

## **TAS5622-TAS5624DDVEVM**

This user's guide provides specifications for the evaluation module (EVM) for TAS5622 and TAS5624 Digital Input Class-D Power Stages with the TAS5558 Digital Audio Processor with PWM Output from Texas Instruments. The user's guide also describes operation of the EVM and provides design information including schematic, bill of materials, and PCB layout.

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## 1 Introduction

The TAS5622-TAS5624DDVEVM PurePath™ EVM demonstrates the current version of TAS5622DDV or TAS5624DDV integrated circuit power stage with TAS5558DGG from Texas Instruments (TI).

The TAS5622 and TAS5624 are high-performance, integrated Stereo Feedback Digital Amplifier Power Stages designed to drive 3Ω speakers at up to 200W per channel for TAS5624DDV and 165W per channel for TAS5622DDV. They require only a passive demodulation filter to deliver efficient high quality audio amplification.

TAS5558DGG is a high performance 32 bit (24 bit input) multi channel PurePath™ Digital Pulse Width Modulator (PWM) with fully symmetrical AD modulation scheme. The device also has Digital Audio Processing (DAP) that provides 48 bit signal processing, advanced performance and a high level of system integration.

This EVM can be configured as 2 BTL channels for stereo evaluation or 1 PBTL (parallel BTL) channel for subwoofer evaluation. Together with a TI Input-USB Board 3, it provides a complete stereo digital audio amplifier system which includes digital input (S/PDIF), analog inputs, interface to PC and DAP features like digital volume control, input and output mixers, automute, tone controls, loudness, EQ filters and dynamic range compression (DRC). There are configuration options for power stage failure protection.

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**NOTE:** TAS5622-TAS5624DDVEVM IS SHIPPED WITH THE CURRENT VERSION OF TAS5624 INSTALLED. TO EVALUATE THE CURRENT VERSION OF TAS5622 PLEASE VISIT THE PRODUCT FOLDER AT [www.ti.com](http://www.ti.com) AND REQUEST A FREE SAMPLE, AND REPLACE TAS5624 WITH TAS5622.

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**Table 1. TAS5622-TAS5624DDVEVM Specification**

| Key Parameters               | Values                   |
|------------------------------|--------------------------|
| TAS5624 Power Supply Voltage | 12 - 38 Vdc              |
| TAS5622 Power Supply Voltage | 12 - 34 Vdc              |
| Number of Channels           | 2 x BTL or 1 x PBTL      |
| Load Impedance BTL           | 3-8 Ohm                  |
| Load Impedance PBTL          | 1.5-4 Ohm                |
| TAS5624 Output power BTL     | 200W / 3Ohm / 10%THD+N   |
| TAS5624 Output power PBTL    | 400W / 1.5Ohm / 10%THD+N |
| TAS5622 Output power BTL     | 165W / 3Ohm / 10%THD+N   |
| TAS5622 Output power PBTL    | 325W / 1.5Ohm / 10%THD+N |
| Dynamic Range (DNR)          | >105 dB                  |
| PWM Processor                | TAS5558DGG               |
| Output Stage                 | TAS5624DDV or TAS5622DDV |

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**NOTE:** The heatsink in TAS5622-TAS5624DDVEVM is designed to comply with time requirements of the “Amplifier Rule”, US Federal Trade Commission 16 CFR 432, when the EVM is operated at power levels specified above. If continuous operation at specified output power is required it is necessary to provide forced air flow through the heatsink.

(The FTC regulation specifies operation in 25°C ambient temperature for one hour at 1/8 specified output power (25.0W per channel for TAS5624DDVEVM, 20.63W per channel for TAS5622DDVEVM) and then for 5 minutes at specified output power (200W per channel for TAS5624DDVEVM, 165W per channel for TAS5622DDVEVM). Then distortion vs. output power can be measured. TAS5622-TAS5624DDVEVM provides specified output power for several minutes or more without thermal shutdown. THD is not specified for this test but is typically near 10%.)

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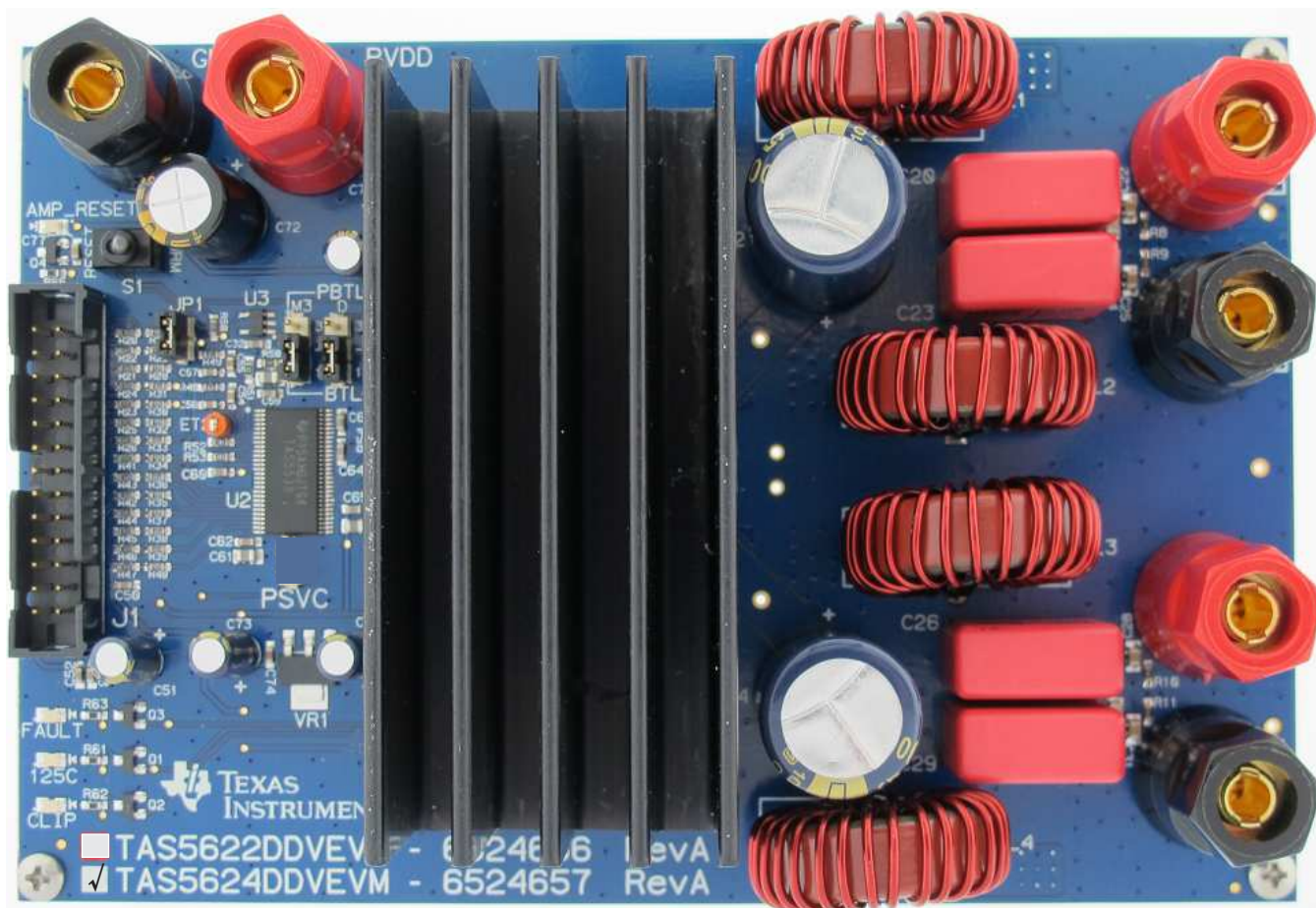


