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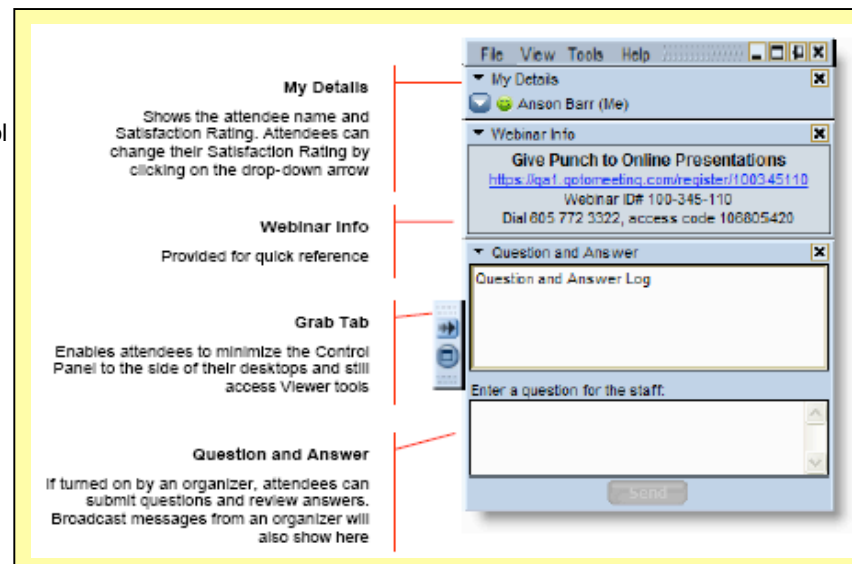
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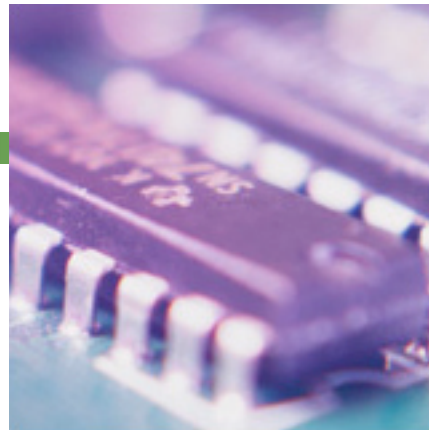
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Top 5 Manufacturing Issues for the Month



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Component Marking #1

■ Question:

- *Programmed label placed on component as shown on print but comes off or doesn't remain legible after the process.*

Known's:

- *No definitive requirements of legibility on drawings only what the marking should state.*



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J-STD-001 Requirements

9.2 Marking Assembly identification such as part numbers and serial numbers shall⁷ remain legible (capable of being read and understood) after all tests, cleaning and other processes to which the item is subjected. Additional markings (such as labels added during the manufacturing process) should not obscure the original supplier's markings. Individual component markings, reference designators and polarity indicators should remain legible and components should be mounted in such a manner that markings are visible.

(7) Class 1-Not Est Class 2-Defect Class 3-Defect



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IPC-A-610 Sect. 10.3 Marking - *Component Marking*

- *Component legends including reference designators and polarity indicators (only applies prior to assembly processing/cleaning)*
- *Component markings, reference designators and polarity indications should be legible and components should be mounted in such a manner that markings are visible. However, unless otherwise required, it is an acceptable condition if these markings are removed or damaged during normal cleaning or processing. Where component marking visibility and legibility is desired, the requirements needs to be stated in procurement document*



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Response

- Note on print does not demand that the label be treated any differently than any other marking of components. It just states that this particular component has been programmed.
- The ambiguity is the non permanency of the label and its markings as it is attached to the electrical components.
- The rub is if the label is on the board it must be legible whereas on the component it should be legible.

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Component Stress Relief #2

- Solder in the lead bend area of a lead attached to a terminal, does it affect the Stress relief requirements of the component? Is it the same requirements as a lead to a terminal?

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J-STD-001 Requirements

- *5.4.1.3 Stress Relief – Component leads **shall** have stress relief. Wires connected to terminals **shall** have stress relief*



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IPC-A-610 Requirements

7.5.5.6 Supported Holes – Solder Conditions – solder in Lead Bend Area

- Acceptable Class 1, 2, 3
 - Solder in lead bend area does not contact the component body.

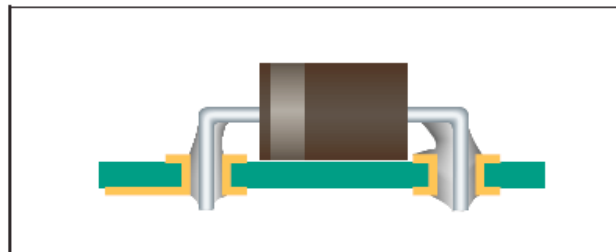


Figure 7-123

Acceptable - Class 1,2,3

- Solder in lead bend area does not contact the component body.



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Response #2

- Solder in the bend area is acceptable whether or not it is a lead in a plated through hole or whether it is a lead attached to a terminal.



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Crimping of Tinned Wires #3

- Can and should the wires be tinned before the crimp connections is made?



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Information from IPC-A-620

- From IPC-A-620, para 4.4 Wire/Lead Preparation, Tinning

Stranded wires **shall not²** be tinned when:

- Wires will be used in crimp terminations.
- Wires will be used in threaded fasteners.
- Wires will be used in forming mesh splices.

