EVM User's Guide: TAS2563QFNEVM

TAS2563 Evaluation Module

Description

The TAS2563QFNEVM allows for evaluation of the TAS2563 device in a mono configuration. The EVM design provides supply voltages, onboard I^2C software control and onboard I^2S audio interfaces. The EVM in multi-channel evaluation mode allows for evaluation of up to four TAS2563 devices via the I^2C interface. This EVM also allows the user to characterize and generate speaker tuning profiles to achieve the desired sound while providing protection against over temperature and over excursion events.

Get Started

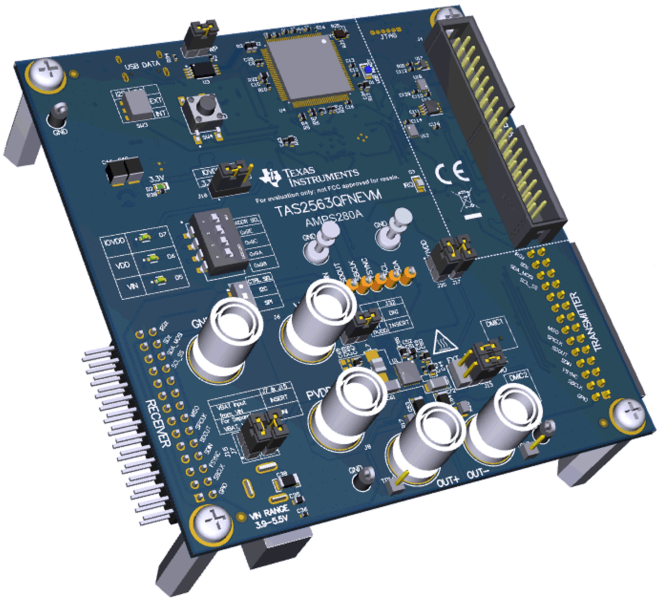
1. Order the TAS2563QFNEVM
2. Download the PurePath Console 3 (PPC3) software.
3. Request access to download the TAS2563QFN PPC3 software from TAS2563 product page.
4. Read the TAS2563 data sheet.
5. Visit e2e audio forum for any questions.

Features

- Mono TAS2563 evaluation
- USB-C interface
- Advanced software mode interface using PurePath™ Console 3 Windows® software
- PSIA – I^2S/TDM interface
- External I^2C and I^2S/TDM host controller connection
- Hardware shutdown control
- Interrupt Output
- 0.75inch banana pair socket for power supply
- Banana socket output terminals
- PPC3 learning board interface for speaker characterization
- Multi-channel evaluation mode for up to 4 TAS2563 smart amps

Applications

- Smart Phone, Tablets and Laptops
- Smart Speakers with Voice Assistance
- Bluetooth and Wireless Speakers
- Smart Home
- IP Camera



TAS2563 Mono Evaluation Module

1 Kit Content

The evaluation kit consists of the following items:

- TAS2563QFNEVM
- Speaker
- Removable mounting putty strips

A power supply is not part of the kit, but the barrel jack connector can be connected to a DC barrel jack adapter with a voltage range of 3.9V to 5.5V. The removable mounting putty is for holding the speaker in place to a stable flat surface. This would be useful for TAS2563 in playback mode and implementing the TAS2563 speaker characterization feature.

2 Specifications

Table 2-1 lists the supply, input, and output requirements for TAS2563.

Table 2-1. Specifications

Parameter	Value
Supply Voltage - VBAT	2.7 to 5.5V
Supply Voltage - VDD	1.65 to 1.95V
Supply Voltage - IOVDD	1.65 to 3.6V
Supply Voltage - PVDD (external mode only) . Open J32 for external PVDD mode.	VBAT to 16V
Input Logic	VDD
Output Power	6.1W
USB, USB class-audio	USB-C

3 Device Configuration

The TAS2563QFNEVM Top View image shows the default jumper configurations. The jumper configurations for the TAS2563QFNEVM are also described below in the Jumper and Switch Settings table.

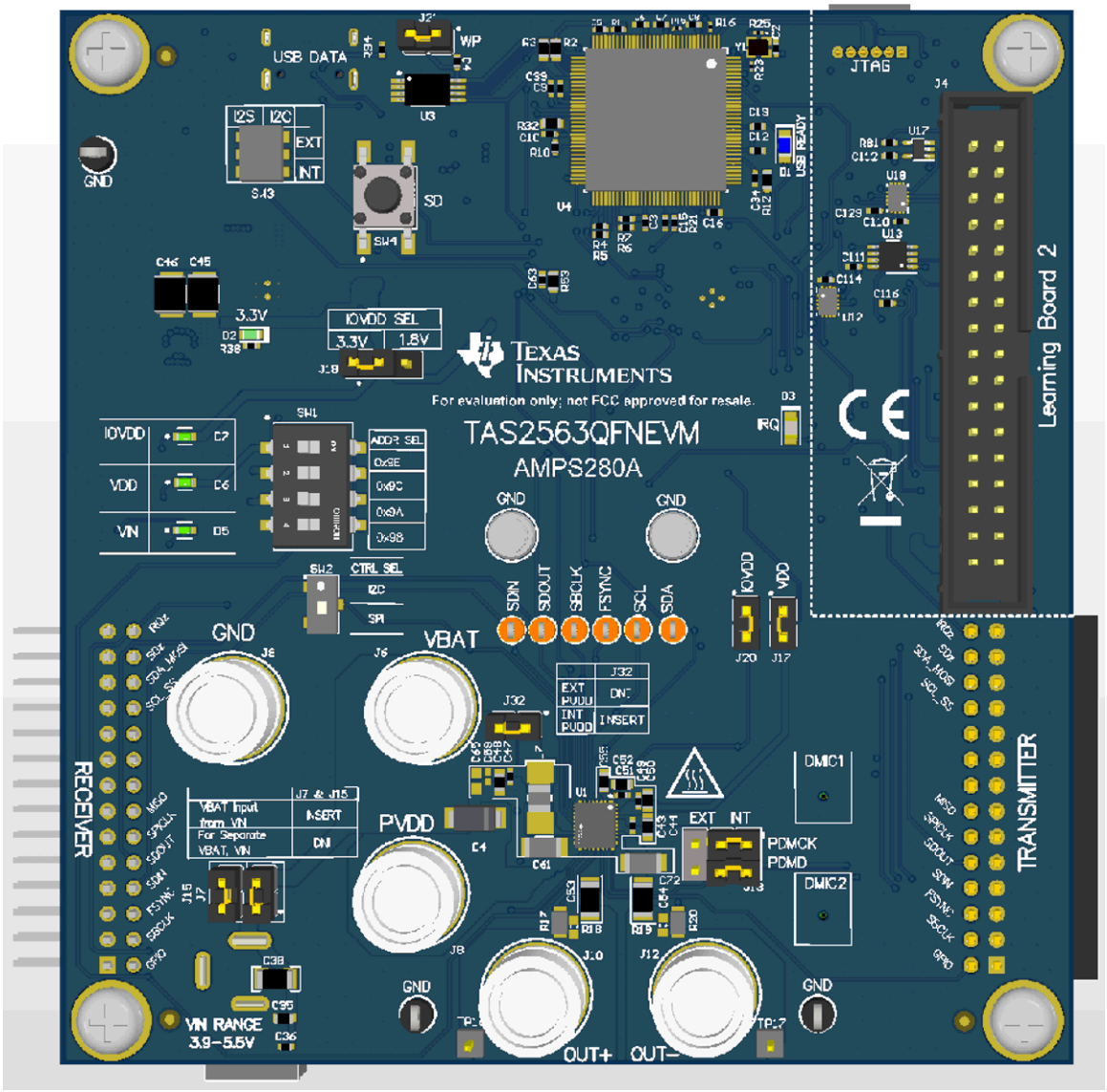


Figure 3-1. TAS2563QFNEVM Top View

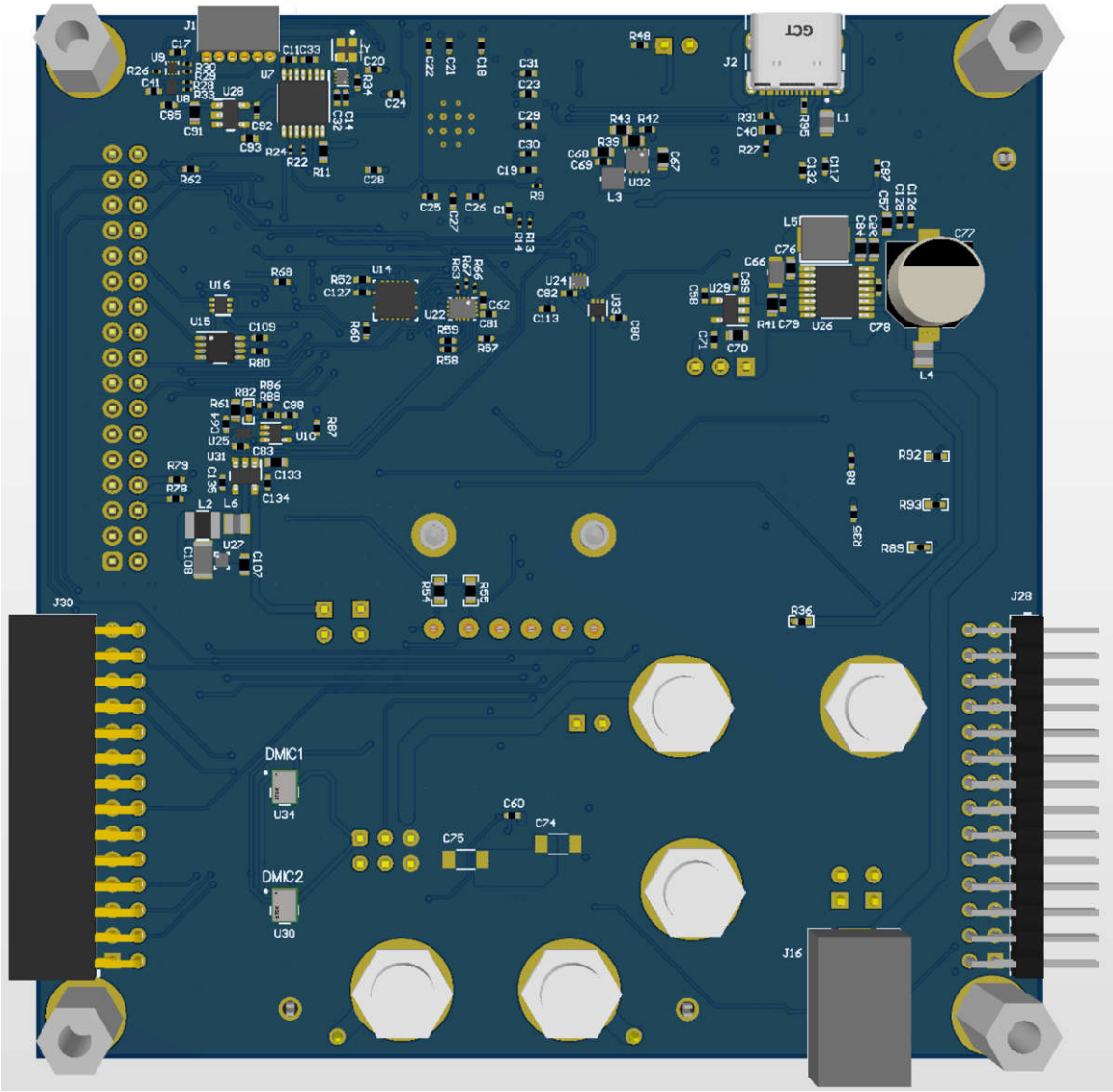


Figure 3-2. TAS2563QFNEVM Bottom View

3.1 Jumper Settings

Table 3-1. Jumper and Switch Settings

Jumper/Switch	Default Setting	General Description
J21	Insert	EEPROM write protect
SW3	INT	I^2C and I^2S external or internal source selection
J18	Short pin1 and 2	IOVDD 1.8V or 3.3V selection
SW1	0x98	Device I^2C address selection
SW2	I^2C	I^2C or SPI selection
J20	Insert	IOVDD supply
J17	Insert	VDD supply
J13	Right-most horizontal shunt in the top row & Right-most horizontal shunt in the bottom row	External or internal MIC configuration
J32	Insert	• Insert for internal PVDD mode. • Open for external PVDD mode. Find more information on external PVDD mode application here.
J7 & J15	Insert vertical shunts	VIN to VBAT supply. • Insert both jumpers if VIN is supplying VBAT • Open both jumpers if VBAT is provided through J6. In this mode, VIN must still be supplied through J16. Note: Do not plug in VIN and VBAT simultaneously if J7 and J15 are shunted. This configuration is not supported by the smart amp.

