

EXPANSION BOARD FOR THE INTEL® JOULE™ COMPUTE MODULE

BPAGE DRAWING
consumer_fab4.sch_1.1
Fri Aug 12 10:48:14 2016

COVER PAGE					
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ENGR_APVDdesign team	2016				
VARIANT:			DOCUMENT_NUMBER	REV	PAGE
PRIMARY			CDI 567365	1.12	1/23

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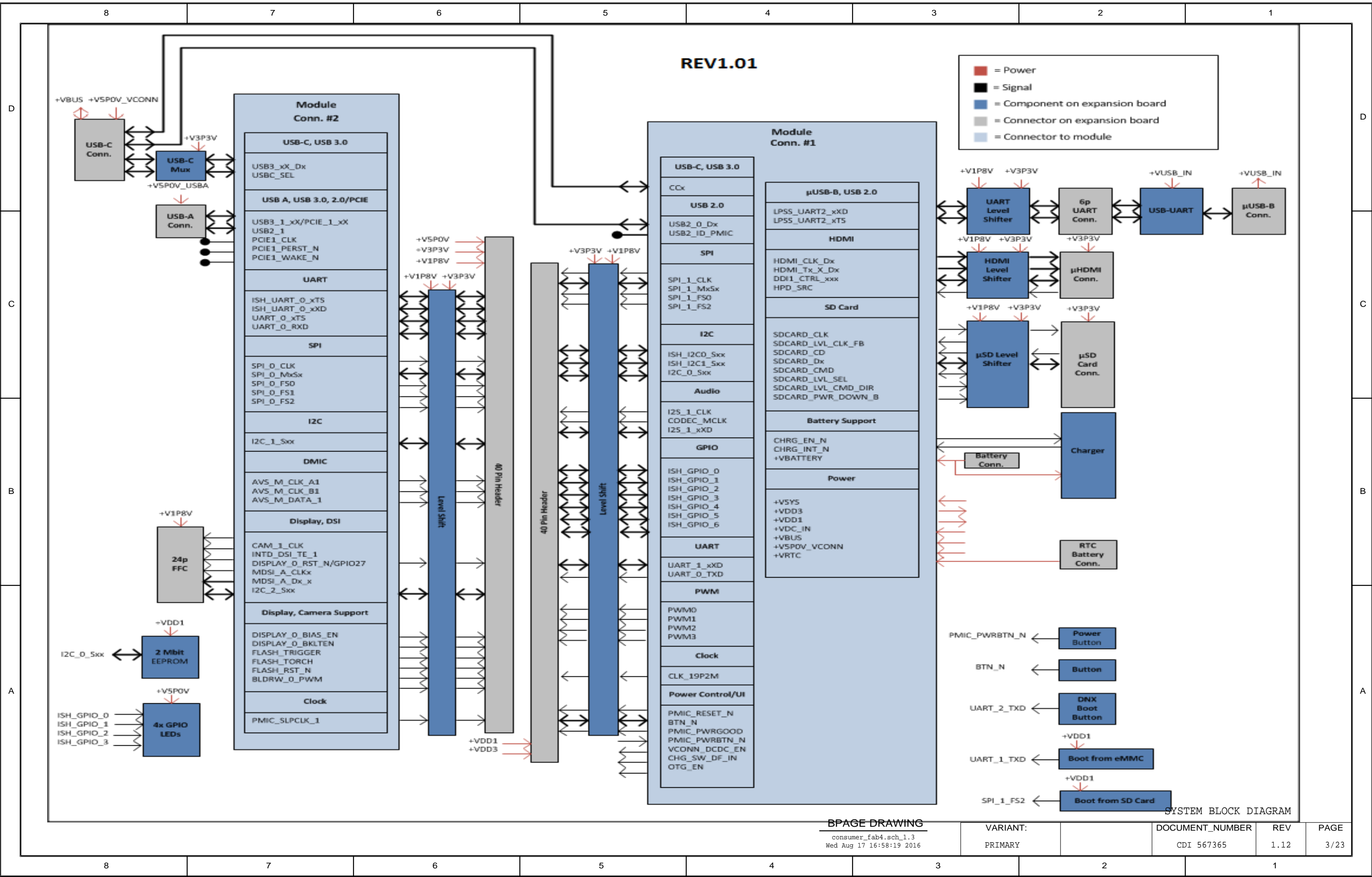
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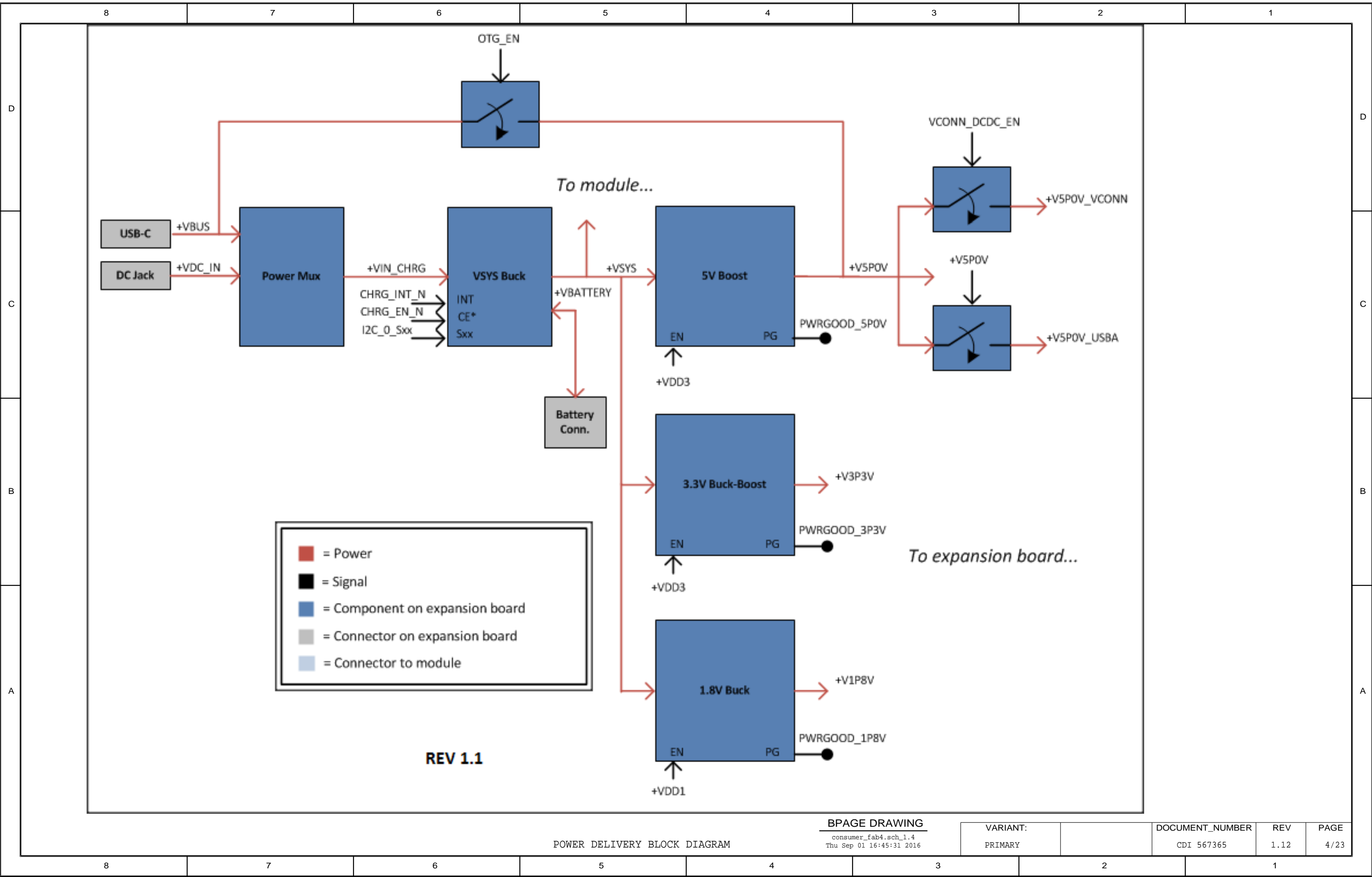
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POWER DELIVERY BLOCK DIAGRAM

