

TLV320AIC3268EVM-U Evaluation Module

This User's Guide describes the operation, use, and features of the TLV320AIC3268EVM-U. For questions and support go to the E2E forums (e2e.ti.com).

The main contents of this document are:

- Hardware descriptions and implementation
- Start up procedure using PurePath™ Console 2 (PPC2) software with the AIC3268 plug-in

Table 1. Related Documents

Document Title	Literature Number
TLV320AIC3268 Data Sheet	SLAS953
PurePath Graphic Development Suite	PurePath Console

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1 Features

- Full featured EVM with the TLV320AIC3268 Audio Codec
- USB connection to PC provides power, control and streaming audio for quick evaluation
- Easy-to-use PurePath Console 2 software provides graphical user interface to configure and control AIC3268

2 Introduction

This specific evaluation module (EVM) is a programmable USB audio device that features the TLV320AIC3268 Audio Codec with miniDSP.

2.1 *Electrostatic Discharge Warning*

Many of the components on the EVM are susceptible to damage by electrostatic discharge (ESD). Users 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.

2.2 Unpacking the EVM

On opening the TLV320AIC3268EVM-U package, ensure that the following item is included:

- One TLV320AIC3268EVM-U board using one TLV320AIC3268 (Figure 1 and Figure 2)

If either of the board or the TLV320AIC3268 device is missing, contact the Texas Instruments Product Information Center to inquire about a replacement.

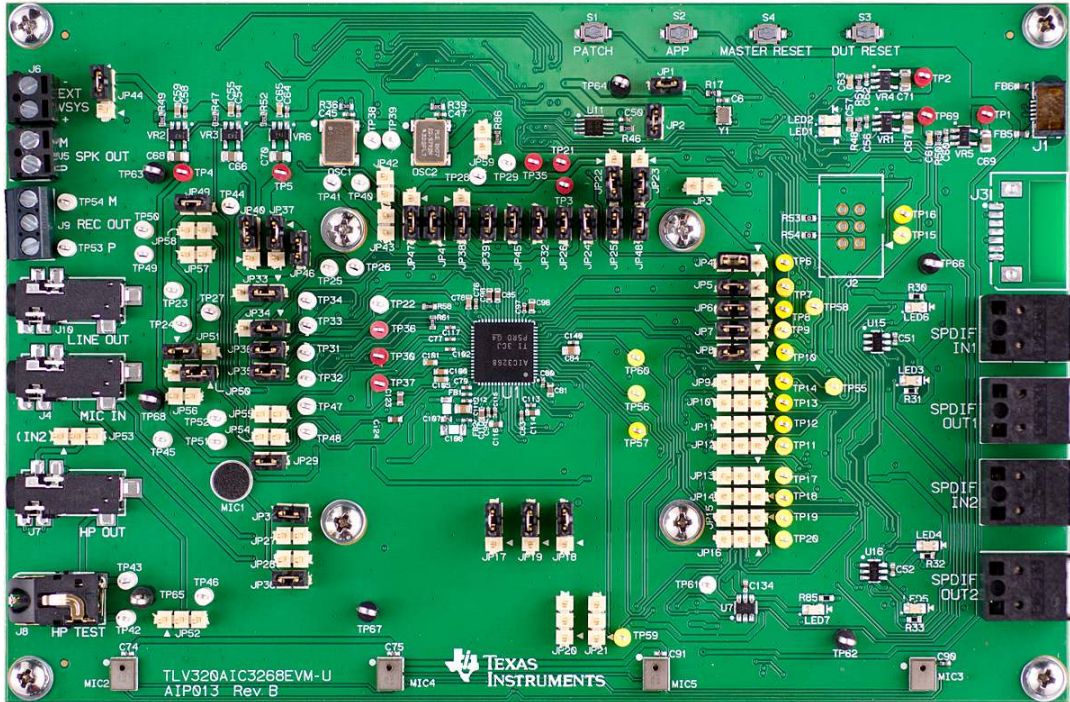


Figure 1. TLV320AIC3268EVM-U Top Board Photo

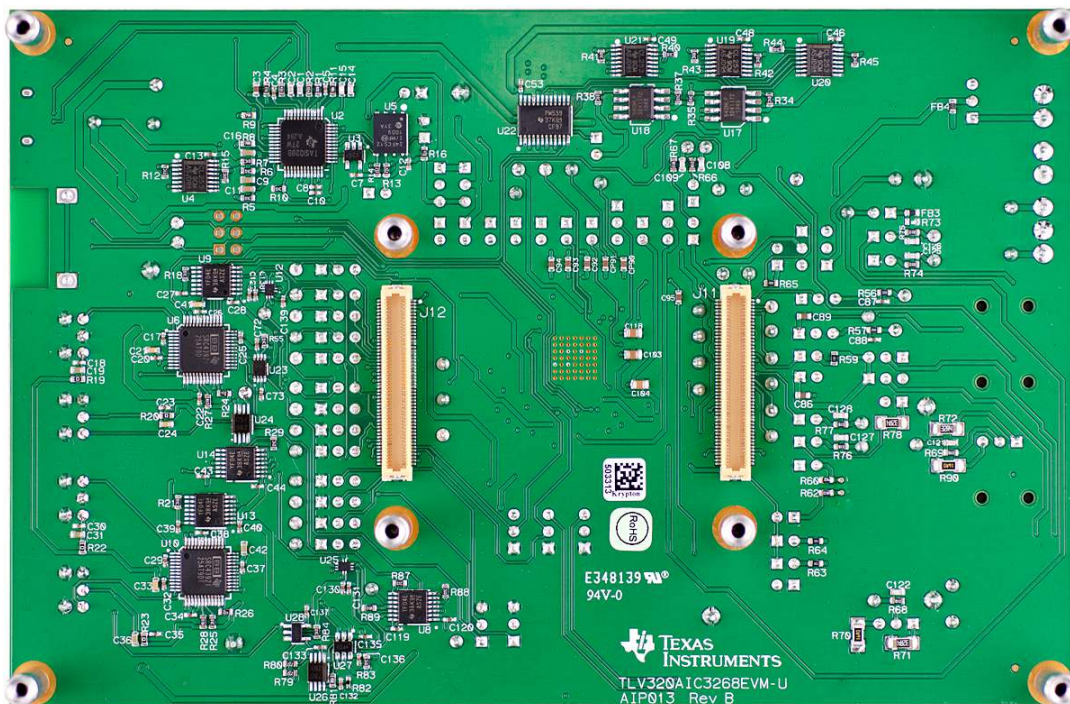


Figure 2. TLV320AIC3268EVM-U Bottom Board Photo

3 Getting Started

1. Request and download the PPC2 software located in the EVM product folder on the web.
2. Connect the EVM to USB port, LED lights LED1 and LED2 should illuminate once the EVM is detected by Windows® PC. Also, in the Windows Device Manager, the EVM should be recognized as a USB composite device, a USB audio device and an HID-compliant device.
3. Connect headphones to jack J7, labeled HP OUT.
4. Open PPC2 and in the *Command Buffer Interface* select *Open*.
5. Download the most up-to-date scripts from the product folder. Navigate to that folder and select script 1.1 and click *Execute*.
6. Play audio through any media tool. Make sure that the playback (and recording) device is USB-AudioEVM in the Windows control panel.
 - To adjust playback volume, open Sound in control panel, select the USB-AudioEVM device and click *Properties*.
 - Similarly, the other example configurations can be tried and sound can be recorded using the microphone available on the board.
7. Install jumpers on the EVM as per the requirements to make the right signal connections.

4 PurePath Console 2 Software

4.1 Installation

1. Request and download the PPC2 software located in the TLV320AIC3268 product folder.
2. Open the self-extracting installation file, and extract contents to a known folder.
3. Install the software by double clicking the setup executable and follow the directions.
4. Connect the EVM to a USB port using a micro-USB cable and open PurePath Console 2. If prompted, select the appropriate EVM name.

4.2 Graphical User Interface (GUI)

4.2.1 Main panel window

The main panel, shown in [Figure 3](#), provides direct access to the I2C settings of the AIC3268. On the main panel, users can configure the registers through the single byte write and read or through the *Command Buffer Interface*. The analog setup, digital setup, audio inputs, audio outputs, DRC, AGC, SAR and headset detection can be configured through this interface.

The EVM status, which reflects the hardware connection of the EVM, is shown on the bottom left of the main panel.

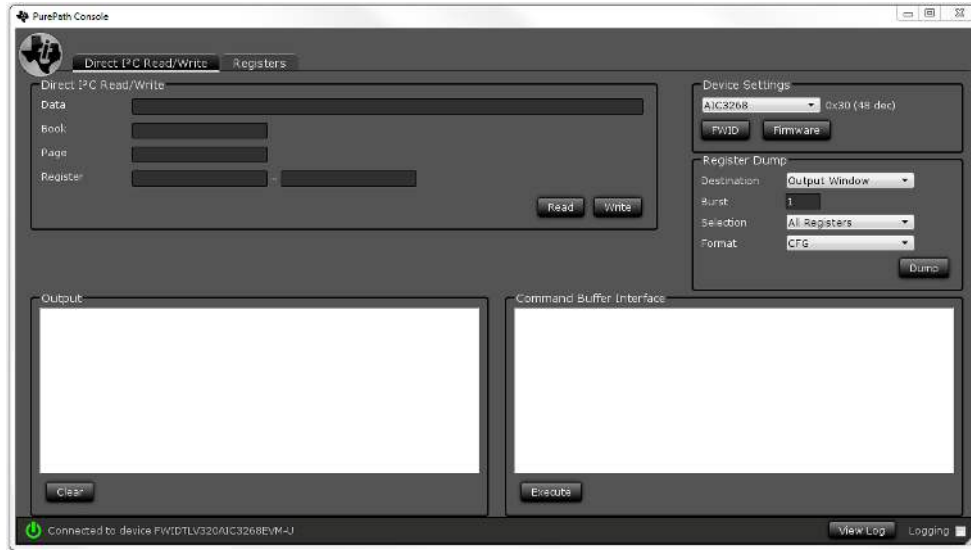


Figure 3. Main Panel

4.2.2 Typical Configuration

In the product folder there are example scripts for typical playback and record applications. These configurations are used through the *Command Buffer Interface*.

