



## ABSTRACT

This user's guide describes the TAS2563RPP evaluation module (TAS2x63EVM). The TAS2x63EVM allows for evaluation of the TAS2563RPP device with end products.

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### 1 Trademarks

PurePath™ is a trademark of Texas Instruments.

Microsoft® and Windows® are registered trademarks of Microsoft Corporation.

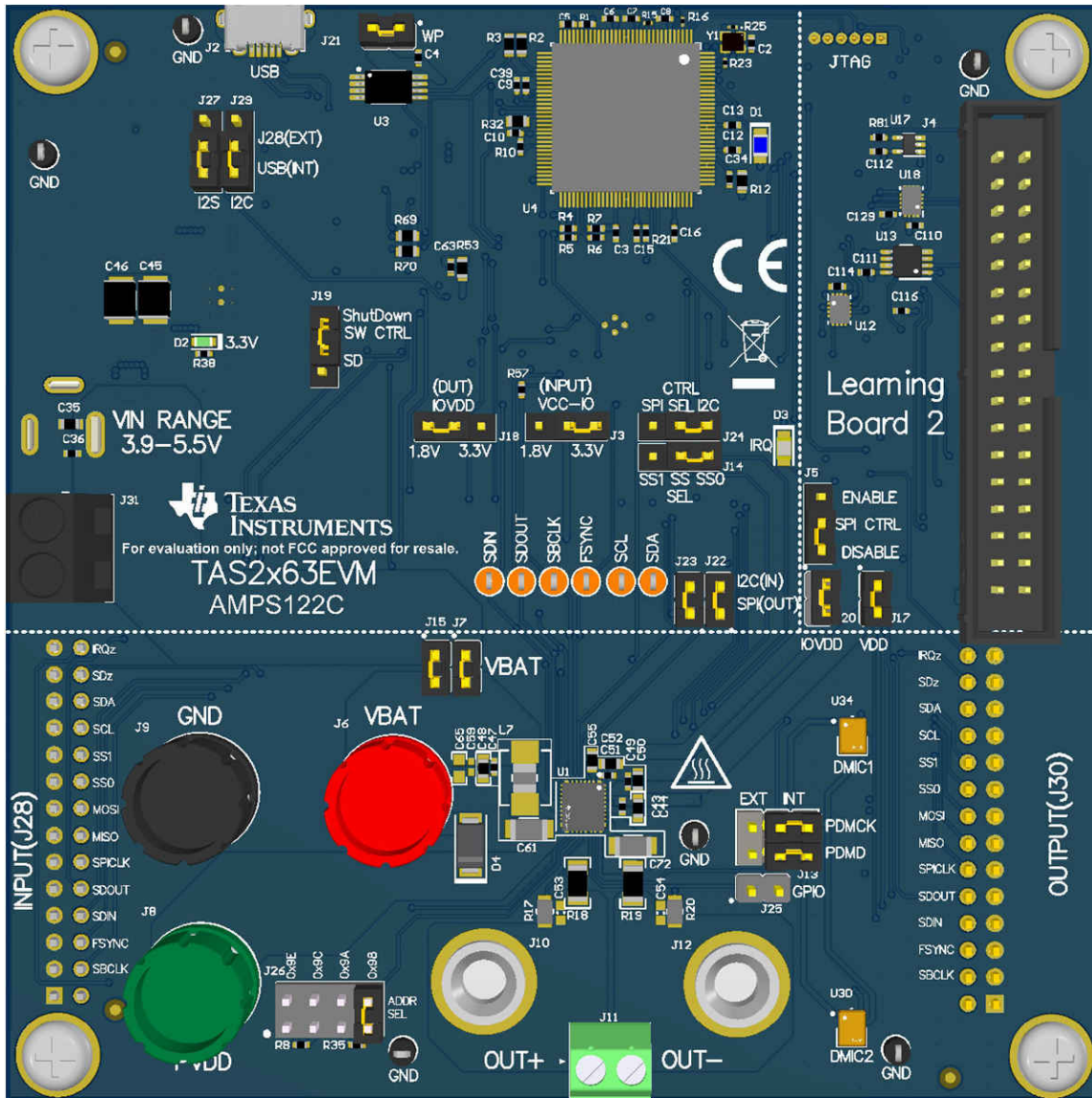
All trademarks are the property of their respective owners.

## 2 Description

The TAS2x63EVM is designed to demonstrate the performance of TAS2563 in a mono configuration. The design utilizes onboard controller to provide connection interface and supply voltages. TAS2563 is a mono, digital-input, Class-D audio amplifier optimized for efficiently driving high peak power into small loudspeaker applications. The Class-D amplifier is capable of delivering 6 W of peak power into a 4  $\Omega$  load at a battery voltage of 4.2 V. Integrated speaker voltage and current sense provides real time monitoring of loud speakers. Up to four devices can share a common bus via I2S/TDM + I2C interfaces. TAS2563 also allows the user to generate speaker tuning profiles to achieve optimal sound while actively providing protection against over temperature and over excursion events.

TAS2x63EVM supports evaluation and development with the TAS2563 device through the following interfaces:

- USB Interface
- Software control via PurePath™ Console 3 (PPC3) GUI, USB-HID
- USB-class audio device, compatible with Microsoft® Windows® 7+
- External 100-mil headers
- PSIA – I<sup>2</sup>S/TDM interface
- I<sup>2</sup>C
- Hardware Shutdown Control
- Interrupt Output



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Figure 2-1. TAS2x63EVM Top View (3D)

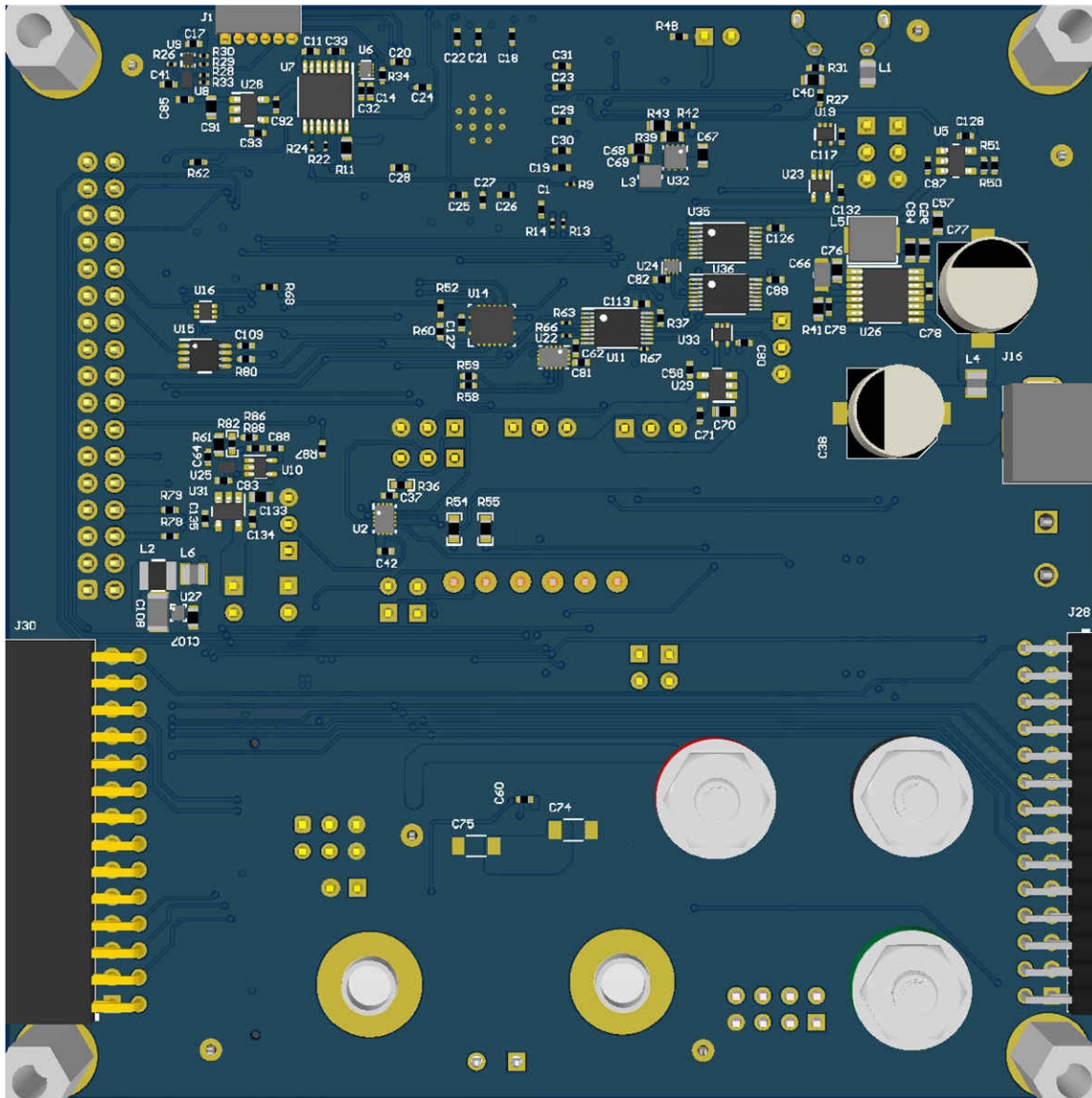


Figure 2-2. TAS2x63EVM Bottom View (3D)

### 3 Specifications

Table 3-1 lists the supply, input, and output requirements for TAS2563.

**Table 3-1. Specifications**

Parameter	Value
Supply Voltage - VBAT	2.7 to 5.5 V
Supply Voltage - VDD	1.65 to 1.95 V
Supply Voltage - IOVDD	1.65 to 3.6 V
Supply Voltage - PVDD (external mode only)	VBAT to 16 V
Input Logic	VDD
Output Power	6 W
USB, USB class-audio	Micro-USB

## 4 Software

The TAS2563 can be easily configured with PPC3 running the TAS2563 plug-in. To request access to the software first request a myTI.com account [here](#).

After creating an account, navigate to the [TAS2563 product page](#) and follow the link in the information box to request access to the software.

## 5 Device Configuration

The default configuration for the TAS2563 is described below in [Table 5-1](#) and [Figure 5-1](#).

### 5.1 Default Jumper Settings

**Table 5-1. Default Jumper Settings**

Jumper	Setting	Description
J27	USB	I <sup>2</sup> S input from USB
J29	USB	I <sup>2</sup> C input from USB
J19	SW CTRL	SD controlled by software
J18	1.8 V	TAS2563 IOVDD voltage
J3	1.8 V	Input signals voltage level
J24	I <sup>2</sup> C	Control signals from I <sup>2</sup> C
J22	Insert	SDA from I <sup>2</sup> C controls
J23	Insert	SCL from I <sup>2</sup> C controls
J17	Insert	VDD current sense
J20	Insert	IOVDD current sense
J7	Insert	VBAT current sense
J15	Insert	VBAT current sense
J13	INT	DMICs on the board
J26	0x98	Address select
J21	Insert	EEPROM write protect
J25	Remove	GPIO pin
J5	Disable	SPI xltr enable control