Figure 1. TAS5622-TAS5624DDVEVM

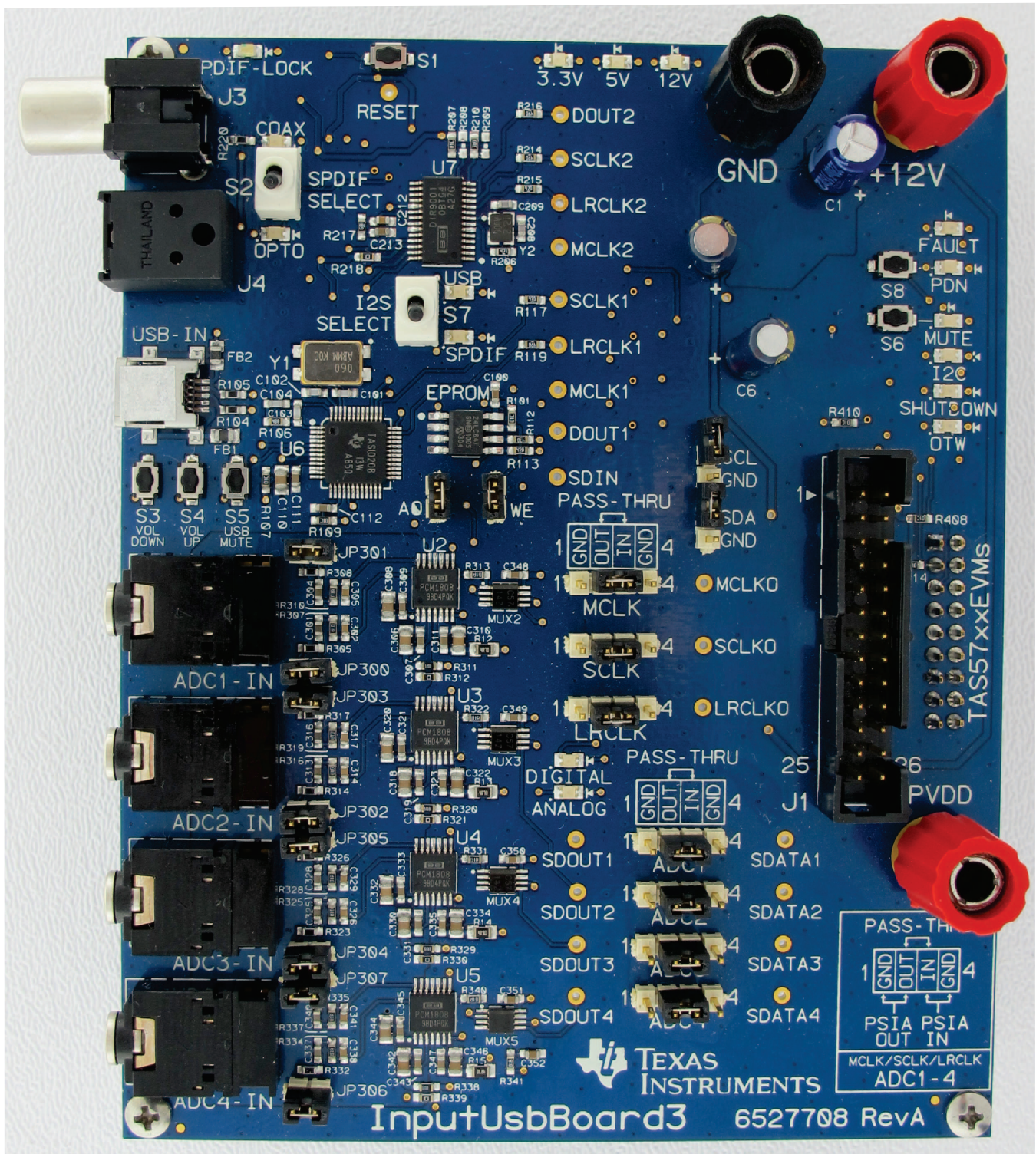


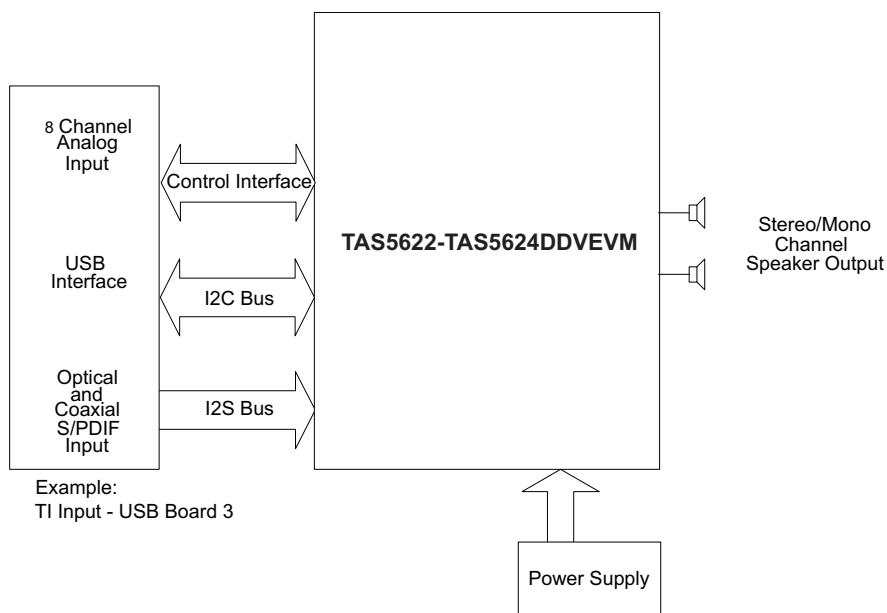
Figure 2. Input-USB Board3

Gerber (layout) files are available at: <http://www.ti.com>.

The EVM is delivered with cables and a TI Input-USB Board 3 to connect to an input source and to a PC for control. Refer to the section "Unpacking the EVM" below.

### TAS5622-TAS5624DDVEVM Features

- Stereo PurePath Digital™ evaluation module.
- Self-contained protection system (overcurrent, overtemperature, undervoltage and missing PWM input).
- Standard I<sup>2</sup>S and I<sup>2</sup>C / Control connector for TI input board
- Double-sided plated-through PCB layout.



**Figure 3. Integrated PurePath Digital™ Amplifier System**

### EVM Physical Structure

Physical structure of the TAS5622-TAS5624DDVEVM is illustrated in [Figure 4](#).

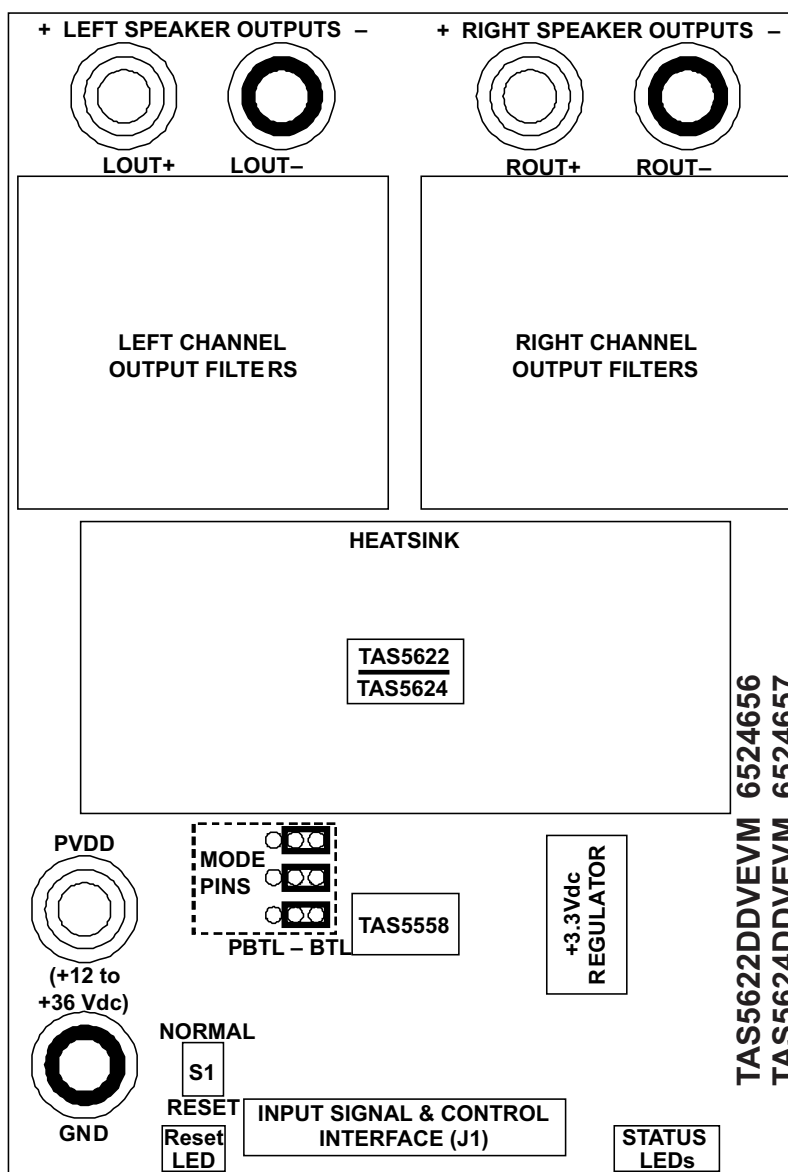


Figure 4. Physical Structure of the TAS5622-TAS5624DDVEVM (Approximate Layout)

## 2 Quick Setup Guide

This section describes the TAS5622-TAS5624DDVEVM power supplies and system interfaces. It provides information regarding handling and unpacking, absolute operating conditions, and switch and jumper positions. It also provides a step-by-step guide to setting up the TAS5622-TAS5624DDVEVM for device evaluation.

### 2.1 Electrostatic Discharge Warning

Many of the components of the TAS5622-TAS5624DDVEVM are susceptible to damage by electrostatic discharge (ESD). Customers are advised to observe proper ESD handling precautions when unpacking and handling the EVM, including the use of a grounded wrist strap at an approved ESD workstation.

### CAUTION

Failure to observe ESD handling procedures can result in damage to EVM components.

## Unpacking the EVM

Upon opening the TAS5622-TAS5624DDVEVM package, check to make sure that the following items are included:

- 1 pc. TAS5622-TAS5624DDVEVM using 1 TAS5558DGG and 1 TAS5622DDV or TAS5624DDV.
- 1 pc. TI Input-USB Board 3 for interfacing TAS5622-TAS5624DDVEVM to SPDIF/analog sources and PC for control.
- 1 pc. Signal and Control Interface IDC cable for connection to an I<sup>2</sup>S front-end like the Input-USB Board 3.
- 1 pc. Cable for connecting Input-USB Board 3 to a USB port on a PC for TAS5558 control by software.
- If any of these items are missing, contact the nearest Texas Instruments Product Information Center to inquire about a replacement.

Connect the Input-USB Board 3 to the TAS5622/14LDDVEVM using the delivered IDC cable.

## Power Supply Setup

2 power supplies are needed to power the TAS5622-TAS5624DDVEVM. Voltage and current requirements for the PVDD power supply are shown in the table below. Connect this power supply to the EVM using banana cables or wires secured to the power supply binding posts PVDD and GND. A second power supply, 12Vdc at 500mA, is required to power Input-USB Board 3. Connect the 12V power supply to the Input-USB Board 3 using banana cables or wires secured to the power supply binding posts +12V and GND.

**Table 2. Recommended PVDD Power Supply Voltages**

| Description                  | Voltage Range | Current Requirements | Binding Post |
|------------------------------|---------------|----------------------|--------------|
| TAS5624 Power Supply Voltage | 12 - 38 Vdc   | 20 A                 | PVDD         |
| TAS5622 Power Supply Voltage | 12 - 34 Vdc   | 18 A                 | PVDD         |

### CAUTION

NOTE: Applying voltages above specifications in [Table 2](#) can cause permanent damage to the hardware. Verify polarity of power supply connections before powering the EVM.

**NOTE:** The length of the power supply cable must be minimized. Increasing length of PSU cable is likely to increase distortion for the amplifier at high output levels and low frequencies.

## 2.2 Speaker Connection

### CAUTION

Both positive and negative speaker outputs are floating and cannot be connected to ground (e.g. through an oscilloscope). To measure a BTL output connect an oscilloscope probe to each side of the output, connect both ground clips to EVM ground and use the oscilloscope math functions to show the difference between the 2 probe signals.

## 2.3 Output Configuration BTL and PBTL

When changing mode from BTL to PBTL, make sure that the AMP\_RESET switch is set to RESET before changing shunts on Mode headers M3, D and C.

- For BTL mode place a shunt on pins 1 and 2 of each header, at the positions marked BTL.
- For PBTL mode place a shunt on pins 3 and 2 of each header, at the positions marked PBTL.

In PBTL mode the load must be connected according to [Figure 5](#):

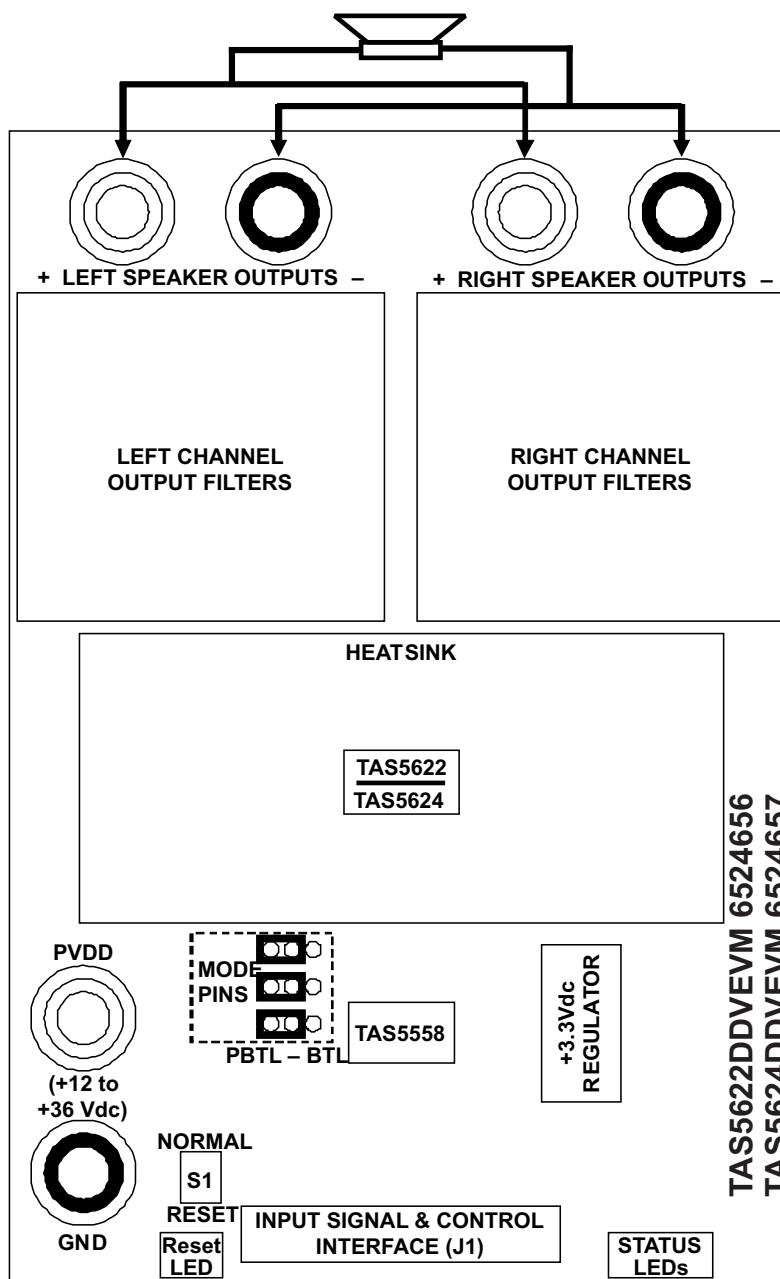


Figure 5. PBTL Mode Configuration

## 2.4 GUI Software Installation and EVM Startup

The TAS5622-TAS5624DDVEVM is controlled by the Input-USB Board 3 with the TAS5558 GUI. The TAS5558 GUI provides control of all registers in TAS5558. Download the current version of the GUI zip file "TAS5558\_xxxx.zip" from the TAS5622DDVEVM folder or the TAS5624DDVEVM folder on <http://www.ti.com> to a convenient location on the host PC. Create a new folder at a convenient location and extract the files from the zip file to the new folder. Be sure to check the box labeled "Use folder names" during extraction. Then connect the USB cable between the host PC and jack USB-IN on the Input-USB Board 3. Then turn on the 12V power supply and the PVDD power supply in that order.

