8.3.2.1 Rectangular or Square End Chip Components – 1, 2, 3 or 5 Side Termination(s) – Side Overhang (A)

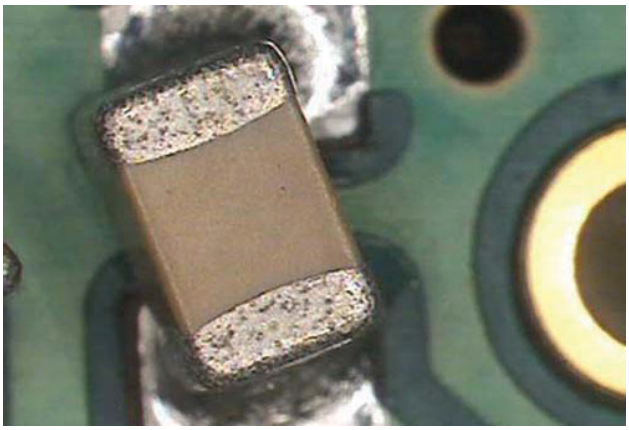

Figure 8-16

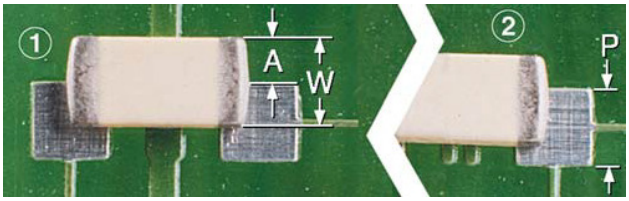

Figure 8-17
1. Class 1,2
2. Class 3

Acceptable – Class 1,2

- Side overhang (A) is less than or equal to 50% width of component termination area (W) or 50% width of land (P), whichever is less.

Acceptable – Class 3

- Side overhang (A) is less than or equal to 25% width of component termination area (W) or 25% width of land (P), whichever is less.

