



| Symbol                         | PQ/PQG44        |      |      | PQ/PQG/HQ/HQG160 |      |      | PQ/PQG/HQ/HQG208  |      |      | PQ/PQG/HQ/HQG240 |      |      |
|--------------------------------|-----------------|------|------|------------------|------|------|-------------------|------|------|------------------|------|------|
|                                | MILLIMETERS     |      |      | MILLIMETERS      |      |      | MILLIMETERS       |      |      | MILLIMETERS      |      |      |
|                                | MIN.            | NDM. | MAX. | MIN.             | NDM. | MAX. | MIN.              | NDM. | MAX. | MIN.             | NDM. | MAX. |
| A                              | 2.15            | 2.15 | 2.35 | 3.70             | 3.70 | 4.10 | 3.70              | 3.70 | 4.10 | 3.78             | 3.78 | 4.10 |
| A <sub>1</sub>                 | 0.05            | 0.05 | 0.25 | 0.25             | 0.33 | 0.50 | 0.25              | 0.33 | 0.50 | 0.25             | 0.38 | 0.50 |
| A <sub>2</sub>                 | 1.95            | 2.00 | 2.10 | 3.20             | 3.40 | 3.60 | 3.20              | 3.40 | 3.60 | 3.20             | 3.40 | 3.60 |
| D/E                            | 13.20 BSC       |      |      | 31.20 BSC        |      |      | 30.60 BSC         |      |      | 34.60 BSC        |      |      |
| D <sub>1</sub> /E <sub>1</sub> | 10.00 BSC       |      |      | 28.00 BSC        |      |      | 28.00 BSC         |      |      | 32.00 BSC        |      |      |
| FL                             | 1.60 REF.       |      |      | 1.60 REF.        |      |      | 1.30 REF.         |      |      | 1.30 REF.        |      |      |
| L                              | 0.73            | 0.88 | 1.03 | 0.73             | 0.88 | 1.03 | 0.50              | 0.60 | 0.75 | 0.50             | 0.60 | 0.75 |
| e                              | 0.80 BSC.       |      |      | 0.65 BSC.        |      |      | 0.50 BSC.         |      |      | 0.50 BSC.        |      |      |
| b                              | 0.30            | 0.45 | 0.45 | 0.22             | 0.40 | 0.40 | 0.17              | 0.22 | 0.27 | 0.17             | 0.27 | 0.27 |
| c                              | 0.13            | 0.23 | 0.23 | 0.13             | 0.23 | 0.23 | 0.09              | 0.20 | 0.20 | 0.09             | 0.20 | 0.20 |
| aaa                            | 0.25            | 0.25 | 0.25 | 0.25             | 0.25 | 0.25 | 0.25              | 0.25 | 0.25 | 0.25             | 0.25 | 0.25 |
| bbb                            | 0.20            | 0.20 | 0.20 | 0.20             | 0.20 | 0.20 | 0.20              | 0.20 | 0.20 | 0.20             | 0.20 | 0.20 |
| ccc                            | 0.10            | 0.10 | 0.10 | 0.10             | 0.10 | 0.10 | 0.08              | 0.08 | 0.08 | 0.08             | 0.08 | 0.08 |
| ddd                            | 0.20            | 0.20 | 0.20 | 0.13             | 0.13 | 0.13 | 0.08              | 0.08 | 0.08 | 0.08             | 0.08 | 0.08 |
| N                              | 44              |      |      | 160              |      |      | 208               |      |      | 240              |      |      |
| REF.                           | JEDEC MS-022-AB |      |      | JEDEC MS-022-DD1 |      |      | JEDEC MS-029-FA-1 |      |      | JEDEC MS-029-GA  |      |      |

- NOTES: 1. ALL DIMENSIONS AND TOLERANCES CONFORM TO ANSI Y14.5M-1994.  
 2. DIMENSIONS D<sub>1</sub> AND E<sub>1</sub> DO NOT INCLUDE MOLD PROTRUSION. ALLOWABLE MOLD PROTRUSION SHALL NOT EXCEED 0.25mm PER SIDE.  
 3. PACKAGE TOP DIMENSIONS MAY BE SMALLER THAN THE BOTTOM DIMENSIONS BY 0.20mm.  
 4. THE SAME PACKAGE DIMENSIONS APPLY FOR THERMALLY ENHANCED PRODUCTS. HEAT SINK IS ADDED. THE PACKAGE CODE IS "HQ".  
 5. HEAT SINK DIMENSIONS: HQ160/HQ208=21mm SQ. REF.; HQ240=24mm SQ. REF.  
 6. MARK ORIENTATION WITH RESPECT TO PIN-1 I.D. IF 2 OR MORE CIRCLES EXIST ON TOP OF THE PACKAGE, USE THE SMALLEST CIRCLE AS PIN-1 I.D.

44, 160, 208, and 240-PIN PQFP (PQ44/PQG44, PQ160/PQG160, PQ208/PQG208, and PQ240/PQG240) and 160, 208, and 240-PIN HEAT SINK PQFP (HQ160/HQG160, HQ208/HQG208, and HQ240/HQG240)