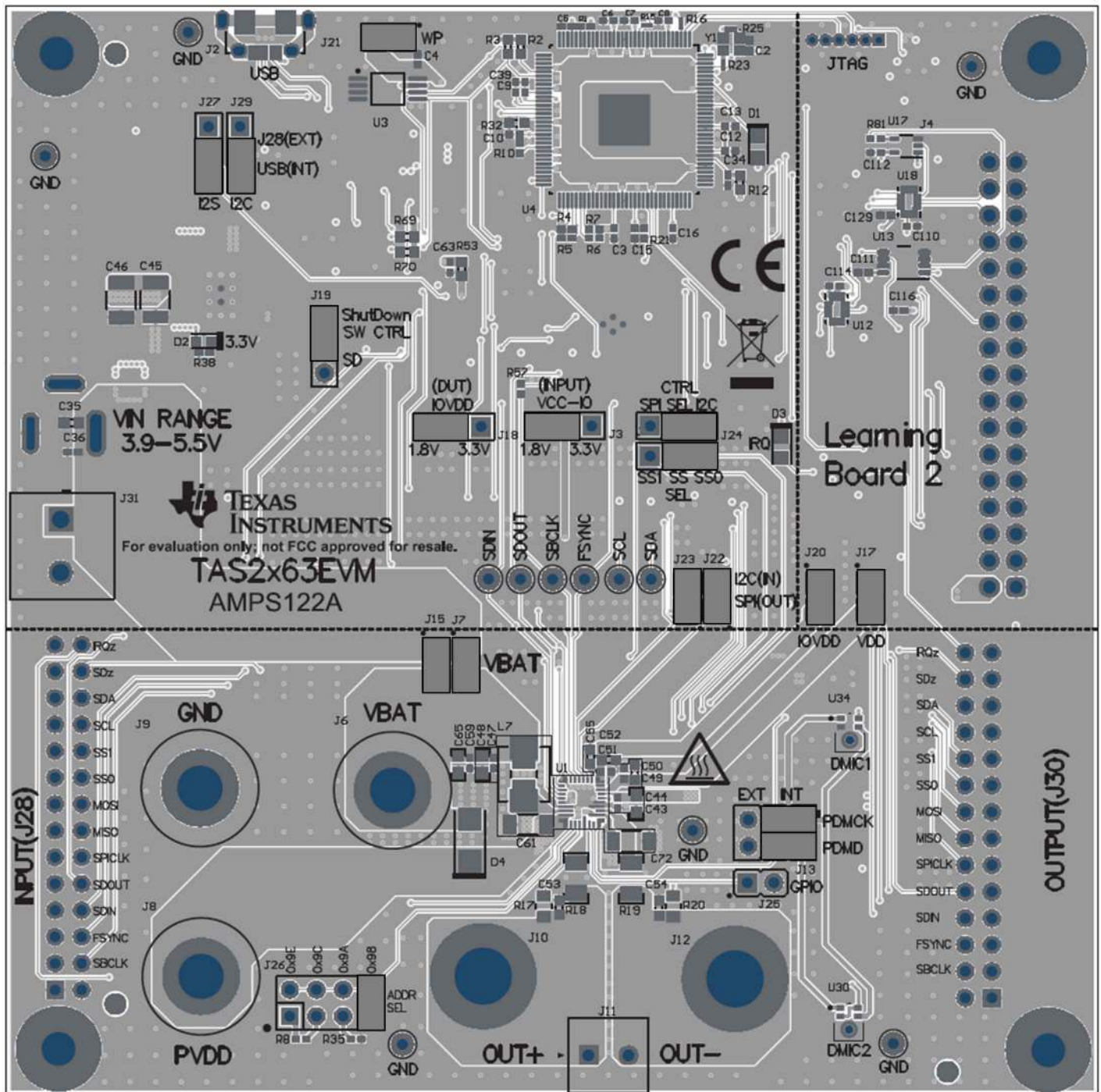


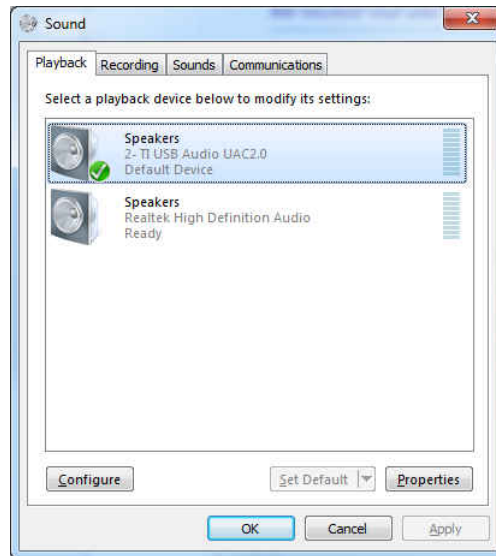
Figure 5-1. Default Jumper Settings

## 5.2 Mono Setup

Use the following instructions to complete a mono setup:

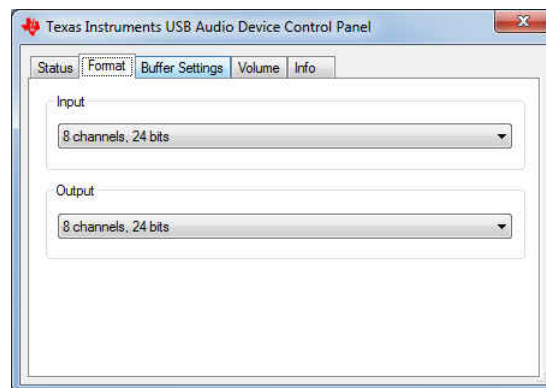
1. Install PPC3 with the TAS2563 plug-in.
2. Connect a speaker to J11.
3. Connect a 5 V supply to connector J16 or J31.
4. Connect a Micro USB Cable from PC to TAS2x63EVM.
5. Verify that TI USB Audio UAC2.0 is the default playback device by opening the sound dialog from the Windows Control Panel.





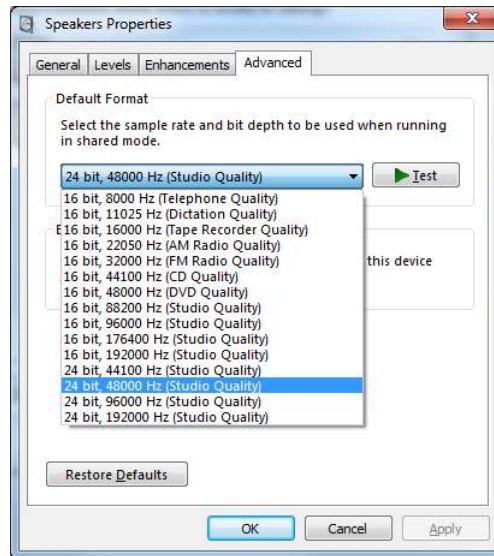
**Figure 5-2. Windows Playback Devices**

6. Set the maximum bit depth using the Texas Instruments USB Audio Device Control Panel found in the system tray.



**Figure 5-3. Texas Instruments USB Audio Device Control Panel**

7. Set the sampling rate.
  - Right click TI USB Audio UAC2.0
  - Select Properties
  - Click advanced tab
  - Select Rate

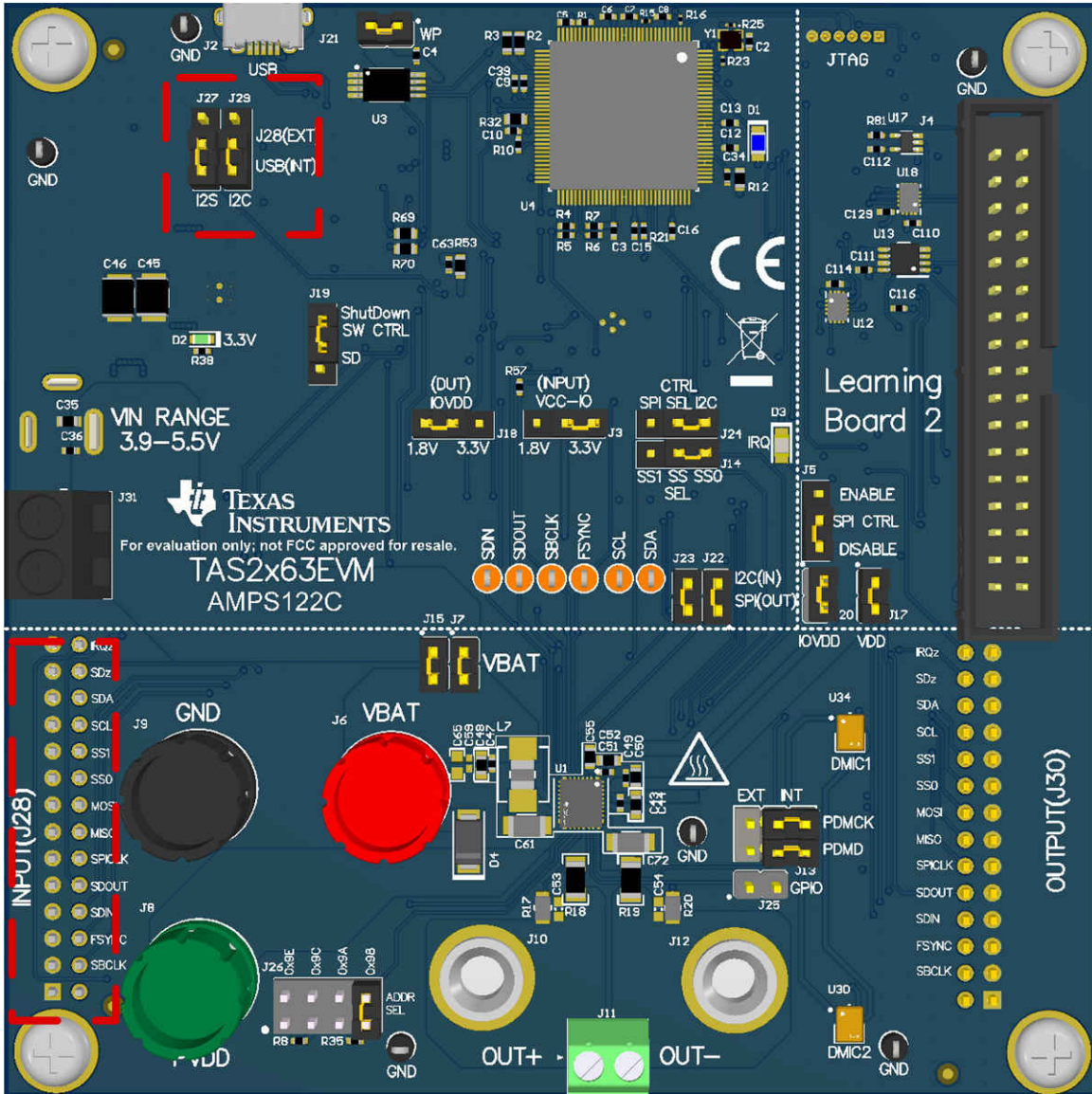


**Figure 5-4. Windows Playback device Sample Rate**

8. Configure the device using the TAS2563 PPC3 Plug-in.

## 6 Digital Audio Interfaces

Select the various digital audio interfaces on the TAS2x63EVM through hardware and software settings. J28 can be used to input signals from AP or other I2C and I2S signal sources, based on J27 and J29 configuration.



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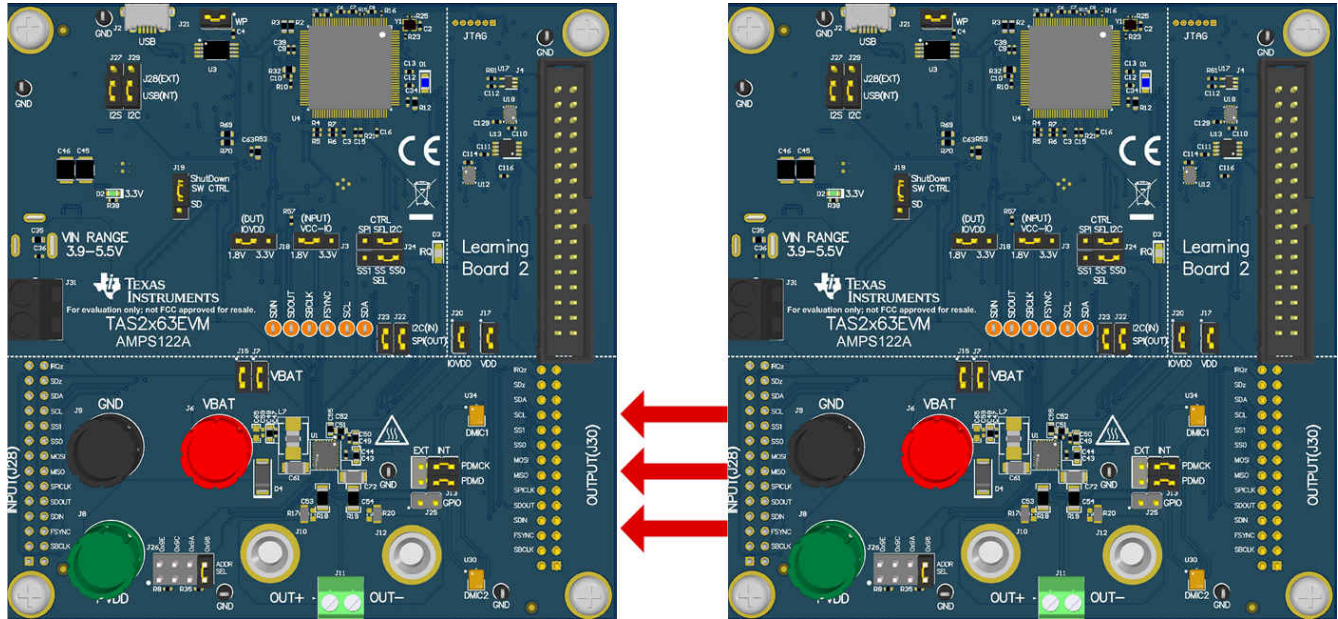
Figure 6-1. I<sup>2</sup>S/I<sup>2</sup>C Selector and Source

## 7 Multi-Channel Configuration

J30 output connector can be connected to J28 input connector from another TAS2x63EVM to allow evaluation of multi-channel applications up to 4 different channels.

Each board must have a different I2C address configuration on J26.

Each board must be supplied on either J16 or J31.



