



| SYMBOL | VARIATIONS | | | | | | | | | | | |
|--------|-----------------|-------|---------|-------------|-------|---------|-------------|-------|---------|-------------|-------|---------|
| | AA | | NOTE | AB | | NOTE | AC | | NOTE | AD | | NOTE |
| | MIN | MAX | | MIN | MAX | | MIN | MAX | | MIN | MAX | |
| D | 1.040 | 1.080 | 17 | 1.140 | 1.180 | 17 | 1.240 | 1.280 | 17 | 1.340 | 1.380 | 17 |
| E | 1.040 | 1.080 | 17 | 1.140 | 1.180 | 17 | 1.240 | 1.280 | 17 | 1.340 | 1.380 | 17 |
| Q | 0.045 | 0.075 | 8 10 | 0.045 | 0.075 | 8 10 | 0.045 | 0.075 | 8 10 | 0.045 | 0.075 | 8 10 |
| M | 10 | | 4 | 11 | | 4 | 12 | | 4 | 13 | | 4 |
| N | — | 84 | 5 | — | 96 | 5 | — | 108 | 5 | — | 144 | 5 |
| S | .050 BASIC | | | 0.000 BASIC | | | 0.050 BASIC | | | 0.000 BASIC | | |
| NOTE | 1,2,3,6,9,16,21 | | | | | | | | | | | |
| REF | Item 10-294 | | | | | | | | | | | |
| ISSUE | A | | | | | | | | | | | |

| | AE | | NOTE | AF | | NOTE | AG | | NOTE | AH | | NOTE |
|-------|-----------------|-------|---------|-------------|-------|---------|-------------|-------|---------|-------------|-------|---------|
| | MIN | MAX | | MIN | MAX | | MIN | MAX | | MIN | MAX | |
| D | 1.440 | 1.480 | 17 | 1.540 | 1.580 | 17 | 1.640 | 1.680 | 17 | 1.740 | 1.780 | 17 |
| E | 1.440 | 1.480 | 17 | 1.540 | 1.580 | 17 | 1.640 | 1.680 | 17 | 1.740 | 1.780 | 17 |
| Q | 0.045 | 0.075 | 8 10 | 0.045 | 0.075 | 8 10 | 0.045 | 0.075 | 8 10 | 0.045 | 0.075 | 8 10 |
| M | 14 | | 4 | 15 | | 4 | 16 | | 4 | 17 | | 4 |
| N | — | 160 | 5 | — | 176 | 5 | — | 220 | 5 | — | 240 | 5 |
| S | 0.050 BASIC | | | 0.000 BASIC | | | 0.050 BASIC | | | 0.000 BASIC | | |
| NOTE | 1,2,3,6,9,16,21 | | | | | | | | | | | |
| REF | Item 10-294 | | | | | | | | | | | |
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| | AJ | | NOTE | AK | | NOTE | AL | | NOTE | AM | | NOTE |
|-------|-----------------|-------|---------|-------------|-------|---------|-------------|-------|---------|-------------|-------|---------|
| | MIN | MAX | | MIN | MAX | | MIN | MAX | | MIN | MAX | |
| D | 1.840 | 1.880 | 17 | 1.940 | 1.980 | 17 | 2.040 | 2.080 | 17 | 2.140 | 2.180 | 17 |
| E | 1.840 | 1.880 | 17 | 1.940 | 1.980 | 17 | 2.040 | 2.080 | 17 | 2.140 | 2.180 | 17 |
| Q | 0.045 | 0.075 | 8 10 | 0.045 | 0.075 | 8 10 | 0.045 | 0.075 | 8 10 | 0.045 | 0.075 | 8 10 |
| M | 18 | | 4 | 19 | | 4 | 20 | | 4 | 21 | | 4 |
| N | — | 260 | 5 | — | 280 | 5 | — | 300 | 5 | — | 320 | 5 |
| S | 0.050 BASIC | | | 0.000 BASIC | | | 0.050 BASIC | | | 0.000 BASIC | | |
| NOTE | 1,2,3,6,9,16,21 | | | | | | | | | | | |
| REF | Item 10-294 | | | | | | | | | | | |
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| JEDEC SOLID STATE PRODUCT OUTLINE | CERAMIC PIN GRID ARRAY PACKAGE FAMILY, S-C-GA (.100" PITCH, CAVITY DOWN) | ISSUE B | DATE JUNE 1993 | MS-017 | PAGE 2 OF 4 |
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| SYMBOL | VARIATIONS | | | | | | | | | | | |
|--------|--------------------|-------|------|-------------|-------|------|-------------|-------|------|-------------|-------|------|
| | BA | | NOTE | BB | | NOTE | BC | | NOTE | BD | | NOTE |
| | MIN | MAX | | MIN | MAX | | MIN | MAX | | MIN | MAX | |
| D | 1.040 | 1.080 | 17 | 1.140 | 1.180 | 17 | 1.240 | 1.280 | 17 | 1.340 | 1.380 | 17 |
| E | 1.040 | 1.080 | 17 | 1.140 | 1.180 | 17 | 1.240 | 1.280 | 17 | 1.340 | 1.380 | 17 |
| Q | 0.0 | 0.0 | 22 | 0.0 | 0.0 | 22 | 0.0 | 0.0 | 22 | 0.0 | 0.0 | 22 |
| M | 10 | | 4 | 11 | | 4 | 12 | | 4 | 13 | | 4 |
| N | — | 84 | 5 | — | 96 | 5 | — | 108 | 5 | — | 144 | 5 |
| S | .050 BASIC | | | 0.000 BASIC | | | 0.050 BASIC | | | 0.000 BASIC | | |
| NOTE | 1,2,3,6,9,16,21,22 | | | | | | | | | | | |
| REF | Item 10-315 | | | | | | | | | | | |
| ISSUE | B | | | | | | | | | | | |

