

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.

Contents

1	Introduction	2
2	Quick Setup Guide.....	6
	2.1 Electrostatic Discharge Warning	6
	2.2 Speaker Connection	7
	2.3 Output Configuration BTL and PBTL	8
	2.4 GUI Software Installation and EVM Startup	9
	2.5 Self-Protection and Fault Reporting	11
3	Related Documentation from Texas Instruments	11
	3.1 Additional Documentation	11
Appendix A	Design Information	12

List of Figures

1	TAS5622-TAS5624DDVEVM	3
2	Input-USB Board3	4
3	Integrated PurePath Digital™ Amplifier System	5
4	Physical Structure of the TAS5622-TAS5624DDVEVM (Approximate Layout)	6
5	PBTL Mode Configuration	8
6	TAS5558 GUI Window	9
7	Channel and Master Volume GUI	10
8	Top Composite PCB Layer.....	15
9	Bottom Composite PCB Layer.....	16

List of Tables

1	TAS5622-TAS5624DDVEVM Specification	2
2	Recommended PVDD Power Supply Voltages	7
3	Bill of Materials for TAS5624DDVEVM	12

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.

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 AND REQUEST A FREE SAMPLE, AND REPLACE TAS5624 WITH TAS5622.

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

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%.)

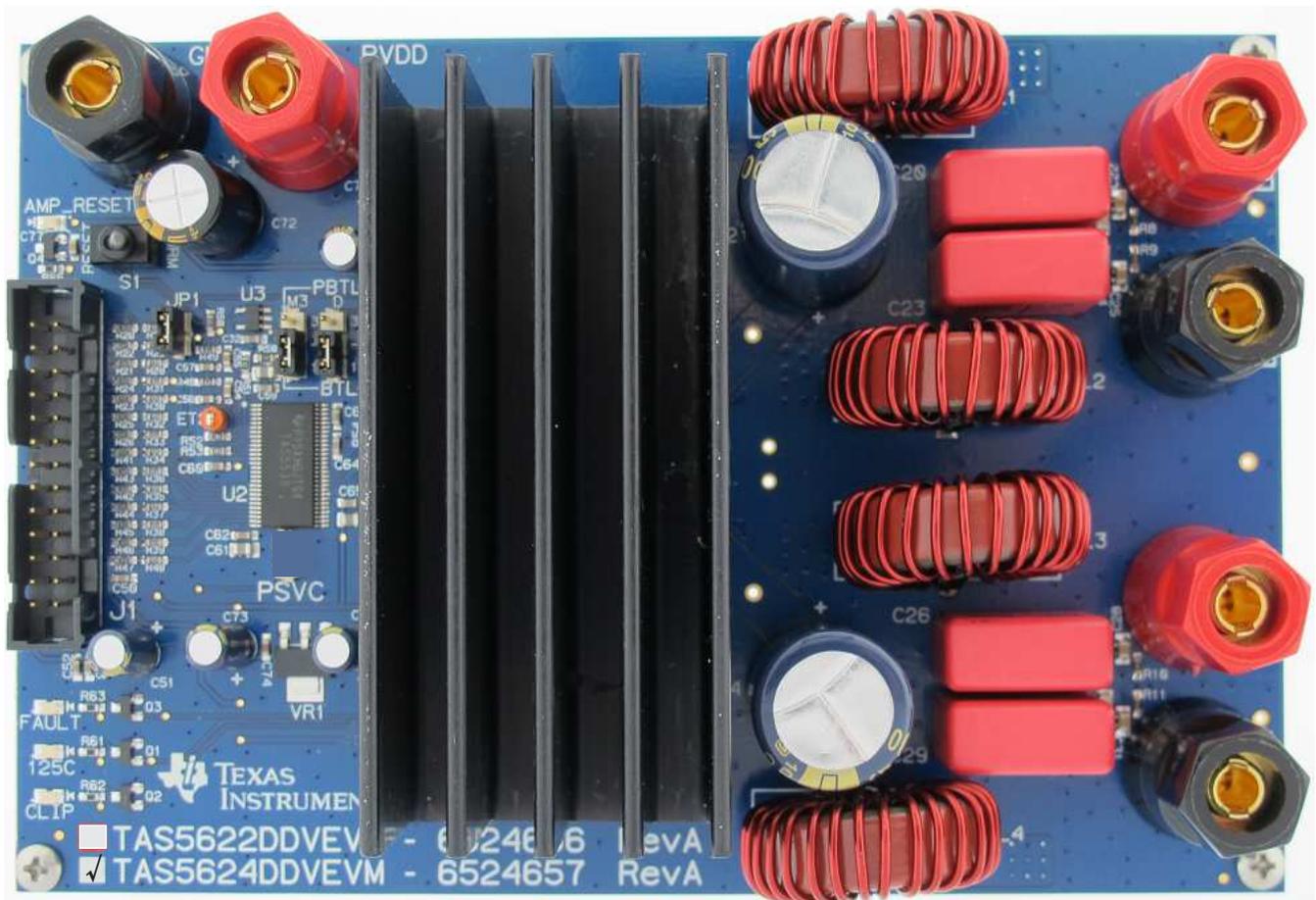


Figure 1. TAS5622-TAS5624DDVEVM

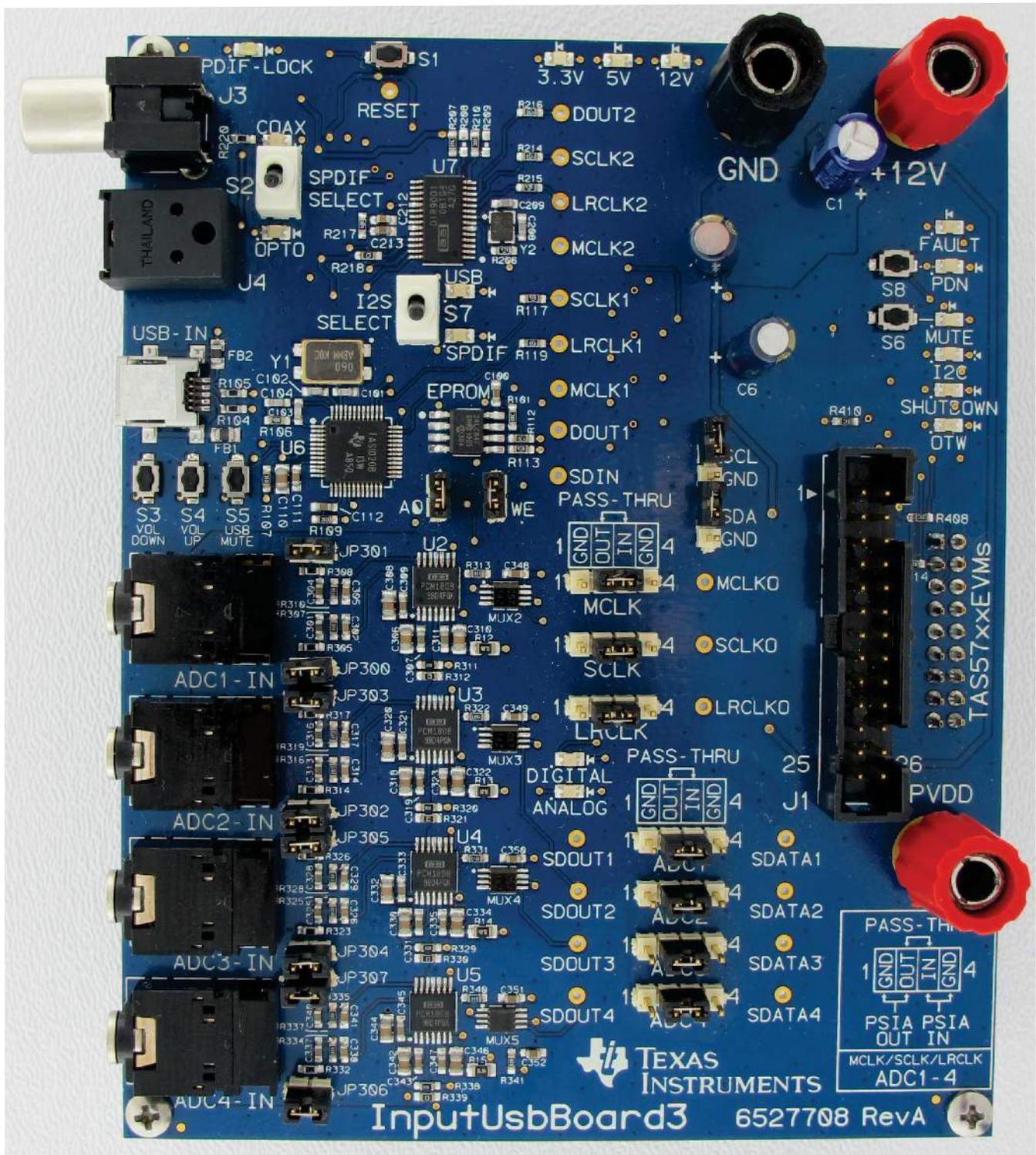


Figure 2. Input-USB Board3

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 I²S and I²C / Control connector for TI input board
- Double-sided plated-through PCB layout.