**Figure 7-1. TAS2x63EVM Multichannel Connection**

## 8 EVM Schematics

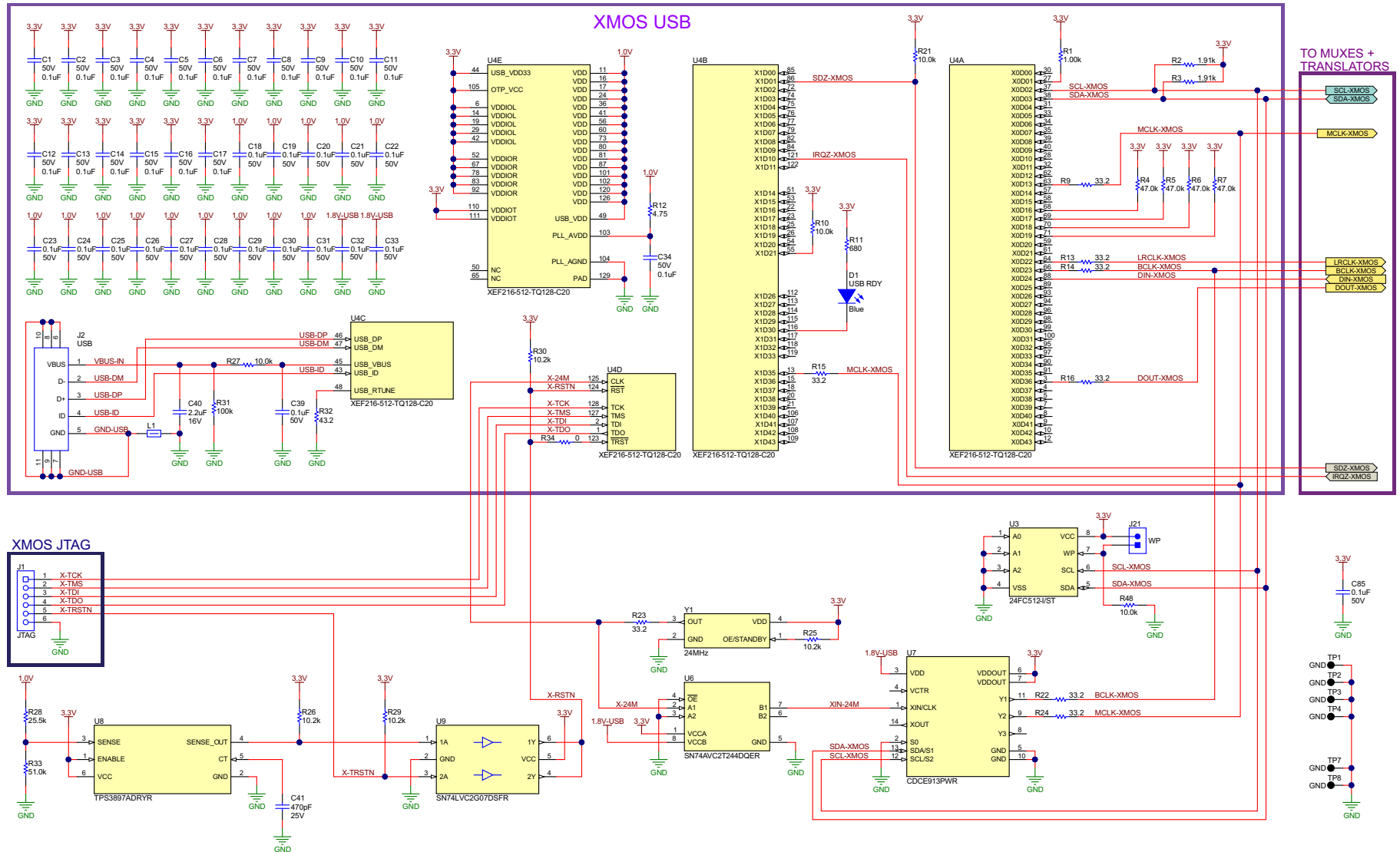


Figure 8-1. TAS2x63EVM Schematic (Sheet 1 of 7)

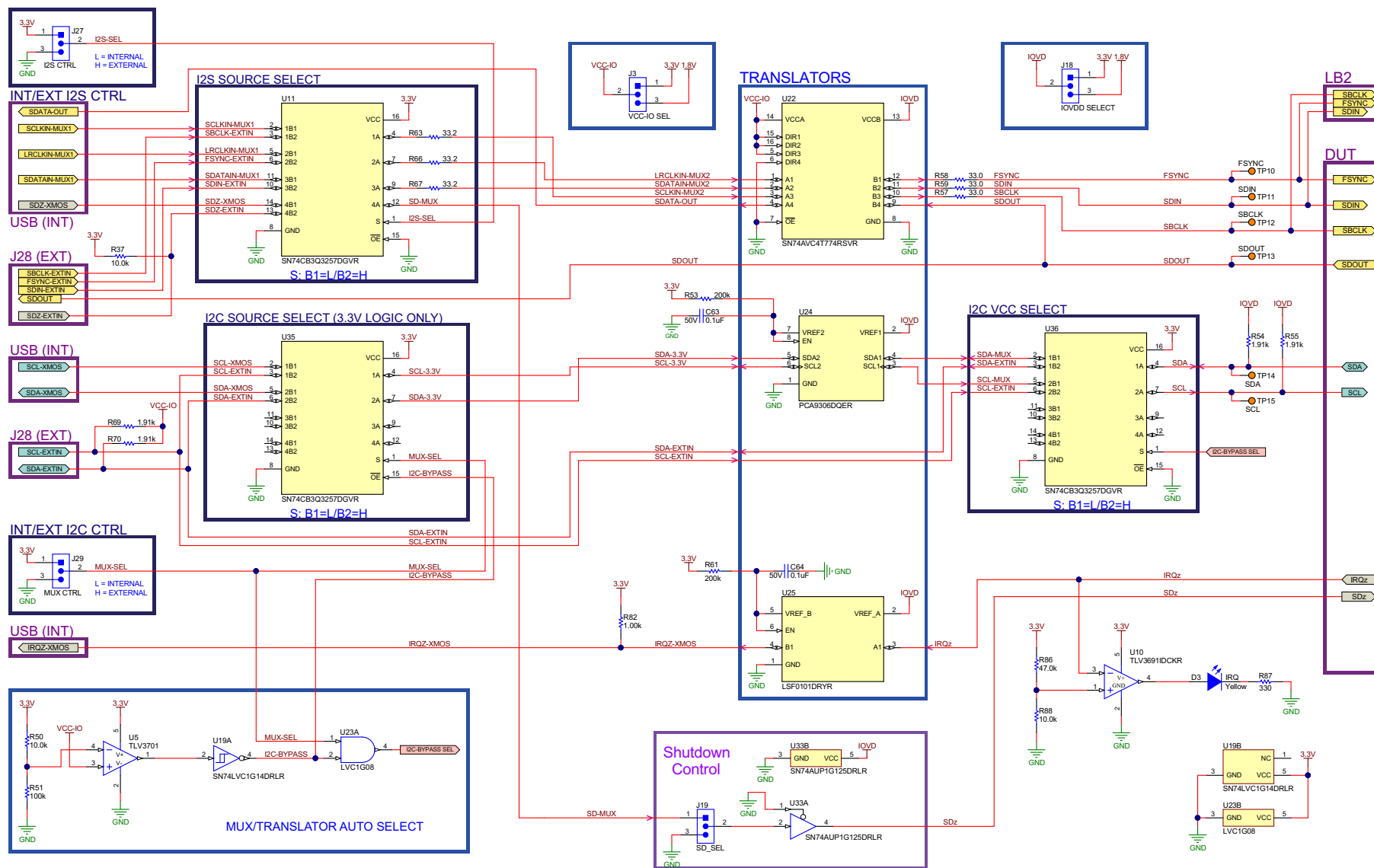


Figure 8-2. TAS2x63EVM Schematic (Sheet 2 of 7)

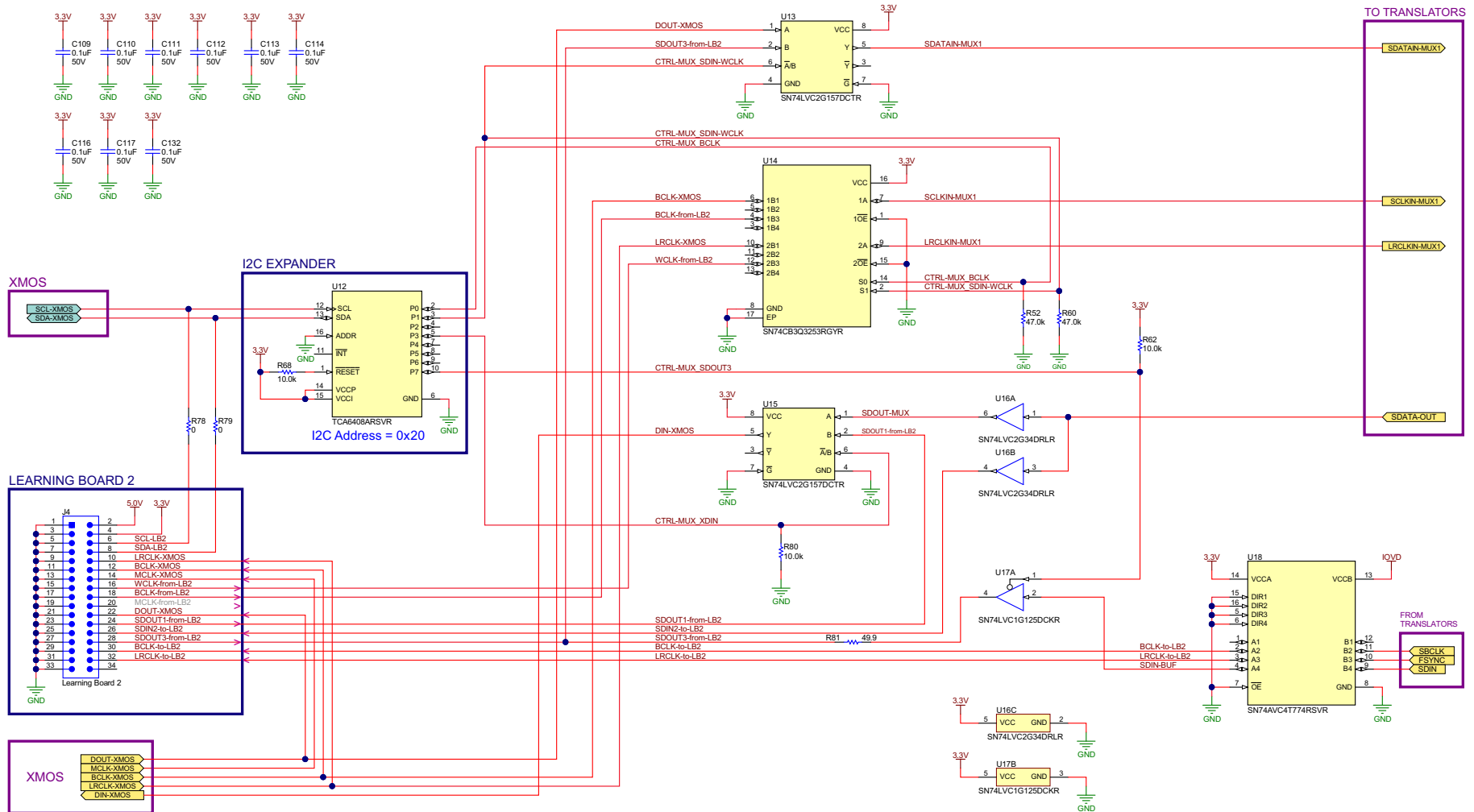


Figure 8-3. TAS2x63EVM Schematic (Sheet 3 of 7)