3.2 Mono Setup

Use the following instructions to complete a mono setup:

1. Install PPC3 with the TAS2563 plug-in
2. Connect a speaker to terminals J10 and J12
3. Connect a 5V supply to:
   a. VIN if J7 and J15 are shunted
   b. VBAT and VIN separately if J7 and J15 are open

   Note: Under no circumstance should VBAT and VIN be powered simultaneously if J7 and J15 are shunted.
4. Connect a USB-C from PC to TAS2563QFNEVM.
5. Verify that TI USB Audio UAC2.0 is the default playback device by opening the sound dialog box from the Windows Control Panel.

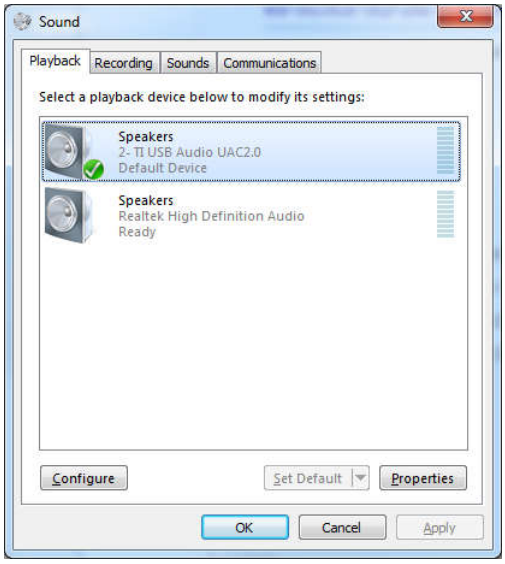


Figure 3-3. Windows Playback Devices

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

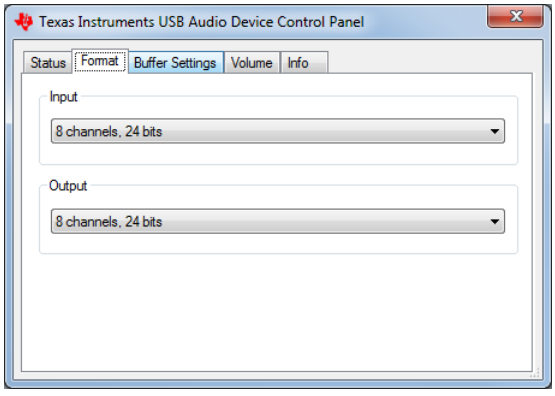


Figure 3-4. Texas Instruments USB Audio Device Control Panel

7. Set the sampling rate.

- Right click TI USB Audio UAC2.0
- Select Properties
- Click advanced tab
- Select Rate

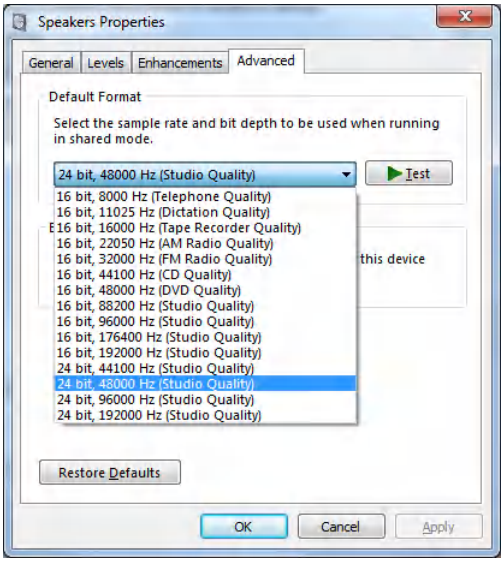


Figure 3-5. Windows Playback Device Sample Rate

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

3.3 Digital Audio Interfaces

Select various digital audio interfaces on the TAS2563QFN3EVM through hardware and software settings. J28 can be used to receive input signals from an Audio Precision monitoring device. J28 also allows for SPI interaction with TAS2563. I^{2}C and I^{2}S signal sources can be selected based on SW2 and SW3 configurations.

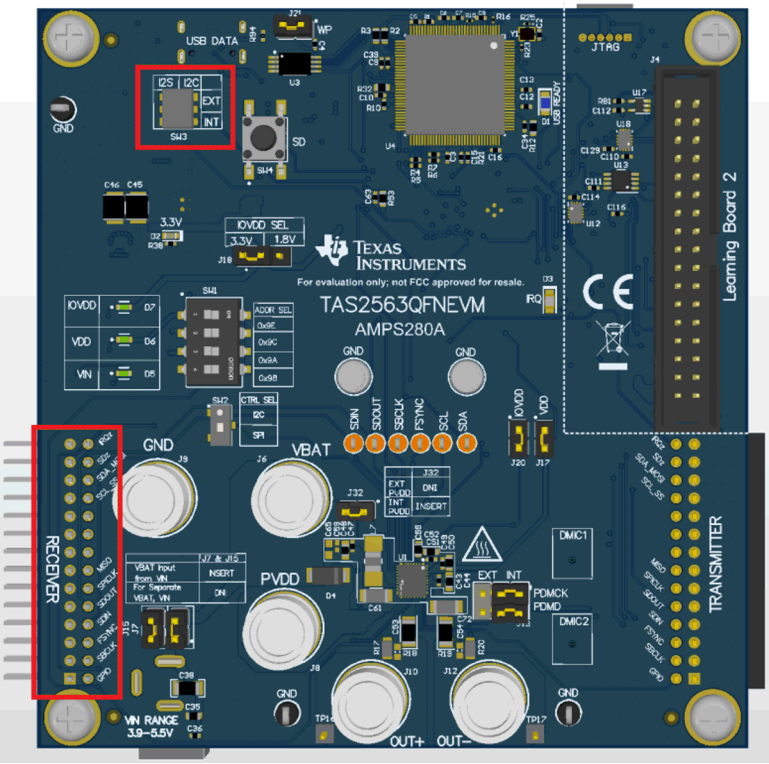


Figure 3-6. I^{2}S/I^{2}C/SPI Selector and Source

3.4 Multi-Channel Configuration

J30 and J28 are the transmitter and recever of TAS2563QFNEVM that allow for multiple mono TAS2563 evaluation. J30 output connectors can be connected to J28 input connectors from another TAS2563QFNEVM to allow evaluation of multi-channel applications up to 4 different channels.

The left-most EVM must be connected to the host PC through USB. Notice header J30 is output and J28 is input, thus the EVM connected to USB must be the one to output the audio and control signals. The rest of the EVMs to the right must be configured for external I^{2}S and I^{2}C using SW3.

Each board must have a different I^{2}C address configuration on SW1. Also each board must follow the power supply recommondations on J7 and J15 found in the Jumper and Switch Settings above.

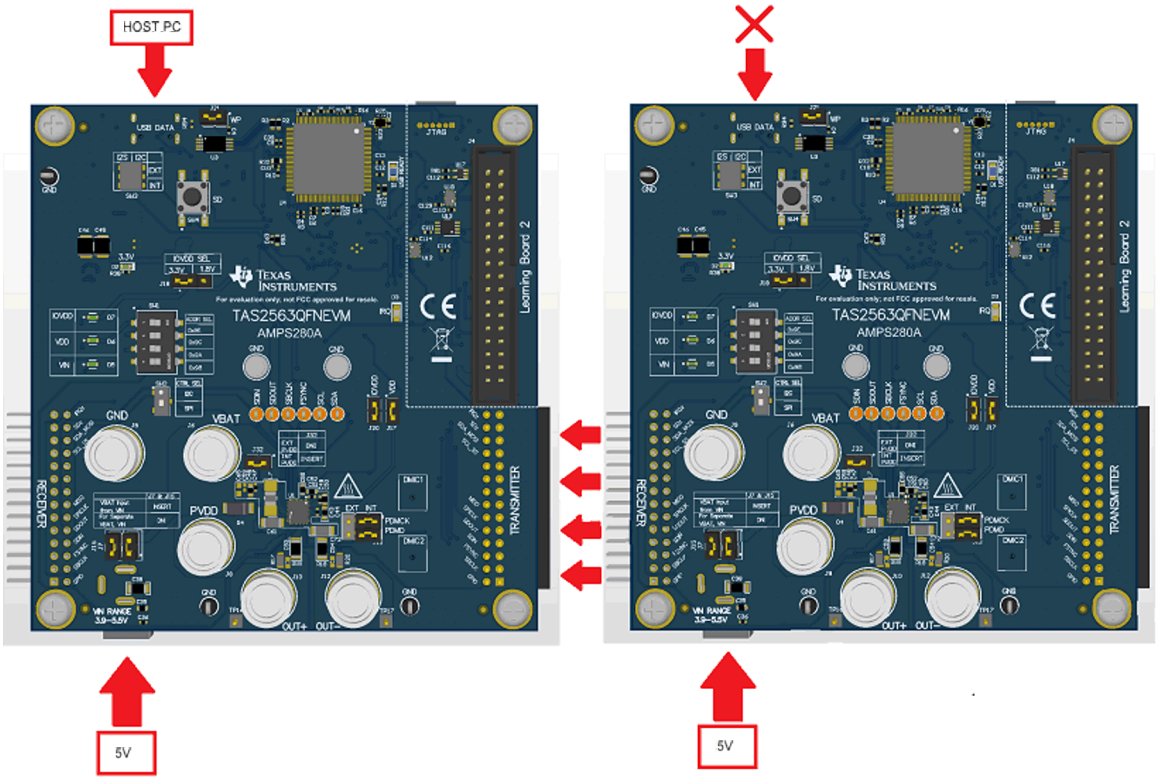


Figure 3-7. TAS2563EVM Multichannel Connection

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 software development tab on the TAS2563 product page and request access to the TAS2563QFN PPC3 software.

4.1 PurePath Console 3 Quick Startup

PurePath Console 3 configuration tool can be used to interface with TAS2563 using the onboard controller, which in turn sends I^2C commands to setup the required register settings.

When PPC3 is executed for the first time, there are no plug-ins included. User must click on the *Sign In* either from the button at the top-right corner or from the *EVM Apps* section. A new window requests the user credentials, input the same myTI account used to request access to PPC3. Once logged in, the requested device applications is available for download and install.