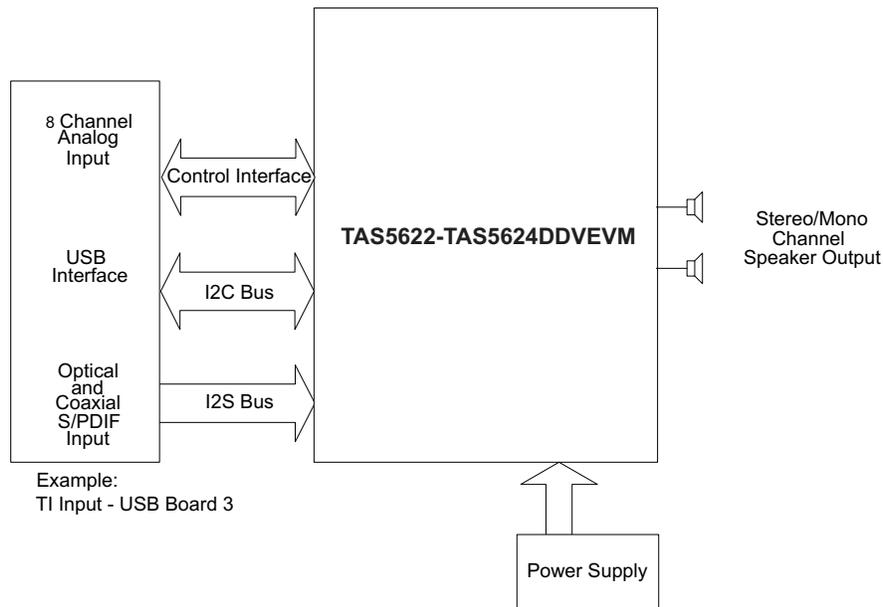


Figure 3. Integrated PurePath Digital™ Amplifier System

EVM Physical Structure

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

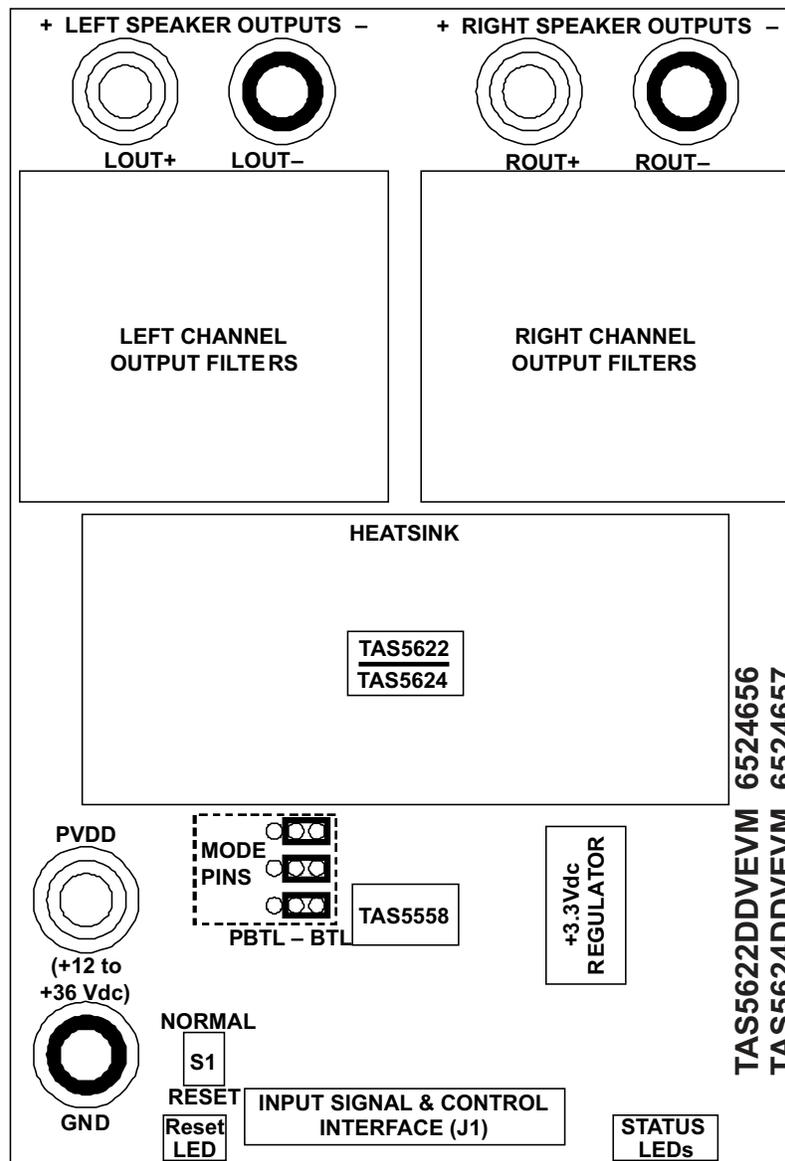


Figure 4. Physical Structure of the TAS5622-TAS5624DDVEVM (Approximate Layout)

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 I²S 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](#):

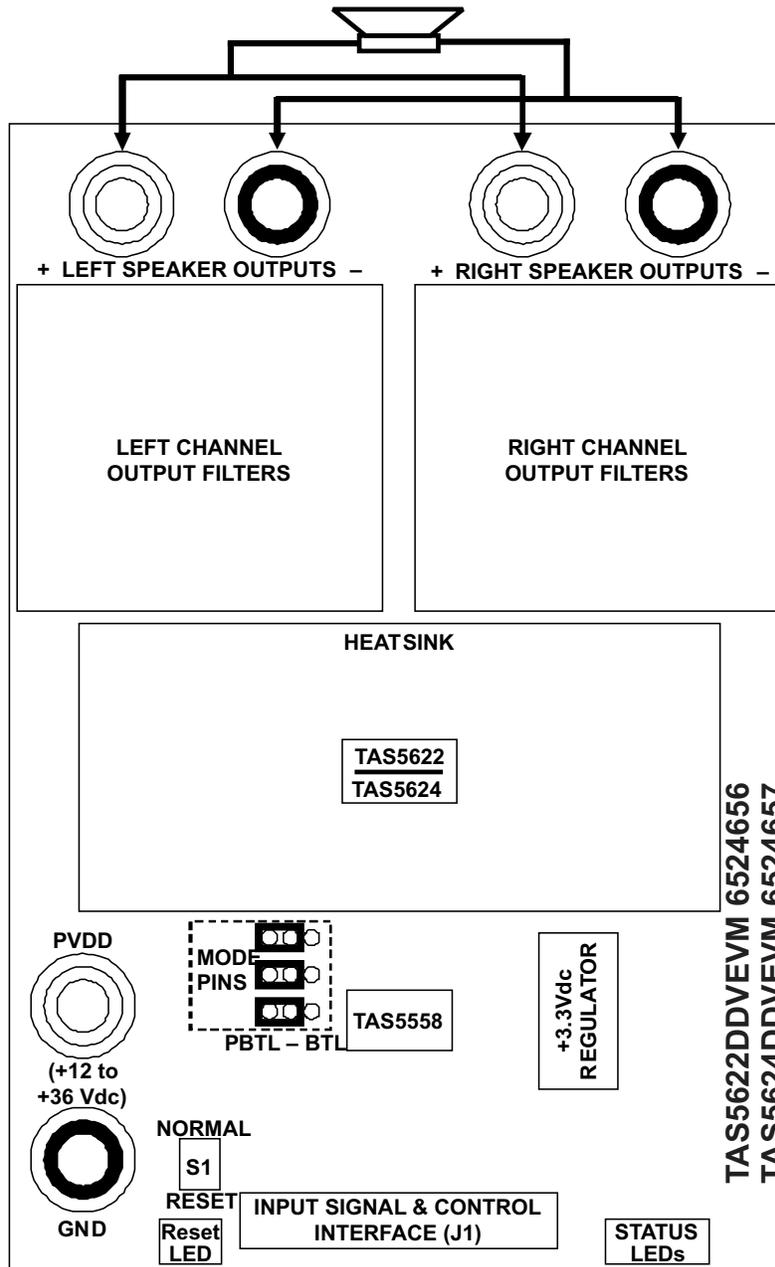


Figure 5. PBTL Mode Configuration

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**.

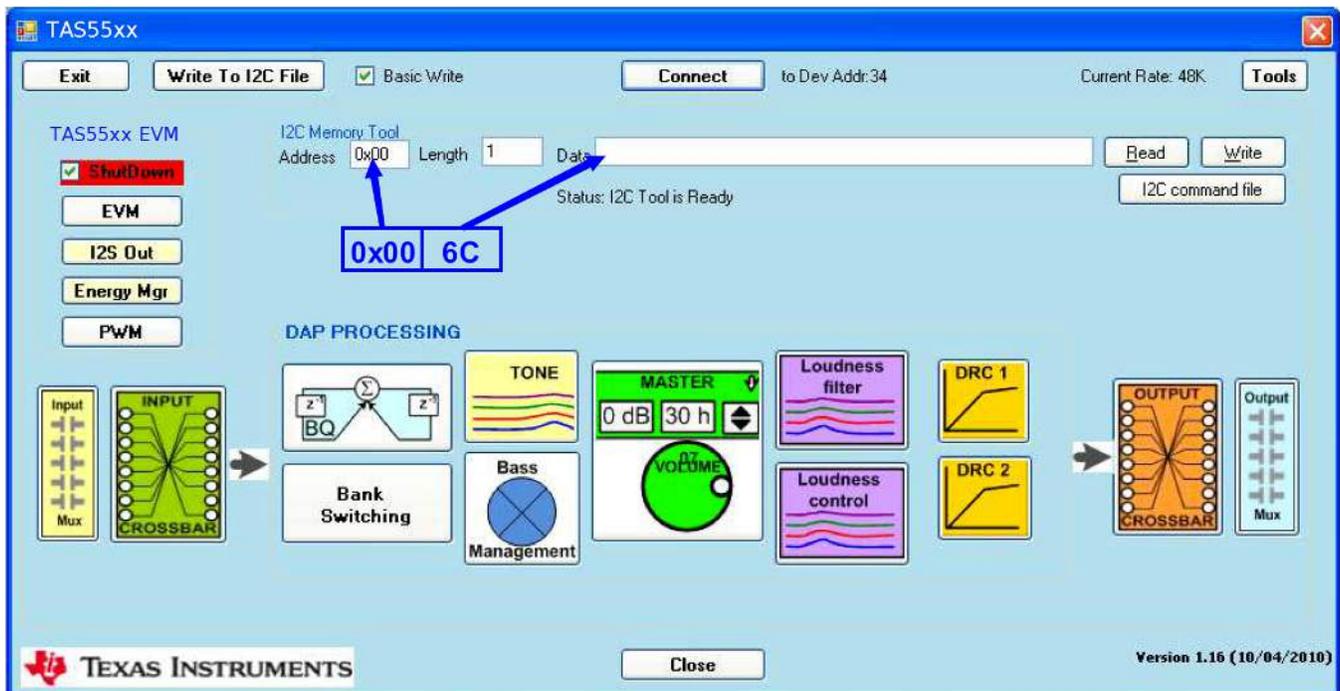


Figure 6. TAS5558 GUI Window

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.