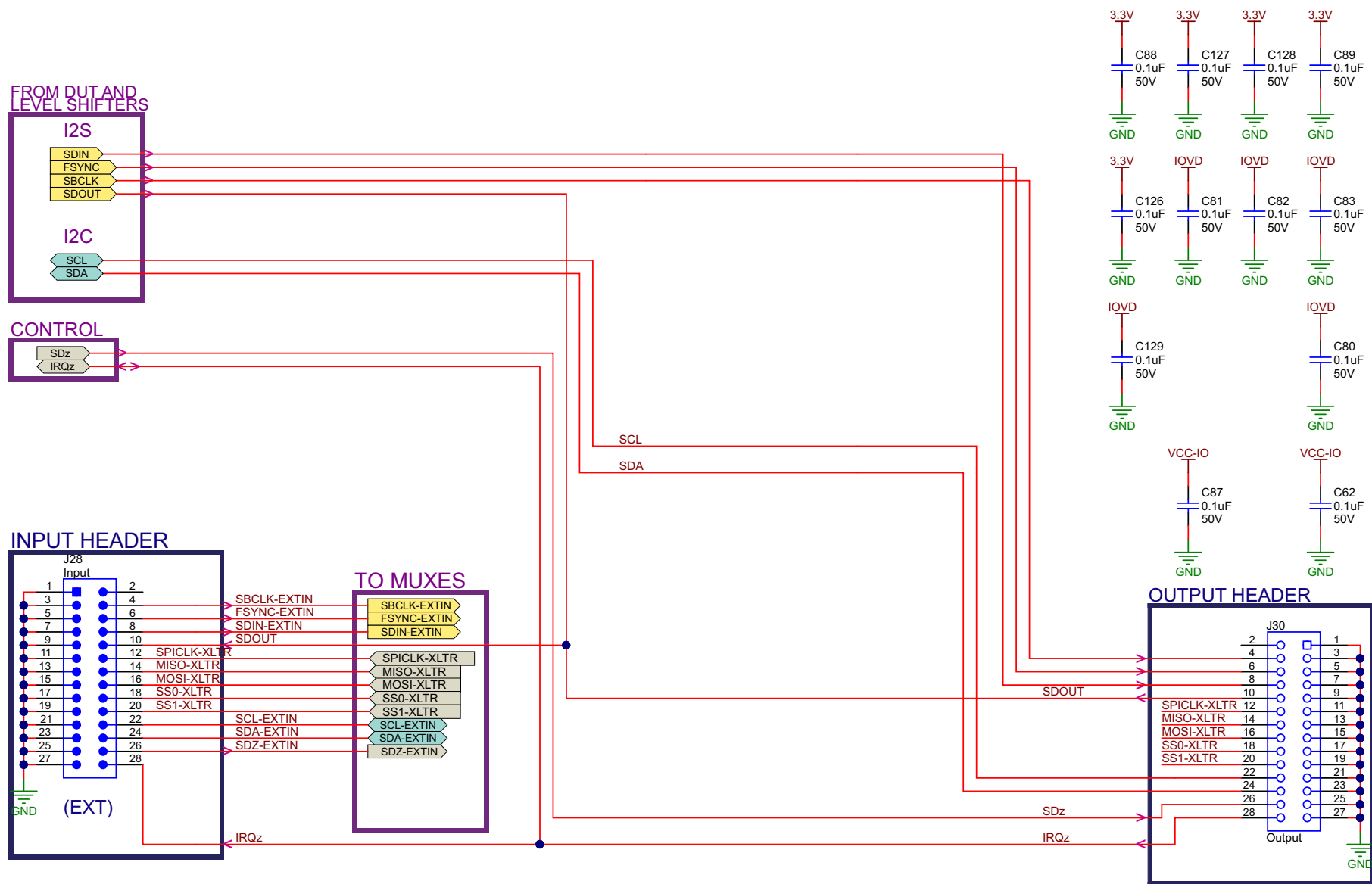
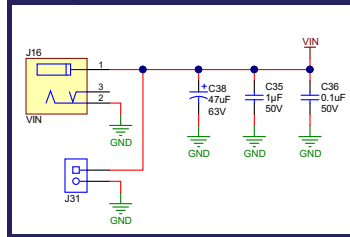


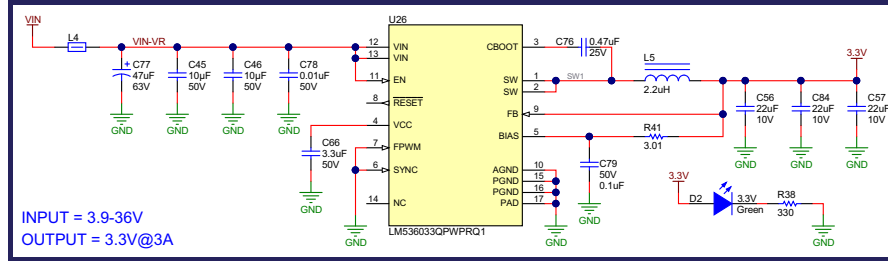
Figure 8-4. TAS2x63EVM Schematic (Sheet 4 of 7)



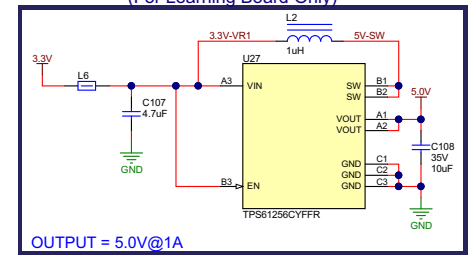
VIN Range = 3.9-5.5V



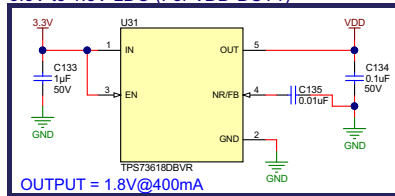
VIN to 3.3V LDO



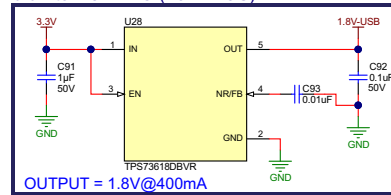
3.3V to 5V Boost Switcher  
(For Learning Board Only)



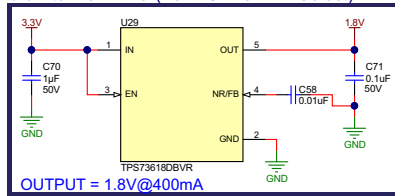
3.3V to 1.8V LDO (For VDD-DUT1)



3.3V to 1.8V LDO (For XMOS)



3.3V to 1.8V LDO (For DUT-IOVDD Select)



3.3V to 1V BUCK LDO for XMOS

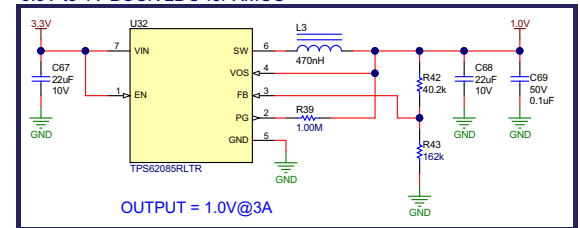


Figure 8-5. TAS2x63EVM Schematic (Sheet 5 of 7)

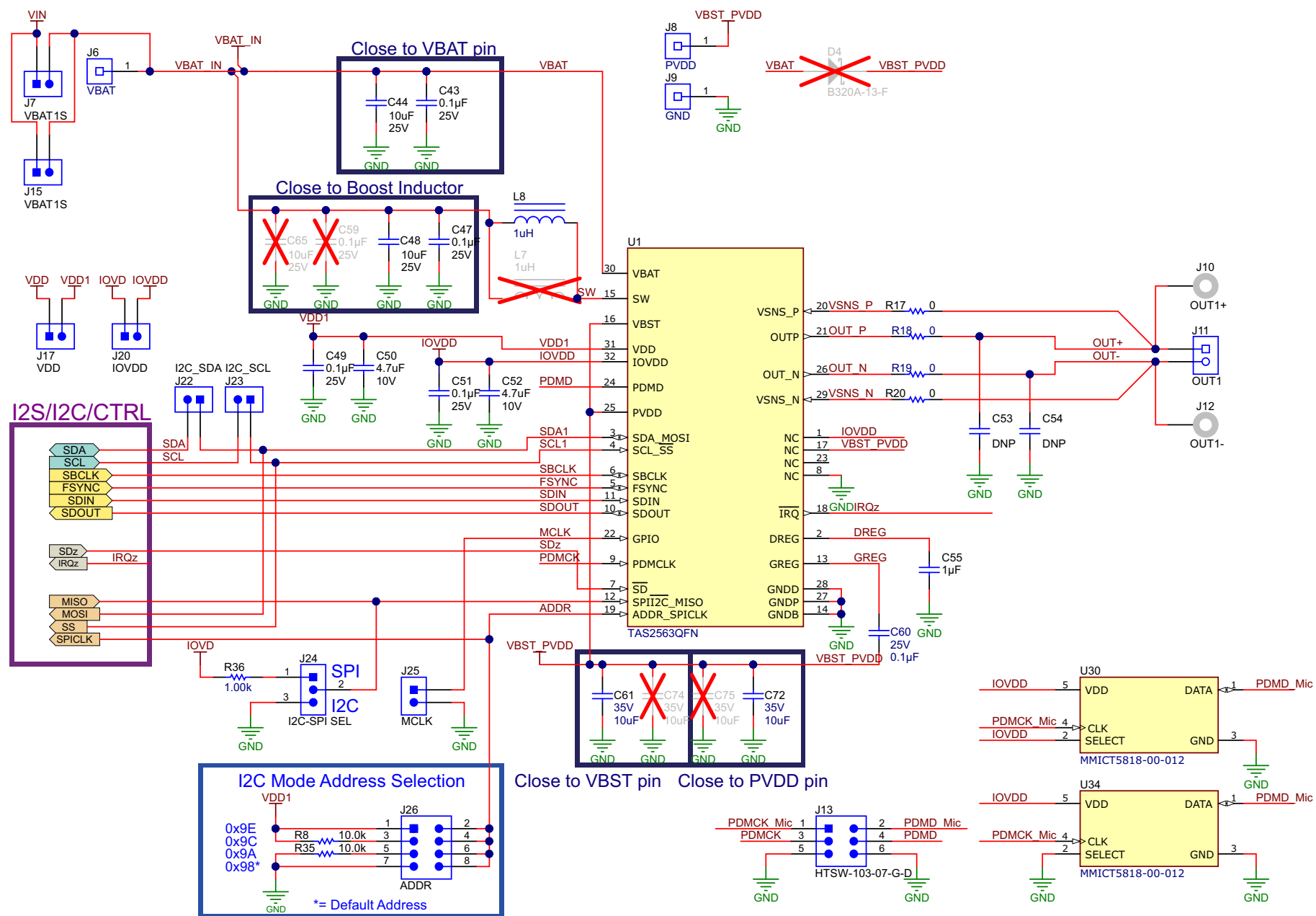


Figure 8-6. TAS2x63EVM Schematic (Sheet 6 of 7)

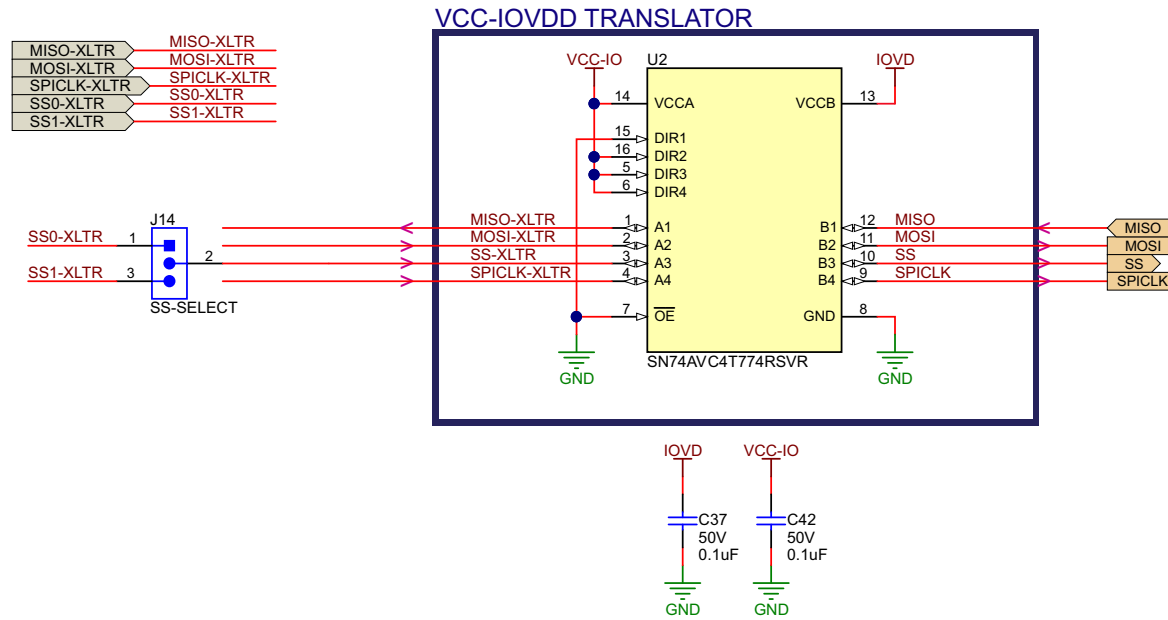


Figure 8-7. TAS2x63EVM Schematic (Sheet 7 of 7)

