PSOC™ Edge E8 Base Board

CONTENTS

CONTENTS

Drawing Numbers

PCBA	121-60647-01
PCB	600-60647-01
FAB DRW	610-60647-01
ASSY DRW	620-60647-01
SCH DRW	630-60647-01

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Page Title: Title Page

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A4	630-60647-01	RISR	RKPM	5.0

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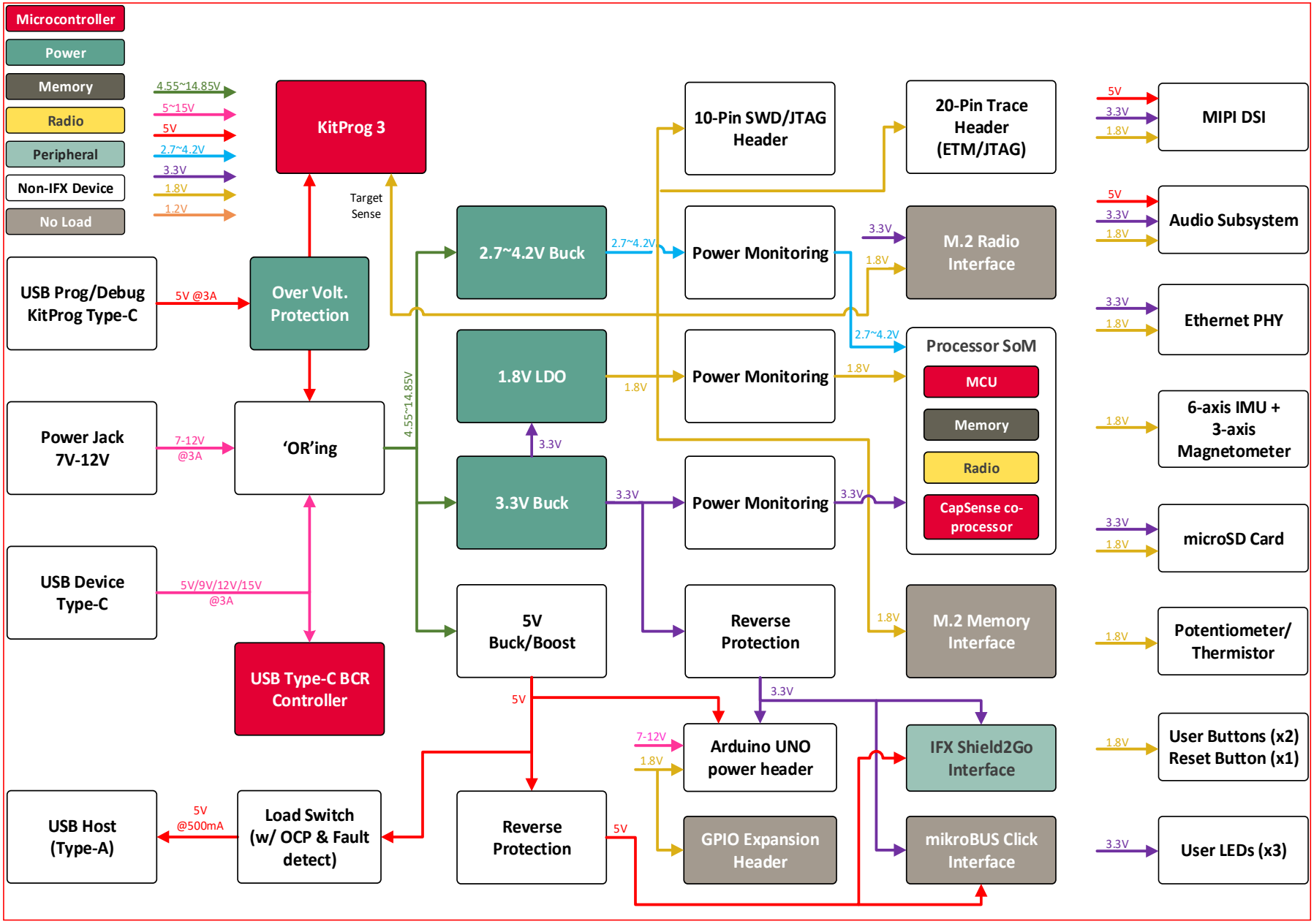
Power Block Diagram



SCH Title : PSOC™ Edge E8 Base Board				
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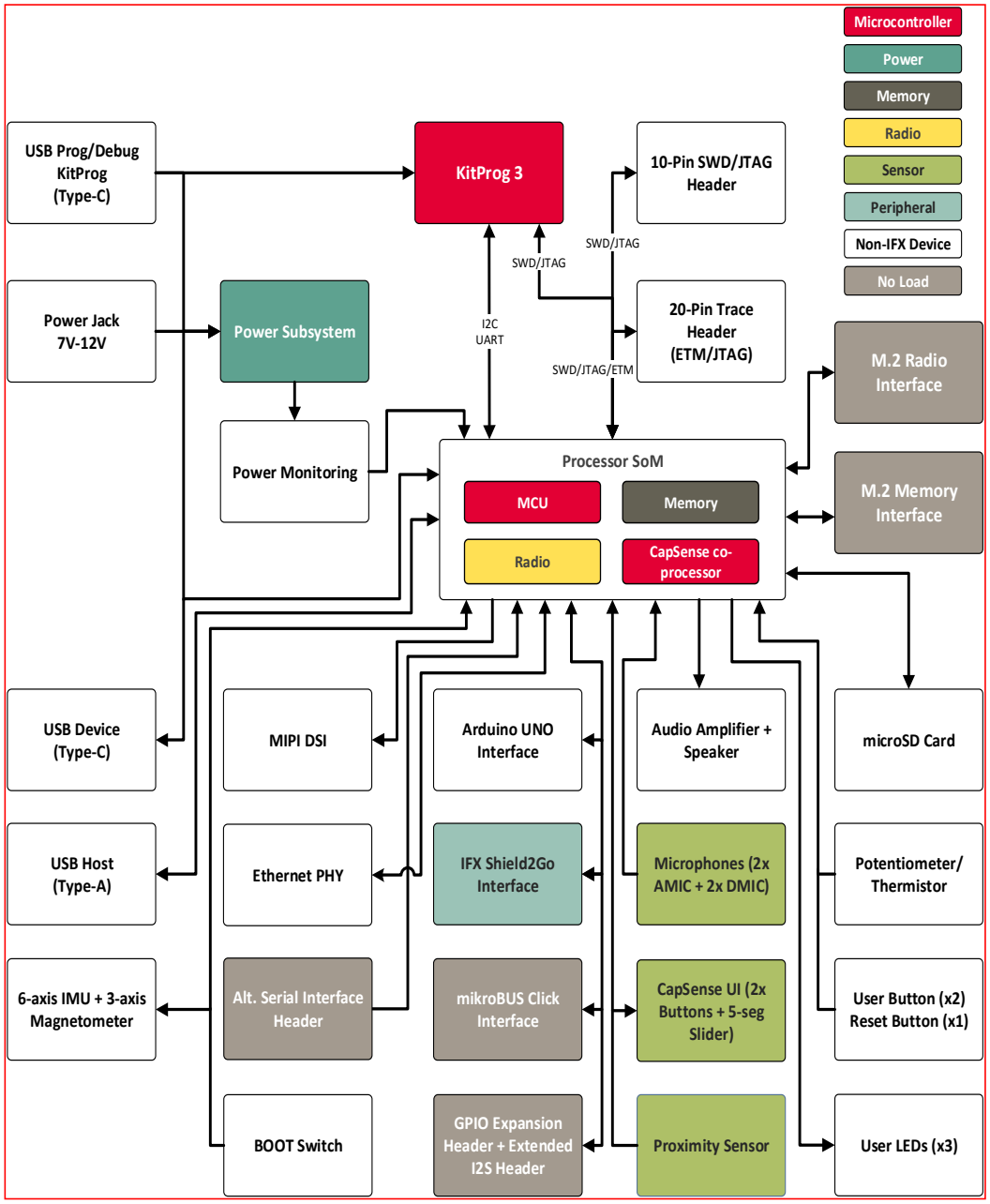
System Block Diagram



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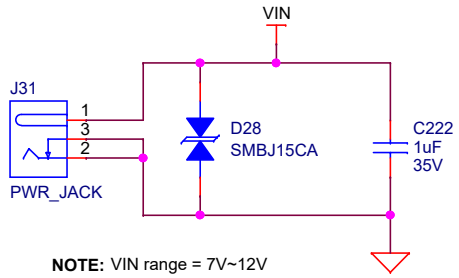
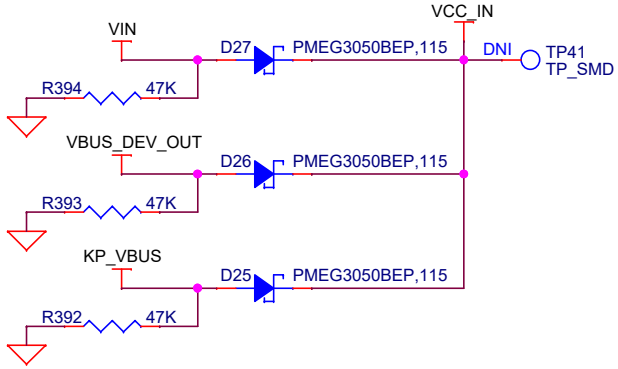
VIN Header

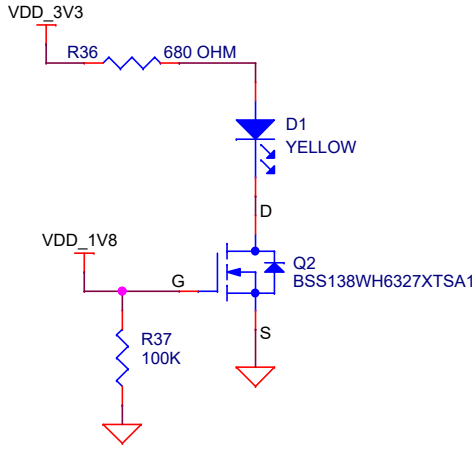


NOTE: VIN range = 7V~12V

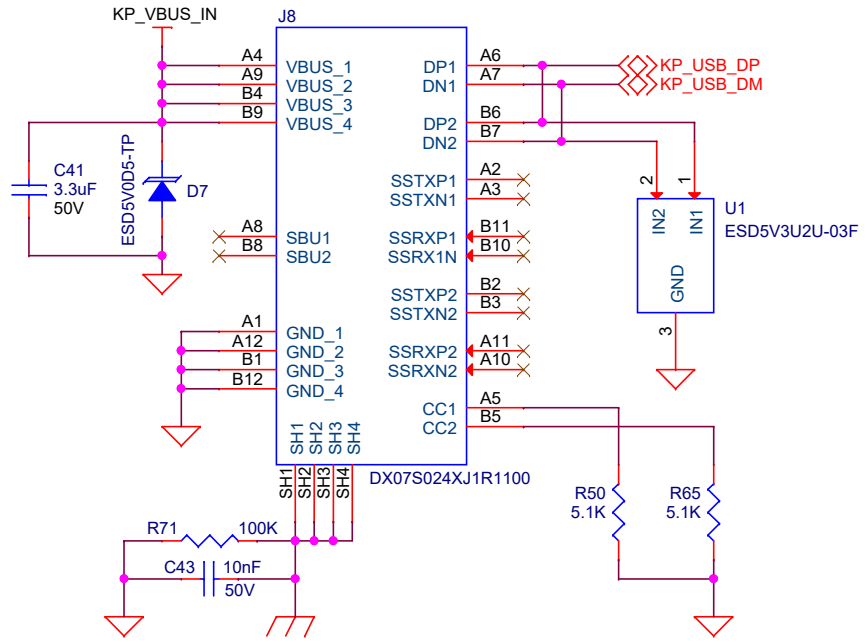
Power Supply 'OR'ing



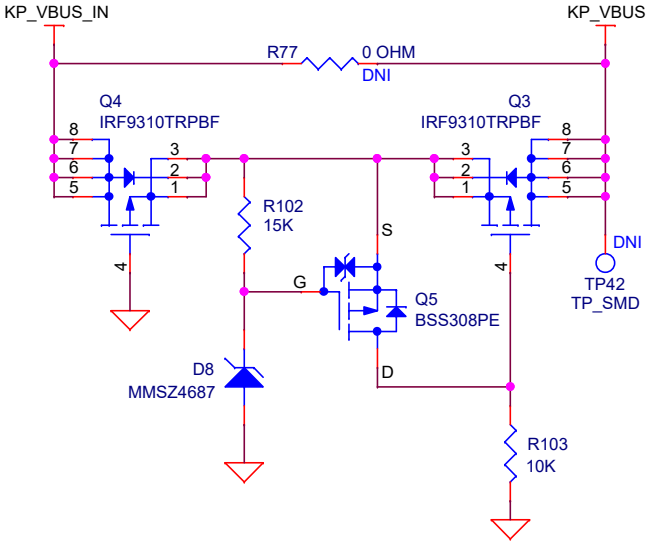
Power LED



KitProg3 Type-C USB



5V Overvoltage Protection



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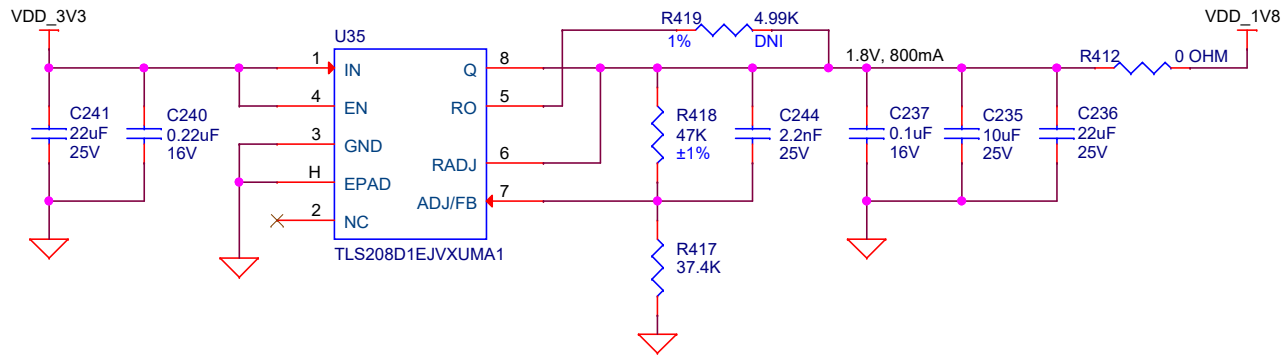
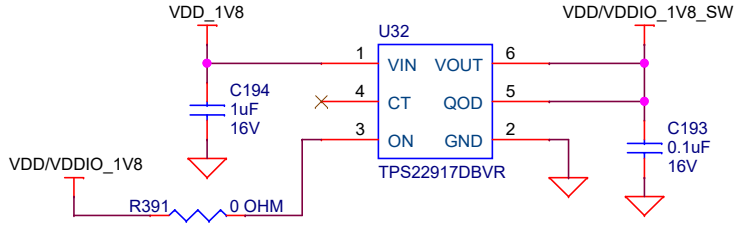
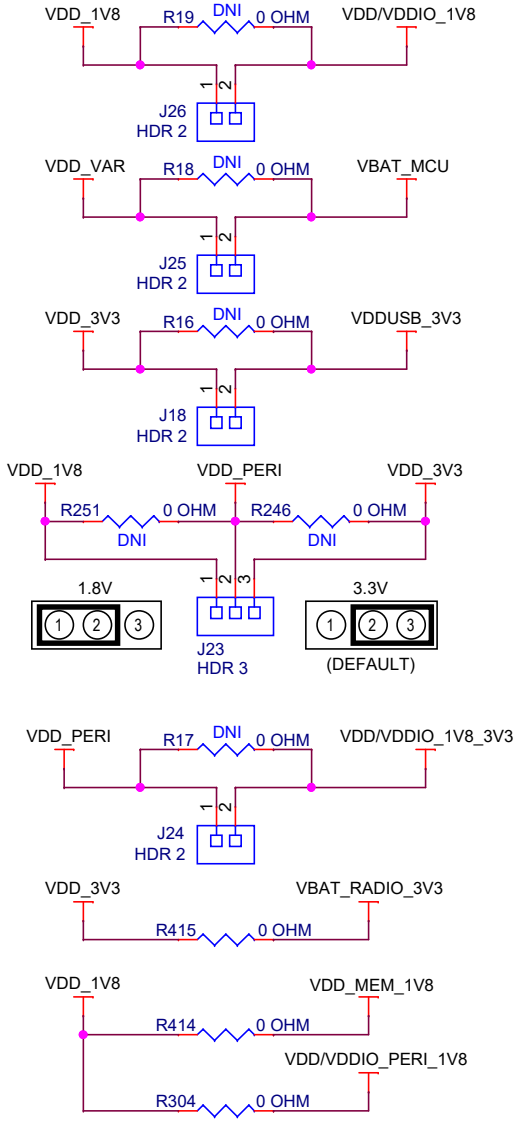
1.8V LDO Voltage Regulator



Power Switch



Power Selection/Monitoring



NOTE: Don't change/remove these jumpers while board is powered on.