Once the *TAS2563QFN EVM* app has been installed, click on the block with the name to open the GUI. Before proceeding, connect a speaker to the output terminals, power up the EVM depending on the J7 and J15 connection described in the Mono Setup section, then connect the EVM to a host PC using the USB-C connector on the EVM.

Once the board is powered and connected to USB, the PPC3 plug-in is ready. The Software supports Mono or Dual-Mono configurations and is able to detect the number of channels connected to the PC depending on how many of these are being powered and present on the I^2C bus. Refer to the Multi-Channel Configuration for more information on how to connect multiple boards together. The current use case can be verified by the selection on the drop down list at the top-right corner of the PPC3 window.

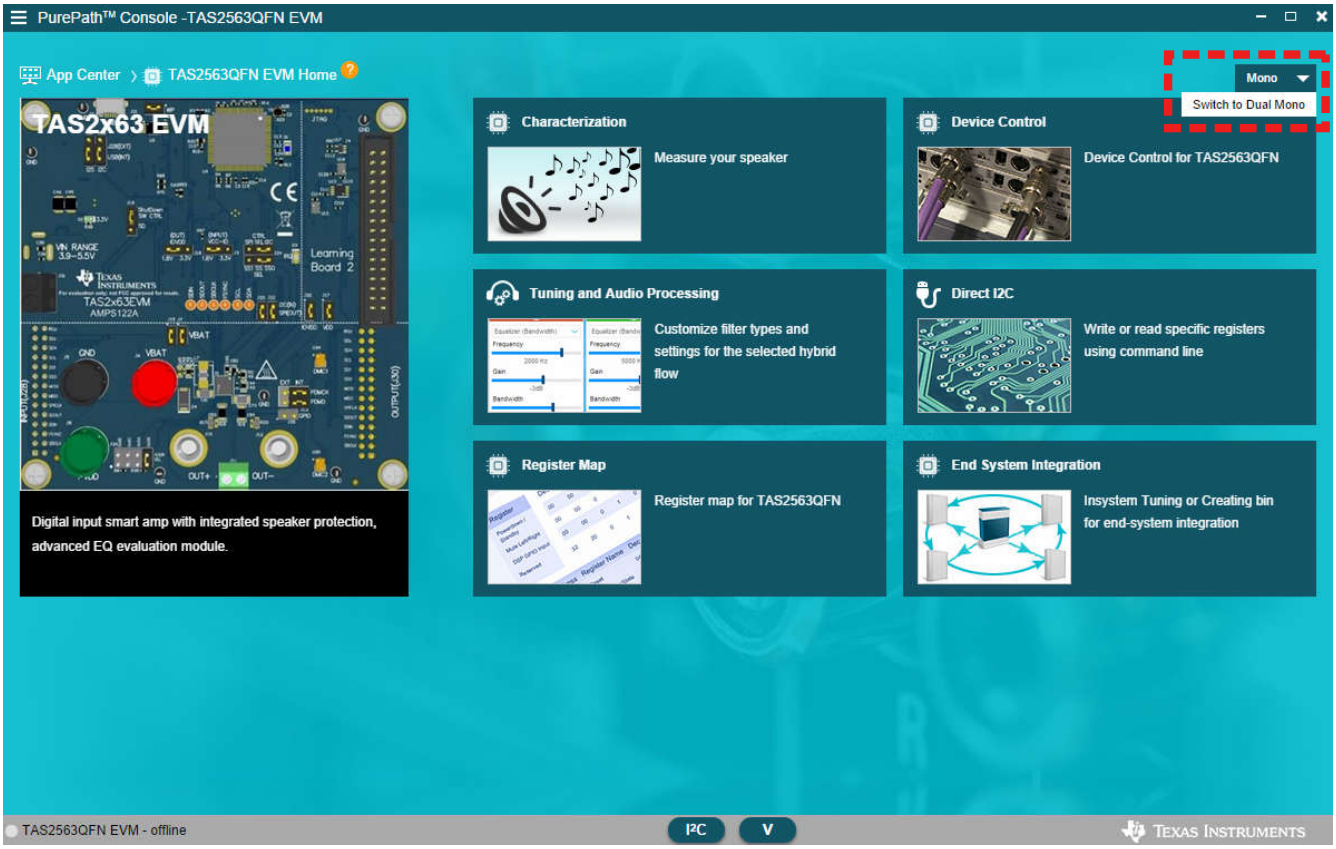


Figure 4-1. TAS2563QFN EVM PPC3 Main Panel

To initialize the device registers, click on the *Device Control* tile, select *ROM mode* from the drop-list at the top-right corner and then *Apply*. The device then becomes initialized and ready to play audio.

Note: ROM mode does not include any speaker protection features, so audio volume must be handled with care in order to prevent damage to speakers connected to the EVM.

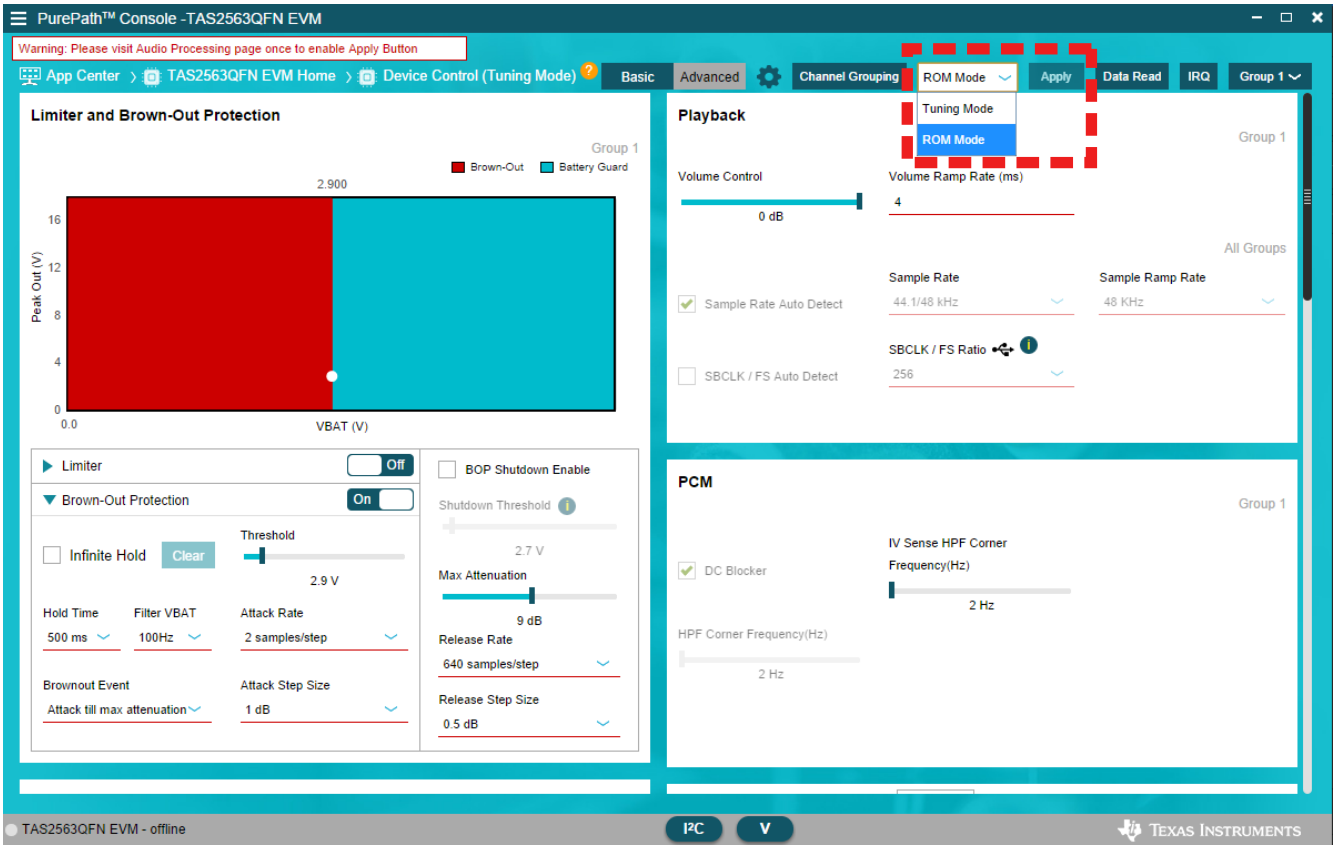


Figure 4-2. TAS2563QFN EVM PPC3 Device Control Panel

When connecting 2 EVMs in series, the software operates in dual-mono mode, which enables the Channel Grouping feature. This allows the user to define groups of devices so that a different configuration can be used for each group. By default, both devices on the EVM are assigned to the same group, so to change one of these to a new group, the device must be deleted from the original group first, and then the device can be added to a different group using the "+" symbol.

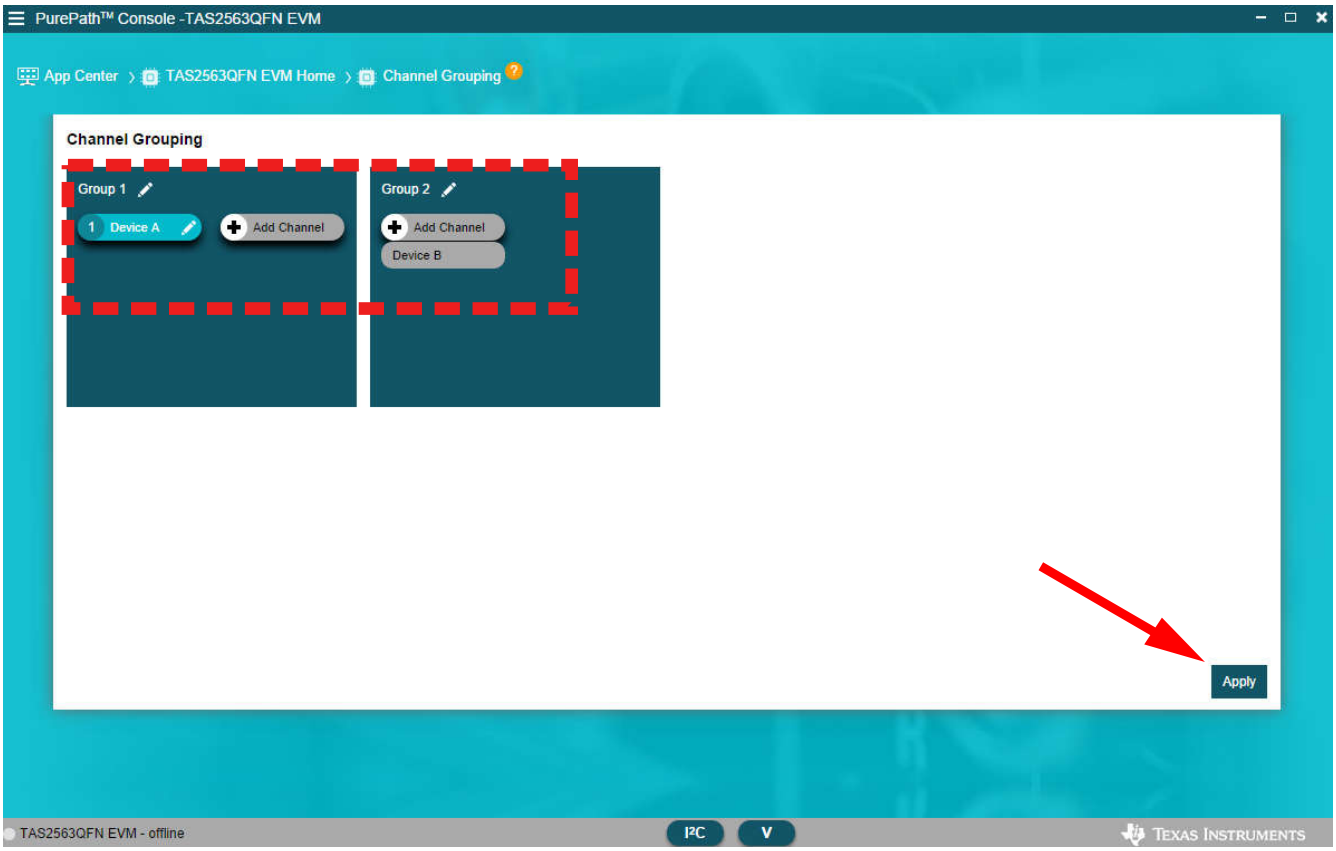


Figure 4-3. TAS2563QFN EVM PPC3 Channel Grouping

4.2 PPC3 - TAS2573QFN EVM Feature Description

PPC3 includes a series of blocks to configure different portions of the TAS2563. The list below includes a brief description of each of these blocks and where to find further information:

