Click here to ask an associate for production status of specific part numbers.

Evaluates: MAX32665, MAX32666

MAX32666 Evaluation Kit

General Description

The MAX32666 EV kit provides a platform for evaluating the capabilities of the MAX32665 and MAX32666 high-efficiency Arm® microcontrollers and audio DSP for wearable and hearable device applications.

EV Kit Contents

- MAX32666 EV kit containing a MAX32666 with a preprogrammed demo
- Bluetooth® hinged whip antenna
- MAX32625PICO debugger with cables
- Two standard A to Micro B USB cables
- Extra shunts

Ordering Information

PART	TYPE
MAX32666EVKIT#	EV Kit

#Denotes RoHS compliant.

Benefits and Features

- Bluetooth SMA connector with a 2.4GHz Hinged Whip Antenna
- 1.28in 128 x 128 Monochrome TFT Display
- 64MB XIP Flash
- 1MB XIP RAM
- Stereo Audio Codec with Line-In and Line-Out 3.5mm Jacks
- Digital Audio Microphone
- USB 2.0 Micro B Interface
- USB 2.0 Micro B to Serial UARTs
  - Selection with Jumpers Between UART1 and UART2
- Micro SD Card Interface
- Select GPIOs Accessed Through a 0.1in Header
- Access to the 8 Analog Inputs Through a 0.1in Header
- Arm® or SWD JTAG 20-Pin Header
- 1-Wire RJ11 Port
- Can Be Solely Sourced by a Coin Cell Battery
- Board Power Provided by Either USB Port
- Individual Power Measurement on All IC Rails Through Jumpers
- On-Board 1.8V and 3.3V Regulators
- Two General-Purpose LEDs and Two General-Purpose Pushbutton Switches

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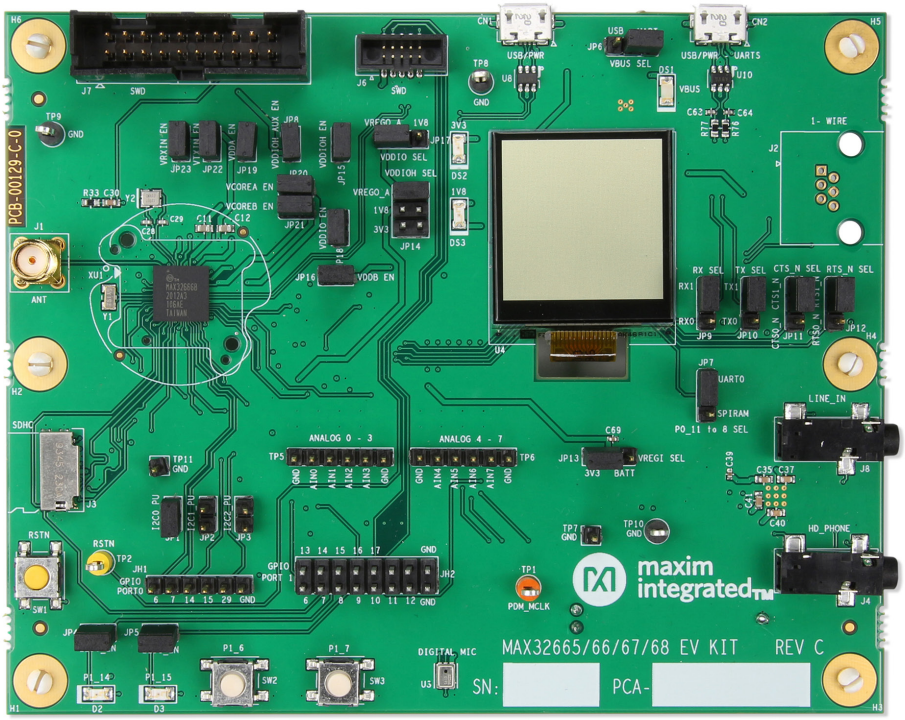
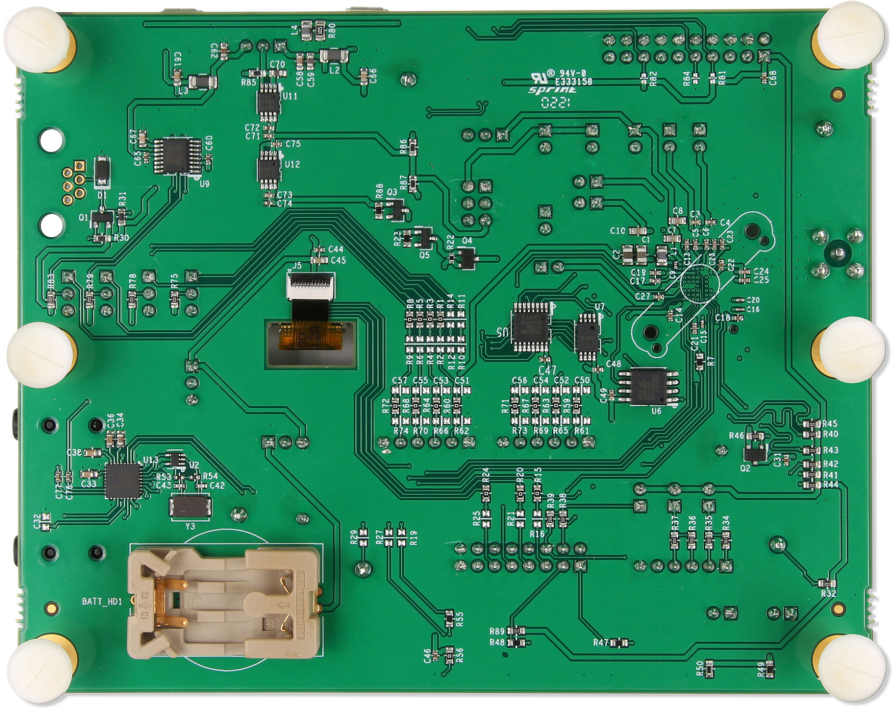
MAX32666 EV Kit Board





Quick Start

Procedure

Follow the steps below to verify board operation:

1) While observing safe ESD practices, carefully remove the MAX32666 EV kit board out of its packaging. Quickly inspect the board to ensure that no damage occurred during shipment. Jumpers/shunts are preinstalled prior to testing and packaging.
2) The MAX32666 is preprogrammed with a demo program. To run the demo, power up the board by plugging in the provided USB cable to connector CN2. Verify that the blue LED (DS1) and the green LEDs (DS2 and DS3) are illuminated.
3) Once power is applied, the demo initiates and flashes the red LED (DS2) upon successful completion.

Detailed Description of Hardware

Power Supply

The EV kit is powered by +5V and is made available through VBUS on the Micro-USB type-B connectors CN1 or CN2. The board is default jumpered for power provided by CN2. A blue LED (DS1) illuminates when the board is powered. Green LEDs (DS3) and (DS2) illuminate when the 1V8 and 3V3 LDOs are powered, respectively. The MAX32665 can be sourced by a coin cell battery or on board 3.3V through the JP13 header.