8.3.2.1 Rectangular or Square End Chip Components – 1, 2, 3 or 5 Side Termination(s) – Side Overhang (A) (cont.)

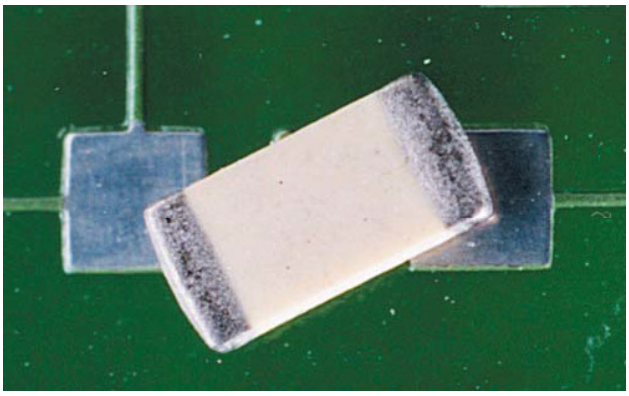

Figure 8-18

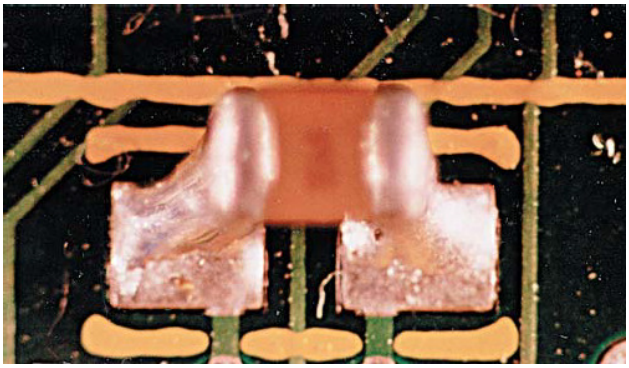

Figure 8-19

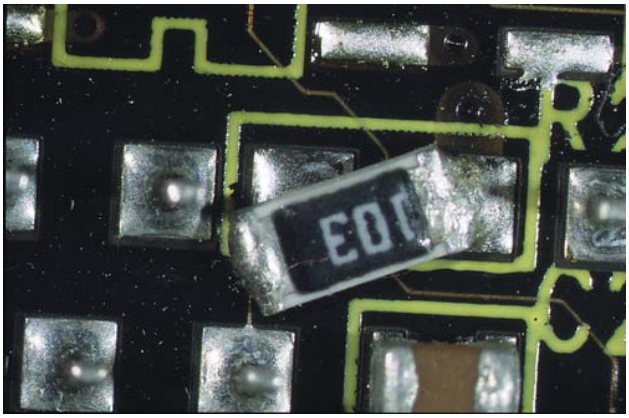

Figure 8-20

Defect – Class 1,2

- Side overhang (A) is greater than 50% component termination width (W) or 50% land width (P), whichever is less.

Defect – Class 3

- Side overhang (A) is greater than 25% component termination width (W) or 25% land width (P), whichever is less.

8.3.2.2 Rectangular or Square End Chip Components – 1, 2, 3 or 5 Side Termination(s) – End Overhang (B)

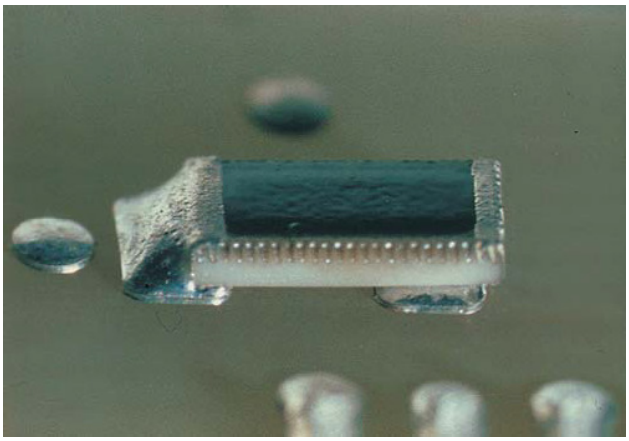

Figure 8-21

Defect – Class 1,2,3

- Termination overhangs land.

8.3.2.3 Rectangular or Square End Chip Components – 1, 2, 3 or 5 Side Termination(s) – End Joint Width (C)

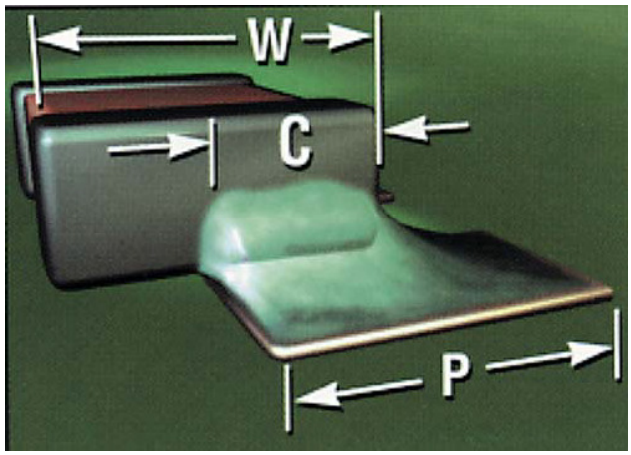

Figure 8-22

Figure 8-23

Acceptable – Class 1,2

- End joint width (C) is minimum 50% of component termination width (W) or 50% land width (P), whichever is less.