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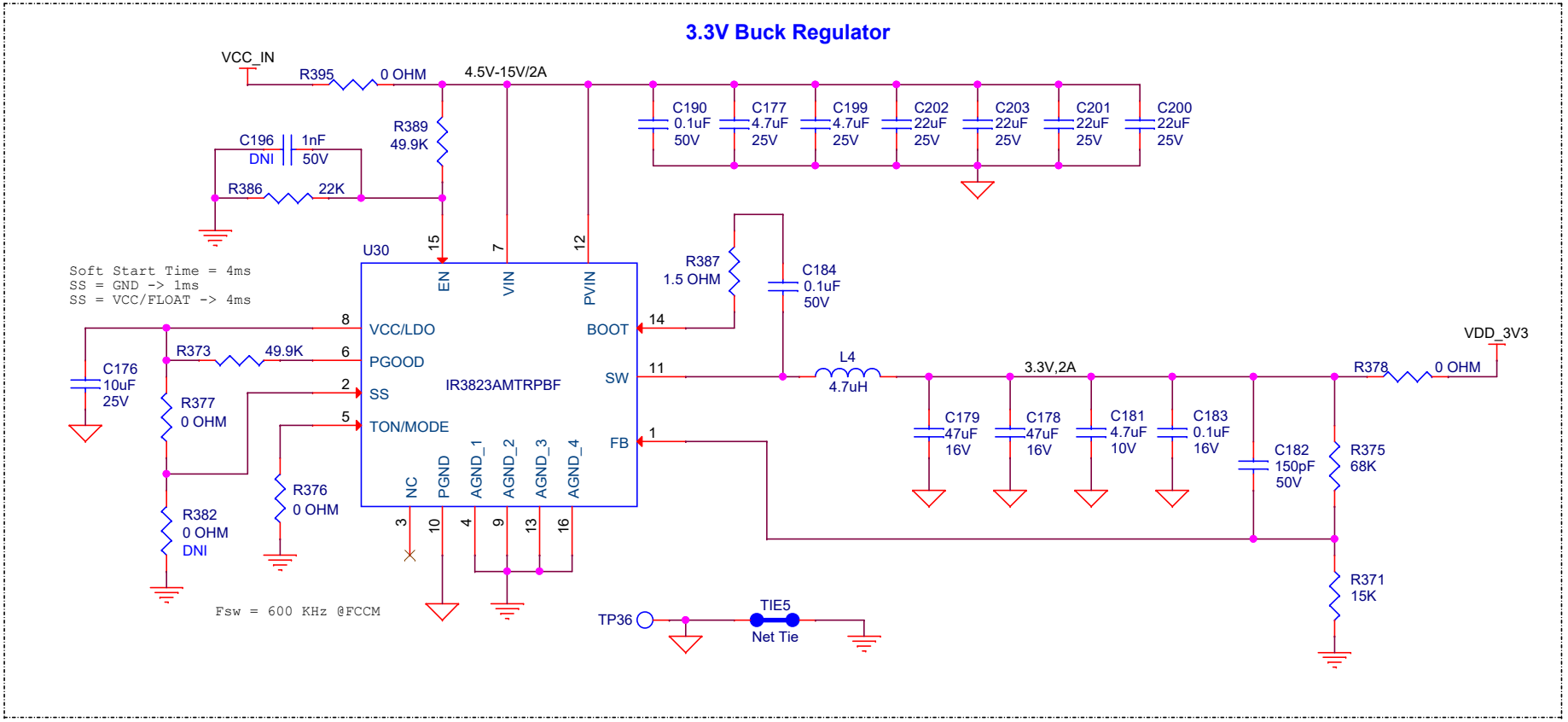
3.3V Buck Regulator



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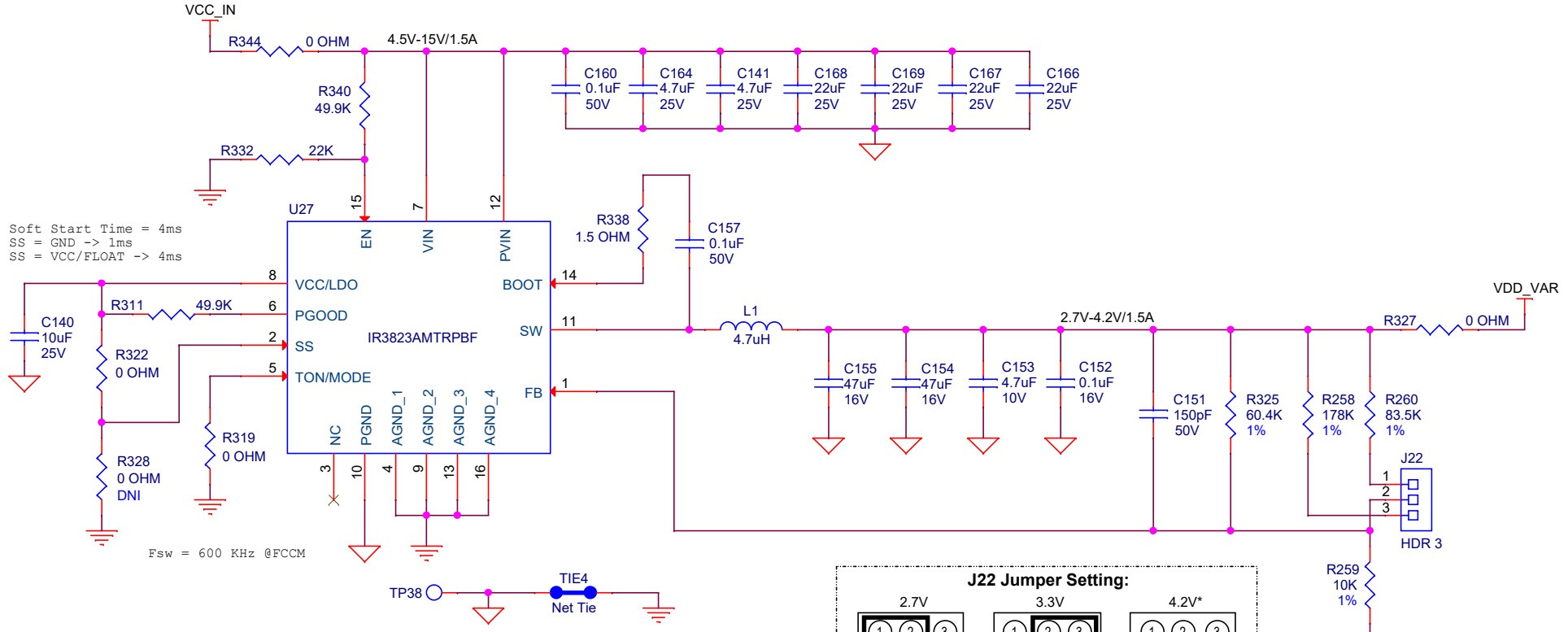
Variable (2.7V-4.2V) Buck Regulator



J22 Jumper Setting:

2.7V	3.3V	4.2V*
POS: 1-2	POS: 2-3 (DEFAULT)	OPEN

*For 4.2V, power the board through J30/J31 with minimum 7V

NOTE: Don't change/remove the jumper J22 while board is powered on.

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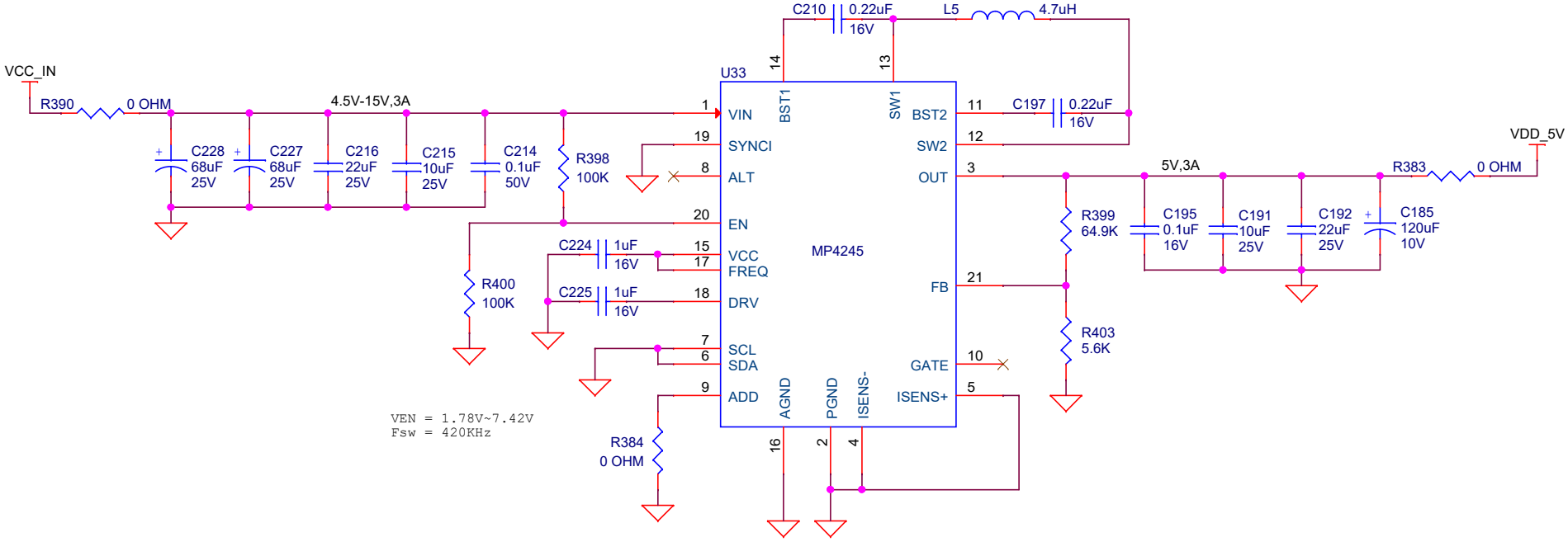
5V Buck-Boost Regulator



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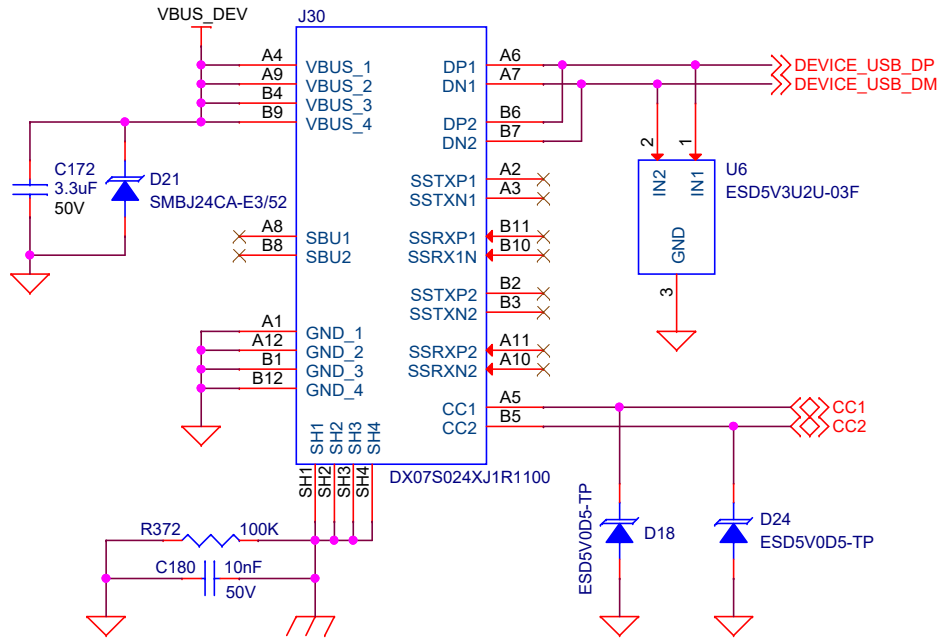
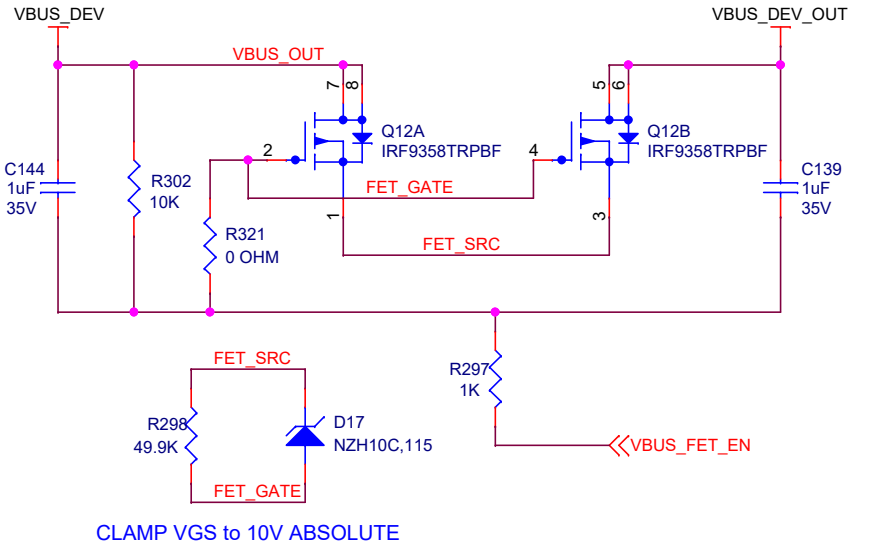
Device USB Type-C

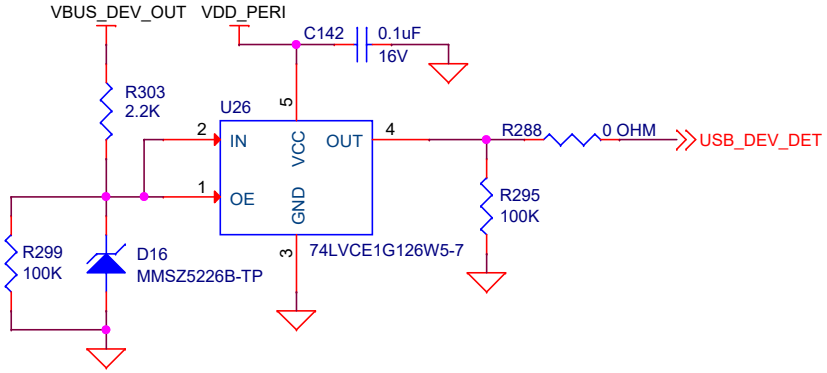


3A Load Switch

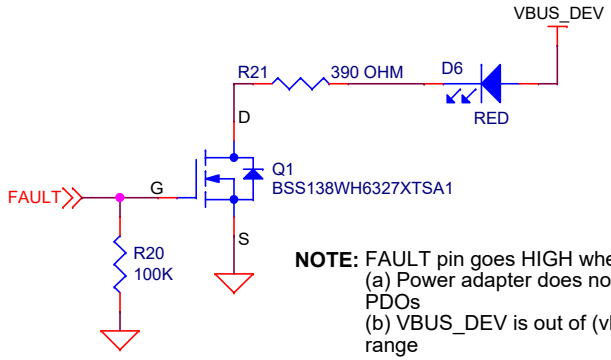


CLAMP VGS to 10V ABSOLUTE

USB Device VBUS Detect



Fault LED



NOTE: FAULT pin goes HIGH when
(a) Power adapter does not advertise compatible PDOs
(b) VBUS_DEV is out of (vbus_min, vbus_max) range

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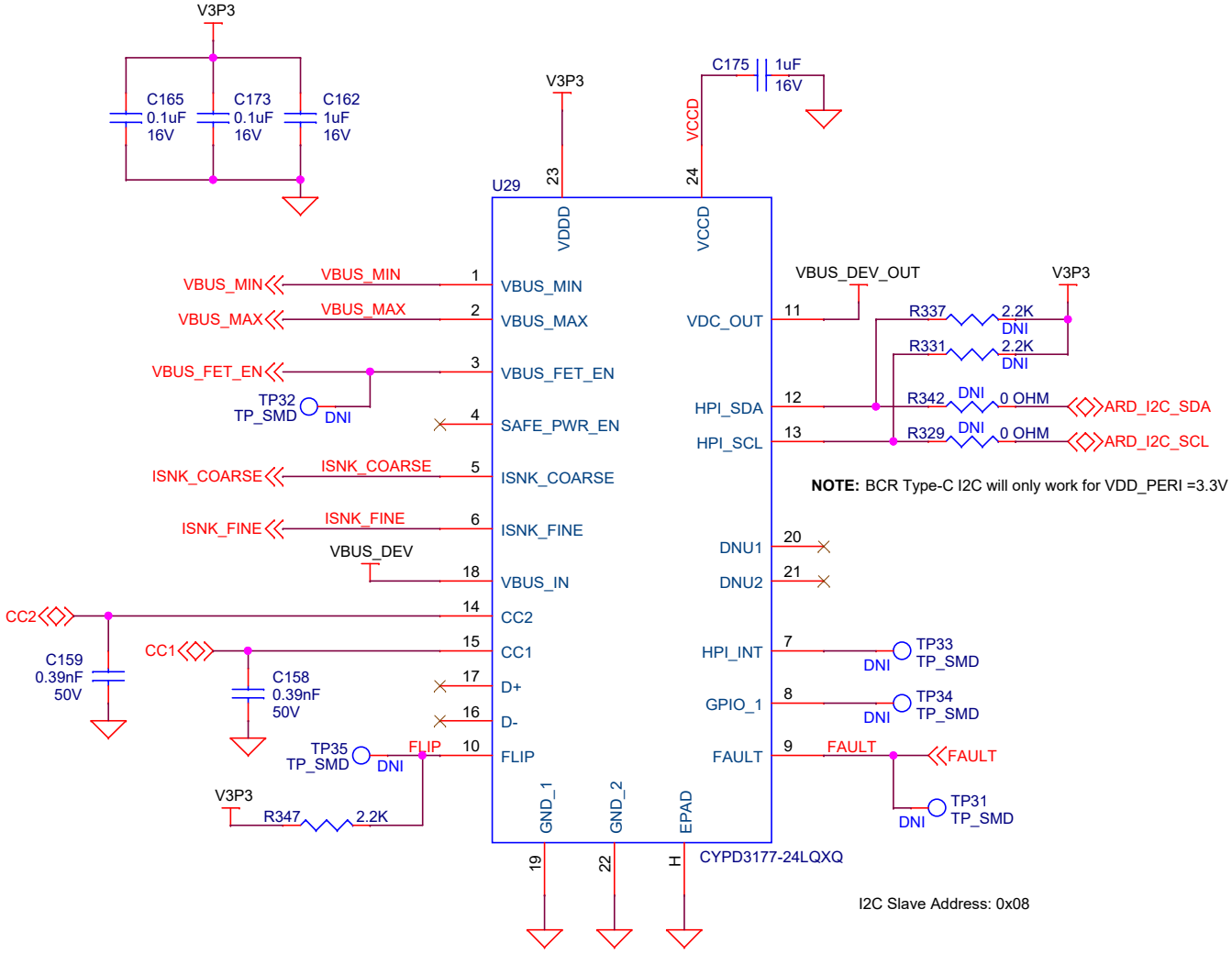
Device USB Type-C BCR Controller