- The function of Characterization panel depends on the hardware connected. If using the EVM only, the characterization panel will only show the last speaker characterization results. If the Smart-Amp Learning Board is connected to the EVM, then the characterization panel shows the characterization walkthrough process. Further information available in TAS2563 Speaker Characterization Guide.
- Device Control panel allows the user to configure all the hardware related features of TAS2563. This panel can be used in either ROM or Tuning modes, if using the later one, this configuration works in conjunction with the Tuning and Audio Processing panel. ROM mode is the simplest configuration which does not include the speaker protection nor any of the audio processing features. The *Apply* button must be used after any changes in the GUI so that these take effect. Further information available in TAS2563 Device Features and Controls Overview.
- Tuning and Audio Processing panel includes all the speaker protection, EQ, DRC and other features tuning parameters. TAS2563 QFN has two modes of operation for the embedded processor, PDM mode enables the digital microphone feedback path with a tradeoff in playaback path processing features. Further information available in TAS2563 Tuning Guide.
- Direct I^2C is available as a dedicated panel or can always be accessed at the bottom-center of the PPC3 window. This tool can be used to write and read the device registers directly using configuration scripts, and also provide an option to record all the I^2C transactions to the device using the Log-Recorder; this feature is useful when trying to identify what register changes are applied when debugging or using GUI controls.
- The End System Integration panel is a walkthrough process to generate the configuration files required for the final product based on the PPC3 settings. Further information available in TAS2563 End System Integration Guide.

5 EVM Schematics

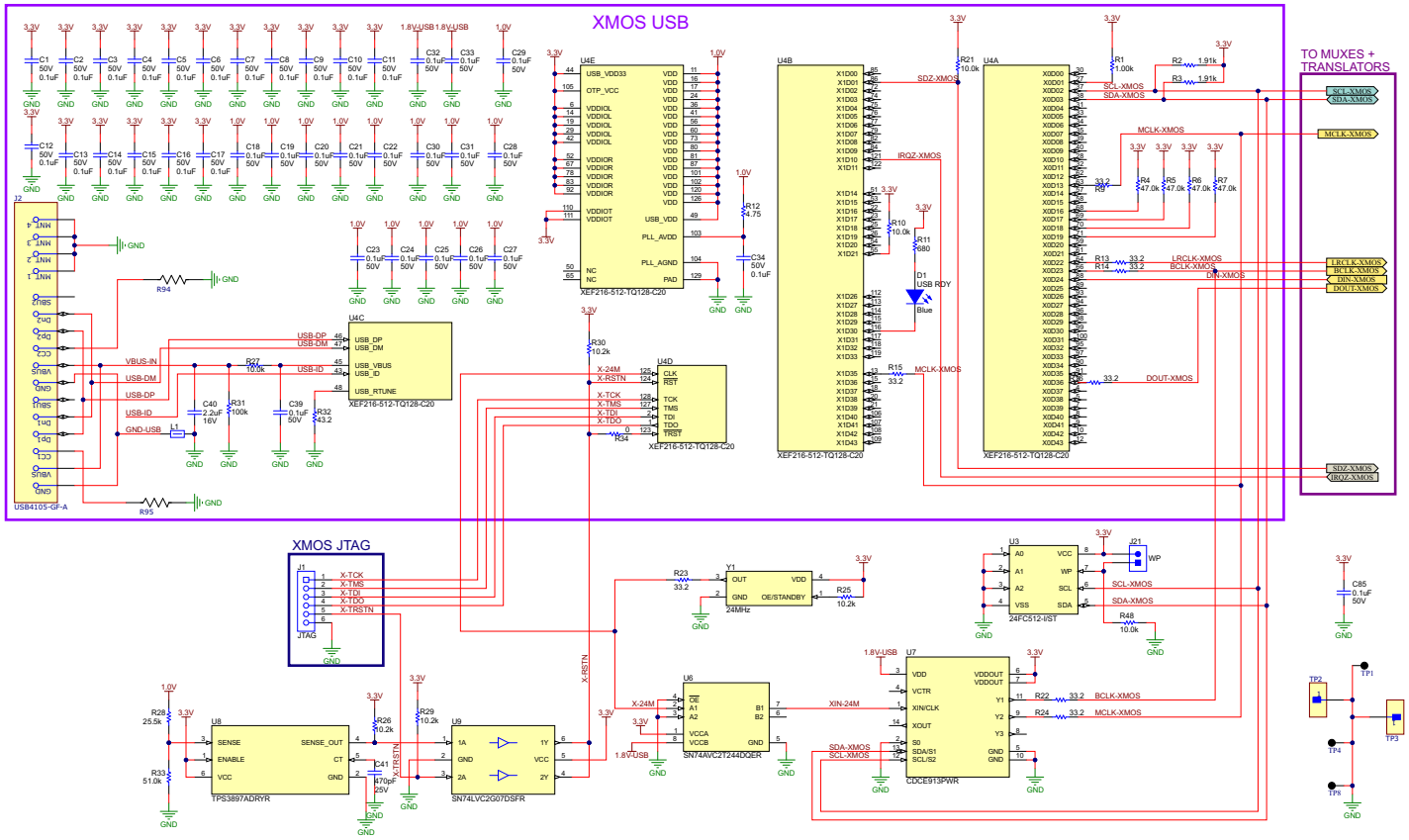


Figure 5-1. TAS2563EVM Schematic (Sheet 1 of 7)

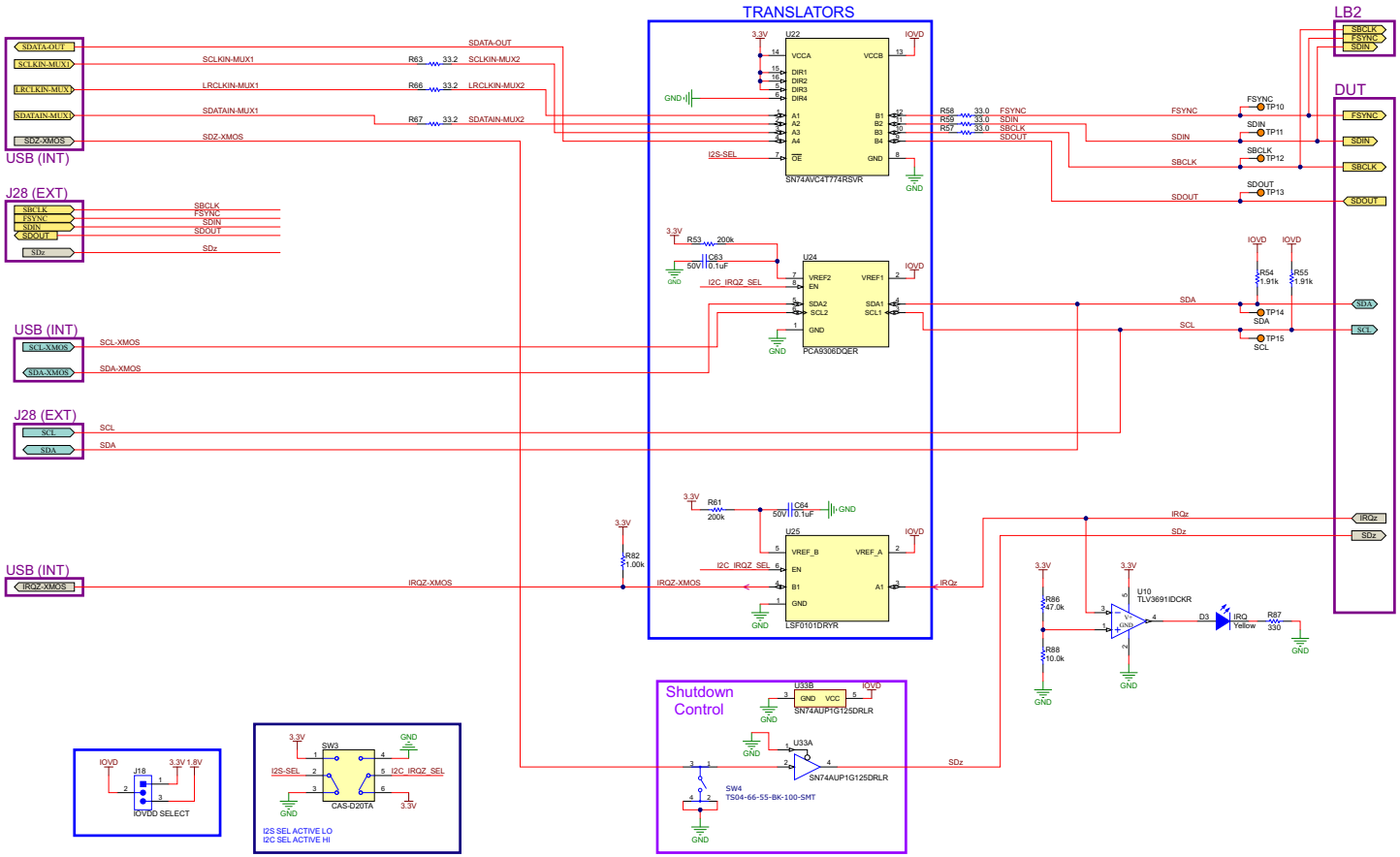


Figure 5-2. TAS2563EVM Schematic (Sheet 2 of 7)

