REVISION	DESCRIPTION	DATE	APPROVED
v1.0	Initial version	2023/09/18	Siavash Taher Parvar

RELEASED

Blender

SCHEMATIC STATUS: ***RELEASED***

v1.0
2023/09/18
VARIANT: N/A

TEMPLATE NOTES

Set Project Parameters

1- Go to View -> Pge Preview Setting
2- Set Parameters based on the following Info
COMMENT 1: Project Version
COMMENT 2: Document Status
COMMENT 3: Doc. Approval Eng.
COMMENT 4: BOM Ref. DOC.
COMMENT 5: PCB Ref. DOC.
COMMENT 6: GBR Ref. DOC.
COMMENT 7: ASM Ref. DOC.
COMMENT 8: Variant Name
COMMENT 9: Revision Description

Symbols and Lables

Mark Not Fitted Components as --> **DNF**
Differential Signal Example
Net Class Example

SCHEMATIC STATUS:

DRAFT	– Very Early Stage of Schematic
PRELIMINARY	– Close to Final Schematic
CHECKED	– There Should Not Be Any Mistakes
RELEASED	– A Board with This Schematic Has Been Produced

DESIGN CONSIDERATION

INFO: Example text for informational design notes.

CAUTIONARY: Example text for cautionary design notes.

DESIGN NOTE: Example text for critical design notes.

LAYOUT NOTE: Example text for critial layout guidlines.

3D Preview TOP

SHOULD BE ADDED AFTER RELEASE

3D Preview BOTTOM

SHOULD BE ADDED AFTER RELEASE

Board Statistics
Stackup Info

SHOULD BE ADDED AFTER RELEASE

APPROVALS	DATE
ENG: Siavash Taher Parvar	2023/09/18
DSN: Siavash Taher Parvar	2023/09/18
CHK: Siavash Taher Parvar	2023/09/18

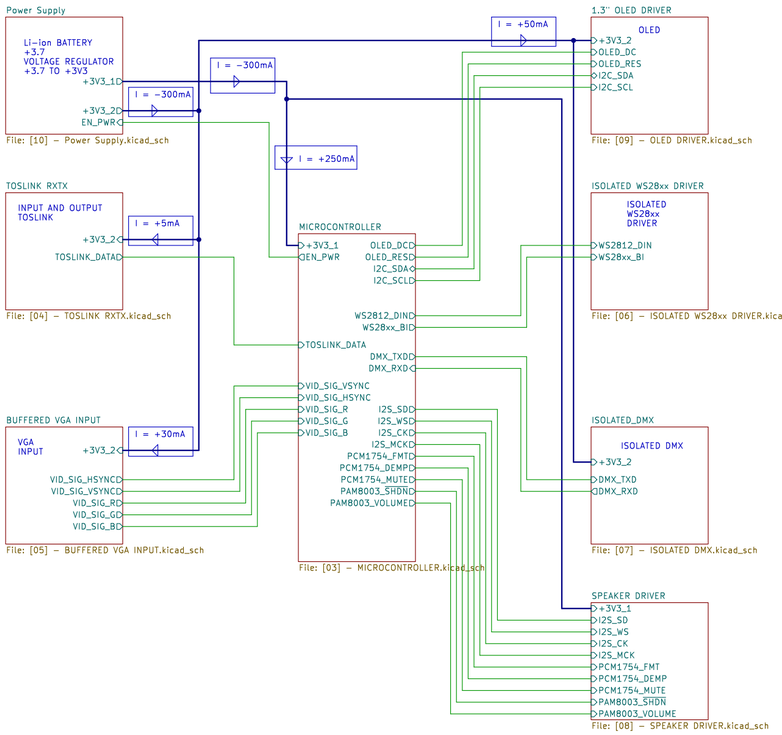
REFERENCE DOCUEMNTS
SCH Ref. DOC.: _HW_Blender.kicad_sch
BOM Ref. DOC.: BOM_Blender_v1.0.html
PCB Ref. DOC.: _HW_Blender.kicad_pcb
GBR Ref. DOC.: GBR_Blender_v1.0
ASM Ref. DOC.: ASM_Blender_v1.0

PROJECT: Blender
PRJ VER: v1.0 | DOC VER: v1.0 | DOC REV: v1.0
TITLE:
Mend0z0
OPEN-SOURCE DOCUMENT
FILE NAME: _HW_Blender.kicad_sch
SHEET 1 OF 16 | SIZE: C | SCALE: 1:1 | VARIANT NAME: N/A

REVISION	DESCRIPTION	DATE	APPROVED
v1.0	Initial version	2023/09/18	Siavash Taher Parvar

BLOCK DIAGRAM

RELEASED



APPROVALS	DATE
ENG: Siavash Taher Parvar	2023/09/18
DSN: Siavash Taher Parvar	2023/09/18
CHK: Siavash Taher Parvar	2023/09/18

REFERENCE DOCUEMNTS

SCH Ref. DOC.: [02] - BLOCK DIAGRAM.kicad_sch
BOM Ref. DOC.: BOM_Blender_v1.0.html
PCB Ref. DOC.: HW_Blender.kicad_pcb
GBR Ref. DOC.: GBR_Blender_v1.0
ASM Ref. DOC.: ASM_Blender_v1.0