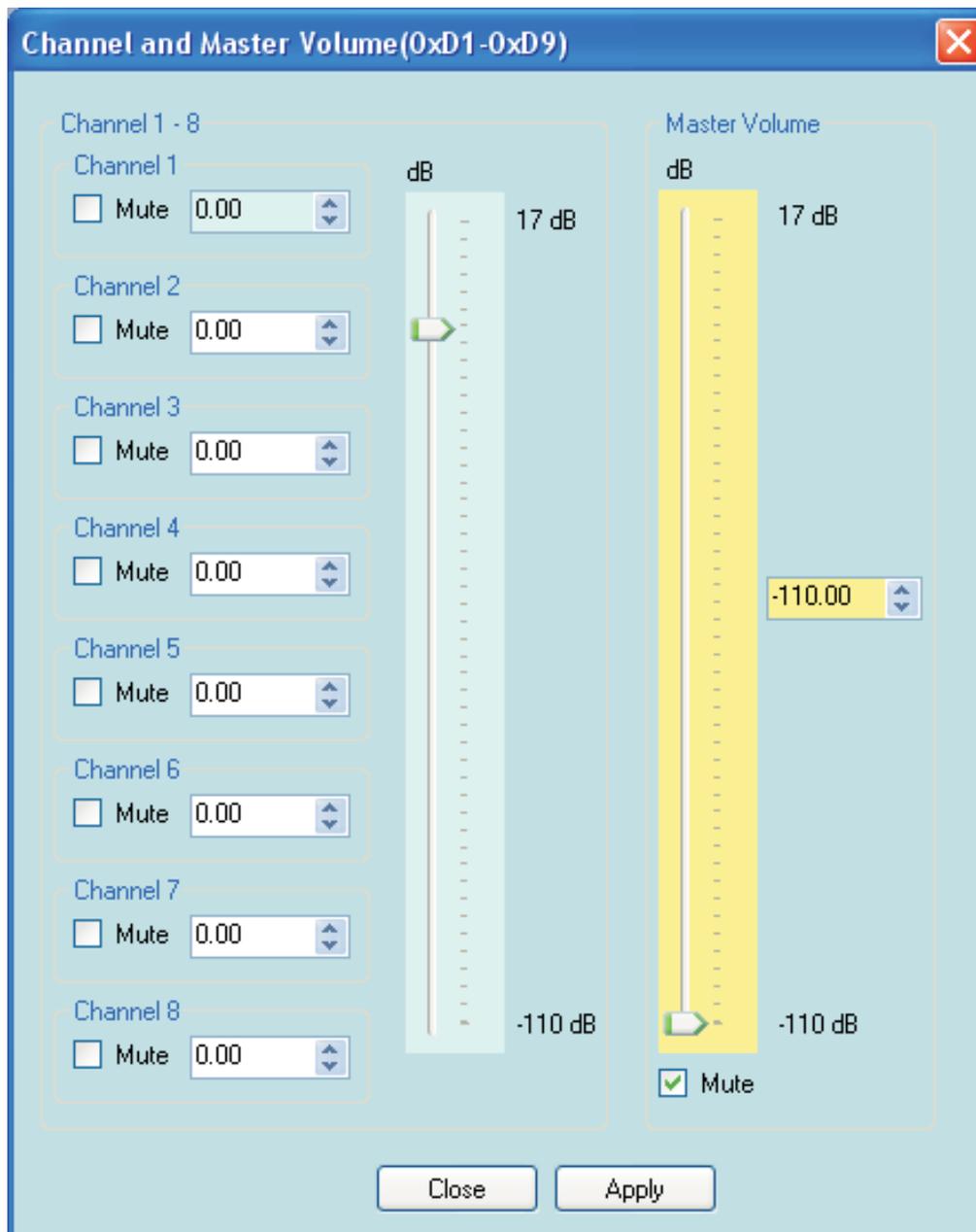


Figure 7. Channel and Master Volume GUI

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	SLES255
TAS5622A	SLAS845
TAS5624A	SLAS844
TPS3825-33	SLVS165
TLV1117-33C	SLVS561

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
TI-SEMICONDUCTORS						
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
SEMICONDUCTORS						
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
CAPACITORS						
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
CAPACITORS						
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
RESISTORS						
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
INDUCTORS						
MA5173-AE	4	L1, L2, L3, L4	MA5173-AE	SHIELDED POWER INDUCTOR 7uH 12A ROHS	Coil Craft	Coil Craft
HEADERS						
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
TESTPOINTS AND SWITCHES						
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
BINDING POSTS						
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, LOUT+, ROUT+	565-5018-2	BINDING POST, RED 60V 30A GOLD ROHS	Mouser	Pomona
SHUNTS						
SPC02SYAN	4	JP1, C(1-2), D(1-2), M3(1-2)	S9001	SHUNT, BLACK AU FLASH 0.100LS	Digi-Key	Sullins
HEAT SINKS AND HARDWARE						
ATSTI1OP-519-C1-R3	1	HS1	ATSTI1OP-519-C1-R3	HEATSINK ALUMINUM ATS 36x78mm 36.8mm PITCH ROHS	ATS	ATS
92000A118	2	HS1	92000A118	PHILIPS PANHEAD SCREW M3x8mm STAINLESS STEEL ROHS	McMaster-Carr	McMaster-Carr
92148A150	2	HS1	92148A150	SPLIT WASHER M3 STAINLESS STEEL ROHS	McMaster-Carr	McMaster-Carr
94868A178	4	NA	94868A178	STANDOFF M3x25mm 4.5mm DIA HEX STAINLESS STEEL F-F ROHS	McMaster-Carr	McMaster-Carr
92000A118	4	NA	92000A118	PHILIPS PANHEAD SCREW M3x8mm STAINLESS STEEL ROHS	McMaster-Carr	McMaster-Carr
92148A150	4	NA	92148A150	SPLIT WASHER M3 STAINLESS STEEL ROHS	McMaster-Carr	McMaster-Carr
Component Count:	163					
COMPONENTS NOT ASSEMBLED						
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 lalter@qats.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.qats.com.

Coilcraft, in Cary, IL, USA, provide a 7 μ H 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. 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.

