**CHIP COMPONENTS / BOTTOM-ONLY TERMINATIONS**

The mechanical properties of the solder joints of bottom-only terminations are slightly reduced from those of 1-3-5 chip components, as only the metallized termination pads on the underside of the component are available for mechanical and electrical attachment to the printed wiring board. The bottom only termination presents some difficulty during visual inspection, as very little of the actual termination is exposed or visible.

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

**ACCEPTABLE END JOINT WIDTH (C)**

End joint width shall not be less than 75% of the component termination width (W) or less than 75% of the land width (P).

**Best Workmanship Practice**

**ACCEPTABLE SIDE / LATERAL OVERHANG (A)**

Side overhang shall not exceed 25% of the part width (W) and the minimum end joint width (C) requirements shall be met.

**NASA WORKMANSHIP STANDARDS**

**END JOINT WIDTH (C)**

The width of the end joint is equal to the width of the component (W), and extends to the width of the land (P).

**Best Workmanship Practice**

**SIDE JOINT LENGTH (D)**

The length of the side joint fillet equals or exceeds the component termination pad length (T).

**Best Workmanship Practice**

**SIDE / LATERAL OVERHANG (A)**

The component is centered on the pads, with no side / lateral overhang (A).

**Best Workmanship Practice**

**MINIMUM SOLDER THICKNESS (G)**

The solder quantity shall be sufficient to form a properly wetted, concave fillet on the vertical surfaces of the chip, and which exhibits good wetting to the chip metallization and termination pad.

**NASA WORKMANSHIP STANDARDS**
**SURFACE MOUNT TECHNOLOGY (SMT)
CHIP COMPONENTS / BOTTOM-ONLY COMPONENTS (cont.)**

**UNACCEPTABLE INSUFFICIENT SOLDER THICKNESS (G)**
The solder quantity is insufficient to form a properly wetted, concave fillet which exhibits good wetting to the chip metallization and termination pad.

NASA-STD-8739.2 [12.9.1.b.5]

**ACCEPTABLE TILT**
Part tilt shall be less than or equal to 25% of the part thickness, and shall not interfere with the proper placement of adjacent parts.

NASA-STD-8739.2 [12.6.2], [12.9.1]

**UNACCEPTABLE EXCESS TILT**
Part tilt in excess of 25% of the part thickness may impact the long-term reliability and integrity of the solder termination, and may interfere with the proper placement and thermal profile of adjacent parts.

NASA-STD-8739.2 [12.9.1.b.1], [12.9.1.b.2]

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**SURFACE MOUNT TECHNOLOGY (SMT)
CHIP COMPONENTS / BOTTOM-ONLY TERMINATIONS (cont.)**

**UNACCEPTABLE END OVERHANG (B)**
Inside overhang shall not exceed 50% of the end termination width (T) and the minimum end joint width (C) requirements shall be met.

NASA-STD-8739.2 [12.6.2.a.2]

**ACCEPTABLE MINIMUM FILLET HEIGHT (F)**
There shall be evidence of a properly wetted fillet on the exposed sides of the termination.

NASA-STD-8739.2 [12.9.1.a]

**PREFERRED MAXIMUM FILLET HEIGHT (E)**
The fillet shall exhibit a positive wetting angle and shall not contact the component body.

NASA-STD-8739.2 [12.8.1], [12.8.2.b.12], [12.9.1.a]

**PREFERRED INSIDE OVERHANG**
The target condition is the component centered between the termination pads, without the inside edges of the metallization pads overhanging the edges of the termination pads.

NASA-STD-8739.2 [8.7.4.g.2]

**ACCEPTABLE INSIDE OVERHANG (X)**
Inside overhang (X) shall be less than or equal to 50% of the end termination width (T) and the minimum end joint width (C) requirements shall be met.

NASA-STD-8739.2 [8.7.4.g.2]

**UNACCEPTABLE EXCESS INSIDE OVERHANG (X)**
Inside overhang shall not exceed 50% of the end termination width (T) and the minimum end joint width (C) requirements shall be met.

NASA-STD-8739.2 [12.6.2.a.2]

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**NASA WORKMANSHIP STANDARDS**

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