4.2.3 I2C Logger

The *Command Buffer Interface* communicates with the TLV320AIC3268 using a simple scripting language (described in [Section 9](#)). The TAS1020B USB controller handles all communication between the PC and the codec. A script is loaded into the command buffer, either by loading a script file using the Open button or by pasting text from the clipboard. Click Run to execute the command buffer.

To record the I2C communication between the PC and the device, there is an I2C Logger in the bottom right of the GUI. The I2C Logger records all register writes sent to the codec when the Logging box is checked. The recorded register values along with their page numbers are displayed in the *I2C Logger Window*. Pressing the Clear button clears the content of the logger.

4.2.4 Register Inspector

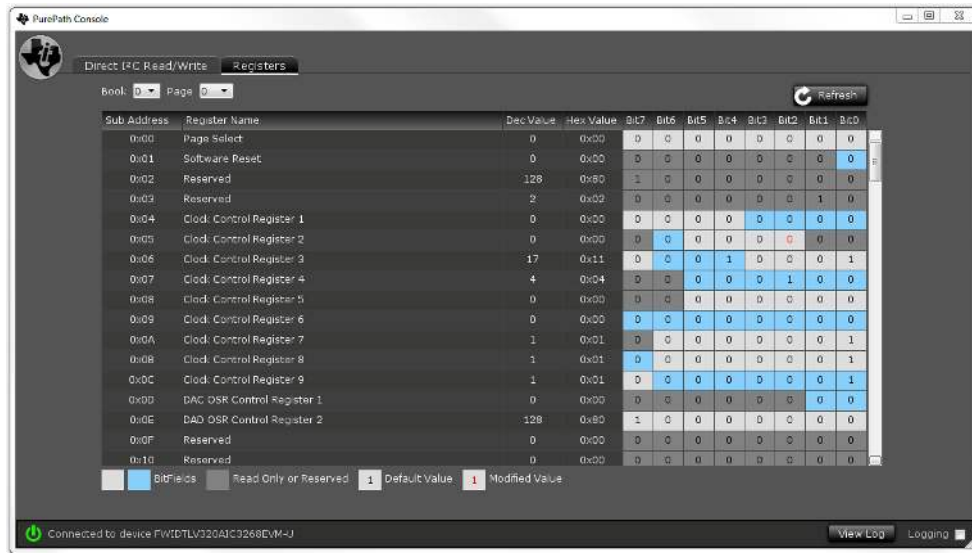


Figure 4. Register Inspector Window

The contents of the TLV320AIC3268 register map can be accessed through the Registers tab in PPC2. The Page number control selects the page to be displayed in the register table. The register table contains information such as register name, current register value and the bit field of the current register value. Specify the page number when using the register inspector table. Once the page is specified, the register value can then be inspected or changed by either entering the hex value of the register or changing the corresponding bits for that register.

5 TLV320AIC3268EVM-U Default Jumper Locations

Table 2 displays the default jumper location information.

Table 2. Default Jumper Locations

Jumper	Position	Jumper	Position
JP1	Shorted	JP31	Shorted
JP2	Shorted	JP32	Shorted
JP3	Open	JP33	1-2
JP4	2-3	JP34	1-2
JP5	2-3	JP35	Shorted
JP6	2-3	JP36	Shorted
JP7	2-3	JP37	1-2
JP8	2-3	JP38	2-3
JP9	2-3	JP39	Shorted
JP10	2-3	JP40	2-3
JP11	2-3	JP41	Shorted
JP12	2-3	JP42	Open
JP13	2-3	JP43	Open
JP14	2-3	JP44	2-3
JP15	2-3	JP45	Shorted
JP16	2-3	JP46	Open
JP17	2-3	JP47	Open
JP18	2-3	JP48	Shorted
JP19	2-3	JP49	Shorted
JP20	1-2	JP50	1-2
JP21	1-2	JP51	1-2
JP22	1-2	JP52	Open
JP23	1-2	JP53	Open
JP24	Shorted	JP54	Open
JP25	Shorted	JP55	Open
JP26	Shorted	JP56	Open
JP27	Open	JP57	Open
JP28	Open	JP58	Open
JP29	Shorted	JP59	Open
JP30	Shorted		

6 TLV320AIC3268EVM-U EVM Schematics

The schematics for the TLV320AIC3268EVM-U are shown in Figure 5 through Figure 12.

