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 steps 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. PROCEDURE

5.1. DESIGN STANDARD

Adhere to the **miniPCB™ Design Standard** throughout the following activities:

- Board Design, Layout, and Revision
- Interface Design
- Part Numbering
- Engineering Documentation
- Branding
- Open Dissemination

5.2. PRODUCT CATALOG

Maintain the **miniPCB™ Product Catalog** spreadsheet for all idea and product changes.

5.3. CAD TOOLS

Use each of the following CAD tools.

CAD TOOL	DESCRIPTION OF USE
EAGLE	EE Development
FUSION 360	ME Development

5.4. DOCUMENT CONTROL

Control miniPCB documentation with each of the following methods.

5.4.1. REVISION HISTORY TABLE

Maintain a revision history table within datasheets and schematic sheets.

5.4.2. REVIEW AND APPROVAL

Review, approve, and sign engineering documentation prior to official release.

5.4.3. ELECTRONIC SIGNATURES

Use one of the following signature formats.

- NM.ddmmmyyyy
- N. MANTEUFEL
- NM

5.4.4. TESTBASE

Create and maintain a simple test management system called TESTbase.

5.4.5. ECOBASE

Create and maintain a simple engineering change order system called ECObase.

5.4.6. ENGINEERING RECORDS

Create the following records for each product.

RECORD	DESCRIPTION
Source Files	Gerbers, CAD files, Word documents, Excel documents, etc.
Schematics	PDF document (from CAD)
Datasheets	PDF document (from Word)
FMEA Reports	PDF document
Testing Procedure	PDF document
Testing Report	PDF document
Engineering Change Orders	PDF documents

5.4.7. FILE REPOSITORY

Commit all engineering files and records to a GitHub repository.

5.4.8. YOUTUBE CHANNEL

Create and maintain a channel on YouTube with videos that record significant engineering CAD work.

5.4.9. PUBLIC DISEMINATION

Use GitHub to disseminate engineering files and records.

Table 2 – GitHub Repository

REPOSITORY	LOCATION
GitHub	https://github.com/miniPCB

5.5. PURCHASING

Purchase boards from any of the approved PCB vendors.

Table 3 – Approved Vendor List

VENDOR NAME	VENDOR WEBSITE
SeeedStudio Fusion	https://www.seeedstudio.com/fusion_pcb.html

6. REFERENCES

miniPCB™ Design Standard

miniPCB™ Product Catalog

ECObase Template

TESTbase Template

7. CHANGE AND LIABILITY NOTICE

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8. TRADEMARK NOTICE

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WORDMARK	FIGUREMARK	FIGUREMARK
miniPCB™		

9. REVISION HISTORY

REV	DESCRIPTION	ECO	DATE
A	Initial Release	1013	15JAN2023