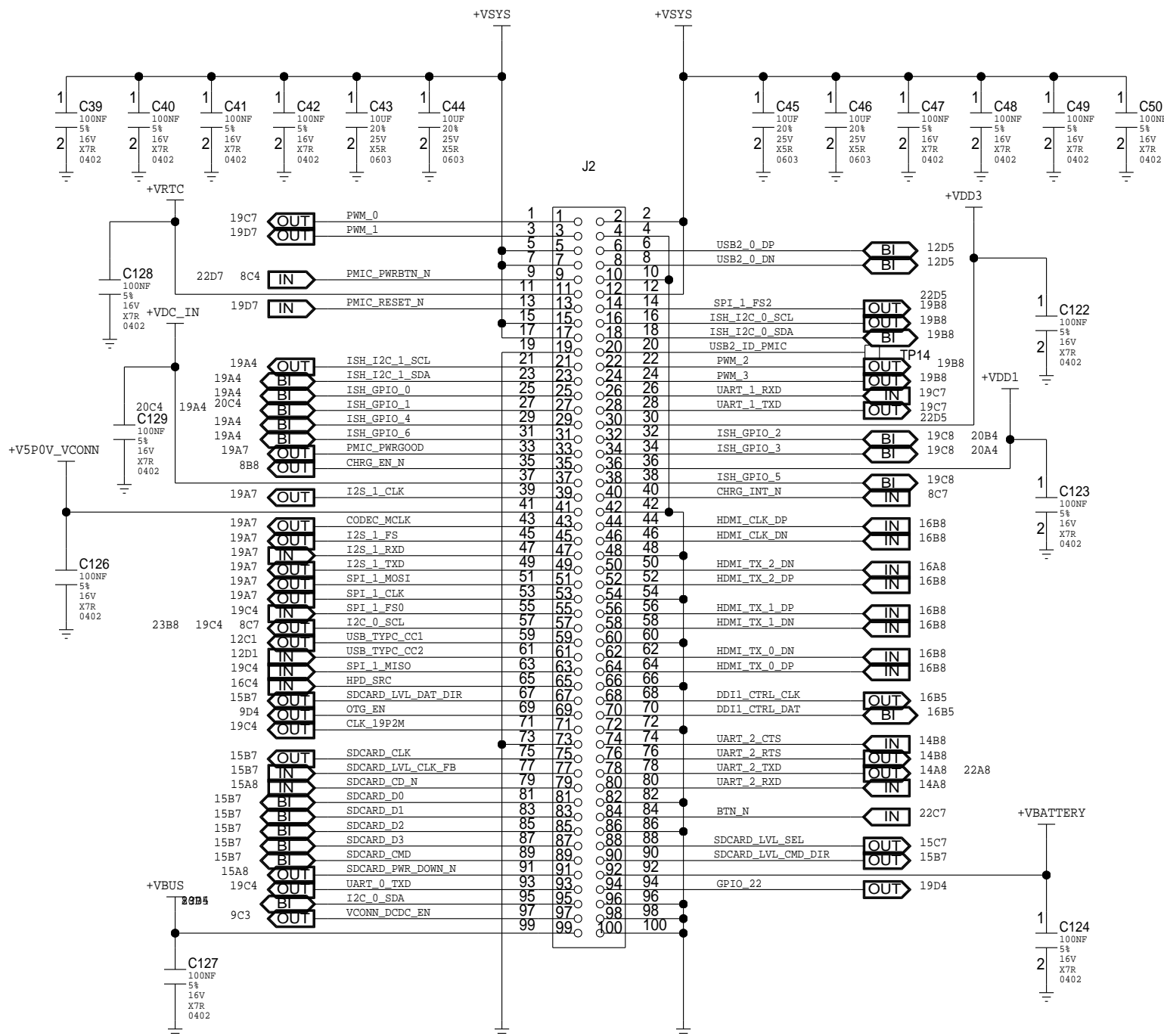
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consumer_fab4.sch_1.4
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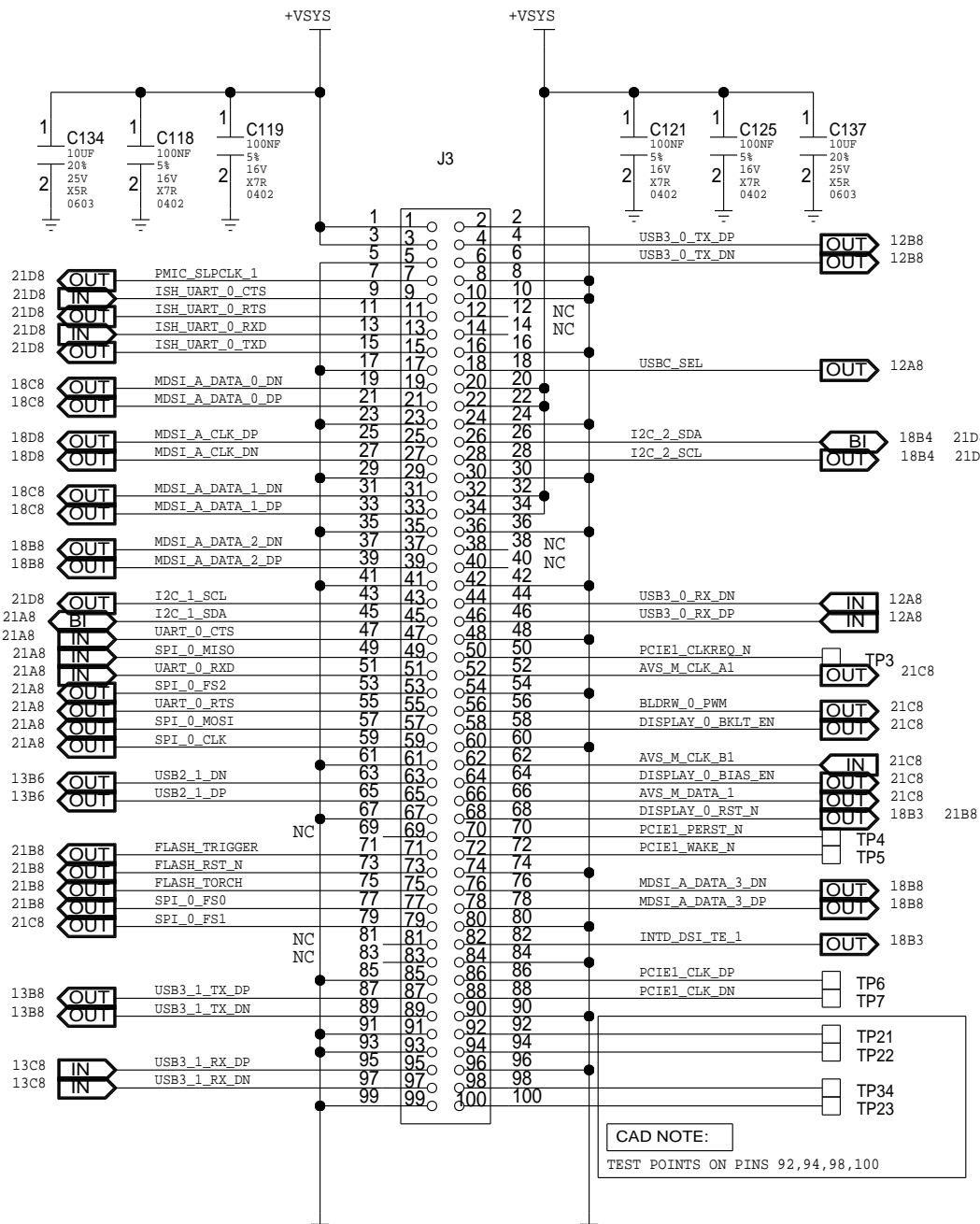
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CONNECTOR\RECEPTACLE FOR MODULE