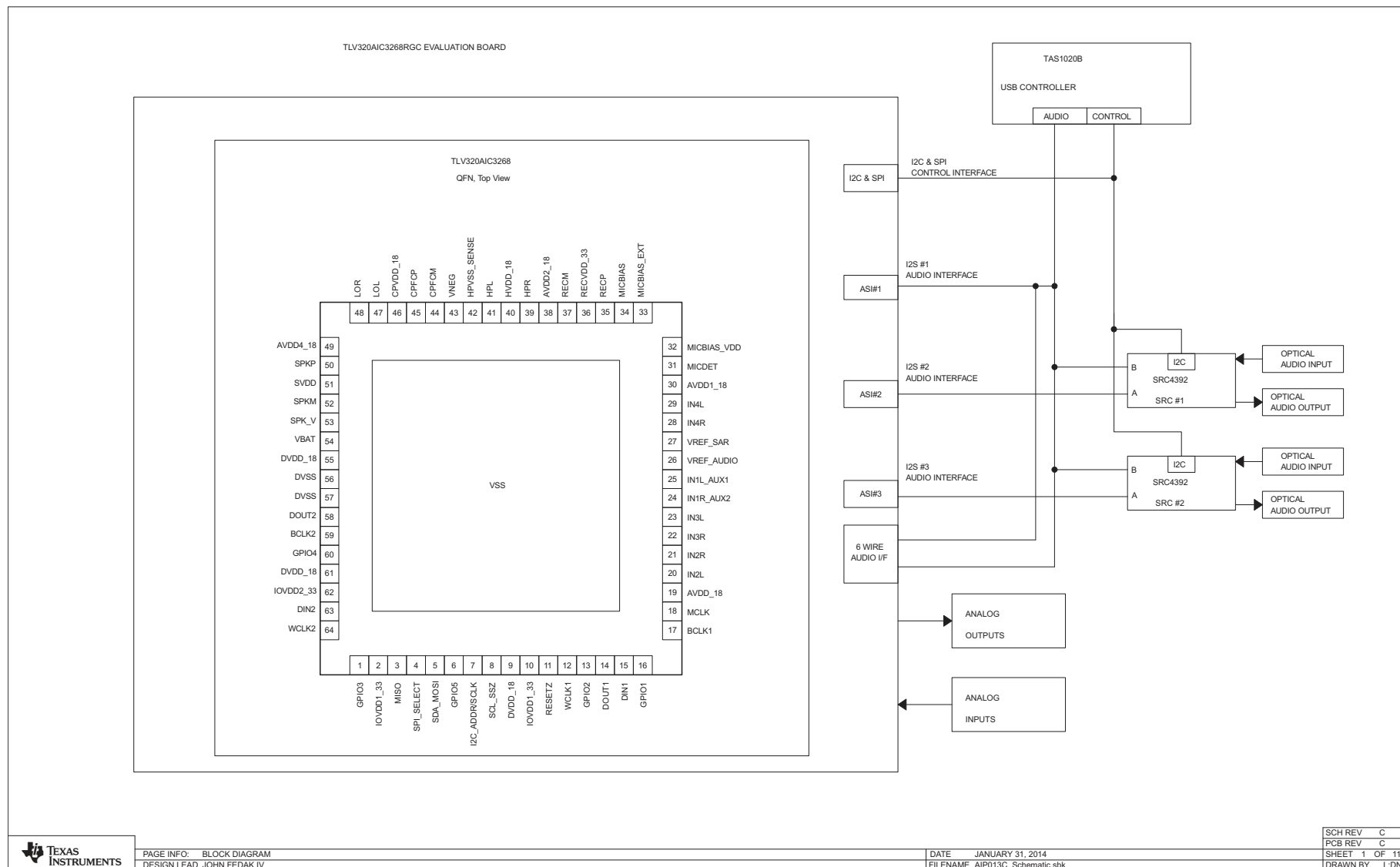


Figure 5. TLV320AIC3268RGC Block Diagram

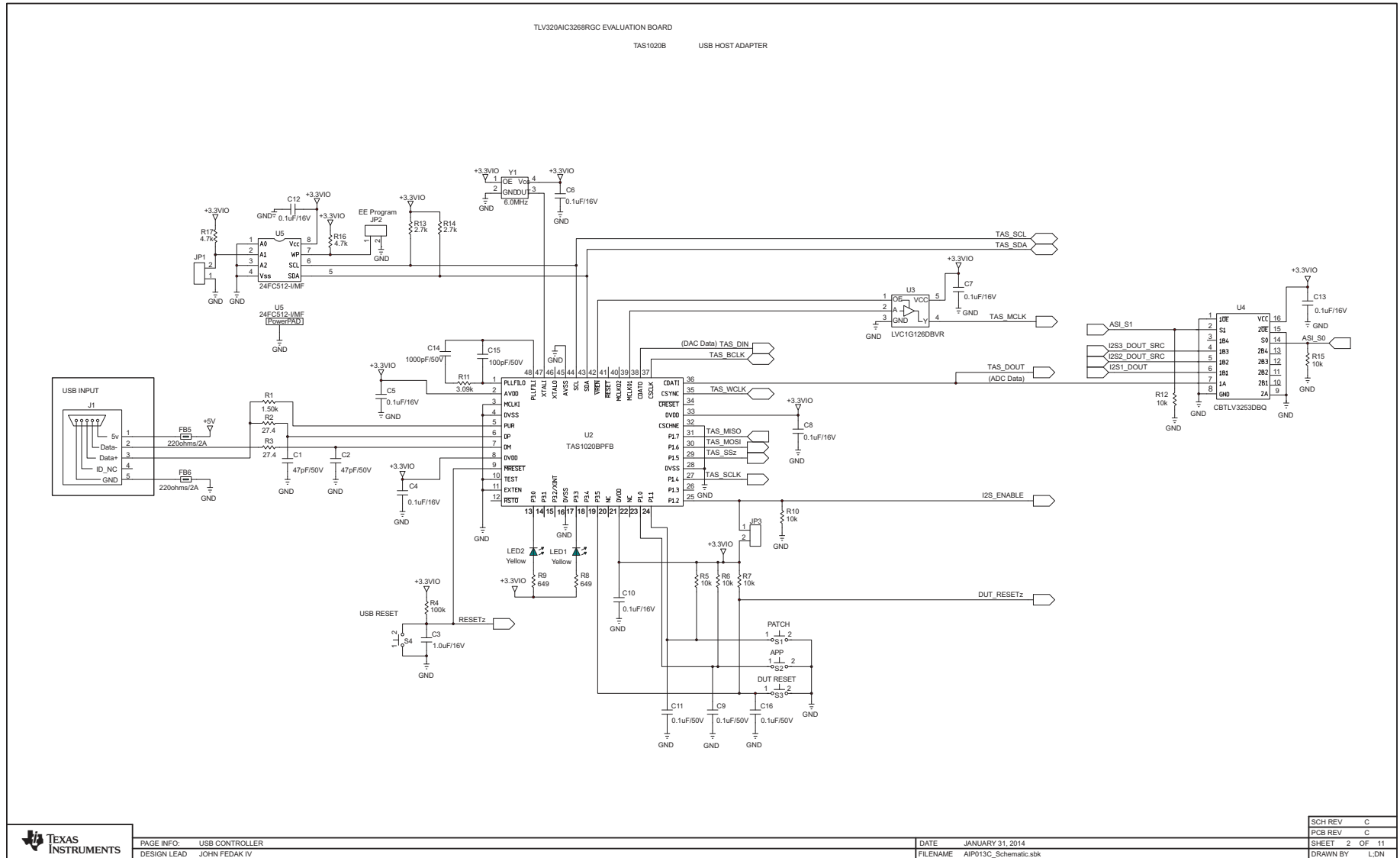


Figure 6. TAS1020BPFB USB Controller

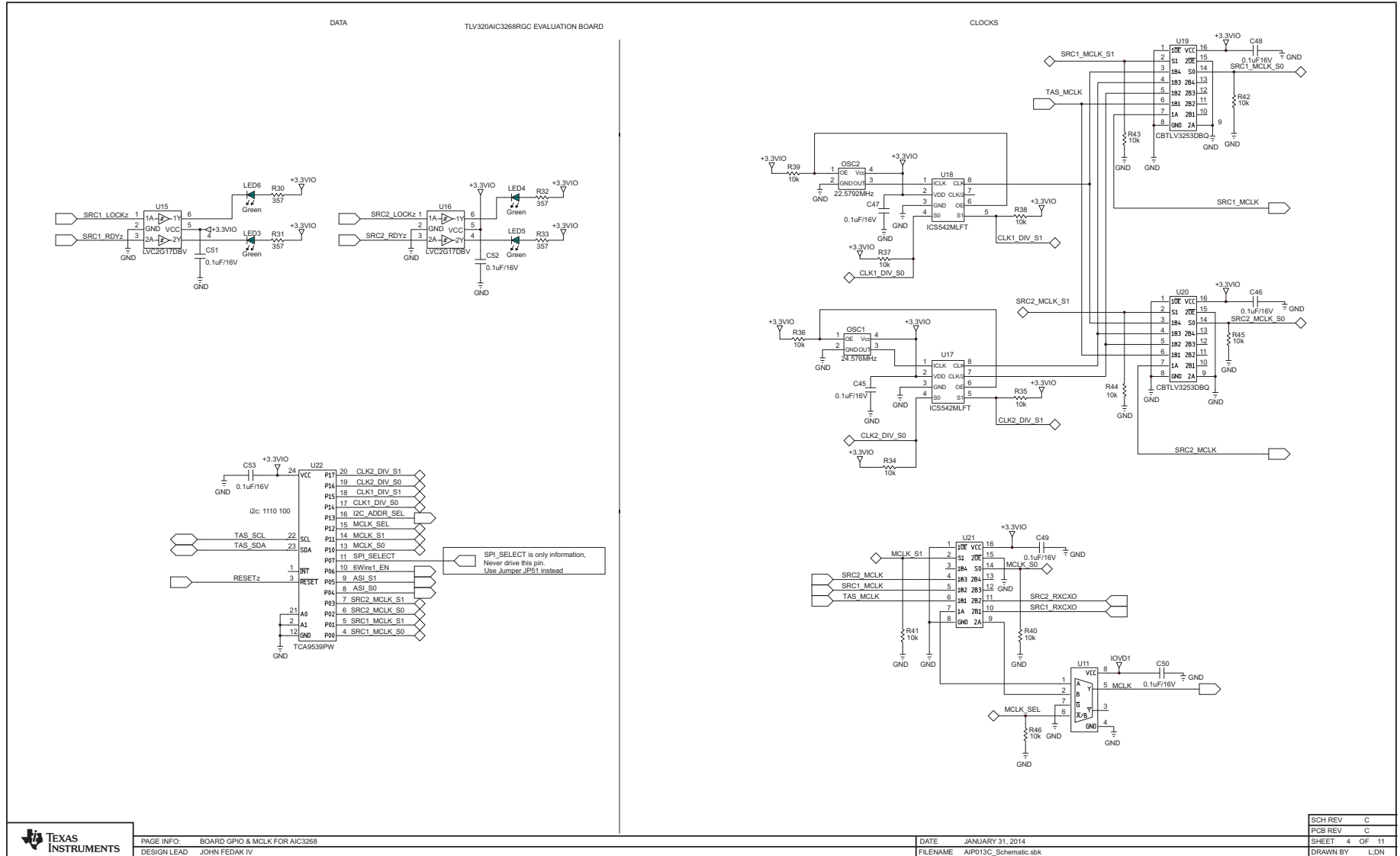


Figure 8. GPIO and MCLK for AIC3268

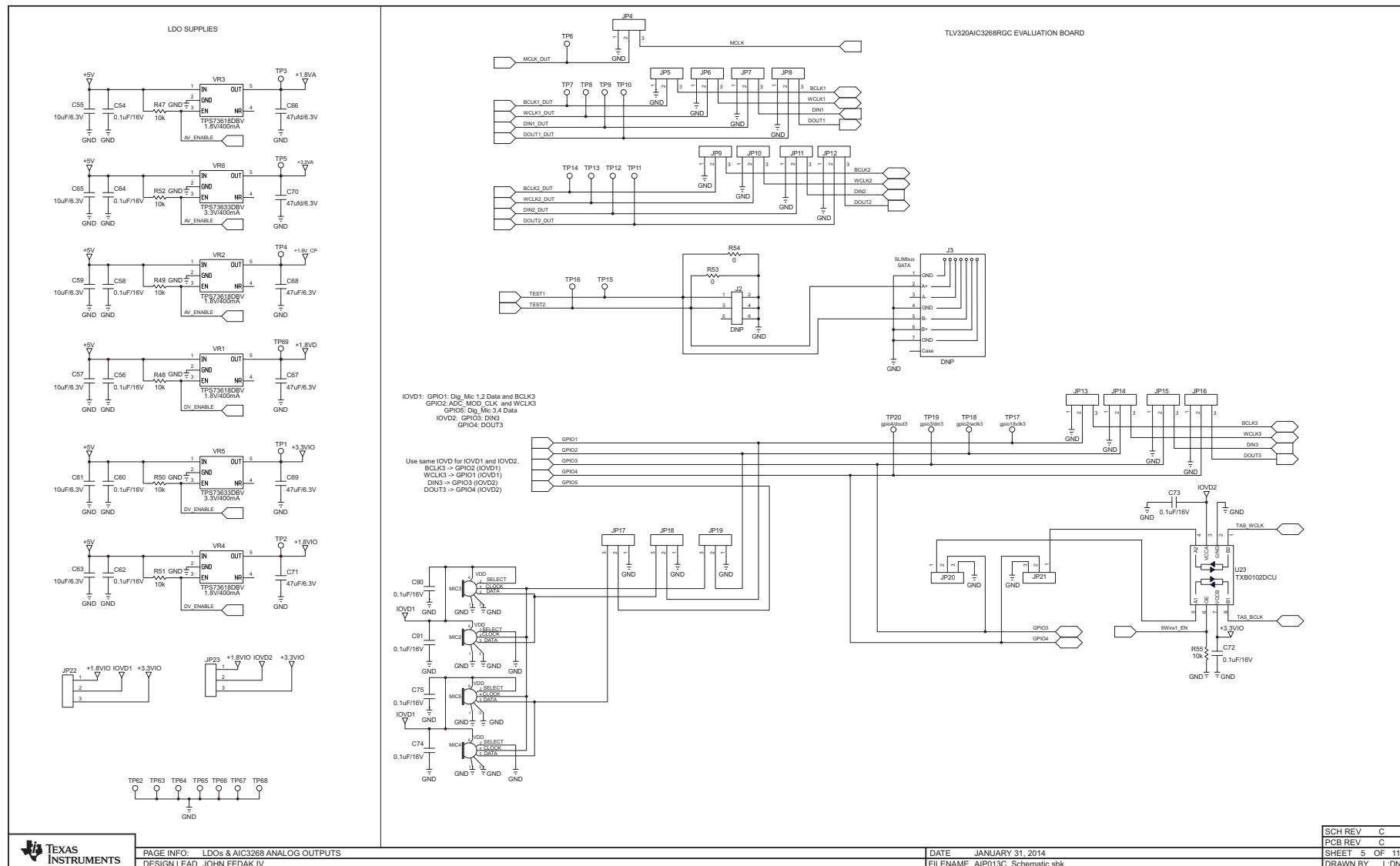


Figure 9. LDO Supplies and Analog Outputs