PROJECT: Blender

PRJ VER: v1.0 | DOC VER: v1.0 | DOC REV: v1.0

Mend0z0

TITLE: BLOCK DIAGRAM

OPEN-SOURCE DOCUMENT

FILE NAME: [02] - BLOCK DIAGRAM.kicad_sch

SHEET 1 OF 16 | SIZE: C | SCALE: 1:1 | VARIANT NAME: N/A

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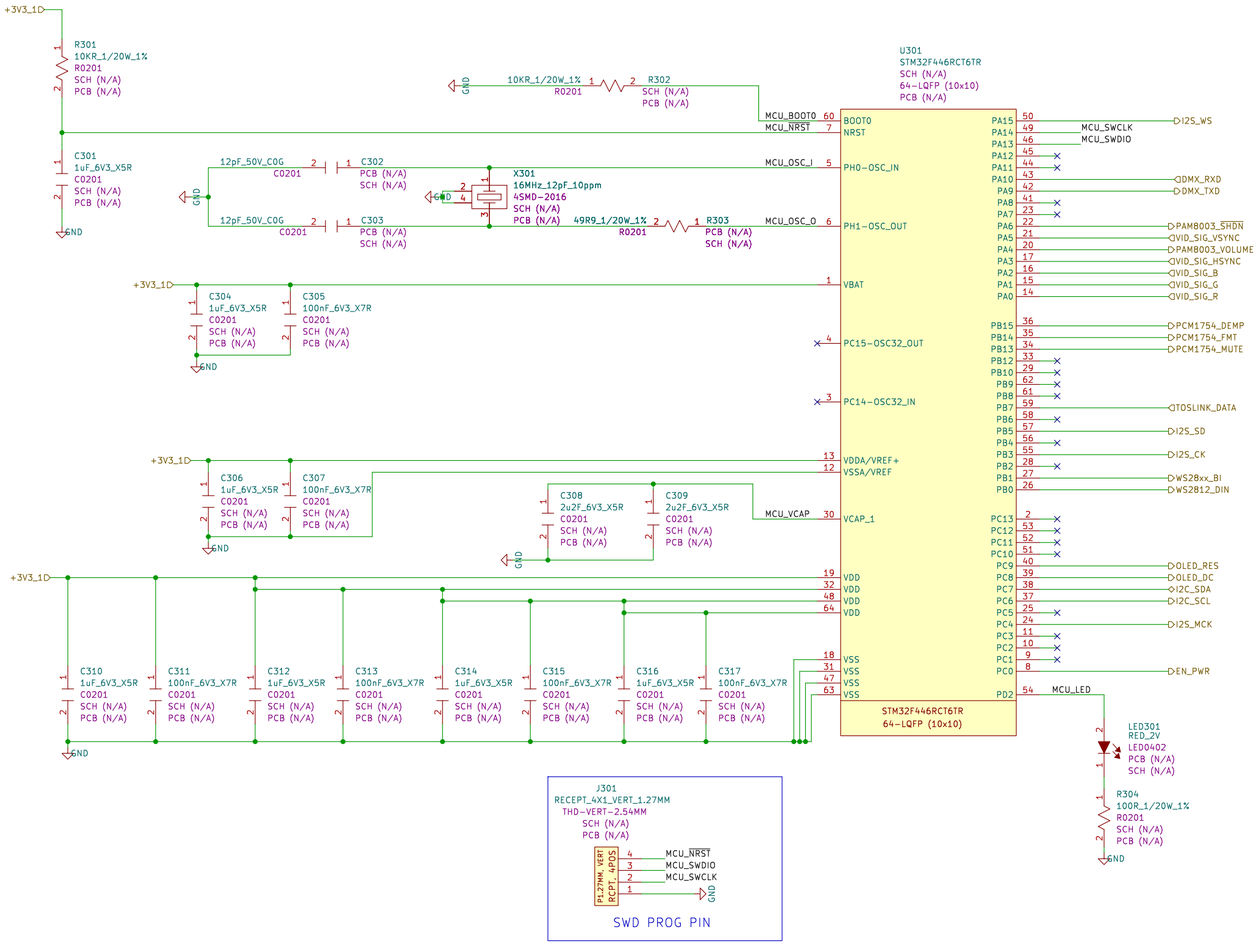
REVISION	DESCRIPTION	DATE	APPROVED
v1.0	Initial version	2023/09/18	Siavash Taher Parvar

MICROCONTROLLER

RELEASED



APPROVALS	DATE
ENG: Siavash Taher Parvar	2023/09/18
DSN: Siavash Taher Parvar	2023/09/18
CHK: Siavash Taher Parvar	2023/09/18

REFERENCE DOCUEMNTS

- SCH Ref. DOC.: [03] - MICROCONTROLLER.kicad_sch
- BOM Ref. DOC.: BOM_Blender_v1.0.html
- PCB Ref. DOC.: HW_Blender.kicad_pcb
- GBR Ref. DOC.: GBR_Blender_v1.0
- ASM Ref. DOC.: ASM_Blender_v1.0

PROJECT: Blender

PRJ VER: v1.0 | DOC VER: v1.0 | DOC REV: v1.0

Mend0z0

OPEN-SOURCE DOCUMENT

TITLE: MICROCONTROLLER

FILE NAME: [03] - MICROCONTROLLER.kicad_sch

SHEET 3 OF 16 | SIZE: C | SCALE: 1:1 | VARIANT NAME: N/A

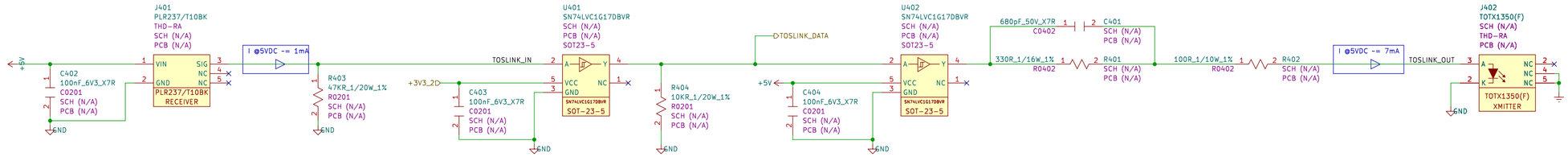
REVISION	DESCRIPTION	DATE	APPROVED
v1.0	Initial version	2023/09/18	Siavash Taher Parvar

