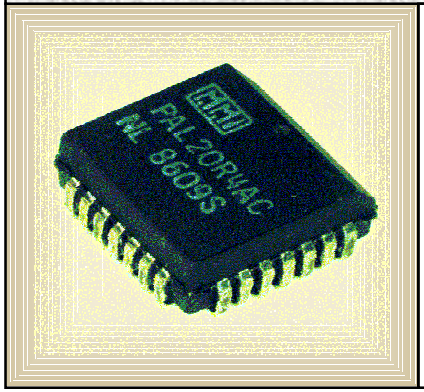
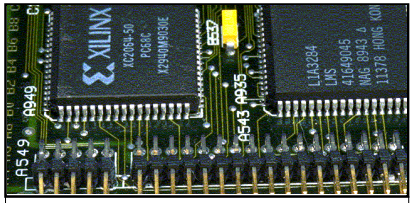


"J" LEADED PACKAGES

"J" Lead Packages have termination leads that are formed into a J pattern, with the lead's tail folding up and under the package body (instead of flat and outwards like a "Gull-wing"). "J" leaded terminations are considered to be the second most reliable termination style of the leaded SMT devices.

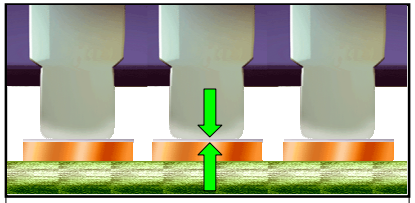
See Section 7.01 "Surface Mount Soldering, General Requirements", for common accept / reject criteria.



PREFERRED

The parts are properly oriented to the land patterns, with each lead centered across the width of the land. Leads are planar, fillets are shiny and concave, and a heel fillet is evident.

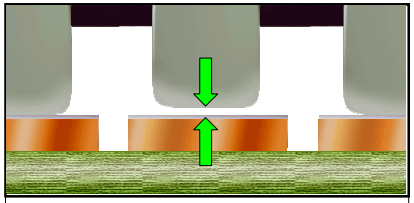
NASA-STD-8739.2 [7.1], [12.8.1], [12.9.3.a]



PREFERRED
COPLANARITY

The lead's foot should be parallel to, and in full contact with the termination pad.

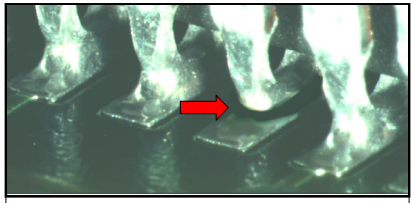
NASA-STD-8739.2 [7.1]



ACCEPTABLE
COPLANARITY

The maximum acceptable variation in planarity between any portion of the lead foot and the termination pad shall not exceed 0.26 mm (0.010").

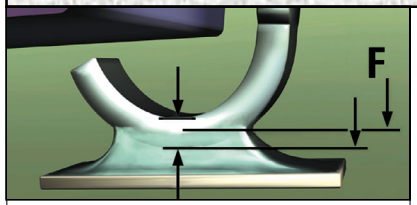
NASA-STD-8739.2 [7.1], [12.8.1.h]



UNACCEPTABLE
IMPROPER COPLANARITY

Excessive non-planarity may result in open or mechanically weak solder terminations, excessive part tilt, solder contact with the component body, or violate minimum electrical spacing requirements.

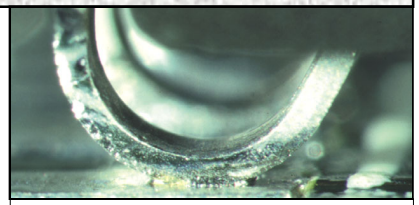
NASA-STD-8739.2 [12.8.2.a.10]



ACCEPTABLE
HEEL FILLET HEIGHT (F)

The fillet height shall not exceed 50% of the lead height. The fillet may be convex, but shall exhibit a positive wetting angle, and the lead contour shall be visible.

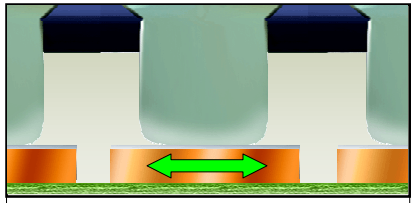
NASA-STD-8739.2 [12.9.3]



UNACCEPTABLE
INSUFFICIENT HEEL FILLET HEIGHT

The fillet height shall be equal to or greater than the minimum solder thickness, plus one (1) lead thickness (t).

