Bluetooth Transceiver for Medical Devices

|  |  |
| --- | --- |
| **PART NUMBER** | 07D-003 |
| **GROUP NAME** | Radio, Application Specific |
| **CIRCUIT NAME** | Wearable Bluetooth Transceiver |
| **VARIANT DESCRIPTION** | Nordic, nRF52832, N52832 |
| **BOARD DESIGN** | Custom |
| **PRODUCT DESCRIPTION** | PCB Assembly on a six (6) layer flex board. |

# Circuit Description

This circuit amplifies a small voltage signal.

# Panel Board

|  |  |
| --- | --- |
|  |  |
| TOP VIEW | BOTTOM VIEW |

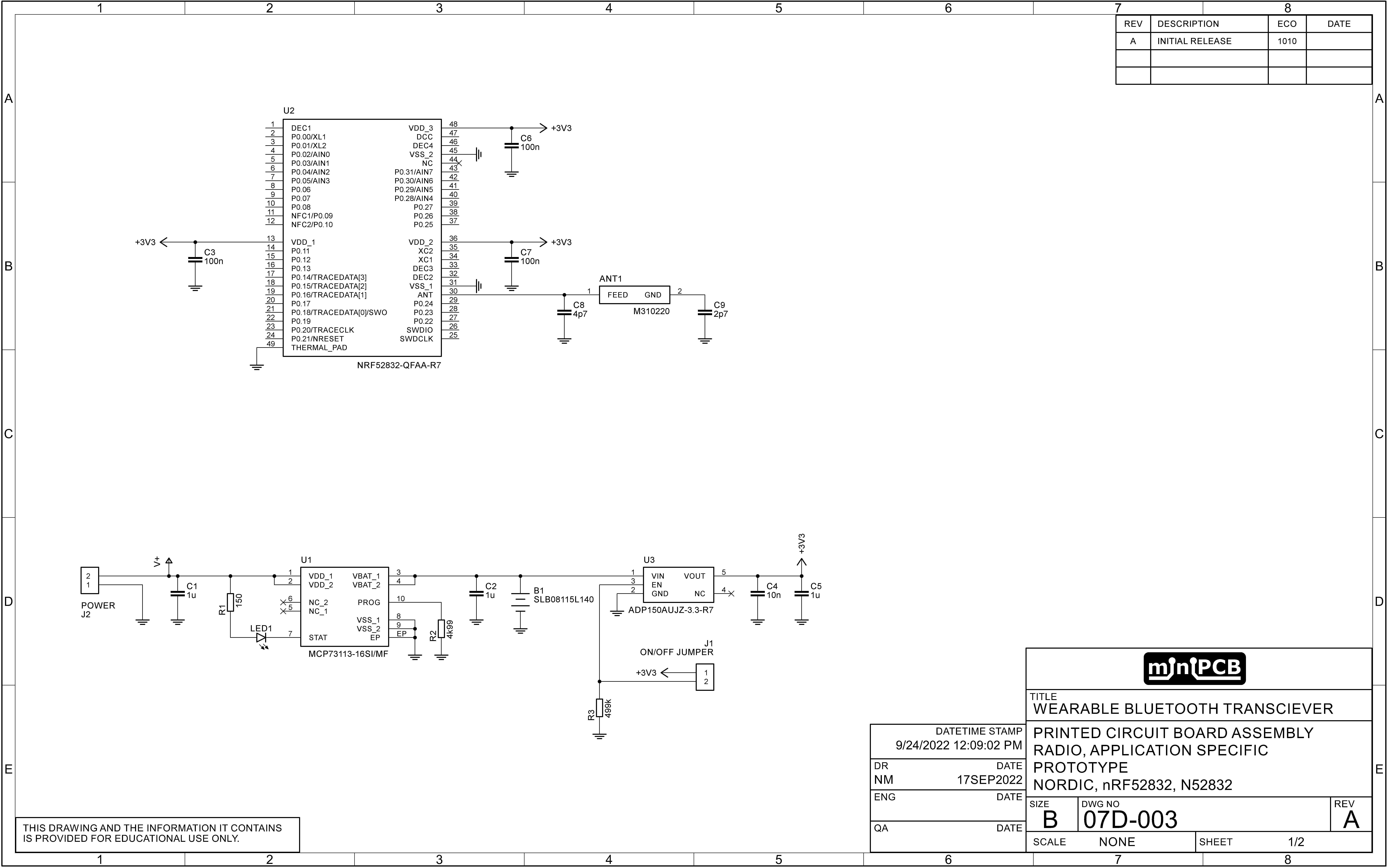
# Single Board

|  |  |
| --- | --- |
|  |  |
| TOP VIEW | BOTTOM VIEW |

# Part Locations

|  |  |
| --- | --- |
|  |  |
| TOP VIEW | BOTTOM VIEW |

# Schematic



# PCB Stackup

Source: https://www.pcbway.com/pcb\_prototype/Stack\_up\_for\_FPC.html

|  |  |  |  |
| --- | --- | --- | --- |
| top coverlay | PI | 12.5um |  |
| Adhesive | 15um |  |
| top copper layer | Cooper | 12um | Finished cooper thickness 18um // SIGNAL |
| 51um | Adhesive | 13um |  |
| PI | 25um | dielectric constant 3.3~3.5 (The DK value is not absolute and will vary depending on the base material's models and thickness.) |
| Pure gum | 13um |  |
| copper 2 layer | Cooper | 12um | SIGNAL |
| 51um | Adhesive | 13um |  |
| PI | 25um |  |
| Adhesive | 13um |  |
| copper 3 layer | Cooper | 12um | POWER |
| 41um | Pure gum | 13um |  |
| Coverlay | 27.5um |  |
| copper 4 layer | Cooper | 12um | GROUND |
| 51um | Adhesive | 13um |  |
| PI | 25um |  |
| Adhesive | 13um |  |
| copper 5 layer | Cooper | 12um | SIGNAL |
| 51um | Pure gum | 13um |  |
| PI | 25um | dielectric constant 3.3~3.5 (The DK value is not absolute and will vary depending on the base material's models and thickness.) |
| Adhesive | 13um |  |
| bottom copper layer | Cooper | 12um | Finished cooper thickness 18um // SIGNAL |
| bottom coverlay | Adhesive | 15um |  |