| | BE | | NOTE | BF | | NOTE | BG | | NOTE | BH | | NOTE |
|-------|--------------------|-------|------|-------------|-------|------|-------------|-------|------|-------------|-------|------|
| | MIN | MAX | | MIN | MAX | | MIN | MAX | | MIN | MAX | |
| | MIN | MAX | NOTE | MIN | MAX | NOTE | MIN | MAX | NOTE | MIN | MAX | NOTE |
| D | 1.440 | 1.480 | 17 | 1.540 | 1.580 | 17 | 1.640 | 1.680 | 17 | 1.740 | 1.780 | 17 |
| E | 1.440 | 1.480 | 17 | 1.540 | 1.580 | 17 | 1.640 | 1.680 | 17 | 1.740 | 1.780 | 17 |
| Q | 0.0 | 0.0 | 22 | 0.0 | 0.0 | 22 | 0.0 | 0.0 | 22 | 0.0 | 0.0 | 22 |
| M | 14 | | 4 | 15 | | 4 | 16 | | 4 | 17 | | 4 |
| N | — | 160 | 5 | — | 176 | 5 | — | 220 | 5 | — | 240 | 5 |
| S | 0.050 BASIC | | | 0.000 BASIC | | | 0.050 BASIC | | | 0.000 BASIC | | |
| NOTE | 1,2,3,6,9,16,21,22 | | | | | | | | | | | |
| REF | Item 10-315 | | | | | | | | | | | |
| ISSUE | B | | | | | | | | | | | |

