Chip Components • Class 3

Target Condition

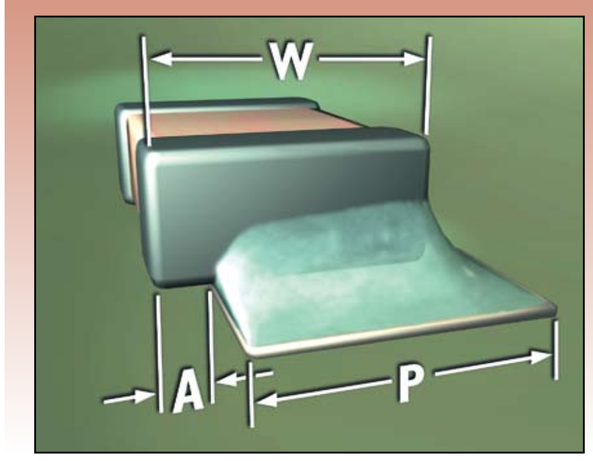
This photo represents an ***ideal*** surface mount solder joint for any class of rectangular Chip component.

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.

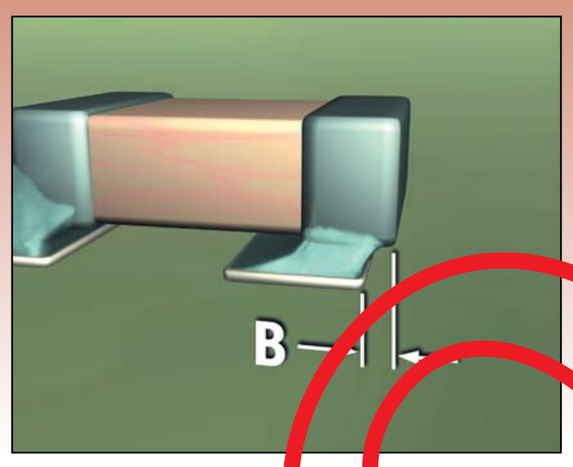
References: A-610D: 8.2.2, Table 8-2; 8.2.2.1 through 8.2.2.8
J-STD-001D: 7.6.4, Table 7-4

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.

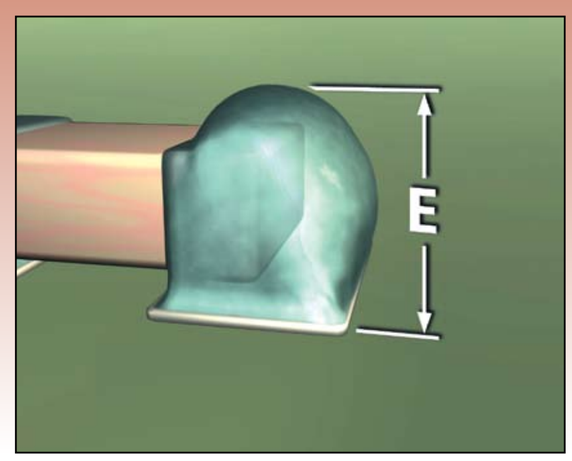


End Overhang (B)

Any part of the component termination extending beyond the land is **unacceptable.**

End Joint Width (C)

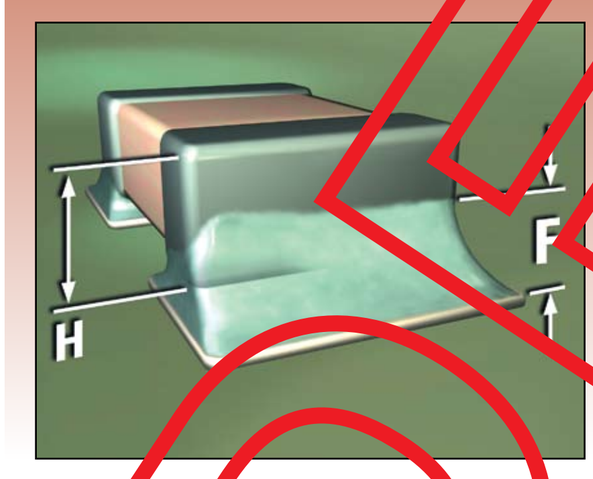
The width of the solder joint at its narrowest point must be a **minimum** of 75% the width of the component termination **(W),** or 75% of the width of the land **(P),** whichever is less.