| PI | 12.5um |  |
| **Total thickness** |  | **371.5um** |  |

# Gerber Files

This section contains images of the layers included in each Gerber file.

## TOP COPPER (GLTX)

## TOP CREAM (GCTX)

## BOTTOM CREAM (GCBX)

## BOTTOM COPPER (GLBX)

## TOP SILKSCREEN (GOTX)

## BOTTOM SILKSCREEN (GOBX)

## TOP SOLDERMASK (GSTX)

## BOTTOM SOLDER MASK (GSBX)

## EDGE (GM1)

## VSCORE (GM2)

## MILLING (GM3)

# Theory of Operation

The purpose of this circuit is to…

This circuit is supplied with a positive DC voltage…

The input stimuli is DC coupled…

The output signal is DC coupled…

# Parts List

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **REF DES** | **PART TYPE** | **MFG PART NUMBER** | **PART DESCRIPTION** | **FIND** |
| C1 | Ceramic |  | 1u, 0402 | 1 |
| C2 | Ceramic |  | 1u, 0402 | 2 |
| C3 | Ceramic |  | 100n, 0402 | 3 |
| C4 | Ceramic |  | 10n, 0402 | 4 |
| C5 | Ceramic |  | 1u, 0402 | 5 |
| C6 | Ceramic |  | 100n, 0402 | 6 |
| C7 | Ceramic |  | 100n, 0402 | 7 |
| C8 | Ceramic |  | 4p7, 0402 | 8 |
| C9 | Ceramic |  | 2p7, 0402 | 9 |
| R1 | Thin film |  | 150, 0402 | 10 |
| R2 | Thin film |  | 4k99, 0402 | 11 |
| R3 | Thin film |  | 499k, 0402 | 12 |
| ANT1 | Antenna | M310220 |  | 13 |
| U1 | Battery Charger | MCP73113-16SI/MF |  | 14 |
| U2 | Bluetooth | NRF52832-QFAA-R7 |  | 15 |
| U3 | LDO Regulator | ADP150AUJZ-3.3-R7 |  | 16 |
| LED1 |  |  | Blue | 17 |
| B1 |  |  | Lithium Ion / Lithium Polymer | 18 |
| J1 |  |  | On / Off control | 19 |
| J2 |  |  | Power input | 20 |

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| WORDMARK | FIGUREMARK | FIGUREMARK |
| miniPCB™ | A picture containing drawing  Description automatically generated™ | Icon  Description automatically generated™ |

# Revision History

|  |  |  |  |
| --- | --- | --- | --- |
| REV | DESCRIPTION | ECO | DATE |
| A | Initial Release |  |  |
|  |  |  |  |