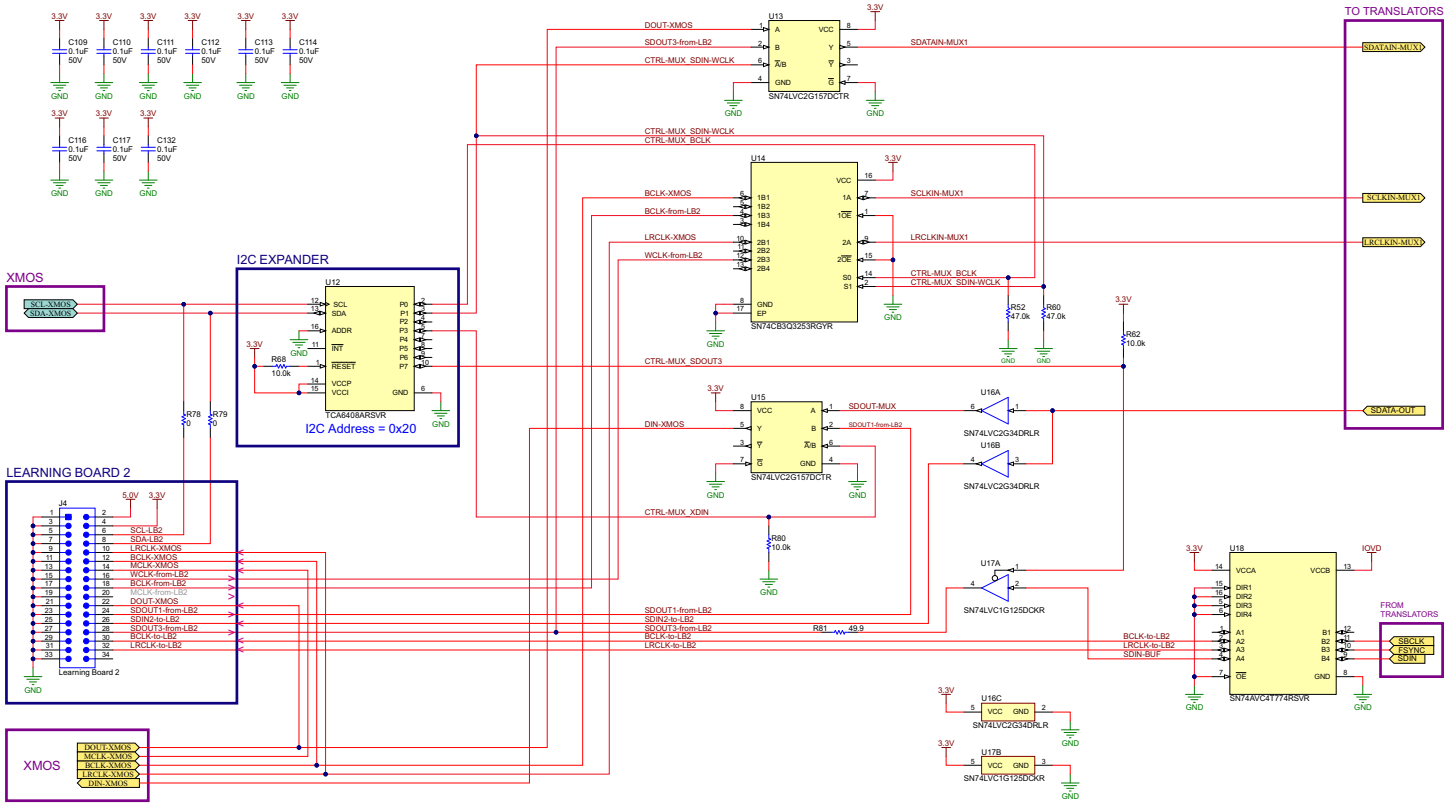


Figure 5-3. TAS2563EVM Schematic (Sheet 3 of 7)

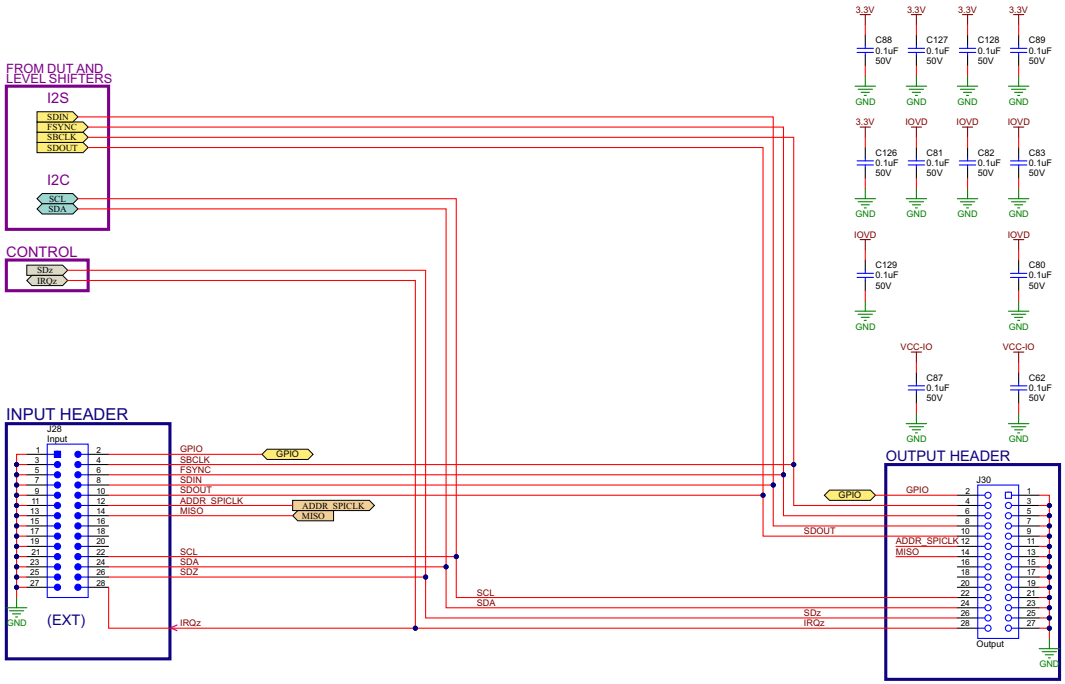


Figure 5-4. TAS2563EVM Schematic (Sheet 4 of 7)

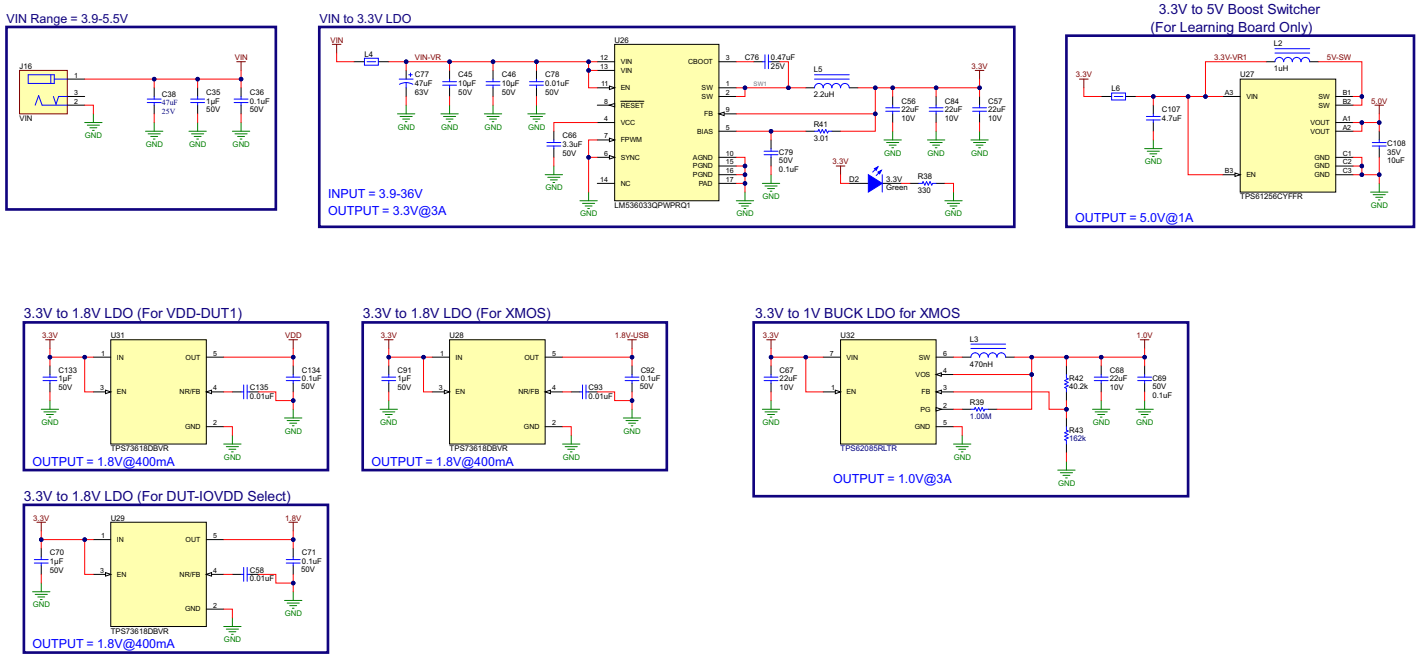


Figure 5-5. TAS2563EVM Schematic (Sheet 5 of 7)

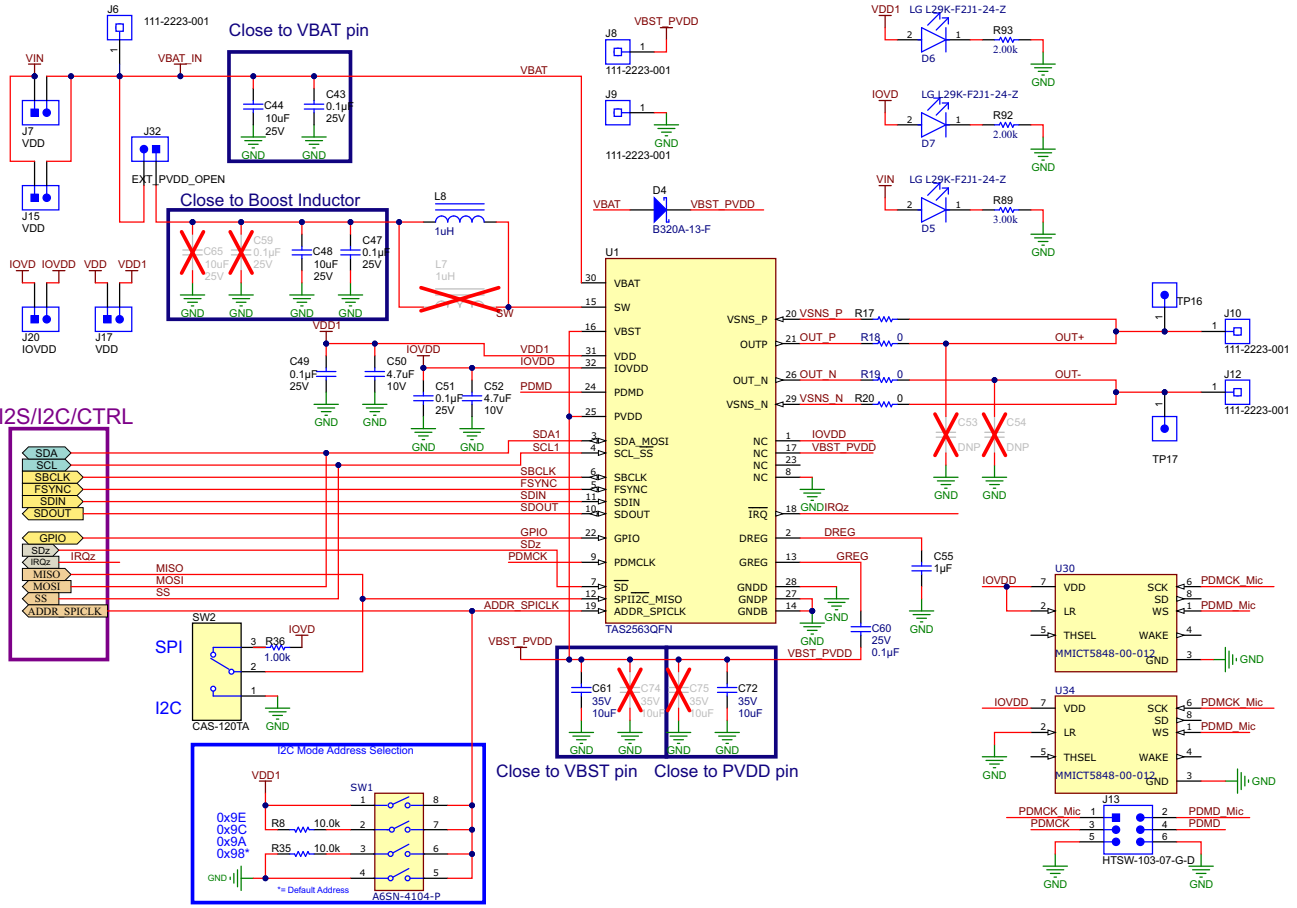


Figure 5-6. TAS2563EVM Schematic (Sheet 6 of 7)