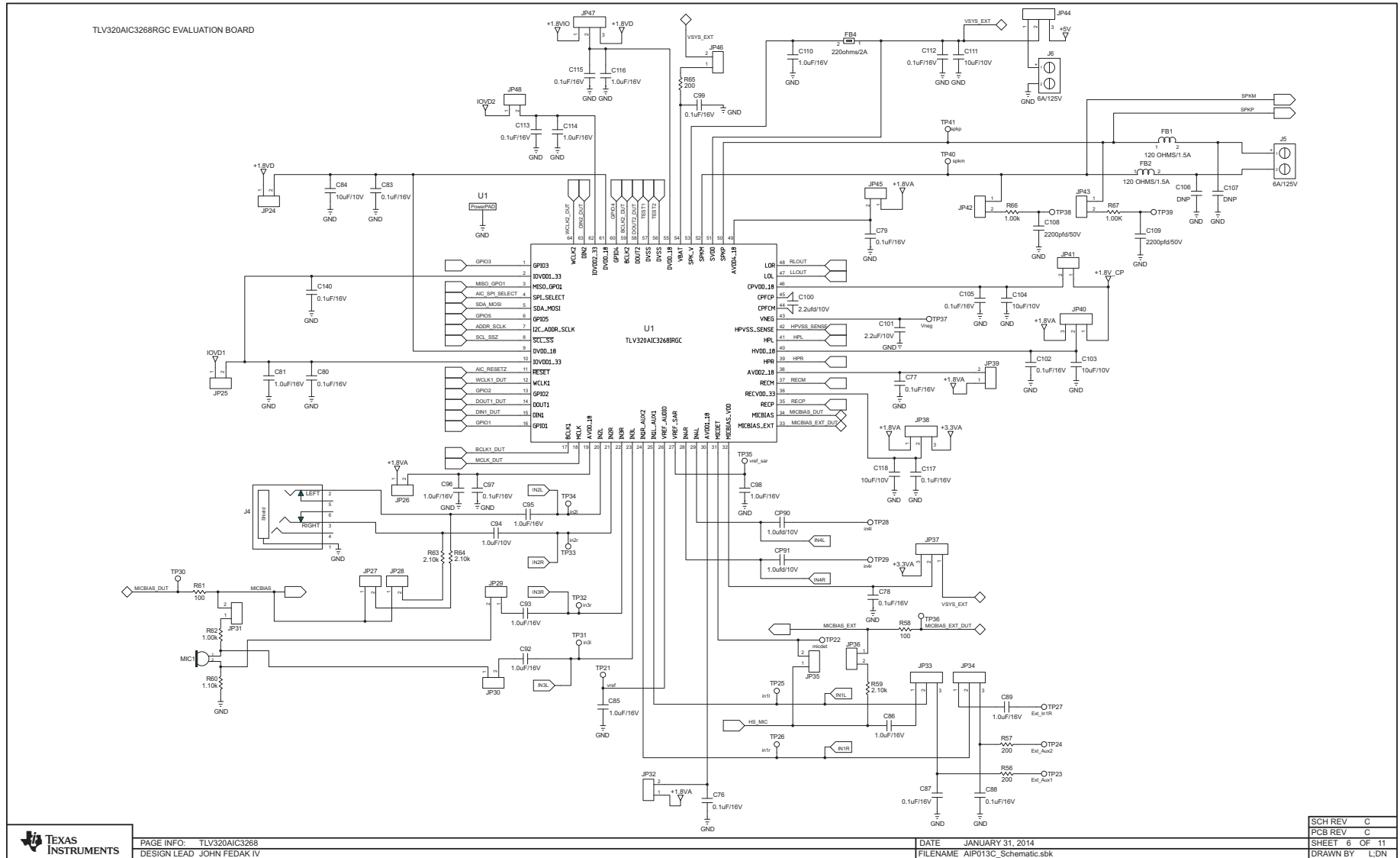


Figure 10. TLV320AIC3268 Schematic

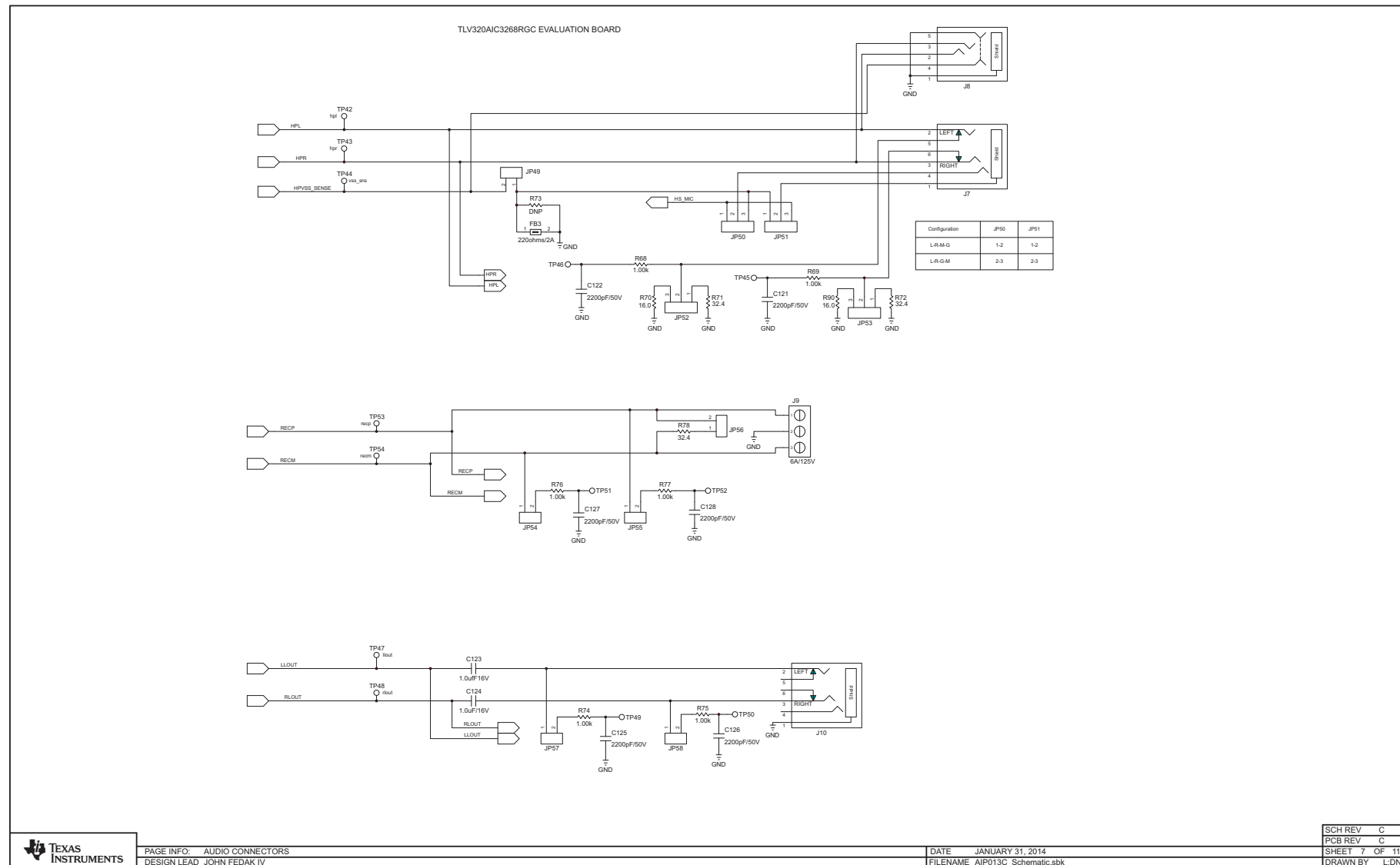


Figure 11. Audio Connectors

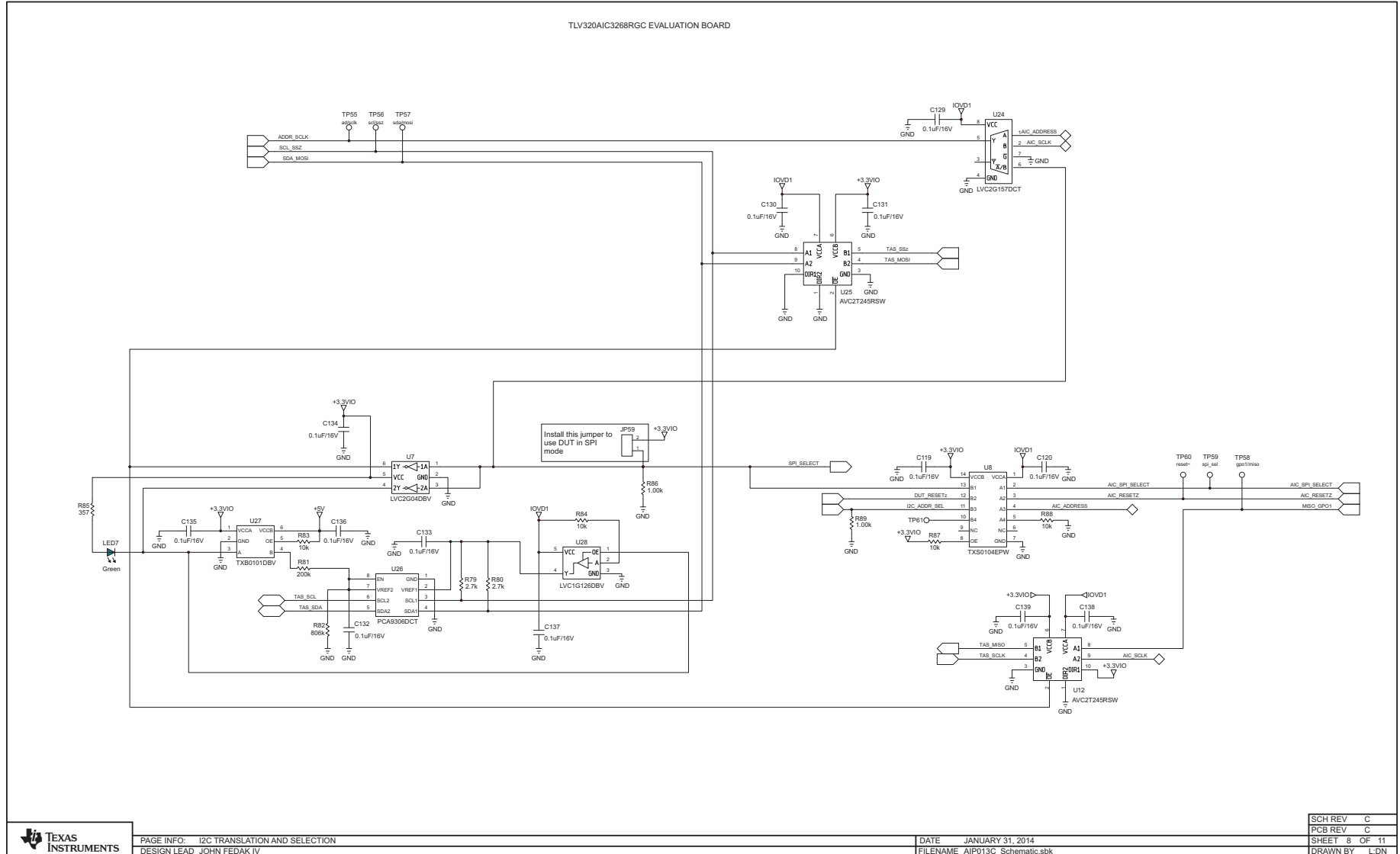


Figure 12. I²C Translation and Selection

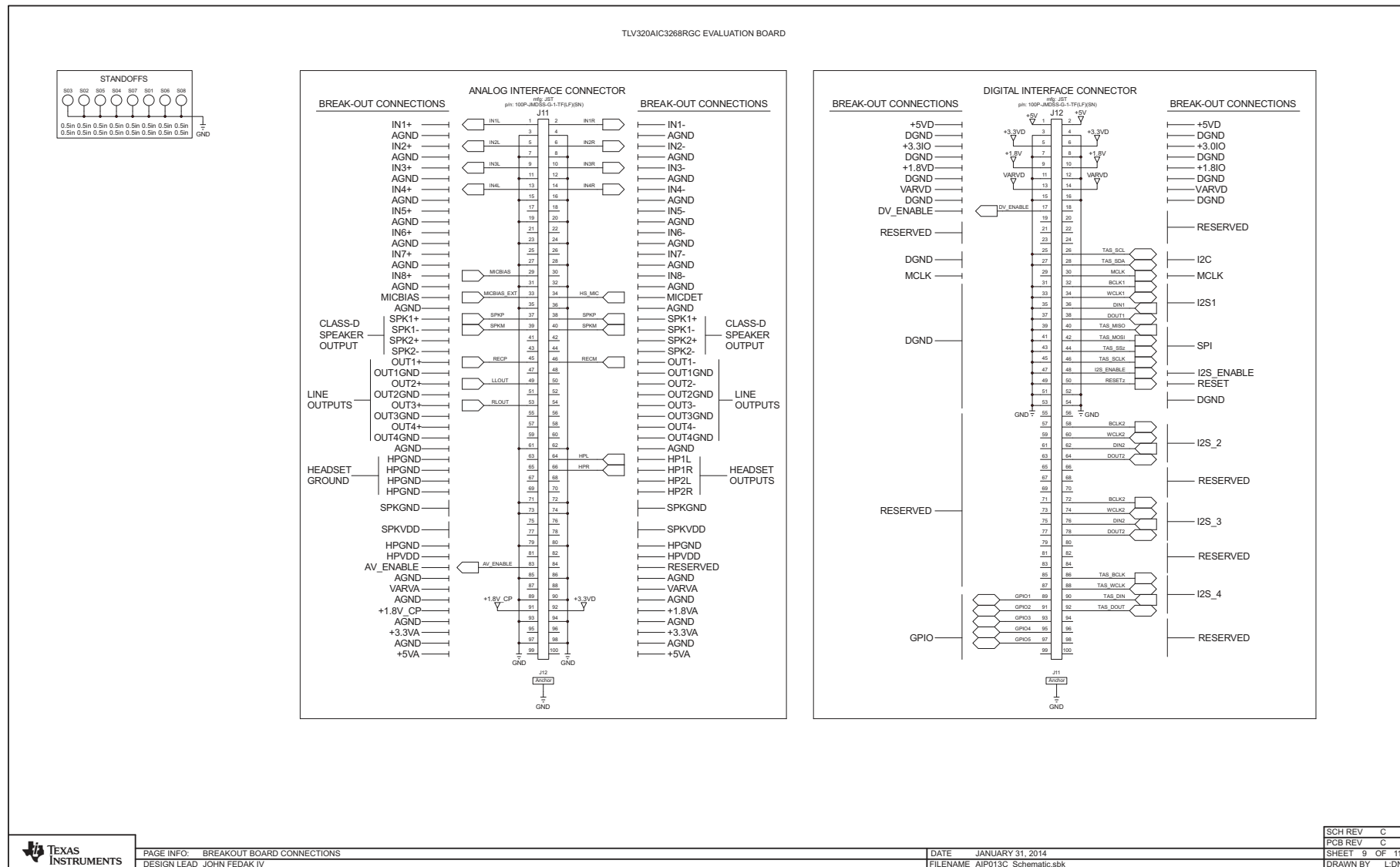


Figure 13. Breakout Board Connections



PAGE INFO: BREAKOUT BOARD CONNECTIONS
 DESIGN LEAD: JOHN FEDAK IV

DATE: JANUARY 31, 2014
 FILENAME: AIP013C_Schematic.sbk

SCH REV: C
 PCB REV: C
 SHEET: 9 OF 11
 DRAWN BY: LDN

7 TLV320AIC3268EVM-U EVM Board Layout

Figure 14 through Figure 16 illustrate the TLV320AIC3268EVM-U EVM board layouts.