8.3.2.3 Rectangular or Square End Chip Components – 1, 2, 3 or 5 Side Termination(s) – End Joint Width (C) (cont.)

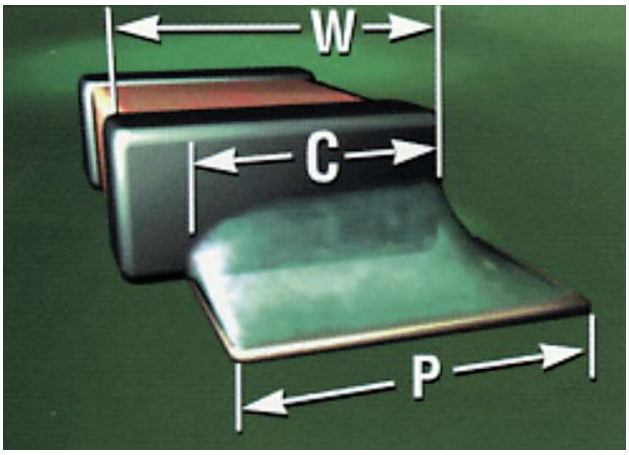

Figure 8-24

Acceptable – Class 3

- End joint width (C) is minimum 75% of component termination (W) or 75% land width (P), whichever is less.

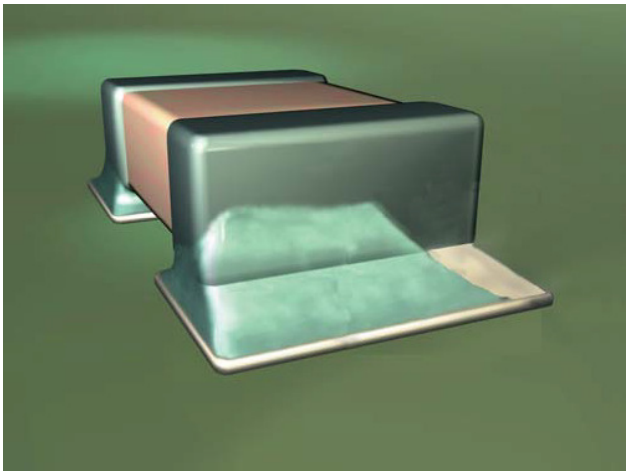

Figure 8-25

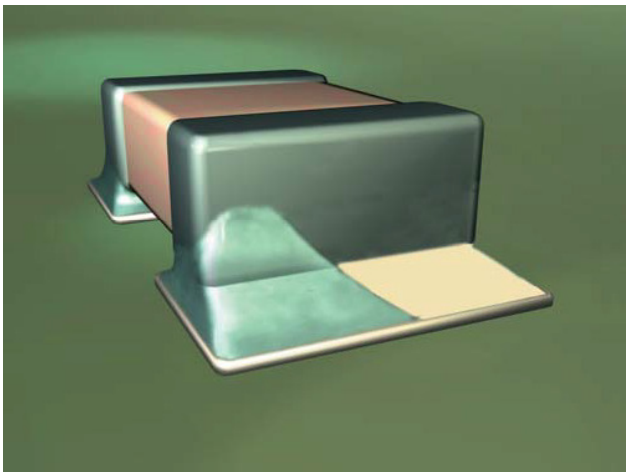

Figure 8-26

Defect – Class 1,2,3

- Less than minimum acceptable end joint width.

8.3.2.4 Rectangular or Square End Chip Components – 1, 2, 3 or 5 Side Termination(s) – Side Joint Length (D)

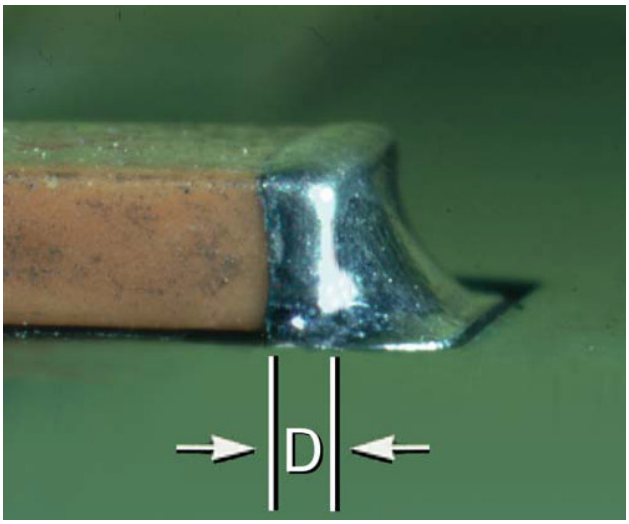

Figure 8-27

Acceptable – Class 1,2,3

- Side joint length is not required. However, a wetted fillet is evident.

