

**Manufacturing
Procedure**

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MFG045 Rev. A

Date:

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Trace Cut**Revision**

A

Description of Change


Initial Release

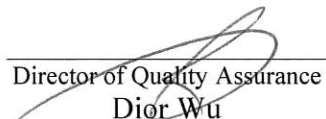
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Title:

Trace Cut**1.0 Purpose**

- 1.1 The purpose of this document is to ensure quality and process control in performing PCB trace cutting.

2.0 Scope

- 2.1 This procedure applies to the process of breaking a conductive trace. Trace cuts are performed due to customer requirements.
- 2.2 The procedure applies to trace cutting of bare PCB's prior to SMT and trace cuts performed on assemblies.

3.0 Reference

- 3.1 SOP22 ESD procedure
- 3.2 SOP11 First Article Procedure
- 3.3 IPC-A-610 Acceptability of Electronic Assemblies
- 3.4 Visual Aids
- 3.5 MPI (If applicable)

4.0 Definitions

- 4.1 PCB: Printed Circuit Board
- 4.2 Trace: Conductive patterns electrically connecting features on PCB's.
- 4.3 Trace Cut: Interrupt (Break) conductive pattern by mechanically disconnecting.

5.0 Responsibilities

- 5.1 It is everyone's responsibility to follow the ESD and safety rules described in this procedure.
- 5.2 Operators are responsible for following the documentation to ensure quality product.
- 5.3 The area supervisor shall insure only a trained operator may perform this process.
- 5.4 The area supervisor shall follow SOP11-First Article and will assist operators as necessary.

6.0 Equipment

- 6.1 Micro Drill (Dremel - MultiPro 3995 Type 5)
- 6.2 Depth Limit Stop

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6.3 Depth Set Block

6.4 Continuity tester.

7.0 Materials

7.1 PCB's

8.0 Records

8.1 The total retention period for the documents listed by Meritronics, is indicated on the Master Forms Listing under the column heading, Record Retention. When the records are no longer in an active status they will be forwarded to Document Control and filed/maintained in accordance with SOP 29.

8.2 Manufacturing Process Instruction - PMFG036

9.0 Procedure

9.1 ESD Requirements:

9.1.1 Wrist strap must be worn at this station, ESD jack exists at the station.

9.2 Safety:

9.2.1 Keep hands clear of the cutting end of Micro-Drill when power is on.

9.2.2 Safety glasses must be worn by operator.

9.3 Equipment Set-up:

9.3.1 The Ball Mill cutter must be replaced daily by a new one or one that has passed inspection by the responsible Process Engineer.

9.3.2 The Ball Mill cutter depth must be verified daily and reset if required by the responsible Process Engineer by using the set depth block.

9.3.3 Set Micro-Drill speed at the maximum RPM setting.

9.4 Log in:

9.4.1 Log PCB lot into the Fab Receipt Log and complete the form. The form will ask if any trace cuts are required. At this point the operator must reference the MPI and the SMT Product SetUp Sheet, looking for any trace cut instructions.

9.4.2 Trace cuts NO: If Fab does not require trace cuts per the MPI, move fabs to SMT staging area shelving.

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9.4.3 Trace cuts YES: The Fabs must stay at the Trace Cut Station and process following this procedure. Fabs cannot be moved until trace cuts are performed.

9.5 Process:

9.5.1 Locate the Trace Cut Station visual aid book and reference the Fab part number. Insure the Fab Rev level and the Trace Cut Aid Rev levels match before preceding. If revisions do not match STOP and inform area Supervisor or responsible Process Engineer.

9.5.2 Place PCB onto a cleaned work surface and locate area requiring trace cuts under the microscope referencing the visual aid.

9.5.3 Grasp Micro-Drill firmly with finger tips "pen like" so as to gain as much control as possible and keep the Depth Limit Stop as flat as possible to the Fab.

9.5.4 Cut trace precisely where shown on visual aid and no other place.

9.5.5 Start cutting by stepping down on the foot switch.

9.5.6 Motion the ball mill back and forth over the trace each time observing material removal.

9.5.7 Once the Depth Limit Stop makes full contact with the Fab surface, stop. Once more visually observe trace to insure removal is complete.

9.5.8 A minimum gap of .032" (in length) of trace must be removed (approximately two ball mill diameters).

9.5.9 After trace(s) cuts are performed on each PCB the operator must verify that an open has been created by use of a continuity light. First assure test light is in working order then find the two locations where the trace was connected and probe the two locations. Be sure the probe is well positioned in an open area (SMT pad or via).

Pass: The light should remain off if the trace was properly cut.

Fail: The continuity light comes on. All fails must be corrected.