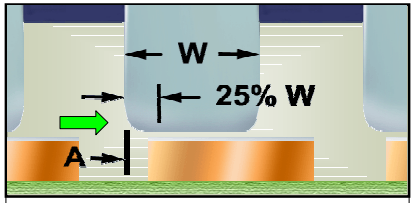
NASA-STD-8739.2 [12.9.3.b.3], [12.9.3.b.6]



PREFERRED
LATERAL / SIDE OVERHANG (A)

There should be no lateral / side overhang, the component lead should be centered on the land.

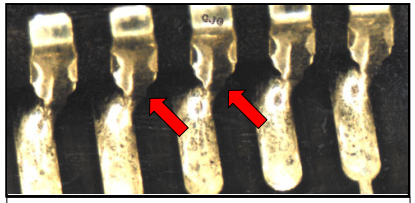
NASA-STD-8739.2 [12.6.2.a.5]



ACCEPTABLE
LATERAL / SIDE OVERHANG (A)

Lateral / side overhang (A) shall not exceed 25% of the lead width (W), and shall not violate minimum electrical spacing requirements.

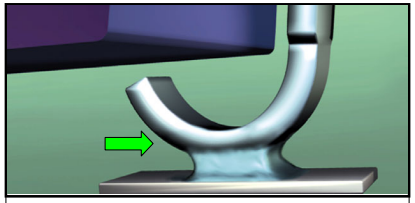
NASA-STD-8739.2 [12.6.2.a.5]



UNACCEPTABLE
IMPROPER LATERAL / SIDE OVERHANG

Lateral / side overhang shall not exceed 25% of the lead width (W), and shall not violate minimum electrical spacing requirements.

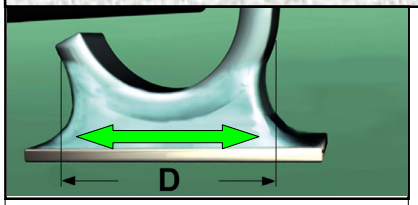
NASA-STD-8739.2 [12.6.2.a.5], [12.9.3.b.1]



ACCEPTABLE
MISSING TOE FILLET

A toe fillet is not required. However, the termination shall exhibit complete wetting and a positive wetting angle between the lead and termination pad.

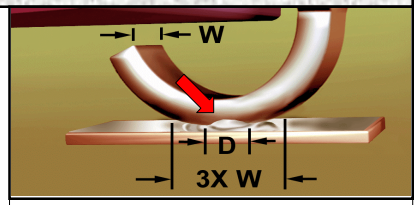
Best Workmanship Practice



PREFERRED
SIDE JOINT FILLET (D)*

The side joint fillet shall be three times (3X) the lead width (W), and shall exhibit a positive contour. (* See Nonwetting for exclusion)

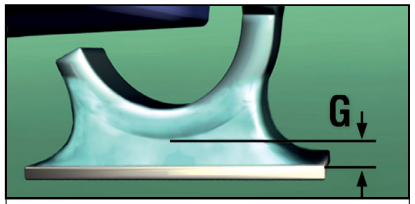
Best Workmanship Practice



UNACCEPTABLE
INSUFFICIENT SIDE JOINT FILLET (D)

The side joint fillet (D) shall be three times (3X) the lead width (W), and shall exhibit a positive contour.

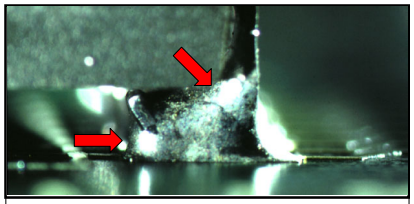
Best Workmanship Practice



PREFERRED
SOLDER THICKNESS (G)

The solder thickness shall be sufficient to form a properly wetted fillet.

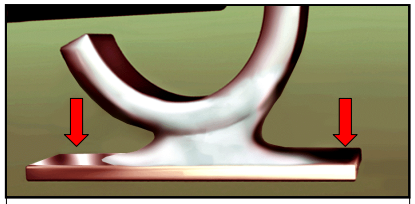
Best Workmanship Practice



UNACCEPTABLE
EXCESS SOLDER

The solder fillet may be convex, but shall exhibit a positive wetting angle, the lead contour shall be visible, and the solder shall not contact the component body.

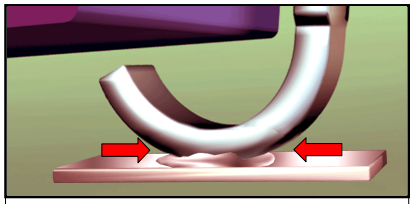
NASA-STD-8739.2 [12.8.1.c], [12.9.3.b.4]



UNACCEPTABLE
INCOMPLETE SOLDER FILLET

The solder fillet shall extend to the land edge.