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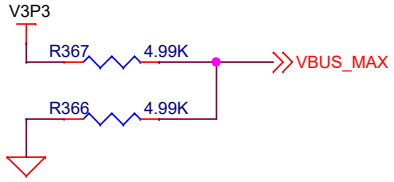
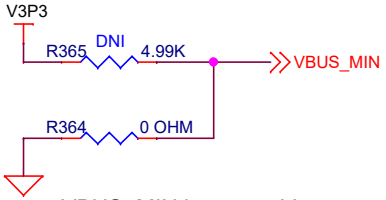
VBUS Voltage Selectors: VBUS_MAX and VBUS_MIN

Requested voltage = (VBUS_MIN -> VBUS_MAX)
= 5V or 15V



VBUS_MAX is decided by the Resistor options.
Default VBUS_MAX is set to 15V



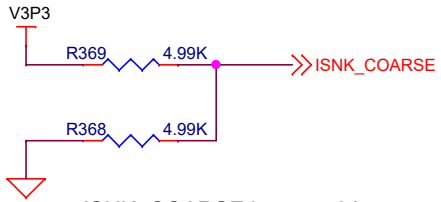
VBUS_MIN is set to 5V

VBUS_MIN and VBUS_MAX Resistor Options Table

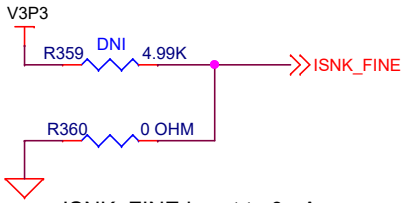
V3P3 RATIO	0/6	1/6	2/6	3/6
VBUS_MAX, VBUS_MIN	5V	9V	12V	15V
PULLUP* (R365, R367)	None	4.99K	4.99K	4.99K
PULLDOWN* (R364, R366)	0	1K	2.4K	4.99K

VBUS CURRENT SELECTORS: ISNK_COARSE and ISNK_FINE

Requested (RDO) current = ISNK_COARSE + ISNK_FINE = 3000mA



ISNK_COARSE is set to 3A



ISNK_FINE is set to 0mA

ISNK_COARSE and ISNK_FINE Resistor Options Table

V3P3 RATIO	0/6	1/6	2/6	3/6	4/6	>=5/6
ISNK_COARSE	0A	1A	2A	3A	4A	5A
ISNK_FINE	0mA	250mA	500mA	750mA	900mA	
PULLUP* (R359, R369)	None	4.99K	4.99K	4.99K	4.99K	0
PULLDOWN* (R360, R368)	0	1K	2.4K	4.99K	10K	None

*When pullup-pulldown combination is 0-none or none-0, use any resistor instead of 0-ohm

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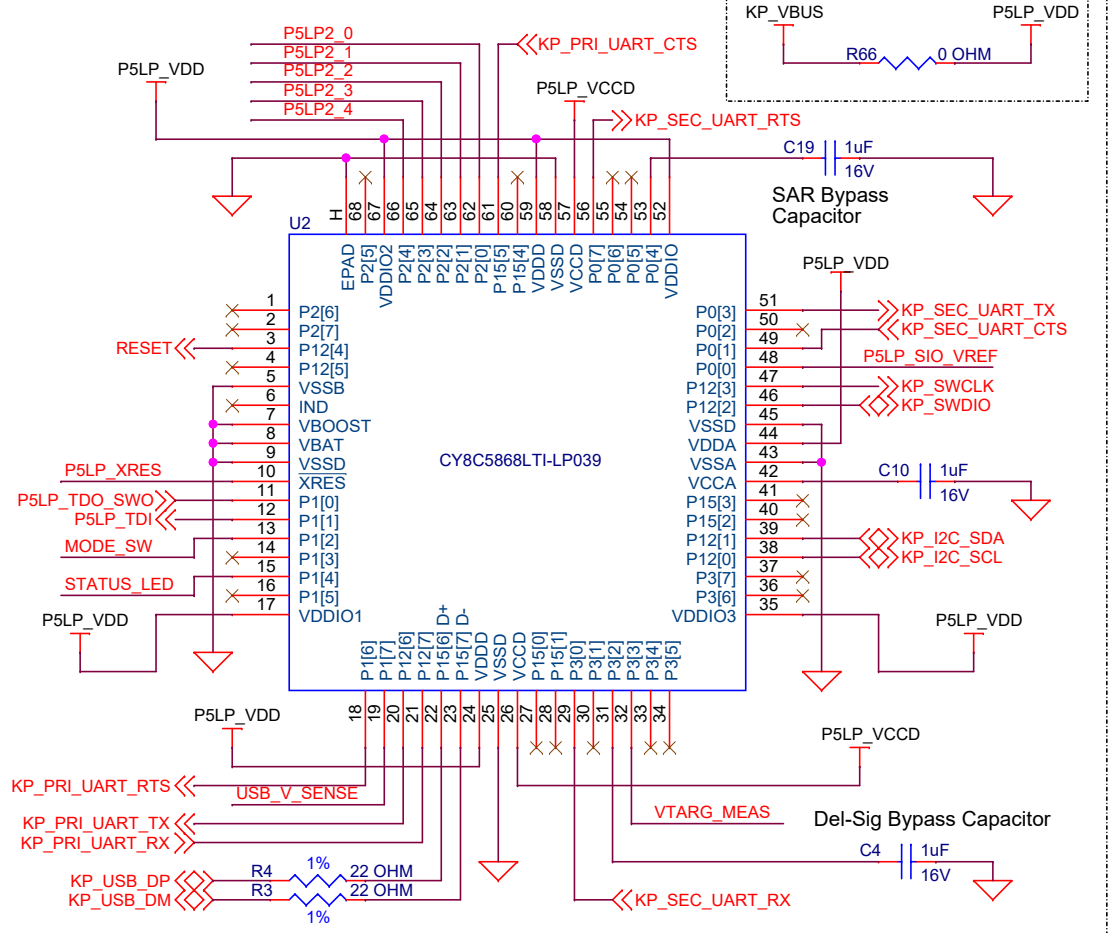
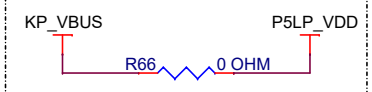
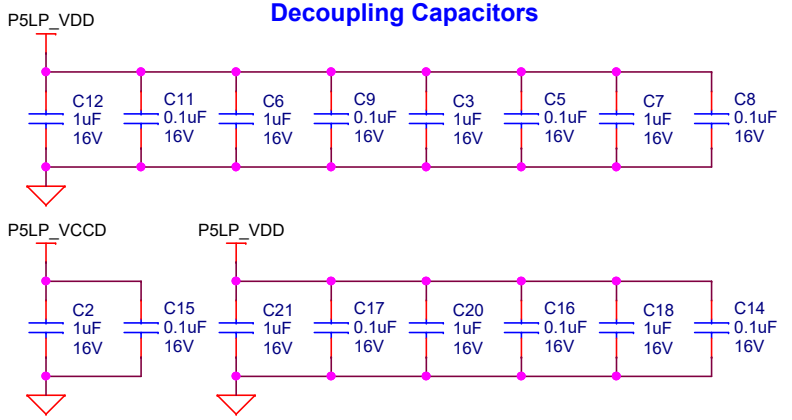
PSOC™ 5LP based KitProg3



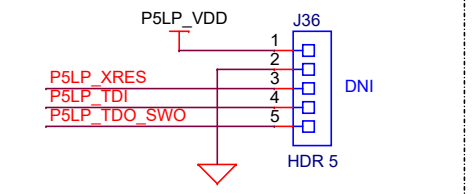
PSOC™ 5LP Power



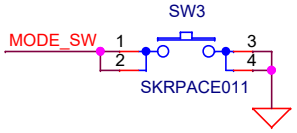
Decoupling Capacitors



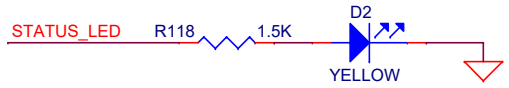
PSOC™ 5LP Programming Header



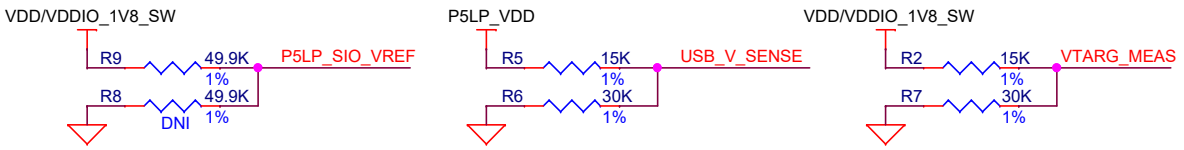
Mode Switch



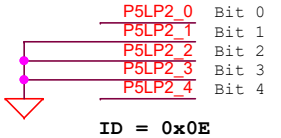
KitProg3 Status LED



Voltage Monitoring



KitProg3 H/W Revision



ID = 0x0E

NOTE: GND is read as binary "1" and floating as "0".

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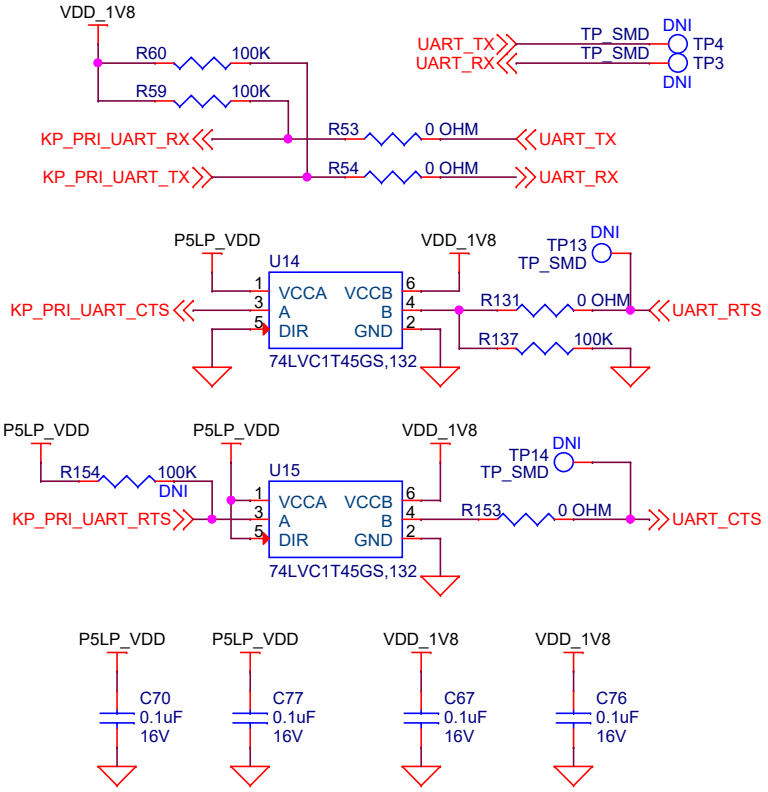
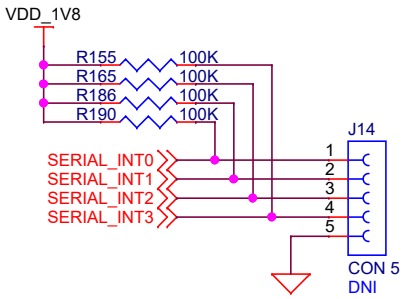
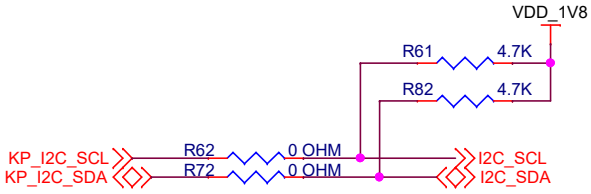
KitProg3 Primary UART Interface