Current Monitoring

Two pin headers provide convenient current monitoring points for VDDA (JP19), VDDIO (JP18), VDDIOH (JP15), VCOREA (JP20), VCOREB (JP21), VTXIN (JP22), VRXIN (JP23). VREGI can be measured at the VREGI SEL (JP13) three-pin header.

Low-Power Mode Current Measurements

When attempting to measure the current consumption for any of the low-power modes, remove jumpers JP1 through JP3 and JP9 through JP12.

Clocking

The MAX32666 clocking is provided by an external 32.768kHz crystal (Y1) for RTC operations and an external 32MHz crystal (Y2).

TFT LCD Display

The display provided is a 1.28in 128 x 128 monochrome TFT. It has three-wire serial control, with a white backlight.

Universal Serial Bus

A USB Micro B connector (CN1) is provided for prototyping USB slave applications. The USB 2.0 high-speed interface (480Mbps) transceiver is embedded in the MAX32666.

UART Interfaces

The EV kit provides a USB-to-UART bridge chip, FTDI FT230X. This bridge eliminates the requirement for a physical RS-232 COM port. Instead, the IC's UART access is through the Micro-USB type-B connector, CN2. The USB-to-UART bridge can be connected to UART 1 or UART 2 of the IC with jumpers JP9 (Rx), JP10 (Tx), JP11 (CTS), and JP12 (RTS). Virtual COM port drivers and guides for installing Windows® drivers are available at the FTDI chip website.

Bluetooth 5 Interface

A SMA connector is provided to attach the included Bluetooth 2.4GHz hinged whip antenna.

Audio Stereo Codec Interface

The MAX32666 interface to the MAX9867 external audio codec IC through its I^2C and I^2S (PCM) ports. Line-in and line-out 3.5mm jacks are provided for audio access.

Digital Microphone

The MAX32666 interface to a miniature digital microphone embedded on an IC through its PDM port.

Windows is a registered trademark and registered service mark of Microsoft Corporation.

JTAG Serial Wire Debug (SWD) Support

SWD debug can be accessed through an Arm standard 20-pin connector (J7) or a Cortex® 10-pin connector (J6). Logic levels are fixed to VDDIOH (1.8V or 3.3V).

Reset Pushbutton

Pushbutton SW1 manually resets the MAX32666.

Indicator LEDs

The indicator LEDs D2 (red) and D3 (green) are connected to GPIO P1.14 and P1.15, respectively.

GPIO Pushbuttons

The two pushbuttons (SW2 and SW3) are connected to GPIO P1.6 and P1.7, respectively. If the pushbutton is pressed, the attached port pin is pulled low.

GPIO Headers

Select GPIOs are accessible through a 0.1in spaced header pins. The IC provides support for both 1.8V and 3.3V peripherals through power rails VDDIO and VDDIOH. GPIO voltages can be programmed on pin-by-pin basis. Refer to the IC's operating guide for more detail.

Table 1. Jumper Settings

JUMPER	SIGNAL	SETTINGS	DESCRIPTION
JP1	I2C0_SCL/SDA	Open	Disconnects I2C0 SCL and SDA 1.5K pullups from VDDIOH
		Close*	Connects I2C0 SCL and SDA 1.5K pullups to VDDIOH
JP2	I2C1_SCL/SDA	Open*	Disconnects I2C1 SCL and SDA 1.5K pullups from VDDIOH
		Close	Connects I2C1 SCL and SDA 1.5K pullups to VDDIOH
JP3	I2C2_SCL/SDA	Open*	Disconnects I2C2 SCL and SDA 1.5K pullups from VDDIOH
		Close	Connects I2C2 SCL and SDA 1.5K pullups to VDDIOH
JP4	P1_14	Open	Disconnects LED D2 from P1_14
		Close*	Connects LED D2 to P1_14
JP5	P1_15	Open	Disconnects LED D3 from P1_15
		Close*	Connects LED D3 to P1_15
JP6	VBUS	2-1	Connects VBUS to USB connector CN1 to supply board power
		2-3*	Connects VBUS to USB connector CN2 to supply board power
JP7	N/A	N/A	N/A
JP8	N/A	N/A	N/A
JP9	P0_20	2-1*	Connects the USB to serial UART to GPIO P0_20 (RX1)
	P0_28	2-3	Connects the USB to serial UART to GPIO P0_28 (RX2)
JP10	P0_21	2-1*	Connects the USB to serial UART to GPIO P0_21 (TX1)
	P0_29	2-3	Connects the USB to serial UART to GPIO P0_29 (TX2)
JP11	P0_22	2-1*	Connects the USB to serial UART to GPIO P0_22 (CTS1_N)
	P0_30	2-3	Connects the USB to serial UART to GPIO P0_30 (CTS2_N)
JP12	P0_23	2-1*	Connects the USB to serial UART to GPIO P0_23 (RTS1_N)
	P0_31	2-3	Connects the USB to serial UART to GPIO P0_31 (RTS2_N)
JP13	VREGI	2-1	Connects VREGI to the coin cell battery
		2-3*	Connects VREGI to 3V3

**Default setting*

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Table 1. Jumper Settings (continued)

JUMPER	SIGNAL	SETTINGS	DESCRIPTION
JP14**	VDDIOH	1-2*	Connects VDDIOH to VREGO_A**
		3-4	Connects VDDIOH to 1V8
		5-6	Connects VDDIOH to 3V3
JP15	VDDIOH	Open	Disconnects power from VDDIOH
		Close*	Connects power to VDDIOH
JP16	VDDB	Open	Disconnects power from VDDB
		Close*	Connects power to VDDB
JP17	VDDIO	2-1*	Connects VDDIO to VREGO_A
		2-3	Connects VDDIO to 1V8
JP18	VDDIO	Open	Disconnects power from VDDIO
		Close*	Connects power to VDDIO
JP19	VDDA	Open	Disconnects power from VDDA
		Close*	Connects power to VDDA
JP20	VCORE_A	Open	Disconnects power from VCORE_A
		Close*	Connects power to VCORE_A
JP21	VCORE_B	Open	Disconnects power from VCORE_B
		Close*	Connects power to VCORE_B
JP22	VTXIN	Open	Disconnects power from VTXIN
		Close*	Connects power to VTXIN
JP23	VRXIN	Open	Disconnects power from VRXIN
		Close*	Connects power to VRXIN

**Default setting*

***VREGO_A Selection for Board Power Precaution*

When selecting VREGO_A, from JP14, as the board auxiliary power (VDDIOH_AUX), care must be taken not to exceed the data-sheet maximum SIMO VREGO_X output current. In addition, it is important that outside loads are also placed in their lowest power mode with no excessive transients when the MAX32666 is in BACKUP or DEEPSLEEP mode. During these Low Power modes, the SIMO has limited output current capability to save power.