Start the GUI by opening "TAS55XX\_GUI.exe" in the new folder. Startup will take a few seconds and the following window will open.

Click CONNECT and then READ, to verify that the data in register **0x00** read **6C**.

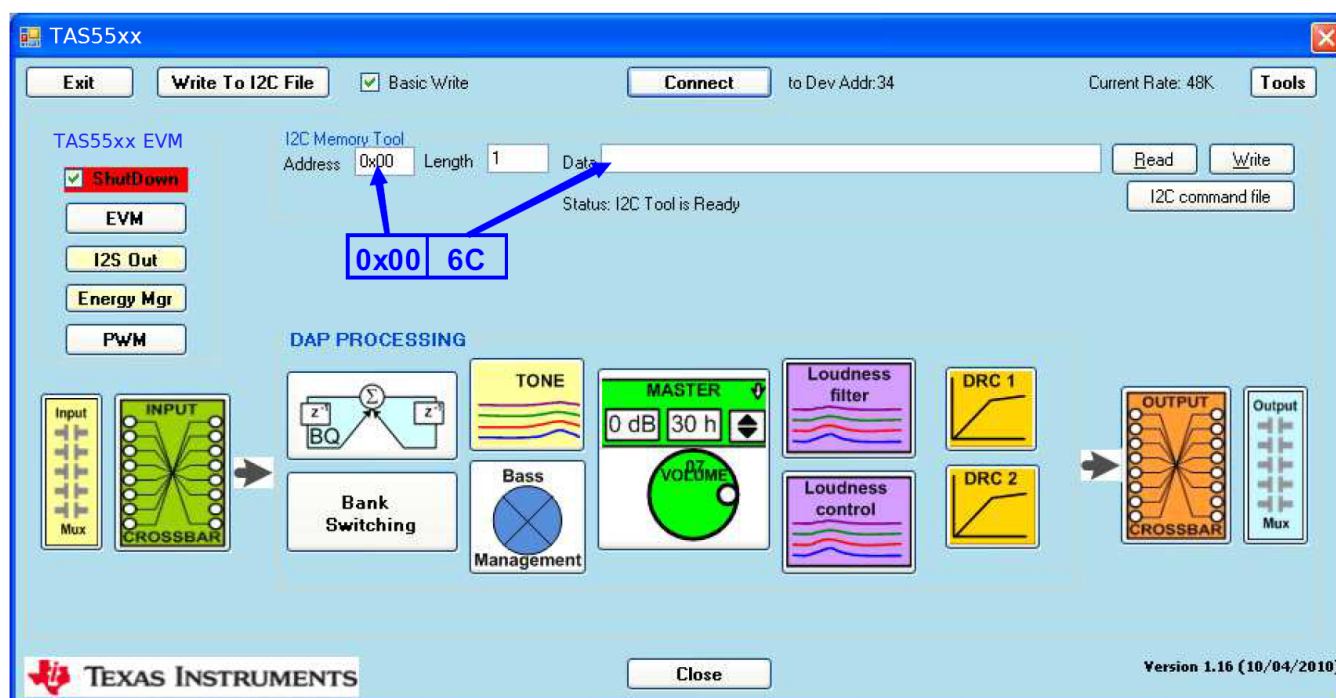
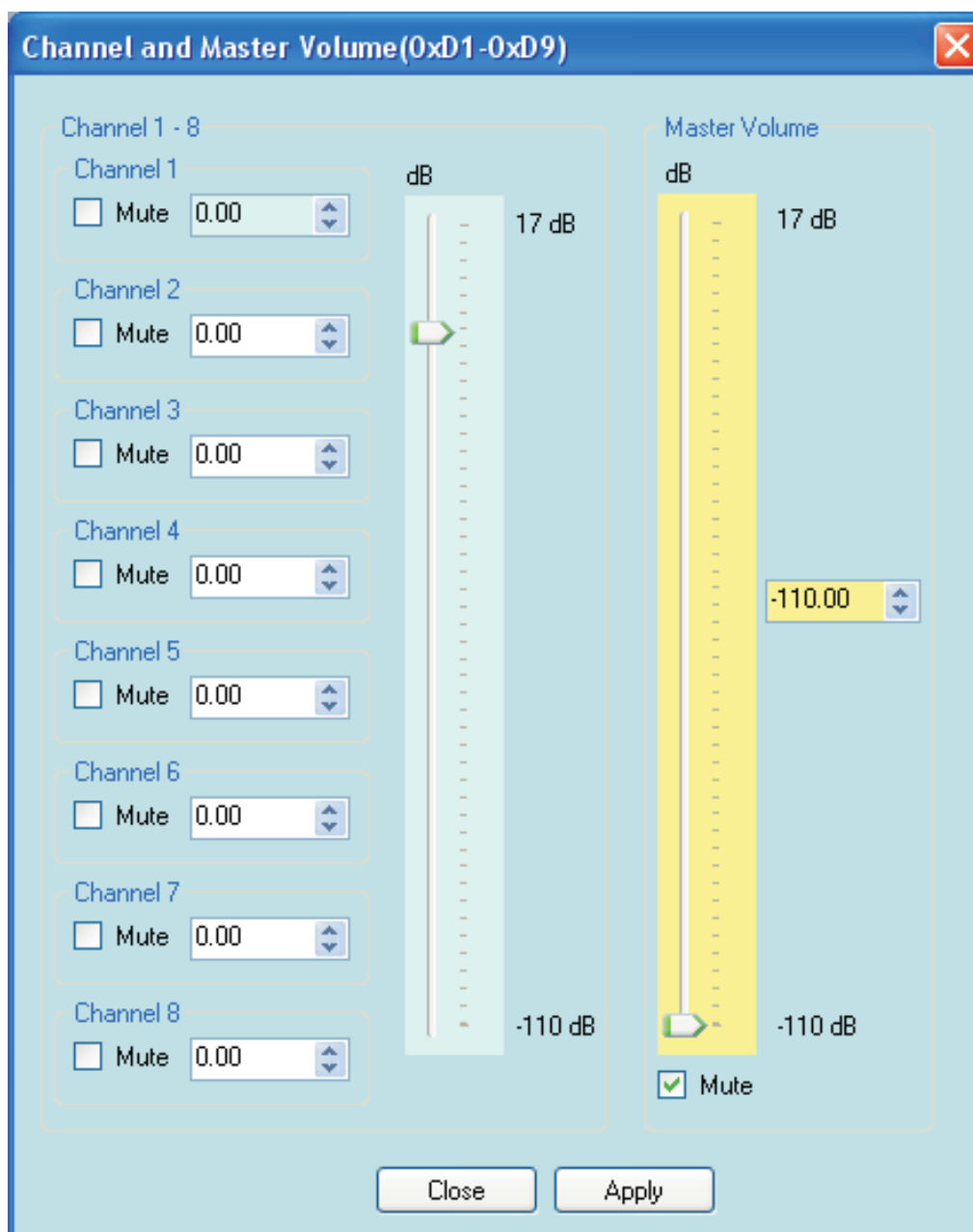


Figure 6. TAS5558 GUI Window

**NOTE:** If the address that is read is not **6C**, make sure the USB is connected to the PC and check for HID enumeration.

- Open the PC device manager. Right-click My Computer on desktop and open Properties, then Hardware, then Device Manager.
- Expand "Human Interface Devices".
- Plug and unplug the USB cable from Input-USB Board 3 and confirm that an HID icon appears.

Uncheck "ShutDown" and click the "Master Volume" icon to open the following window.



**Figure 7. Channel and Master Volume GUI**

Uncheck mute and increase volume to the desired level, and close the window. Then press the MUTE switch on Input-USB Board 3 to extinguish the MUTE LED. The EVM should now operate.

**NOTE:** In some cases when power is cycled on the DUT or Input-USB Board 3 but the GUI is not closed, it will be necessary to take an action like checking and unchecking mute to force I2C communication to refresh TAS5558. In some cases the startup process must be repeated.

An SPDIF input may be provided to Input-USB Board 3 by coax to jack COAX or by optical connection to jack OPTO. Alternatively an analog input may be connected to jack ADC1\_IN. An analog input will override an SPDIF input.

## 2.5 Self-Protection and Fault Reporting

The TAS5622 and TAS5624 are self-protecting devices that provide overtemperature, overcurrent, undervoltage and missing-PWM-input protection, with extensive fault reporting. For full descriptions of these functions consult data sheet SLAS845 for TAS5622A and data sheet SLAS844 for TAS5624A.

## 3 Related Documentation from Texas Instruments

The following table lists data sheets that provide detailed descriptions of integrated circuits from TI that are used in the TAS5622-TAS5624DDVEVM. These data sheets can be obtained at <http://www.ti.com>.

**Related Documentation from Texas Instruments**

| Part Number | Literature Number       |
|-------------|-------------------------|
| TAS5558     | <a href="#">SLES255</a> |
| TAS5622A    | <a href="#">SLAS845</a> |
| TAS5624A    | <a href="#">SLAS844</a> |
| TPS3825-33  | <a href="#">SLVS165</a> |
| TLV1117-33C | <a href="#">SLVS561</a> |

### 3.1 Additional Documentation

1. *System Design Considerations for True Digital Audio Power Amplifiers* ([SLAA117](#))
2. *Digital Audio Measurements* ([SLAA114](#))
3. *PSRR for PurePath Digital Audio Amplifiers* ([SLEA049](#))
4. *Power Rating in Audio Amplifier* ([SLEA047](#))
5. *PurePath Digital AM Interference Avoidance* ([SLEA040](#))
6. *Click & Pop Measurements Technique* ([SLEA044](#))
7. *Power Supply Recommendations for DVD-Receivers* ([SLEA027](#))
8. *Implementation of Power Supply Volume Control* ([SLEA038](#))

## Appendix A Design Information

This appendix includes design information for the TAS5622-TAS5624DDVEVM. This information is presented in the following order.