The following criteria are applicable if tinning is required:



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Response #3

Tinned Wire Crimping

- It's a defect to tin a wire that is going to be crimped



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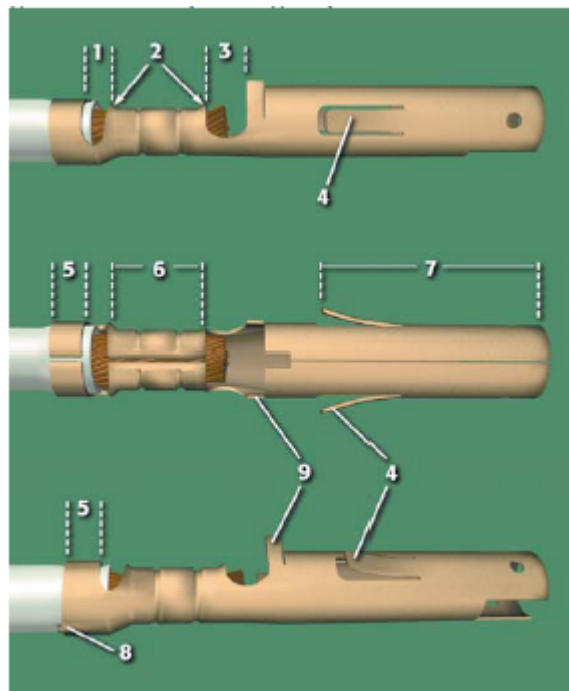


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Crimping #4 Stress Relief to the Wire



- Insulation insp window
- Entry belmouth
- Brush insp window
- Locking tabs
- Insulation crimp area
- Conductor crimp area
- Terminal mating area
- Cut off tab
- Terminal stop ear



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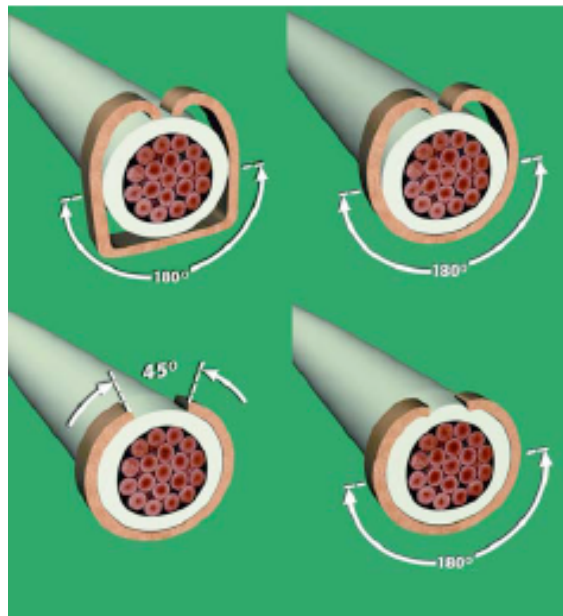


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620 Acceptance criteria



Acceptable – Class 1,2,3

- Minor deformation of the insulation surface as long as the crimp tabs do not cut, break, penetrate or puncture the surface of the wire insulation.
- Crimp tabs provide a minimum side support of 180° to the wire insulation and both tabs contact the top of the wire insulation.
- Crimp tabs do not meet at the top, but encircle the wire leaving an opening of 45° or less at the top.



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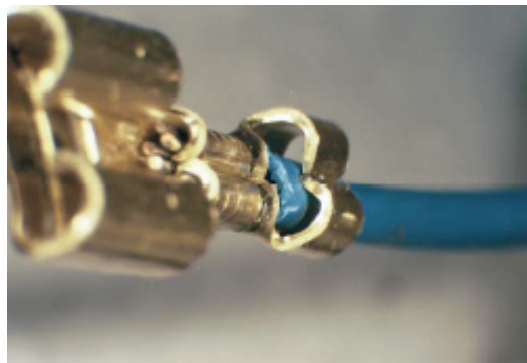
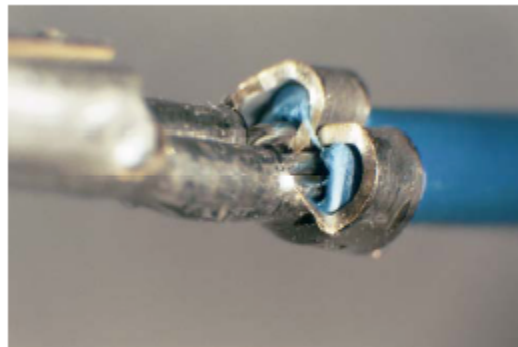


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620 Defect Criteria



Defect – Class 1,2,3

- The insulation crimp tabs pierce the insulation (Figure 5-10).
- The insulation crimp tabs do not provide support at least 180 degrees around the insulation (Figure 5-11).
- Crimp tabs that encircle the wire but leave an opening of more than 45° at the top (Figure 5-12).
- Both insulation crimp tabs are not in contact with the top of the insulation (Figure 5-13)
- Conductors are in insulation crimp area of the contact (Figures 5-14, 5-15).



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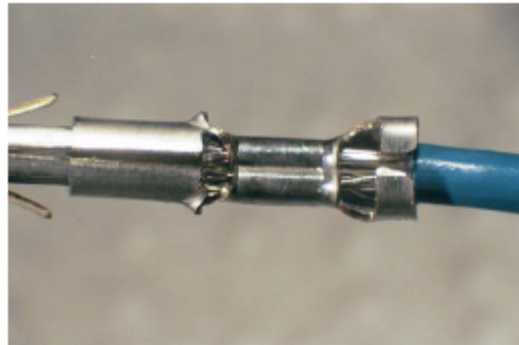


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620 Defect Criteria



- The insulation must be secured with the crimp, if it is not then the condition is not acceptable.



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Mixing Lead and Lead-Free on One board #5

- Question, we have boards built by our subcontractor who mixed leaded components and lead-free component using leaded solder. Is this Ok?

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Response #5

- Different melting temperatures
- Different Thermal profiles
- Different Dwell times
- Component Compatibility with thermal ramp up
- Flux performance

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