MAX32666 EV Kit Bill of Materials

QTY	PART REFERENCE	BOM DESCRIPTION	MANUFACTURER PN	MANUFACTURER
1	BATT_HD1	HOLDER COIN CELL CR2032 EJECT	BA2032	MPD (Memory Protection Devices)
2	C1 C2	CAP CER 47UF 6.3V 20% X5R 0805	C2012X5R0J476M125AC	TDK Corporation
19	C3 C4 C5 C6 C13 C14 C17 C18 C19 C21 C22 C23 C24 C25 C26 C27 C75 C76 C77	CAP CER 1UF 6.3V X5R 0402	JMK105BJ105KV-F	Taiyo Yuden
5	C7 C8 C10 C11 C12	CAP CER 22UF 6.3V 20% X5R 0603	C1608X5R0J226M080AC	TDK Corporation
1	C9	CAP CER 4700PF 16V 10% X7R 0201	CGA1A2X7R1C472K030BA	TDK Corporation
3	C15 C16 C20	CAP CER 0.1UF 6.3V 10% X5R 0201	GRM033R60J104KE19D	Murata
2	C28 C29	CAP CER 16PF 50V 5% C0G/NP0 0402	GRM1555C1H160JA01D	Murata Electronics North America
2	C30 C58	CAP CER 0.1UF 25V 10% X8R 0603	C1608X8R1E104K080AA	TDK Corporation
12	C31 C39 C44 C46 C47 C48 C49 C60 C65 C68 C72 C74	CAP CER 0.1UF 10V 10% X5R 0402	GRM155R61A104KA01D	Murata
9	C32 C50 C51 C52 C53 C54 C55 C56 C57	DNI		
7	C33 C35 C36 C37 C38 C40 C41	CAP CER 1uF 16V 10% X7R 0603	GCM188R71C105KA64D	Murata
1	C34	CAP CER 2.2uF 10V 10% X5R 0603	C0603C225K8PACTU	Kemet
2	C42 C43	CAP CER 18PF 50V 5% NP0 0402	GRM1555C1H180JA01D	Murata
1	C45	CAP CER 10UF 6.3V 20% X5R 0603	GRM188R60J106ME84D	Murata Electronics North America
2	C59 C70	CAP CER 1UF 35V 10% X5R 0603	GMK107BJ105KA-T	Taiyo Yuden
2	C61 C66	CAP CER 10nF 25V 10% X7R 0603	CL10B103KA8NNNC	Samsung
1	C62	CAP CER 4.7uF 10V 10% X5R 0603	C0603C475K8PACTU	Kemet
2	C63 C64	CAP CER 47PF 50V 1% NP0 0402	C1005C0G1H470F050BA	TDK Corporation
1	C67	CAP CER 0.1uF 16V 10% X7R 0603	C0603C104K4RACTU	Kemet
1	C69	CAP CER 10000PF 16V 10% X7R 0402	GRM155R71C103KA01D	Murata Electronics North America

MAX32666 EV Kit Bill of Materials (continued)

QTY	PART REFERENCE	BOM DESCRIPTION	MANUFACTURER PN	MANUFACTURER
2	C71 C73	CAP CER 10UF 6.3V 20% X5R 0402	GRJ155R60J106ME11D	Murata Electronics North America
2	CN1 CN2	CONN RCPT 5POS MICRO USB B R/A	47346-0001	Molex
1	D1	TVS 200W 5V UNIDIR SOD-123FL	SMF5.0A-TP	Micro Commercial Co
1	D2	LED 660NM RED WTR CLR 1206 SMD	SML-LX1206SRC-TR	Lumex Opto
3	D3 DS2 DS3	LED 565NM WTR CLR GREEN 1206 SMD	SML-LX1206GC-TR	Lumex Opto
1	DS1	LED 469NM BLUE DIFF 1206 SMD	HSMR-C150	Avago Technologies US Inc.
6	H1 H2 H3 H4 H5 H6	DNI MTG 125DRL 300PAD		
1	J1	CONN SMA JACK STR 50 OHM PCB	5-1814832-1	TE Connectivity
1	J2	CONN MOD JACK R/A 6P6C (DNI)	43860-0002	Molex Inc
1	J3	CONN MICRO SD CARD PUSH-PULL R/A	047571-0001	Molex
2	J4 J8	CONN JACK STEREO 3.5MM SMD R/A	SJ-3523-SMT-TR	CUI Inc
1	J5	CONN FFC FPC 10POS 0.50MM R/A	503480-1000	Molex, LLC
1	J6	IDC BOX HEADER 0.050 10 POS SMD	3220-10-0300-00	CNC Tech
1	J7	CONN HEADER 2.54MM 20POS GOLD	SBH11-PBPC-D10-ST-BK	Sullins
3	JH1 TP5 TP6	CONN HEADER .100 SINGL STR 6POS	PEC06SAAN	Sullins
1	JH2	CONN HEADER .100 DUAL STR 16POS	PEC08DAAN	Sullins
14	JP1 JP2 JP3 JP4 JP5 JP8 JP15 JP16 JP18 JP19 JP20 JP21 JP22 JP23	CONN HEADER .100 SINGL STR 2POS (2x1)	PEC02SAAN	Sullins
8	JP6 JP7 JP9 JP10 JP11 JP12 JP13 JP17	CONN HEADER .100 SINGL STR 3POS	PEC03SAAN	Sullins
1	JP14	CONN HEADER .100 DUAL STR 6POS	PEC03DAAN	Sullins
1	L1	FIXED IND 2.2UH 1A 150 MOHM SMD 0805	MLP2012H2R2MT0S1	TDK Corporation
2	L2 L3	FERRITE CHIP SIGNAL 2000 OHM SMD	HZ1206C202R-10	Laird-Signal Integrity Products
1	L4	FERRITE CHIP 220 OHM 0805	BLM21PG221SN1D	Murata Electronics North America

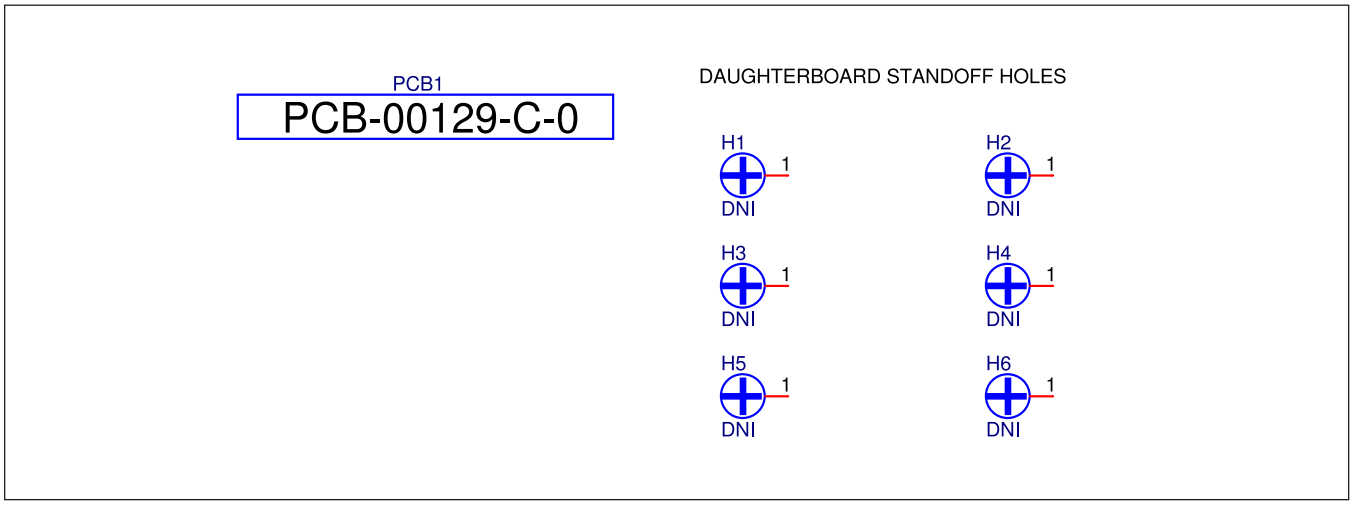
MAX32666 EV Kit Bill of Materials (continued)