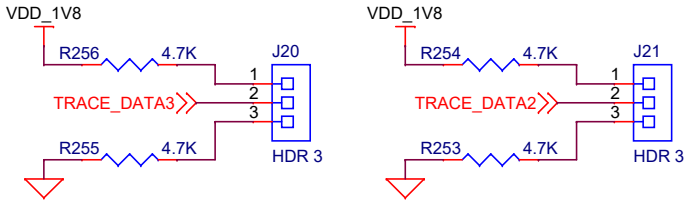
Alternative Serial Interface



KitProg3 I2C Interface



Alternative Serial Interface Configuration

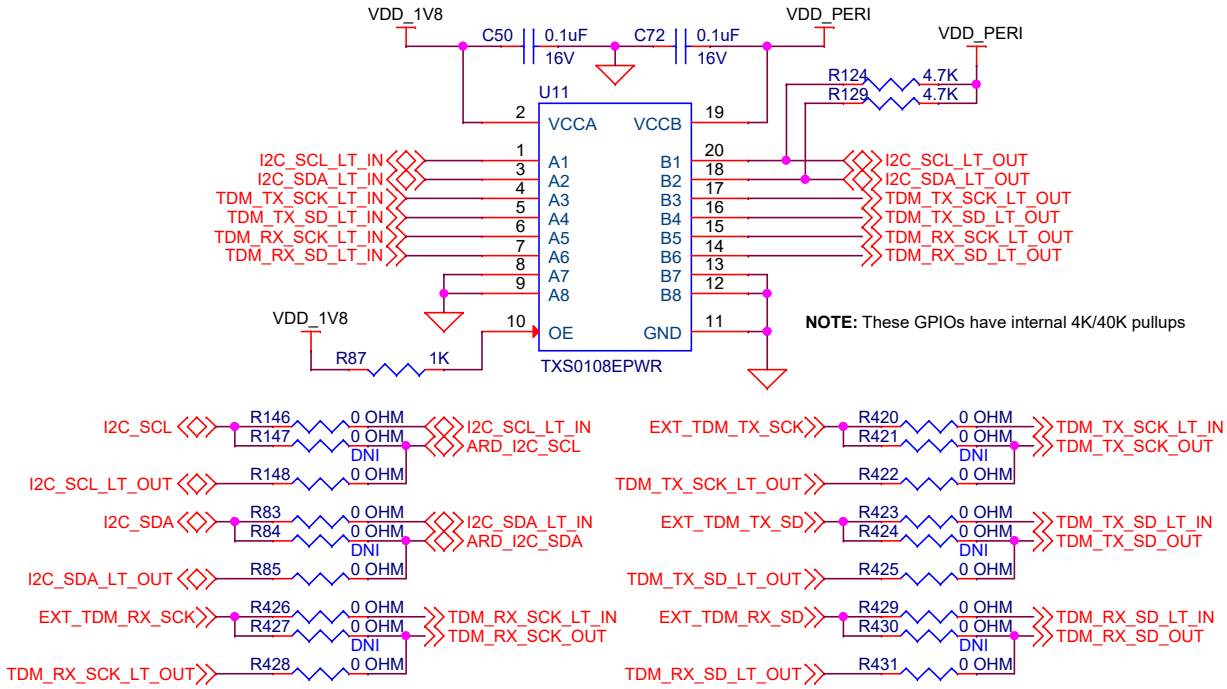


	J20:NC	J20:1-2	J20:2-3
J21:NC	ETM TRACE	RFU*	SPI
J21:1-2	ETM TRACE	UART	I2C
J21:2-3	ETM TRACE	RFU*	SPI

*RFU - Reserved for Future Use

NOTE: J20 and J21 are NC by default

I2C & TDM Level Translator



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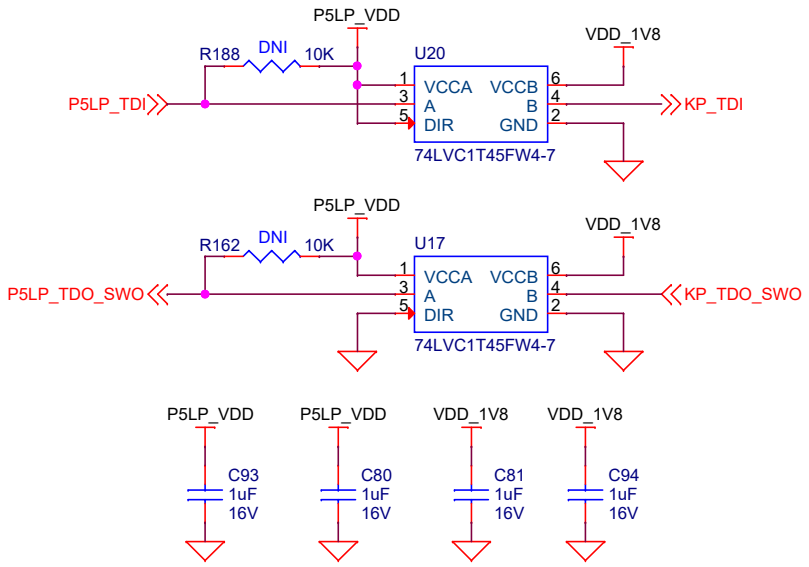
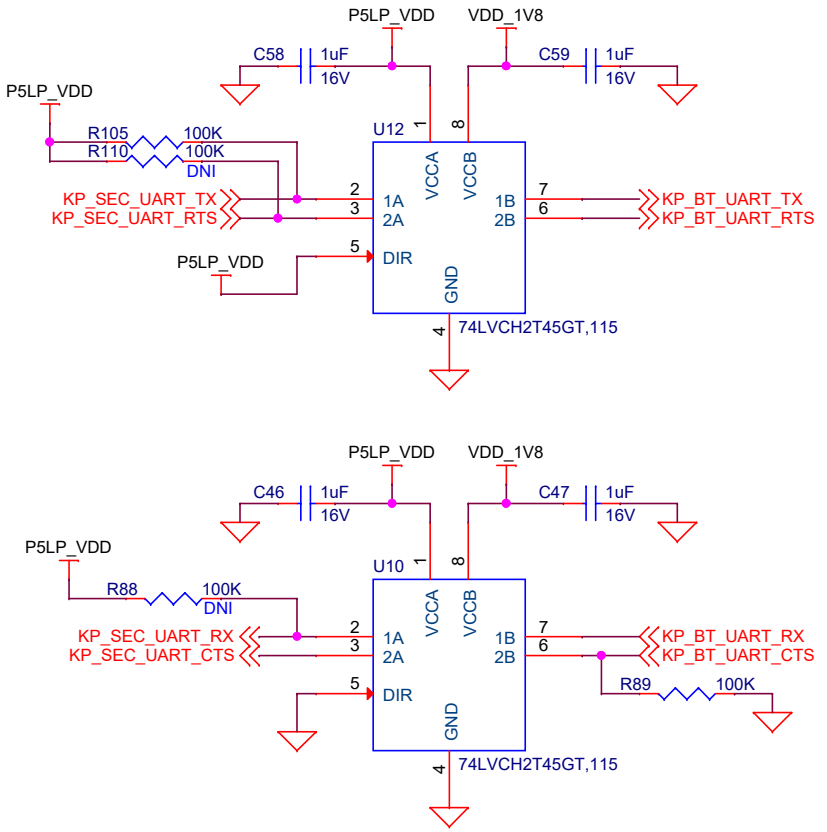
Level Translator for JTAG



KitProg3 Secondary UART Interface



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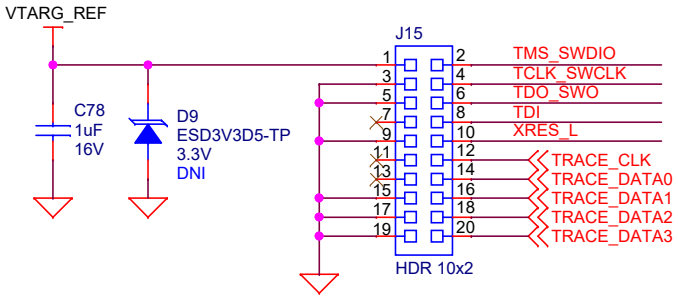
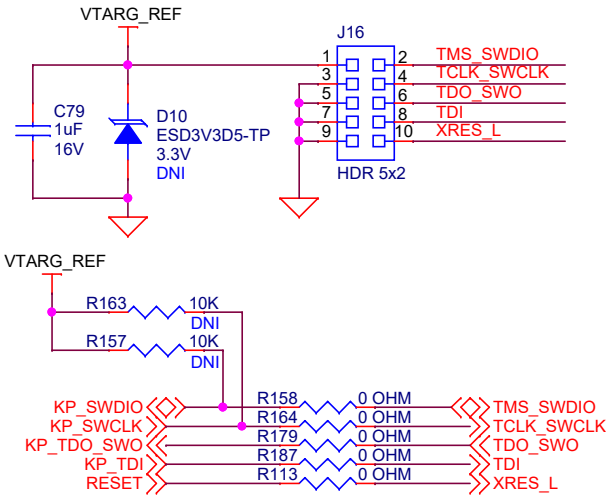
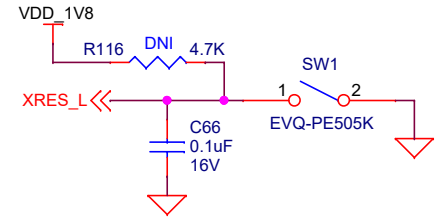
ETM/JTAG Header for M33/M55/U55



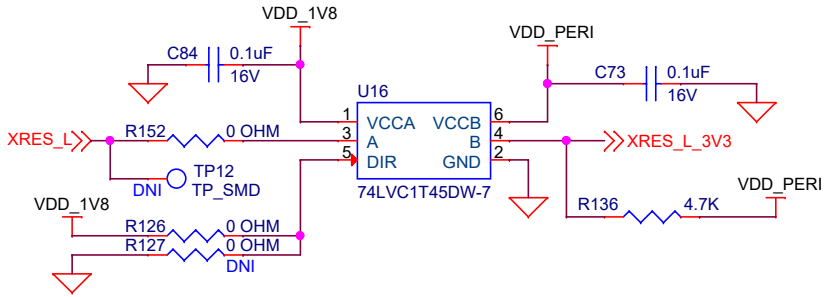
10-pin SWD/JTAG Header for M33/M55/U55



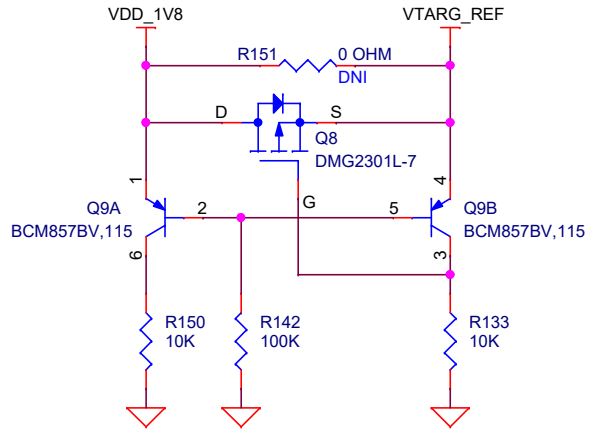
Reset Button



Level Translator for XRES_L



VTARG Reverse Voltage Protection



NOTE 1: VTARG_REF is only output voltage sense line for external debuggers. MCU can't be powered using external debugging headers like J15, J16

NOTE 2: If R151 is loaded and external power is used, make sure to supply enough current to the 1.8V rail ~800mA max.

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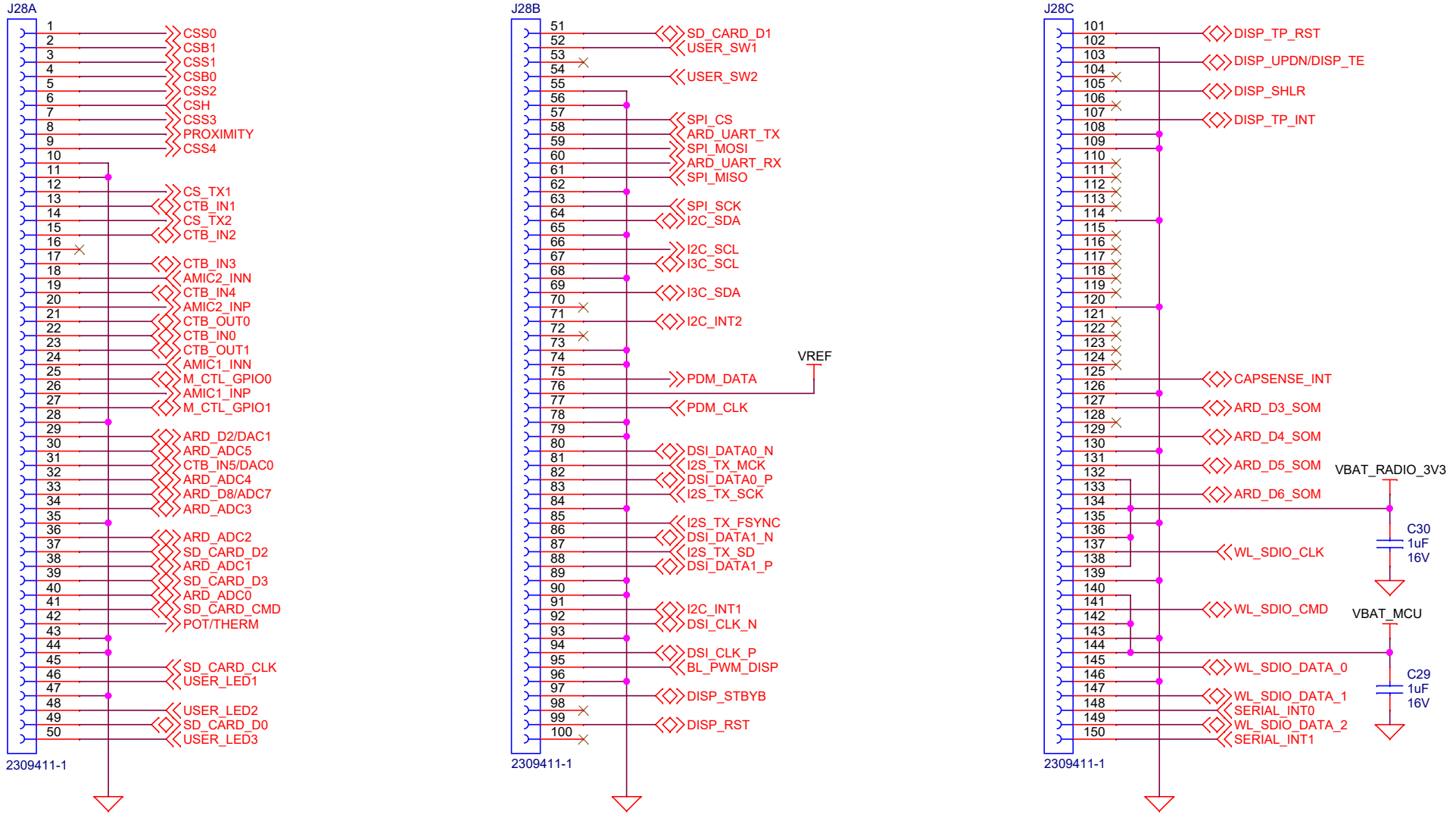
SoM Interface



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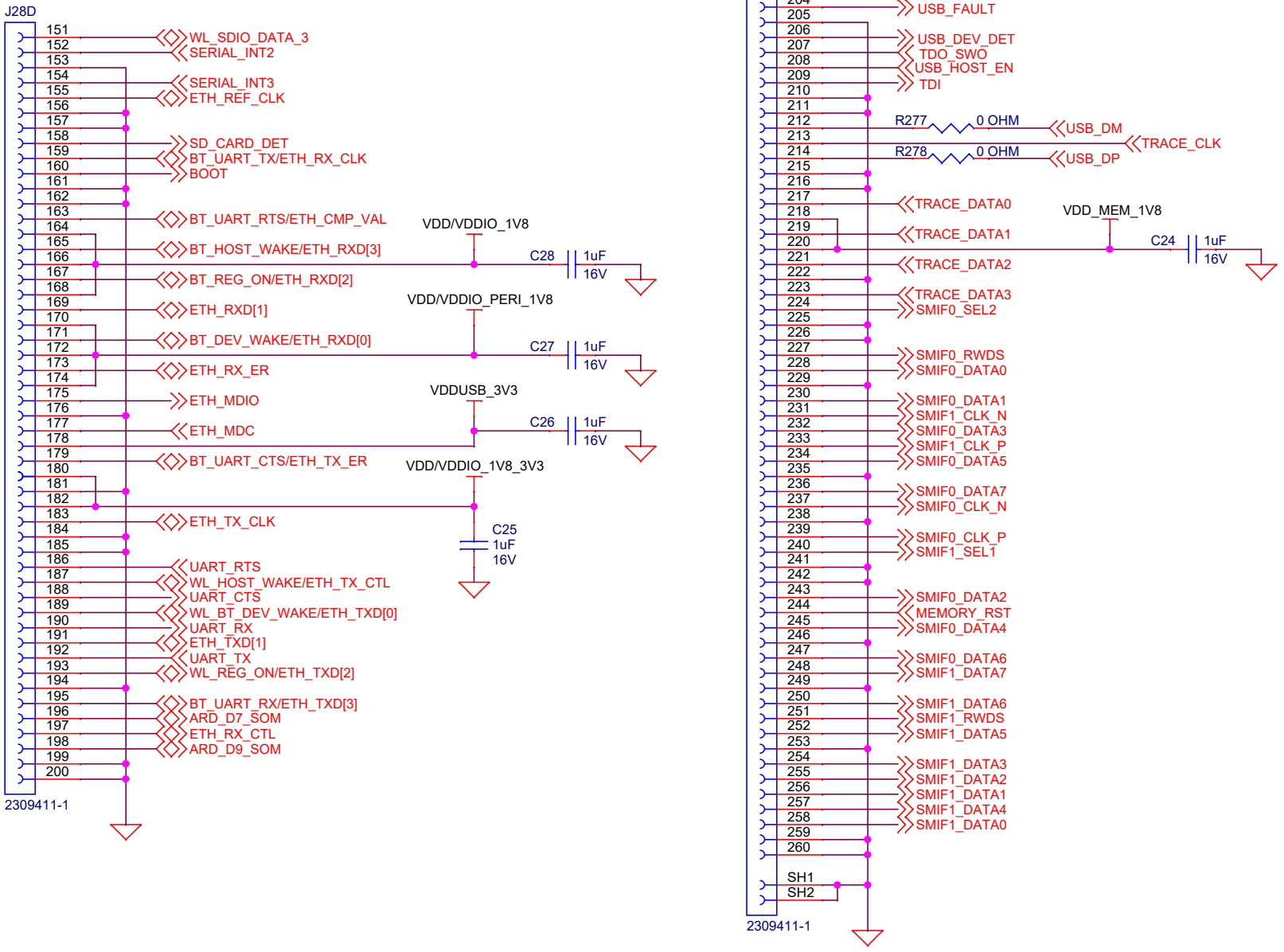
SoM Interface (cont.)