Defect – Class 1,2,3

- No wetted fillet.

8.3.2.5 Rectangular or Square End Chip Components – 1, 2, 3 or 5 Side Termination(s) – Maximum Fillet Height (E)

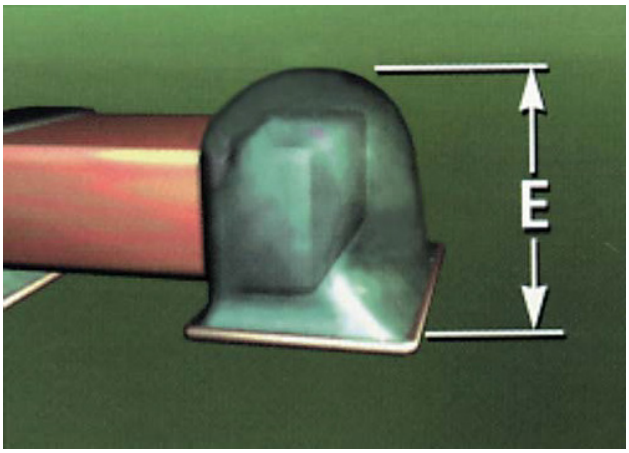

Figure 8-28

Acceptable – Class 1,2,3

- Maximum fillet height (E) may overhang the land and/or extend onto the top or side metallization, but does not touch the top or side of the component.

Defect – Class 1,2,3

- Solder fillet extends onto the top of the component body.

8.3.2.6 Rectangular or Square End Chip Components – 1, 2, 3 or 5 Side Termination(s) – Minimum Fillet Height (F)

Figure 8-29

Acceptable – Class 1,2

- Minimum fillet height (F) exhibits wetting on the vertical surface(s) of the component termination.

Acceptable – Class 3

- Minimum fillet height (F) is solder thickness (G) plus either 25% termination height (H), or 0.5 mm [0.02 in], whichever is less.

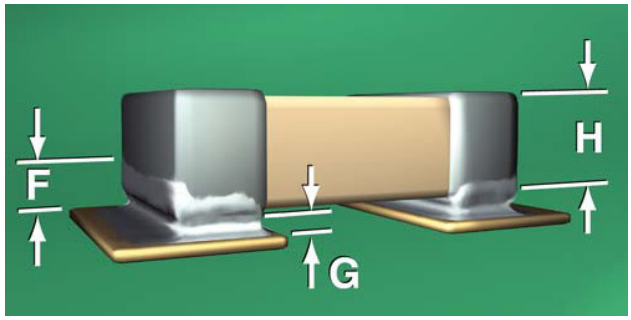

Figure 8-30

Defect – Class 1,2

- No fillet height evident on face of component.

Defect – Class 3

- Minimum fillet height (F) is less than solder thickness (G) plus either 25% (H), or solder thickness (G) plus 0.5 mm [0.02 in], whichever is less.

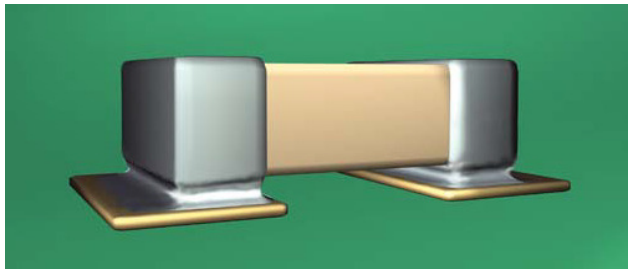

Figure 8-31

Defect – Class 1,2,3

- Insufficient solder.
- A wetted fillet is not evident.