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

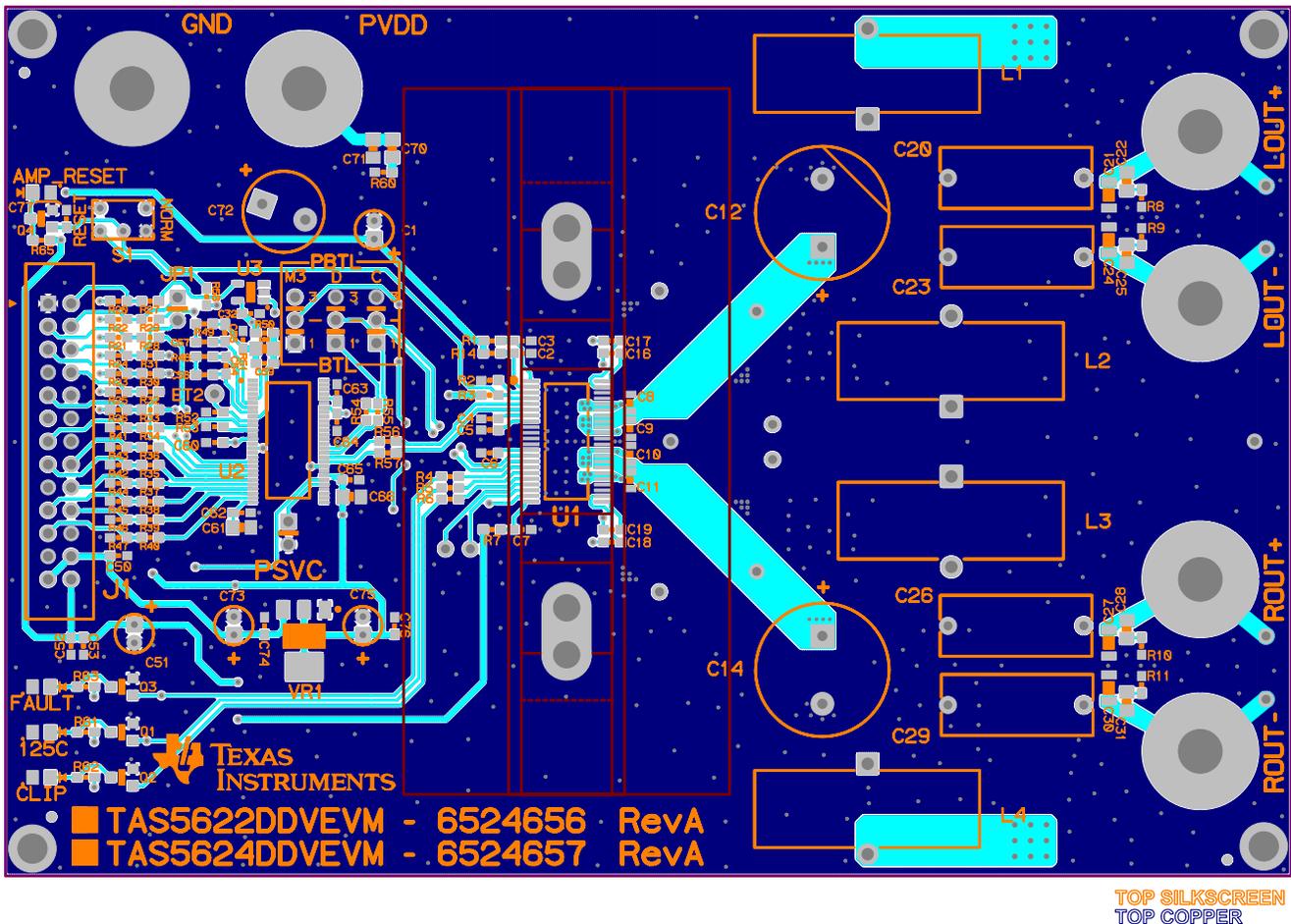


Figure 8. Top Composite PCB Layer

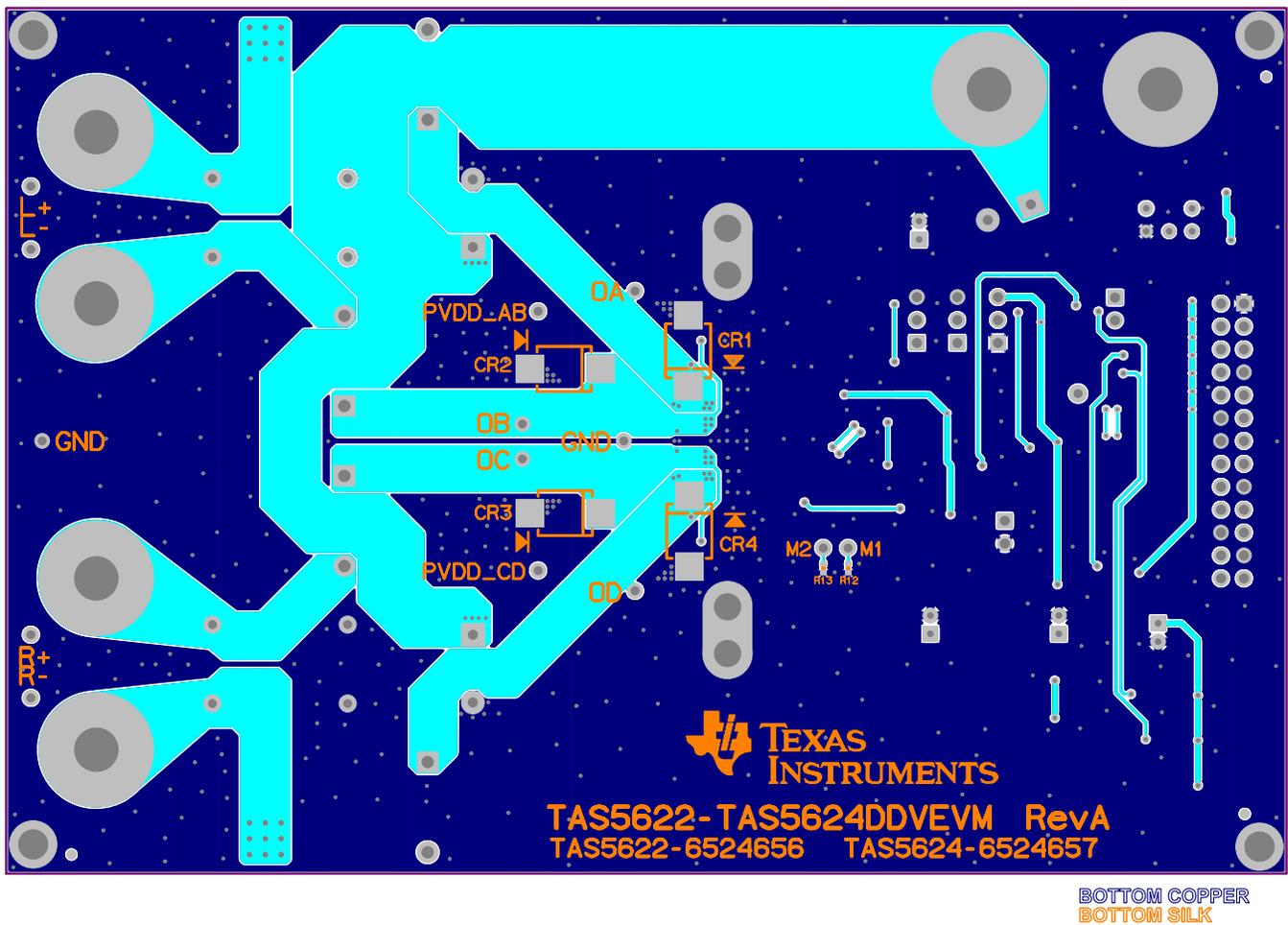


Figure 9. Bottom Composite PCB Layer

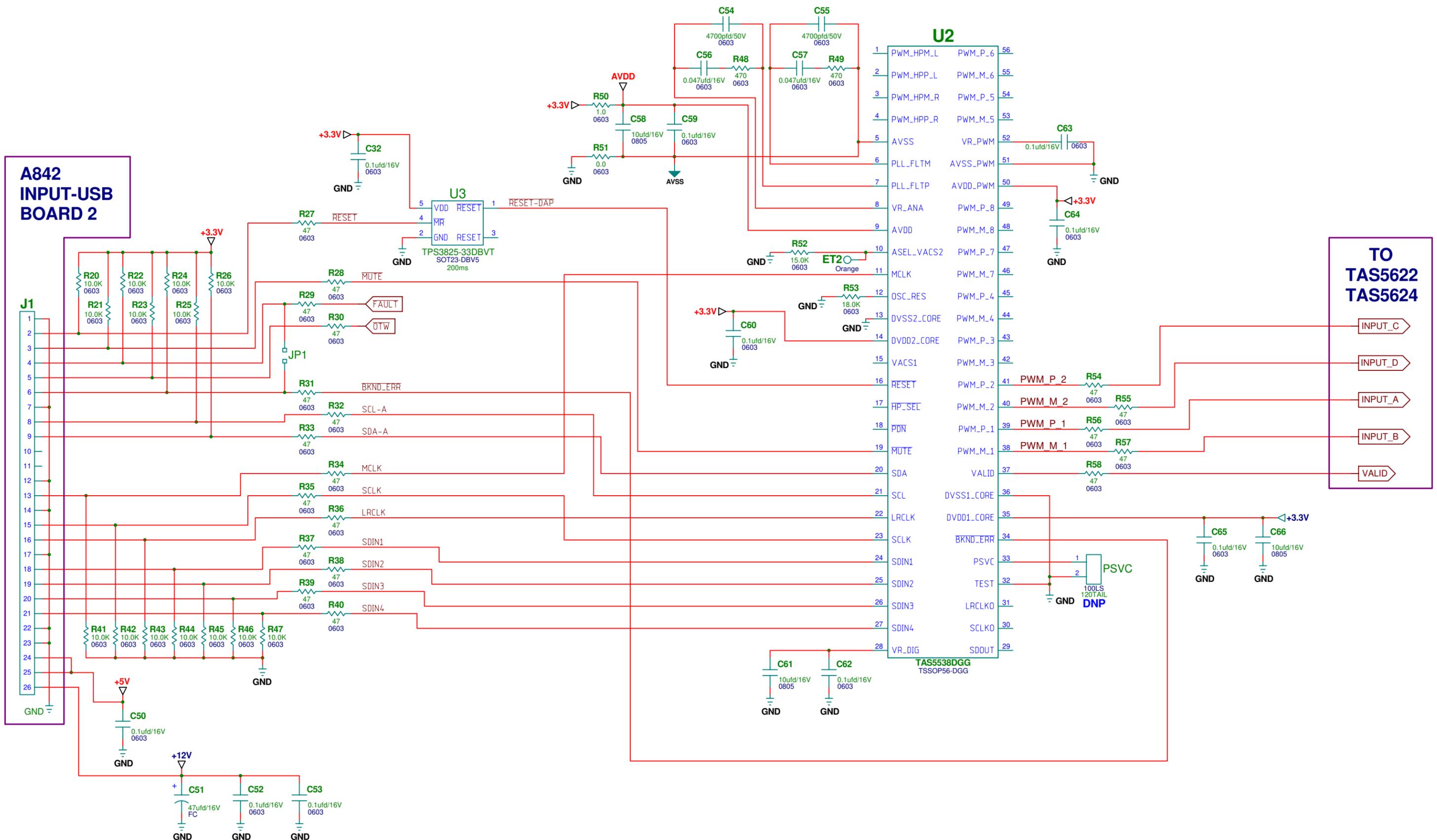
A.4 EVM and Input-USB Board 3 Schematics