- [Table 3](#) EVM Bill of Materials
- [Section A.1](#) EVM Custom Component Vendors
- [Section A.2](#) TAS5622-TAS5624LDDVEVM PCB Specification
- [Section A.3](#) EVM PCB Layers
- [Section A.4](#) EVM and Input-USB Board 3 Schematics

**Table 3. Bill of Materials for TAS5624DDVEVM**

| Manu Part No.            | Qty | Ref Des                                                                         | Vendor Part No.  | Description                                                  | Vendor            | Manu              |
|--------------------------|-----|---------------------------------------------------------------------------------|------------------|--------------------------------------------------------------|-------------------|-------------------|
| <b>TI-SEMICONDUCTORS</b> |     |                                                                                 |                  |                                                              |                   |                   |
| TAS5624DDV               | 1   | U1                                                                              | TAS5624DDV       | 150W-STEREO/300W-MONO PUREPATH DIGITAL AMP HTSSOP44-DDV ROHS | Texas Instruments | Texas Instruments |
| TAS5558DGG               | 1   | U2                                                                              | TAS5558DGG       | 8 CHANNEL HD COMPATIBLE AUDIO PROCESSOR TSSOP56-DGG ROHS     | Texas Instruments | Texas Instruments |
| TPS3825-33DBVT           | 1   | U3                                                                              | 296-2636-1       | PROCESSOR SUPERVISORY CIRCUITS 2.93V 200ms SOT23-DBV5 ROHS   | Digi-Key          | Texas Instruments |
| TLV1117-33CDCYR          | 1   | VR1                                                                             | 296-21112-1-ND   | VOLT REG LDO 3.3V 800mA SOT223-DCY ROHS                      | Digi-Key          | Texas Instruments |
| <b>SEMICONDUCTORS</b>    |     |                                                                                 |                  |                                                              |                   |                   |
| 2N7002                   | 4   | Q1, Q2, Q3, Q4                                                                  | 2N7002NCT        | N-FET 60V 115mA 200mW 7.5 OHM@10V SOT23-DBV3 ROHS            | Digi-Key          | Fairchild         |
| SML-LXT0805SRW-TR        | 3   | 125C, FAULT, AMP_RESET                                                          | 67-1555-1        | LED, RED 2.0V SMD0805 ROHS                                   | Digi-Key          | Lumex Opto        |
| SML-LXT0805YW-TR         | 1   | CLIP                                                                            | 67-1554-1        | LED, YELLOW 2.0V SMD0805 ROHS                                | Digi-Key          | Lumex Opto        |
| <b>CAPACITORS</b>        |     |                                                                                 |                  |                                                              |                   |                   |
| C1206C102K1RACTU         | 4   | C21, C24, C27, C30                                                              | 399-1222-1       | CAP SMD1206 CERM 1000PFD 100V 1% C0G ROHS                    | Digi-Key          | Kemet             |
| GRM188R71H472KA01D       | 2   | C54, C55                                                                        | 490-1506-1       | CAP SMD0603 CERM 4700PFD 50V 10% X7R ROHS                    | Digi-Key          | Murata            |
| GRM21BR72A103KA01L       | 5   | C22, C25, C28, C31, C70                                                         | 490-1652-1       | CAP SMD0805 CERM 0.01UFD 100V 10% X7R ROHS                   | Digi-Key          | Murata            |
| GRM188R71H333KA61D       | 4   | C16, C17, C18, C19                                                              | 490-3286-1-ND    | CAP SMD0603 CERM 0.033UFD 50V 10% X7R ROHS                   | Digi-Key          | Murata            |
| GRM188R71C473KA01D       | 2   | C56, C57                                                                        | 490-1529-1       | CAP SMD0603 CERM 0.047UFD 16V 10% ROHS                       | Digi-Key          | Murata            |
| GRM188R71C104KA01D       | 17  | C2, C3, C4, C7, C32, C50, C52, C53, C59, C60, C62, C63, C64, C65, C74, C76, C77 | 490-1532-1-ND    | CAP SMD0603 CERM 0.1UFD 16V 10% X7R ROHS                     | Digi-Key          | Murata            |
| MKP4 -.68/250/20         | 4   | C20, C23, C26, C29                                                              | MKP4 -.68/250/20 | CAP POLYPRO FILM MKP4 0.68UFD 250V 20% ROHS                  | WIMA              | WIMA              |
| C1608X7R1C105K           | 2   | C5, C6                                                                          | 445-1604-1       | CAP SMD0603 CERM 1.0UFD 16V 10% X7R ROHS                     | Digi-Key          | TDK               |
| GRM21BR71H105KA12L       | 5   | C8, C9, C10, C11, C71                                                           | 490-4736-1-ND    | CAP SMD0805 CERM 1.0UFD 50V 10% X7R ROHS                     | Digi-Key          | Murata            |
| GRM21BR61C106KE15L       | 3   | C58, C61, C66                                                                   | 490-3886-1       | CAP SMD0805 CERM 10UFD 16V 10% X5R ROHS                      | Digi-Key          | Murata            |
| <b>CAPACITORS</b>        |     |                                                                                 |                  |                                                              |                   |                   |
| EEU-FC1C470              | 4   | C1, C51, C73, C75                                                               | P11196           | CAP 47UFD 16V RAD ALUM ELEC FC ROHS                          | Digi-Key          | Panasonic         |

**Table 3. Bill of Materials for TAS5624DDVEVM (continued)**

| Manu Part No.                  | Qty | Ref Des                                                                                       | Vendor Part No.  | Description                                          | Vendor     | Manu                  |
|--------------------------------|-----|-----------------------------------------------------------------------------------------------|------------------|------------------------------------------------------|------------|-----------------------|
| UKZ1H470MPM                    | 1   | C72                                                                                           | 493-3194         | CAP ALUM ELEC KZ RADIAL 47UF 50V 20% ROHS            | Digi-Key   | Nichicon              |
| EEU-FC1H102                    | 2   | C12, C14                                                                                      | P10333-ND        | CAP ALUM ELEC FC RADIAL 1000UF 50V 20% ROHS          | Digi-Key   | Panasonic             |
| <b>RESISTORS</b>               |     |                                                                                               |                  |                                                      |            |                       |
| RMCF0402ZT0R00                 | 2   | R12, R13                                                                                      | RMCF0402ZT0R00CT | ZERO OHM JUMPER SMT 0402 0 OHM 1/16W,5% ROHS         | Digi-Key   | Stackpole Electronics |
| ERJ-3GEY0R00V                  | 1   | R51                                                                                           | P0.0GCT          | RESISTOR SMD0603 0.0 OHM 5% THICK FILM 1/10W ROHS    | Digi-Key   | Panasonic             |
| ERJ-3GEYJ1R0V                  | 1   | R50                                                                                           | P1.0GCT          | RESISTOR SMD0603 1.0 OHMS 1% THICK FILM 1/10W ROHS   | Digi-Key   | Panasonic             |
| ERJ-3GEYJ3R3V                  | 8   | R1, R7, R8, R9, R10, R11, R14, R60                                                            | P3.3GCT          | RESISTOR SMD0603 3.3 OHMS 5% 1/10W ROHS              | Digi-Key   | Panasonic             |
| ERJ-3GEYJ470V                  | 19  | R27, R28, R29, R30, R31, R32, R33, R34, R35, R36, R37, R38, R39, R40, R54, R55, R56, R57, R58 | P47GCT           | RESISTOR SMD0603 47 OHMS 5% 1/10W ROHS               | Digi-Key   | Panasonic             |
| CRCW0603100RFKEA               | 3   | R4, R5, R6                                                                                    | 541-100HCT       | RESISTOR SMD0603 100 OHM 1/10W 1% ROHS               | Digi-Key   | Vishay                |
| ERJ-3GEYJ471V                  | 2   | R48, R49                                                                                      | P470GCT          | RESISTOR SMD0603 470 OHMS 5% 1/10W ROHS              | Digi-Key   | Panasonic             |
| ERJ-3GEYJ472V                  | 4   | R61, R62, R63, R65                                                                            | P4.7KGCT         | RESISTOR SMD0603 4.7K OHMS 5% 1/10W ROHS             | Digi-Key   | Panasonic             |
| ERJ-3EKF1002V                  | 14  | R20, R21, R22, R23, R24, R25, R26, R41, R42, R43, R44, R45, R46, R47                          | P10.0KHCT        | RESISTOR SMD0603 10.0K 1% THICK FILM 1/10W ROHS      | Digi-Key   | Panasonic             |
| RMCF0603FT15K0                 | 1   | R52                                                                                           | RMCF0603FT15K0CT | RESISTOR SMD0603 15.0K OHMS 1% 1/10W ROHS            | Digi-Key   | Stackpole Electronics |
| RC0603FR-0718KL                | 1   | R53                                                                                           | 311-18.0KHRCT    | RESISTOR SMD0603 THICK FILM 18.0K OHMS 1% 1/10W ROHS | Digi-Key   | Yageo                 |
| RC0603FR-0730KL                | 1   | R2                                                                                            | 311-30.0KHRCT    | RESISTOR SMD0603 THICK FILM 30.0K 1% 1/10W ROHS      | Digi-Key   | Yageo                 |
| ERJ-3GEYJ473V                  | 1   | R3                                                                                            | P47KGCT          | RESISTOR SMD0603 47K OHMS 5% 1/10W ROHS              | Digi-Key   | Panasonic             |
| <b>INDUCTORS</b>               |     |                                                                                               |                  |                                                      |            |                       |
| MA5173-AE                      | 4   | L1, L2, L3, L4                                                                                | MA5173-AE        | SHIELDED POWER INDUCTOR 7uH 12A ROHS                 | Coil Craft | Coil Craft            |
| <b>HEADERS</b>                 |     |                                                                                               |                  |                                                      |            |                       |
| N2526-6002-RB                  | 1   | J1                                                                                            | MHC26K-ND        | HEADER SHROUDED 100LS MALE GOLD 2X13 PINS ROHS       | Digi-Key   | 3M                    |
| PBC02SAAN                      | 1   | JP1                                                                                           | S1011E-02-ND     | HEADER THRU MALE 2 PIN 100LS GOLD ROHS               | Digi-Key   | Sullins               |
| PBC03SAAN                      | 3   | C, D, M3                                                                                      | S1011E-03-ND     | HEADER THRU MALE 3 PIN 100LS GOLD ROHS               | Digi-Key   | Sullins               |
| <b>TESTPOINTS AND SWITCHES</b> |     |                                                                                               |                  |                                                      |            |                       |
| 5003                           | 1   | ET2                                                                                           | 5003K            | PC TESTPOINT, ORANGE, ROHS                           | Digi-Key   | Keystone Electronics  |
| G12AP-RO                       | 1   | S1                                                                                            | 360-1758         | SWITCH THRU SPDT STRAIGHT ULTRA MINIATURE ROHS       | Digi-Key   | NKK                   |
| <b>BINDING POSTS</b>           |     |                                                                                               |                  |                                                      |            |                       |
| 5018-0                         | 3   | GND, LOUT-, ROUT-                                                                             | 565-5018-0       | BINDING POST, BLACK 60V 30A GOLD ROHS                | Mouser     | Pomona                |

