| REF | 11-936, 11-979 | | | ---- | | |
| ISSUE | B | | | ---- | | |


TABLE 3

| TOLERANCE OF FORM AND POSITION | | | | |
|--------------------------------|--------------|----------------|------|------|
| SYMBOL | PACKAGE TYPE | VALUE | | |
| | | øb NOM = 0.450 | ---- | ---- |
| aaa | ---- | 0.15 | ---- | ---- |
| ccc | ENCAPSULATED | 0.20 | ---- | ---- |
| ddd | ---- | 0.20 | ---- | ---- |
| eee | ENCAPSULATED | 0.15 | ---- | ---- |
| fff | ---- | 0.08 | ---- | ---- |
| | | | | |
| NOTES | | 2 | ---- | ---- |
| REF | | 11-936 | ---- | ---- |
| ISSUE | | A | ---- | ---- |

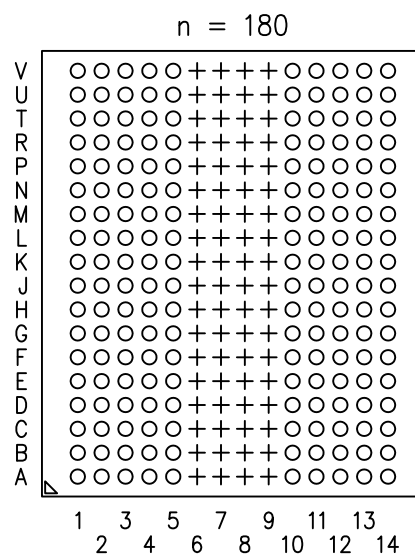
$$b1 = b(\text{NOM}) * 0.667$$

$$Z1(\text{MIN}) = b(\text{MIN}) * 0.60$$

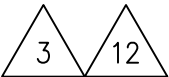
$$\phi_b = 0.450 \text{ NOMINAL}$$

| øb = 0.450 NOMINAL | | | | | | | | | | | | | | |
|---|---------------|---------|---------|----------|----------|----|----|----------|----------|-------|-----|------------------|--------|-------|
| NEW VARIATION  | OLD VARIATION | X BASIC | Y BASIC | X1 BASIC | Y1 BASIC | MX | MY | SX BASIC | SY BASIC | n | N | TERMINAL PATTERN | REF | ISSUE |
| *P14.0X12.0-GJ-180A | --- | 12.00 | 14.00 | 9.75 | 12.75 | 14 | 18 | 0.375 | 0.375 | 180 | 252 | A | 11-936 | A |
| PBGA-B180[252]_I0p75-R12p0x14p0Z#-C0p525Z0p22 | --- | 12.00 | 14.00 | 9.75 | 12.75 | 14 | 18 | 0.375 | 0.375 | 180 | 252 | A | 11-979 | B |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | NOTES | 2 | 2 | 2 | 2 | 5 | 5 | 2, 12 | 2, 12 | 6, 13 | 6 | 13 | | |

NOTE:
FOR VARIATIONS THAT BEGIN WITH *, SEE SPP-025 ISSUE C FOR EXPLANATION OF VARIATION SCHEME.
THIS VARIATION SCHEME HAS BEEN REPLACED BY JESD30.



TERMINAL PATTERN A



+ = 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 DESIGNATIONS PER JEP95, SECTION 3, SPP–010.

4. e REPRESENT THE SOLDER BALL GRID PITCH.

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 X ME.



7 SHEET 1 – A FULLY POPULATED 18 X 22 MATRIX SIZE IS SHOWN FOR ILLUSTRATION ONLY.
SHEET 2 – A DEPOPULATED 18 X 22 MATRIX SIZE IS SHOWN FOR ILLUSTRATION ONLY.



8 DIMENSION Z INCLUDES STAND–OFF HEIGHT Z1, PACKAGE BODY THICKNESS
HEIGHT, BUT DOES NOT INCLUDE ATTACHED FEATURES, e.g. EXTERNAL HEAT SINK.
AN INTEGRAL HEAT SLUG 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 A1 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, INDENTATIONS, 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 OR SD = e/2.



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



14 THE SOLDERABLE SURFACE MAY BE DEFINED BY AN OPENING IN THE SOLDER RESIST
LAYER. IT MAY BE ELLIPTICAL, PROVIDED THE RATIO OF MAJOR TO MINOR AXIS IS NO
GREATER THAN 2/1, AND THE SURFACE AREA IS NO LESS THAN THE MINIMUM FOR A
CIRCULAR PAD.

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.

STP (3D) FILE RECORD

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

| STP FILE NAME | ISSUE | DATE | ITEM NUMBER |
|---|-------|----------|----------------|
| PBGA-B180[252]_I0p75-R12p0x14p0Z#-C0p525Z0p22 | B | FEB 2020 | 11-979 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

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:JANUARY 2017 | ITEM NUMBER:11-936 |
|-----------------|-------------------|--------------------|

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

| | | |
|-----------------|--------------------|--------------------|
| INITIAL ISSUE:B | DATE:FEBRUARY 2020 | ITEM NUMBER:11-979 |
|-----------------|--------------------|--------------------|

| LOCATION: | CHANGED FROM: | CHANGED TO: |
|-------------------------|---|---|
| ALL SHEETS, TITLE | BALL GRID ARRAY FAMILY, RECTANGLE, 0.75 MM PITCH | PLASTIC BOTTOM GRID ARRAY... BALL, 0.075MM PITCH RECTANGULAR FAMILY |
| SHEET 1, PKG DESIGNATOR | PBGA | PBGA-B#[#]_l0p75... |
| ALL SHEETS | SYMBOLS A, D, AND E | SYMBOLS Z, Y, AND X RESPECTIVELY |
| SHEET 2 | | ADDED OPTIONAL BOTTOM LID VARIATION |
| SHEET 3 | | ADDED OPTIONAL BOTTOM LID CALLOUT AND 0.10 MIN DIM |
| SHEET 4, TABLE 1 | DELETED P = PACKAGE PROFILE HEIGHT 070 THRU 120 | |
| | A = > 0.60 THRU 1.20 A2 0.46 MAX THRU 0.96 MAX | Z = PACKAGE SPECIFIC Z2(MAX) = Z(MAX) - Z1(0.22) |
| SHEET 5 | A1 = 0.24 b MIN = 0.40 b MAX = 0.50 | Z1 = 0.22 b MIN = 0.375 b MAX = 0.525 |
| SHEET 6 | | ADDED JESD30 VARIATION ADDED NOTE |
| SHEET 7 | FOOTPRINT | TERMINAL PATTERN |
| SHEET 8, NOTE 7 | A FULLY POPULATED 20 X 22... | SHEET 1 - A FULLY POPULATED 18 X 22... |
| | | ADDED SHEET 2 - A DEPOPULATED 18 X 22... |
| SHEET 9, NOTE 16 | EXPLANATION OF VARIATION SCHEME | SEE JESD30 FOR EXPLANATION OF VARIATION SCHEME |
| | | PACKAGE HEIGHT IS THE MAXIMUM PACKAGE THICKNESS. |
| | | REMOVED SPP-025 VARIATION SCHEME |

| | | | | | |
|--|---|-----------------------|-------------------|------------------|--------------|
| JEDEC SOLID STATE PRODUCT OUTLINE Copyright © 2020 JEDEC | PLASTIC BOTTOM GRID ARRAY BALL, 0.75MM PITCH RECTANGULAR FAMILY PACKAGE | ITEM MO-328 | ISSUE B | DATE FEB 2020 | SHEET iii |
|--|---|-----------------------|-------------------|------------------|--------------|