CONNECTOR\RECEPTACLE FOR MODULE



DF40C-100DS-0.4V(51)



DF40C-100DS-0.4V(51)

CAD NOTE:
PLACE TEST POINTS ON SECONDARY SIDE

CAD NOTE:
TEST POINTS ON PINS 92,94,98,100

BPAGE DRAWING

MODULE CONNECTOR INTERFACE

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Fri Aug 12 10:47:57 2016

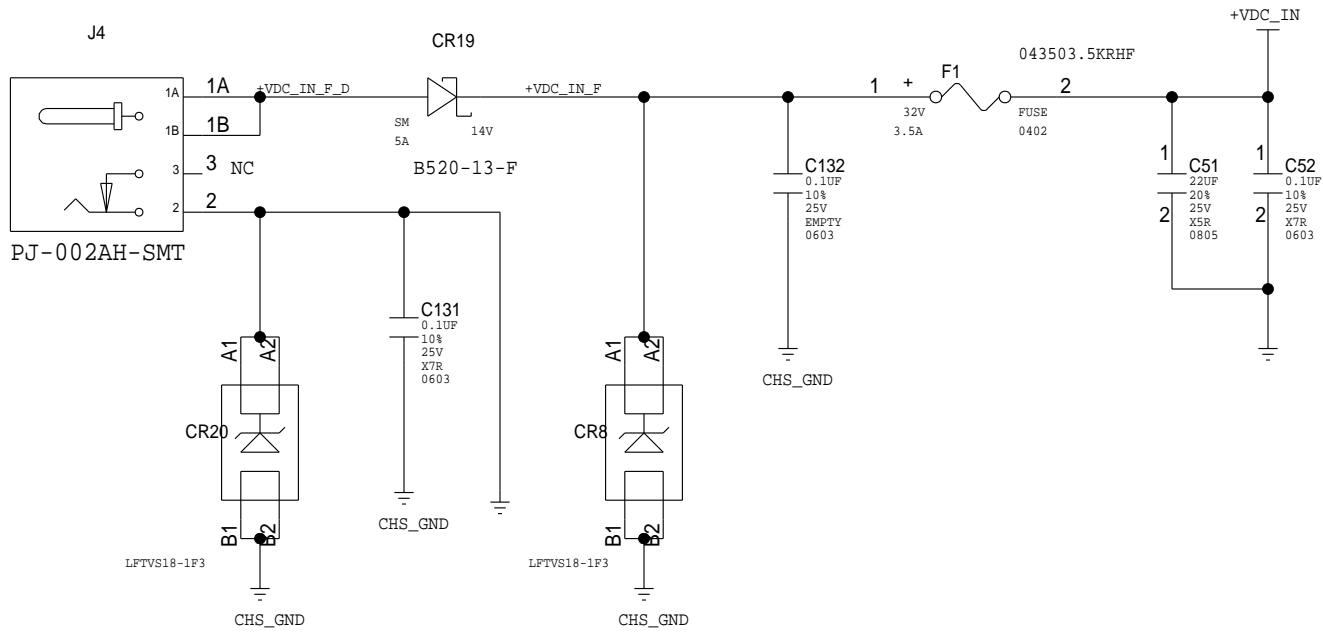
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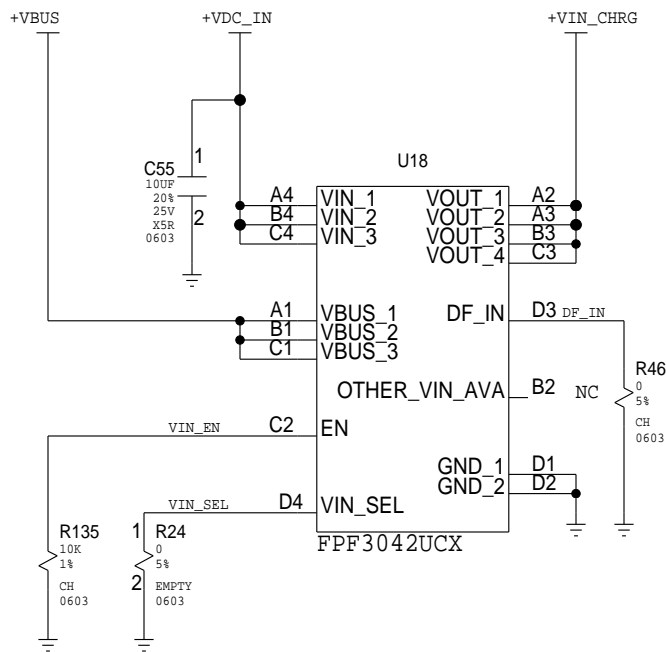
DC JACK



INPUT POWER MUX

DESIGN NOTE:

+VDC_IN IS DEFAULT WHEN +VBUS AND +VDC_IN ARE PRESENT

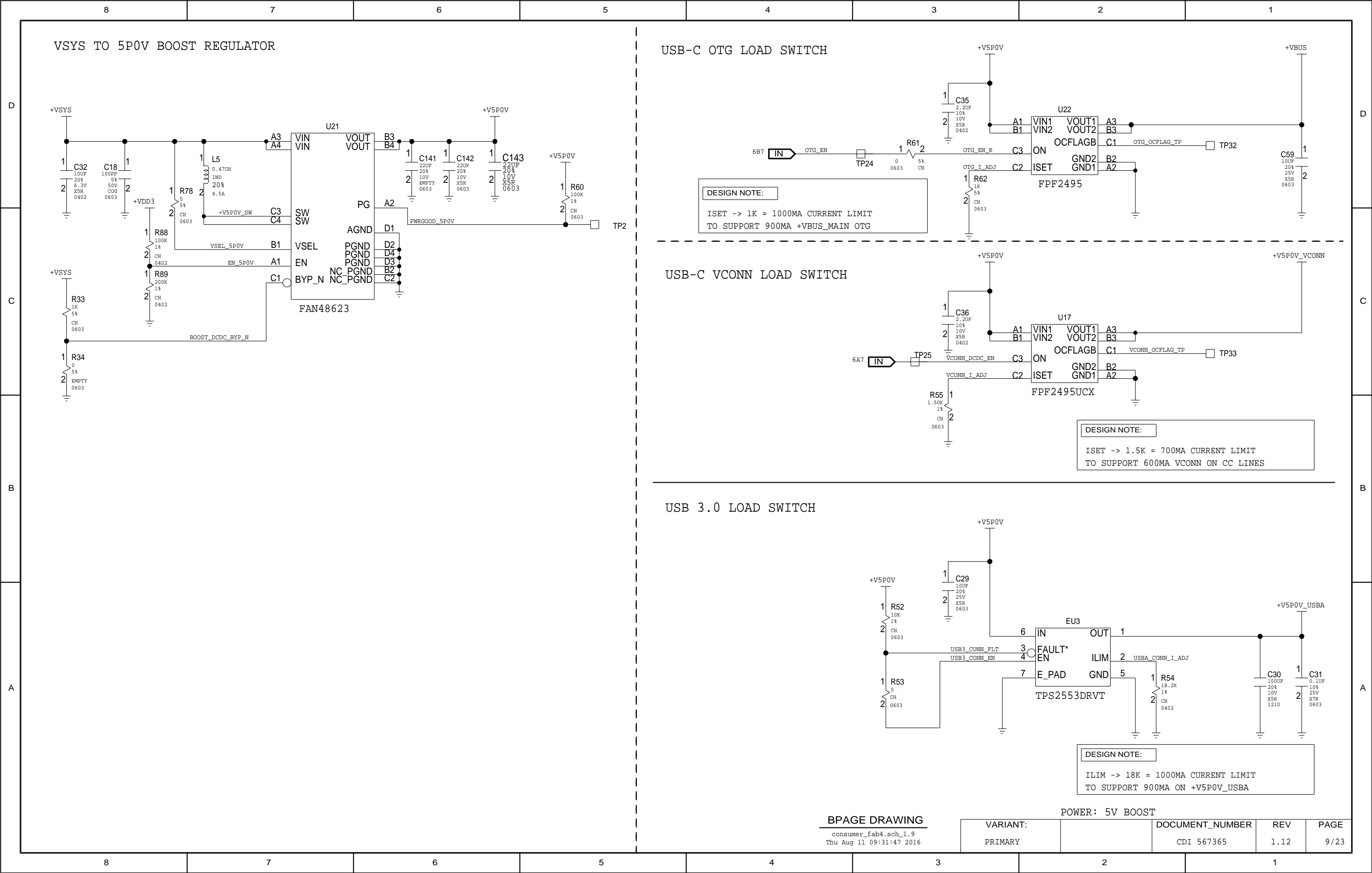


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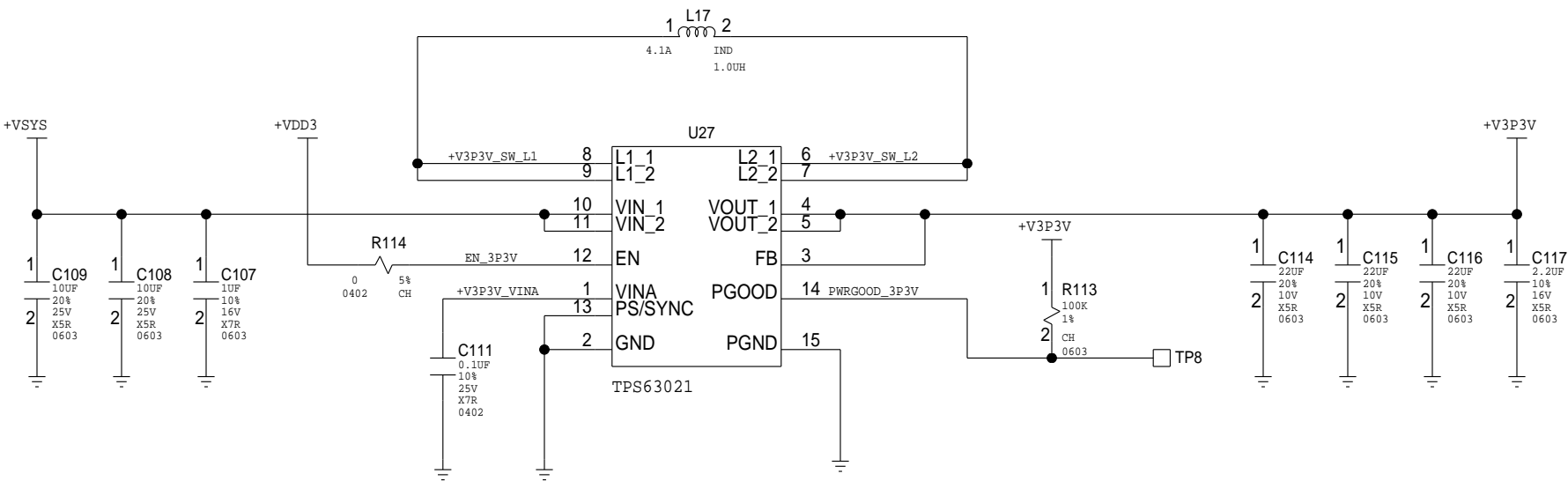
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POWER: DC JACK & INPUT POWER MUX