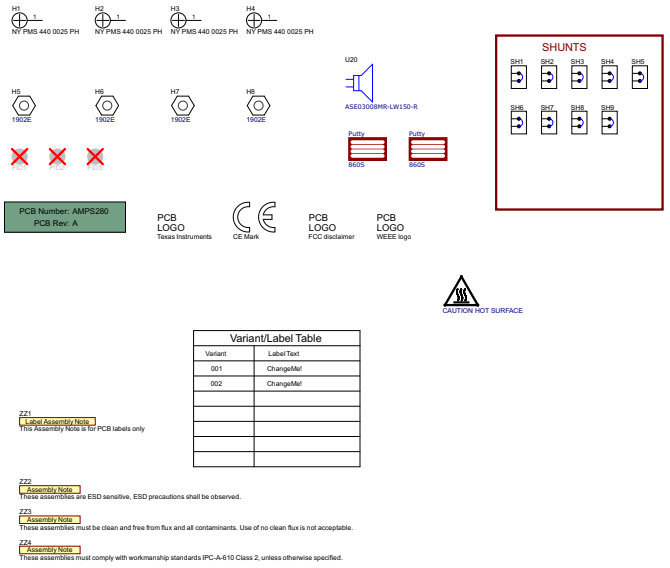


Figure 5-7. TAS2563EVM Schematic (Sheet 7 of 7)

