

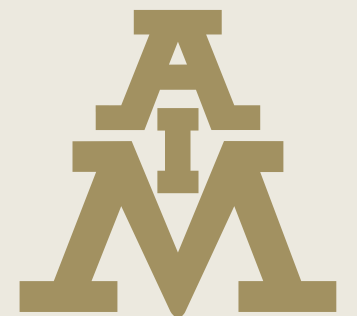
APPLYING THERMOCOUPLES TO MEASURE BGA TEMPERATURE DURING REFLOW PROFILING

PROPER TECHNIQUE FOR APPLYING THERMOCOUPLES (TCS) TO MEASURE BGA TEMPERATURE DURING REFLOW PROFILING

★ This destructive test will require a sacrificial "Golden Board" | PROCESS TIME: 2 HOURS

- 1 Preheat oven and record current zone temperatures and conveyor speed prior to adjustments
- 2 Access to the underside of the BGA can be accomplished by drilling a hole in the PCB BGA footprint prior to reflow (a bare board can be used but will not be as precise)
- 3 Attach the Thermocouples (TC) using high temperature solder, metal tape or Kapton tape, ensure the tip of the TC is in intimate contact with test area
Note: When using metal tape, use High Temperature Flue Tape
- 4 A minimum of three TC should be attached on thermally diverse areas of the test vehicle i.e., BGA/LGA, ground plane, sub-miniature chip components
**On bare boards use the leading edge, middle and trailing edge*
- 5 Using high melt point solder, attach the tip of the TC to a solderable surface on the BTC
**Be sure the tip of the component is embedded in the solder, this is where the temperature is detected*
- 6 Epoxy should be used on both soldered and glued attachment areas to fix the wires to ensure the TC remains in place throughout the soldering process
**It is common for TC to separate from the PCB above liquidus temperatures and this must be prevented as it will negatively affect results*
Note: Use Kapton tape to secure TC wires to the PCB for stress relief, reduce tangling and prolong test vehicle usefulness
- 7 When TC are attached to the PCB, connect the TC's to the profiler, plug profiler into computer to verify the software is connecting properly to the equipment
Set the profiler to begin recording at 50°C
- 8 Unplug the profiler from the computer and place into the heat resistant case
**If a mesh belt is not used, a bare PCB with the same width as the test vehicle can be used*
**The support PCB may need to be "doubled up" to prevent sagging and profiler falling into the oven*
- 9 Insert the PCB and profiler into the oven
- 10 Carefully remove the PCB and profiler from the end of the oven
***CAUTION: Extremely HOT.** Handle only while wearing heat resistant gloves
Note: Placing hot profiler on a metal table or on the floor will accelerate cooling
- 11 Once cooled, remove data collection module, and download data to computer
- 12 Save profile, be sure to name files so they can be easily identified
**e.g. aim1 M8 sac305 RTS 4 min 1-1-20 11am*
- 13 Send the data file in an email attachment to AIM
**An AIM support team member will review the files and forward comments to you and/or the end customer*

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