| | BJ | | NOTE | BK | | NOTE | BL | | NOTE | BM | | NOTE |
|-------|--------------------|-------|------|-------------|-------|------|-------------|-------|------|-------------|-------|------|
| | MIN | MAX | | MIN | MAX | | MIN | MAX | | MIN | MAX | |
| | MIN | MAX | NOTE | MIN | MAX | NOTE | MIN | MAX | NOTE | MIN | MAX | NOTE |
| D | 1.840 | 1.880 | 17 | 1.940 | 1.980 | 17 | 2.040 | 2.080 | 17 | 2.140 | 2.180 | 17 |
| E | 1.840 | 1.880 | 17 | 1.940 | 1.980 | 17 | 2.040 | 2.080 | 17 | 2.140 | 2.180 | 17 |
| Q | 0.0 | 0.0 | 22 | 0.0 | 0.0 | 22 | 0.0 | 0.0 | 22 | 0.0 | 0.0 | 22 |
| M | 18 | | 4 | 19 | | 4 | 20 | | 4 | 21 | | 4 |
| N | — | 260 | 5 | — | 280 | 5 | — | 300 | 5 | — | 320 | 5 |
| S | 0.050 BASIC | | | 0.000 BASIC | | | 0.050 BASIC | | | 0.000 BASIC | | |
| NOTE | 1,2,3,6,9,16,21,22 | | | | | | | | | | | |
| REF | Item 10-315 | | | | | | | | | | | |
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| JEDEC | | CERAMIC PIN GRID ARRAY | | ISSUE | DATE | MS-017 | PAGE 3 OF 4 |
| SOLID STATE PRODUCT | | PACKAGE FAMILY, S-C-GA | | B | JUNE | | |
| OUTLINE | | (.100" PITCH, CAVITY DOWN) | | | 1993 | | |

NOTES:

1. Dimensioning & tolerancing per ANSI Y14.5M-1982.
2. Refer to applicable symbol list.
3. Terminal position designation per JESD 95-1.
4. Symbol "M" is the in matrix size.
5. Symbol "N" is the maximum allowable number of pins.
6. 11X11 and 12X12 matrix sizes shown for illustration only.
7. Dimension "A" does not include heatsinks or other attached features.
8. The standoff shall be located on the pin matrix diagonals. The major dimension of the standoff feature should be .045" minimum.
9. The seating plane is the outer standoff surface facing away from the ceramic body for variations AA-AM. The seating plane is the ceramic body surface for variations BA-BM.
10. Dimension "Q" is measured from the ceramic body surface to the outer standoff surface. See APPLICATION NOTE for variations AA-AM.
11. All pins shall be on the .100" grid.
12. -C- is the plane of pin to package interface.
13. Pin tips should have a radius or chamfer. See APPLICATION NOTE.
14. See APPLICATION NOTE.
15. This dimension allows a 750 microinch thick coating for solder dipped parts. See APPLICATION.
16. There must be some type of A1 corner identification on both top and bottom surfaces of the package. ID type is optional and may consist of notches, ID pins, metallized markings or other features. The features used on each surface may be of differing types.
17. There shall be .015" minimum spacing between any two metal features on the package surface.
18. Dimensions "D" and "E" do not include ceramic protrusions. Such protrusions may not extend more than .003" on any side. Corners and edges of the package body may have chamfers for mechanical protection or identification.
19. This dimension defines the maximum size for the pin braze pads.
20. S is measured with respect to -A- and -B-.
21. All dimensions in INCHES.
22. There are no standoff pins on variations BA through BM.

APPLICATION NOTES:

1. For applications where a PGA package is used in a socket, the following requirements may apply:
 - a. Pin tips shall have a radius or chamfer.
 - b. Standoff height shall be in the range .055"/.045". If the standoff pin is used.
 - c. Minimum pin length (dimension "L") shall be .120".
 - d. Maximum pin diameter including finish should be .020".
2. For military applications the pin length (dimension "L") range may be restricted to .120"/.140".

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| JEDEC SOLID STATE PRODUCT | CERAMIC PIN GRID ARRAY PACKAGE FAMILY, S-C-GA (.100" PITCH, CAVITY DOWN) | ISSUE B | DATE JUNE 1993 | MS-017 | PAGE 4 of 4 |
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