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VSYS TO 3.3V BUCK-BOOST REGULATOR



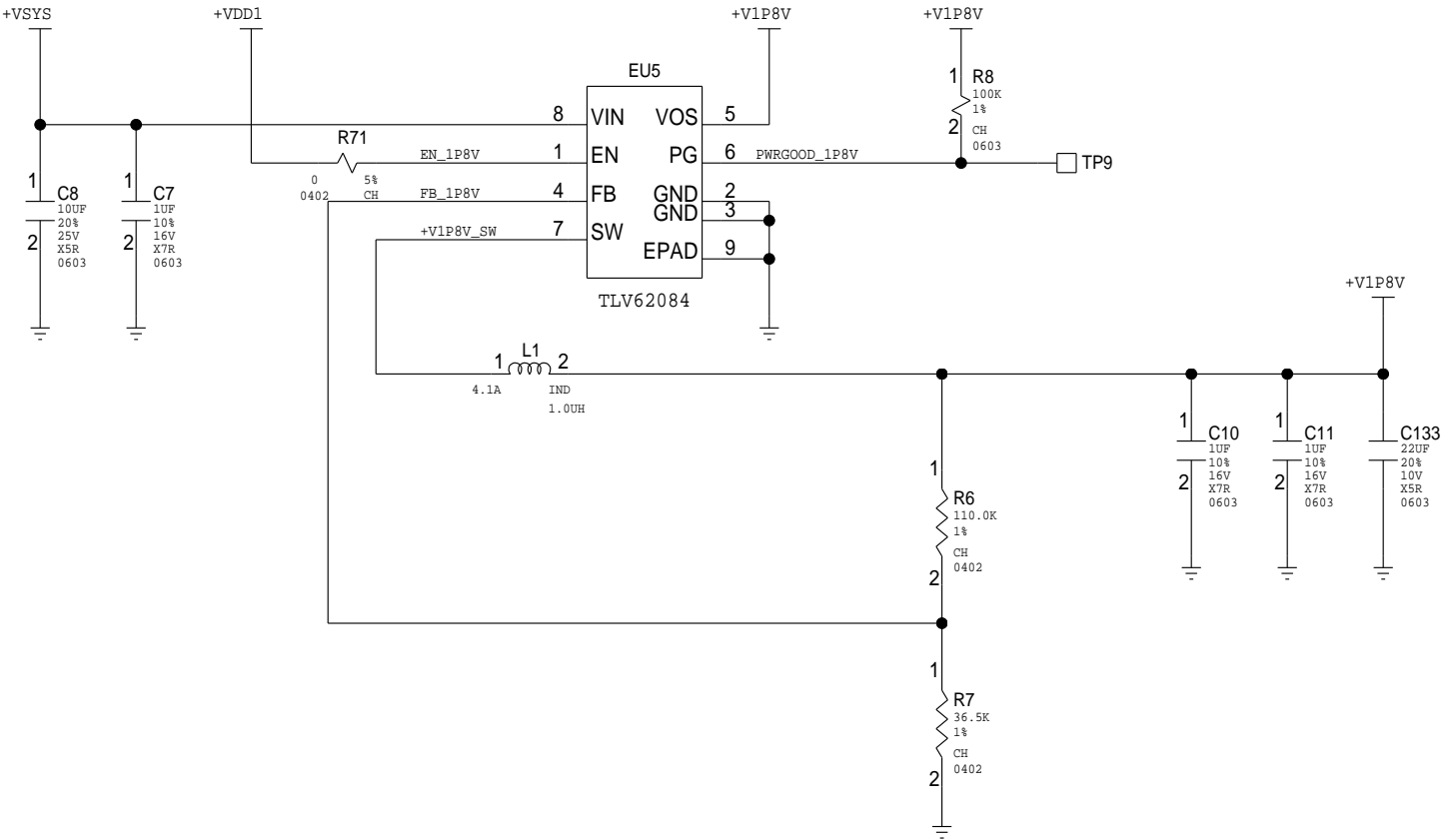
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POWER 3P3V BUCK-BOOST

