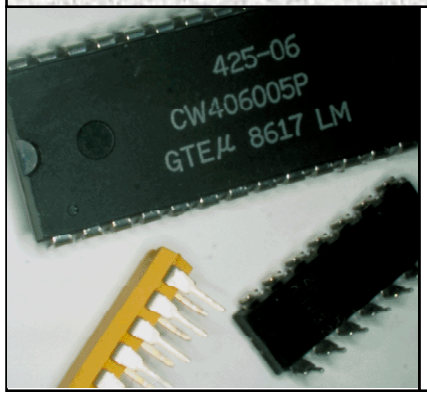
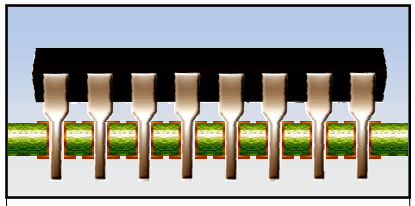
THROUGH-HOLE SOLDERING
COMPONENT INSTALLATION – DUAL IN-LINE PACKAGES (DIPS)



COMPONENT INSTALLATION
DUAL IN-LINE PACKAGES (DIPS)

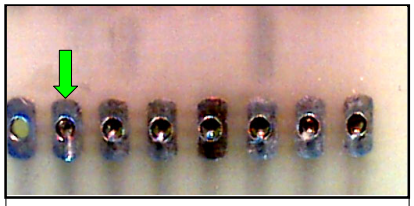
Dual In-Line Packages (DIPS) are the component body type most associated with printed wiring assemblies (PWA) using through-hole technology. The DIP body can be either plastic or ceramic with between 6 to 64 leads.

See Section 6.01 “Through-Hole Soldering, General Requirements”, for common accept / reject criteria.



PREFERRED

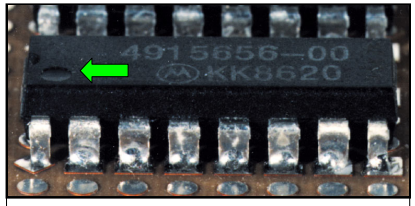
The component has been properly oriented and all leads are fully inserted in the termination holes with the lead standoff step in contact with the lands. The component body is undamaged and part markings are legible and visible on top of component body.



ACCEPTABLE
PARTIALLY CLINCHED LEADS

The corner leads may be partially clinched outward from the chip body’s longitudinal axis to temporarily secure the component. Clinching shall not violate minimum electrical spacing requirements, or adversely affect solderability.

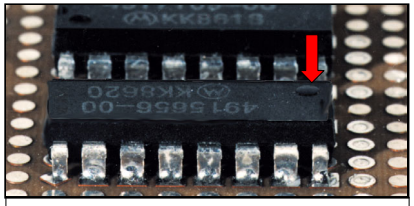
Best Workmanship Practice



ACCEPTABLE
ORIENTATION / POLARITY

The component has been properly installed. The locator chip’s notch / dimple, which identifies pin 1, is lined up with the silkscreen pattern. A square-shaped solder pad on the printed wiring pattern may also be used to identify pin 1.

NASA-STD-8739.3 [8.1.3]



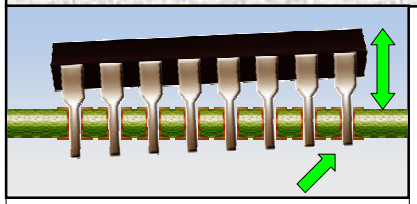
UNACCEPTABLE
IMPROPER ORIENTATION / POLARITY

The DIP has been installed backwards. The locator notch / dimple, which identifies pin 1 of the chip, should be lined up to the silkscreen and/or conductive pattern marks.

NASA-STD-8739.3 [13.6.2.a.5]

NASA WORKMANSHIP STANDARDS

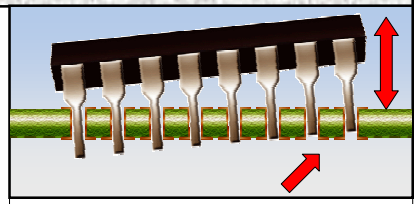
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION JOHNSON SPACE CENTER HOUSTON, TEXAS USA 77058	**Released:** 06.27.2002	**Revision:**	**Revision Date:**
	Book: 6	**Section:** 6.11	**Page:** 1



ACCEPTABLE
TILT

The component exhibits minor tilting, but the tilt does not reduce lead protrusion below acceptable minimums, cause the component body to exceed height requirements, or violate minimum electrical spacing requirements.

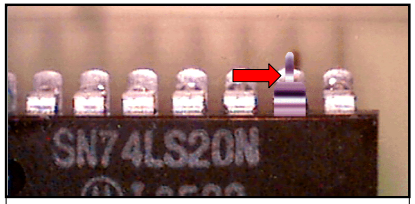
NASA-STD-8739.3 [8.1], [13.6.1]



UNACCEPTABLE
EXCESS TILT

Excess part tilt causes the leads to not meet minimum protrusion requirements. Excess tilt may cause the part to exceed maximum height requirements, or result in violation of minimum electrical clearance requirements.

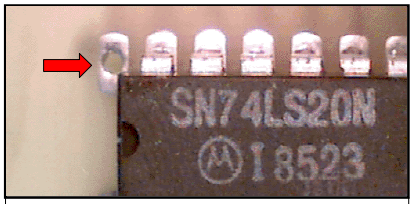
NASA-STD-8739.3 [13.6.2.a.21]



UNACCEPTABLE
BENT / CURLED LEAD

The lead has been smashed into the pad surface, preventing proper insertion. This may be caused by improper lead planarity, an improperly bent lead, or a solder-plugged hole.

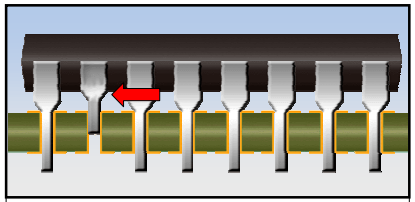
NASA-STD-8739.3 [13.6.2.a.7], [13.6.2.a.21]



UNACCEPTABLE
IMPROPER ORIENTATION / OFFSET

The component has been incorrectly installed, with the chip offset with respect to the intended termination pattern. This failure is typically caused by insertion of the chip leads into the bypass capacitor mounting holes.

NASA-STD-8739.3 [13.6.2.a.5]



UNACCEPTABLE
PISTONED LEAD

The lead has been displaced vertically (pistoned) during insertion. This may be caused by improper lead planarity, an improperly bent lead, or a solder-plugged hole.

NASA-STD-8739.3 [13.6.2.a.7], [13.6.2.a.21]