TOSLINK RXTX

RELEASED

SAMPLING CIRCUIT

OPTICAL TRANSMITTER



OPTICAL RECEIVER

APPROVALS	DATE
ENG: Siavash Taher Parvar	2023/09/18
DSN: Siavash Taher Parvar	2023/09/18
CHK: Siavash Taher Parvar	2023/09/18

REFERENCE DOCUEMNTS
SCH Ref. DOC.: [04] - TOSLINK RXTX.kicad_sch
BOM Ref. DOC.: BOM_Blender_v1.0.html
PCB Ref. DOC.: HW_Blender.kicad_pcb
GBR Ref. DOC.: GBR_Blender_v1.0
ASM Ref. DOC.: ASM_Blender_v1.0

PROJECT: Blender

PRJ VER: v1.0 | DOC VER: v1.0 | DOC REV: v1.0

Mend0z0

OPEN-SOURCE DOCUMENT

TITLE: TOSLINK RXTX

FILE NAME: [04] - TOSLINK RXTX.kicad_sch

SHEET 4 OF 16 | SIZE: C | SCALE: 1:1 | VARIANT NAME: N/A

THIS DOCUMENT AND THE DATA DISCLOSED HEREIN OR HEREWITH ARE ALL OPEN-SOURCE AND THERE IS NO RESPONSIBILITY FOR PROBABLE FAILURE OR INJURY

REVISION	DESCRIPTION	DATE	APPROVED
v1.0	Initial version	2023/09/18	Siavash Taher Parvar

BUFFERED VGA INPUT

RELEASED

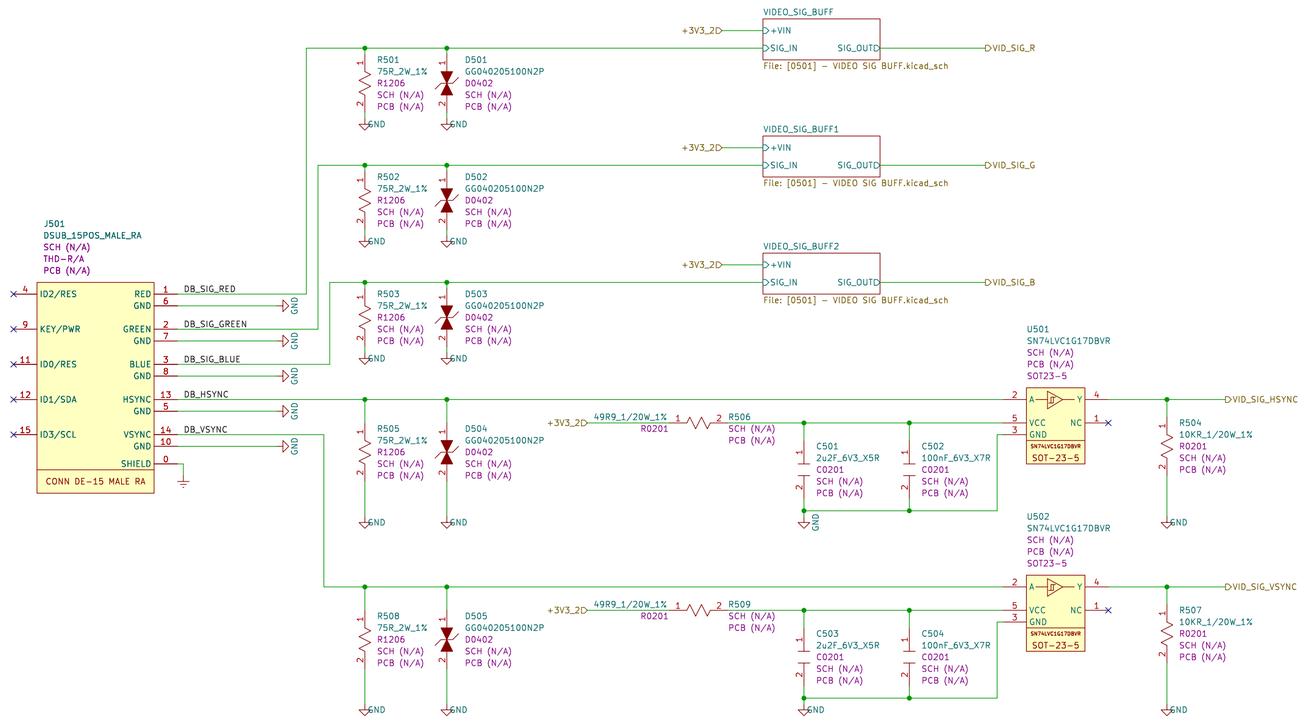
NOTE:

Pinout Info

1: Red Video (To monitor from video card)
2: Green Video (To monitor from video card)
3: Blue Video (To monitor from video card)
4: Monitor ID 2 (To video card from monitor)
5: TTL Ground (Monitor self-test, used for testing purposes only)
6: Red Analog Ground
7: Green Analog Ground
8: Blue Analog Ground
9: Key (Plugged hole, not used for electronic signals)
10: Sync Ground (For both sync pins)
11: Monitor ID 0 (To video card from monitor)
12: Monitor ID 1 (To video card from monitor)
13: Horizontal Sync (To monitor from video card)
14: Vertical Sync (To monitor from video card)
15: Monitor ID 3 (To video card from monitor)

NOTE:

The most important pins on a monitor's connector are the synchronization, or sync pins. There are three: Horizontal, vertical, and ground. The sending of a horizontal sync pulse indicates the end of a horizontal line, and the sending of a vertical sync pulse indicates the end of a vertical screen frame.