Fillet Height (E)

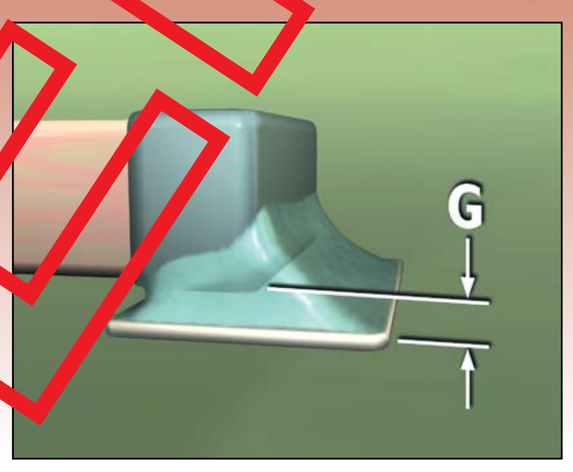
The solder may overhang the land, and extend onto the top of the termination, but **not touch** the top of the component body, as a **maximum** fillet height.

Acceptability Requirements



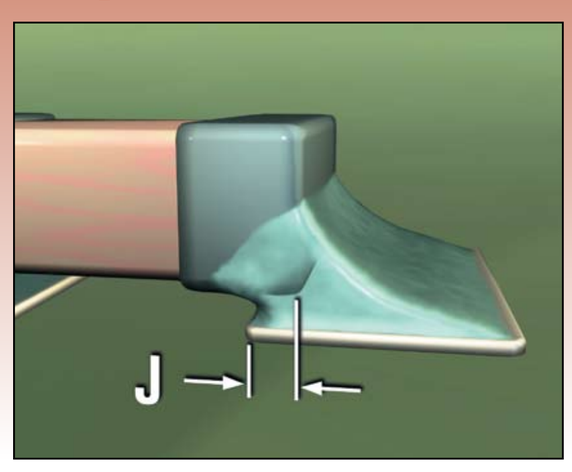
Fillet Height (F)

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.

** Including any measurement for solder thickness **(G)**.*

References:
IPC-A-610**D** and
IPC J-STD-001**D**

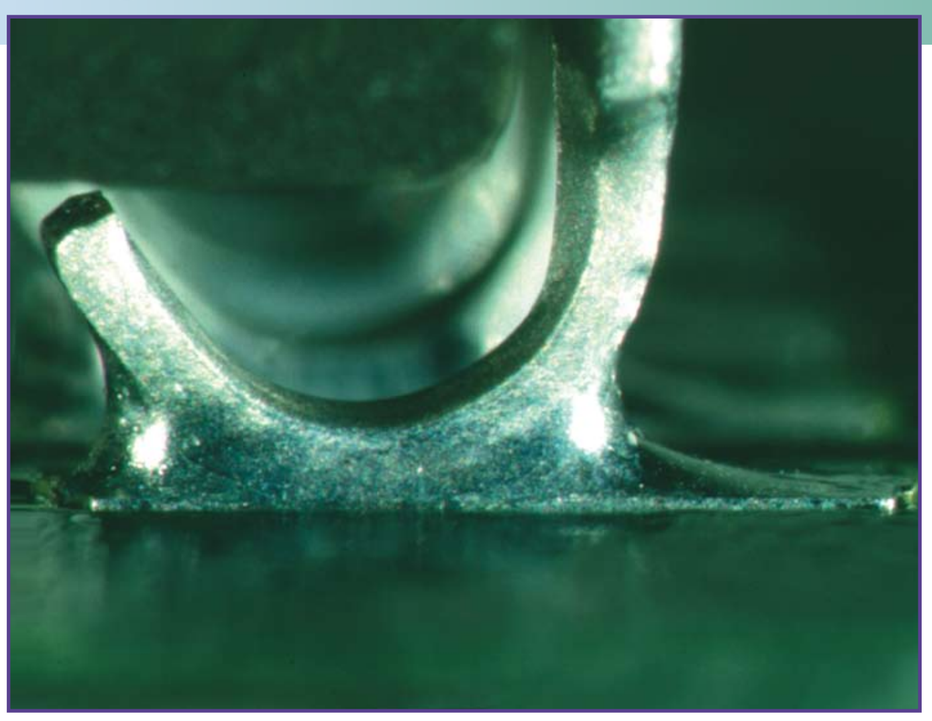
IPC
ASSOCIATION CONNECTING ELECTRONICS INDUSTRIES