**Table 3. Bill of Materials for TAS5624DDVEVM (continued)**

| Manu Part No.                                                                             | Qty | Ref Des                            | Vendor Part No.    | Description                                                | Vendor        | Manu          |
|-------------------------------------------------------------------------------------------|-----|------------------------------------|--------------------|------------------------------------------------------------|---------------|---------------|
| 5018-2                                                                                    | 3   | PVDD,<br>LOUT+,<br>ROUT+           | 565-5018-2         | BINDING POST, RED 60V 30A GOLD ROHS                        | Mouser        | Pomona        |
| <b>SHUNTS</b>                                                                             |     |                                    |                    |                                                            |               |               |
| SPC02SYAN                                                                                 | 4   | JP1, C(1-2),<br>D(1-2),<br>M3(1-2) | S9001              | SHUNT, BLACK AU FLASH 0.100LS                              | Digi-Key      | Sullins       |
| <b>HEAT SINKS AND HARDWARE</b>                                                            |     |                                    |                    |                                                            |               |               |
| ATSTI1OP-519-C1-R3                                                                        | 1   | HS1                                | ATSTI1OP-519-C1-R3 | HEATSINK ALUMINUM ATS 36x78mm<br>36.8mm PITCH ROHS         | ATS           | ATS           |
| 92000A118                                                                                 | 2   | HS1                                | 92000A118          | PHILIPS PANHEAD SCREW M3x8mm<br>STAINLESS STEEL ROHS       | McMaster-Carr | McMaster-Carr |
| 92148A150                                                                                 | 2   | HS1                                | 92148A150          | SPLIT WASHER M3 STAINLESS STEEL<br>ROHS                    | McMaster-Carr | McMaster-Carr |
| 94868A178                                                                                 | 4   | NA                                 | 94868A178          | STANDOFF M3x25mm 4.5mm DIA HEX<br>STAINLESS STEEL F-F ROHS | McMaster-Carr | McMaster-Carr |
| 92000A118                                                                                 | 4   | NA                                 | 92000A118          | PHILIPS PANHEAD SCREW M3x8mm<br>STAINLESS STEEL ROHS       | McMaster-Carr | McMaster-Carr |
| 92148A150                                                                                 | 4   | NA                                 | 92148A150          | SPLIT WASHER M3 STAINLESS STEEL<br>ROHS                    | McMaster-Carr | McMaster-Carr |
| Component Count:                                                                          | 163 |                                    |                    |                                                            |               |               |
| <b>COMPONENTS NOT ASSEMBLED</b>                                                           |     |                                    |                    |                                                            |               |               |
| CR1, CR2, CR3, CR4, L+, L-, OA, OB, OC, OD, R+, R-, PVDD_AB, PVDD_CD, M1, M2, GNDx2, PSVC |     |                                    |                    |                                                            |               |               |

## A.1 EVM Custom Component Vendors

TAS5622DDVEVM and TAS5624DDVEVM include inductors and heatsinks from 2 custom component vendors designed specifically for the EVMs. These vendors carry stock for small orders on their shelves..

Advanced Thermal Solutions (ATS), in Norwood, MA, USA, provide a heatsink optimized for these EVMs, ATS-TI1OP-519-C1. Information on this heatsink can be obtained from Leonard Alter at [alter@gats.com](mailto:alter@gats.com). ATS design and manufacture a large line of off-the-shelf and patented high performance heatsinks. They also design and manufacture research quality thermal test and measurement equipment and offer thermal evaluation and design services. Information about their products and services is available at [www.gats.com](http://www.gats.com).

Coilcraft, in Cary, IL, USA, provide a 7μH inductor optimized for these EVMs, MA5173-AE. Information on this component can be found in the data sheet for the MA5172 inductor family at [www.coilcraft.com](http://www.coilcraft.com). Coilcraft make a variety of other inductors for Class D amplifiers, most of which are AEC-Q200 Grade 1 certified for automotive applications. Free evaluation samples and on-line ordering are available at [www.coilcraft.com](http://www.coilcraft.com).

## A.2 TAS5622-TAS5624LDDVEVM PCB Specification

|                          |                                                          |
|--------------------------|----------------------------------------------------------|
| PCB IDENTIFICATION:      | TAS5622-TAS5624DDVEVM_RevA                               |
| PCB TYPE:                | DOUBLE-SIDED PLATED-THROUGH                              |
| PCB SIZE:                | 142 x 96 mm                                              |
| LAMINATE TYPE:           | FR4                                                      |
| LAMINATE THICKNESS:      | 1.6mm                                                    |
| COPPER THICKNESS:        | 70 µm (2 ounce) (INCLUDING PLATING EXTERIOR LAYER)       |
| COPPER PLATING IN HOLES: | 70 µm (2 ounce)                                          |
| MINIMUM HOLE DIAMETER:   | 0.3 mm (12 mils)                                         |
| SILKSCREEN:              | WHITE - REMOVE SILKSCREEN FROM SOLDER & PRE-TINNED AREAS |
| SOLDER MASK:             | BLUE                                                     |
| APPROX. HOLE COUNT:      | 570                                                      |
| PROTECTIVE COATING:      | ENIG (ELECTROLESS NICKEL / IMMERSION GOLD)               |
| ELECTRICAL TEST:         | PCB MUST BE ELECTRICAL TESTED                            |
| COMMENTS:                | FAB NOTES ARE IN THE DRILL DRAWING FILE                  |