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

Revision History

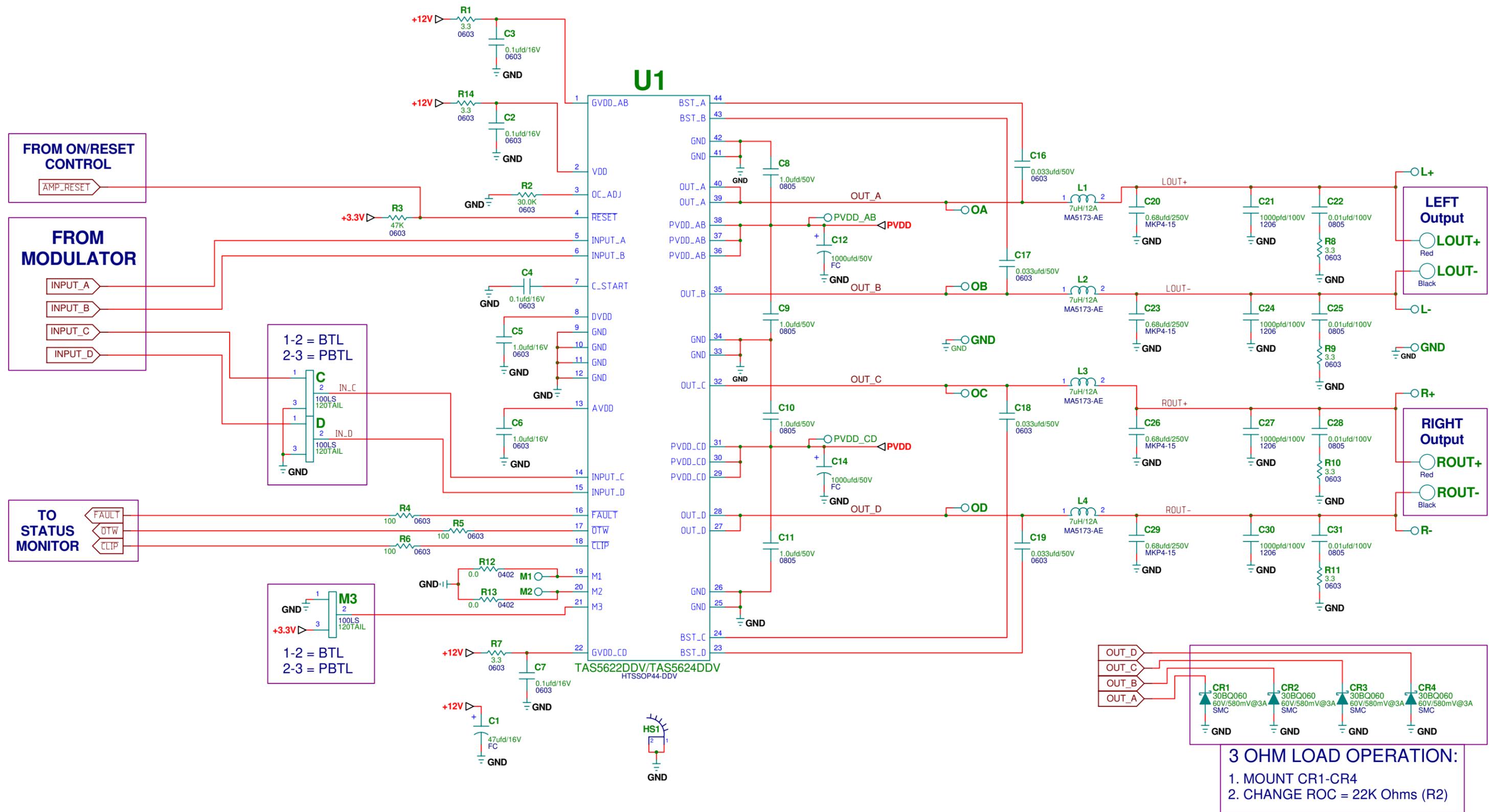
Changes from Original (May 2012) to A Revision	Page
• Changed the TAS5538 device to TAS5558 throughout the document.	2
• Changed device TAS5538 to TAS5558 in image titled <i>Physical Structure of the TAS5622-TAS5624DDVEVM (Approximate Layout)</i>	6
• Changed device TAS5538 to TAS5558 in image titled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

TAS5622DDV/TAS5624DDV EVALUATION BOARD

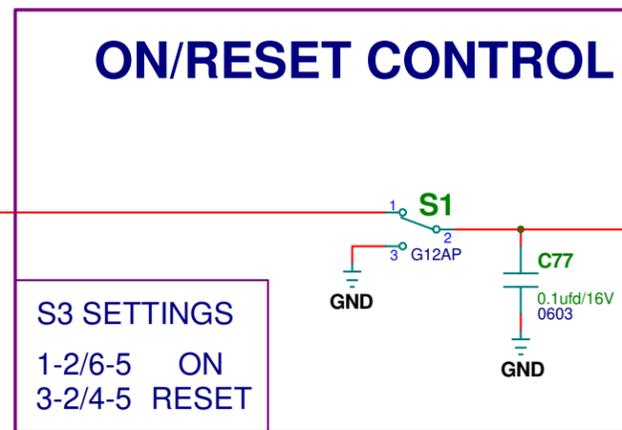
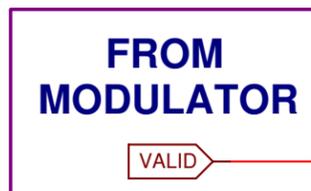
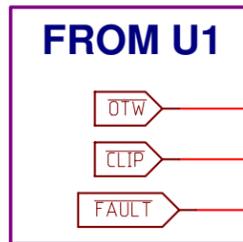
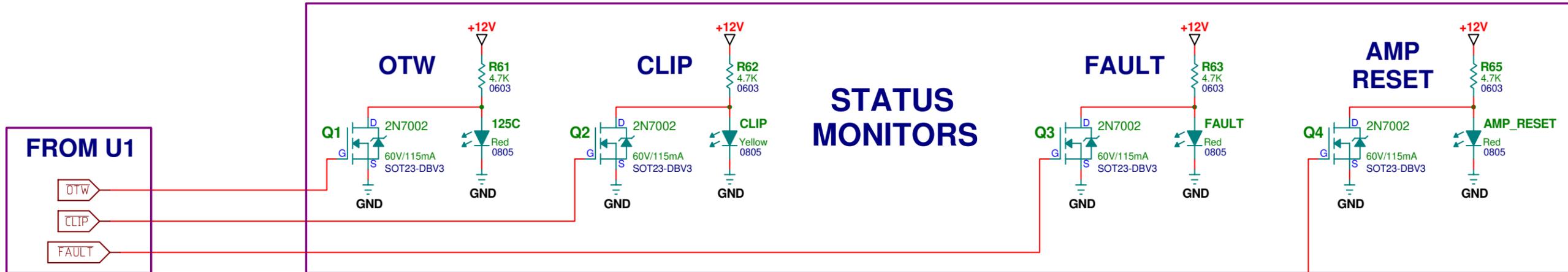
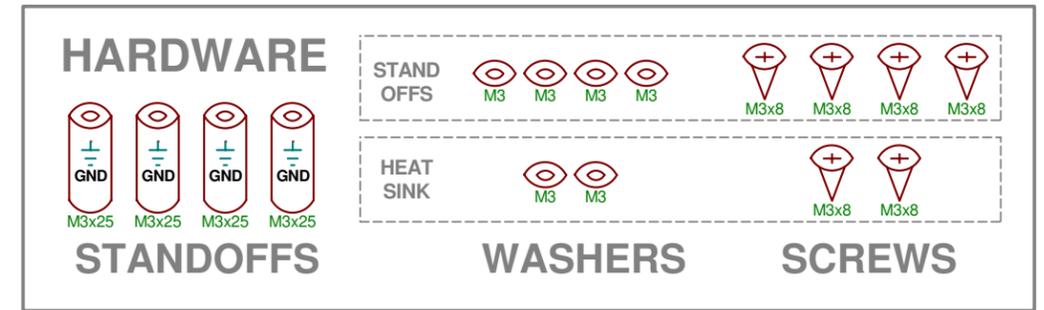
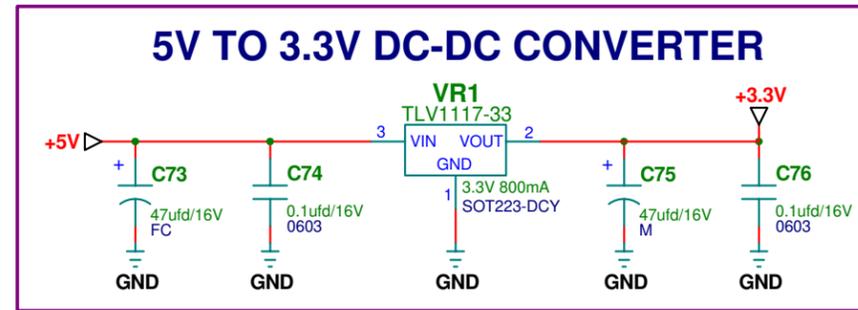
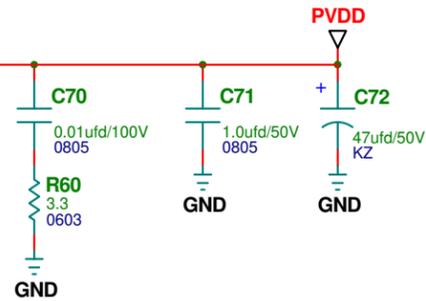
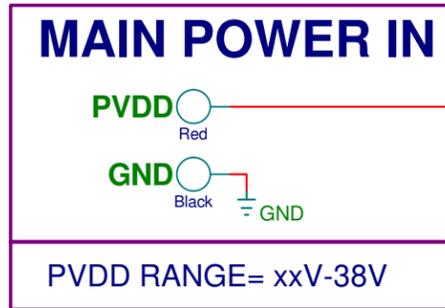


