

IME 156 – Post-Assembly PCB Self-Evaluation Instructions & Form (Pg 3)**1. (10pts) Solder joints:**

Solder joints must have solder all around periphery of the lead/solder pad interface. Applied solder must form a concave (caves inward) contour with respect to the lead and pad and flow smoothly against the pad (see target conditions below). Solder amount must not be excessive. Attempted removal of solder flux residue must be apparent either by scraping or solvent wiping with paper towel. All leads must be cut/trimmed above solder joints (approx. 1-2 mm) and not cut through solder.

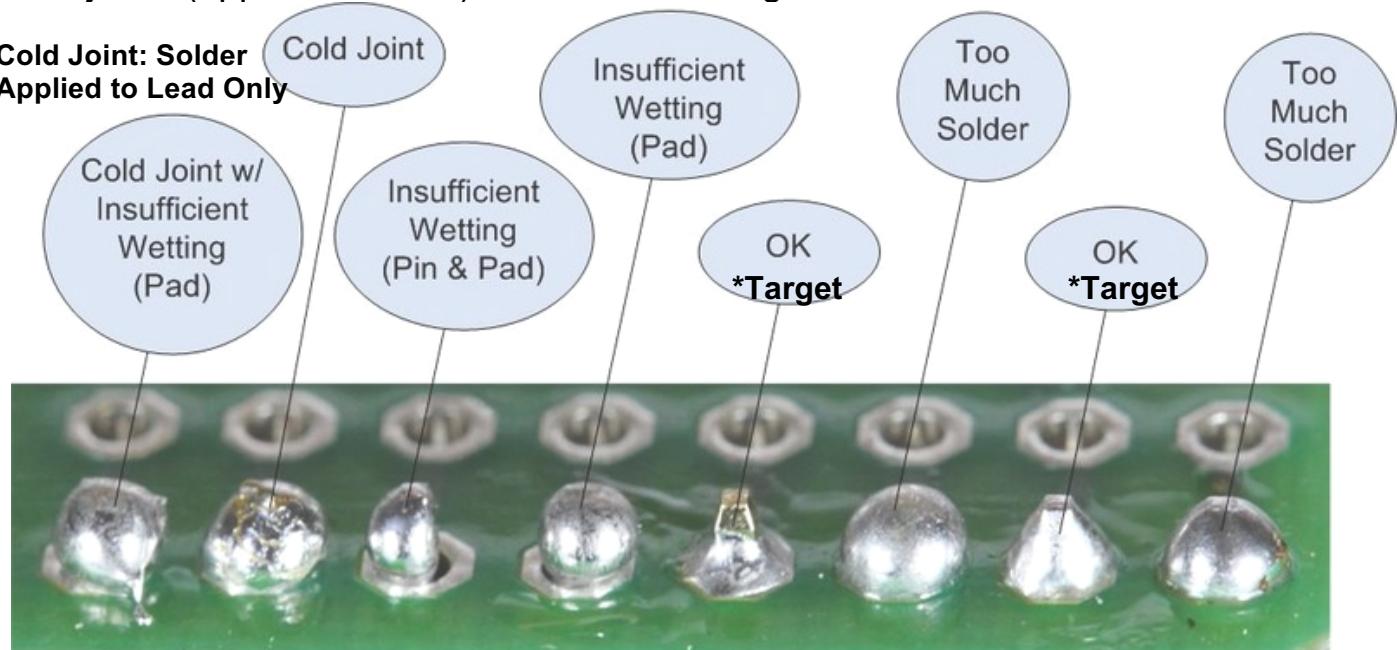


Figure 1. Examples of poor and ***target** soldered joint conditions.



Figure 2. Target amounts of solder and lead lengths trimmed to approx. 1-2 mm above the solder joint. (Photo shows ~2 mm lengths)

2. (4pts) Orientations & Polarities:

Polarities must be correct on all polarized components and resistor tolerance bands oriented on the right with respect to board markings (read values left to right). All components with polarities (electrolytic [cylindrical] capacitors, regulators, transistors, op amps) installed correctly in accordance with polarity markings.