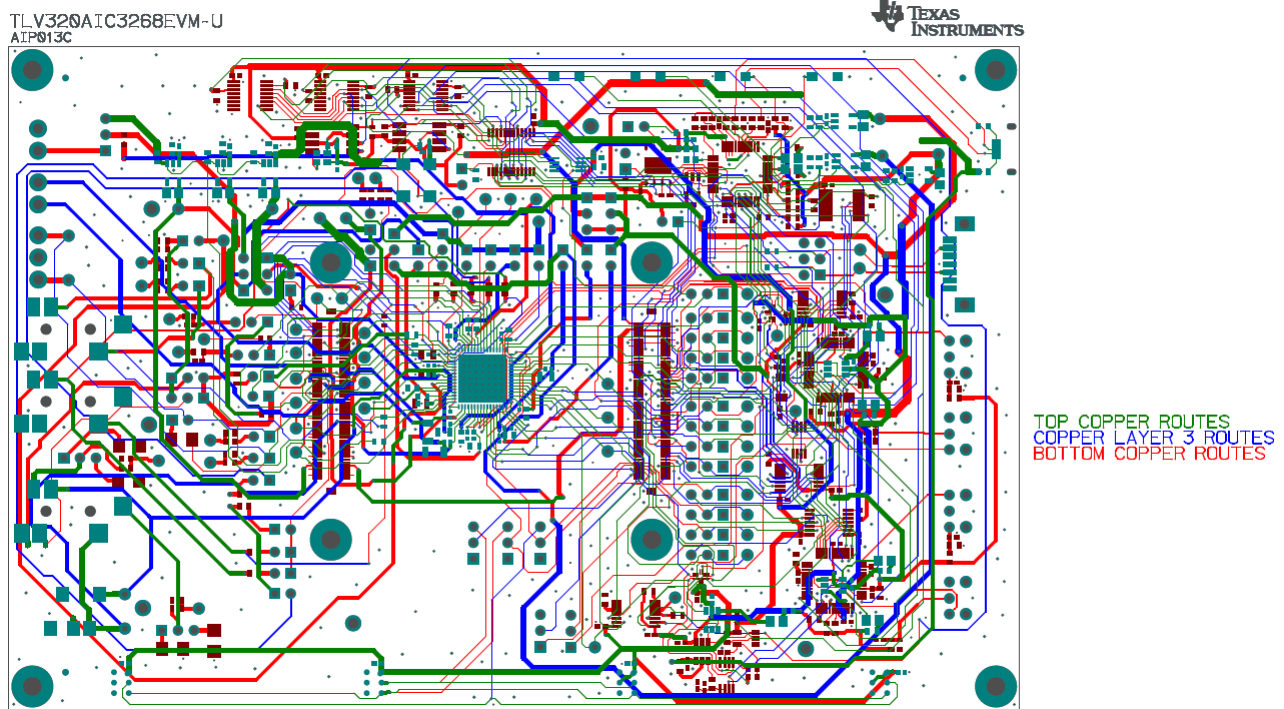


Figure 14. Top Xray View

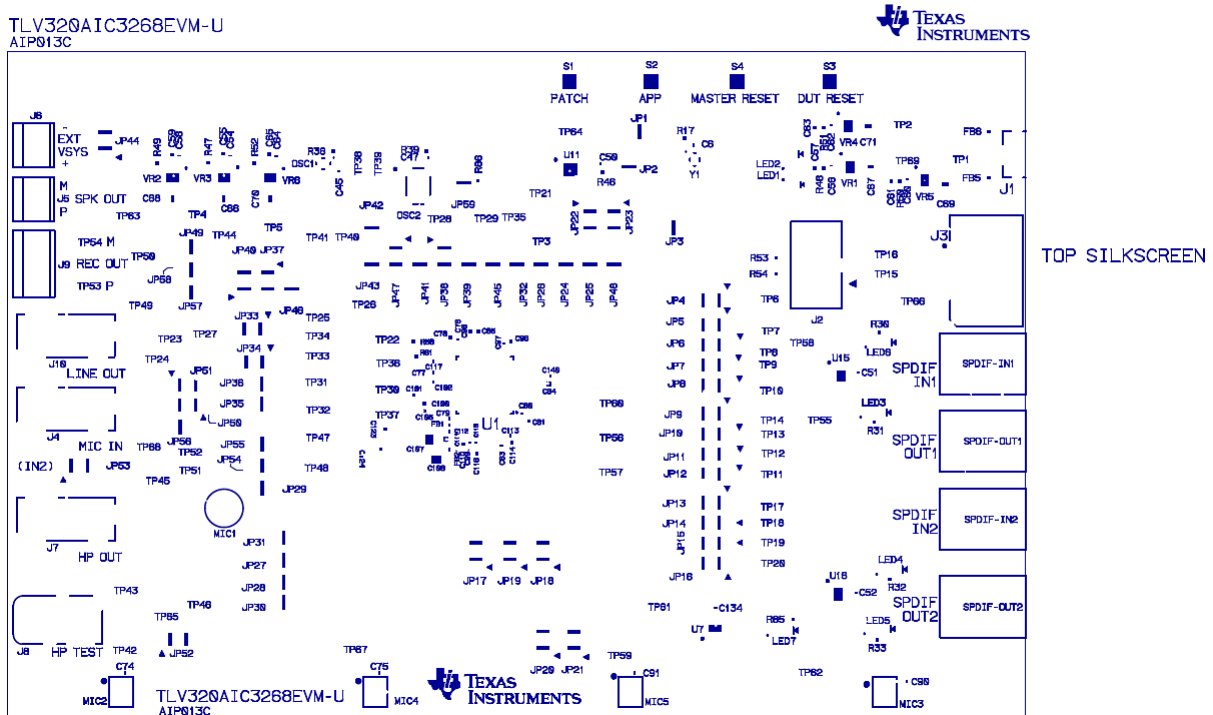


Figure 15. Silkscreen Top

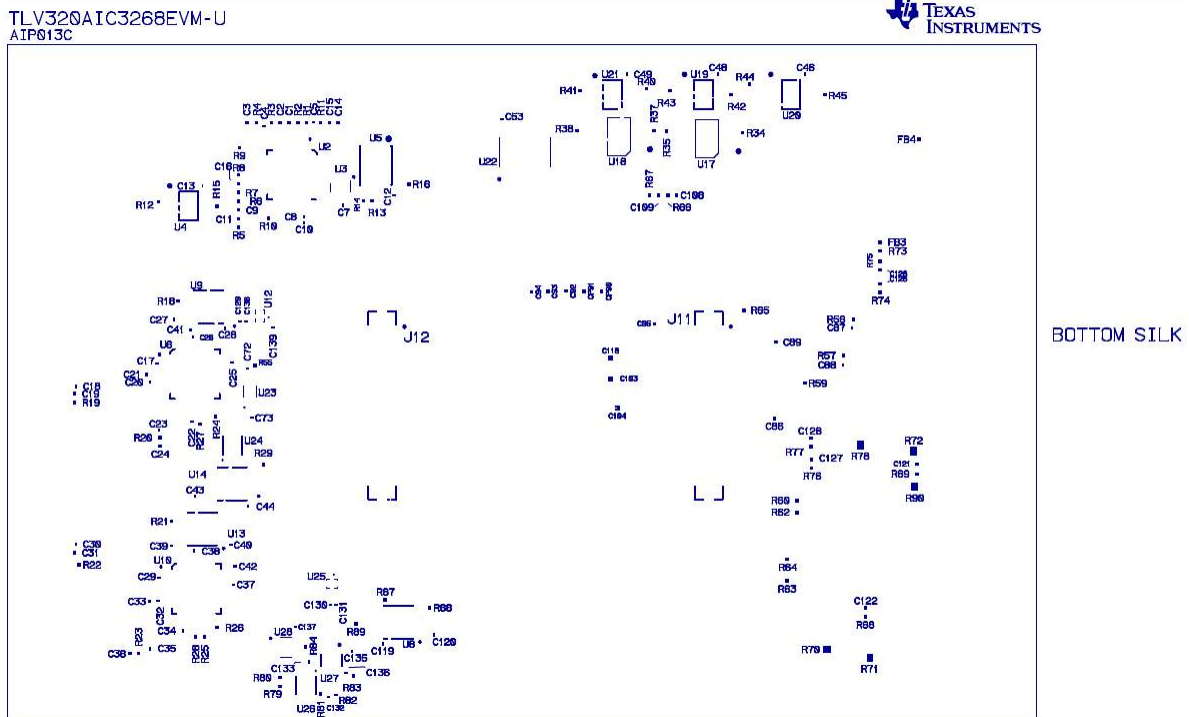


Figure 16. Silkscreen Bottom

8 TLV320AIC3268EVM-U Bill of Materials

Table 3 contains the BOM for the TLV320AIC3268EVM-U.