## A.3 EVM PCB Layers

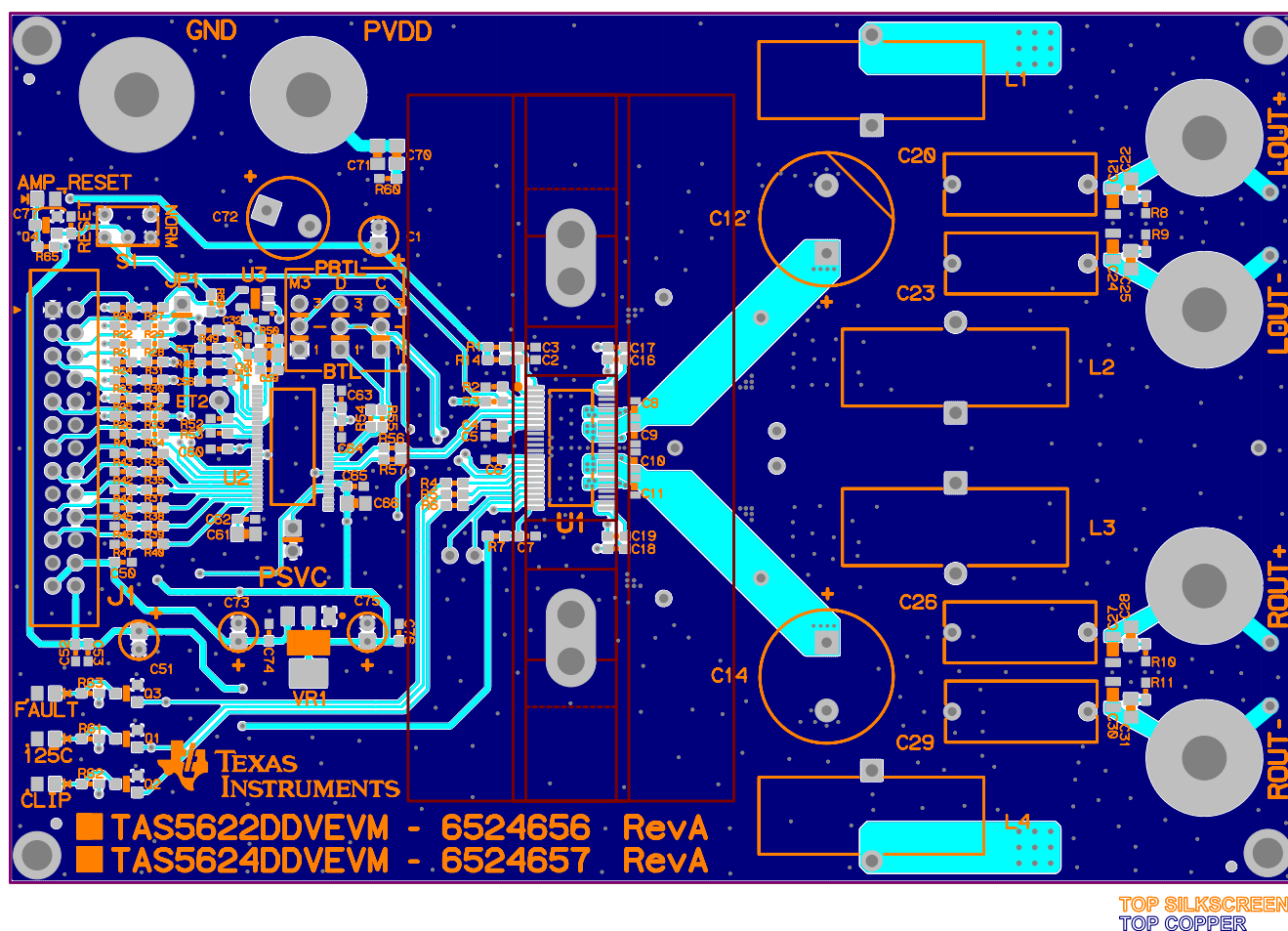


Figure 8. Top Composite PCB Layer

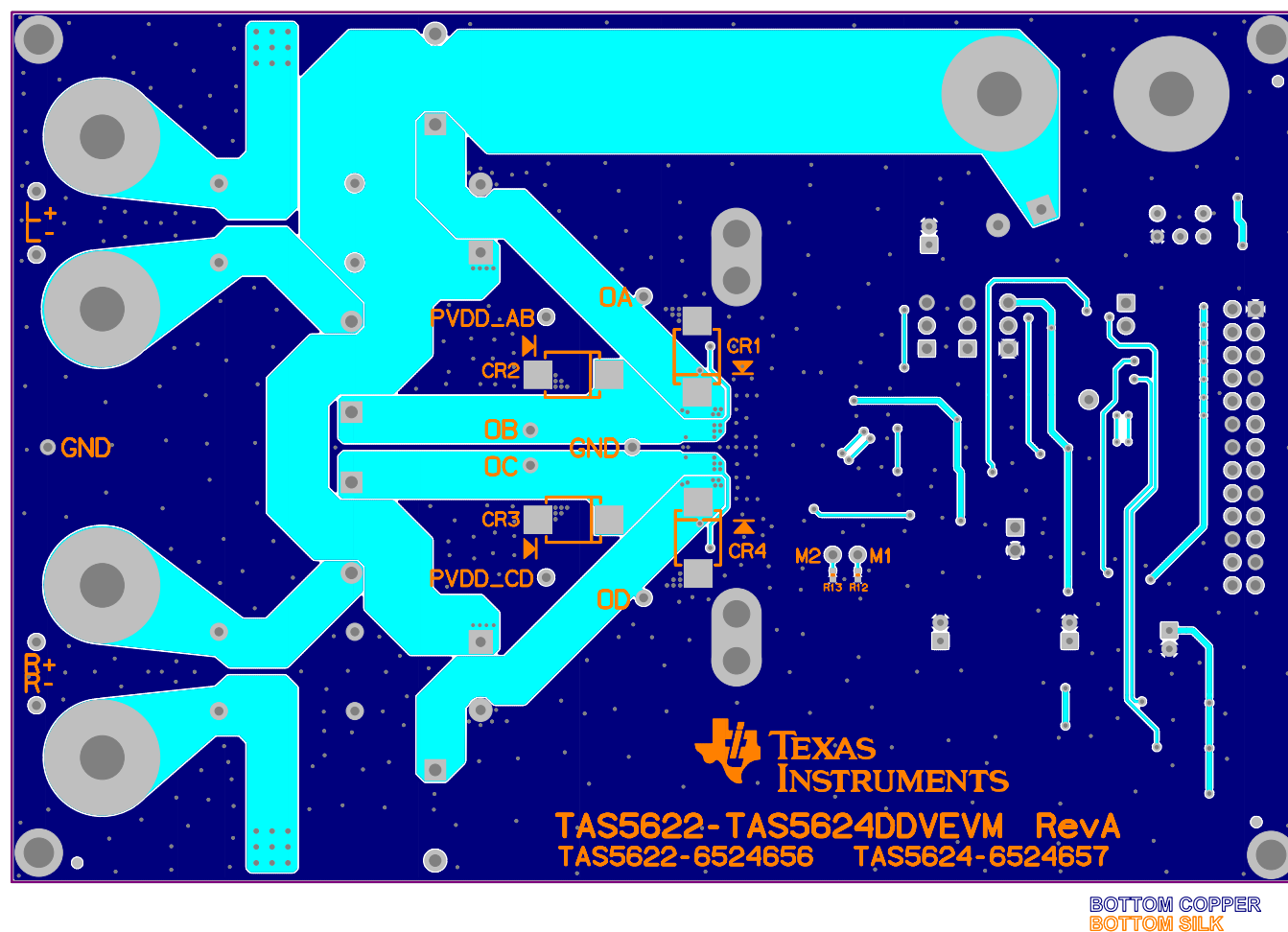


Figure 9. Bottom Composite PCB Layer

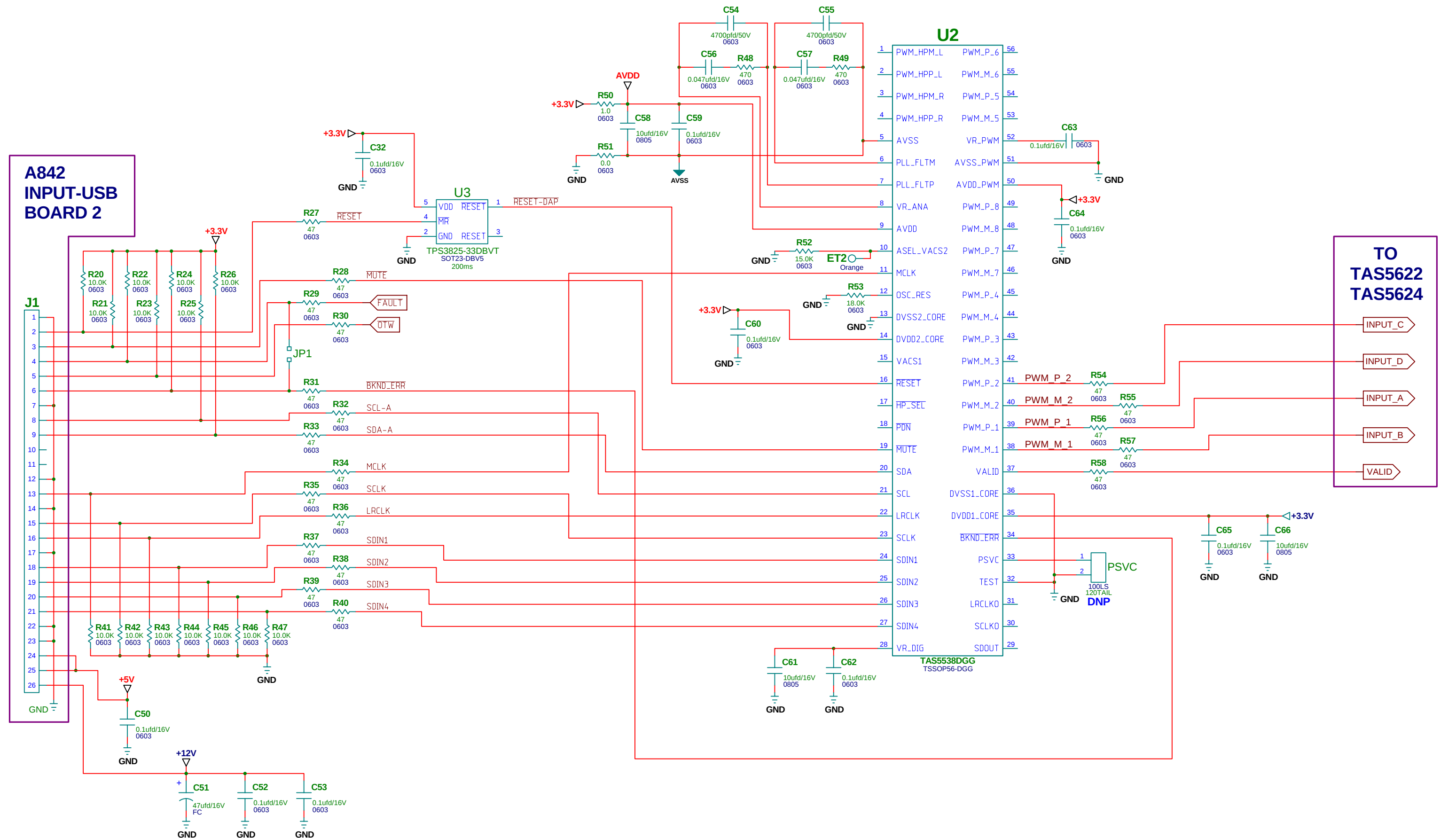
#### A.4 EVM and Input-USB Board 3 Schematics

The EVM and Input-USB Board 3 Schematics are appended to this user's guide PDF.

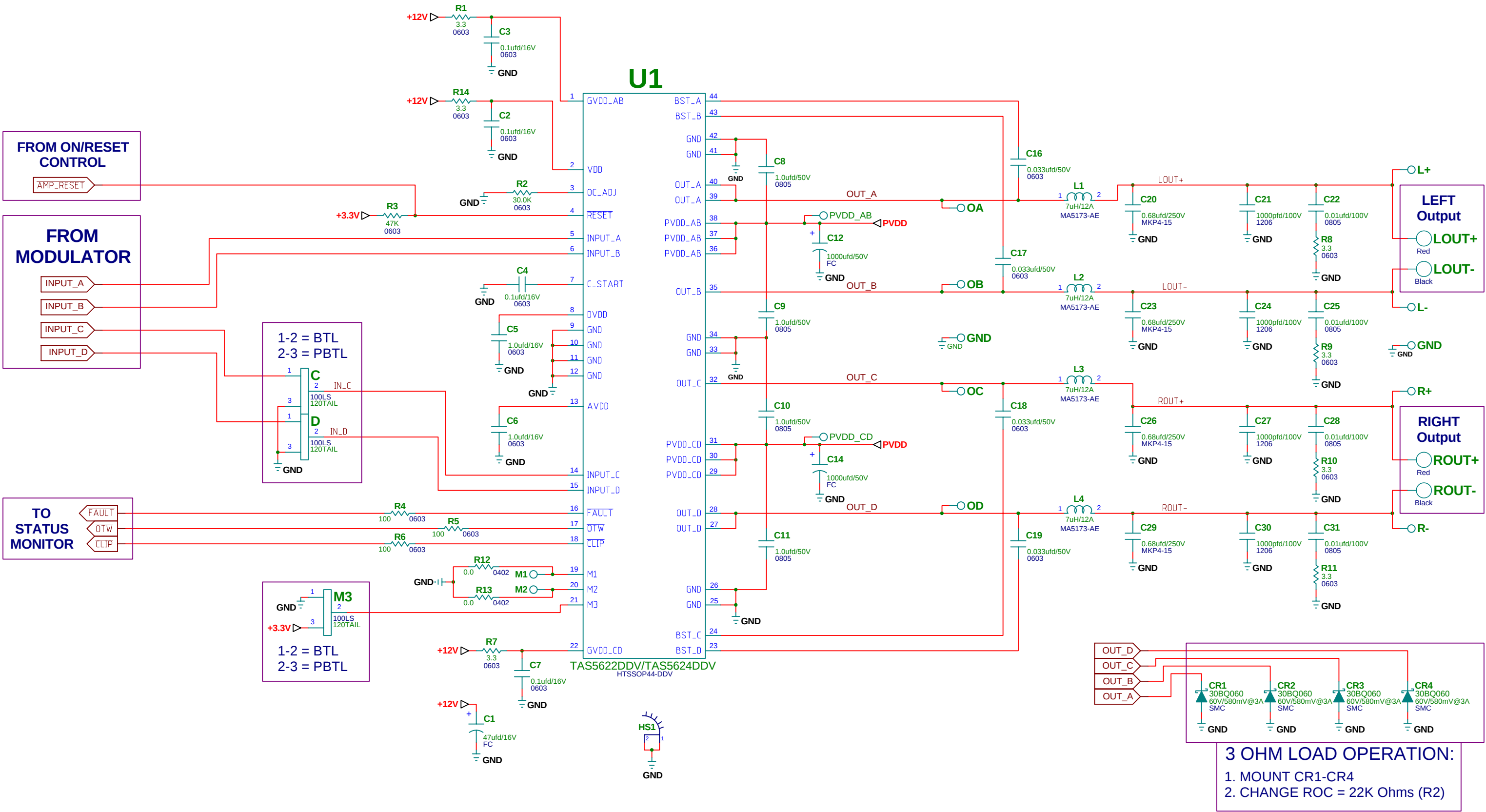
## Revision History

| Changes from Original (May 2012) to A Revision                                                                                        | Page              |
|---------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| • Changed the TAS5538 device to TAS5558 throughout the document. ....                                                                 | <a href="#">2</a> |
| • Changed device TAS5538 to TAS5558 in image titled <i>Physical Structure of the TAS5622-TAS5624DDVEVM (Approximate Layout)</i> ..... | <a href="#">6</a> |
| • Changed device TAS5538 to TAS5558 in image titled <i>PBTL Mode Configuration</i> .....                                              | <a href="#">8</a> |
| • Changed device in <i>TAS5558 GUI Window</i> image to TAS5558. ....                                                                  | <a href="#">9</a> |