3000 Lakeside Drive, Suite 309-S
Bannockburn, IL 60015-1249
Tel. 847.615.7100 • FAX: 847.615.7105
www.ipc.org • e-mail: custservice@ipc.org

 • P-SMT3-D • ISBN 1-580988-36-9

J-Lead Components • Class 3

Target Condition



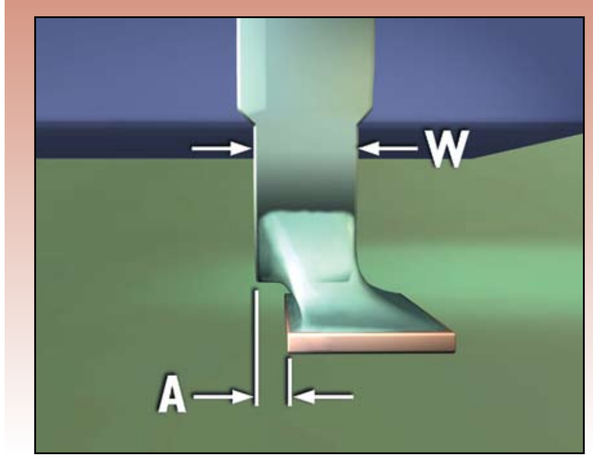
This photo represents an ***ideal*** surface mount solder joint for any class of J-Lead component.

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.

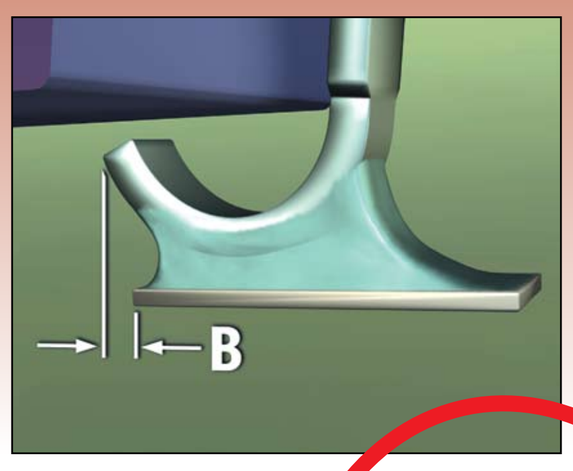
References: A-610D: 8.2.7, Table 8-7; 8.2.7.1 through 8.2.7.7
J-STD-001D: 7.6.9, Table 7-9

Acceptability Requirements



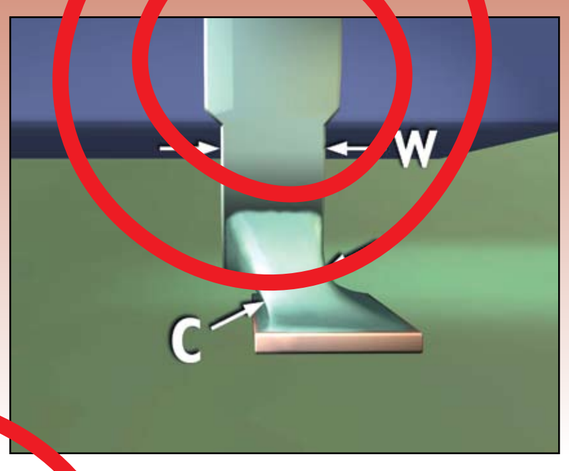
Side Overhang (A)