## 9 EVM Layer Plots

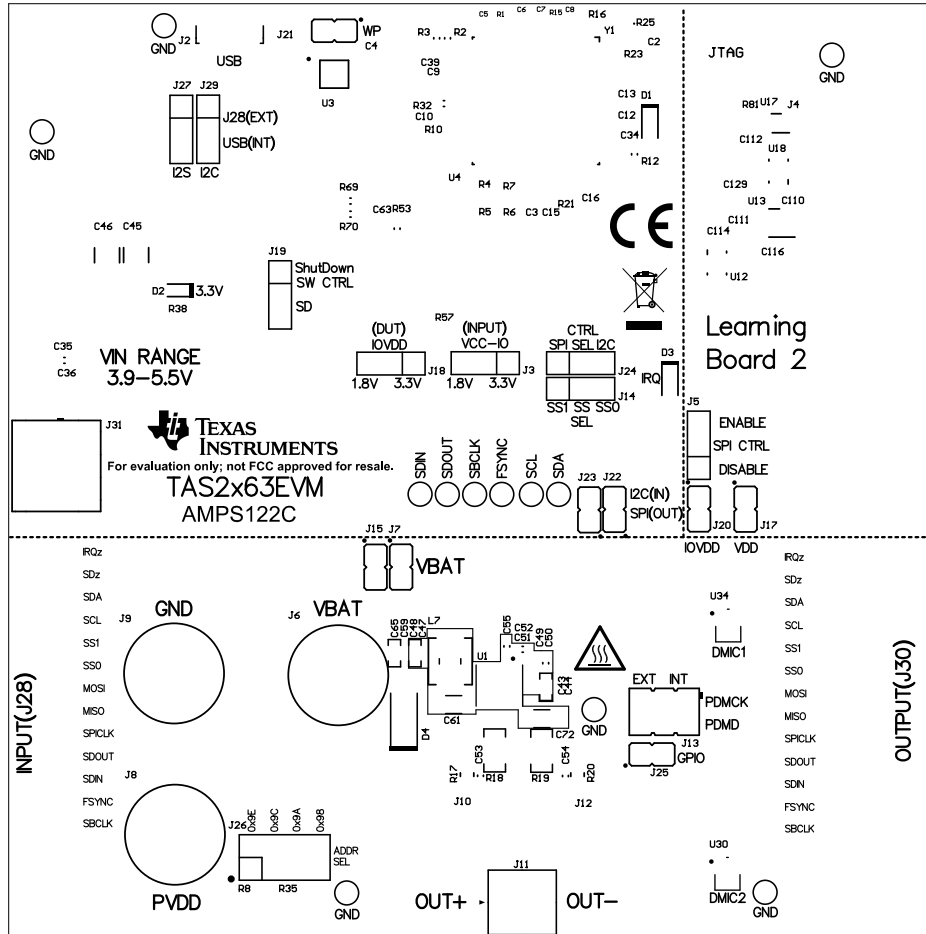


Figure 9-1. TAS2x63EVM Top Overlay

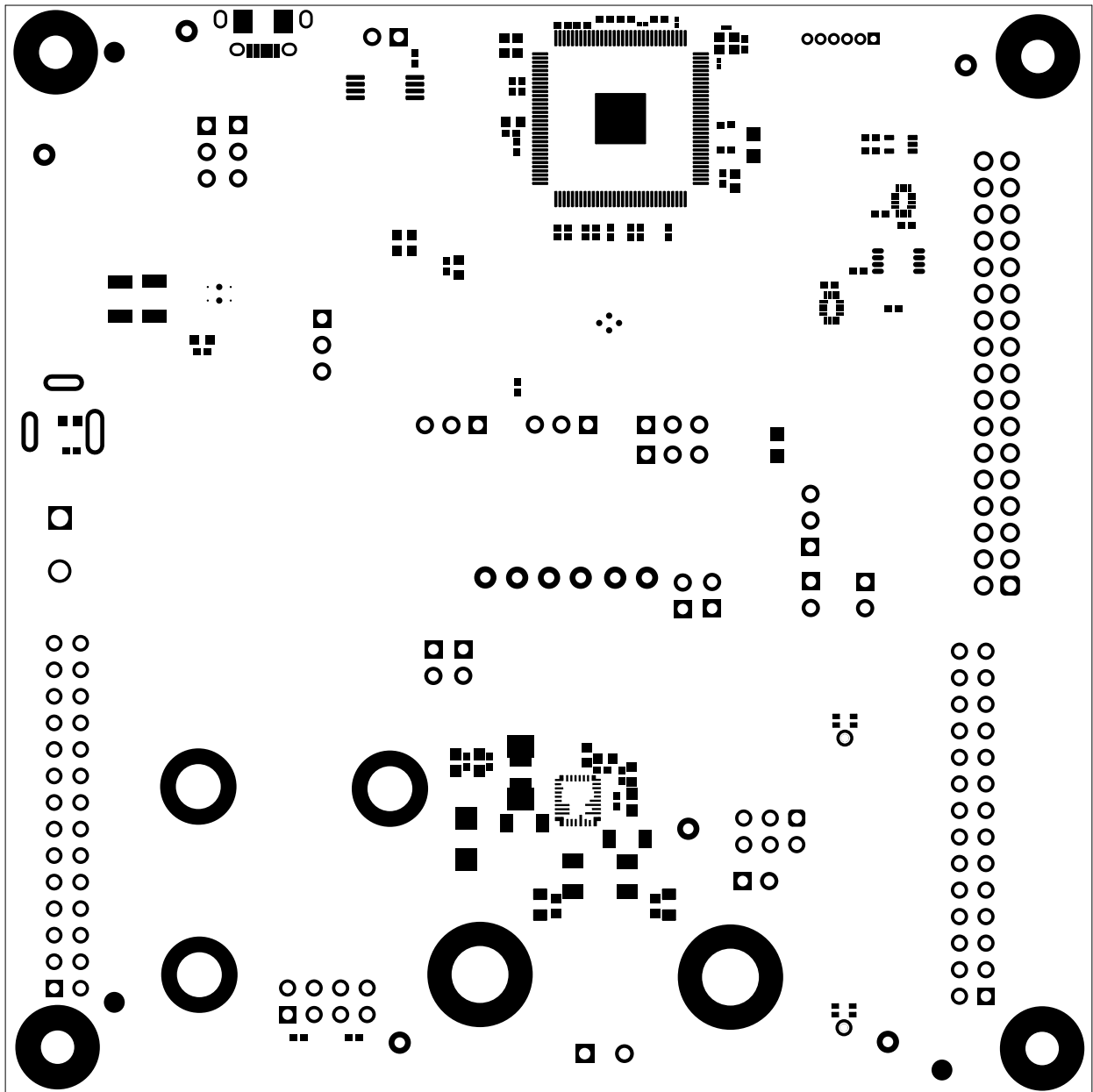


Figure 9-2. TAS2x63EVM Top Solder Mask

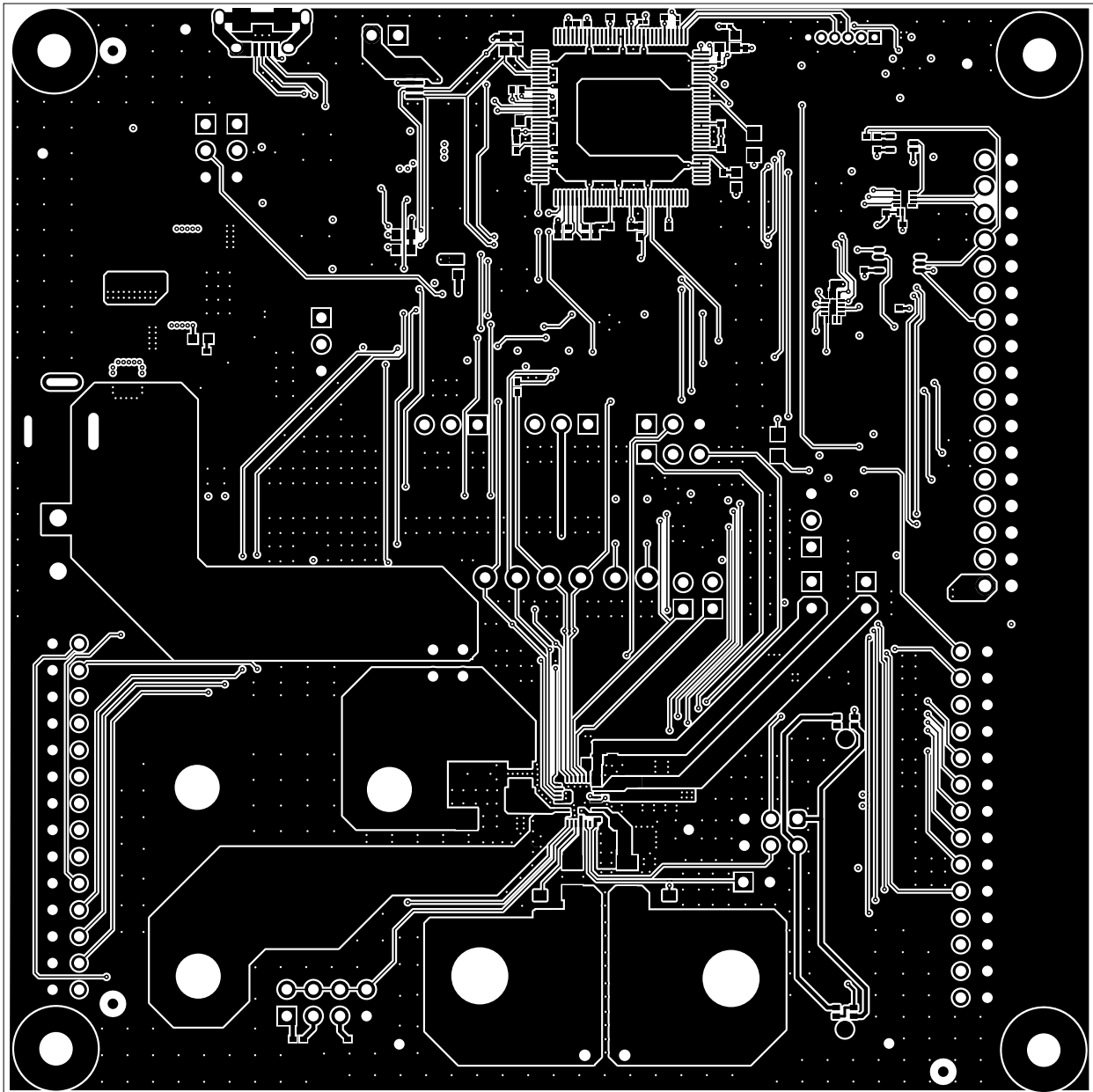
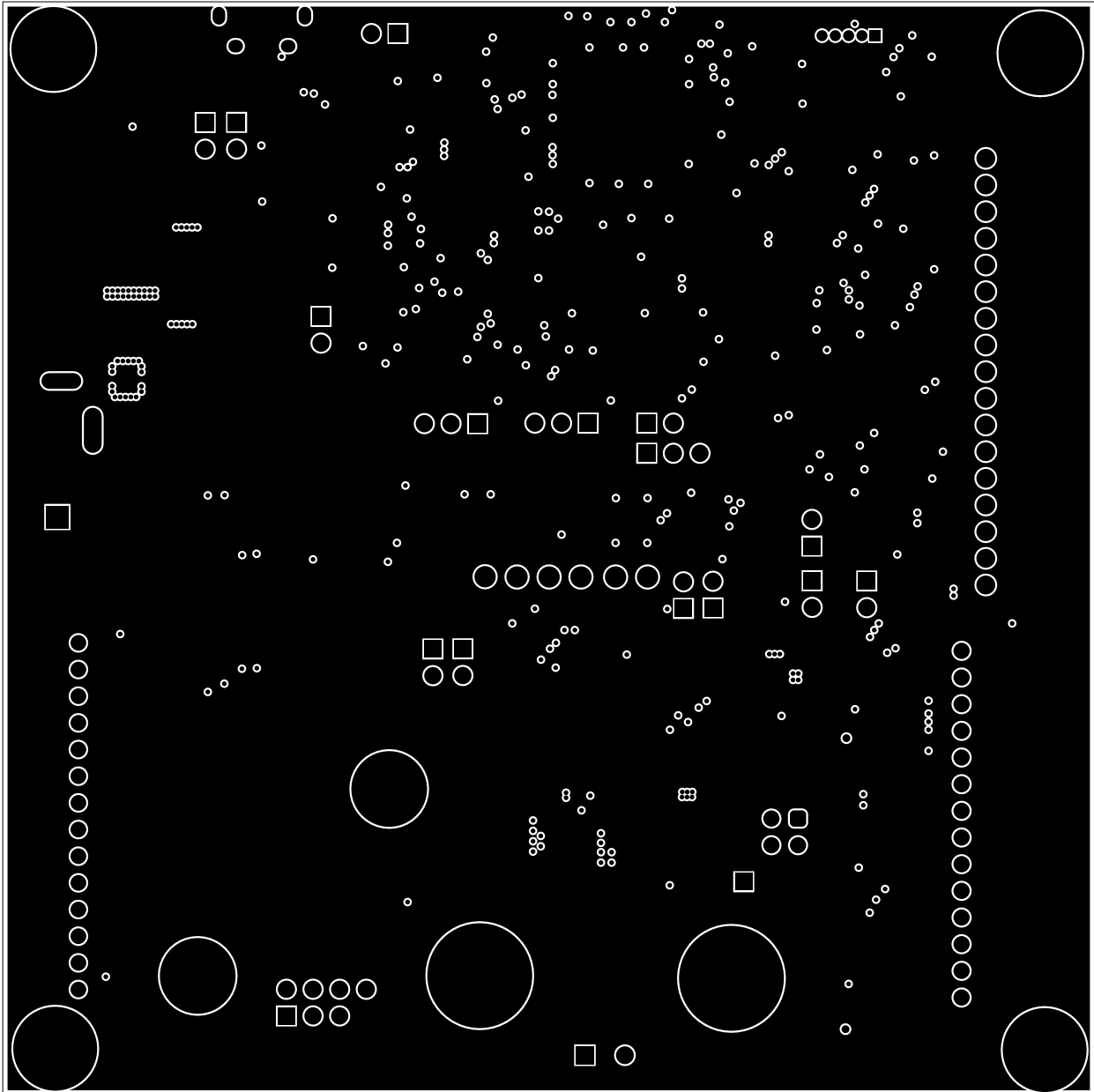