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VSYS TO 1.8V BUCK REGULATOR



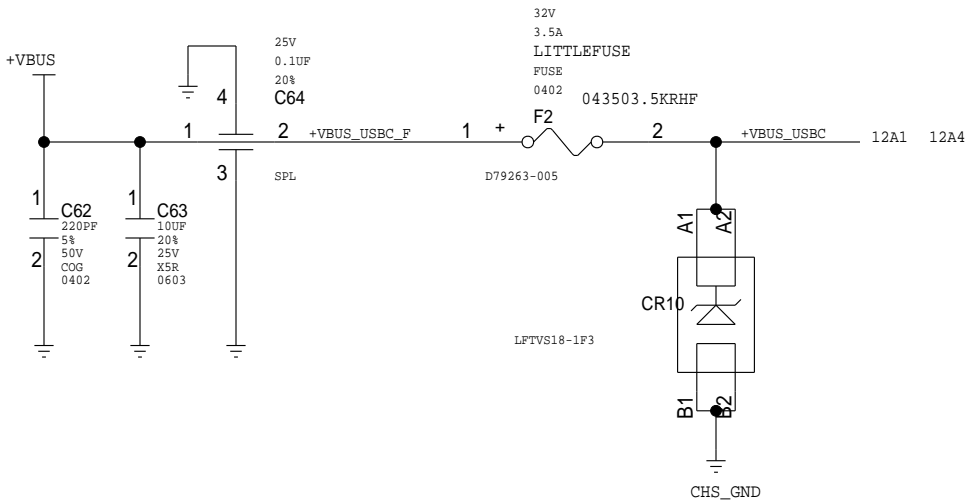
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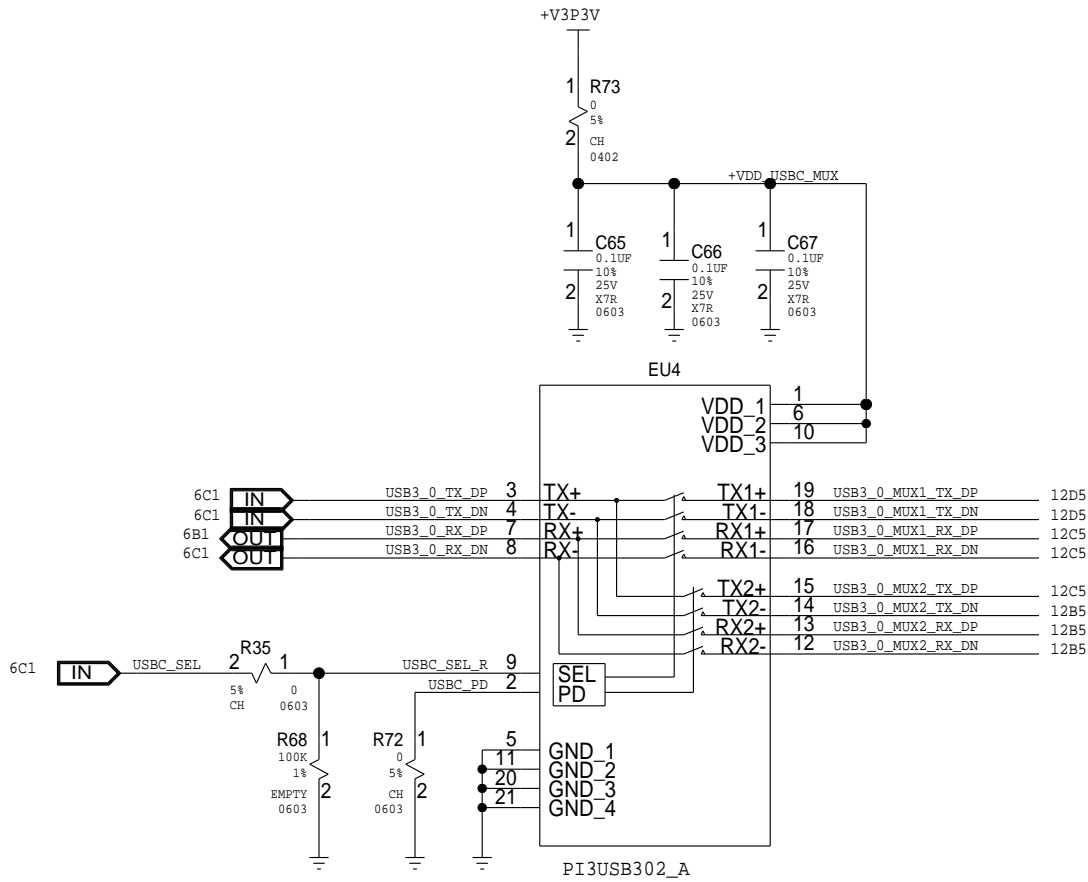
POWER: 1P8V BUCK

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TYPE-C CMC, ESD FILTERS, DIODE PROTECT.



