

## REFER TO MIL-STD-883, TM2009 REV L

### 3.3.6 Ball/column grid array leads.

- a. Nonconformance with any design criteria (see 3.3.1.c).
- b. Solder columns / solder balls alignment.
  - i. Solder column base is misaligned such that the column is not within the perimeter of the pad.
  - ii. Solder column tip misalignment that does not meet drawing requirements (typically < 100  $\mu\text{m}$ ).
  - iii. Solder ball misalignment that does not meet drawing requirements.
- c. Broken, twisted or damaged solder columns/spheres. Damaged columns/spheres (scored, gouged) that fail to meet final dimensional requirements.
- d. Solder column bends or misalignments that do not meet the drawing design criteria.
- e. Solder columns/spheres containing any void, hole, pit, gouge or depression greater than 15% of the column/sphere diameter or volume. For voids, holes, pits less than 15% of the diameter or volume, the cumulative total shall be less than half of the column/sphere diameter.
- f. Solder columns/spheres containing cracks.
- g. Columns/spheres with burrs or bumps exceeding 20% of the column/sphere diameter.
- h. Columns/spheres that exhibit peeling, flaking, or blistering.
- i. Solder fillet height which is less than half the column diameter for more than 25% of the column circumference.
- j. For copper reinforced columns that exhibit any of the following:
  - i. Copper ribbon delamination exceeding 25% around the column circumference.
  - ii. Columns with copper wire having copper exposed more than five percent of the column surface area. Exposed (cut) copper on the free end of the column is acceptable.
- k. Discoloration of columns/spheres due to corrosion, crusting, or residual flux (there should be a consistent shiny solder appearance). Evidence of flux residue, stains, rust, or signs of corrosion that can be seen at 3 to 10X magnification.
- l. Foreign material. Discoloration, or adherent deposits within 0.5 mm of the free end of the column.
- m. Solder columns/spheres that do not meet requirements for device co-planarity/uniformity of the drawing design criteria (typically < 150  $\mu\text{m}$ ).
- o. Pad dewetting/non-wetting greater than 5% of the pad surface area.

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TITLE				SOLDER COLUMN CCGA SPECIFICATIONS			
SCALE	SIZE	DRAWING NO.		REV			
NONE	A	160000		A			
DO NOT SCALE DRAWING				SHEET 1 OF 1			