SCH REV	A
PCB REV	A
SHEET	1 OF 5
DRAWN BY	LDN

TAS5622DDV/TAS5624DDV EVALUATION BOARD



TAS5622DDV/TAS5624DDV EVALUATION BOARD

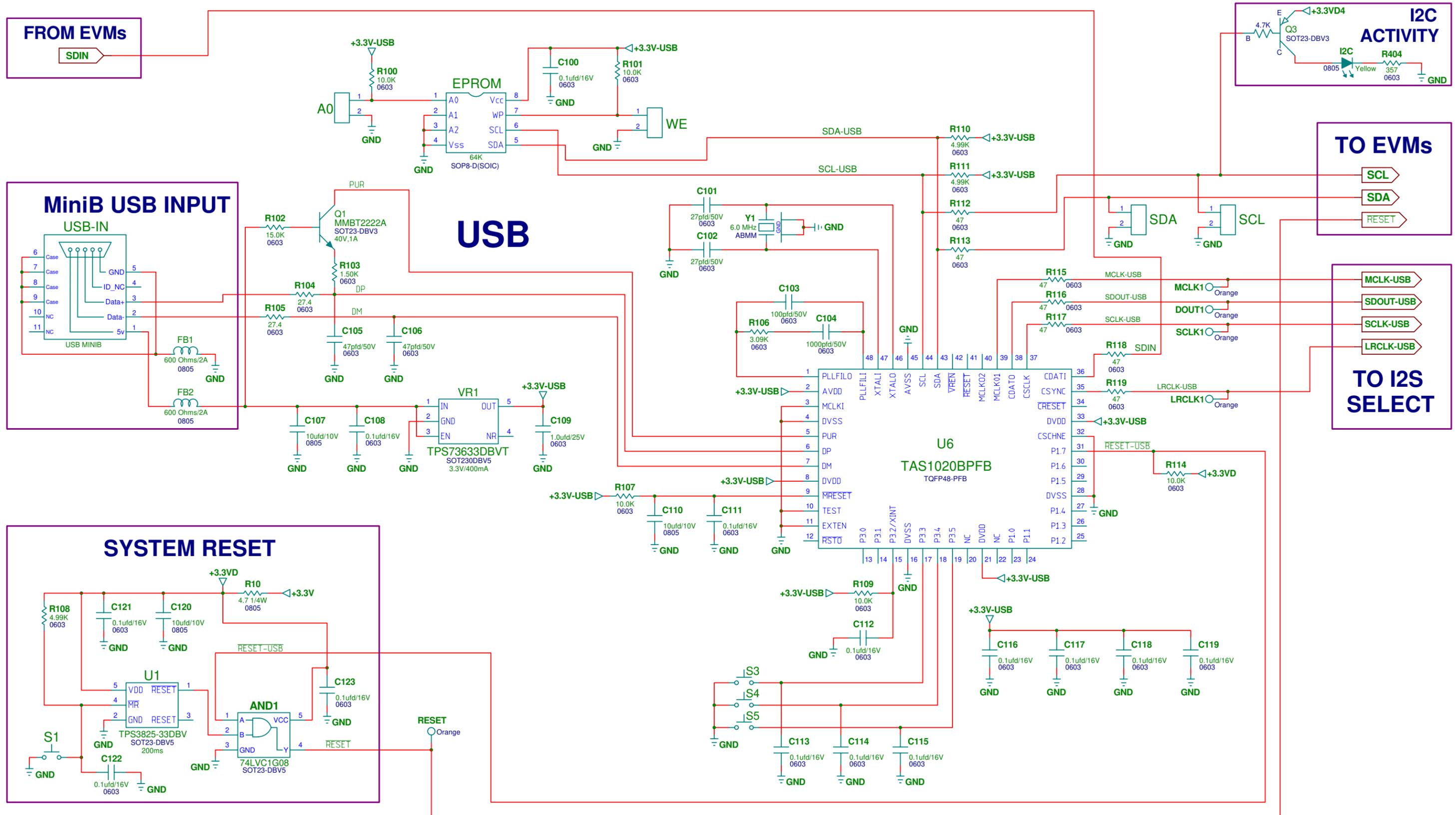


TAS5622DDV/TAS5624DDV EVALUATION BOARD

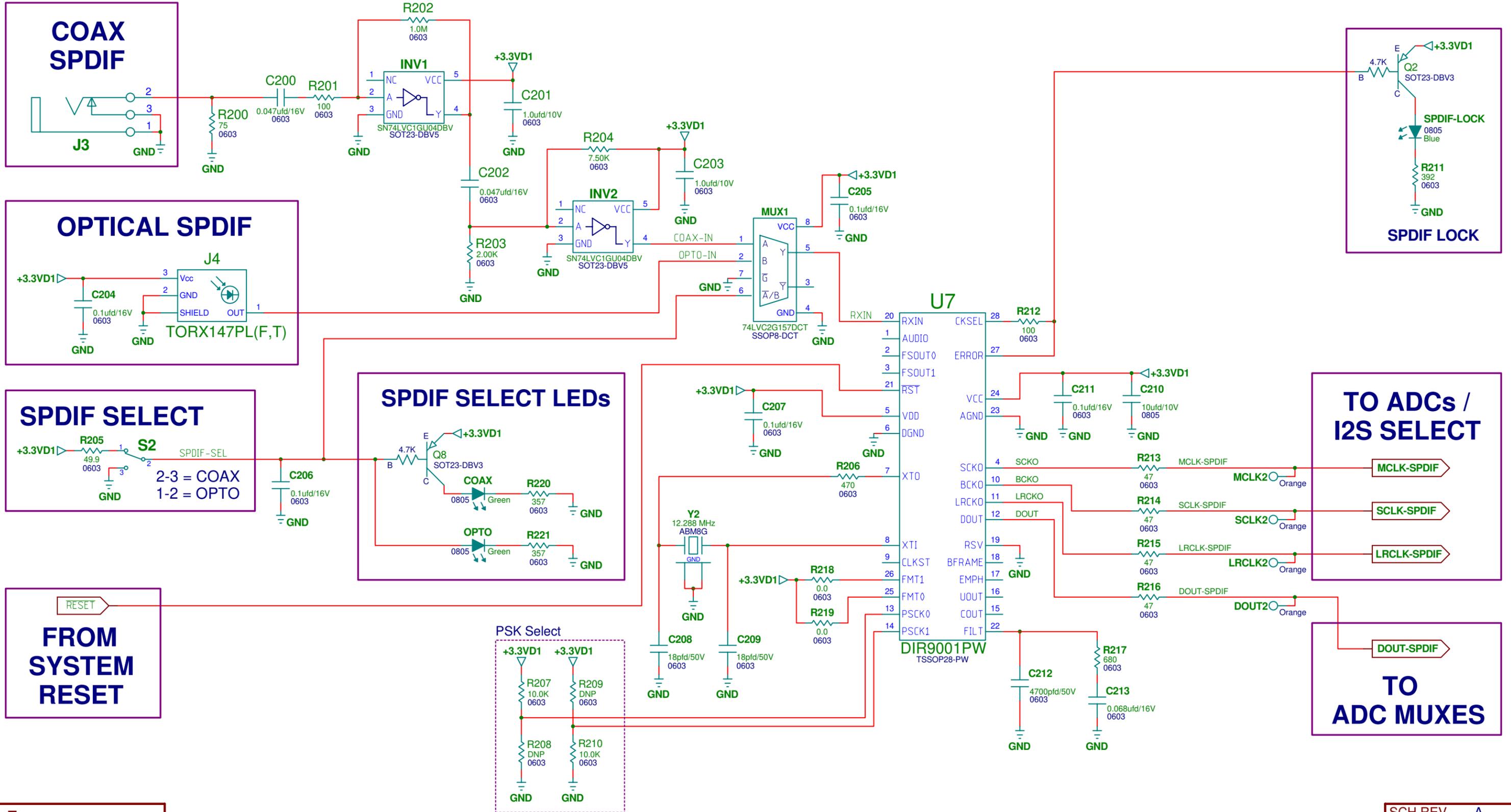
REVISION HISTORY