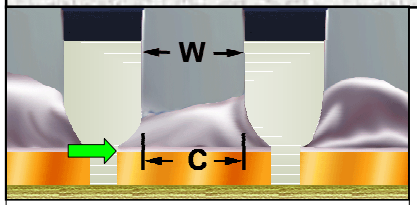
NASA-STD-8739.2 [12.8.1.b]



UNACCEPTABLE
INSUFFICIENT SOLDER QUANTITY

The solder quantity shall be sufficient to form a properly wetted fillet.

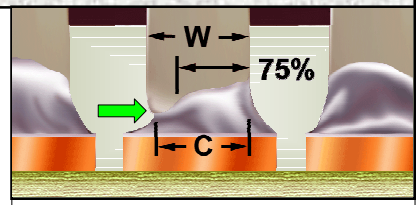
NASA-STD-8739.2 [12.9.3.b.3]



PREFERRED
END JOINT WIDTH (C)

The width of the end joint should be greater than or equal to the lead width (W).

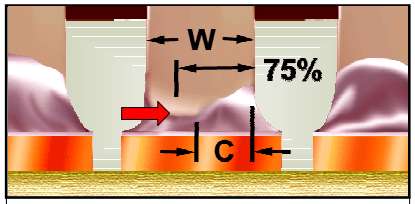
Best Workmanship Practice



ACCEPTABLE
END JOINT WIDTH (C)

The width of the end joint (C) shall be greater than or equal to 75% of the lead width (W).

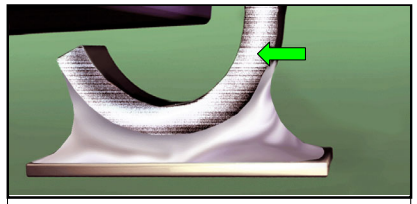
Best Workmanship Practice



UNACCEPTABLE
INSUFFICIENT END JOINT WIDTH (C)

The width of the end joint is less than 75% of the lead width.

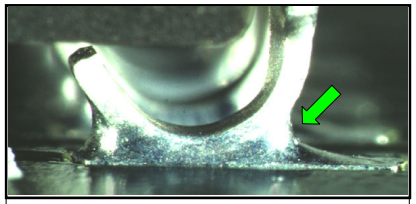
Best Workmanship Practice



ACCEPTABLE
NONWETTING
(SPECIAL EXCLUSION)

Leads not having wettable sides (edges) by design (such as leads stamped from pre-plated stock) are not required to exhibit side fillets.

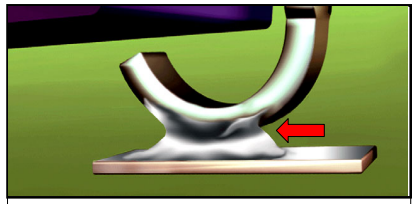
Best Workmanship Practice



MANDATORY
HEEL FILLET

A heel fillet is mandatory and the contour shall be positive.

NASA-STD-8739.2 [12.9.3.a.1]

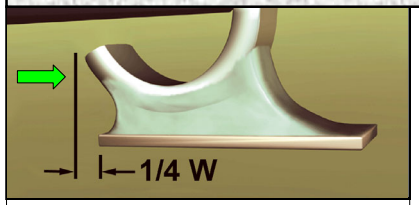


UNACCEPTABLE
MISSING HEEL FILLET

A heel fillet is mandatory and the contour shall be positive.

NASA-STD-8739.2 [12.9.3.a.1], [12.9.3.b.6]

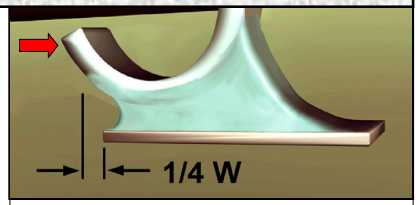
SURFACE MOUNT TECHNOLOGY (SMT)
"J" LEADED PACKAGES (cont.)



ACCEPTABLE
TOE OVERHANG

Toe overhang shall not exceed 25% of the lead width (W), and shall not violate minimum electrical spacing requirements.

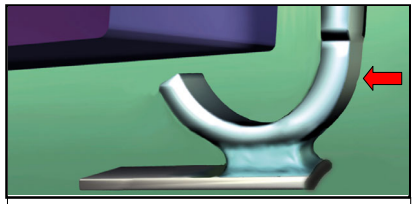
NASA-STD-8739.2 [12.6.2.a.5]



UNACCEPTABLE
EXCESSIVE TOE OVERHANG

Toe overhang shall not exceed 25% of the lead width (W), and shall not violate minimum electrical spacing requirements.

NASA-STD-8739.2 [12.6.2.a.5], [12.9.3.b.2]



UNACCEPTABLE
HEEL OVERHANG

Heel overhang is prohibited, as this condition routinely results in toe overhang (on the opposite side of the device), and may prevent the proper formation of a heel fillet.

Best Workmanship Practice

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