# TAS5622DDV/TAS5624DDV EVALUATION BOARD

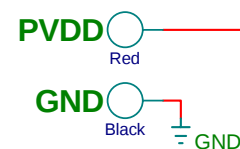


# TAS5622DDV/TAS5624DDV EVALUATION BOARD

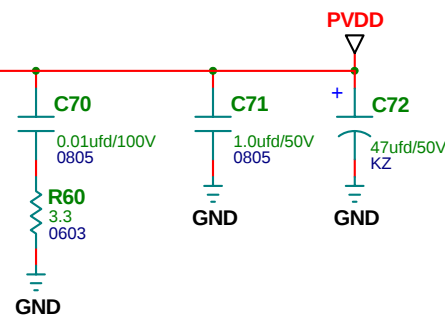


# TAS5622DDV/TAS5624DDV EVALUATION BOARD

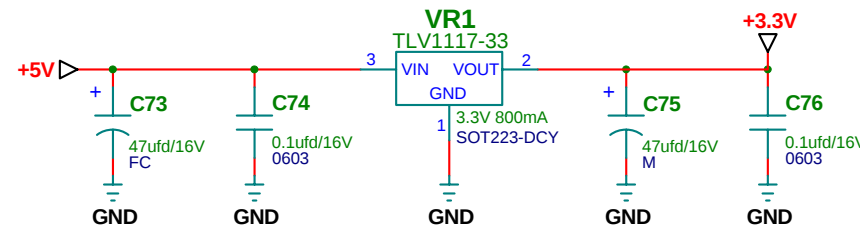
## MAIN POWER IN



PVDD RANGE= xxV-38V



## 5V TO 3.3V DC-DC CONVERTER



## HARDWARE



STANDOFFS

STAND  
OFFS



WASHERS



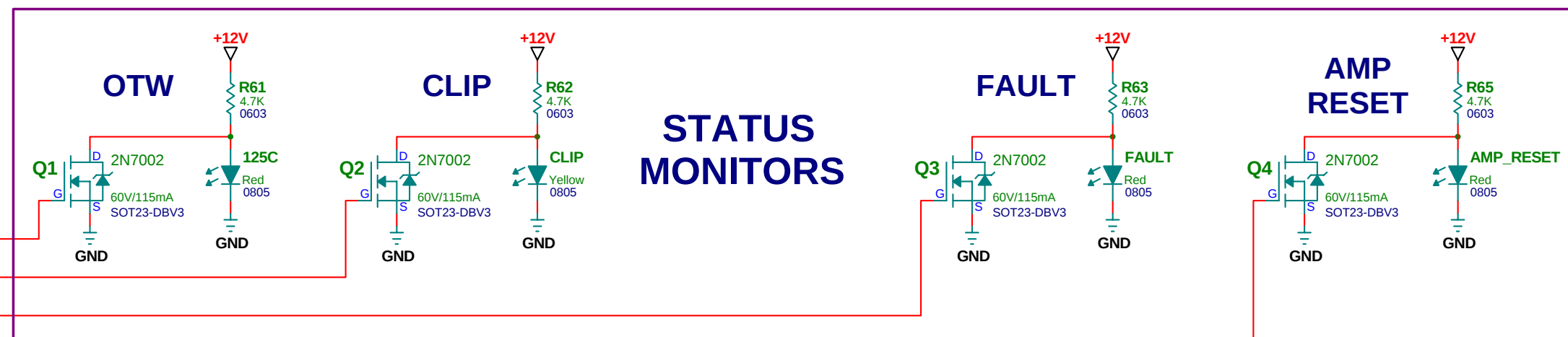
SCREWS



HEAT  
SINK



## FROM U1

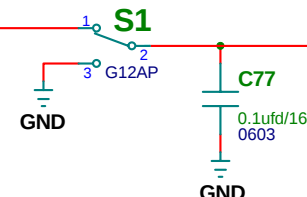


## FROM MODULATOR

VALID

## ON/RESET CONTROL

S3 SETTINGS  
1-2/6-5 ON  
3-2/4-5 RESET



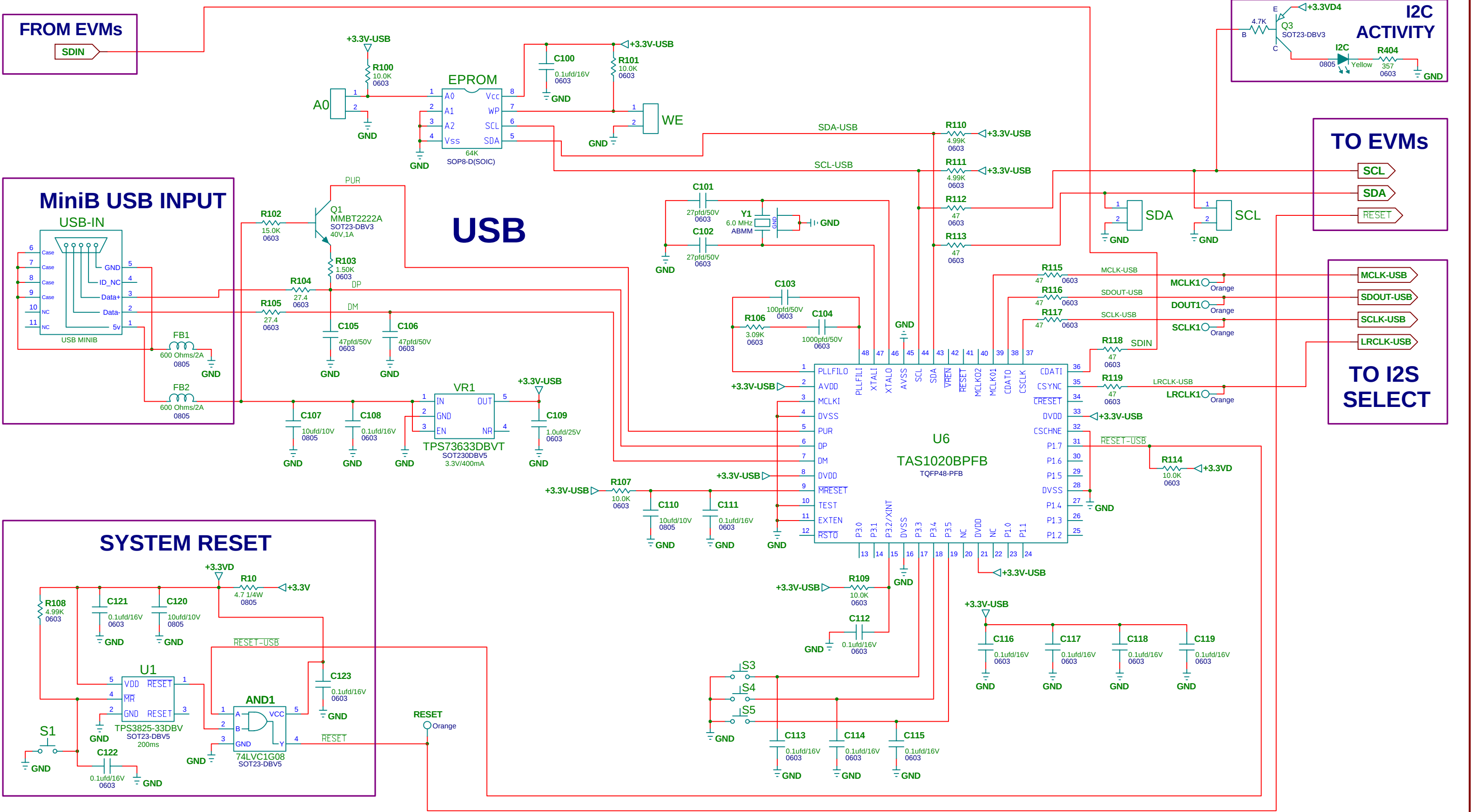
## TO U1

AMP\_RESET

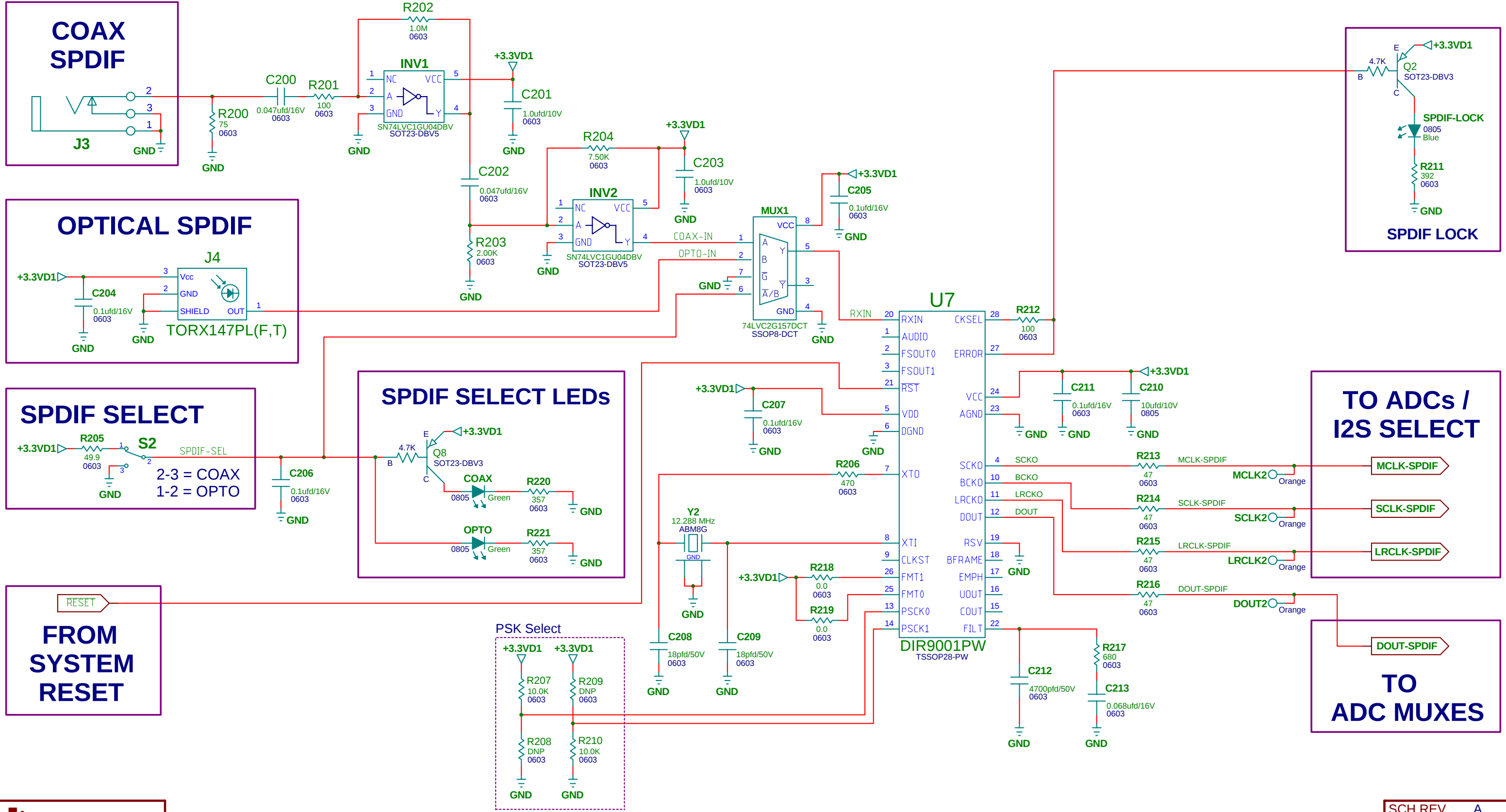
# TAS5622DDV/TAS5624DDV EVALUATION BOARD

| REVISION HISTORY |                 |               |          |
|------------------|-----------------|---------------|----------|
| REVISION         | DESCRIPTION     | DATE          | APPROVAL |
| A                | INITIAL RELEASE | MARCH 7, 2012 | SC       |