6 EVM Layer Plots

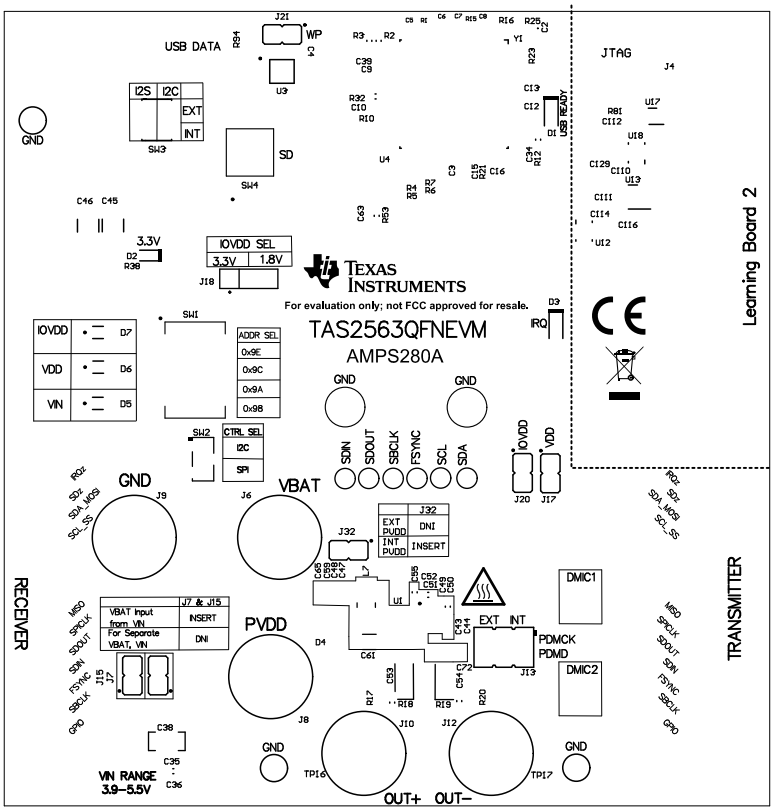


Figure 6-1. TAS2563EVM Top Overlay

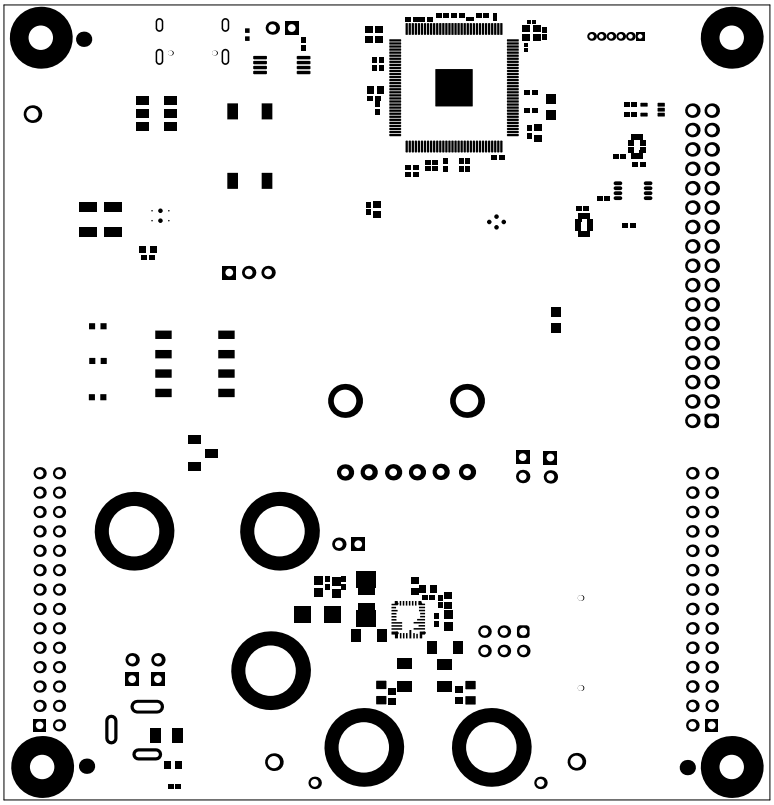


Figure 6-2. TAS2563EVM Top Solder Mask

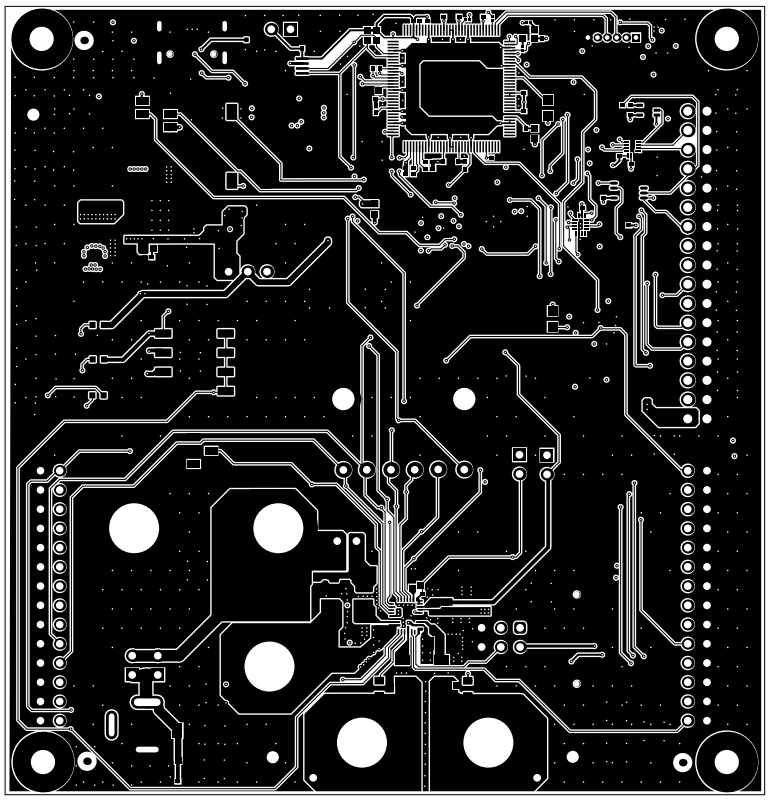


Figure 6-3. TAS2563EVM Top Layer

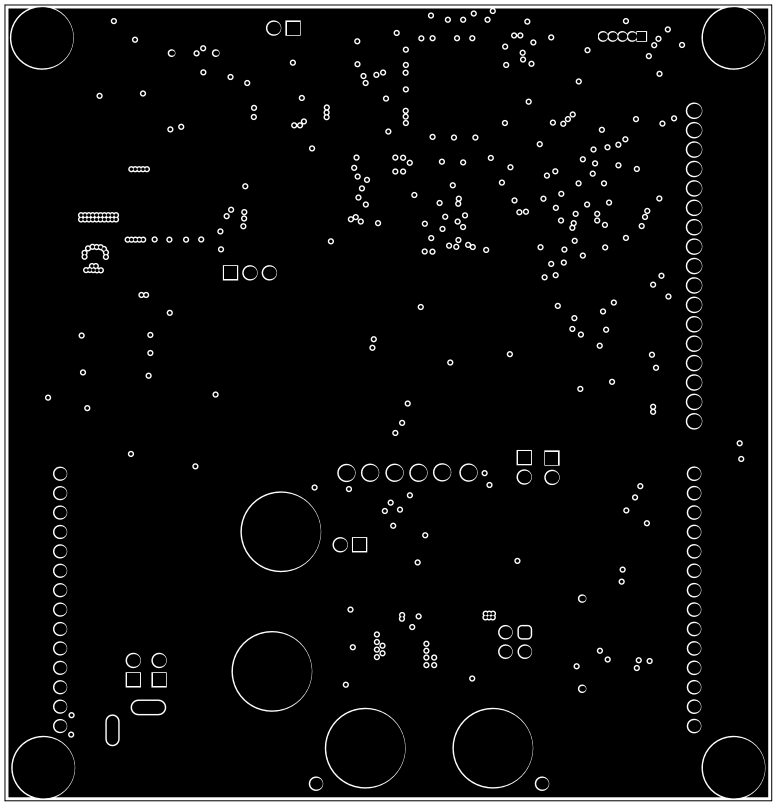


Figure 6-4. TAS2563EVM Signal Layer 1

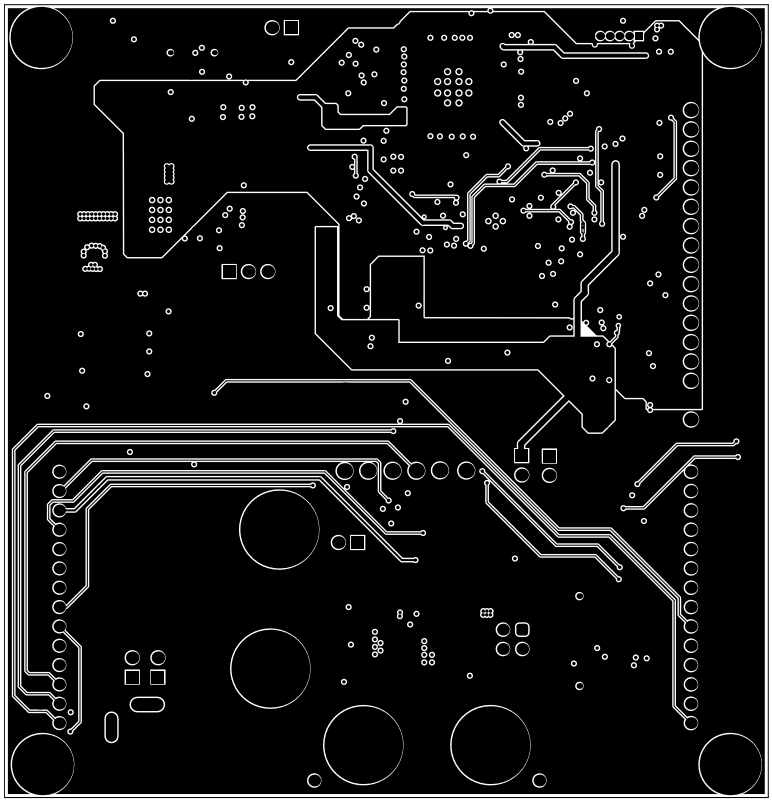


Figure 6-5. TAS2563EVM Signal Layer 2

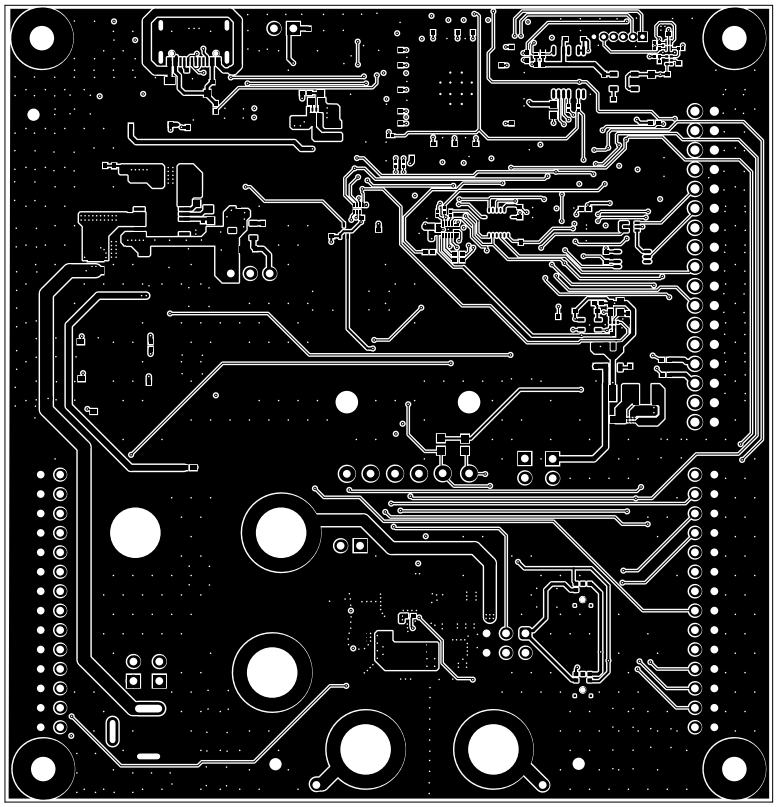


Figure 6-6. TAS2563EVM Bottom Layer

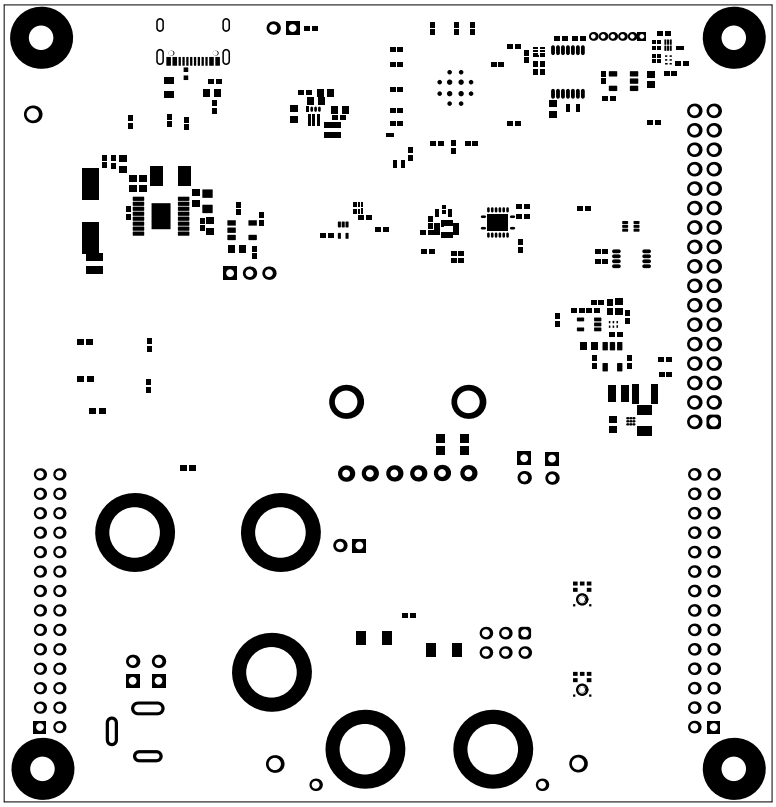


Figure 6-7. TAS2563EVM Bottom Solder Mask

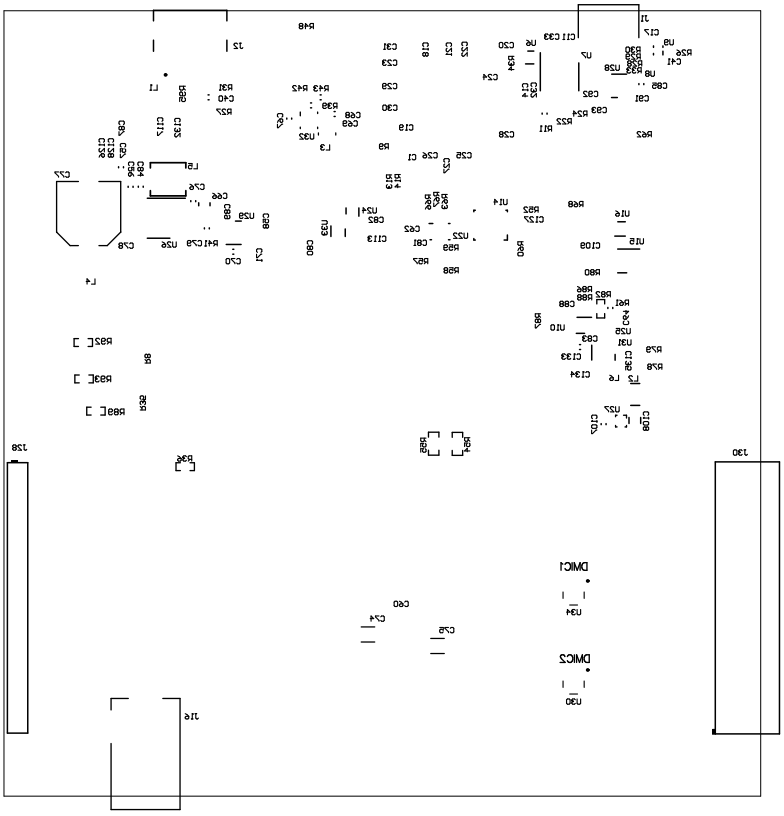


Figure 6-8. TAS2563EVM Bottom Overlay

7 Bill of Materials

Designator	Quantity	Value	Description	PackageReference	PartNumber	Manufacturer	Alternate PartNumber	Alternate Manufacturer
!PCB	1		Printed Circuit Board		AMPS280	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, C39, 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	65	0.1uF	CAP, CERM, 0.1uF, 50V, +/- 10%, X7R, 0402	0402	C1005X7R1H104K050BB	TDK		
C35, C70, C91, C133	4	1uF	CAP, CERM, 1µF, 50V,+/- 20%, X5R, AEC-Q200 Grade 3, 0603	0603	CGA3E3X5R1H105M080AB	TDK		
C38	1	47uF	CAP, CERM, 47uF, 25V, +/- 20%, JB, 1206	1206	C3216JB1E476M160AC	TDK		
C40	1	2.2uF	CAP, CERM, 2.2uF, 16V,+/- 10%, X7R, 0603	0603	EMK107BB7225MA-T	Taiyo Yuden		

Designator	Quantity	Value	Description	PackageReference	PartNumber	Manufacturer	Alternate PartNumber	Alternate Manufacturer
C41	1	470pF	CAP, CERM, 470pF, 25V, +/- 5%, C0G/NP0, 0402	0402	GRM1555C1E471JA01D	MuRata		
C43, C47, C49, C51, C60	5	0.1uF	CAP, CERM, 0.1µF, 25V,+/- 10%, X7R, AEC-Q200 Grade 1, 0402	0402	CGA2B3X7R1E104K050BB	TDK		
C44, C48	2	10uF	CAP, CERM, 10uF, 25V, +/- 20%, X5R, 0603	0603	GRM188R61E106MA73D	MuRata		
C45, C46	2	10uF	CAP, CERM, 10µF, 50V,+/- 20%, JB, 1210	1210	C3225JB1H106M250AB	TDK		
C50, C52	2	4.7uF	CAP, CERM, 4.7uF, 10V, +/- 10%, X5R, 0603	0603	CGB3B1X5R1A475K055AC	TDK		
C55	1	1uF	CAP, CERM, 1µF, 16V,+/- 20%, X7R, 0603	0603	CL10B105MO8NNWC	Samsung		
C56, C57, C67, C68, C84	5	22uF	CAP, CERM, 22uF, 10V, +/- 20%, X5R, 0603	0603	C1608X5R1A226M080AC	TDK		
C58, C78, C93, C135	4	0.01uF	CAP, CERM, 0.01uF, 50V, +/- 10%, X7R, AEC-Q200 Grade 1, 0402	0402	CGA2B3X7R1H103K050BB	TDK		
C61, C72	2	10uF	CAP, CERM, 10uF, 35V, +/- 10%, X7R, 1206	1206	C3216X7R1V106K160AC	TDK		
C66	1	3.3uF	CAP, CERM, 3.3uF, 50V, +/- 10%, X5R, 0805	0805	C2012X5R1H335K125AB	TDK		

Designator	Quantity	Value	Description	PackageReference	PartNumber	Manufacturer	Alternate PartNumber	Alternate Manufacturer
C76	1	0.47uF	CAP, CERM, 0.47uF, 25V, +/- 10%, X7R, 0603	0603	GRM188R71E474KA12D	MuRata		
C77	1	47uF	CAP, AL, 47uF, 63V, +/- 20%, 0.65ohm, AEC-Q200 Grade 2, SMD	SMT Radial F	EEE-FK1J470P	Panasonic		
C107	1	4.7uF	CAP, CERM, 4.7uF, 16V, +/- 10%, X5R, 0603	0603	GRM188R61C475KAAJ	MuRata		
C108	1	10uF	CAP, CERM, 10uF, 35V, +/- 10%, X7R, 1206_190	1206_190	GMK316AB7106KL-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, 20V, 3A, SMA	SMA	B320A-13-F	Diodes Inc.		
D5, D6, D7	3		Green 570nm LED Indication - Discrete 1.7V 0603 (1608 Metric)	0603		Osram		
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		