Figure 9-3. TAS2x63EVM Top Layer



**Figure 9-4. TAS2x63EVM Signal Layer 1**

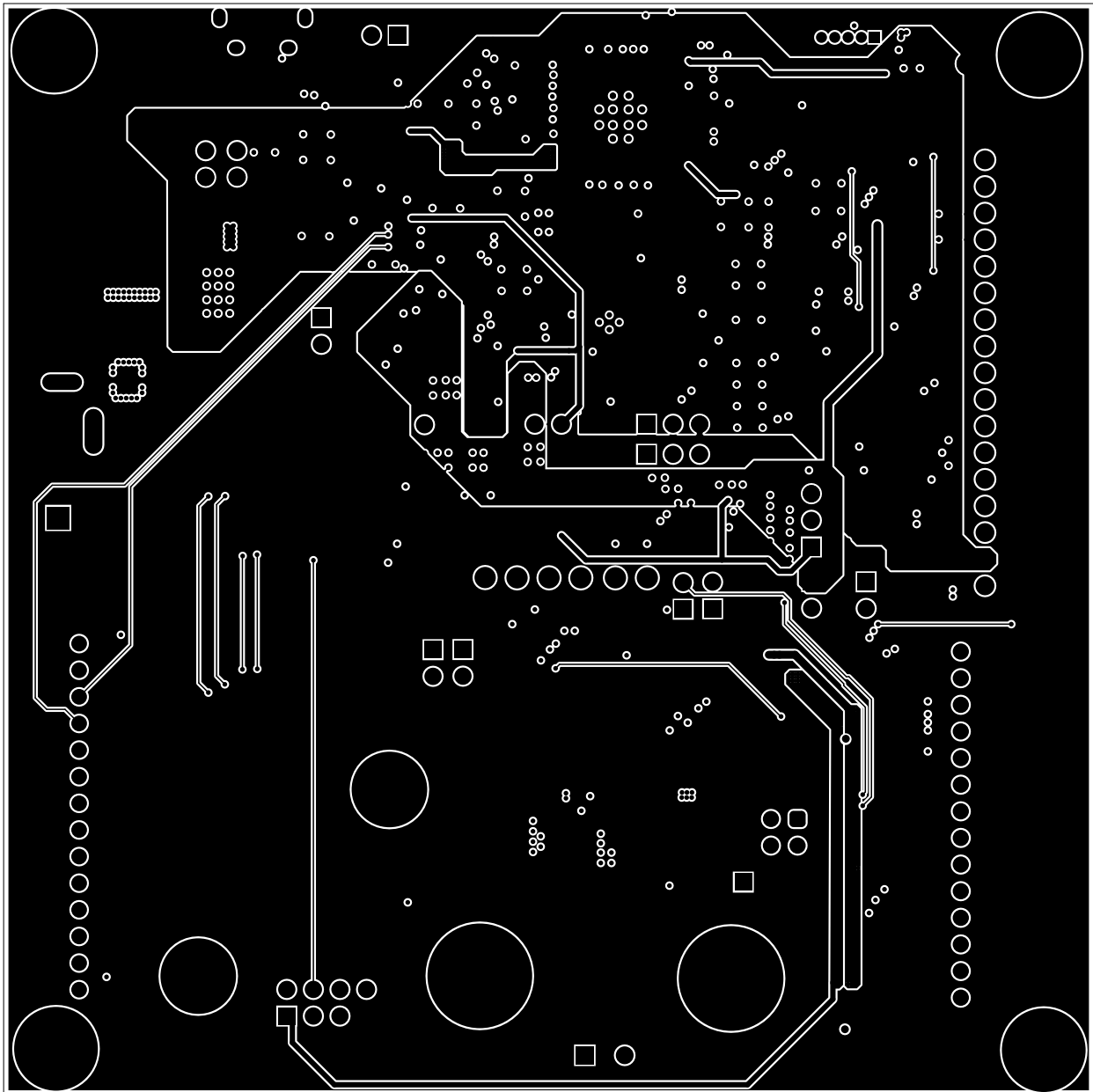


Figure 9-5. TAS2x63EVM Signal Layer 2



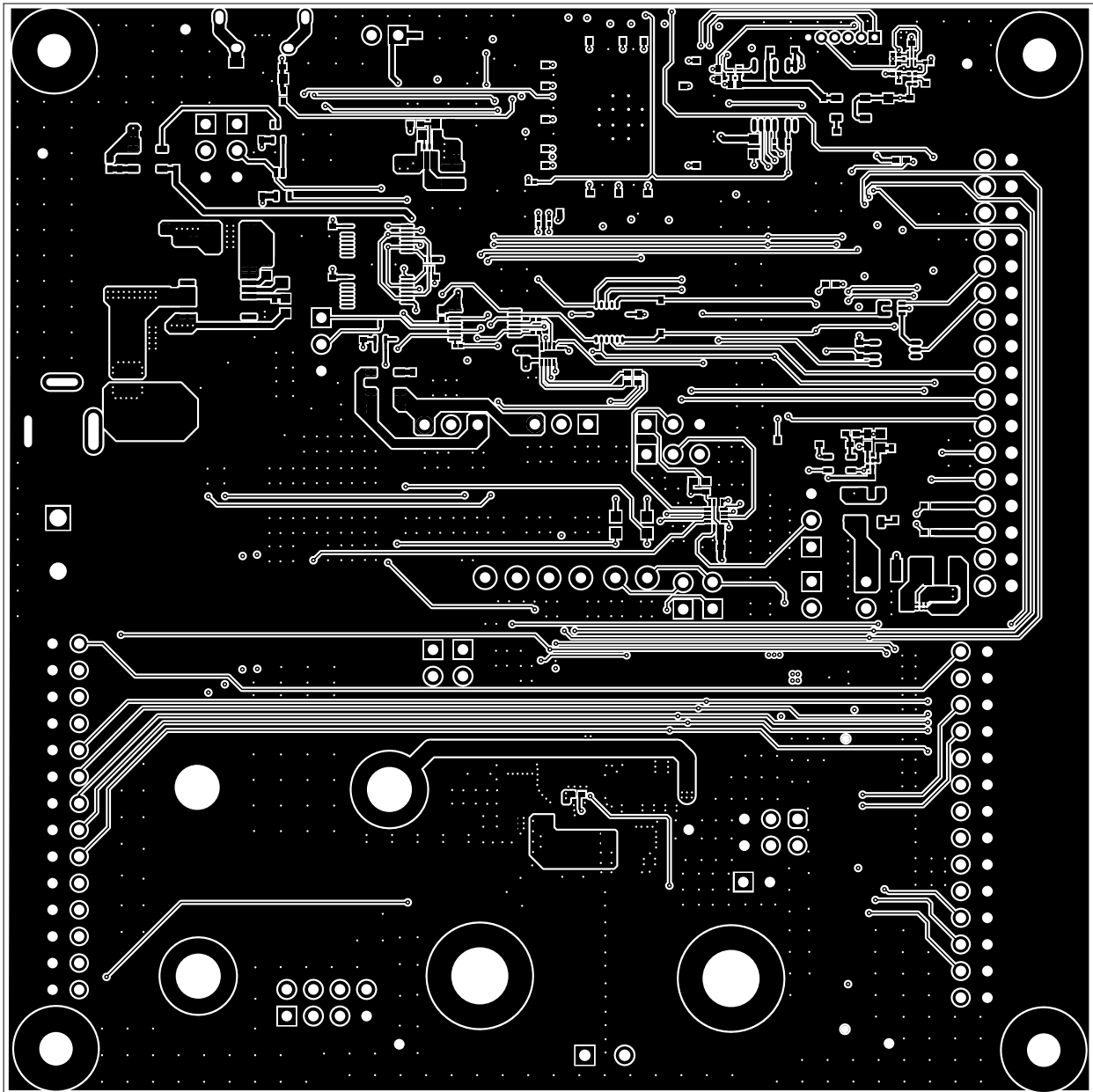


Figure 9-6. TAS2x63EVM Bottom Layer

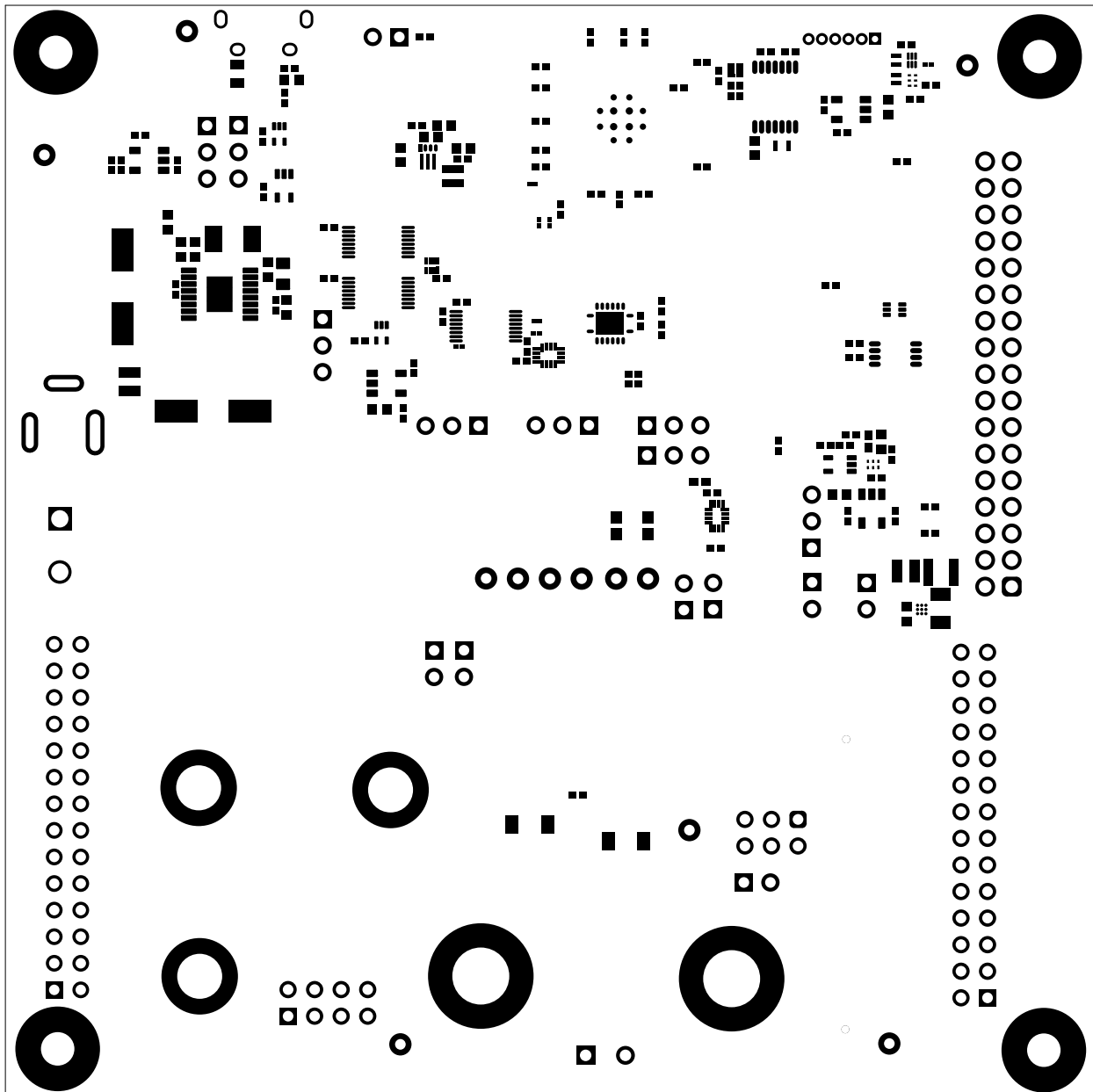


Figure 9-7. TAS2x63EVM Bottom Solder Mask

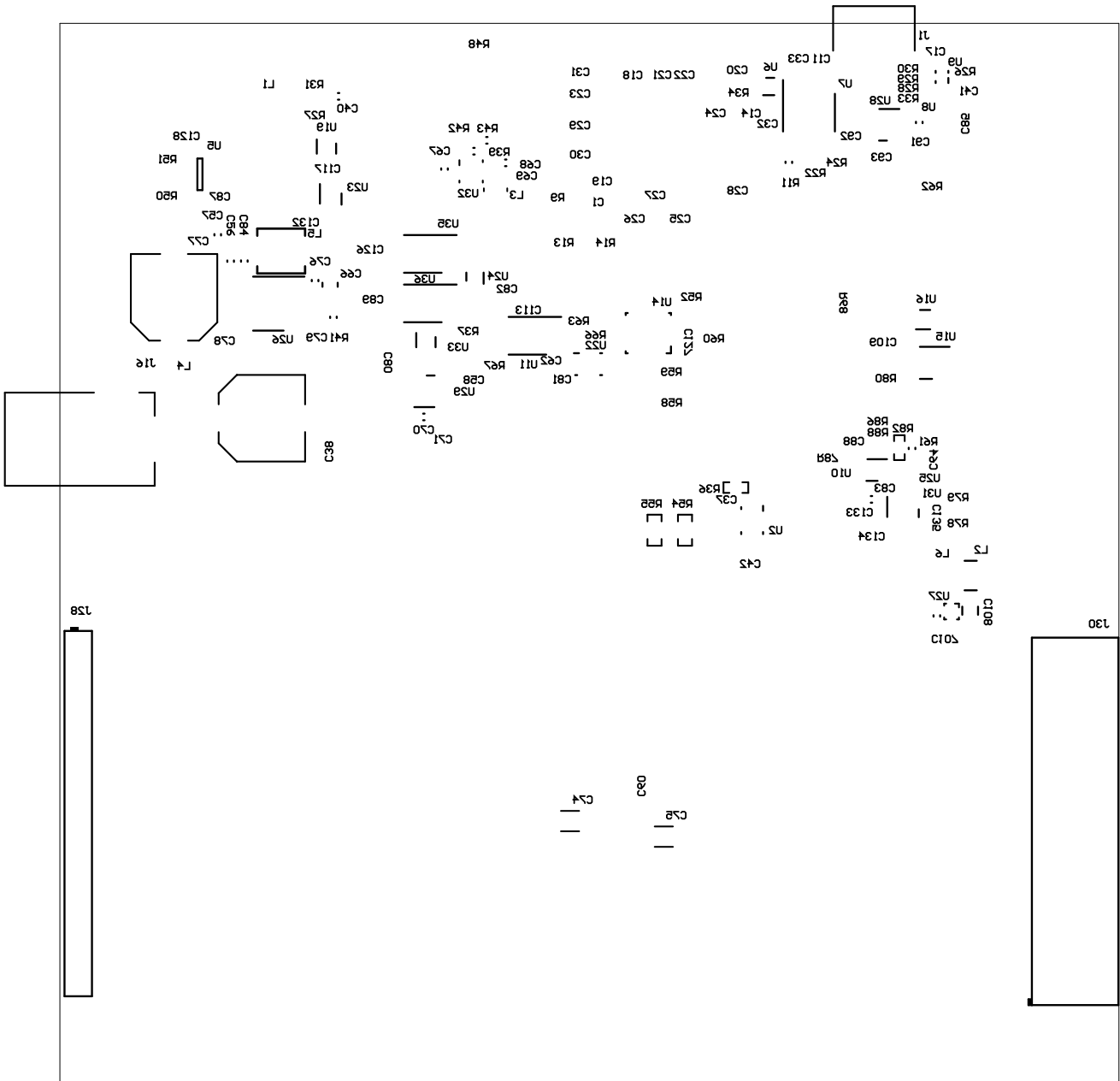


Figure 9-8. TAS2x63EVM Bottom Overlay

## 10 Bill of Materials

Designator	Quantity	Value	Description	PackageReference	PartNumber	Manufacturer	Alternate PartNumber	Alternate Manufacturer
!PCB	1		Printed Circuit Board		AMPS122	Any		
C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C15, C16, C17, C18, C19, C20, C21, C22, C23, C24, C25, C26, C27, C28, C29, C30, C31, C32, C33, C34, C36, C37, C39, C42, C62, C63, C64, C69, C71, C79, C80, C81, C82, C83, C85, C87, C88, C89, C92, C109, C110, C111, C112, C113, C114, C116, C117, C126, C127, C128, C129, C132, C134	67	0.1uF	CAP, CERM, 0.1 uF, 50 V, +/- 10%, X7R, 0402	0402	C1005X7R1H104K050BB	TDK		
C35, C70, C91, C133	4	1uF	CAP, CERM, 1 μF, 50 V, +/- 20%, X5R, AEC-Q200 Grade 3, 0603	0603	CGA3E3X5R1H105M080AB	TDK		
C38, C77	2	47uF	CAP, AL, 47 uF, 63 V, +/- 20%, 0.65 ohm, AEC-Q200 Grade 2, SMD	SMT Radial F	EEE-FK1J470P	Panasonic		
C40	1	2.2uF	CAP, CERM, 2.2 uF, 16 V, +/- 10%, X7R, 0603	0603	EMK107BB7225M A-T	Taiyo Yuden		

Designator	Quantity	Value	Description	PackageReference	PartNumber	Manufacturer	Alternate PartNumber	Alternate Manufacturer
C41	1	470pF	CAP, CERM, 470 pF, 25 V, +/- 5%, C0G/NP0, 0402	0402	GRM1555C1E471 JA01D	MuRata		
C43, C47, C49, C51, C60	5	0.1uF	CAP, CERM, 0.1 μF, 25 V,+/- 10%, X7R, AEC-Q200 Grade 1, 0402	0402	CGA2B3X7R1E10 4K050BB	TDK		
C44, C48	2	10uF	CAP, CERM, 10 uF, 25 V, +/- 20%, X5R, 0603	0603	GRM188R61E106 MA73D	MuRata		
C45, C46	2	10uF	CAP, CERM, 10 μF, 50 V,+/- 20%, JB, 1210	1210	C3225JB1H106M2 50AB	TDK		
C50, C52	2	4.7uF	CAP, CERM, 4.7 uF, 10 V, +/- 10%, X5R, 0603	0603	CGB3B1X5R1A47 5K055AC	TDK		
C55	1	1uF	CAP, CERM, 1 μF, 16 V,+/- 20%, X7R, 0603	0603	CL10B105MO8NN WC	Samsung		
C56, C57, C67, C68, C84	5	22uF	CAP, CERM, 22 uF, 10 V, +/- 20%, X5R, 0603	0603	C1608X5R1A226M 080AC	TDK		
C58, C78, C93, C135	4	0.01uF	CAP, CERM, 0.01 uF, 50 V, +/- 10%, X7R, AEC-Q200 Grade 1, 0402	0402	CGA2B3X7R1H10 3K050BB	TDK		
C61, C72	2	10uF	CAP, CERM, 10 uF, 35 V, +/- 10%, X7R, 1206	1206	C3216X7R1V106K 160AC	TDK		
C66	1	3.3uF	CAP, CERM, 3.3 uF, 50 V, +/- 10%, X5R, 0805	0805	C2012X5R1H335K 125AB	TDK		
C76	1	0.47uF	CAP, CERM, 0.47 uF, 25 V, +/- 10%, X7R, 0603	0603	GRM188R71E474 KA12D	MuRata		

Designator	Quantity	Value	Description	PackageReference	PartNumber	Manufacturer	Alternate PartNumber	Alternate Manufacturer