SCH Title : PSOC™ Edge E8 Base Board

Page Title: SoM Interface 2

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A4	630-60647-01	RISR	RKPM	5.0

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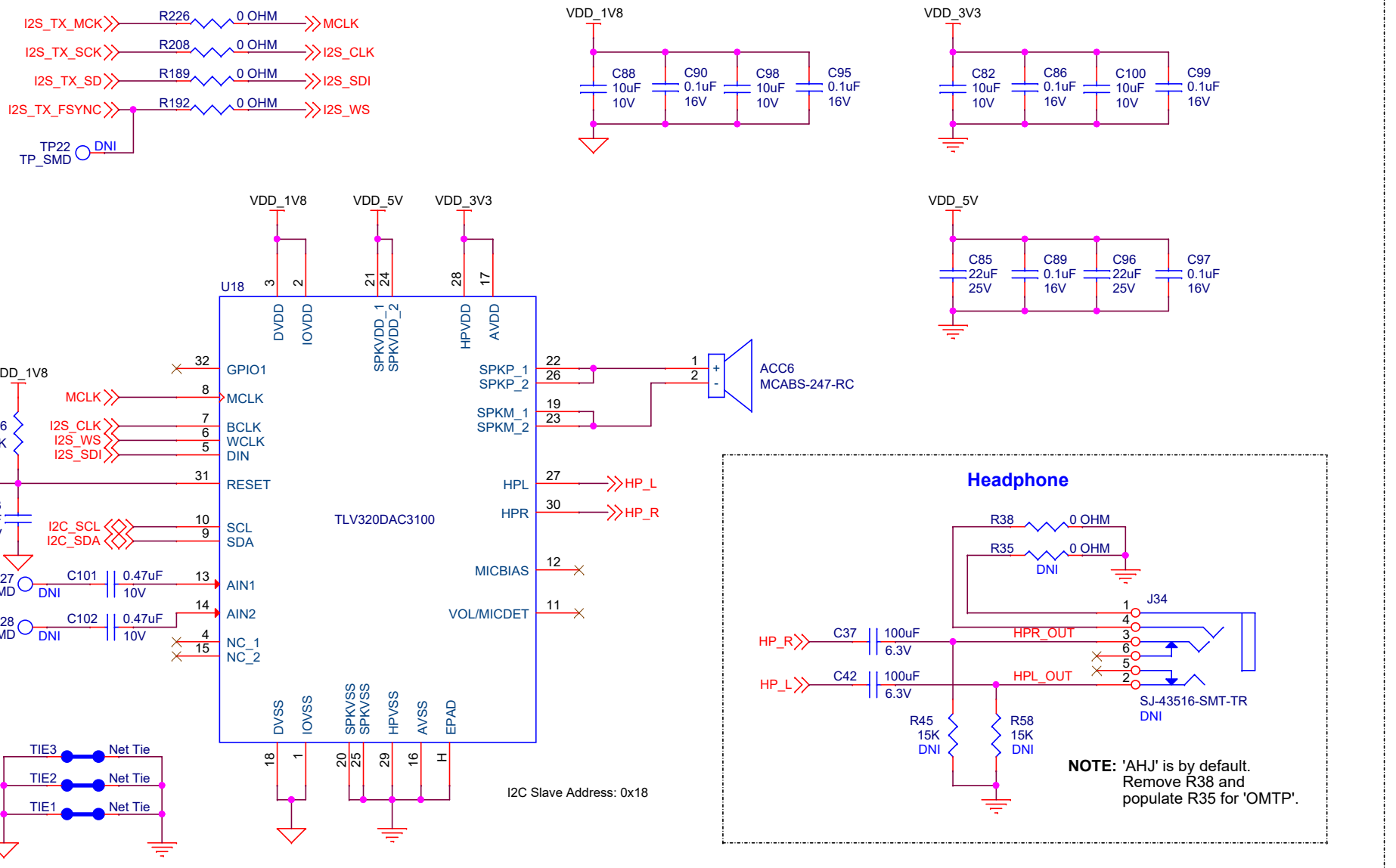
Audio Amplifier



SCH Title : **PSOC™ Edge E8 Base Board**				
Page Title: **Audio Class-D Amplifier**				
Size	Document Number	Drawn By	Approved By	Rev
A4	**630-60647-01**	**RISR**	**RKPM**	**5.0**
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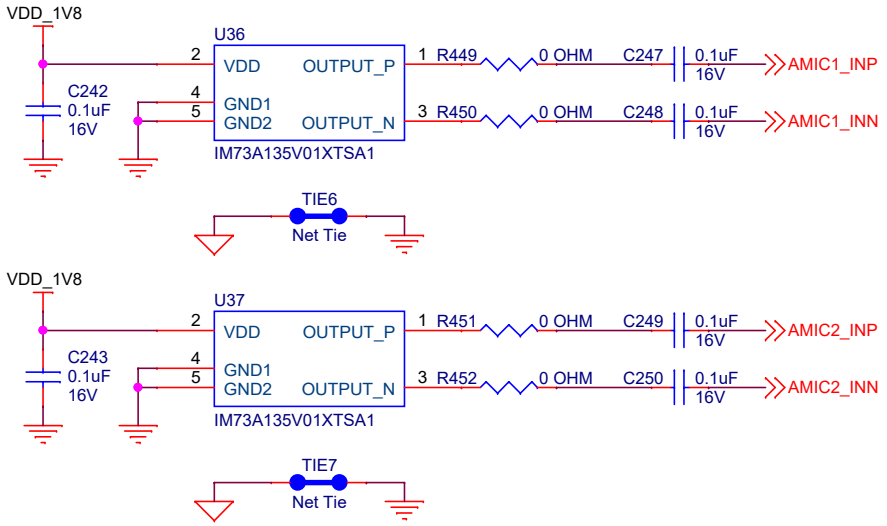
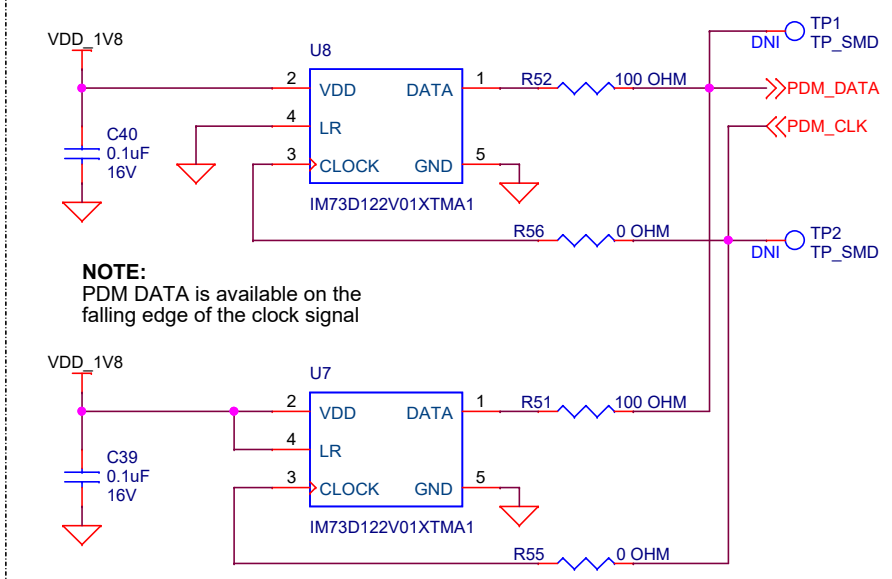
Analog MICs



PDM MICs



NOTE:
PDM DATA is available on the falling edge of the clock signal

NOTE:
PDM DATA is available on the rising edge of the clock signal

SCH Title : PSOC™ Edge E8 Base Board				
Page Title: AMICs & DMICs				
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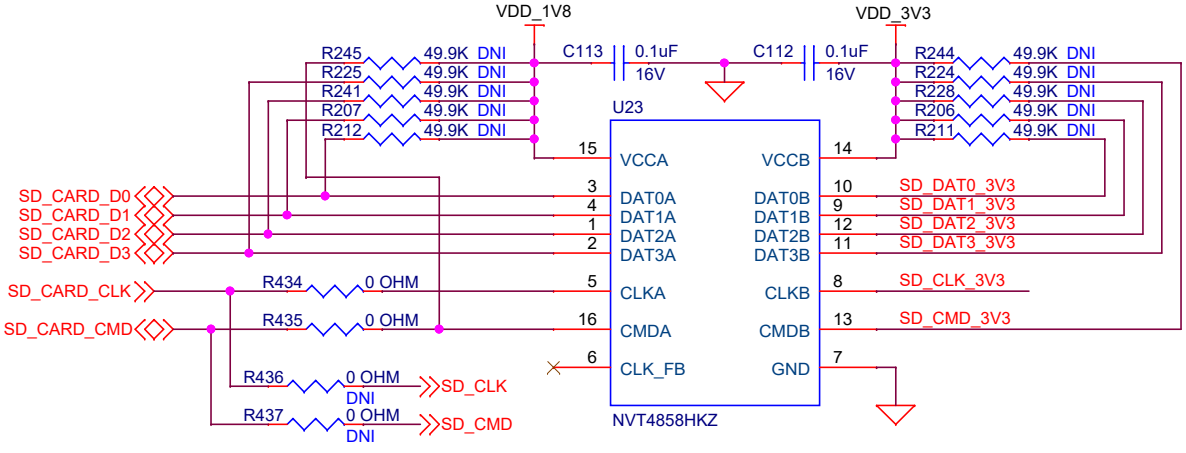
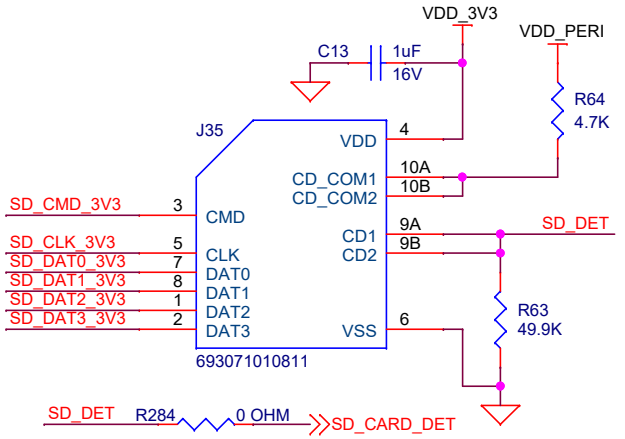
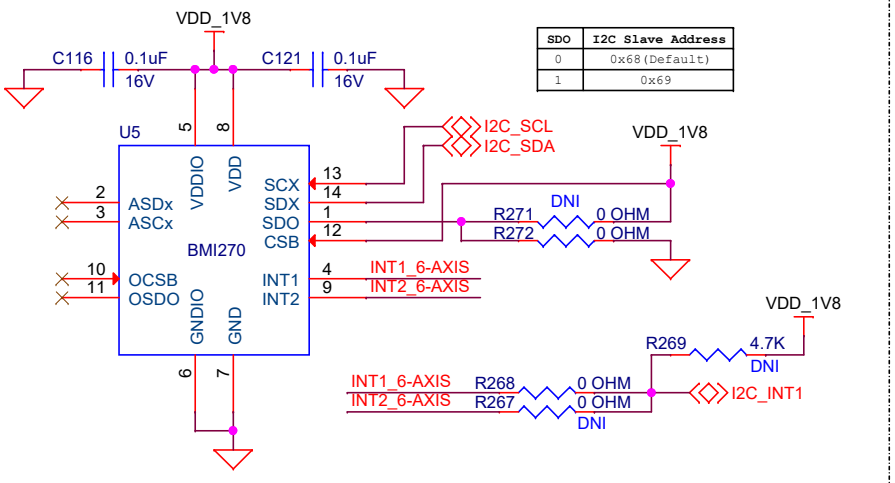
Level Translator for MicroSD Card



MicroSD Card Interface

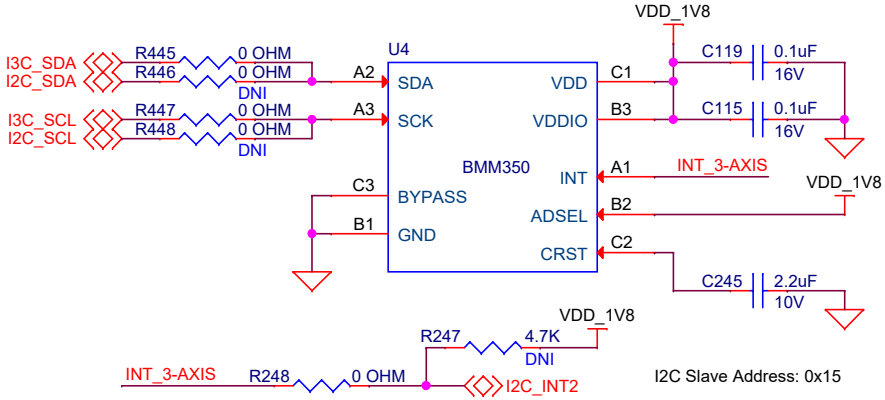


6-axis IMU (Accelerometer + Gyroscope)



SDO	I2C Slave Address
0	0x68 (Default)
1	0x69

3-axis Magnetometer



SCH Title : PSOC™ Edge E8 Base Board				
Page Title: MicroSD Card & IMU				
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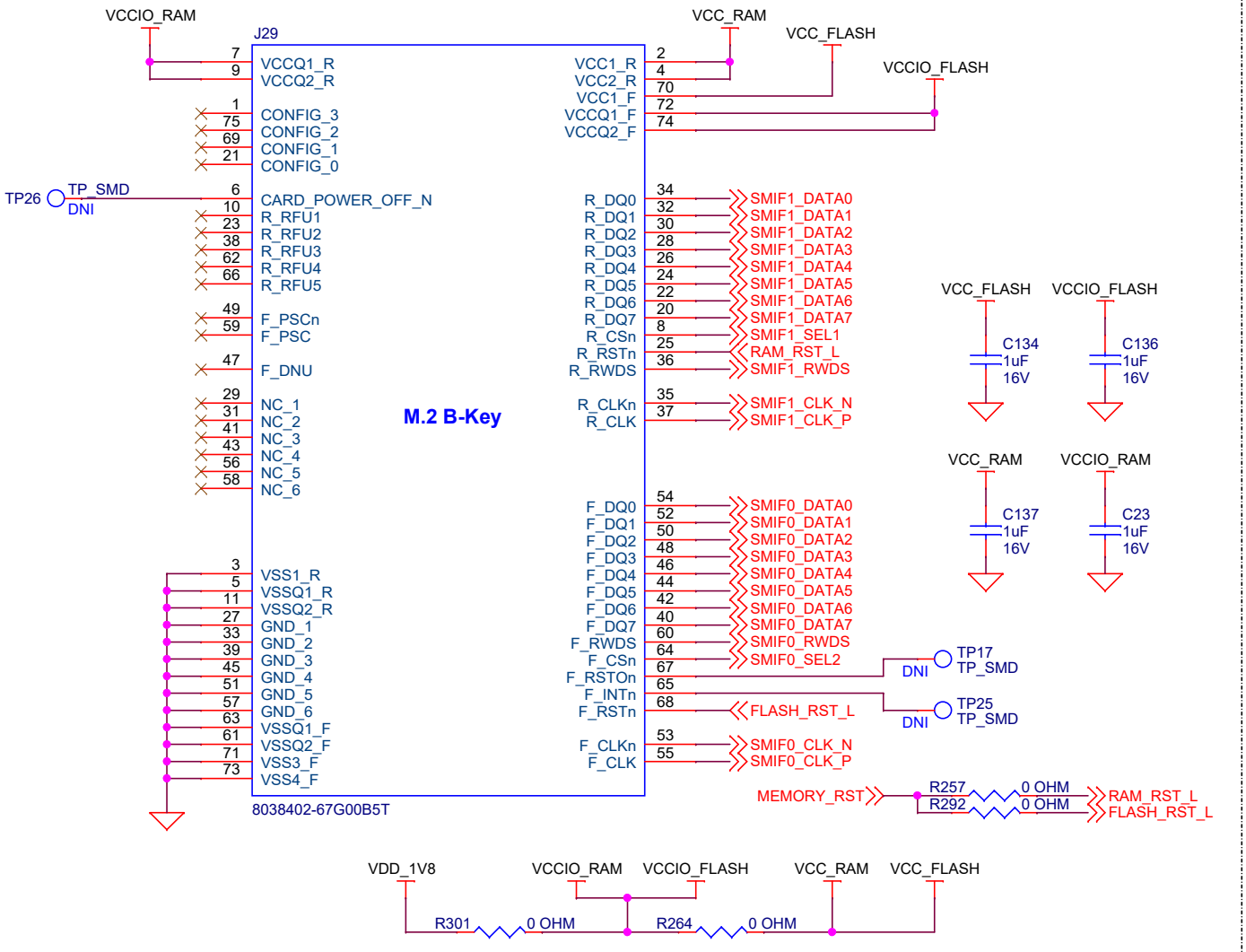
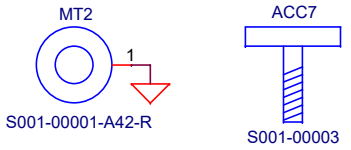
M.2 Memory Interface



M.2 Stand-off and Screw



Legal Disclaimer :
The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation, warranties of non-infringement of intellectual property rights of any third party.