QTY	PART REFERENCE	BOM DESCRIPTION	MANUFACTURER PN	MANUFACTURER
1	PCB1			
1	Q1	MOSFET P-CH 25V 460MA SOT-23	FDV304P	Fairchild Semiconductor
2	Q2 Q4	MOSFET P-CH 20V 6A SOT23F	SSM3J327R,LF	Toshiba Semiconductor and Storage
2	Q3 Q5	MOSFET N-CH 20V 2.3A SOT23	BSS806N H6327	Infineon Technologies
16	R1 R3 R5 R8 R15 R20 R24 R56 R59 R60 R63 R64 R67 R68 R71 R72	RES SMD 0 OHM JUMPER 1/10W 0603	RC0603JR-070RL	Yageo
14	R2 R4 R6 R9 R10 R11 R12 R14 R16 R19 R21 R25 R27 R29	RES SMD 0 OHM JUMPER 1/10W 0603 (DNI)	RC0603JR-070RL	Yageo
4	R7 R47 R48 R55	RES SMD 100 OHM 1% 1/10W 0603	RC0603FR-07100RL	Yageo
1	R22	RES 4.7K OHM 1/10W 1% 0402 SMD	ERJ-2RKF4701X	Panasonic
2	R23 R88	RES 150K OHM 1/10W 1% 0603 SMD	ERJ-3EKF1503V	Panasonic
1	R30	RES 47K OHM 1/10W 1% 0603 SMD	ERJ-3EKF4702V	Panasonic
1	R31	RES 1K OHM 1/10W 1% 0603 SMD	ERJ-3EKF1001V	Panasonic
13	R32 R40 R41 R42 R43 R44 R45 R46 R75 R78 R79 R83 R89	RES 10K OHM 1/10W 1% 0603 SMD	ERJ-3EKF1002V	Panasonic
1	R33	RES 10 OHM 1/10W 1% 0603 SMD	ERJ-3EKF10R0V	Panasonic
6	R34 R35 R36 R37 R38 R39	RES 1.5K OHM 1/10W 1% 0603 SMD	ERJ-3EKF1501V	Panasonic
1	R49	RES 470 OHM 1/10W 1% 0603 SMD	ERJ-3EKF4700V	Panasonic
3	R50 R86 R87	RES 332 OHM 1/10W 1% 0603 SMD	ERJ-3EKF3320V	Panasonic
1	R53	RES SMD 150 OHM 1% 1/10W 0402	ERJ-2RKF1500X	Panasonic
1	R54	RES SMD 1M OHM 1% 1/10W 0402	ERJ-2RKF1004X	Panasonic
8	R61 R62 R65 R66 R69 R70 R73 R74	RES 49.9 OHM 1/10W 1% 0603 SMD (DNI)	ERJ-3EKF49R9V	Panasonic
2	R76 R77	RES 27 OHM 1/10W 1% 0603 SMD	ERJ-3EKF27R0V	Panasonic

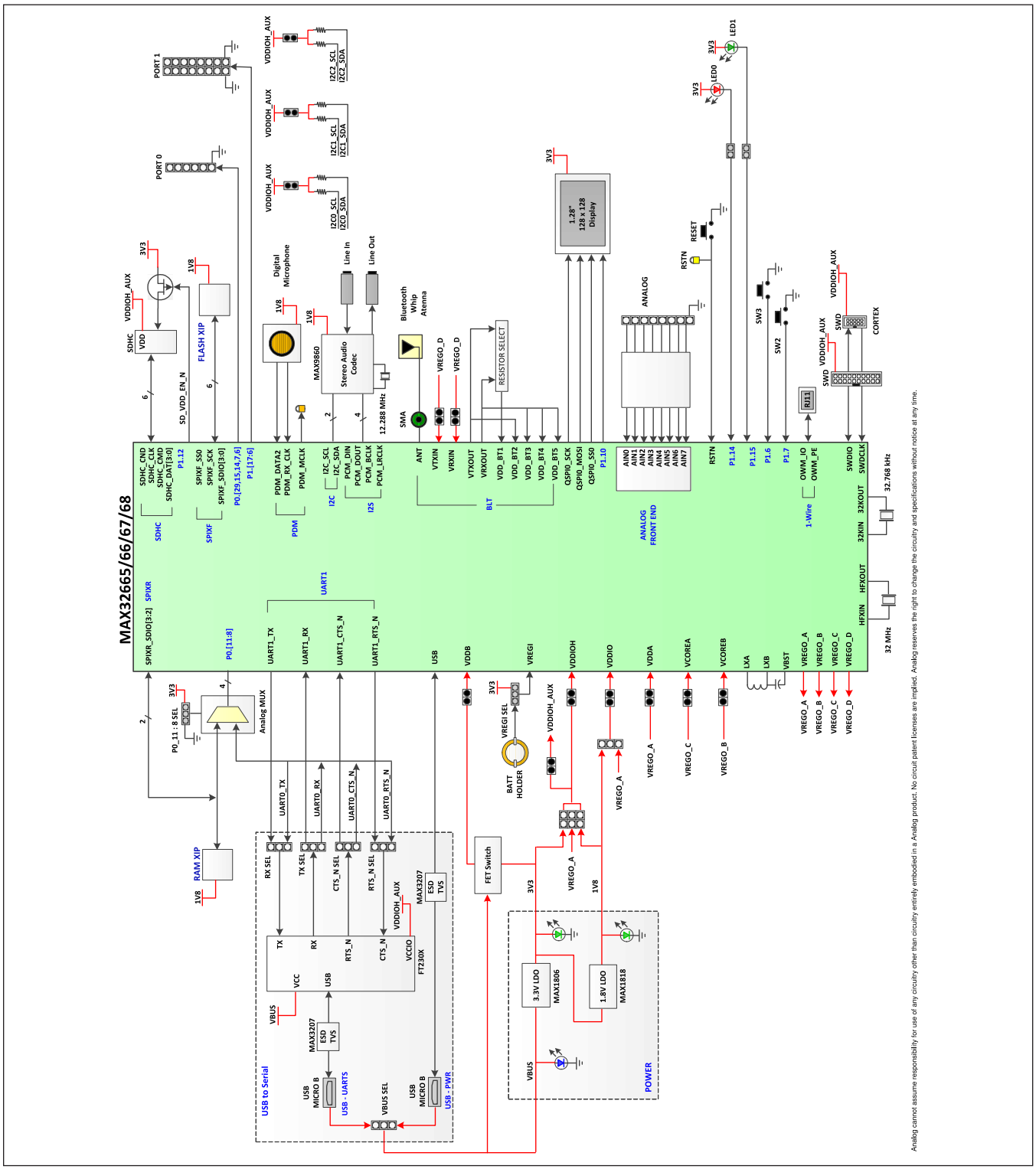
MAX32666 EV Kit Bill of Materials (continued)