C107	1	4.7uF	CAP, CERM, 4.7 uF, 16 V, +/- 10%, X5R, 0603	0603	GRM188R61C475 KAAJ	MuRata		
C108	1	10uF	CAP, CERM, 10 uF, 35 V, +/- 10%, X7R, 1206_190	1206_190	GMK316AB7106K L-TR	Taiyo Yuden		
D1	1	Blue	LED, Blue, SMD	LED_0805	LTST-C170TBKT	Lite-On		
D2	1	Green	LED, Green, SMD	LED_0603	LTST-C191KGKT	Lite-On		
D3	1	Yellow	LED, Yellow , SMD	0805 LED	LTST-C170KSKT	Lite-On		
D4	1	20V	Diode, Schottky, 20 V, 3 A, SMA	SMA	B320A-13-F	Diodes Inc.		
H1, H2, H3, H4	4		Machine Screw, Round, #4-40 x 1/4, Nylon, Philips panhead	Screw	NY PMS 440 0025 PH	B&F Fastener Supply		
H5, H6, H7, H8	4		Standoff, Hex, 1"L #4-40 Nylon	Standoff	1902E	Keystone		
J1	1		Receptacle, 50mil, 6x1, Gold, R/A, TH	6x1 Receptacle	LPPB061NGCN-RC	Sullins Connector Solutions		
J2	1		Connector, Receptacle, Micro-USB Type AB, R/A, Bottom Mount SMT	Connector, USB Micro AB	DX4R205JJAR1800	JAE Electronics		
J3, J14, J18, J19, J24, J27, J29	7		Header, 100mil, 3x1, Gold, TH	PBC03SAAN	PBC03SAAN	Sullins Connector Solutions		
J4	1		Header(shrouded), 2.54mm, 17x2, Gold, TH	Header(shrouded), 2.54mm, 17x2, TH	302-S341	On-Shore Technology		
J6	1		Binding Post, Bright Tin, Red, TH	Binding Post, Bright Tin, Red, TH	3760-2	Pomona Electronics		
J7, J15, J17, J20, J21, J22, J23, J25	8		Header, 100mil, 2x1, Gold, TH	Sullins 100mil, 1x2, 230 mil above insulator	PBC02SAAN	Sullins Connector Solutions		

Designator	Quantity	Value	Description	PackageReference	PartNumber	Manufacturer	Alternate PartNumber	Alternate Manufacturer
J8	1		Binding Post, Bright Tin, Green, TH	Binding Post, Bright Tin, Green, TH	3760-5	Pomona Electronics		
J9	1		Binding Post, Bright Tin, Black, TH	Binding Post, Bright Tin, Black, TH	3760-0	Pomona Electronics		
J10, J12	2		Standard Banana Jack, Uninsulated, 5.5mm	Keystone_575-4	575-4	Keystone		
J11	1		Conn Term Block, 2POS, 3.81mm, TH	2POS Terminal Block	1727010	Phoenix Contact		
J13	1		Header, 2.54mm, 3x2, Gold, TH	Header, 2.54mm, 3x2, Gold, TH	HTSW-103-07-G-D	Samtec		
J16	1		Power Jack, mini, 2.5mm OD, R/A, TH	Jack, 14.5x11x9mm	RAPC712X	Switchcraft		
J26	1		Header, 100mil, 4x2, Tin, TH	Header, 4x2, 100mil, Tin	PEC04DAAN	Sullins Connector Solutions		
J28	1		Header, 2.54mm, 14x2, Gold, R/A, TH	Header, 2.54mm, 14x2, R/A, TH	PRPC014DBAN-M71RC	Sullins Connector Solutions		
J30	1		Receptacle, 2.54mm, 14x2, Gold, R/A, TH	Receptacle, 2.54mm, 14x2, R/A, TH	PPPC142LJBN-RC	Sullins Connector Solutions		
J31	1		Terminal Block, 5.08mm, 2x1, TH	Terminal Block, 5.08mm, 2x1, TH	0395443002	Molex		
L1	1	30 ohm	Ferrite Bead, 30 ohm @ 100 MHz, 6 A, 0805	0805	MPZ2012S300AT000	TDK		
L2	1	1uH	Inductor, Flat Wire, 1 uH, 3.1 A, 0.045 ohm, SMD	3.2x1.2x2.5mm	1277AS-H-1R0M=P2	MuRata Toko		