SCH Title : PSOC™ Edge E8 Base Board				
Page Title: M.2 Memory SoM Interface				
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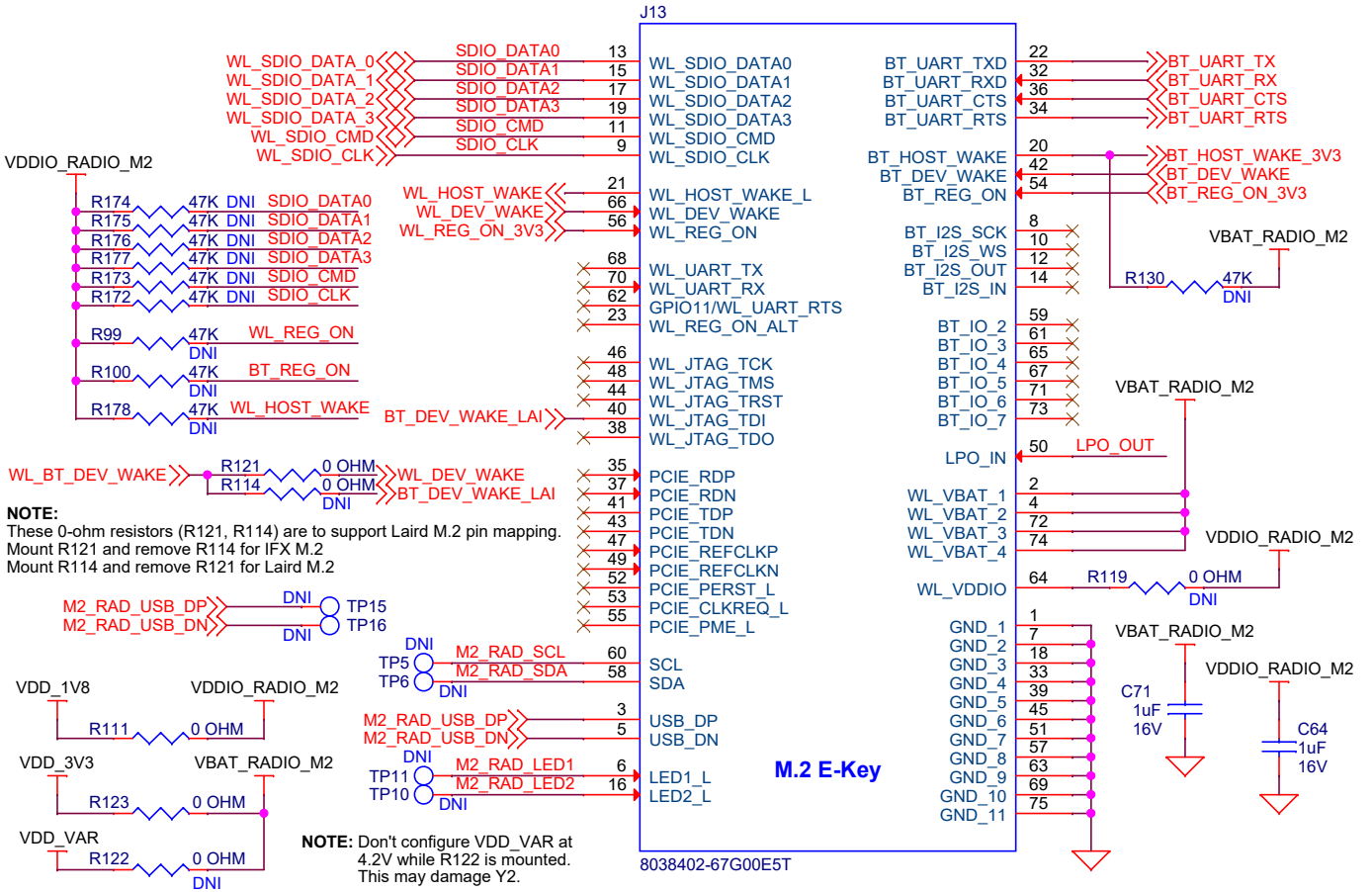
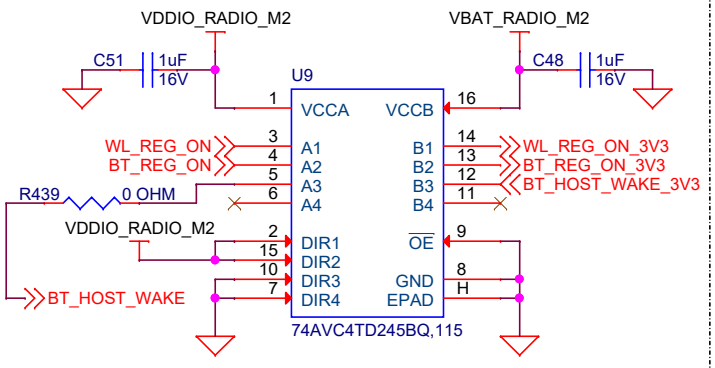
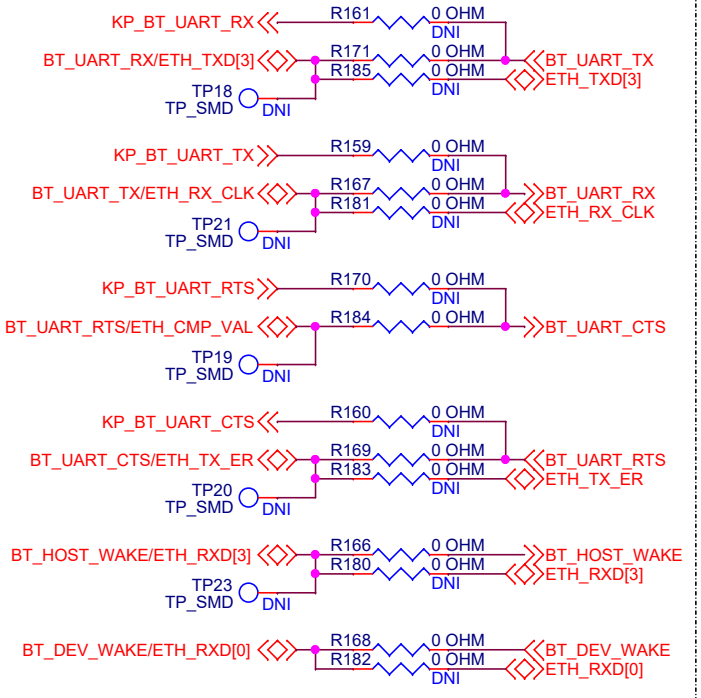
M.2 Radio Interface Connector



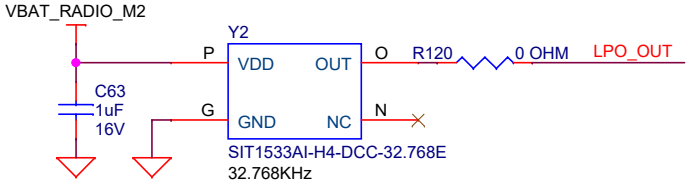
Level Translator



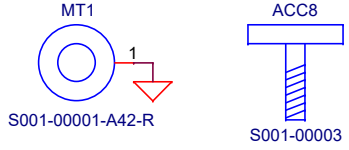
Pin Multiplexing



Onboard LPO



M.2 Stand-off and Screw



SCH Title : PSOC™ Edge E8 Base Board				
Page Title: M.2 Radio SOM Interface				
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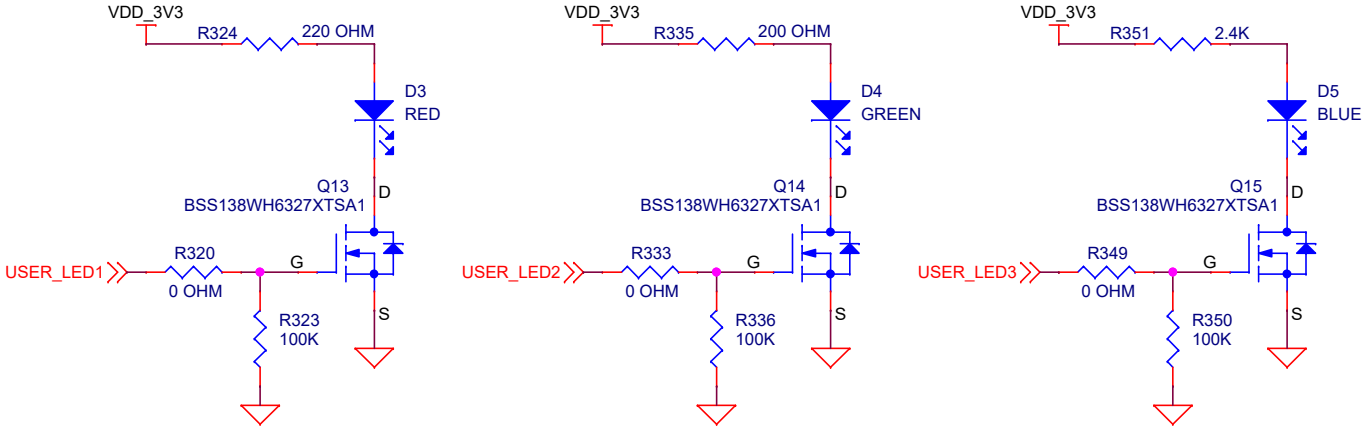
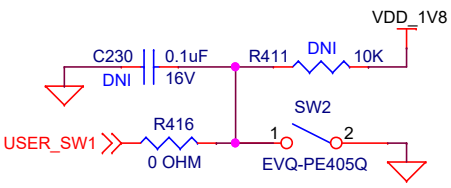
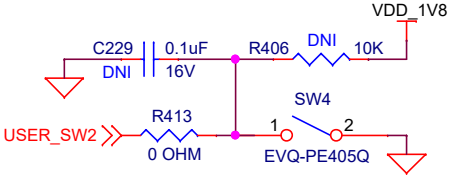
User LEDs



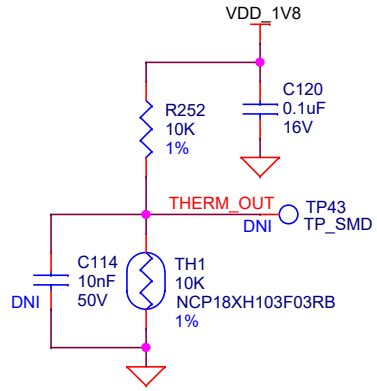
User Button 1



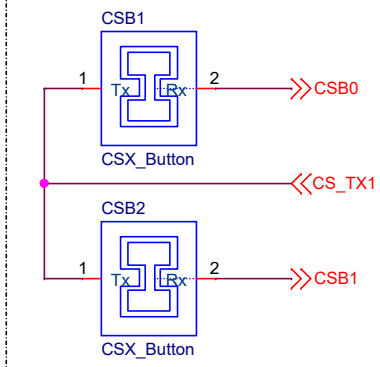
User Button 2



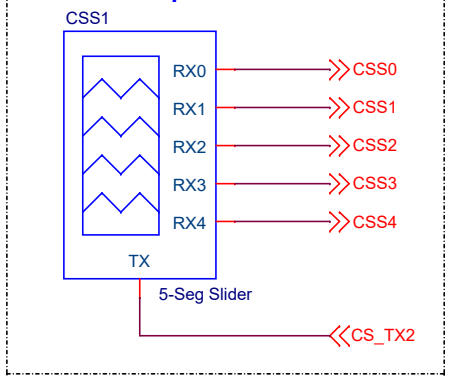
Thermistor



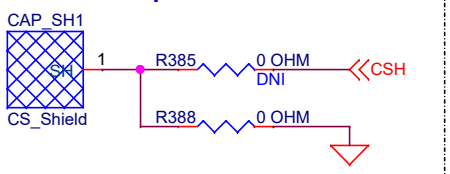
CapSense Buttons



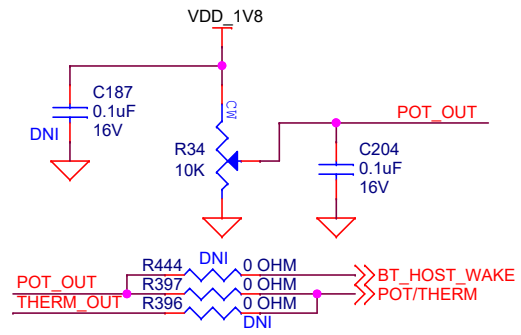
CapSense Slider



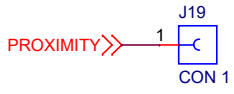
CapSense Shield



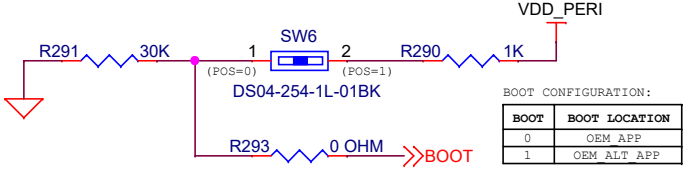
Potentiometer



Proximity Sensor



BOOT Configuration Switch



SCH Title : PSOC™ Edge E8 Base Board

Page Title: User Interfaces

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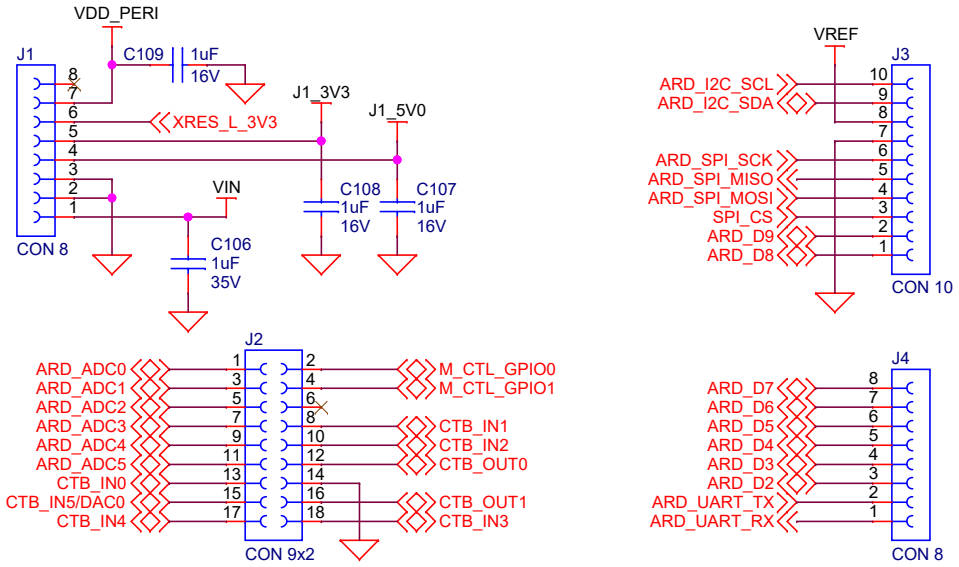
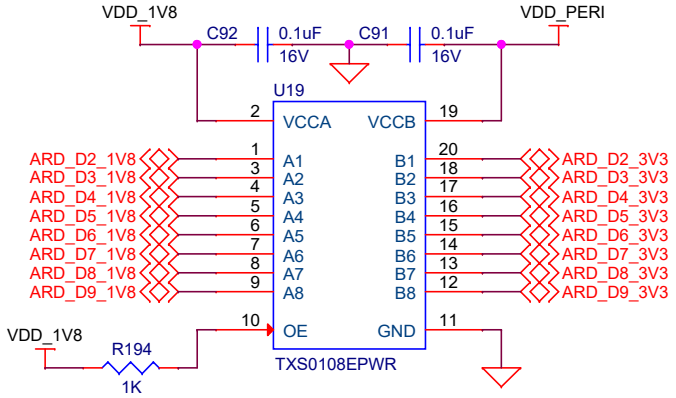
Arduino Compatible Headers



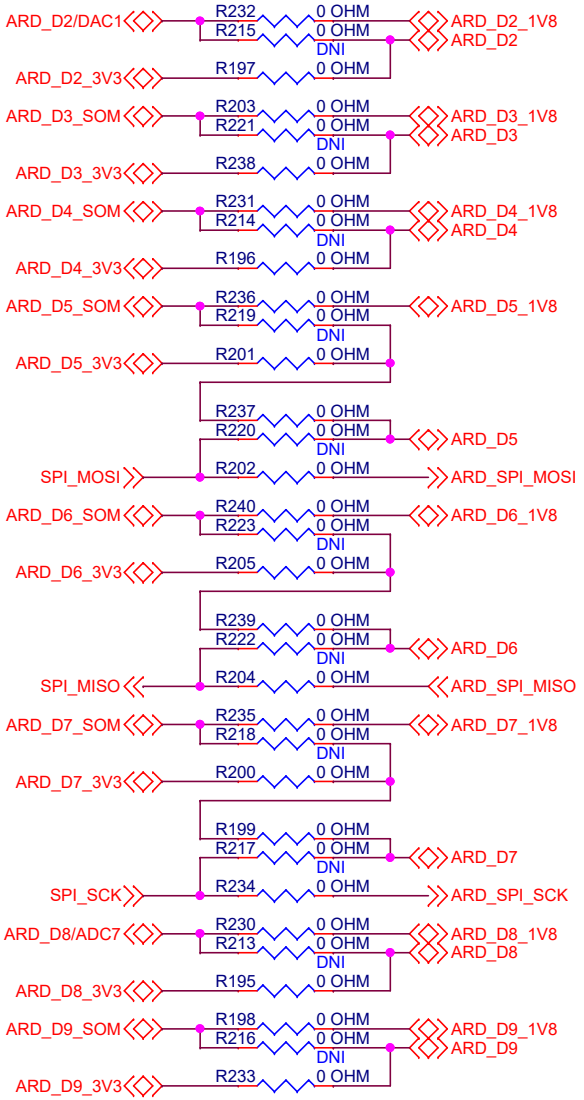
NOTE: All I/Os of J2 header will only support 1.8V. I/Os of J3 & J4 headers can support 1.8V/3.3V.
5V is not supported on any of these I/Os.
VDD_PERI is reference voltage for UART, SPI & I2C interface.

Level Translator for Arduino Interface



NOTE: These GPIOs have internal 4K/40K pullups

Arduino Pin Multiplexing



NOTE 1: To bypass Level Translator (U19),
Remove: R232, R197, R203, R238, R231, R196, R236, R201, R240, R205, R235, R200, R230, R195, R198, R233
Mount: R215, R221, R214, R219, R223, R218, R213, R216

NOTE 2: For CY8CKIT-026 shield support,
Remove: R237, R202, R239, R204, R199, R234
Mount: R220, R222, R217

SCH Title : **PSOC™ Edge E8 Base Board**				
Page Title: **Arduino Headers**				
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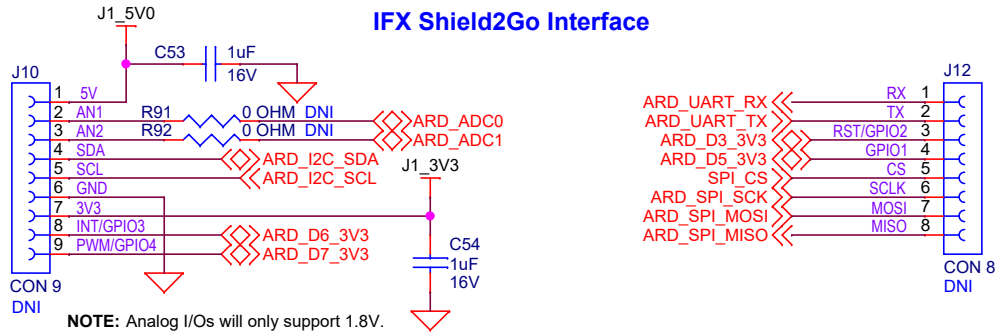
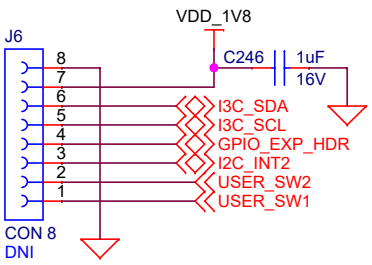
IFX Shield2Go Interface

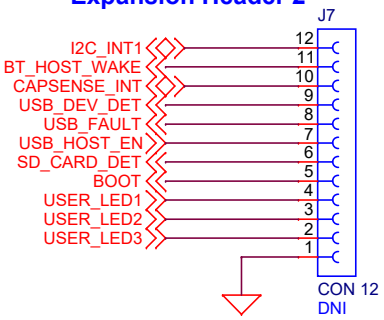


NOTE: Analog I/Os will only support 1.8V.