APPROVALS	DATE
ENG: Siavash Taher Parvar	2023/09/18
DSN: Siavash Taher Parvar	2023/09/18
CHK: Siavash Taher Parvar	2023/09/18

REFERENCE DOCUEMNTS
SCH Ref. DOC.: [05] - BUFFERED VGA INPUT.kicad_sch
BOM Ref. DOC.: BOM_Blender_v1.0.html
PCB Ref. DOC.: HW_Blender.kicad_pcb
GBR Ref. DOC.: GBR_Blender_v1.0
ASM Ref. DOC.: ASM_Blender_v1.0

PROJECT: Blender

PRJ VER: v1.0 | DOC VER: v1.0 | DOC REV: v1.0

Mend0z0

TITLE: BUFFERED VGA INPUT

OPEN-SOURCE DOCUMENT

FILE NAME: [05] - BUFFERED VGA INPUT.kicad_sch

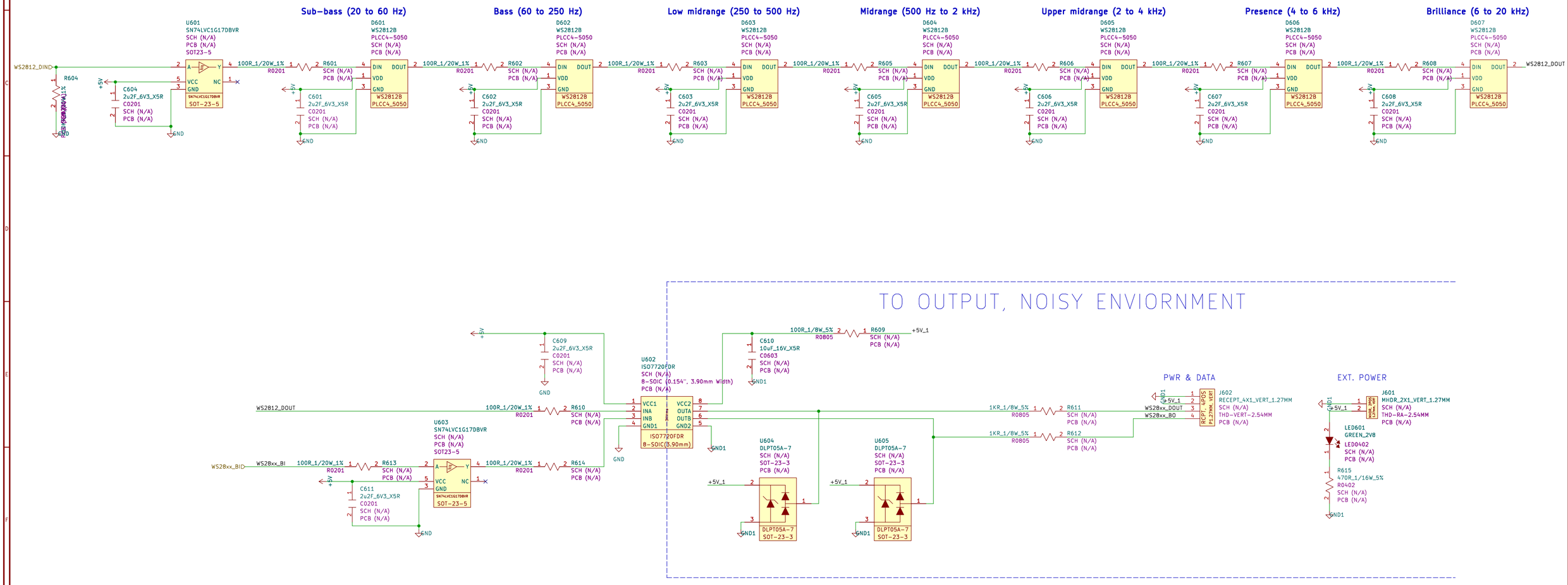
SHEET 5 OF 16 | SIZE: C | SCALE: 1:1 | VARIANT NAME: N/A

THIS DOCUMENT AND THE DATA DISCLOSED HEREIN OR HEREWITH ARE ALL OPEN-SOURCE AND THERE IS NO RESPONSIBILITY FOR PROBABLE FAILURE OR INJURY

REVISION	DESCRIPTION	DATE	APPROVED
v1.0	Initial version	2023/09/18	Siavash Taher Parvar

ISOLATED WS28xx DRIVER

RELEASED



APPROVALS	DATE
ENG: Siavash Taher Parvar	2023/09/18
DSN: Siavash Taher Parvar	2023/09/18
CHK: Siavash Taher Parvar	2023/09/18

REFERENCE DOCUEMNTS

- SCH Ref. DOC.: [06] - ISOLATED WS28xx DRIVER.kicad_sch
- BOM Ref. DOC.: BOM_Blender_v1.0.html
- PCB Ref. DOC.: HW_Blender.kicad_pcb
- GBR Ref. DOC.: GBR_Blender_v1.0
- ASM Ref. DOC.: ASM_Blender_v1.0