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

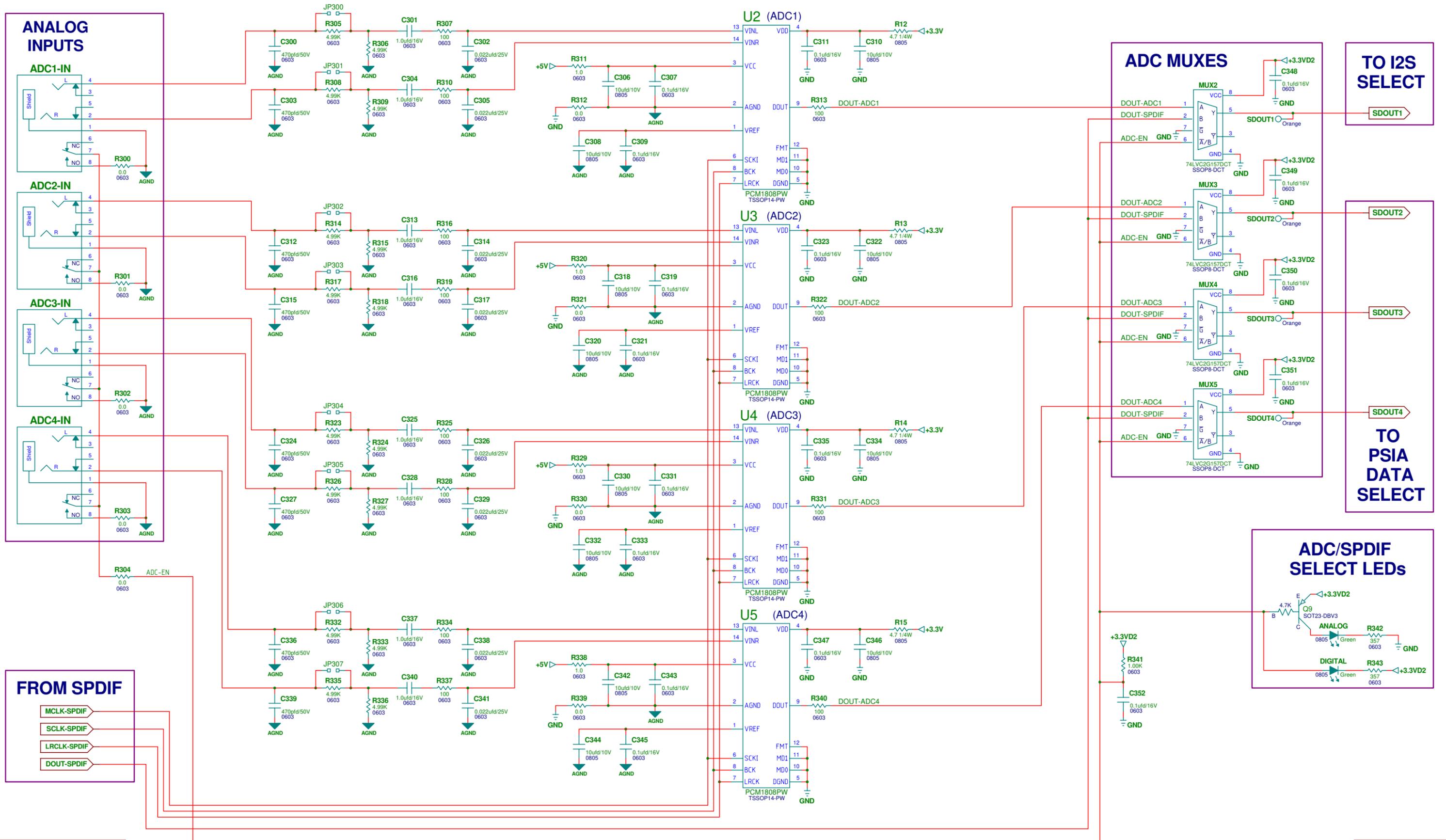
INPUT-USB BOARD #3



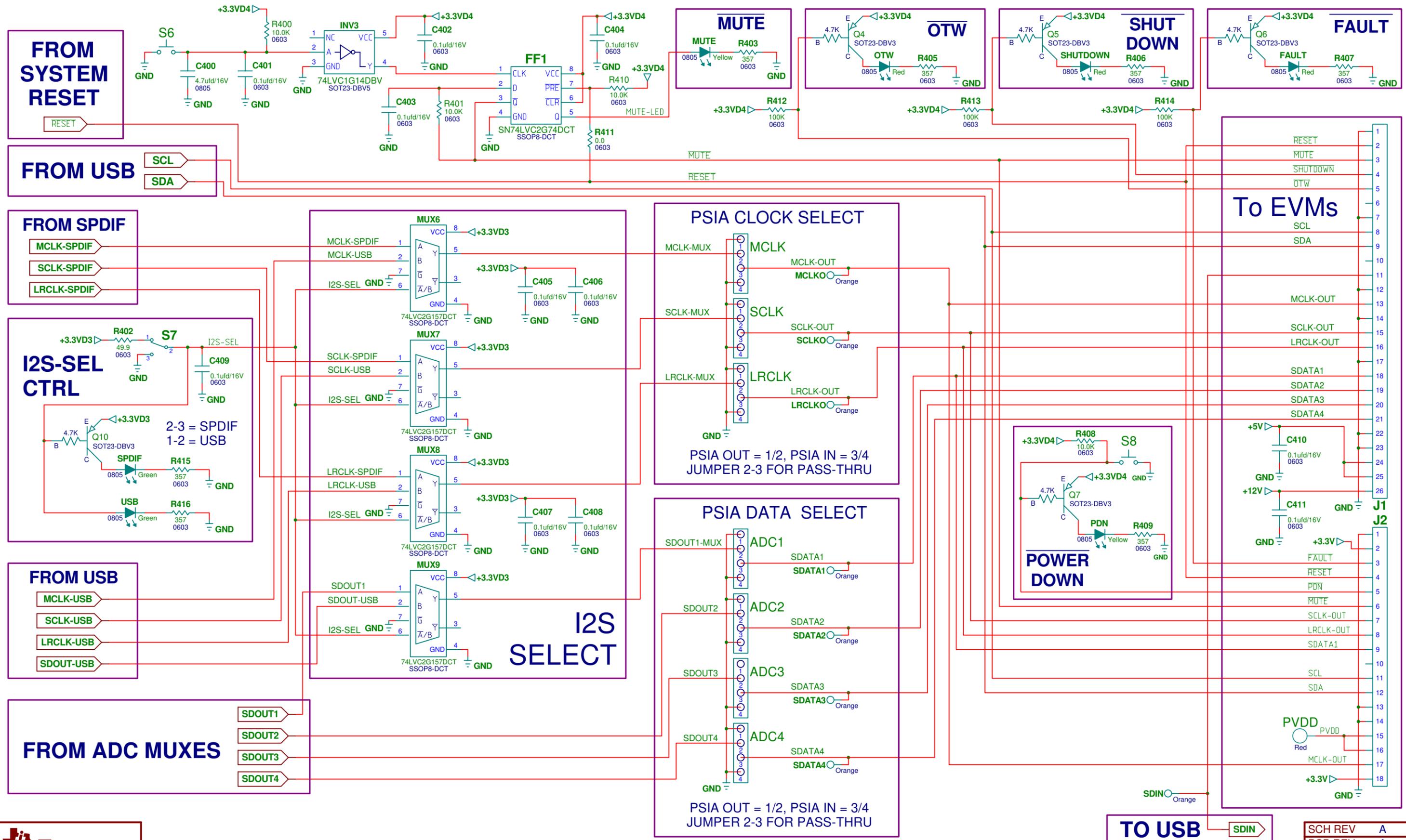
INPUT-USB BOARD #3



INPUT-USB BOARD #3

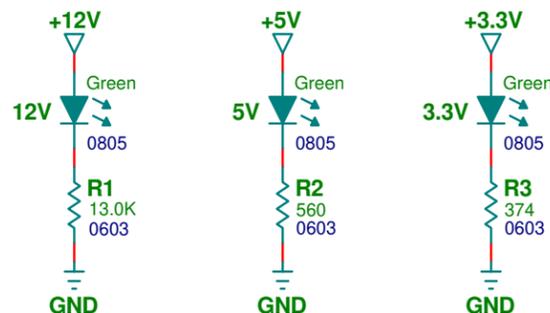
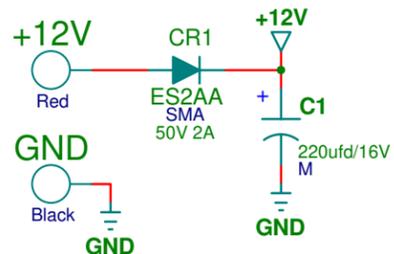