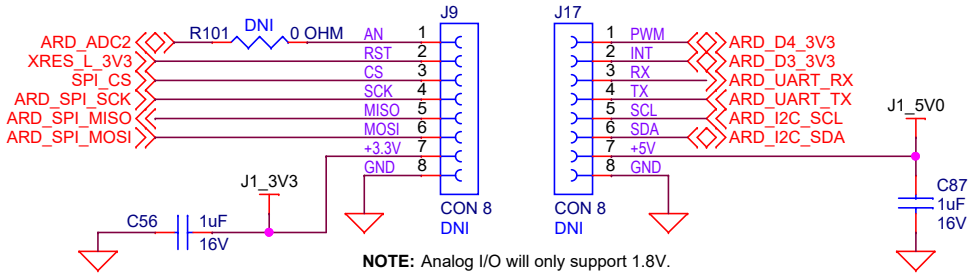
Expansion Header 1



Expansion Header 2

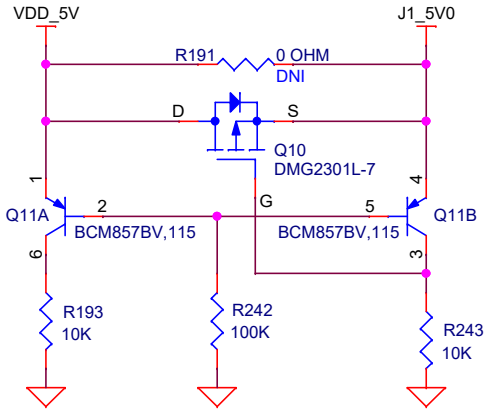


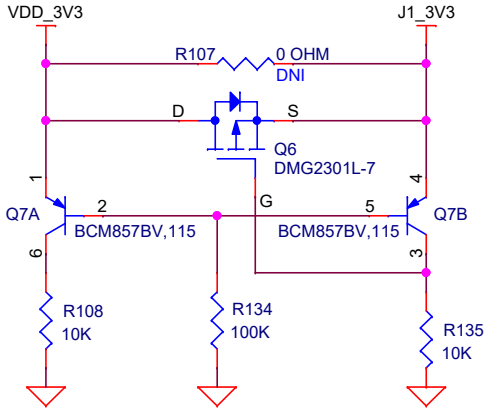
mikroBUS Click Interface



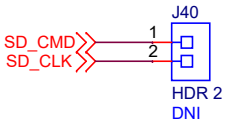
NOTE: Analog I/O will only support 1.8V.

Reverse Voltage Protection for Arduino, IFX Shield2Go & mikroBUS Headers

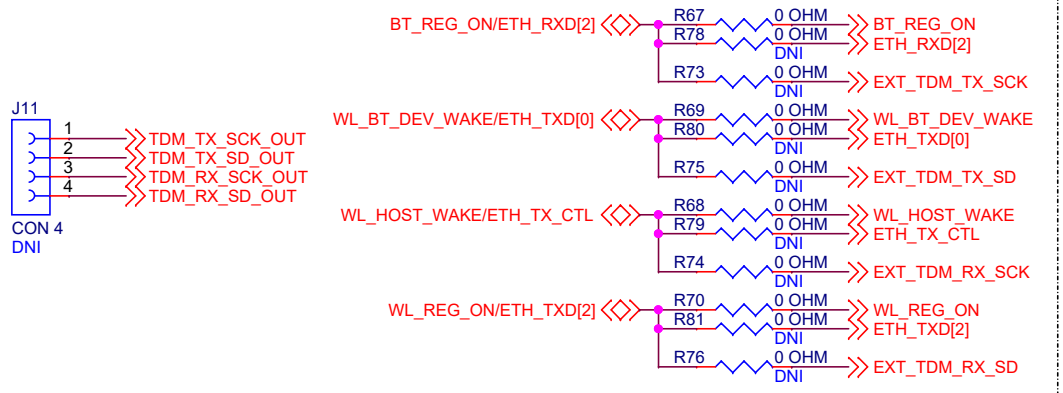




Expansion Header 3



Extended I2S Interface



SCH Title : PSOC™ Edge E8 Base Board

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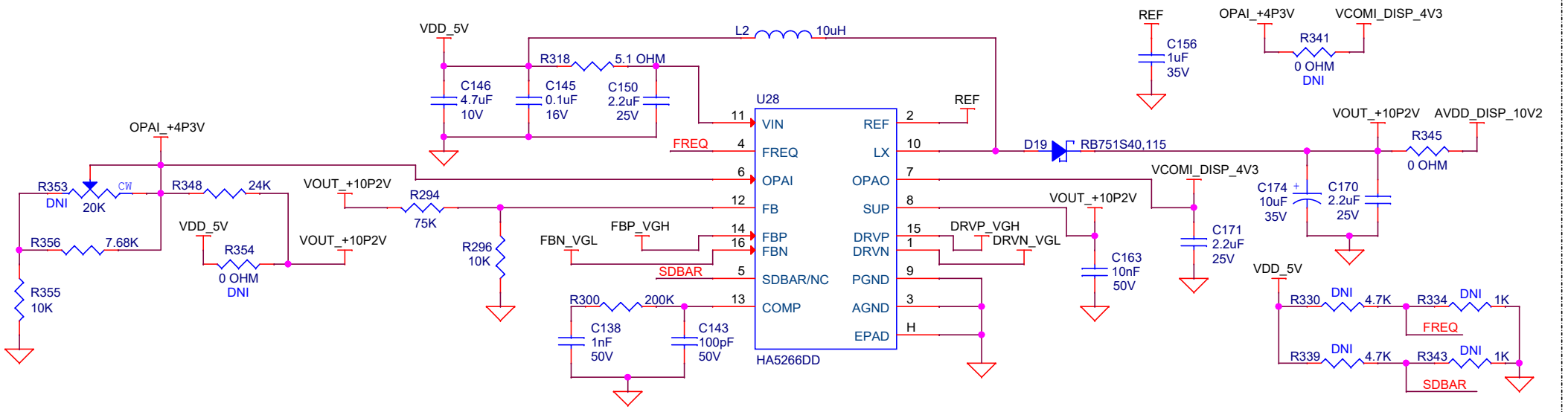
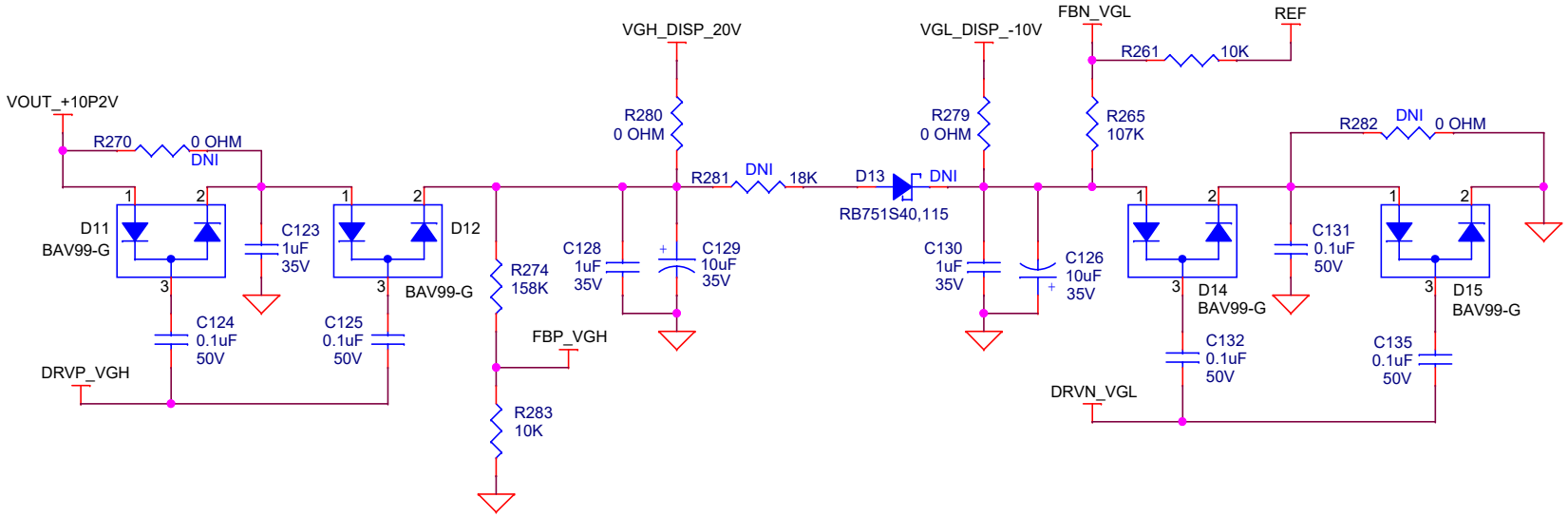
TFT DC-DC Converter Section



TFT DC-DC Converter - Positive and Negative Charge pump



SCH Title : PSOC™ Edge E8 Base Board				
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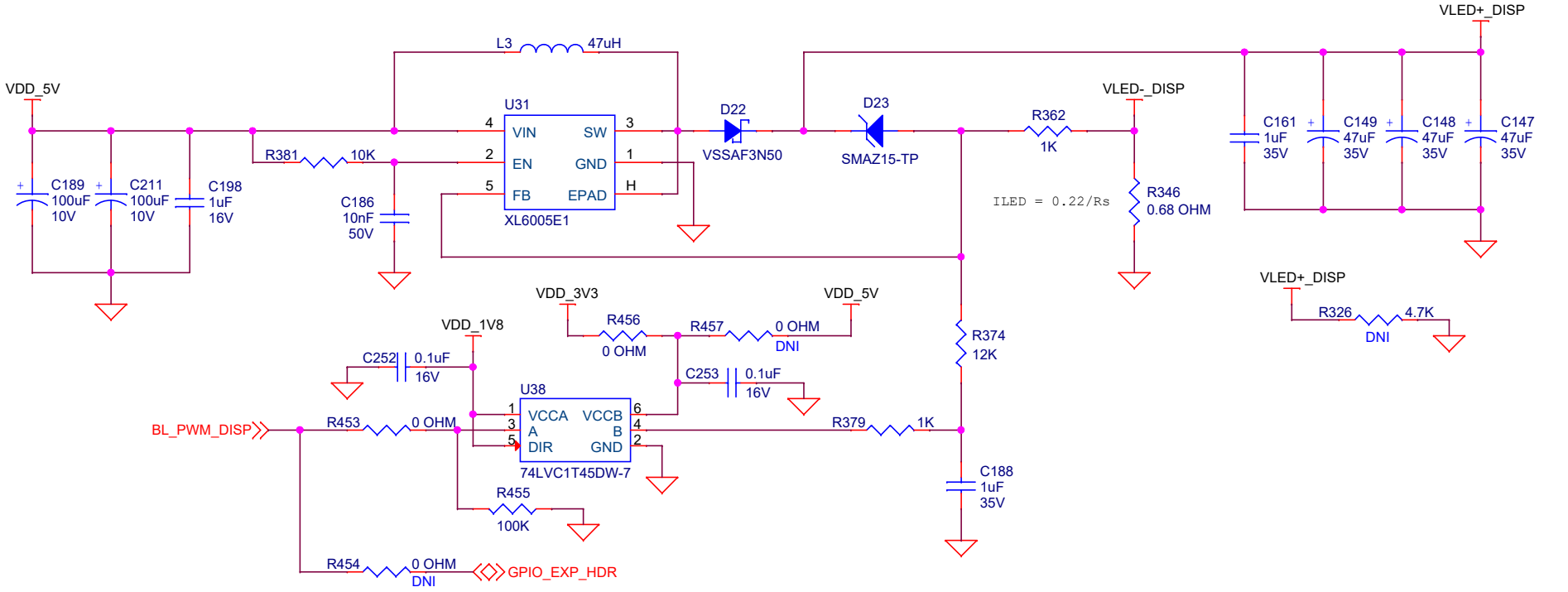
LCD Backlight Driver for 10.1" Custom Display



SCH Title : PSOC™ Edge E8 Base Board				
Page Title: Display Backlight Driver				
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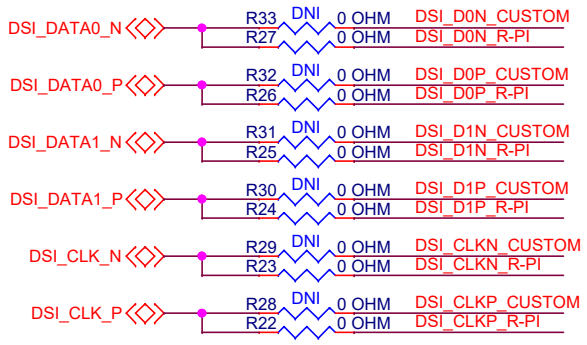
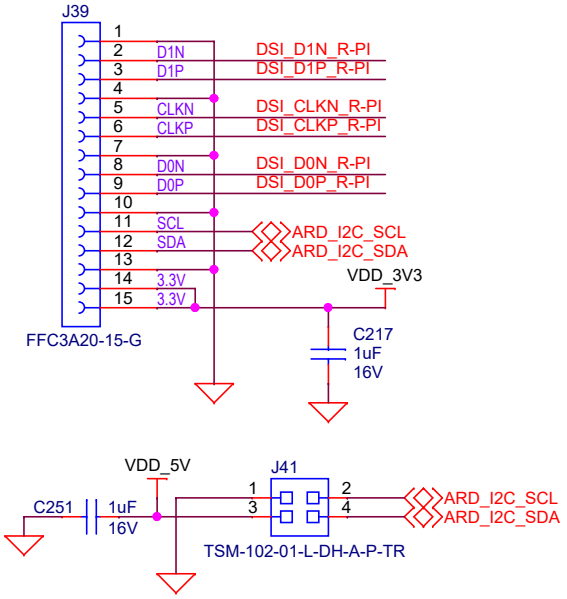
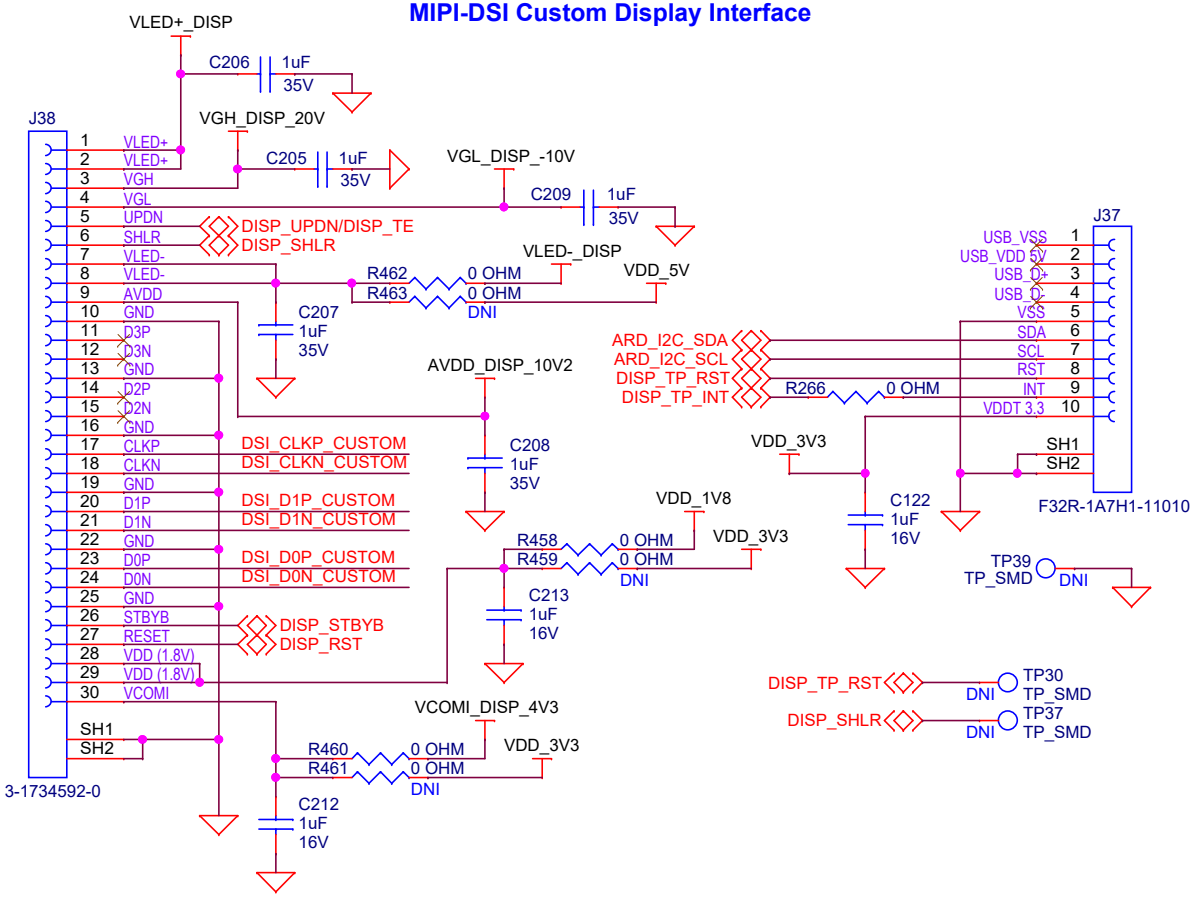
MIPI-DSI I/O Multiplexing