PROJECT: Blender

PRJ VER: v1.0 | DOC VER: v1.0 | DOC REV: v1.0

Mend0z0

OPEN-SOURCE DOCUMENT

TITLE: ISOLATED WS28xx DRIVER

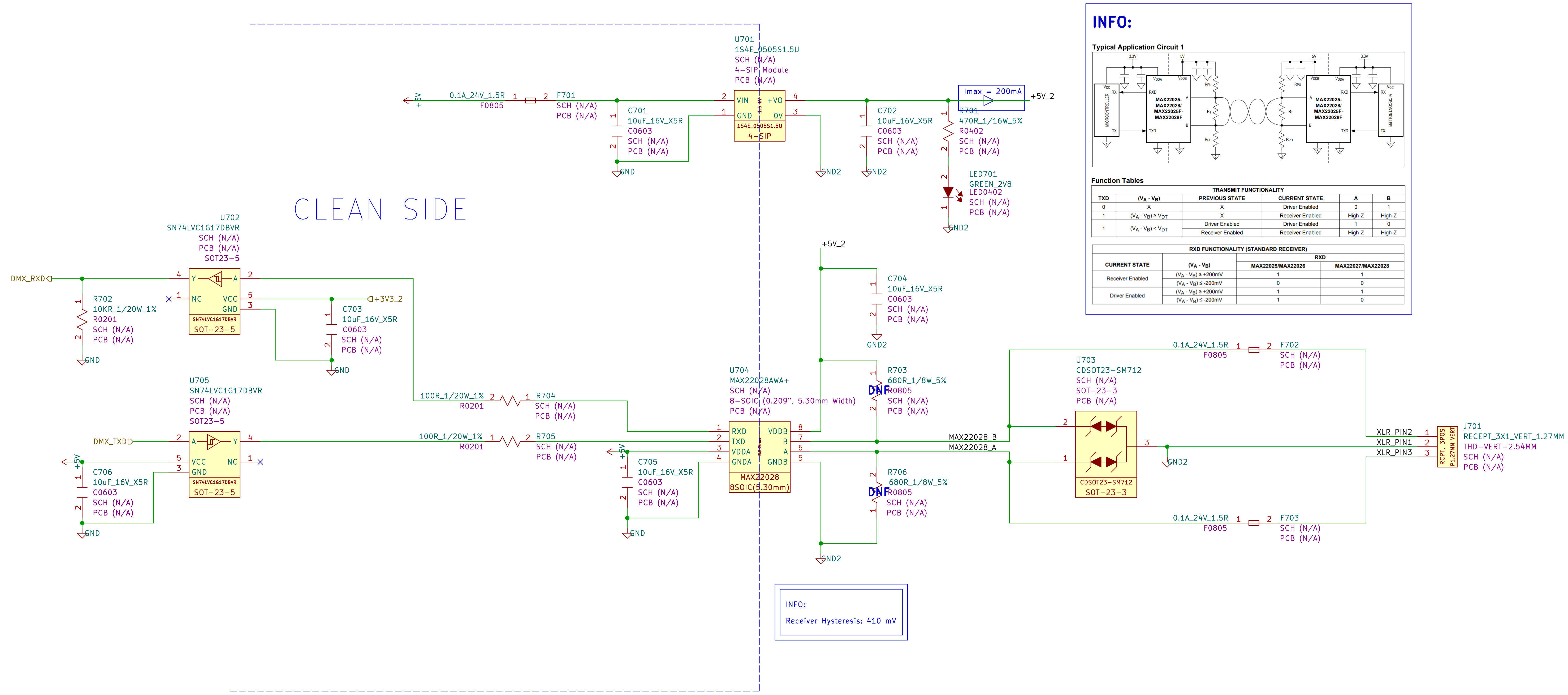
FILE NAME: [06] - ISOLATED WS28xx DRIVER.kicad_sch

SHEET 6 OF 16 | SIZE: C | SCALE: 1:1 | VARIANT NAME: N/A

REVISION	DESCRIPTION	DATE	APPROVED
v1.0	Initial version	2023/09/18	Siavash Taher Parvar

ISOLATED_DMX

RELEASED



INFO:

Typical Application Circuit 1

Function Tables

TRANSMIT FUNCTIONALITY					
TXD	$(V_A - V_B)$	PREVIOUS STATE	CURRENT STATE	A	B
0	X	X	Driver Enabled	0	1
1	$(V_A - V_B) \geq V_{DT}$	X	Receiver Enabled	High-Z	High-Z
1	$(V_A - V_B) < V_{DT}$	Driver Enabled	Driver Enabled	1	0
		Receiver Enabled	Receiver Enabled	High-Z	High-Z

RXD FUNCTIONALITY (STANDARD RECEIVER)			
CURRENT STATE	$(V_A - V_B)$	RXD	
		MAX22025/MAX22026	MAX22027/MAX22028
Receiver Enabled	$(V_A - V_B) \geq +200mV$	1	1
	$(V_A - V_B) \leq -200mV$	0	0
Driver Enabled	$(V_A - V_B) \geq +200mV$	1	1
	$(V_A - V_B) \leq -200mV$	1	0

APPROVALS	DATE
ENG: Siavash Taher Parvar	2023/09/18
DSN: Siavash Taher Parvar	2023/09/18
CHK: Siavash Taher Parvar	2023/09/18

REFERENCE DOCUEMNTS
- SCH Ref. DOC.: [07] - ISOLATED DMX.kicad_sch
- BOM Ref. DOC.: _BOM_Blender_v1.0.html
- PCB Ref. DOC.: _HW_Blender.kicad_pcb
- GBR Ref. DOC.: _GBR_Blender_v1.0
- ASM Ref. DOC.: _ASM_Blender_v1.0

PROJECT: Blender

PRJ VER: v1.0 | DOC VER: v1.0 | DOC REV: v1.0

Mend0z0

TITLE: ISOLATED_DMX

OPEN-SOURCE DOCUMENT

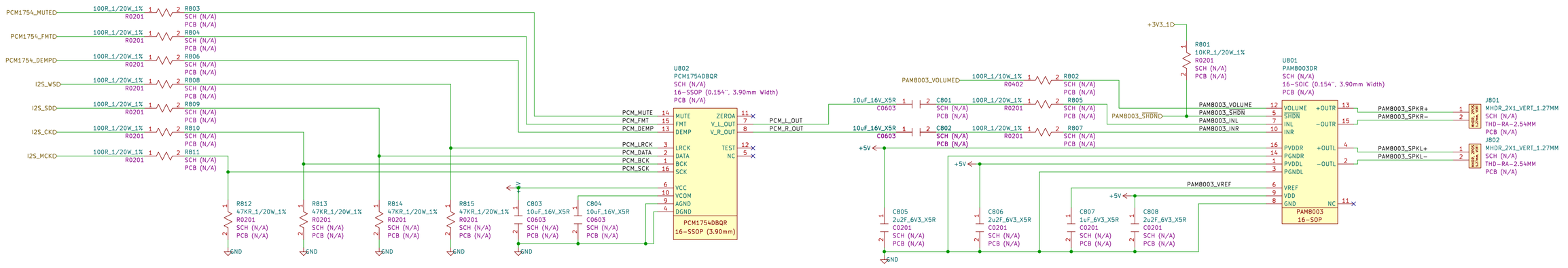
FILE NAME: [07] - ISOLATED DMX.kicad_sch