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



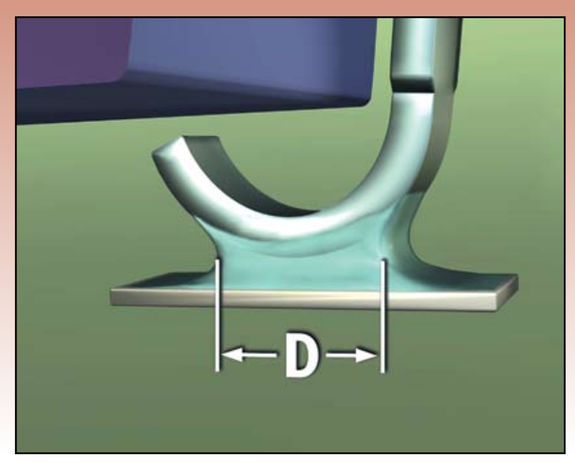
Toe Overhang (B)

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).**



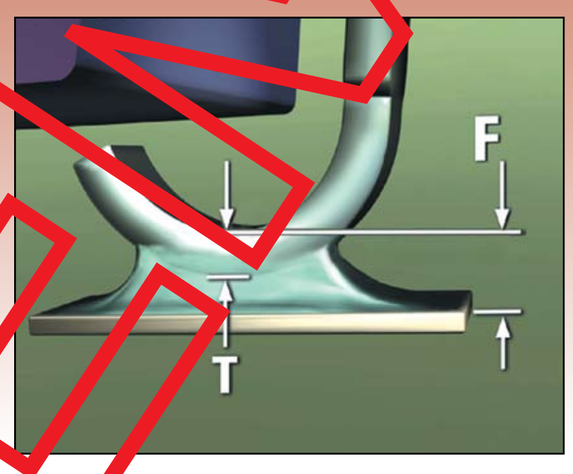
Side Joint Length (D)

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

Acceptability Requirements

Fillet Height (E)

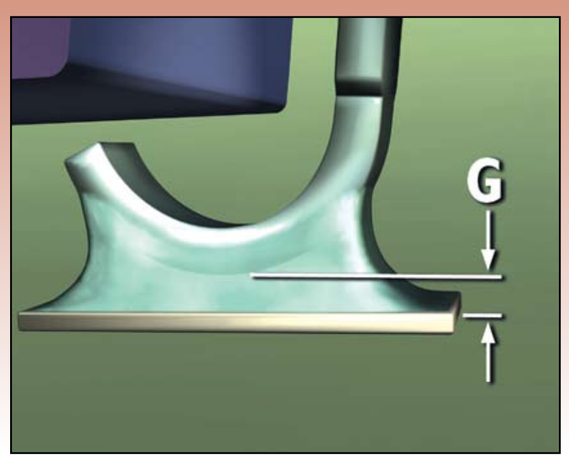
The solder may **not touch** the component body as a **maximum** fillet height.



Heel Fillet Height (F)

The **minimum** heel fillet height must be at least 100% of the lead thickness **(T)***.

** 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.

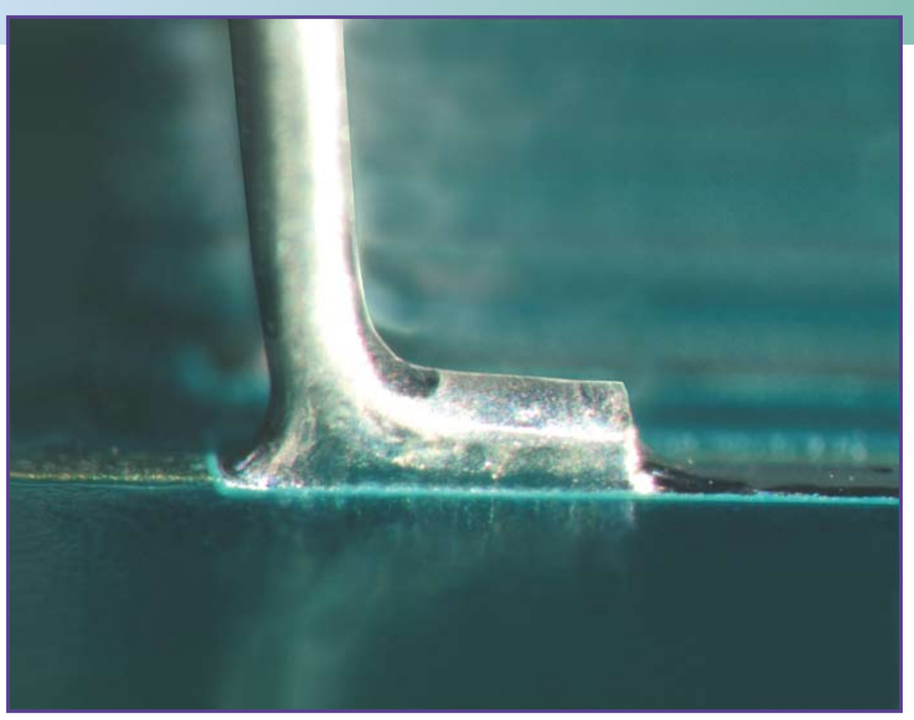
References:
IPC-A-610**D** and
IPC J-STD-001**D**