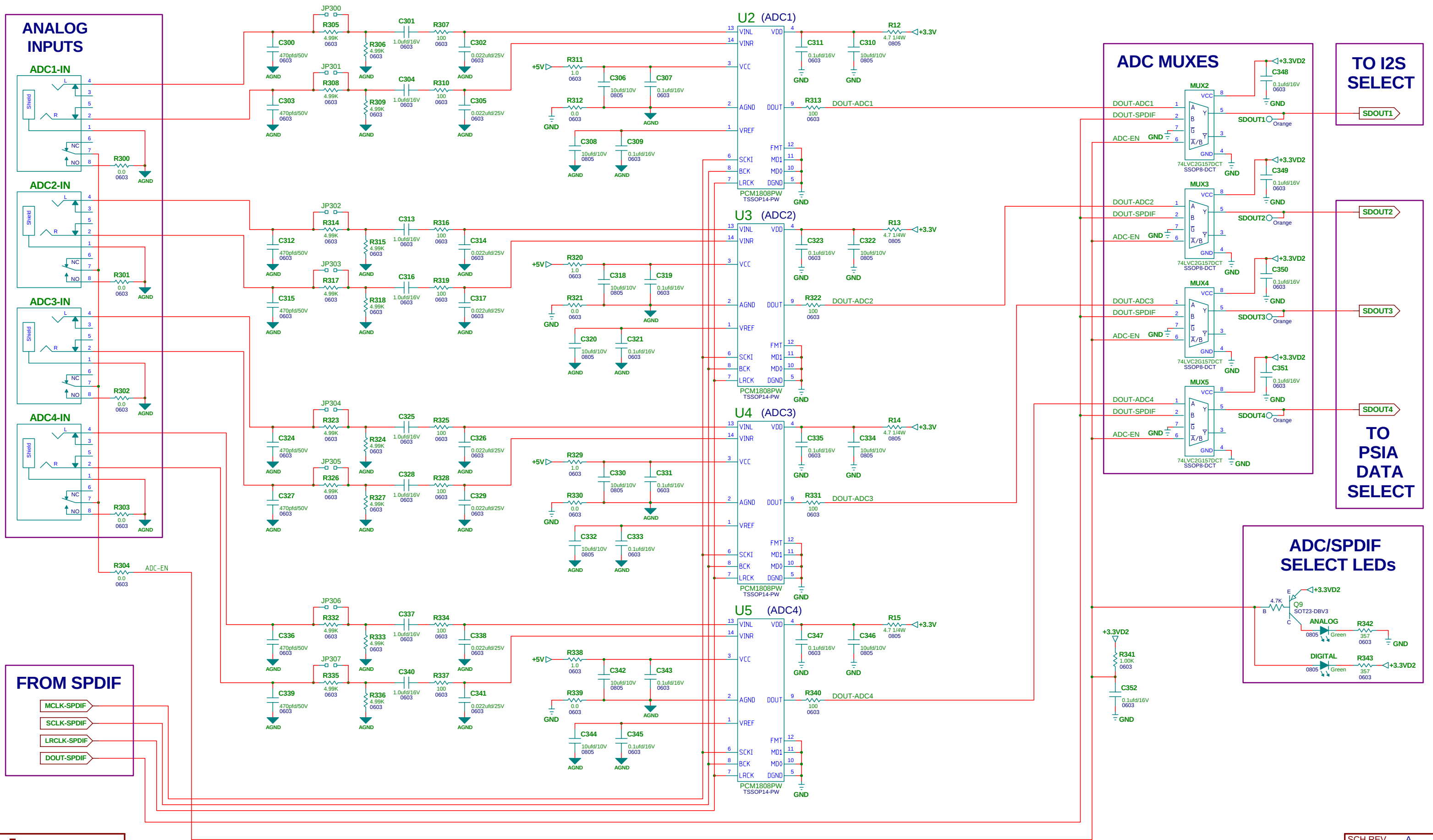
# INPUT-USB BOARD #3



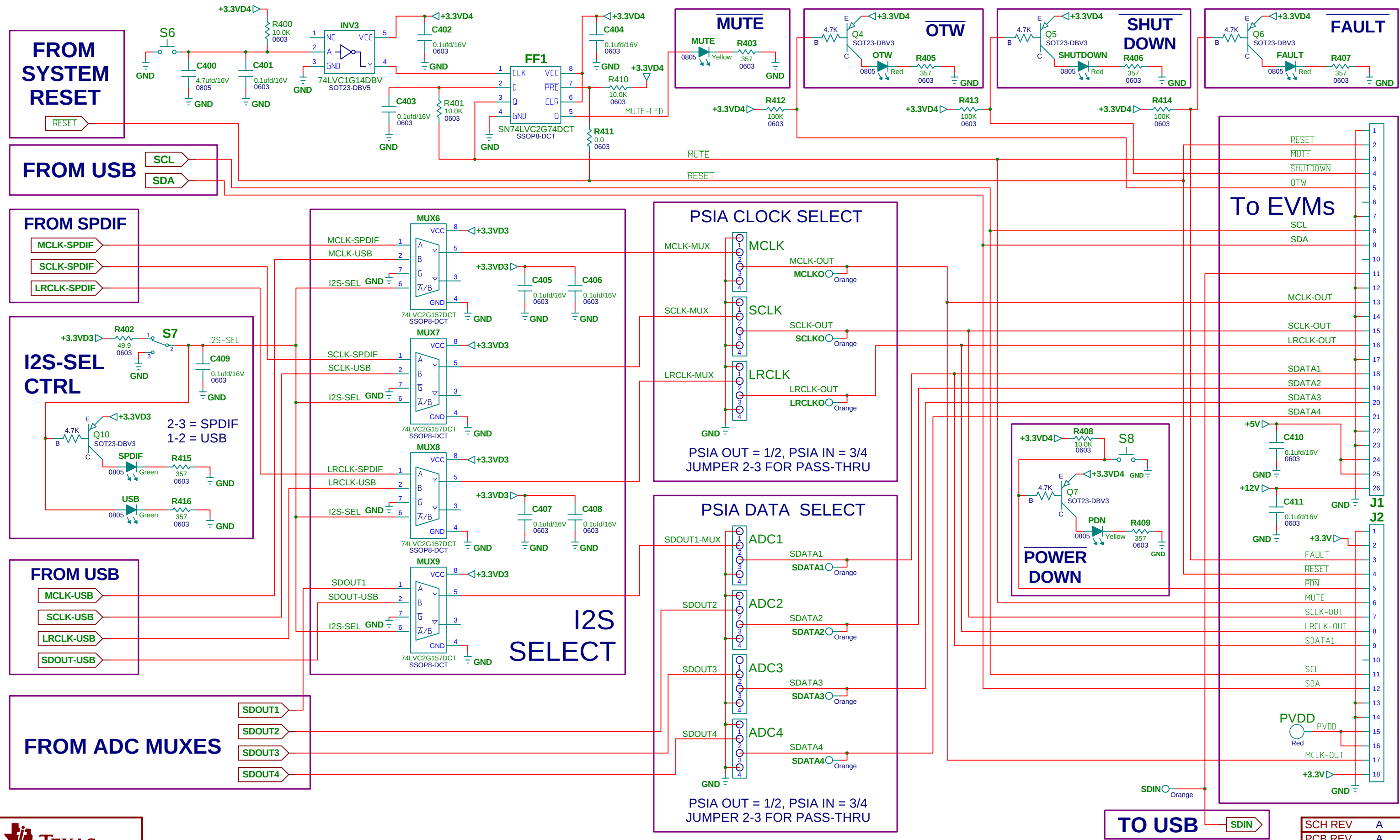
# INPUT-USB BOARD #3



# INPUT-USB BOARD #3

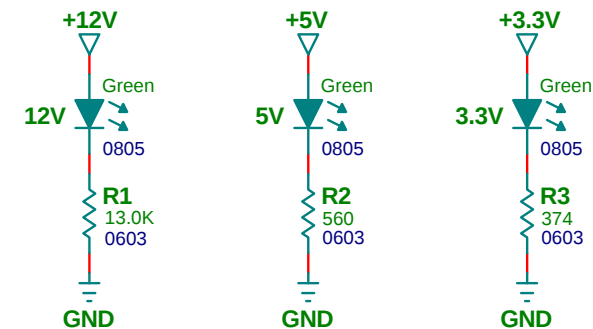
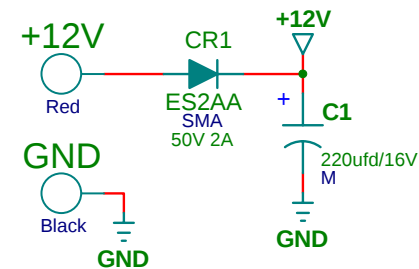


# INPUT-USB BOARD #3

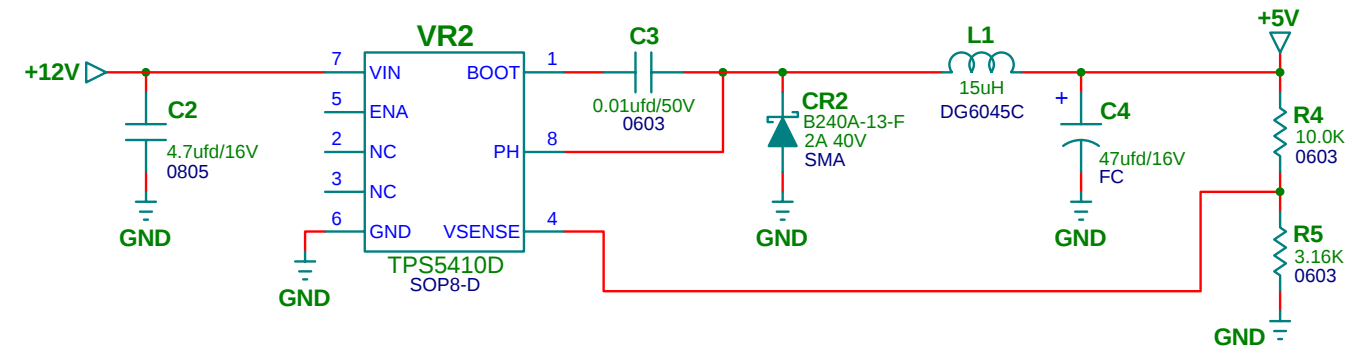


# INPUT-USB BOARD #3

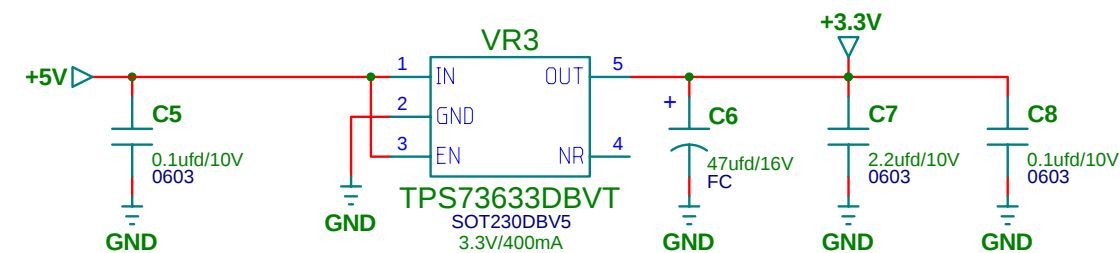
## MAIN POWER IN



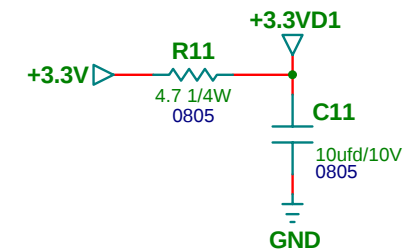
## PVDD TO 5V SWITCHER



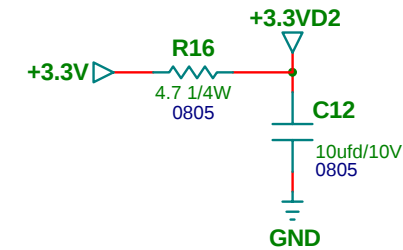
## 5V TO 3.3V DC-DC CONVERTER



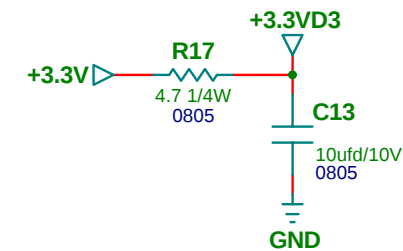
## SPDIF



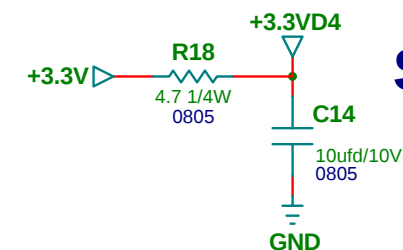
## ADC MUXES



## I2S SELECT MUXES

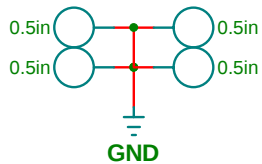


## SWITCHES AND LEDs



## BOM ONLY

### STANDOFFS



# INPUT-USB BOARD #3

## REVISION HISTORY

| REVISION | DESCRIPTION     | DATE          | APPROVAL |
|----------|-----------------|---------------|----------|
| A        | INITIAL RELEASE | JULY 12, 2011 | TL       |

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