8.3.2.7 Rectangular or Square End Chip Components – 1, 2, 3 or 5 Side Termination(s) – Solder Thickness (G)

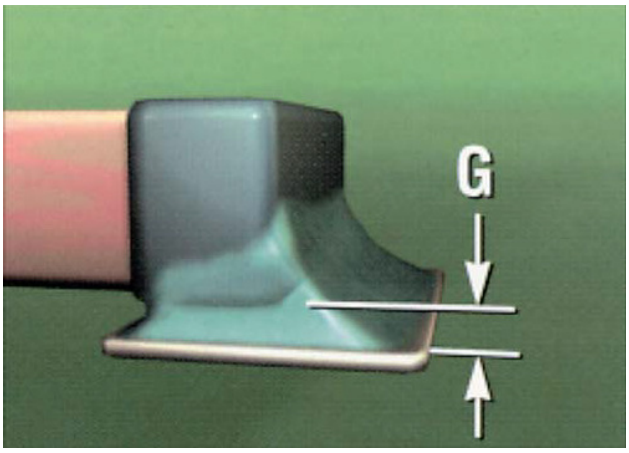

Figure 8-32

Acceptable – Class 1,2,3

- Wetted fillet evident.

Defect – Class 1,2,3

- No wetted fillet.

8.3.2.8 Rectangular or Square End Chip Components – 1, 2, 3 or 5 Side Termination(s) – End Overlap (J)

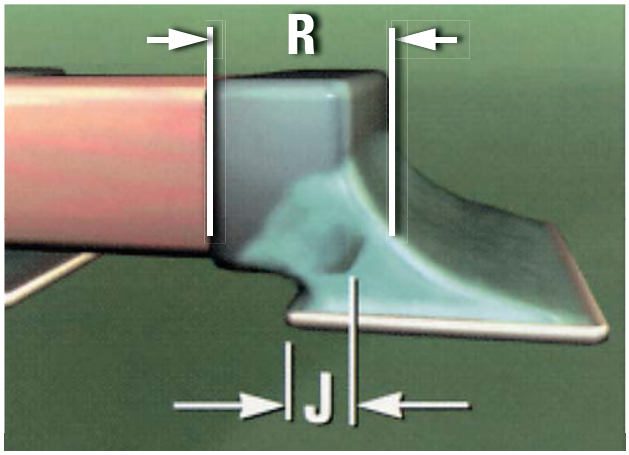

Figure 8-33

Acceptable – Class 1,2

- Evidence of overlap contact (J) between the component termination and the land is required.

Acceptable – Class 3

- End overlap (J) is 25% or more of component termination length (R).

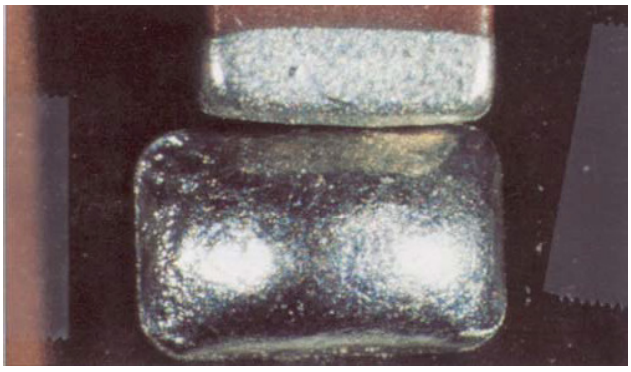

Figure 8-34

Defect – Class 1,2,3

- Insufficient end overlap.

Defect – Class 3

- End overlap (J) is less than 25% of component termination length (R).