QTY	PART REFERENCE	BOM DESCRIPTION	MANUFACTURER PN	MANUFACTURER
1	R80	RES SMD 1M OHM 5% 1/8W 0805	ERJ-6GEYJ105V	Panasonic
3	R81 R82 R84	DNI 0402		
1	R85	RES 2.7K OHM 1/10W 1% 0603 SMD	ERJ-3EKF2701V	Panasonic
1	SW1	SWITCH TACTILE SPST-NO 0.05A 24V	B3S-1002 BY OMZ	Omron Electronics
2	SW2 SW3	SWITCH TACTILE SPST-NO 0.05A 24V	B3S-1000	Omron Electronics
1	TP1	TEST POINT PC MULTI PURPOSE ORG	5013	Keystone Electronics
1	TP2	TEST POINT PC MULTI PURPOSE YEL	5014	Keystone Electronics
2	TP7 TP11	CONN HEADER .100 SINGL STR 1POS	PEC01SAAN	Sullins
3	TP8 TP9 TP10	TEST POINT PC MULTI PURPOSE BLK	5011	Keystone Electronics
1	U1	MAX32666_121P_BGA	MAX32666GXMBT+	Maxim Integrated
1	U2	IC SINGLE INVERTER GATE SC70-5	SN74LVC1GU04DCKT	Texas Instruments
1	U3	SILICON DIGITAL MICROPHONE	SPH0644HM4H-1	Knowles
1	U4	LCD TFT 1.28" 128X128 FPC	LS013B7DH03	Sharp Microelectronics
1	U5	IC MUX/DEMUX SW QUAD 2:1 16TSSOP	QS3VH257PAG8	IDT
1	U6	IC FLASH 64MBIT 104MHZ 8SOP	MX25U6435FM2I-10G	Macronix
1	U7	IC SRAM 1MBIT 20MHZ 8TSSOP	N01S818HAT22I	ON Semiconductor
2	U8 U10	ESD PROT DIFF SOT23-6	MAX3207EAUT+T	Maxim Integrated
1	U9	IC USB SERIAL BASIC UART 16SSOP	FT230XS-R	FTDI
1	U11	IC REG LDO 3.3V/ADJ 0.5A 8UMAX	MAX1806EUA33+	Maxim Integrated
1	U12	Low Dropout Linear Regulator	MAX1806EUA18+	Maxim Integrated
1	U13	IC STEREO AUD CODEC LP 32TQFN	MAX9867ETJ+T	Maxim Integrated
1	Y1	CRYSTAL 32.768KHZ 6.0PF SMD	ABS07-32.768KHZ-6-T	Abracon Corp
1	Y2	CRYSTAL 32.00 MHZ 12PF SMD	FA-20H 32.0000MF12Y-W3	EPSON
1	Y3	CRYSTAL 12.2880MHZ 18PF SMD	ABM3-12.288MHZ-B4Y-T	Abracon Corporation