SHEET 7 OF 16 | SIZE: C | SCALE: 1:1 | VARIANT NAME: N/A

REVISION	DESCRIPTION	DATE	APPROVED
v1.0	Initial version	2023/09/18	Siavash Taher Parvar

SPEAKER DRIVER

RELEASED



APPROVALS	DATE
ENG: Siavash Taher Parvar	2023/09/18
DSN: Siavash Taher Parvar	2023/09/18
CHK: Siavash Taher Parvar	2023/09/18

REFERENCE DOCUEMNTS

SCH Ref. DOC.: [08] - SPEAKER DRIVER.kicad_sch
BOM Ref. DOC.: _BOM_Blender_v1.0.html
PCB Ref. DOC.: _HW_Blender.kicad_pcb
GBR Ref. DOC.: _GBR_Blender_v1.0
ASM Ref. DOC.: _ASM_Blender_v1.0

PROJECT: Blender

PRJ VER: v1.0 | DOC VER: v1.0 | DOC REV: v1.0

Mend0z0

TITLE: SPEAKER DRIVER

OPEN-SOURCE DOCUMENT

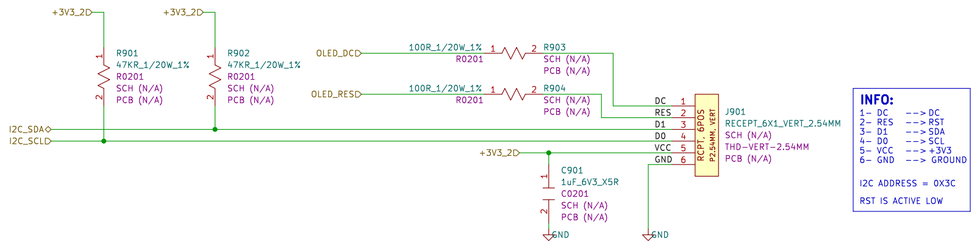
FILE NAME: [08] - SPEAKER DRIVER.kicad_sch

SHEET 8 OF 16 | SIZE: C | SCALE: 1:1 | VARIANT NAME: N/A

REVISION	DESCRIPTION	DATE	APPROVED
v1.0	Initial version	2023/09/18	Siavash Taher Parvar

1.3" OLED DRIVER

RELEASED



APPROVALS	DATE
ENG: Siavash Taher Parvar	2023/09/18
DSN: Siavash Taher Parvar	2023/09/18
CHK: Siavash Taher Parvar	2023/09/18

REFERENCE DOCUEMNTS
SCH Ref. DOC.: [09] - OLED DRIVER.kicad_sch
BOM Ref. DOC.: BOM_Blender_v1.0.html
PCB Ref. DOC.: HW_Blender.kicad_pcb
GBR Ref. DOC.: GBR_Blender_v1.0
ASM Ref. DOC.: ASM_Blender_v1.0

PROJECT: Blender

PRJ VER: v1.0 | DOC VER: v1.0 | DOC REV: v1.0

Mend0z0

TITLE: 1.3" OLED DRIVER

OPEN-SOURCE DOCUMENT

FILE NAME: [09] - OLED DRIVER.kicad_sch

SHEET 9 OF 16 | SIZE: C | SCALE: 1:1 | VARIANT NAME: N/A

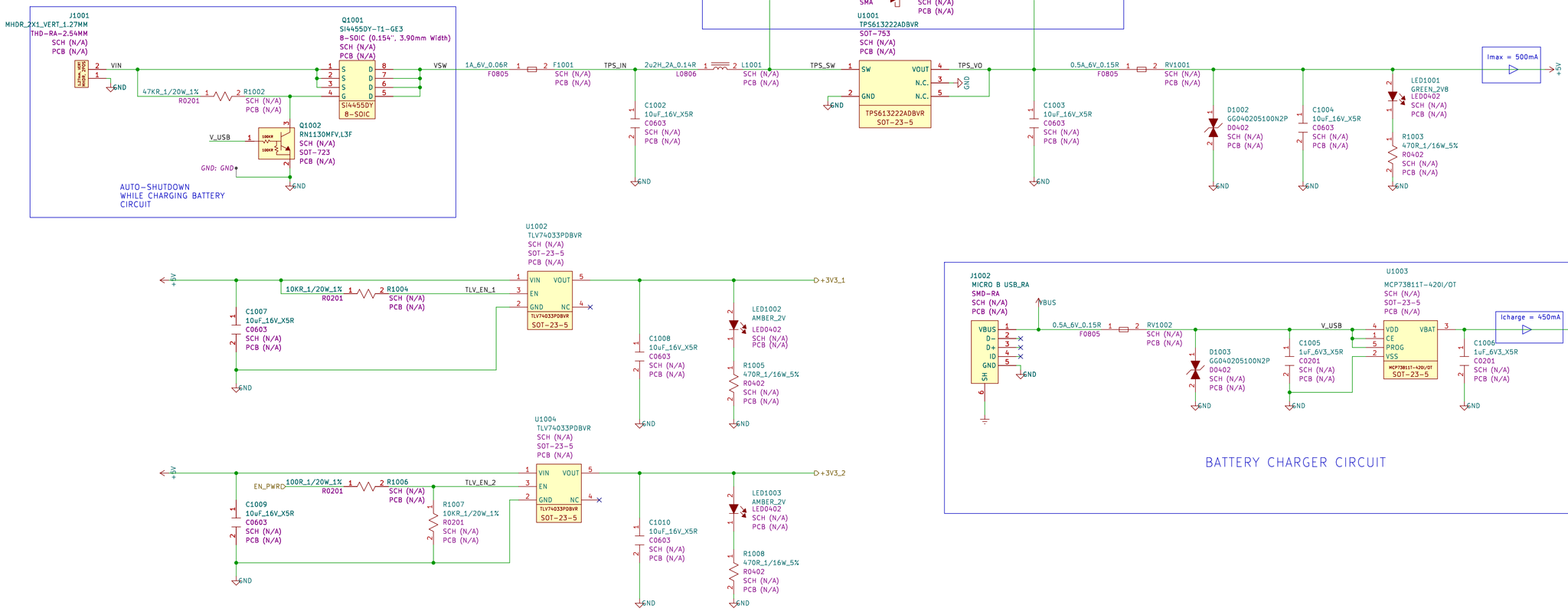
REVISION	DESCRIPTION	DATE	APPROVED
v1.0	Initial version	2023/09/18	Siavash Taher Parvar