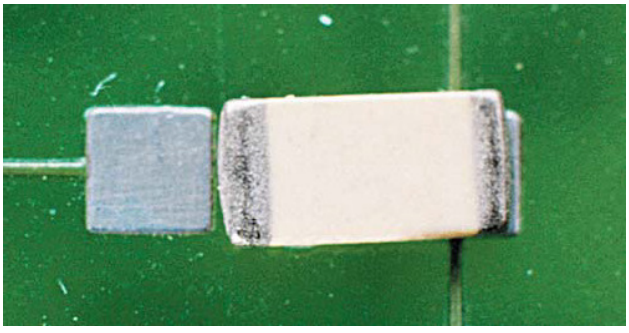

Figure 8-35

8.3.2.9 Rectangular or Square End Chip Components – 1, 2, 3 or 5 Side Termination(s) – Termination Variations

8.3.2.9.1 Rectangular or Square End Chip Components – 1, 2, 3 or 5 Side Termination(s) – Termination Variations – Mounting on Side (Billboarding)

This section provides criteria for chip components that may flip (rotate) onto the narrow edge during assembly.

These criteria may not be acceptable for certain high frequency or high vibration applications.

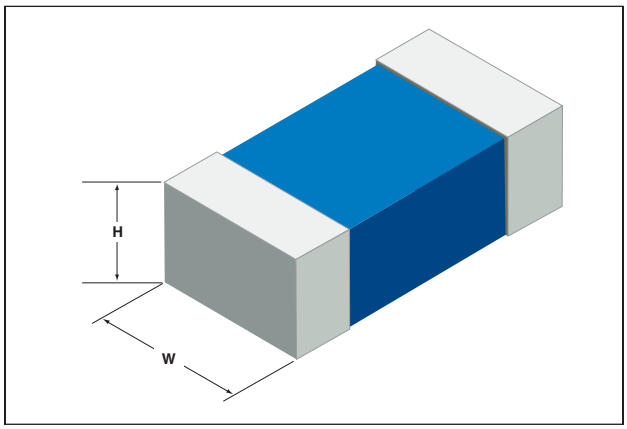

Figure 8-36

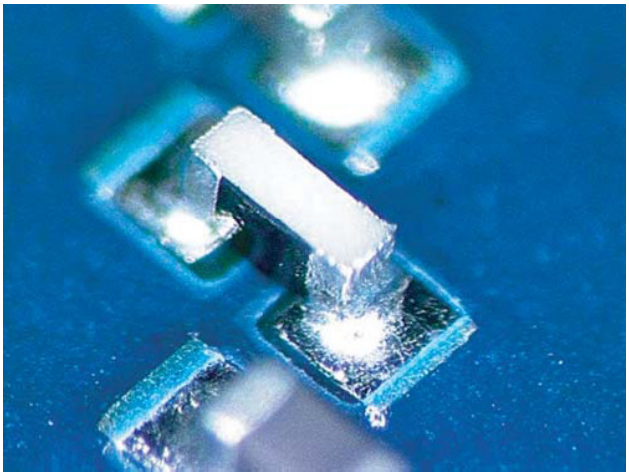

Figure 8-37

Acceptable – Class 1,2

- Width (W) to height (H) ratio does not exceed two to one (2:1) ratio; see Figure 8-36.
- Complete wetting to land and end cap metallization.
- Overlap contact between 100% of the component termination (metallization) and the land.
- Component has three or more termination faces (metallization).
- There is evidence of wetting on the three vertical faces of the termination area.

Acceptable – Class 3

- For components size 1206 or smaller:
  - Width (W) to height (H) ratio does not exceed two to one (2:1); see Figure 8-37.
  - Complete wetting at land to end cap metallization.
  - Overlap contact between 100% of the component termination (metallization) and the land.
  - Component has three or more termination faces (metallization).
  - There is evidence of wetting on the three vertical faces of the termination area.
- For components larger than size 1206:
  - Width (W) to height (H) ratio that does not exceed 1.25:1 ratio.
  - Component has five termination faces (metallization).
  - Complete wetting at land to end cap metallization.
  - Overlap contact between 100% of the component termination (metallization) and the land.
  - There is evidence of wetting on the three vertical faces of the termination area.