Table 3. TLV320AIC3268EVM-U Bill of Materials

Item	MANU PART NUM	MFG	QTY	REF DESIGNATORS	DESCRIPTION
1	TLV320AIC3268IRGC	TEXAS INSTRUMENTS	1	U1	STEREO AUDIO CODEC WITH DIRECT PATH HEADPHONE AND CLASS-D
2	TAS1020BPFB	TEXAS INSTRUMENTS	1	U2	USB STREAMING CONTROLLER TQFP48-PFB ROHS
3	SN74LVC1G126DBVR	TEXAS INSTRUMENTS	2	U3, U28	SINGLE BUS BUFFER GATE WITH 3-STATE OUTPUT SOT23-DBV5 ROHS
4	SN74CBTLV3253DBQR	TEXAS INSTRUMENTS	4	U4, U19, U20, U21	LO VOLT DUAL 10F4 FET MUX/DEMUX SSOP16-DB ROHS
5	24FC512-I/MF	MICROCHIP	1	U5	512K I2C SERIAL EEPROM DFN8-MF ROHS
6	SRC4392IPFBR	BURR-BROWN	2	U6, U10	2 CHAN,ASYN, SAMPLE RATE CONV W/DIG AUDIO REC/XMTR ROHS
7	SN74LVC2G04DBVR	TEXAS INSTRUMENTS	1	U7	DUAL INVERTER GATE SOT23-DBV6 ROHS
8	TXS0104EPWR	TEXAS INSTRUMENTS	4	U8, U9, U13, U14	4-BIT BIDIR LEVEL TRANSLATOR TSSOP14-PW ROHS
9	SN74LVC2G157DCTR	TEXAS INSTRUMENTS	2	U11, U24,	MUX/DATA SELECTOR 2 TO 1 SSOP8-DCT ROHS
10	SN74AVC2T245RSWR	TEXAS INSTRUMENTS	2	U12, U25	2BIT XCVR CONFIGURABLE TRANSLATION 3-STATE OUTS QFN10-RSW ROHS
11	SN74LVC2G17DBVR	TEXAS INSTRUMENTS	2	U15, U16	DUAL SCHMITT-TRIGGER BUFFER SOT23-DBV6 ROHS
12	ICS542MLFT	IDT	2	U17, U18	CLOCK DIVIDER,SOP8-D,ROHS
13	TCA9539PWR	TEXAS INSTRUMENTS	1	U22	REMOTE 16B I2C SMBUS LO PWR IO EXPNDR INT OUT TSSOP24-PW ROHS
14	TXB0102DCUR	TEXAS INSTRUMENTS	1	U23	2-BIT BIDIR LEVEL TRANSLATOR VSSOP8-DCU ROHS
15	PCA9306DCTR	TEXAS INSTRUMENTS	1	U26	DUAL BIDIR I2C BUS AND SMBUS VOLT LEVEL TRANS SSOP8-DCT ROHS
16	TXB0101DBVR	TEXAS INSTRUMENTS	1	U27	1-BIT BIDIR LEVEL TRANSLATOR SOT23-DBV6 ROHS
17	TPS73618DBVT	TEXAS INSTRUMENTS	4	VR1, VR2, VR3, VR4	VOLT REG 1.8V 400MA LDO CAP FREE NMOS SOT23-DBV5 ROHS
18	TPS73633DBVT	TEXAS INSTRUMENTS	2	VR5, VR6	VOLT REG 3.3V 400MA LDO CAP FREE NMOS SOT23-DBV5 ROHS
19	PLR135/T10	EVERLIGHT ELECTRONICS	2	SPDIF-IN1, SPDIF-IN2	PHOTOLINK FIBER OPTIC RECEIVER 2.4-5.5V 15MB PCB-RA SHUTTER ROHS
20	PLT133/T10W	EVERLIGHT ELECTRONICS	2	SPDIF-OUT1, SPDIF-OUT2	PHOTOLINK FIBER OPTIC TRANSMITTER 2.4-5.5V 15MB PCB-RA SHUTTER ROHS
21	SML-LXT0805YW-TR	LUMEX OPTO	2	LED1, LED2	LED, YELLOW 2.0V SMD0805 ROHS
22	SML-LXT0805GW-TR	LUMEX OPTO	5	LED3, LED4, LED5, LED6, LED7	LED, GREEN 2.0V SMD0805 ROHS
23	FXO-HC736R-22.5792	FOX ELECTRONICS	1	OSC1	OSCILLATOR SMT 3.3V 24.576MHz ROHS
24	625L3C024M57600	CTS FREQUENCY CONTROLS	1	OSC2	OSCILLATOR SMT 3.3V 22.5792MHz ROHS
25	625L31006M00000	CTS FREQUENCY CONTROLS	1	Y1	OSCILLATOR SMT 6.0MHz 3.3V OUT-ENABLE ROHS
26	GRM1885C1H470JA01D	MURATA	2	C1, C2	CAP SMD0603 CERM 47PFD 50V 5% COG ROHS
27	C1608X7R1C105K	TDK	3	C3, C123, C124	CAP SMD0603 CERM 1.0UFD 16V 10% X7R ROHS
28	GRM155R71C104KA88D	MURATA	77	C4, C5, C6, C7, C8, C10, C12, C13, C17, C18, C20, C22, C23, C25, C26, C27, C28, C29, C30, C32, C34, C35, C37, C38, C39, C40, C43, C44, C45, C46, C47, C48, C49, C50, C51, C52, C53, C54, C56, C58, C60, C62, C64, C72, C73, C74, C75, C76, C77, C79, C80, C83, C87, C88, C90, C91, C97, C99, C102, C112, C113, C115, C117, C119, C120, C129, C130, C131, C132, C133, C134, C135, C136, C137, C138, C139, C140	CAP SMD0402 CERM 0.1UFD 16V X7R 10% ROHS
29	C1608X7R1H104K	TDK	3	C9, C11, C16	CAP SMD0603 CERM 0.1UFD 50V 10% X7R ROHS
30	C1608C0G1H102J	TDK CORP.	1	C14	CAP SMD0603 CERM 1000PFD 50V 5% COG ROHS
31	GRM1885C1H101JA01D	MURATA	1	C15	CAP SMD0603 CERM 100PFD 50V 5% COG ROHS
32	GRM188R60J106ME47D	MURATA	14	C19, C21, C24, C31, C33, C36, C41, C42, C55, C57, C59, C61, C63, C65	CAP SMD0603 CERM 10UFD 6.3V 20% X5R ROHS
33	JMK212BJ476MG-T	TAIYO YUDEN	6	C66, C67, C68, C69, C70, C71	CAP SMD0805 CERM 47UFD 6.3V 20% X5R ROHS

Table 3. TLV320AIC3268EVM-U Bill of Materials (continued)

Item	MANU PART NUM	MFG	QTY	REF DESIGNATORS	DESCRIPTION
34	GRM188R71C104KA01D	MURATA	2	C78, C105	CAP SMD0603 CERM 0.1UFD 16V 10% X7R ROHS
35	EMK107B7105KA-T	TAIYO YUDEN	6	C81, C96, C98, C110, C114, C116	CAP SMD0603 CERM 1.0UFD 16V 10% X7R ROHS
36	GRM21BR71A106KE51L	MURATA	5	C84, C103, C104, C111, C118	CAP SMD0805 CERM 10UF 10V10% X7R ROHS
37	GRM188R71A105KA61D	MURATA	9	C85, C86, C89, C92, C93, C94, C95, CP90, CP91	CAP SMD0603 CERM 1.0UF 10V 10% X7R ROHS
38	GRM188R71A225KE15D	MURATA	2	C100, C101	CAP SMD0603 CERM 2.2UF 10V 10% X7R ROHS
39	NA	NA	0	C106, C107	CAP SMD1206 VALUE TBD
40	GRM188R71H222KA01D	MURATA	8	C108, C109, C121, C122, C125, C126, C127, C128	CAP SMD0603 CERM 2200PFD 50V 10% X7R ROHS
41	ERJ-3EKF1501V	PANASONIC	1	R1	RESISTOR SMD0603 1.50K OHM 1% THICK FILM 1/10W ROHS
42	ERJ-3EKF27R4V	PANASONIC	2	R2, R3	RESISTOR SMD0603 27.4 OHMS 1% 1/10W ROHS
43	ERJ-3EKF1003V	PANASONIC	1	R4	RESISTOR SMD0603 100K OHM 1% THICK FILM 1/10W ROHS
44	ERJ-3GEYJ103V	PANASONIC	34	R5, R6, R7, R10, R12, R15, R18, R21, R25, R29, R34, R35, R36, R37, R38, R39, R40, R41, R42, R43, R44, R45, R46, R47, R48, R49, R50, R51, R52, R55, R83, R84, R87, R88	RESISTOR SMD0603 10K 5% 1/10W ROHS
45	RC0603FR-07649RL	YAGEO	2	R8, R9	RESISTOR SMD0603 THICK FILM 649 OHMS 1% 1/10W ROHS
46	ERJ-3EKF3091V	PANASONIC	1	R11	RESISTOR SMD0603 3.09K OHM 1% THICK FILM 1/10W ROHS
47	ERJ-3GEYJ272V	PANASONIC	4	R13, R14, R79, R80	RESISTOR SMD0603 2.7K OHMS 5% 1/10W ROHS
48	ERJ-3GEYJ472V	PANASONIC	4	R16, R17, R24, R26	RESISTOR SMD0603 4.7K OHMS 5% 1/10W ROHS
49	ERJ-3GEY0R00V	PANASONIC	6	R19, R20, R22, R23, R53, R54	RESISTOR,SMT,0603,ZERO OHM,5%,,1/10W,ROHS
50	RC0603FR-071KL	YAGEO	13	R27, R28, R62, R66, R67, R68, R69, R74, R75, R76, R77, R86, R89	RESISTOR SMD0603 THICK FILM 1.00K OHM 1% 1/10W ROHS
51	ERJ-3EKF3570V	PANASONIC	5	R30, R31, R32, R33, R85	RESISTOR SMD0603 357 OHM 1% THICK FILM 1/10W ROHS
52	CRCW0603200RFKEA	VISHAY	3	R56, R57, R65	RESISTOR SMD0603 200 OHMS 1% 1/10W ROHS
53	ERJ-3EKF1000V	PANASONIC	2	R58, R61	RESISTOR SMD0603 100 1% THICK FILM 1/10W ROHS
54	ERJ-3EKF2101V	PANASONIC	3	R59, R63, R64	RESISTOR SMD0603 2.10K OHMS 1% THICK FILM 1/10W ROHS
55	ERJ-3EKF1101V	PANASONIC	1	R60	RESISTOR SMD0603 1.10K OHMS 1% THICK FILM 1/10W ROHS
56	CRCW120616R0JNEA	VISHAY	2	R70, R90	RESISTOR,SMT,1206,16.0 OHM,5%,1/4W,ROHS
57	RC1206FR-0732R4L	YAGEO	3	R71, R72, R78	RESISTOR SMD1206 32.4 OHMS 1% 1/4W ROHS
58	ERJ-3GEY0R00V	PANASONIC	0	R73	RESISTOR,SMT,0603,ZERO OHM,5%,,1/10W,ROHS
59	ERJ-3GEYJ204V	PANASONIC	1	R81	RESISTOR SMD0603 200K OHMS 5% 1/10W ROHS
60	ERJ-2RKF8063X	PANASONIC	1	R82	RESISTOR SMD0402 THICK FILM 806K OHMS 1/10W 1% ROHS
61	BLM15EG121SN1D	MURATA	2	FB1, FB2	FERRITE BEAD SMD0402 120 OHMS 1.5A ROHS
62	MPZ1608S221A	TDK	4	FB3, FB4, FB5, FB6	FERRITE CHIP, 220 OHMS 2A 100MHZ SMD 0603 ROHS
63	ZX62WD1-B-5PC	HIROSE	1	J1	JACK USB FEMALE TYPEB MICRO SMT-RA 5PIN ROHS
64	75869-131LF	FCI	0	J2	HEADER SHROUDED 100LS MALE GOLD 2x3 PINS ROHS
65	5607-4200-SH	3M	0	J3	CONNECTOR-SATA 7 PIN SMT-RA SERIES 5607 ROHS
66	SJ-43516-SMT	CUI STACK	3	J4, J7, J10	JACK AUDIO-STEREO MINI(3.5MM ,4-COND SMT-RA ROHS
67	ED555/2DS	ON SHORE TECHNOLOGY	2	J5, J6	TERMINAL BLOCK 2PIN 6A/125V GRAY 3.5mm PITCH 16-28AWG ROHS
68	SJ-435105	CUI STACK	1	J8	JACK AUDIO MINI(3.5MM ,4-COND SMT-RA ROHS
69	ED555/3DS	ON SHORE TECHNOLOGY	1	J9	TERMINAL BLOCK 3PIN 6A/125V GRAY 3.5mm PITCH 16-28AWG ROHS
70	100P-JMDSS-G-1-TF(LF)(SN)	JST	2	J11, J12	PLUG SMD 2x50 FEMALE JMDSERIES 0.5MM LS GOLD ROHS