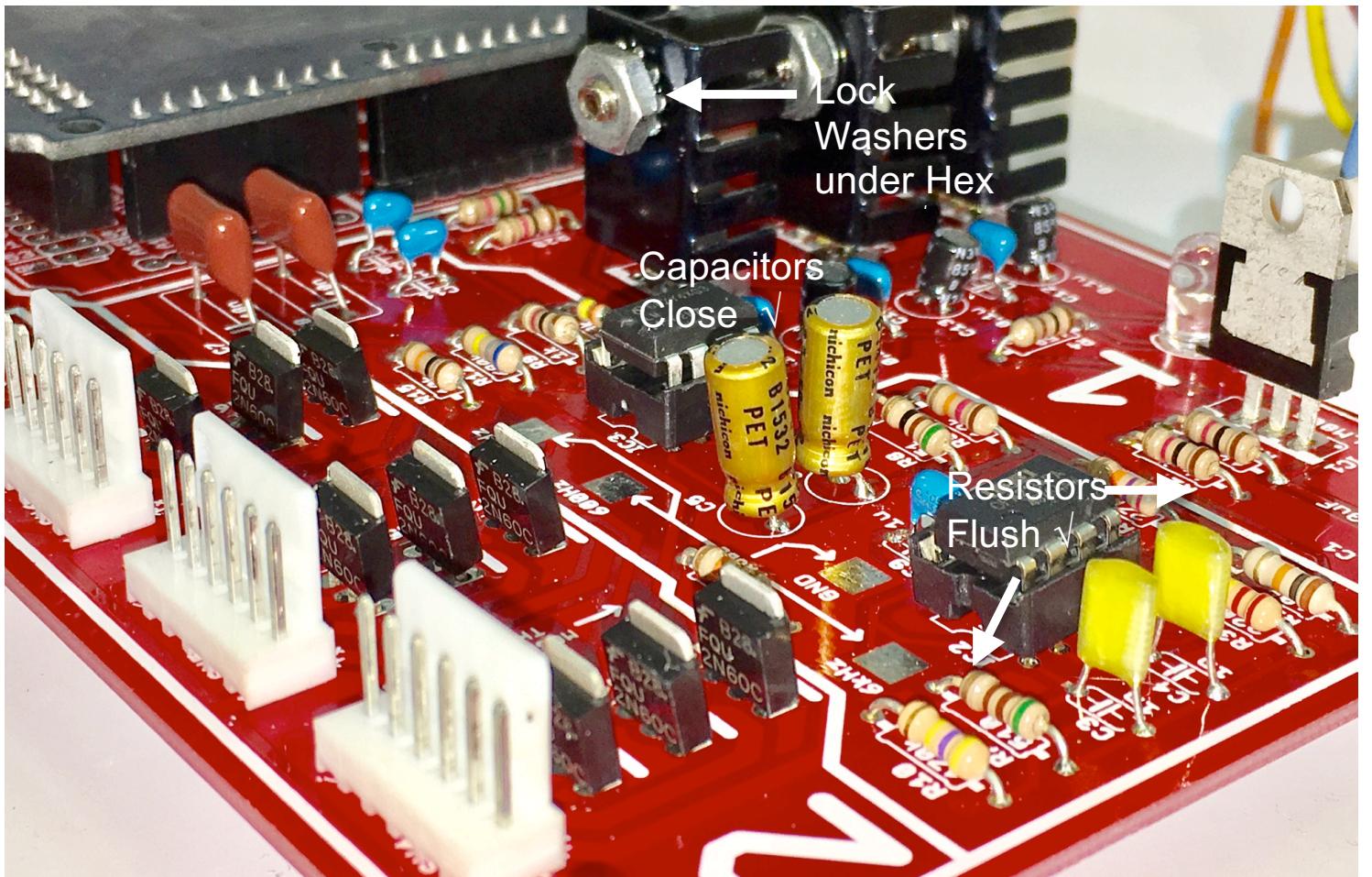


Figure 3. Examples of component placement against PCB surface and correct heat sink hardware installation.

3. (3pts) Components in correct locations:

Full credit is earned for all components in their correct locations. Pay particular attention to regulator ICs, capacitors and resistors. **Note:** there are two different regulator IC parts; LM350 and LM7805, that have similar packages.

4. (2pts) Components Against Board:

All components should be close to the board, but without causing excessive strain on the leads; specifically, resistors should be **flush with board within approx. 1 mm (.04 in.)**. Electrolytic (cylindrical) capacitors should be close. All other components are exempt.

5. (1pt.) Heat sink Hardware Secured:

Heat sinks are to be secured to LM350 ICs conforming to figure 3. Star lock washers under nuts. Nuts **must be tightened** with tools such that fingers cannot loosen.

Name: _____

IME 156 PCB Self Evaluation and Points Assessment – Due with PCB before the 8th meeting of lab:
Evaluate your assembled PCB per these requirements and scoring rubric.

1. (10pts) Solder joints shall conform with the following criteria:

a. Solder joints have solder continuously around periphery of the lead/pad interfaces.

There is no solder bridging between joints or pads. No cold joints. (3 Pts) Points Assessed _____

b. Solder amount is not excessive; joints have smooth, concave contour. (3 Pts) Points Assessed _____

c. Evidence of removal of some flux residue must be apparent. (2 Pts) Points Assessed _____

d. Leads cut/trimmed to approx. 1-2 mm above the solder joint. (2 Pts) Points Assessed _____

Solder Joints Subtotal (10) _____

2. (4pts) Orientations correct: Polarized components installed correctly and resistor tolerance bands on right (read values left-to-right). This includes: regulators, transistors, op amps and electrolytic (barrel-shaped) capacitors.

a. Polarities correct on all polarized components. (2 pts) Points Assessed _____

b. Tolerance Bands on right for all resistors. (2 pts) Points Assessed _____

3. (3pts) Components in correct locations in accordance with Value and Part no. markings on PCB. Voltage regulator ICs and resistors are installed correctly.

a. Regulators all in correct locations by part No. (1 Pt) Points Assessed _____

b. Components all in correct locations. (2 Pts) Points Assessed _____

4. (2pts) Components against board. All components must be close to the board surface. Resistors should be flush with the PCB (within 1 mm (.04 in.)). Note: Not all components can be flush to the board, regulators and disc capacitors for example are not required to be flush.

a. Resistors flush with PCB within approx. 1 mm (.04 in.) of PCB surface (2 Pts) Points Assessed _____

5. (1pt.) Heat sink hardware installed/secured correctly. Nut & star lock washer installed on back of heat sink (side opposite from regulator). Nut tightened sufficiently such that modest finger pressure will not loosen.

a. Heat sink hardware (Washers & Nuts) correct and tight (1 Pt) Points Assessed _____

Total Points Possible: 20 pts.

Total Points Self-Assessed _____
Instructor Verified Total Points _____

Mic Test. The microphone assembly supplied with my kit is functioning correctly. It is stored in the protective ESD bag and is my responsibility. **Student Initials** _____.

Arduino Test. The Arduino supplied with my kit is functioning correctly. It is stored in the protective ESD bag and is my responsibility. **Student Initials** _____.