MIPI-DSI R-Pi Display Interface



MIPI-DSI Custom Display Interface



SCH Title : PSOC™ Edge E8 Base Board				
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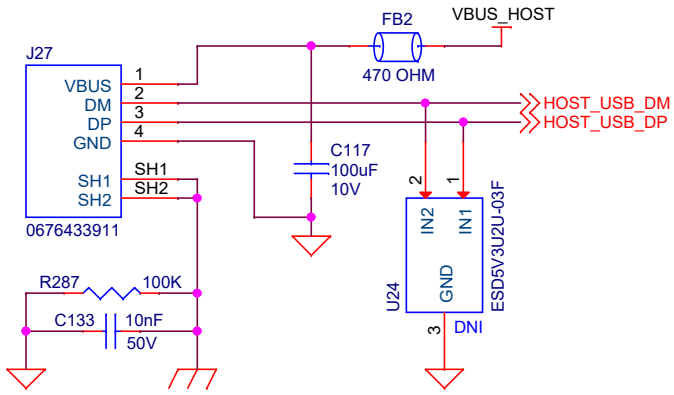
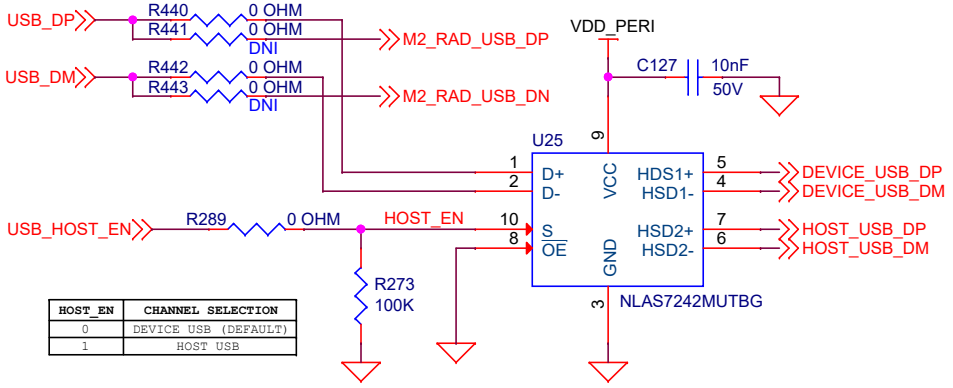
USB Type-A Host

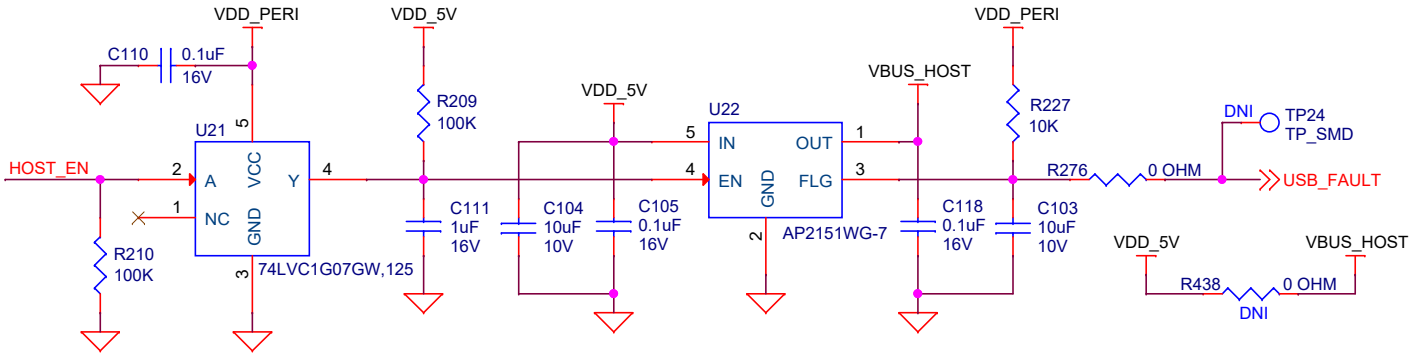


USB Multiplexer (Device and Host)



HOST_EN	CHANNEL SELECTION
0	DEVICE USB (DEFAULT)
1	HOST USB

USB Host VBUS Enable



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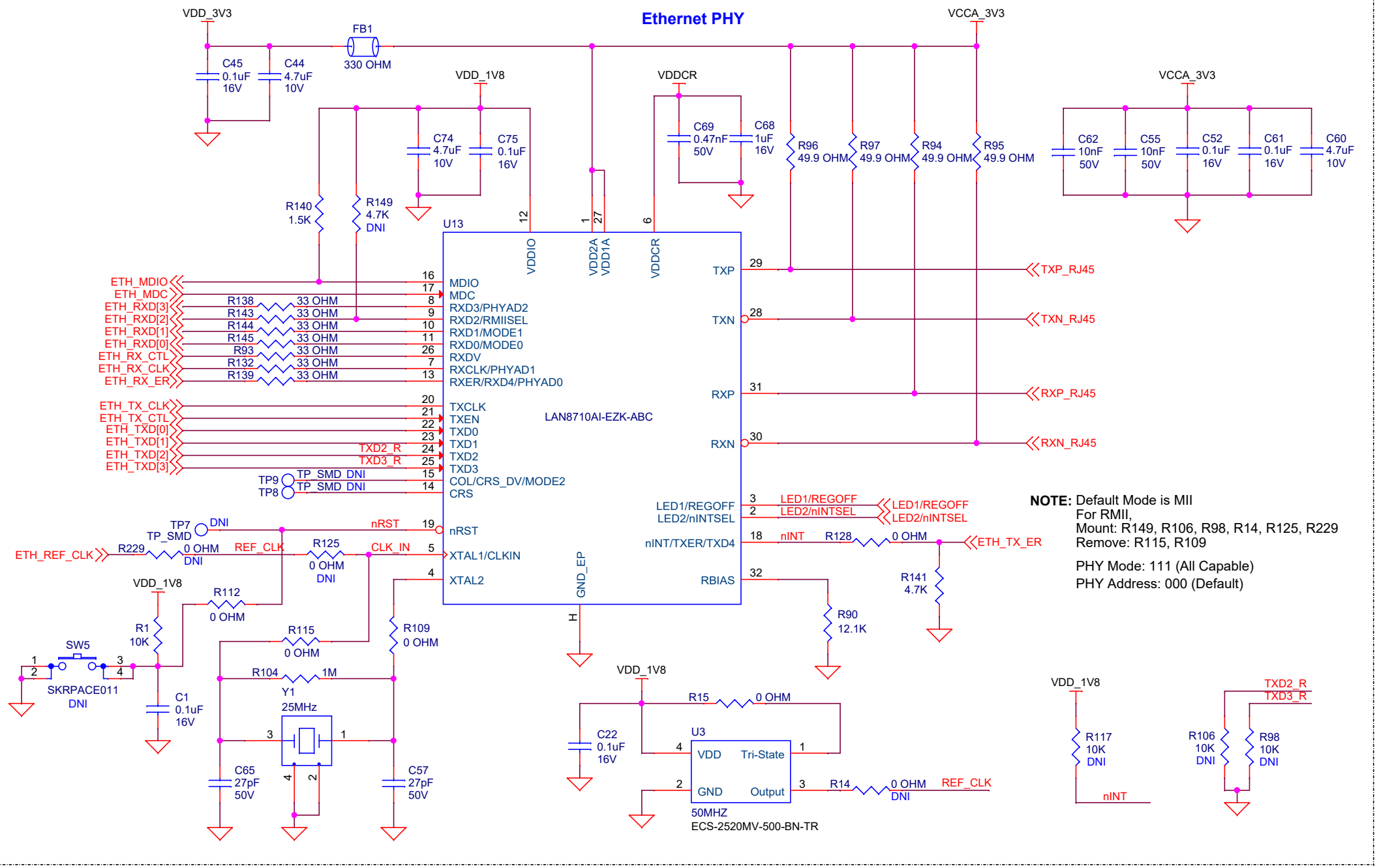
Ethernet PHY



NOTE: Default Mode is MII
For RMII,
Mount: R149, R106, R98, R14, R125, R229
Remove: R115, R109

PHY Mode: 111 (All Capable)
PHY Address: 000 (Default)

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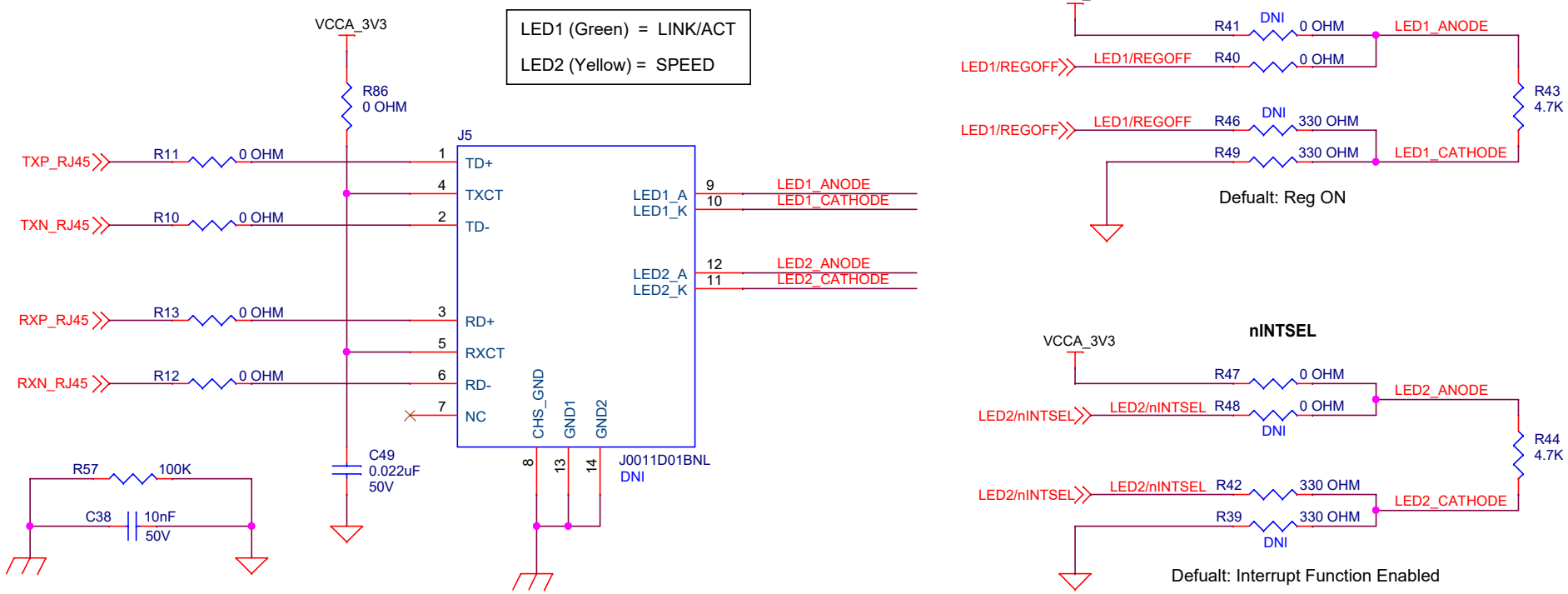
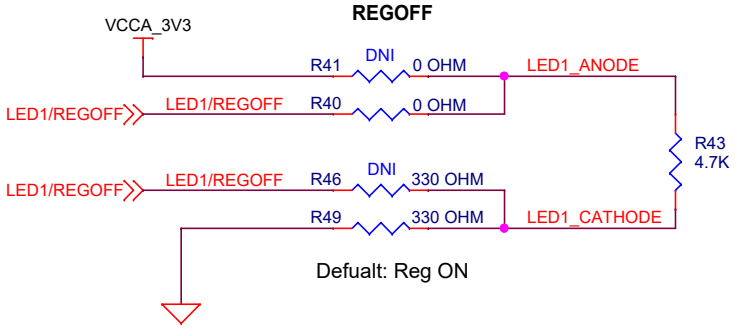
RJ45 MagJack



REGOFF



Defualt: Reg ON

nINTSEL

Defualt: Interrupt Function Enabled

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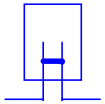
Jumper
151-8010-E

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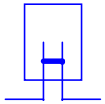
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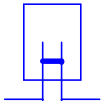
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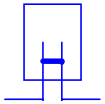
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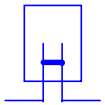
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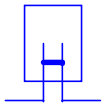
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Jumper
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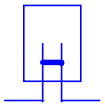
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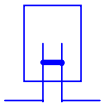

ACC16

Hex Standoffs

970150365

ACC21

970150365

ACC22

970150365

ACC23

970150365

ACC24

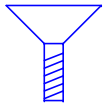
970150365

ACC25

970150365

ACC26

Mounting Screws

97790503211

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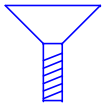
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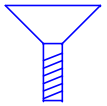
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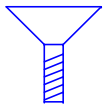
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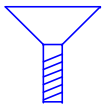
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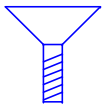
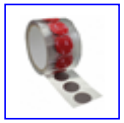

ACC32

Acrylic Overlay
CapSense Overlay

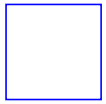
Color: Clear, Transparent
Finish: Matte
Dimensions:
Length = 47.94mm
Height = 43.94mm
Thickness = 1mm

ACC17

Double Sided Tape
TAPE

ACC18

QR Code
QR Code Label

ACC19

PCBA Label
PCA Label

ACC20

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REVISION HISTORY

REV	DESCRIPTION OF CHANGE	ORIG. OF CHANGE	DATE
0.1	Initial Draft	RISR	2023/04/01
1.0	1. Kit MPN updated 2. Power Switch section added. 3. Variable Buck feedback resistor values updated. 4. KP3 Secondary UART and JTAG support added. 5. Provision for bypassing I2C Level trans added. 6. Removed M0 prog/debug option. 7. SoM connector J28 pinout updated: a. Declustered Ethernet and ARD pins. b. Proximity, CAPSENSE_INT pin added. 8. I2C_INT1 multiplexed with 6-axis IMU INT1 & INT2. 9. Pin multiplexing for Radio updated 10. Proximity connector added. 11. Added provision to bypass the ARD level trans and connect directly to ARD Hdr. 12. SPI pins routing provision to J4 Hdr. Given for -026 CAN/LIN shield support. 13. CTB/GPIO pins, CAPSENSE_INT pins routed to Exp. Hdr. 14. Pullup added & pulldown removed on Ethernet PHY RXD2/RMIISEL signal 15. Back annotated 16. J6 changed to 8-pin header, J7 changed to 12-pin header	RISR	2023/07/17
2.0	1. PDM CLK/Data signals are swapped on SoM connector. 2. Ext. I2S pins connected through 3.3V level translator. 3. Multiplexed SD_CLK & SD_CMD to Exp. header 3. 4. Updated IMU (BMI270) + Mag (BMM350) sections. 5. BOOT0 pin removed from Boot Sw. and used it for SD_CARD_DET. Previously used SD_CARD_DET pin is made NC on SoM connector. 6. XRES pullup made DNI. 7. R353 made as DNI. 8. Added R439 on BT_HOST_WAKE.	RISR	2023/10/23
3.0	1. User button debounce capacitors C229, C230 made populated 2. Removed connections CTB/GPIO1, CTB/GPIO2, CTB/GPIO3 from Exp Hdr 1 (J6) 3. Added 1.8V (with C246) and GND connections to Exp Hdr 1 (J6) 4. Replaced PDM mics with new part: IM72D128V01XTMA1 5. Multiplexed USB connection to M.2 Radio module using R440-R443 6. Provided optional POT connection to the LPCOMP input P10.4 (BT_HOST_WAKE) through R444 7. I3C support provided for Magnetometer (U4) by default, multiplexed with I2C as DNI 8. AMIC signal processing ckt. updated 9. J41 connector added for R-Pi display power & I2C interface 10. Multiplexed BL_PWM_DISP to Exp Header 1 (J6.4) through R453, R454 11. Made R-Pi display interface as default connection and 10-inch custom DSI as DNI 12. R342, R329 made as DNI 13. Alternate Serial Interface Configuration table updated 14. Level translator (U38) added for backlight control in LCD Backlight Driver section 15. Added multiplexing resistors R458, R459, R460, R461 to select between 1.8V/3.3V/4.3V for display	RISR	2024/06/10
4.0	1. J41 changed to dual row header 2. Changed 15-pin R-Pi display connector (J39) to vertical mount 3. Support for 1.43-inch display through 30-pin custom display connector 4. C229, C230 debounce capacitors made as DNI	RISR	2025/01/13
5.0	1. Cosmetic changes and clean-up of passive component properties	RKPM	2025/08/07

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