IPC
ASSOCIATION CONNECTING ELECTRONICS INDUSTRIES

© 2006 IPC
3000 Lakeside Drive, Suite 309-S
Bannockburn, IL 60015-1249
Tel. 847.615.7100 • FAX: 847.615.7105
www.ipc.org • e-mail: custservice@ipc.org

Gull Wing Components • Class 3

Target Condition



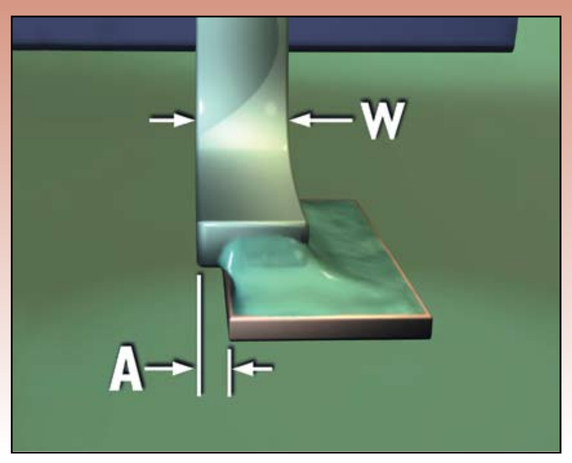
This photo represents an ***ideal*** surface mount solder joint for any class of Gull Wing component.

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.

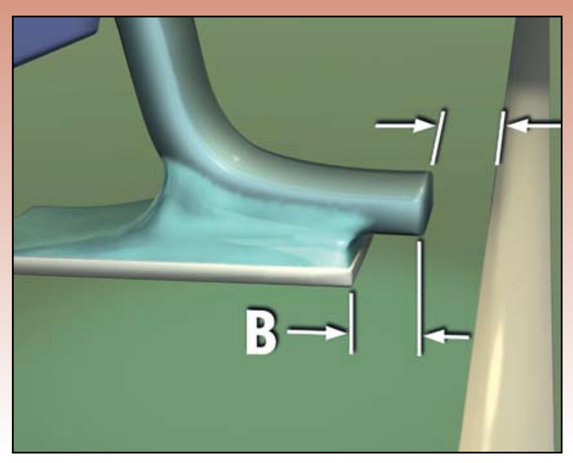
References: A-610D: 8.2.5, Table 8-5, 8.2.5.1 through 8.2.5.7
J-STD-001D: 7.6.7, Table 7-7

Acceptability Requirements



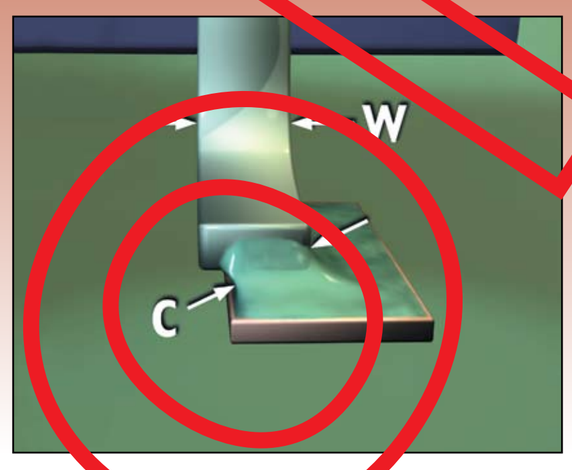
Side Overhang (A)

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.