Power Supply

RELEASED

DESIGN NOTE:

The high switching frequency of TPS61322xx demands a high-speed rectifying switch for optimum efficiency. Ensure that the average and peak current rating of the diode exceeds the average output current and peak inductor current. In addition, the reverse breakdown voltage of the diode must exceed the maximum output voltage of the converter. A snubber circuit consisting of a resistor R1 and a capacitor C2 is needed if the Schottky diode D1 is soldered. The capacitance of C2 must be larger than triple times of the diode capacitance. The typical value of the resistor R1 is 5 Ω, and the typical value of the capacitor C2 is 120 pF.



APPROVALS	DATE
ENG: Siavash Taher Parvar	2023/09/18
DSN: Siavash Taher Parvar	2023/09/18
CHK: Siavash Taher Parvar	2023/09/18

REFERENCE DOCUEMNTS
SCH Ref. DOC.: [10] - Power Supply.kicad_sch
BOM Ref. DOC.: BOM_Blender_v1.0.html
PCB Ref. DOC.: HW_Blender.kicad_pcb
GBR Ref. DOC.: GBR_Blender_v1.0
ASM Ref. DOC.: ASM_Blender_v1.0

PROJECT: Blender

PRJ VER: v1.0 | DOC VER: v1.0 | DOC REV: v1.0

Mend0z0

TITLE: Power Supply

OPEN-SOURCE DOCUMENT

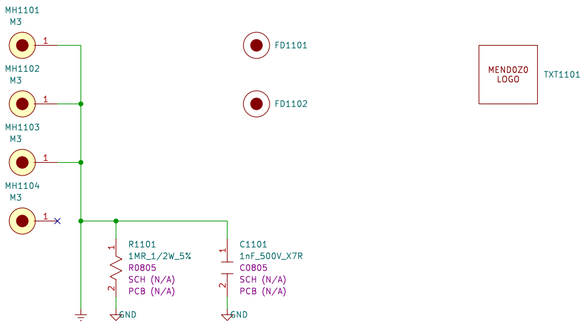
FILE NAME: [10] - Power Supply.kicad_sch

SHEET 10 OF 16 | SIZE: C | SCALE: 1:1 | VARIANT NAME: N/A

REVISION	DESCRIPTION	DATE	APPROVED
v1.0	Initial version	2023/09/18	Siavash Taher Parvar

MECHANICAL PARTS

RELEASED



APPROVALS	DATE
ENG: Siavash Taher Parvar	2023/09/18
DSN: Siavash Taher Parvar	2023/09/18
CHK: Siavash Taher Parvar	2023/09/18

REFERENCE DOCUEMNTS
SCH Ref. DOC.: [11] - MECHANICAL PARTS.kicad_sch
BOM Ref. DOC.: BOM_Blender_v1.0.html
PCB Ref. DOC.: HW_Blender.kicad_pcb
GBR Ref. DOC.: GBR_Blender_v1.0
ASM Ref. DOC.: ASM_Blender_v1.0

PROJECT: Blender

PRJ VER: v1.0 | DOC VER: v1.0 | DOC REV: v1.0

Mend0z0

TITLE: MECHANICAL PARTS

OPEN-SOURCE DOCUMENT

FILE NAME: [11] - MECHANICAL PARTS.kicad_sch

SHEET 11 OF 16 | SIZE: C | SCALE: 1:1 | VARIANT NAME: N/A

REVISION	DESCRIPTION	DATE	APPROVED
v1.0	Initial version	2023/09/18	Siavash Taher Parvar

VIDEO_SIG_BUFF

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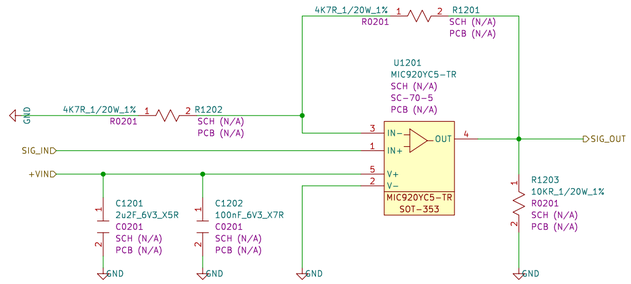

APPROVALS	DATE
ENG: Siavash Taher Parvar	2023/09/18
DSN: Siavash Taher Parvar	2023/09/18
CHK: Siavash Taher Parvar	2023/09/18

REFERENCE DOCUEMNTS
SCH Ref. DOC.: [0501] - VIDEO SIG BUFF.kicad_sch
BOM Ref. DOC.: BOM_Blender_v1.0.html
PCB Ref. DOC.: HW_Blender.kicad_pcb
GBR Ref. DOC.: GBR_Blender_v1.0
ASM Ref. DOC.: ASM_Blender_v1.0