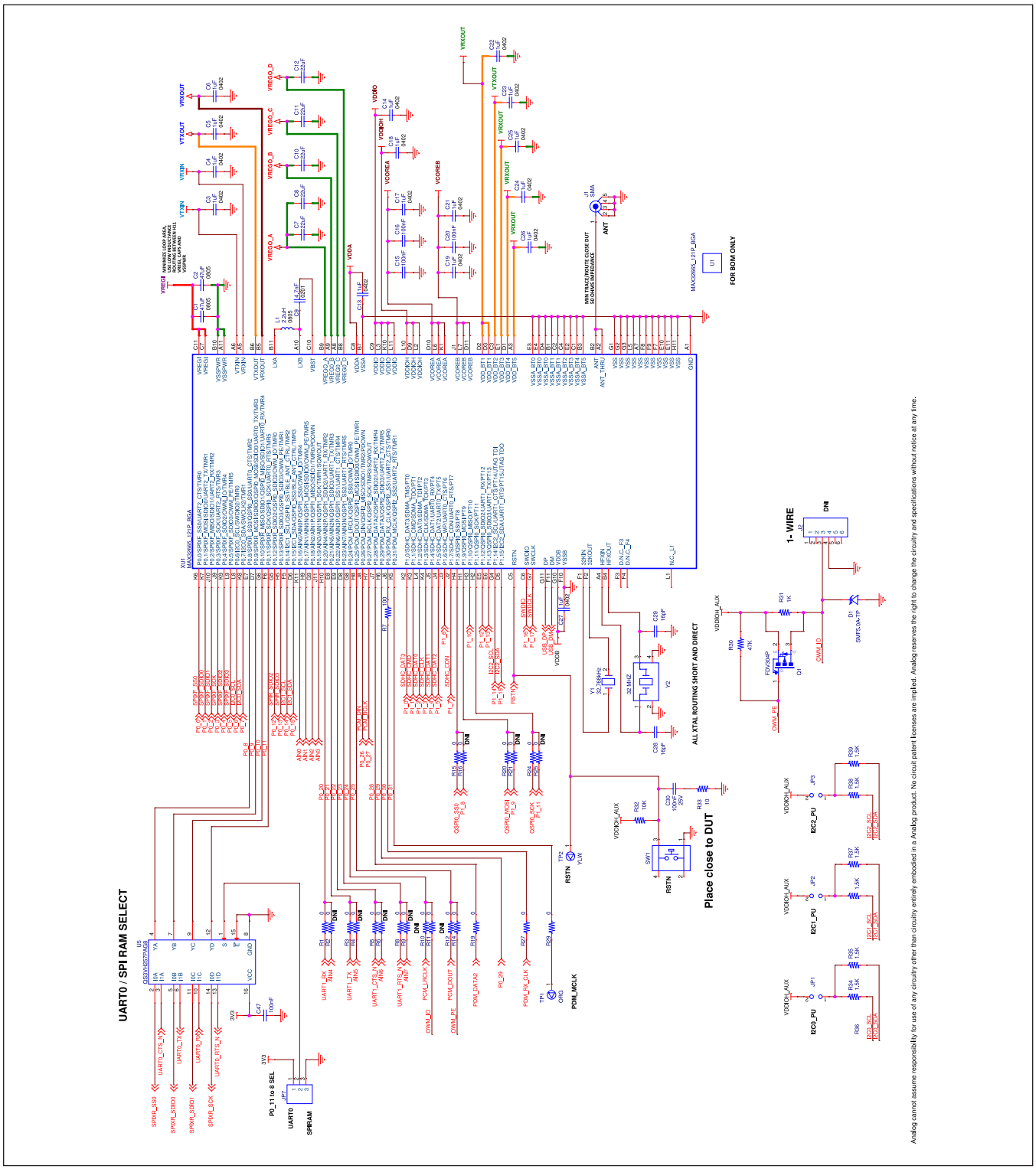
MAX32666 EV Kit Schematics



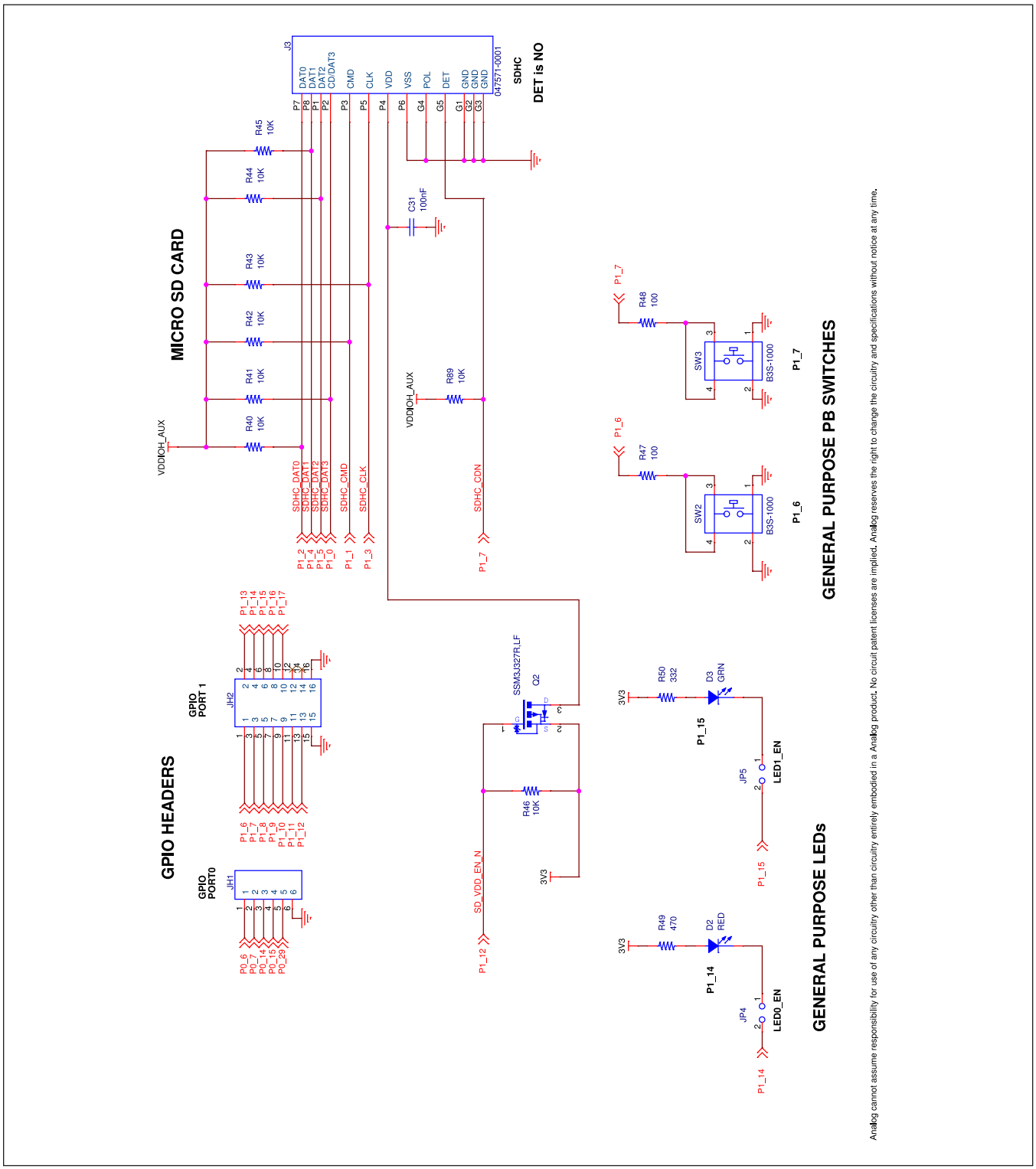
MAX32666 EV Kit Schematics (continued)



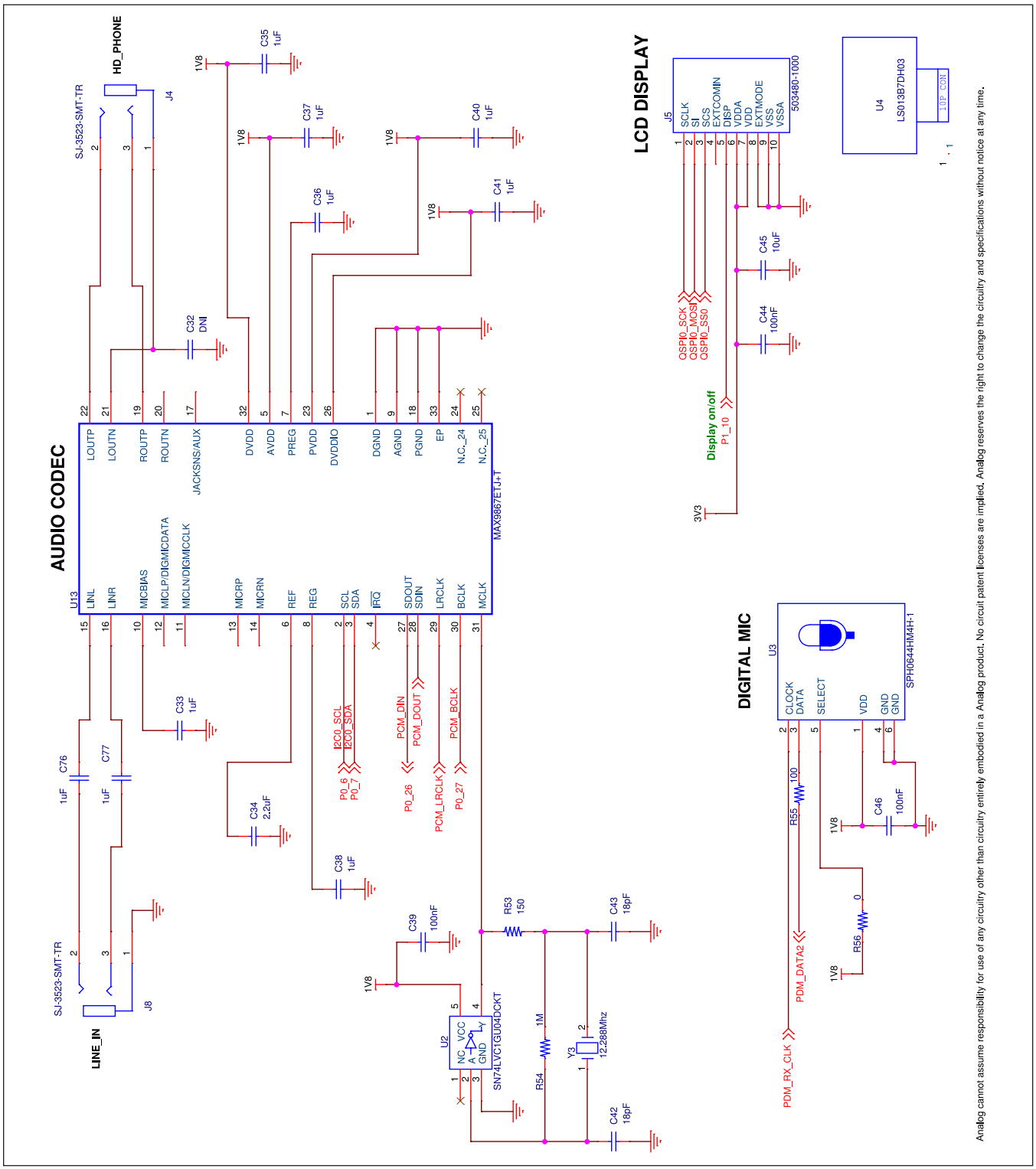
MAX32666 EV Kit Schematics (continued)



