



# Hand Soldering Workshop



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# *Hand Soldering Procedure*

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## 1. Operational Requirements

Prior to soldering, operators must wear tested and validated anti-static wristbands and anti-static gloves. All PCBs to be soldered should undergo thorough inspection by QC before commencing the soldering process. The solder joints should exhibit impeccable characteristics, including smoothness, rounded contours, and complete filling, while strictly avoiding any imperfections such as misalignment, insufficient solder, solder bridging, cold solder, solder voids, solder balling, incomplete wetting, or copper peel-off. For gold-plated boards, it is imperative to solder not only the front side of the pins but also the backside to prevent any copper exposure. After soldering, operators are required to conduct a meticulous self-inspection of both the solder joints and components' appearance, thereby ensuring the prevention of defective products from advancing to subsequent processes.

## 2. Operational Procedures

2.1: Before commencing work, review the information on the product process card to be aware of any specific precautions. Pay close attention to the polarity direction for components with polarity, refer to the product process card and sample images during the operation. Be carefully and cautions, avoiding any collisions.

2.2: During the pre-soldering phase, refer to the Bill of Materials (BOM) to locate the proper positions on the board and determine the correct soldering direction based on the product drawing's silk screen markings. Secure one pin of each component initially and validate the placement with engineering personnel for accuracy, obtaining first-article confirmation from the In-Process Quality Control (IPQC) team. Once the First Article Inspection (FAI) is approved, proceed with batch soldering following the validated sample. Adhering to this professional procedure ensures precise component placement and soldering, maintaining superior product quality and preventing defects from advancing to subsequent stages.

2.3: When soldering, ensure the soldering iron only touch to component's pins to prevent damage to the component itself. For soldering flexible boards (FPC), use a card slot for fixation, and a foam board as upholder when soldering bottom side. Confirm the soldering iron temperature (300-350C for FPC and FR4 PCB, 400-480C for heavy copper PCB and aluminum PCB). The recommended soldering time is around 2-3 seconds to avoid burns,

discoloration, or copper peel-off due to prolonged heating. For boards with a thickness greater than 1.6mm or requiring high-temperature soldering, determine the soldering time based on actual on-site results.



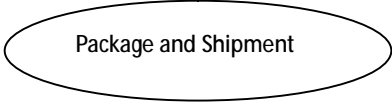
2.4: Following soldering, for products requiring pin trimming, ensure a small portion of the pin remains exposed, around 1.0mm in height. Systematically store the PCBs using board racks with the rail side facing downward. If components are in close proximity to the rails, adopt staggered placement or select a position away from the board's edge. Precisely label the product's status on the identification card and affix a personal code to the board's edge for the soldered products. This meticulous approach ensures proper handling, organization, and identification of soldered components, contributing to an efficient and well-organized production process.

2.5: Upon the completion of the soldering process, meticulously clean the workbench and promptly return any remaining materials to the Procurement and Material Control (PMC) department. Ensure that all components are correctly placed inside their corresponding part-numbered bags. Verify that the material packaging bags align accurately with the actual components, and the quantities precisely match the required returns as specified in the Bill of Materials (BOM). In the event of any uncertainties, promptly communicate and report to the department supervisor for timely resolution and further guidance. Maintaining this level of professionalism ensures an organized and efficient production environment with strict adherence to quality standards and material management protocols.

2.6: Before turning off the soldering iron power supply, apply a small amount of solder to the soldering iron tip (ensuring the solder covers the slanted area of the tip) to prevent oxidation of the soldering iron tip.

## Quality Control Procedure

Production Plan / Production Process Card Requirements	Production Dept	Hand Soldering	Proceed soldering procedure according to the production plan	Solder machine confirmation	Quality Dept
Production Plan / Production Process Card Requirements	Quality Dept	First Article Making	<ol style="list-style-type: none"> <li>1. Confirm whether process card conform to customer's requirement</li> <li>2. Check components according to BOM</li> <li>3. Check the appearance of the first-article including color, semi-finished product requirements for trial assembly, and functional testing and related reliability testing</li> </ol>	FAI record	Production Dept
Production Plan / Production Process Card Requirements	Engineer Dept	Mass Production	Operate according to SOP	Finished product complete	Quality Dept
Inspection Standard	Quality Dept	QC Inspection	<ol style="list-style-type: none"> <li>1. Conduct inspections according to the product quality standards.</li> <li>2. Promptly report any anomalies to the production and quality departments.</li> <li>3. Ensure clear identification of the quality status.</li> </ol>	Finished product/ semi-product testing record	Production Dept

Inspection Standard	Quality Dept		<ol style="list-style-type: none"> <li>1. FQC personnel confirm the materials used for production at each workstation.</li> <li>2. Promptly report any abnormalities to the production team and follow up on the resolution.</li> <li>3. Inspect the product's appearance, conduct functional tests, and perform relevant reliability tests.</li> </ol>	Inspection Daily Report/ Corrective and Preventive Action Report	Production Dept
Inspection Standard	Quality Dept		<ol style="list-style-type: none"> <li>1. Verify production orders, customer order information, and other relevant requirements.</li> <li>2. Perform comprehensive inspections of product appearance, color, functionality, and relevant reliability testing.</li> <li>3. Ensure clear quality status labeling.</li> </ol>	Finished Product Report/Finished Product Inspection Report/Repair Report	Production Dept
Production Plan / Production Process Card Requirements	SMT PMC		<ol style="list-style-type: none"> <li>1. The external packaging must be intact.</li> <li>2. It should not be underfilled or overfilled.</li> <li>3. When packaging individual items, pay attention to ensuring the board edges are free from burrs.</li> </ol>	Receiving Note/Delivery Note	Quality Dept

Best