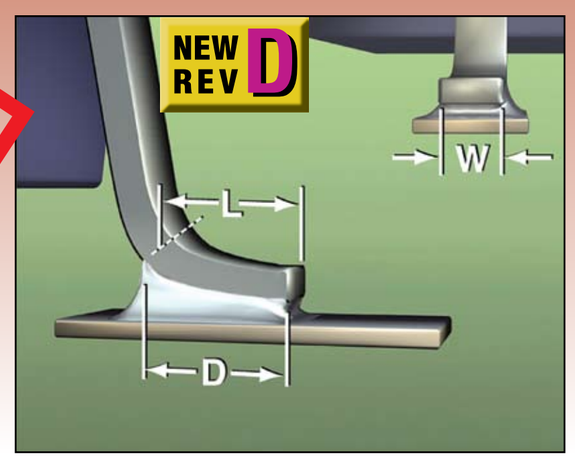
Toe Overhang (B)

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.

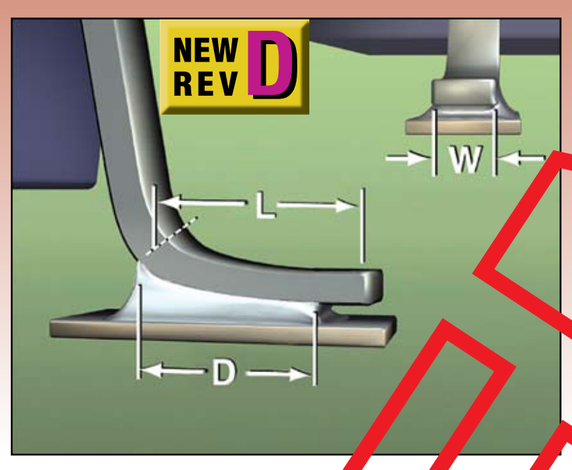


Side Joint Length (D)

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.).*

Acceptability Requirements



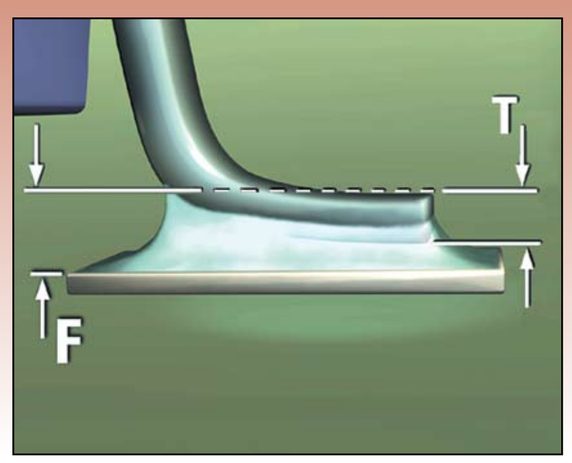
Side Joint Length (D)

Long Foot—When foot length **(L)** is equal to or greater than three 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.

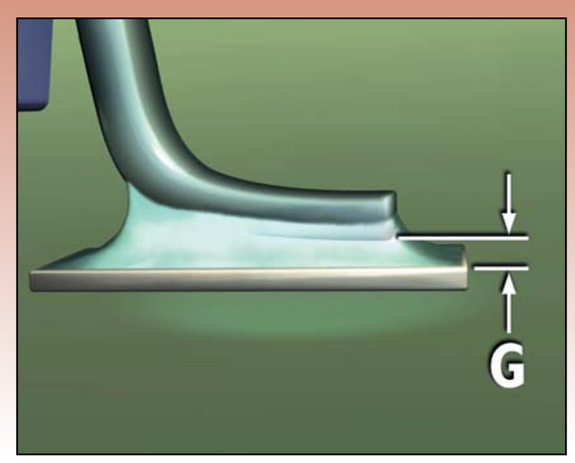
Note: *Solder may touch the body of a plastic SOIC or SOT Component.*



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.

© 2006 IPC
3000 Lakeside Drive, Suite 309-S
Bannockburn, IL 60015-1249
Tel. 847.615.7100 • Fax 847.615.7105
www.ipc.org • e-mail: customerservice@ipc.org

IPC
ASSOCIATION CONNECTING ELECTRONICS INDUSTRIES

References:
IPC-A-610**D** and
IPC J-STD-001**D**