Target Condition

Chip Components: Class 3

This photo represents an ideal surface mount solder joint for any class of rectangular Chip component.

The following illustrations show the limits of component misalignment and solder joint size. Solder joints that do not meet any of these conditions for 1, 3 or 5-sided terminations should be considered unacceptable.

Notes: Solder joints are semi-transparent to show relationship between land and termination. Minimum side joint length, dimension (D), is not required for chips, only a properly wetted fillet.

Acceptability Requirements

Side Overhang (A)
The component may overhang the side of the land a maximum of 25% of the width of the component termination (W), or 25% of the width of the land (P), whichever is less.

End Overhang (B)
Any part of the component termination extending beyond the land is unacceptable.

End Joint Width (C)
The width of the solder joint at its narrowest point must be a minimum of 75% of the width of the component termination (W), or 75% of the width of the land (P), whichever is less.

Fillet Height (E)
The solder may overhang the land, and extend onto the top of the termination, but not touch the top of the component body, as a maximum fillet height.

Fillet Height (F)
The minimum fillet height must extend at least 25% of the height of the component termination (H)*, or 0.5 mm (0.02 in.), whichever is less.

Solder Thickness (G)
The minimum distance between the land and component termination is not specified. Only a properly wetted fillet must be evident.

End Overlap (J)
Some amount of overlap between the component termination and the land is required for minimum acceptance.

Notes:
- Solder joints are semi-transparent to show relationship between land and termination.
- Minimum side joint length, dimension (D), is not required for chips, only a properly wetted fillet.

References:

* Including any measurement for solder thickness (G)
Target Condition

J-Lead Components • Class 3

This photo represents an ideal surface mount solder joint for any class of J-Lead component.

The following illustrations show the limits of component misalignment and solder joint size. Solder joints that do not meet any of these conditions should be considered unacceptable.

Note: Solder joints are semi-transparent to show relationship between land and lead.

Acceptability Requirements

Side Overhang (A)
The component lead may overhang the side of the land a maximum of 25% of the width of the lead (W).

Toe Overhang (B)
The maximum distance the end, or tip, of the lead may extend over the edge of the land is not specified.

End Joint Width (C)
The width of the solder joint at its narrowest point needs to be a minimum of 75% the lead width (W).

Side Joint Length (D)
The length of the solder joint at its narrowest point must be a minimum of 150% the width of the lead (W).

Fillet Height (E)
The solder may not touch the component body as a maximum fillet height.

Heel Fillet Height (F)
The minimum heel fillet height must be at least 100% of the lead thickness (T)*

Solder Thickness (G)
The minimum distance between the land and component lead is not specified. Only a properly wetted fillet must be evident.

References:
IPC-A-610E and IPC J-STD-001E
Target Condition

Gull Wing Components • Class 3

This photo represents an ideal surface mount solder joint for any class of Gull Wing component.

The following illustrations show the limits of component misalignment and solder joint size. Solder joints that do not meet any of these conditions should be considered unacceptable.

Note: Solder joints are semi-transparent to show relationship between land and lead.

Acceptability Requirements

Side Overhang (A)
The component lead may overhang the side of the land a maximum of 25% of the width of the lead (W), or 0.5 mm (0.02 in.), whichever is less.

Toe Overhang (B)
The end or tip of the lead extending over the edge of the land must not violate minimum electrical clearance as a maximum condition.

End Joint Width (C)
The width of the solder joint at its narrowest point needs to be at least 75% the lead width (W), as a minimum requirement.

Side Joint Length (D)

Short Foot—If foot length (L) is less than 3 (W), then minimum (D) is 100% (L).

Note: Fine pitch leads—short and long foot—require (D) to be at least 0.5 mm (0.02 in.).

Side Joint Length (D)

Long Foot—When foot length (L) is equal to or greater than 3 lead widths (W), side joint length (D) must be a minimum of 3 (W) or 75% (L), whichever is longer.

Heel Fillet Height (E)
Solder may extend to the top bend of the lead, or knee, but not touch the component body or end seal as a maximum fillet height.

Note: Solder may touch the body of a plastic SOIC or SOT Component.

Heel Fillet Height (F)
The minimum heel fillet height must be at least as high as lead thickness (T) at connection side.

* Including any measurement for solder thickness (G).

Solder Thickness (G)
The minimum distance between the land and component lead is not specified. Only a properly wetted fillet must be evident.

References:
IPC-A-610E and IPC J-STD-001E