Designator	Quantity	Value	Description	PackageReference	PartNumber	Manufacturer	Alternate PartNumber	Alternate Manufacturer
J2	1		USB - C (Type - C) USB 2.0 Receptacle Connector 24 Position Surface Mount, Right Angle; Through Hole	CONN_USB_9MM58_7MM53	USB4105-GF-A	GCT		
J4	1		Header(shrouded), 2.54mm, 17x2, Gold, TH	Header(shrouded), 2.54mm, 17x2, TH	302-S341	On-Shore Technology		
J6, J8, J9, J10, J12	5		Binding Post, Nickel, TH	Receptacle, 1x1 Position, Dia 9.8mm, TH	111-2223-001	Cinch Connectivity		
J7, J15, J17, J20, J21, J32	6		Header, 100mil, 2x1, Gold, TH	Sullins 100mil, 1x2, 230 mil above insulator	PBC02SAAN	Sullins Connector Solutions		
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		
J18	1		Header, 100mil, 3x1, Gold, TH	PBC03SAAN	PBC03SAAN	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		
L1	1	30ohm	Ferrite Bead, 30ohm @ 100MHz, 6A, 0805	0805	MPZ2012S300AT000	TDK		
L2	1	1uH	Inductor, Flat Wire, 1uH, 3.1A, 0.045ohm, 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, 470nH, 2A, 0.059ohm, SMD	Inductor, 2x1.2x2mm	VLS2012ET-R47N	TDK		
L4, L6	2	300 ohm	Ferrite Bead, 300ohm @ 100MHz, 3.1A, 0806	0806	NFZ2MSM301SN10L	MuRata		
L5	1	2.2uH	Inductor, Shielded, 2.2uH, 4A, 0.061ohm, AEC-Q200 Grade 0, SMD	4.45x1.8x4.06mm	SRP4020TA-2R2M	Bourns		
L8	1	1uH	Inductor, Shielded, Metal Composite, 1uH, 3.3A, 0.04ohm, SMD	2.5x1.2x2mm	DFE252012F-1R0M=P2	MuRata Toko		
Putty	2		Scotch® Removable Mounting Putty	MOUNTING_PUTTY	860S	3M		
R1, R82	2	1.00k	RES, 1.00 k, 1%, 0.1 W, 0402	0402	ERJ-2RKF1001X	Panasonic		
R2, R3, R54, R55	4	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		

Designator	Quantity	Value	Description	PackageReference	PartNumber	Manufacturer	Alternate PartNumber	Alternate Manufacturer
R10, R21, R27, R62, R68, R80, R88	7	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		
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	1	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, 1.00M, 1%, 0.1W, 0603	0603	RC0603FR-071ML	Yageo		

Designator	Quantity	Value	Description	PackageReference	PartNumber	Manufacturer	Alternate PartNumber	Alternate Manufacturer
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		
R43	1	162k	RES, 162 k, 1%, 0.1 W, 0603	0603	RC0603FR-07162KL	Yageo		
R53, R61	2	200k	RES, 200 k, 1%, 0.1 W, AEC-Q200 Grade 0, 0603	0603	CRCW0603200KFKEA	Vishay-Dale		
R57, R58, R59	3	33	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	RMCF0402FT49R9	Stackpole Electronics Inc		
R89	1	3.00k	RES, 3.00 k, 1%, 0.063 W, AEC-Q200 Grade 0, 0402	0402	CRCW04023K00FKED	Vishay-Dale		
R92, R93	2	2.00k	RES, 2.00 k, 1%, 0.063 W, AEC-Q200 Grade 0, 0402	0402	CRCW04022K00FKED	Vishay-Dale		
R94, R95	2		5.1kOhms ±1% 0.063W, 1/16W Chip Resistor 0402 (1005 Metric) Automotive AEC-Q200 Thick Film	0402	CRCW04025K10FKED	Vishay		
SH1, SH2, SH3, SH4, SH5, SH6, SH7, SH8, SH9	9	1x2	Shunt, 100mil, Gold plated, Black	Shunt	SNT-100-BK-G	Samtec	969102-0000-DA	3M

Designator	Quantity	Value	Description	PackageReference	PartNumber	Manufacturer	Alternate PartNumber	Alternate Manufacturer
SW1	1		Dip Switch SPST 4 Position Surface Mount Slide (Standard) Actuator 25mA 24VDC	SW	A6SN-4104-P	Omron Electronics Inc-EMC Div		
SW2	1		Switch, Slide, SPDT 100mA, SMT	Switch, 5.4x2.5x2.5mm	CAS-120TA	Copal Electronics		
SW3	1		Switch, Dual SPDT, 2 Pos, 0.1A, 6VDC, SMD	5.4x3.9mm	CAS-D20TA	Copal Electronics		
SW4	1		Tactile Switch SPST-NO Top Actuated Surface Mount	SMD4	TS04-66-55-BK-100-SMT	Same Sky		
TP1, TP4, TP8	3		Test Point, Compact, Black, TH	Black Compact Testpoint	5006	Keystone Electronics		
TP2, TP3	2		Terminal Turret Connector Single End 0.360" (9.14mm) Silver	TERM_TURRET	2801-2-00-44-00-00-07-0	Mill-Max		
TP10, TP11, TP12, TP13, TP14, TP15	6		Test Point, Miniature, Orange, TH	Orange Miniature Testpoint	5003	Keystone		
TP16, TP17	2		Header, 2.54mm, 1x1, Gold, TH	Header, 2.54mm, 1x1, TH	TSW-101-08-G-S	Samtec		
U1	1		TAS2563QFN	VQFN-HR32	TAS2563QFN	Texas Instruments		
U3	1		512K I^2C Serial EEPROM, TSSOP	TSSOP-8	24FC512-I/ST	Microchip		
U4	1		IC MCU 512KB RAM, 128TQFP	TQFP-128	XEF216-512-TQ128-C20	XMOS semiconductor		

Designator	Quantity	Value	Description	PackageReference	PartNumber	Manufacturer	Alternate PartNumber	Alternate Manufacturer
U6	1		Dual-Bit Dual-Supply Bus Transceiver, DQE0008A, LARGE T&R	DQE0008A	SN74AVC2T244DQER	Texas Instruments		
U7	1		Programmable 1-PLL VCXO Clock Synthesizer with 2.5V or 3.3V LVCMOS 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	SN74LVC2G07DSFR	Texas Instruments		
U10	1		0.9V to 6.5V, Nano-Power Comparator, DCK0005A (SOT-SC70-5)	DCK0005A	TLV3691IDCKR	Texas Instruments	TLV3691IDCKT	Texas Instruments
U12	1		Low-Voltage 8-Bit I^2C and SMBus I/O Expander, 1.65 to 5.5V, -40 to 85 degC, 16-pin UQFN (RSV), Green (RoHS & no Sb/Br)	RSV0016A	TCA6408ARSVR	Texas Instruments		

Designator	Quantity	Value	Description	PackageReference	PartNumber	Manufacturer	Alternate PartNumber	Alternate Manufacturer
U13, U15	2		Single 2-Line to 1-Line Data Selector/ Multiplexer, DCT0008A, LARGE T&R	DCT0008A	SN74LVC2G157DCTR	Texas Instruments	SN74LVC2G157DCUT	Texas Instruments
U14	1		Dual 1-of-4 FET Multiplexer/ Demultiplexer 2.5V/3.3V Low-Voltage High-Bandwidth Bus Switch, RGY0016A (VQFN-16)	RGY0016A	SN74CB3Q3253RGYR	Texas Instruments		Texas Instruments
U16	1		Dual Buffer Gate, DRL0006A, LARGE T&R	DRL0006A	SN74LVC2G34DRLR	Texas Instruments		Texas Instruments
U17	1		Single Bus Buffer Gate With 3-State Outputs, DCK0005A, LARGE T&R	DCK0005A	SN74LVC1G125DCKR	Texas Instruments		
U18, U22	2		4-Bit Dual-Supply Bus Transceiver With Configurable Voltage-Level Shifting and 3-State Outputs, RSV0016A (UQFN-16)	RSV0016A	SN74AVC4T774RSVR	Texas Instruments		Texas Instruments
U20	1		SPEAKER 8OHM 2W		ASE02808MR-LW150-R	PUI Audio		

Designator	Quantity	Value	Description	PackageReference	PartNumber	Manufacturer	Alternate PartNumber	Alternate Manufacturer
U24	1		Dual Bi-Directional I^2C-Bus and SMBus Voltage Level-Translator, 0 to 5.5V, -40 to 85degC, 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		
U26	1		3.5 to 36Vin, 3 Ampere Synchronous DC-DC Converter for Automotive Applications, PWP0016D (TSSOP-16)	PWP0016D	LM536033QPWPRQ1	Texas Instruments	LM536033QPWPTQ1	Texas Instruments
U27	1		3.5MHz 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		

Designator	Quantity	Value	Description	PackageReference	PartNumber	Manufacturer	Alternate PartNumber	Alternate Manufacturer
U30, U34	2		27Hz ~ 18kHz Digital, I²S Microphone MEMS (Silicon) 1.62V ~ 1.98V Omnidirectional (-37dB ±1dB @ 94dB SPL) Solder Pads	LGA_CAV8	MMICT5848-00-012	TDK		
U32	1		3A 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
U33	1		Low-Power Single Bus Buffer Gate with 3-State Output, DRL0005A, LARGE T&R	DRL0005A	SN74AUP1G125DRLR	Texas Instruments		Texas Instruments
Y1	1		OSC, 24MHz, 2.25 - 3.63V, SMD	2x1.6mm	ASTMLPA-24.000MHZ-EJ-E-T	Abracon Corporation		
C53, C54	0	1uF	CAP, CERM, 1µF, 16V,+/- 20%, X7R, 0603	0603	CL10B105MO8NNWC	Samsung		
C59	0	0.1uF	CAP, CERM, 0.1µF, 25V,+/- 10%, X7R, AEC-Q200 Grade 1, 0402	0402	CGA2B3X7R1E104K050BB	TDK		
C65	0	10uF	CAP, CERM, 10uF, 25V, +/- 20%, X5R, 0603	0603	GRM188R61E106MA73D	MuRata		

Designator	Quantity	Value	Description	PackageReference	PartNumber	Manufacturer	Alternate PartNumber	Alternate Manufacturer
C74, C75	0	10uF	CAP, CERM, 10uF, 35V, +/- 10%, X7R, 1206	1206	C3216X7R1V106K160AC	TDK		
FID1, FID2, FID3	0		Fiducial mark. There is nothing to buy or mount.	N/A	N/A	N/A		
L7	0	1uH	Inductor, 1uH, 7A, 0.014ohm, SMD	4.15x4mm	PCMB053T-1R0MS	Susumu Co Ltd		

8 Revision History

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

Changes from Revision A (February 2022) to Revision B (December 2025)	Page
• General documentation updates for TAS2X63EVM transition to TAS2563QFNEVM	1

Changes from Revision * (December 2020) to Revision A (February 2022)	Page
• Updated the Default Jumper Settings table	5
• Updated figures	20

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