Designator	Quantity	Value	Description	PackageReference	PartNumber	Manufacturer	Alternate PartNumber	Alternate Manufacturer
L3	1	470nH	Inductor, Shielded, Ferrite, 470 nH, 2 A, 0.059 ohm, SMD	Inductor, 2x1.2x2mm	VLS2012ET-R47N	TDK		
L4, L6	2	300 ohm	Ferrite Bead, 300 ohm @ 100 MHz, 3.1 A, 0806	0806	NFZ2MSM301SN10L	MuRata		
L5	1	2.2uH	Inductor, Shielded, 2.2 uH, 4 A, 0.061 ohm, AEC-Q200 Grade 0, SMD	4.45x1.8x4.06mm	SRP4020TA-2R2M	Bourns		
L8	1	1uH	Inductor, Shielded, Metal Composite, 1 uH, 3.3 A, 0.04 ohm, SMD	2.5x1.2x2mm	DFE252012F-1R0M=P2	MuRata Toko		
R1, R82	2	1.00k	RES, 1.00 k, 1%, 0.1 W, 0402	0402	ERJ-2RKF1001X	Panasonic		
R2, R3, R54, R55, R69, R70	6	1.91k	RES, 1.91 k, 1%, 0.1 W, 0603	0603	RC0603FR-071K91L	Yageo		
R4, R5, R6, R7, R52, R60, R86	7	47.0k	RES, 47.0 k, 1%, 0.0625 W, 0402	0402	RC0402FR-0747KL	Yageo America		
R8, R35, R48	3	10.0k	RES, 10.0 k, 1%, 0.063 W, AEC-Q200 Grade 0, 0402	0402	RMCF0402FT10K0	Stackpole Electronics Inc		
R9, R13, R14, R15, R16, R22, R23, R24, R63, R66, R67	11	33.2	RES, 33.2, 1%, 0.05 W, 0201	0201	RC0201FR-0733R2L	Yageo America		
R10, R21, R27, R37, R62, R68, R80, R88	8	10.0k	RES, 10.0 k, 1%, 0.063 W, 0402	0402	RC0402FR-0710KL	Yageo America		
R11	1	680	RES, 680, 1%, 0.1 W, 0603	0603	RC0603FR-07680RL	Yageo		



Designator	Quantity	Value	Description	PackageReference	PartNumber	Manufacturer	Alternate PartNumber	Alternate Manufacturer
R12	1	4.75	RES, 4.75, 1%, 0.1 W, 0603	0603	RC0603FR-074R75L	Yageo		
R17, R20	2	0	RES, 0, 5%, 0.125 W, 0805	0805	RC0805JR-070RL	Yageo America		
R18, R19	2	0	RES, 0, 5%, 0.25 W, AEC-Q200 Grade 0, 1206	1206	RCA12060000ZSEA	Vishay-Dale		
R25, R26, R29, R30	4	10.2k	RES, 10.2 k, 1%, 0.05 W, 0201	0201	RC0201FR-0710K2L	Yageo America		
R28	1	25.5k	RES, 25.5 k, 1%, 0.05 W, 0201	0201	RC0201FR-0725K5L	Yageo America		
R31, R51	2	100k	RES, 100 k, 1%, 0.1 W, 0402	0402	ERJ-2RKF1003X	Panasonic		
R32	1	43.2	RES, 43.2, 1%, 0.1 W, 0603	0603	RC0603FR-0743R2L	Yageo		
R33	1	51.0k	RES, 51.0 k, 1%, 0.05 W, 0201	0201	RC0201FR-0751KL	Yageo America		
R34, R78, R79	3	0	RES, 0, 5%, 0.1 W, AEC-Q200 Grade 0, 0402	0402	ERJ-2GE0R00X	Panasonic		
R36	1	1.00k	RES, 1.00 k, 1%, 0.063 W, AEC-Q200 Grade 0, 0402	0402	CRCW04021K00FKED	Vishay-Dale		
R38, R87	2	330	RES, 330, 1%, 0.1 W, AEC-Q200 Grade 0, 0402	0402	ERJ-2RKF3300X	Panasonic		
R39	1	1.00Meg	RES, 1.00 M, 1%, 0.1 W, 0603	0603	RC0603FR-071ML	Yageo		
R41	1	3.01	RES, 3.01, 1%, 0.1 W, 0603	0603	RC0603FR-073R01L	Yageo		
R42	1	40.2k	RES, 40.2 k, 1%, 0.1 W, AEC-Q200 Grade 0, 0402	0402	ERJ-2RKF4022X	Panasonic		

Designator	Quantity	Value	Description	PackageReference	PartNumber	Manufacturer	Alternate PartNumber	Alternate Manufacturer
R43	1	162k	RES, 162 k, 1%, 0.1 W, 0603	0603	RC0603FR-07162 KL	Yageo		
R50	1	10.0k	RES, 10.0 k, 1%, 0.1 W, 0402	0402	ERJ-2RKF1002X	Panasonic		
R53, R61	2	200k	RES, 200 k, 1%, 0.1 W, AEC-Q200 Grade 0, 0603	0603	CRCW0603200KF KEA	Vishay-Dale		
R57, R58, R59	3	33.0	RES, 33.0, 1%, 0.1 W, 0402	0402	ERJ-2RKF33R0X	Panasonic		
R81	1	49.9	RES, 49.9, 1%, 0.063 W, AEC- Q200 Grade 0, 0402	0402	RMCF0402FT49R 9	Stackpole Electronics Inc		
SH1, SH2, SH3, SH4, SH5, SH6, SH7, SH8, SH9, SH10, SH11, SH13, SH14, SH15, SH16, SH17, SH18	17	1x2	Shunt, 100mil, Gold plated, Black	Shunt	SNT-100-BK-G	Samtec	969102-0000-DA	3M
TP1, TP2, TP3, TP4, TP7, TP8	6		Test Point, Miniature, Black, TH	Black Miniature Testpoint	5001	Keystone		
TP10, TP11, TP12, TP13, TP14, TP15	6		Test Point, Miniature, Orange, TH	Orange Miniature Testpoint	5003	Keystone		
U1	1		TAS2563QFN	VQFN-HR32	TAS2563QFN	Texas Instruments		
U2, U18, U22	3		4-Bit Dual-Supply Bus Transceiver With Configurable Voltage-Level Shifting and 3- State Outputs, RSV0016A (UQFN-16)	RSV0016A	SN74AVC4T774R SVR	Texas Instruments		Texas Instruments

Designator	Quantity	Value	Description	PackageReference	PartNumber	Manufacturer	Alternate PartNumber	Alternate Manufacturer
U3	1		512K I2C Serial EEPROM, TSSOP	TSSOP-8	24FC512-I/ST	Microchip		
U4	1		IC MCU 512KB RAM, 128TQFP	TQFP-128	XEF216-512-TQ128-C20	XMOS semiconductor		
U5	1		Single Nanopower Push-Pull Comparator, DBV0005A (SOT-23-5)	DBV0005A	TLV3701IDBVR	Texas Instruments	TLV3701IDBVT	Texas Instruments
U6	1		Dual-Bit Dual-Supply Bus Transceiver, DQE0008A, LARGE T&R	DQE0008A	SN74AVC2T244D QER	Texas Instruments		
U7	1		Programmable 1-PLL VCXO Clock Synthesizer with 2.5-V or 3.3-V LVC MOS Outputs, PW0014A (TSSOP-14)	PW0014A	CDCE913PWR	Texas Instruments	CDCE913PW	Texas Instruments
U8	1		Single-Channel Ultra-Small Adjustable Supervisory Circuit With Active-High Open-Drain Output, DRY0006A (USON-6)	DRY0006A	TPS3897ADRYR	Texas Instruments		
U9	1		Enhanced Product Dual Buffer/Driver with Open-Drain Output, DCK0006A (SOT-SC70-6)	DSF0006A	SN74LVC2G07DS FR	Texas Instruments		

Designator	Quantity	Value	Description	PackageReference	PartNumber	Manufacturer	Alternate PartNumber	Alternate Manufacturer
U10	1		0.9V to 6.5V, Nano-Power Comparator, DCK0005A (SOT-SC70-5)	DCK0005A	TLV3691IDCKR	Texas Instruments	TLV3691IDCKT	Texas Instruments
U11, U35, U36	3		4-Bit One-of-2 FET Multiplexer/ Demultiplexer 2.5-V/3.3-V Low-Voltage, High-Bandwidth Bus Switch, DGV0016A (TVSOP-16)	DGV0016A	SN74CB3Q3257D GVR	Texas Instruments		Texas Instruments
U12	1		Low-Voltage 8-Bit I2C and SMBus I/O Expander, 1.65 to 5.5 V, -40 to 85 degC, 16-pin UQFN (RSV), Green (RoHS & no Sb/Br)	RSV0016A	TCA6408ARSVR	Texas Instruments		
U13, U15	2		Single 2-Line to 1-Line Data Selector/ Multiplexer, DCT0008A, LARGE T&R	DCT0008A	SN74LVC2G157D CTR	Texas Instruments	SN74LVC2G157D CUT	Texas Instruments
U14	1		Dual 1-of-4 FET Multiplexer/ Demultiplexer 2.5-V/3.3-V Low-Voltage High-Bandwidth Bus Switch, RGY0016A (VQFN-16)	RGY0016A	SN74CB3Q3253R GYR	Texas Instruments		Texas Instruments
U16	1		Dual Buffer Gate, DRL0006A, LARGE T&R	DRL0006A	SN74LVC2G34DR LR	Texas Instruments		Texas Instruments

Designator	Quantity	Value	Description	PackageReference	PartNumber	Manufacturer	Alternate PartNumber	Alternate Manufacturer
U17	1		Single Bus Buffer Gate With 3-State Outputs, DCK0005A, LARGE T&R	DCK0005A	SN74LVC1G125DCKR	Texas Instruments		
U19	1		Single Schmitt-Trigger Inverter, DRL0005A, LARGE T&R	DRL0005A	SN74LVC1G14DRLR	Texas Instruments		Texas Instruments
U20	1		SPEAKER 8OHM 1W TOP PORT 83DB	SPEAKER_PANELMOUNT	ASE03008MR-LW150-R	PUI Audio		
U23	1		Single 2-Input Positive-AND Gate, DCK0005A, LARGE T&R	DCK0005A	SN74LVC1G08DCKR	Texas Instruments		
U24	1		Dual Bi-Directional I2C-Bus and SMBus Voltage Level-Translator, 0 to 5.5 V, -40 to 85 degC, 8-pin X2SON (DQE), Green (RoHS & no Sb/Br)	DQE0008A	PCA9306DQER	Texas Instruments		
U25	1		Single Bi-Directional Multi-Voltage Level Translator, DRY0006A (USON-6)	DRY0006A	LSF0101DRYR	Texas Instruments		

Designator	Quantity	Value	Description	PackageReference	PartNumber	Manufacturer	Alternate PartNumber	Alternate Manufacturer
U26	1		3.5 to 36Vin, 3 Ampere Synchronous DC- DC Converter for Automotive Applications, PWP0016D (TSSOP-16)	PWP0016D	LM536033QPWPR Q1	Texas Instruments	LM536033QPWPT Q1	Texas Instruments
U27	1		3.5-MHz High Efficiency Step-Up Converter in Chip Scale Package, YFF0009ACAG (DSBGA-9)	YFF0009ACAG	TPS61256CYFFR	Texas Instruments	TPS61256CYFFT	Texas Instruments
U28, U29, U31	3		Single Output LDO, 400mA, Adj. (1.2 to 5.5V), Cap free, Low Noise, Reverse Current Protection, DBV0005A (SOT-23-5)	DBV0005A	TPS73618DBVR	Texas Instruments		
U30, U34	2		Bottom Port PDM Digital Output Multi-Mode Microphone	SMT_3MM50_2MM65	MMICT5818-00-01 2	TDK		
U32	1		3-A Step-Down Converter with DCS-Control and Hiccup Short Circuit Protection in 2x2 HotRod Package, RLT0007A (VSON- HR-7)	RLT0007A	TPS62085RLTR	Texas Instruments	TPS62085RLTT	Texas Instruments

Designator	Quantity	Value	Description	PackageReference	PartNumber	Manufacturer	Alternate PartNumber	Alternate Manufacturer
U33	1		Low-Power Single Bus Buffer Gate with 3-State Output, DRL0005A, LARGE T&R	DRL0005A	SN74AUP1G125D RLR	Texas Instruments		Texas Instruments
Y1	1		OSC, 24 MHz, 2.25 - 3.63 V, SMD	2x1.6mm	ASTMLPA-24.000 MHZ-EJ-E-T	Abracon Corporation		
C53, C54	0	1uF	CAP, CERM, 1 $\mu$ F, 16 V, +/- 20%, X7R, 0603	0603	CL10B105MO8NN WC	Samsung		
C59	0	0.1uF	CAP, CERM, 0.1 $\mu$ F, 25 V, +/- 10%, X7R, AEC-Q200 Grade 1, 0402	0402	CGA2B3X7R1E10 4K050BB	TDK		
C65	0	10uF	CAP, CERM, 10 uF, 25 V, +/- 20%, X5R, 0603	0603	GRM188R61E106 MA73D	MuRata		
C74, C75	0	10uF	CAP, CERM, 10 uF, 35 V, +/- 10%, X7R, 1206	1206	C3216X7R1V106K 160AC	TDK		
FID1, FID2, FID3	0		Fiducial mark. There is nothing to buy or mount.	N/A	N/A	N/A		
L7	0	1uH	Inductor, 1 uH, 7 A, 0.014 ohm, SMD	4.15x4mm	PCMB053T-1R0M S	Susumu Co Ltd		

## 11 Revision History

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

<b>Changes from Revision * (December 2020) to Revision A (February 2022)</b>	<b>Page</b>
• Updated figures.....	<a href="#">2</a>
• Updated the Default Jumper Settings table.....	<a href="#">7</a>
• Updated figures.....	<a href="#">20</a>

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