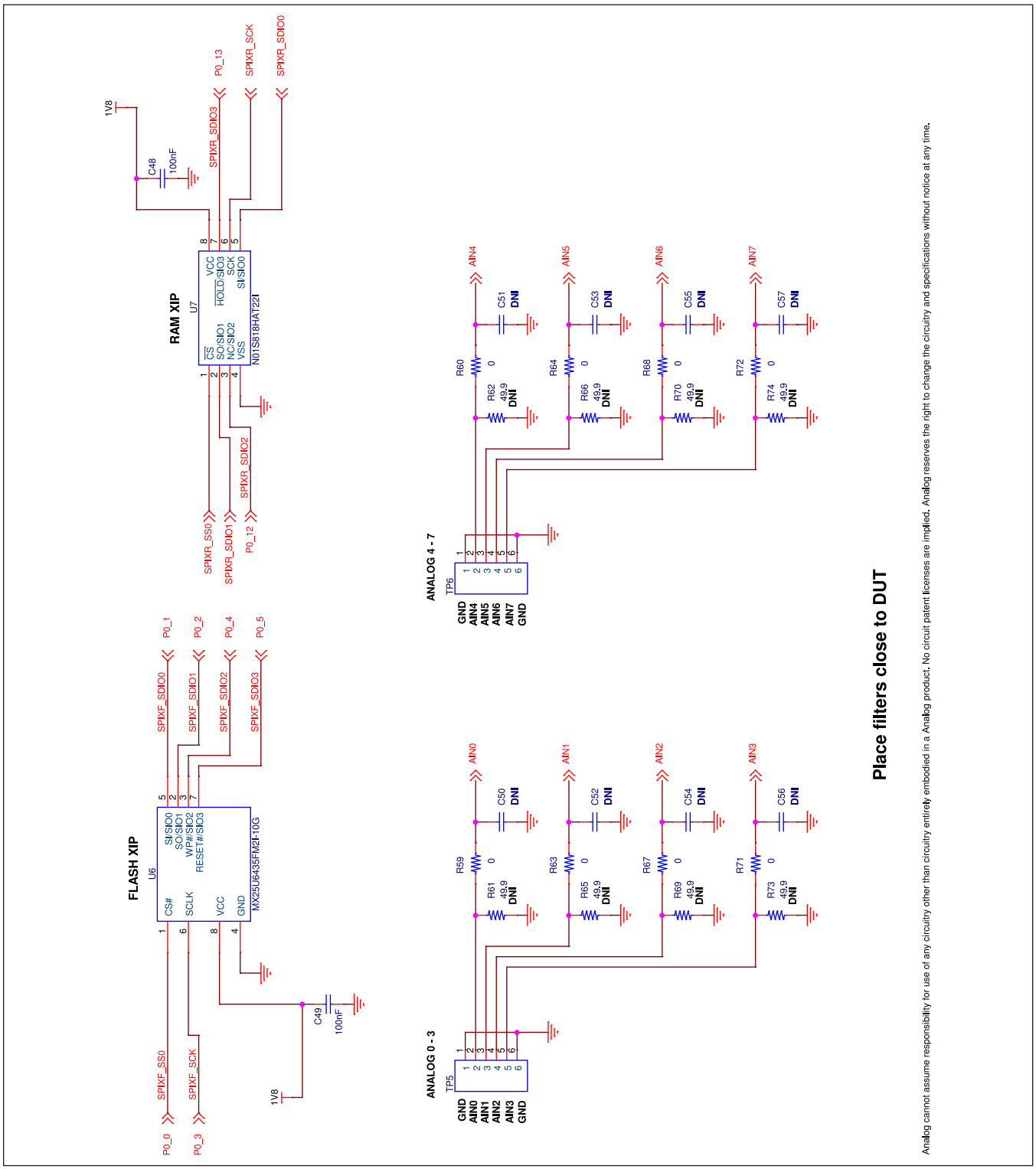
MAX32666 EV Kit Schematics (continued)