PROJECT: Blender

PRJ VER: v1.0 | DOC VER: v1.0 | DOC REV: v1.0

Mend0z0

TITLE: VIDEO_SIG_BUFF

OPEN-SOURCE DOCUMENT

FILE NAME: [0501] - VIDEO SIG BUFF.kicad_sch

SHEET 12 OF 16 | SIZE: C | SCALE: 1:1 | VARIANT NAME: N/A

REVISION	DESCRIPTION	DATE	APPROVED
v1.0	Initial version	2023/09/18	Siavash Taher Parvar

VIDEO_SIG_BUFF1

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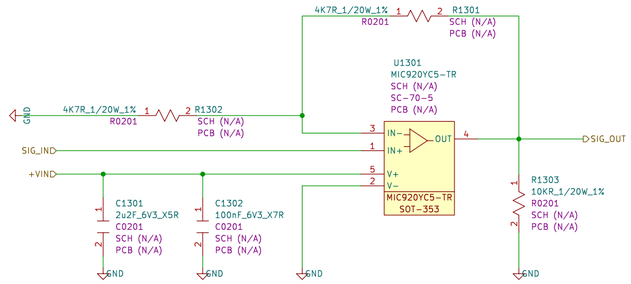


APPROVALS	DATE
ENG: Siavash Taher Parvar	2023/09/18
DSN: Siavash Taher Parvar	2023/09/18
CHK: Siavash Taher Parvar	2023/09/18

REFERENCE DOCUEMNTS
SCH Ref. DOC.: [0501] - VIDEO SIG BUFF.kicad_sch
BOM Ref. DOC.: BOM_Blender_v1.0.html
PCB Ref. DOC.: HW_Blender.kicad_pcb
GBR Ref. DOC.: GBR_Blender_v1.0
ASM Ref. DOC.: ASM_Blender_v1.0

PROJECT: Blender

PRJ VER: v1.0 | DOC VER: v1.0 | DOC REV: v1.0

Mend0z0

TITLE: VIDEO_SIG_BUFF1

OPEN-SOURCE DOCUMENT

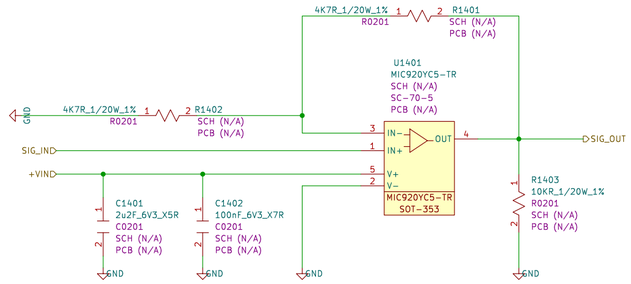
FILE NAME: [0501] - VIDEO SIG BUFF.kicad_sch

SHEET 13 OF 16 | SIZE: C | SCALE: 1:1 | VARIANT NAME: N/A

REVISION	DESCRIPTION	DATE	APPROVED
v1.0	Initial version	2023/09/18	Siavash Taher Parvar

VIDEO_SIG_BUFF2

RELEASED



APPROVALS	DATE
ENG: Siavash Taher Parvar	2023/09/18
DSN: Siavash Taher Parvar	2023/09/18
CHK: Siavash Taher Parvar	2023/09/18

REFERENCE DOCUEMNTS
SCH Ref. DOC.: [0501] - VIDEO SIG BUFF.kicad_sch
BOM Ref. DOC.: _BOM_Blender_v1.0.html
PCB Ref. DOC.: _HW_Blender.kicad_pcb
GBR Ref. DOC.: _GBR_Blender_v1.0
ASM Ref. DOC.: _ASM_Blender_v1.0

PROJECT: Blender

PRJ VER: v1.0 | DOC VER: v1.0 | DOC REV: v1.0

Mend0z0

TITLE: VIDEO_SIG_BUFF2

OPEN-SOURCE DOCUMENT

FILE NAME: [0501] - VIDEO SIG BUFF.kicad_sch

SHEET 14 OF 16 | SIZE: C | SCALE: 1:1 | VARIANT NAME: N/A

REVISION	DESCRIPTION	DATE	APPROVED

PWR SEQUENCE

APPROVALS	DATE
ENG: Siavash Taher Parvar	
DSN: Siavash Taher Parvar	
CHK: Siavash Taher Parvar	

REFERENCE DOCUEMNTS
SCH Ref. DOC.: [12] - PWR SEQUENCE.kicad_sch
BOM Ref. DOC.:
PCB Ref. DOC.:
GBR Ref. DOC.:
ASM Ref. DOC.:

PROJECT:

PRJ VER: | DOC VER: | DOC REV:

Mend0z0

TITLE: PWR SEQUENCE

OPEN-SOURCE DOCUMENT

FILE NAME: [12] - PWR SEQUENCE.kicad_sch

SHEET 15 OF 16 | SIZE: C | SCALE: 1:1 | VARIANT NAME:

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REVISION HISTORY

REVISION	DESCRIPTION	DATE	APPROVED

APPROVALS	DATE
ENG: Siavash Taher Parvar	
DSN: Siavash Taher Parvar	
CHK: Siavash Taher Parvar	

REFERENCE DOCUEMNTS
SCH Ref. DOC.: [13] - REVISION HISTORY.kicad_sch
BOM Ref. DOC.:
PCB Ref. DOC.:
GBR Ref. DOC.:
ASM Ref. DOC.:

PROJECT:

PRJ VER: | DOC VER: | DOC REV:

Mend0z0

TITLE: REVISION HISTORY

OPEN-SOURCE DOCUMENT

FILE NAME: [13] - REVISION HISTORY.kicad_sch

SHEET 16 OF 16 | SIZE: C | SCALE: 1:1 | VARIANT NAME: