Development Procedure

FOR EDUCATIONAL USE ONLY

What is a miniPCB?

A miniPCB is a printed circuit board that contains a layout of an electronic circuit.

A miniPCB has a mechanical design that is consistent with numerous similar miniPCBs.

A miniPCB has an interface connector that is simple and economical.

A miniPCB has educational documentation that is approved by an engineer.

A miniPCB is sold in minimum-order-quantities determined by the PCB panel size.

This document is available for free as a download from the GitHub repository:

https://github.com/miniPCB

This document is associated with the miniPCB Channel on YouTube:

https://www.youtube.com/@minipcb

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1. PURPOSE

This document provides a deliverables-at-milestone process for developing new miniPCBs.

2. SCOPE

This document applies to development activities related to the miniPCB project.

3. RESPONSIBILITIES

Nolan Manteufel is responsible for maintaining this procedure.

Anyone developing a miniPCB is responsible for adhering to this procedure.

4. TERMINOLOGY AND ABBREVIATIONS

Terminology and abbreviations used throughout the miniPCB project are consistent with the definitions presented in this section.

Table 1 – Definitions and Abbreviations

TERM	DEFINITION
PCB	Printed Circuit Board, Bare Board
PCBA	Printed Circuit Board Assembly, Bare Board + Parts + Assembly
SMD	Surface mount device
THD	Through hole device

5. PROCEDURAL NOTES

5.1. ORDER OF OPERATIONS

The development procedure starts at kickoff, EE0.0, and proceeds forward through the milestones EE1.0, EE2.0, EE3.0, and EE4.0. Any milestone may be repeated as many times as necessary, and any project can be cancelled, to ensure that students and teachers are never provided with a miniPCB that has flaws or defects that may dissuade interest in the electronic circuit present.

6. PROCEDURE

6.1. EE0.0 KICKOFF

At the conclusion of the EE0.0 video, an ECO should be created.

- Engineering Change Order
- GitHub update

6.2. EE1.0 PRELIMINARY DESIGN REVIEW

At the conclusion of the EE1.0 video, PCBs should be ordered.

- EAGLE project
- Schematic
- Layout
- Datasheet
- Fabrication files
- GitHub update

6.3. EE2.0 CRITICAL DESIGN REVIEW

At the conclusion of the EE2.0 video, parts should be ordered.

- Datasheet with Parts List

6.4. EE3.0 FINAL DESIGN REVIEW

At the conclusion of the EE3.0 video, documentation should be ready for release.

- Developmental Test Plan
- Developmental Test Report
- Datasheet complete

6.5. EE4.0 HARDWARE RELEASE

At the conclusion of the EE4.0 video, the work of the miniPCB development engineer is complete.

7. REFERENCES

miniPCB™ Design Standard

miniPCB™ Product Catalog

ECObase Template

TESTbase Template

8. CHANGE AND LIABILITY NOTICE

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miniPCB™		

10. REVISION HISTORY

REV	DESCRIPTION	ECO	DATE
A	Initial Release	1013	15JAN2023
B	Moved sections included in Initial Release to the miniPCB Quality Manual. Added sections Idea, Prototype, Released, and Obsolete phases.	1015	16JAN2023
C	Removed sections related to product life cycle and added EE# milestones with lists of deliverables.	1022	28FEB2023