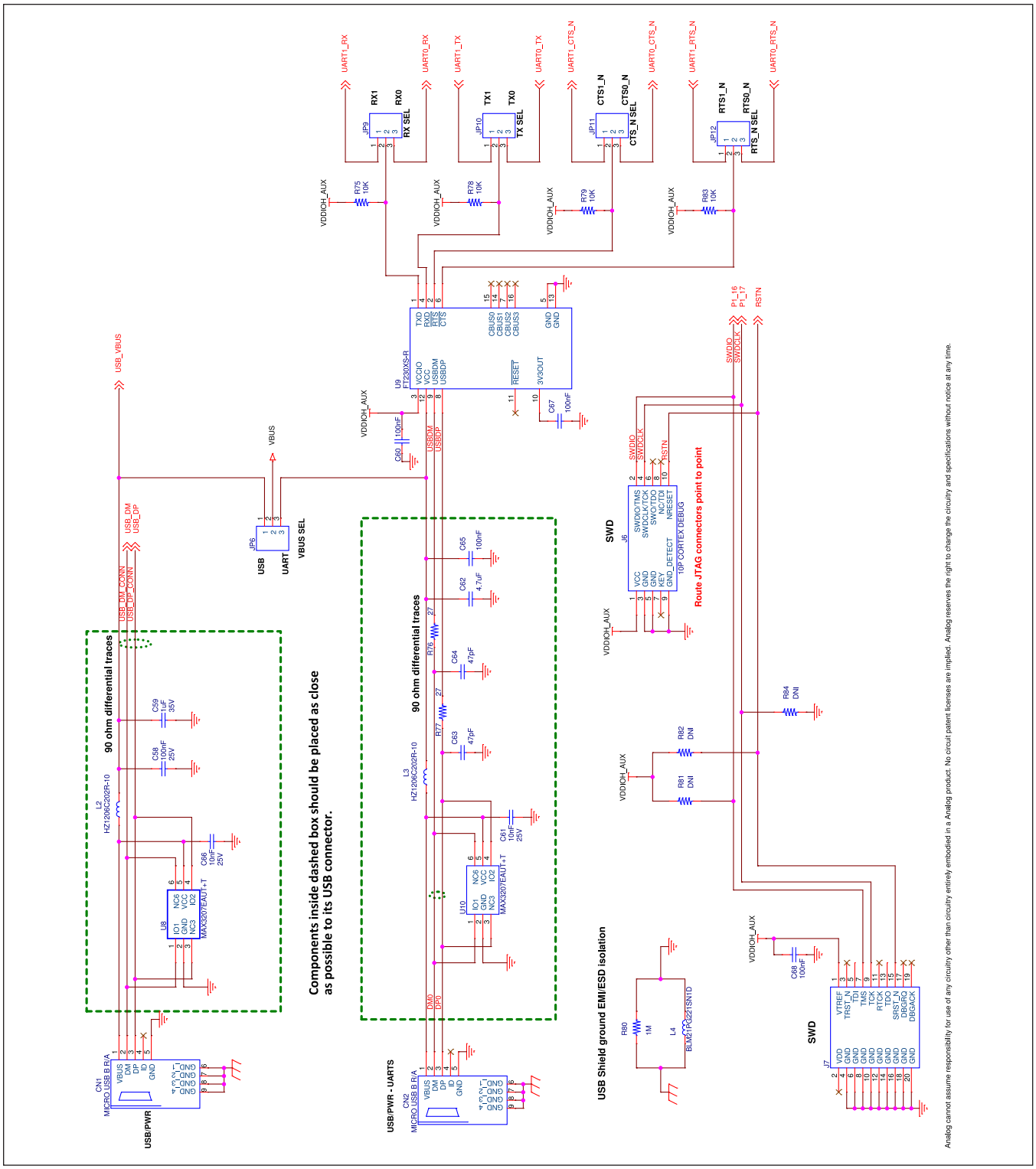
MAX32666 EV Kit Schematics (continued)



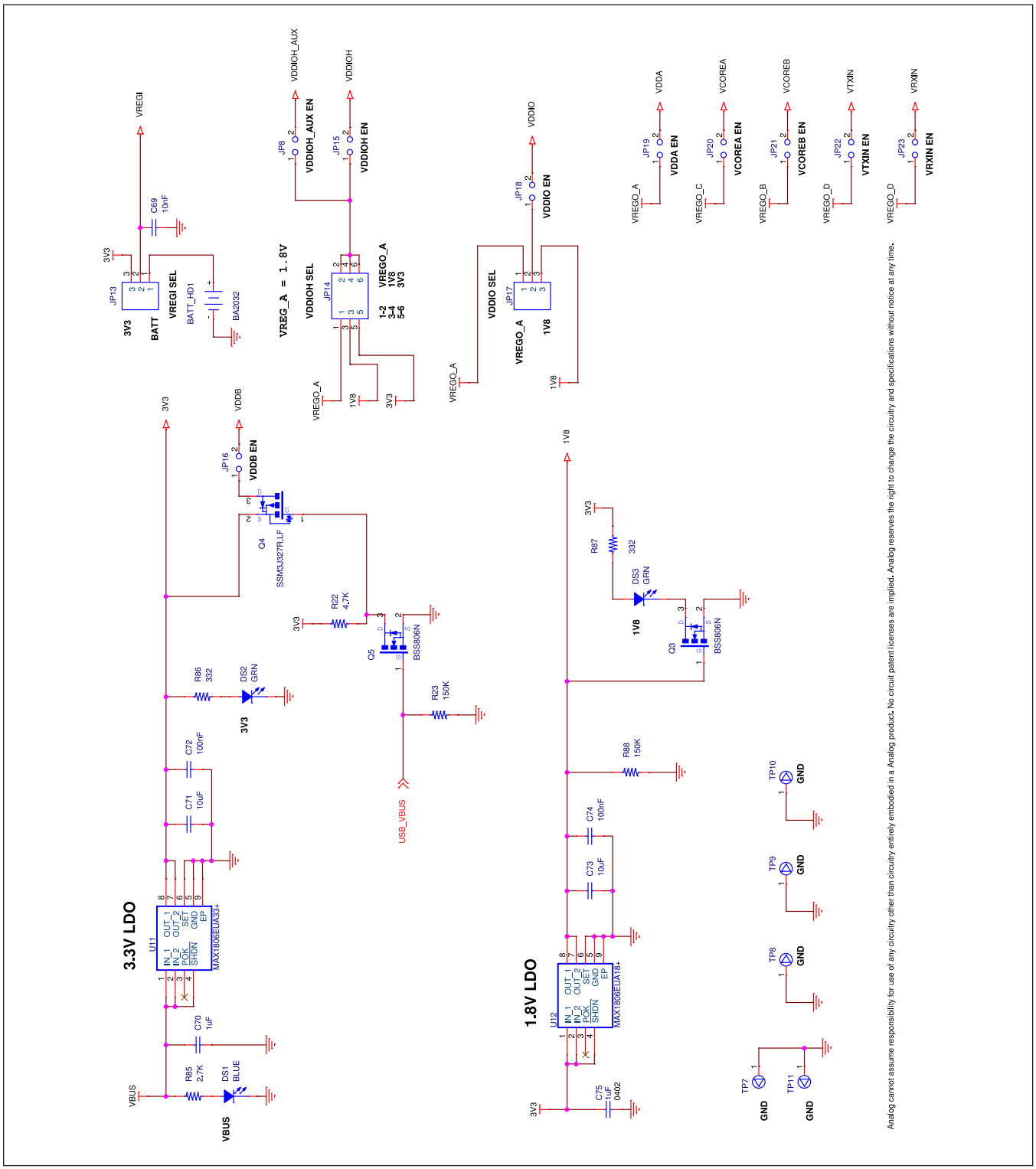
MAX32666 EV Kit Schematics (continued)



MAX32666 EV Kit Schematics (continued)



MAX32666 EV Kit Schematics (continued)



Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	11/18	Initial release	—
1	12/18	Updated *Ordering Information*	1
2	8/19	Updated *MAX32665/MAX32666 EV Kit Board*, *Table 1*, *MAX32665/MAX32666 EV Kit Bill of Materials*, and *MAX32665/MAX32666 EV Kit Schematic Diagrams*	2, 4, 5, 6–17
3	1/21	Updated *Table 1*, Added *VREGO_A Precaution* section and *MAX32665/MAX32666 EV Kit Schematic Diagrams*	5, 10–17
4	3/21	Added *Low-Power Mode Current Measurements* section in *Detailed Description of Hardware*	3
5	7/22	Removed the MAX32666/65 socket and evaluation of MAX32667-68. Elimination of MAX32665 EV kit in the entire datasheet.	1–18

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