Table 3. TLV320AIC3268EVM-U Bill of Materials (continued)

Item	MANU PART NUM	MFG	QTY	REF DESIGNATORS	DESCRIPTION
71	PBC02SAAN	SULLINS	28	JP1, JP2, JP3, JP24, JP25, JP26, JP27, JP28, JP29, JP30, JP31, JP32, JP35, JP36, JP39, JP41, JP42, JP43, JP45, JP46, JP48, JP49, JP54, JP55, JP56, JP57, JP58, JP59	HEADER THRU MALE 2 PIN 100LS 120 TAIL GOLD ROHS
72	PBC03SAAN	SULLINS	31	JP4, JP5, JP6, JP7, JP8, JP9, JP10, JP11, JP12, JP13, JP14, JP15, JP16, JP17, JP18, JP19, JP20, JP21, JP22, JP23, JP33, JP34, JP37, JP38, JP40, JP44, JP47, JP50, JP51, JP52, JP53	HEADER THRU MALE 3 PIN 100LS 120 TAIL GOLD ROHS
73	WM-63PRT	PANASONIC	1	MIC1	MICROPHONE ELECTRET OMNIDIRECTIONAL DUAL BAND 2PIN ROHS
74	SPM0423HD4H-WB	KNOWLES	4	MIC2, MIC3, MIC4, MIC5	MIC DIGITAL MIMI-SISONIC HALOGEN FREE 6PIN ROHS
75	5000	KEYSTONE ELECTRONICS	11	TP1, TP2, TP3, TP4, TP5, TP21, TP30, TP35, TP36, TP37, TP69	PC TESTPOINT, RED, ROHS
76	5002	KEYSTONE ELECTRONICS	30	TP22, TP23, TP24, TP25, TP26, TP27, TP28, TP29, TP31, TP32, TP33, TP34, TP38, TP39, TP40, TP41, TP42, TP43, TP44, TP45, TP46, TP47, TP48, TP49, TP50, TP51, TP52, TP53, TP54, TP61	PC TESTPOINT, WHITE, ROHS
77	5004	KEYSTONE ELECTRONICS	21	TP6, TP7, TP8, TP9, TP10, TP11, TP12, TP13, TP14, TP15, TP16, TP17, TP18, TP19, TP20, TP55, TP56, TP57, TP58, TP59, TP60	PC TESTPOINT, YELLOW, ROHS
78	5011	KEYSTONE ELECTRONICS	7	TP62, TP63, TP64, TP65, TP66, TP67, TP68	PC TESTPOINT BLACK 063 HOLE ROHS
79	TL1015AF160QG	E-SWITCH	4	S1, S2, S3, S4	SWITCH, MOM, 160G SMT 4X3MM ROHS
80	3480	KEYSTONE ELECTRONICS	8	STANDOFFS	STANDOFF 4-40 0.5IN 0.220 DIA ALUM RND F-F ROHS
81	4862	KEYSTONE ELECTRONICS	8	STANDOFF SCREWS	MACHINE SCREW 4-40 PHILIPS 0.25 LENGTH ROHS
82	INTLWSS 004	KEYSTONE ELECTRONICS	8	STANDOFF WASHERS	WASHER INTERNAL TOOTH #4 STAINLESS STEEL ROHS
83	969102-0000-DA	3M	38	JP1, JP2, JP4, JP5, JP6, JP7, JP8, JP17, JP18, JP19, JP22, JP23, JP24, JP25, JP26, JP29, JP30, JP31, JP32, JP33, JP34, JP35, JP36, JP37, JP38, JP39, JP40, JP41, JP44, JP45, JP46, JP47, JP48, JP49, JP50, JP51, JP52, JP53	SHUNT BLACK AU FLASH 0.100LS OPEN TOP ROHS
		TOTAL	491		
SPECIAL NOTES TO THIS BILL OF MATERIALS					
SN1	These assemblies are ESD sensitive, ESD precautions shall be observed.				
SN2	These assemblies must be clean and free from flux and all contaminants. Use of no clean flux is not acceptable.				
SN3	These assemblies must comply with workmanship standards IPC-A-610 Class 2.				
SN4	Ref designators marked with an asterisk (***) cannot be substituted. All other components can be substituted with equivalent MFG's components.				

9 Writing Scripts

A script is simply a text file that contains data to send to the serial control buses.

Each line in a script file is one command. No provision is made for extending lines beyond one line, except for the > command. A line is terminated by a carriage return.

The first character of a line is the command. Commands are:

- l**— Set interface bus to use
- r**— Read from the serial control bus
- w**— Write to the serial control bus
- >**— Extend repeated write commands to lines below a **w**
- #**— Comment
- b**— Break
- d**— Delay
- f**— Wait for Flag

The first command, **l**, sets the interface to use for the commands to follow. This command must be followed by one of the following parameters:

i2cstd— Standard mode I²C bus

i2cfast— Fast mode I²C bus

spi8— SPI bus with 8-bit register addressing

spi16— SPI bus with 16-bit register addressing

For example, if a fast mode I²C bus is to be used, the script begins with:

l i2cfast— A double-quoted string of characters following the **b** command can be added to provide information to the user about each breakpoint. When the script is executed, the software's command handler halts as soon as a breakpoint is detected and displays the string of characters within the double quotes.

The Wait for Flag command, **f**, reads a specified register and verifies if the bitmap provided with the command matches the data being read. If the data does not match, the command handler retries for up to 200 times. This feature is useful when switching buffers in parts that support the adaptive filtering mode. The command **f** syntax follows:

```
f [i2c address] [register] [D7] [D6] [D5] [D4] [D3] [D2] [D1] [D0]
```

where 'i2c address' and 'register' are in hexadecimal format

and 'D7' through 'D0' are in binary format with values of 0,

1 or X for don't care.⁸

Anything following a comment command **#** is ignored by the parser, provided that it is on the same line.

The delay command **d** allows the user to specify a time, in milliseconds, that the script pauses before proceeding. Note: The delay time is entered in decimal format.

A series of byte values follows either a read or write command. Each byte value is expressed in hexadecimal, and each byte must be separated by a space. Commands are interpreted and sent to the TAS1020B by the program.

The first byte following an **r** (read) or **w** (write) command is the I²C slave address of the device (if I²C is used) or the first data byte to write. (If SPI is used, note that SPI interfaces are not standardized on protocols, so the meaning of this byte varies with the device being addressed on the SPI bus.) The second byte is the starting register address that data will be written to (again, with I²C; SPI varies). Following these two bytes are data, if writing; if reading, the third byte value is the number of bytes to read, (expressed in hexadecimal).

For example, to write the values 0xAA 0x55 to an I²C device with a slave address of 0x30, starting at a register address of 0x03, the user writes:

```
#example script

I i2cfast

w 30 03 AA 55

r 30 03 02e
```

This script begins with a comment, specifies that a fast I²C bus is used, then writes 0xAA 0x55 to the I²C slave device at address 0x30, writing the values into registers 0x03 and 0x04. The script then reads back two bytes from the same device starting at register address 0x03. Note that the slave device value does not change. It is unnecessary to set the R/W bit for I²C devices in the script; the read or write commands does that.

If extensive repeated write commands are sent and commenting is desired for a group of bytes, the **>** command can be used to extend the bytes to other lines that follow. A usage example for the **>** command follows:

```
#example script for '>' command

I i2cfast

# Write AA and BB to registers 3 and 4, respectively

w 30 03 AA BB

# Write CC, DD, EE and FF to registers 5, 6, 7 and 8, respectively

> CC DD EE FF

# Place a commented breakpoint

b "AA BB CC DD EE FF was written, starting at register 3"

# Read back all six registers, starting at register 3

r 30 03 06b
```

The following example demonstrates usage of the Wait for Flag command, **f**:

```
#example script for 'wait for flag' command

I i2cfast

# Switch to Page 44

w 30 00 2C

# Switch buffer

w 30 01 05

# Wait for bit D0 to clear. 'x' denotes a don't care.

f 30 01 xxxxxxx0
```

Any text editor can be used to write these scripts; jEdit is an editor that is highly recommended for general usage. For more information, go to: www.jedit.org.

Once the script is written, it can be used in the command window by running the program, and then selecting *Open Script File...* from the File menu. Locate the script and open it. The script then is displayed in the command buffer. The user also can edit the script once it is in the buffer and save it by selecting *Save Script File...* from the File menu.

Once the script is in the command buffer, it can be executed by pressing the *Execute Command Buffer* button. If breakpoints are in the script, the script executes to that point, and the user is presented with a dialog box with a button to press to continue executing the script. When ready to proceed, the user pushes that button and the script continues.

Revision History

Changes from Original (February 2014) to A Revision	Page
• Deleted link to the Application Reference Guide from the Related Documents table.	1
• Deleted section titled Operation.	4

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

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- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
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2. Use EVMs only after User obtains the license of Test Radio Station as provided in Radio Law of Japan with respect to EVMs, or
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