INPUT-USB BOARD #3

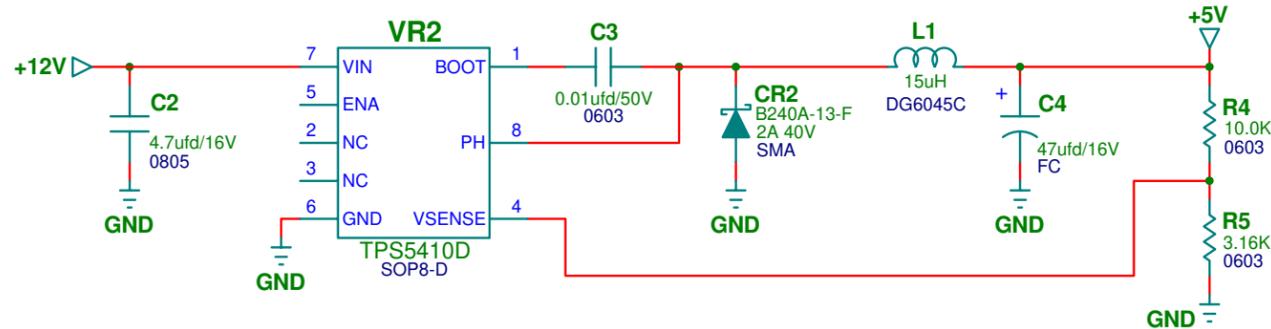


INPUT-USB BOARD #3

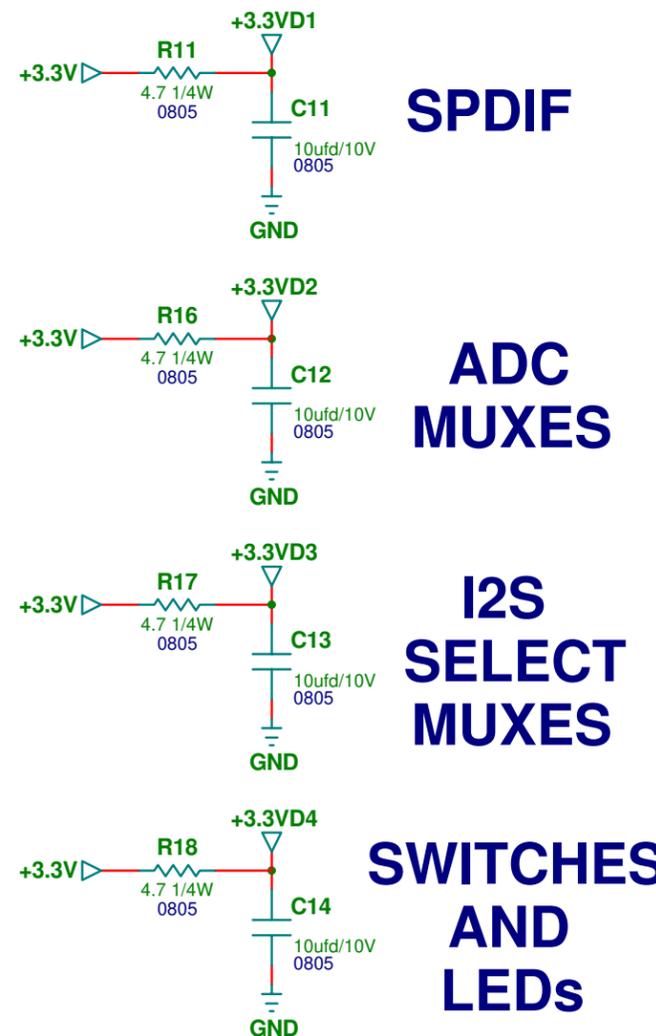
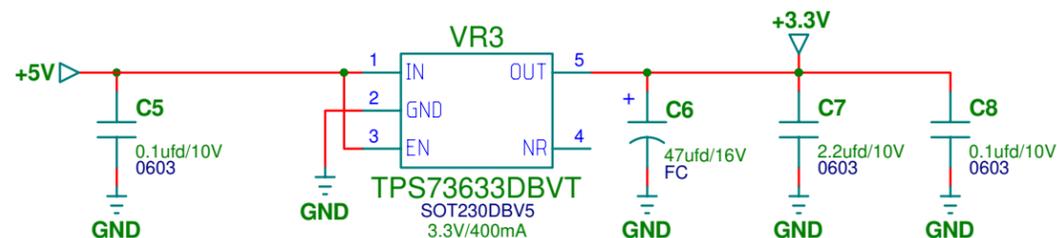
MAIN POWER IN



PVDD TO 5V SWITCHER

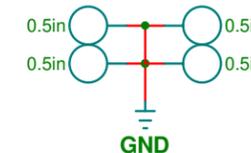


5V TO 3.3V DC-DC CONVERTER



BOM ONLY

STANDOFFS



INPUT-USB BOARD #3

REVISION HISTORY

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

TEXAS INSTRUMENTS DISCLAIMER

The information and materials ("Materials") provided here are provided by Texas Instruments Incorporated ("TI") as a service to its customers and/or suppliers, and may be used for informational purposes only, and only subject to the following terms. By downloading or viewing these Materials, you are signifying your assent to these terms.

- 1.) These preliminary evaluation schematics are intended for use for PRELIMINARY ENGINEERING DEVELOPMENT AND EVALUATION PURPOSES ONLY and are not considered by Texas Instruments to be fit as a basis for establishing production products or systems. This information may be incomplete in several respects, including but not limited to information relating to required design, marketing, and/or manufacturing-related protective considerations and product safety measures typically found in the end-product incorporating the goods.
- 2.) Accordingly, neither TI nor its suppliers warrant the accuracy or completeness of the information, text, graphics, links or other items contained within the Materials. TI may make changes to the Materials, or to the products described therein, at any time without notice. TI makes no commitment to update the Materials.
- 3.) TI assumes no liability for applications assistance, customer product design, software performance, or services that may be described or referenced in the Materials. The user assumes all responsibility and liability for proper and safe design and handling of goods. Accordingly, the user indemnifies TI from all claims arising from its use of the Materials.
- 4.) TI currently deals with various customers for products, and therefore our arrangement with the user will not be exclusive. TI makes no representations regarding the commercial availability of non-TI components that may be referenced in the Materials.
- 5.) No license is granted under any patent right or other intellectual property right of TI covering or relating to any combination, machine, or process in which such TI products or services might be or are used. Except as expressly provided herein, TI and its suppliers do not grant any express or implied right to you under any patents, copyrights, trademarks, or trade secret information.
- 6.) Performance tests and ratings, to the extent referenced in the Materials, are measured using specific computer systems and/or components and reflect the approximate performance of TI products as measured by those tests. Any difference in system hardware or software design or configuration may affect actual performance. Buyers should consult other sources of information to evaluate the performance of systems or components they are considering purchasing.
- 7.) Resale of TI's products or services with statements different from or beyond the parameters stated by TI for that product or service in official TI data books or data sheets voids all express and any implied warranties for the associated TI product or service, and is an unfair and deceptive business practice, and TI is not responsible for any such use.
- 8.) The Materials are copyrighted and any unauthorized use may violate copyright, trademark, and other laws. You may only download one copy for your internal use only, unless you are specifically licensed to do otherwise by TI in writing. This is a license, not a transfer of title, and is subject to the following restrictions: You may not:
 - (a) modify the Materials (including any associated warranties, conditions, limitations or notices) or use them for any commercial purpose, or any public display, performance, sale or rental;
 - (b) decompile, reverse engineer, or disassemble software Materials except and only to the extent permitted by applicable law;
 - (c) remove any copyright or other proprietary notices from the Materials;
 - (d) transfer the Materials to another person. You agree to prevent any unauthorized copying of the Materials. TI may terminate this license at any time if you are in breach of the terms of this Agreement. Upon termination, you will immediately destroy the Materials.
- 9.) THE MATERIALS ARE PROVIDED "AS IS" WITHOUT ANY EXPRESS OR IMPLIED WARRANTY OF ANY KIND INCLUDING WARRANTIES OF MERCHANTABILITY, NONINFRINGEMENT OF INTELLECTUAL PROPERTY, OR FITNESS FOR ANY PARTICULAR PURPOSE. IN NO EVENT SHALL TI OR ITS SUPPLIERS BE LIABLE FOR ANY DAMAGES WHATSOEVER (INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF PROFITS, BUSINESS INTERRUPTION, LOSS OF INFORMATION) ARISING OUT OF THE USE OF OR INABILITY TO USE THE MATERIALS, EVEN IF TI HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, enhancements, improvements and other changes to its semiconductor products and services per JESD46, latest issue, and to discontinue any product or service per JESD48, latest issue. Buyers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All semiconductor products (also referred to herein as "components") are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its components to the specifications applicable at the time of sale, in accordance with the warranty in TI's terms and conditions of sale of semiconductor products. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by applicable law, testing of all parameters of each component is not necessarily performed.

TI assumes no liability for applications assistance or the design of Buyers' products. Buyers are responsible for their products and applications using TI components. To minimize the risks associated with Buyers' products and applications, Buyers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any patent right, copyright, mask work right, or other intellectual property right relating to any combination, machine, or process in which TI components or services are used. Information published by TI regarding third-party products or services does not constitute a license to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of significant portions of TI information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. TI is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

Resale of TI components or services with statements different from or beyond the parameters stated by TI for that component or service voids all express and any implied warranties for the associated TI component or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

Buyer acknowledges and agrees that it is solely responsible for compliance with all legal, regulatory and safety-related requirements concerning its products, and any use of TI components in its applications, notwithstanding any applications-related information or support that may be provided by TI. Buyer represents and agrees that it has all the necessary expertise to create and implement safeguards which anticipate dangerous consequences of failures, monitor failures and their consequences, lessen the likelihood of failures that might cause harm and take appropriate remedial actions. Buyer will fully indemnify TI and its representatives against any damages arising out of the use of any TI components in safety-critical applications.

In some cases, TI components may be promoted specifically to facilitate safety-related applications. With such components, TI's goal is to help enable customers to design and create their own end-product solutions that meet applicable functional safety standards and requirements. Nonetheless, such components are subject to these terms.

No TI components are authorized for use in FDA Class III (or similar life-critical medical equipment) unless authorized officers of the parties have executed a special agreement specifically governing such use.

Only those TI components which TI has specifically designated as military grade or "enhanced plastic" are designed and intended for use in military/aerospace applications or environments. Buyer acknowledges and agrees that any military or aerospace use of TI components which have **not** been so designated is solely at the Buyer's risk, and that Buyer is solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI has specifically designated certain components as meeting ISO/TS16949 requirements, mainly for automotive use. In any case of use of non-designated products, TI will not be responsible for any failure to meet ISO/TS16949.

Products

Audio	www.ti.com/audio
Amplifiers	amplifier.ti.com
Data Converters	dataconverter.ti.com
DLP® Products	www.dlp.com
DSP	dsp.ti.com
Clocks and Timers	www.ti.com/clocks
Interface	interface.ti.com
Logic	logic.ti.com
Power Mgmt	power.ti.com
Microcontrollers	microcontroller.ti.com
RFID	www.ti-rfid.com
OMAP Applications Processors	www.ti.com/omap
Wireless Connectivity	www.ti.com/wirelessconnectivity

Applications

Automotive and Transportation	www.ti.com/automotive
Communications and Telecom	www.ti.com/communications
Computers and Peripherals	www.ti.com/computers
Consumer Electronics	www.ti.com/consumer-apps
Energy and Lighting	www.ti.com/energy
Industrial	www.ti.com/industrial
Medical	www.ti.com/medical
Security	www.ti.com/security
Space, Avionics and Defense	www.ti.com/space-avionics-defense
Video and Imaging	www.ti.com/video

TI E2E Community

e2e.ti.com