TYPE-C MUX



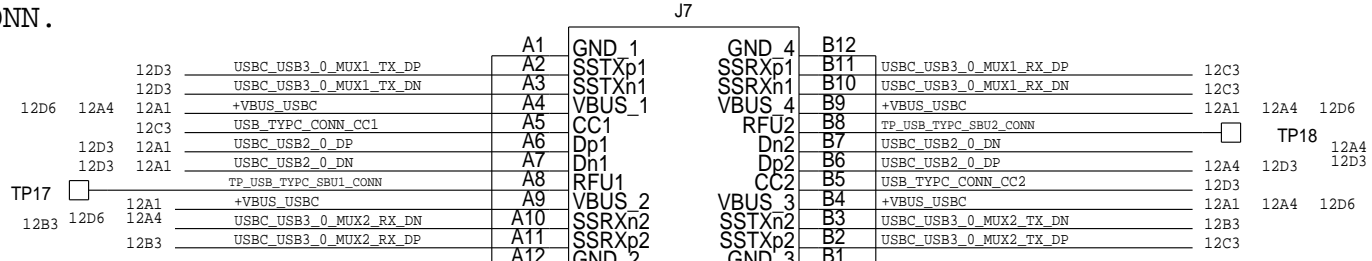
TYPE-C CONN.

CAD NOTE:

'USB-C' SILKSCREEN NEAR J7

CAD NOTE:

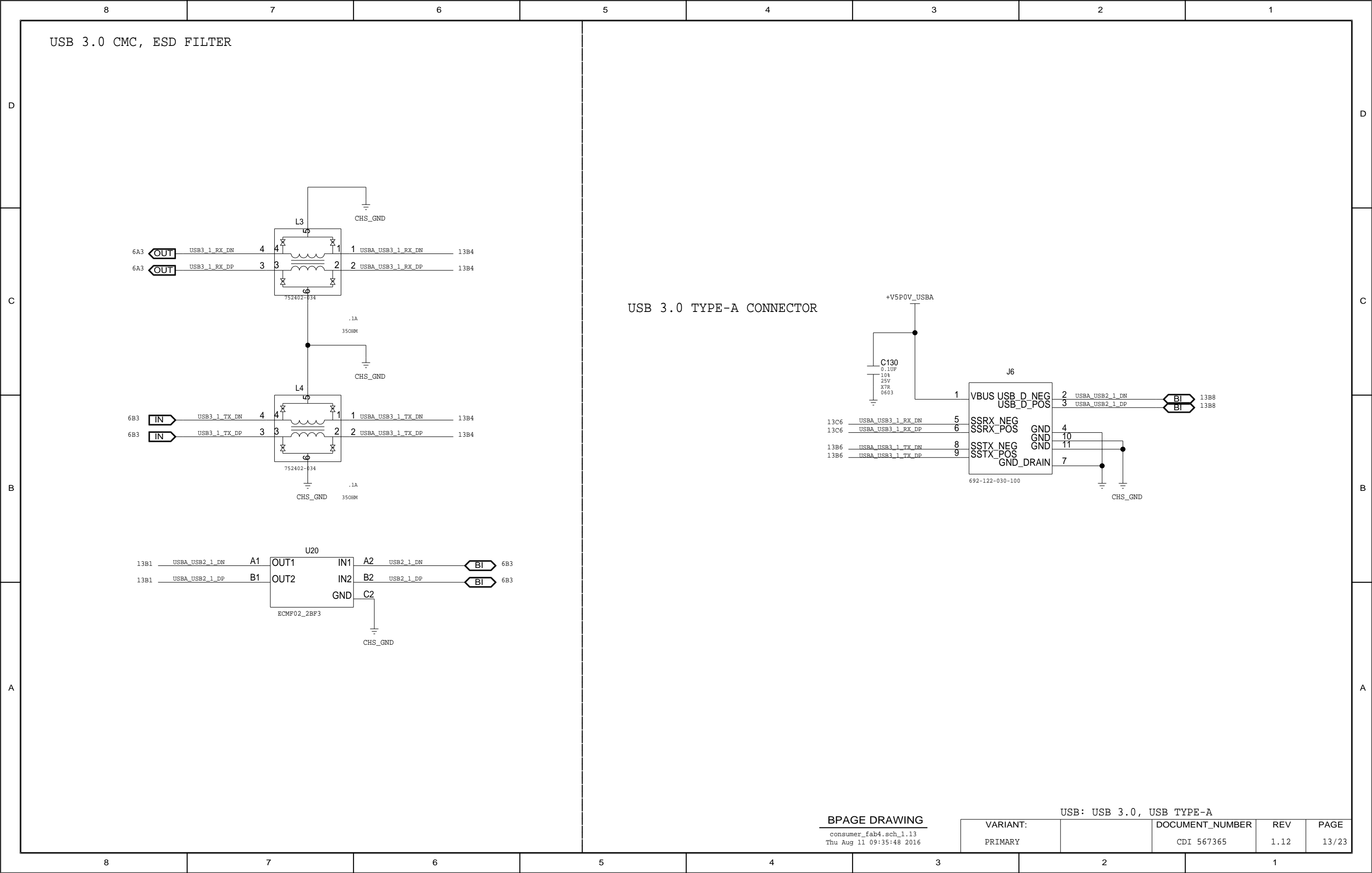
FOR BETTER CURRENT PATH
M5, M6, M7 AND M8 PINS
ARE INTENTIONALLY DISCONNECTED
THEY ARE CONNECTED TO
M1, M2, M3 AND M4 ON SHIELD



BPAGE DRAWING

consumer_fab4.sch_1.12
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MICRO-SD LEVEL SHIFTER AND ESD, EMI FILTERING

MICRO-SD CONN.

D

C

B

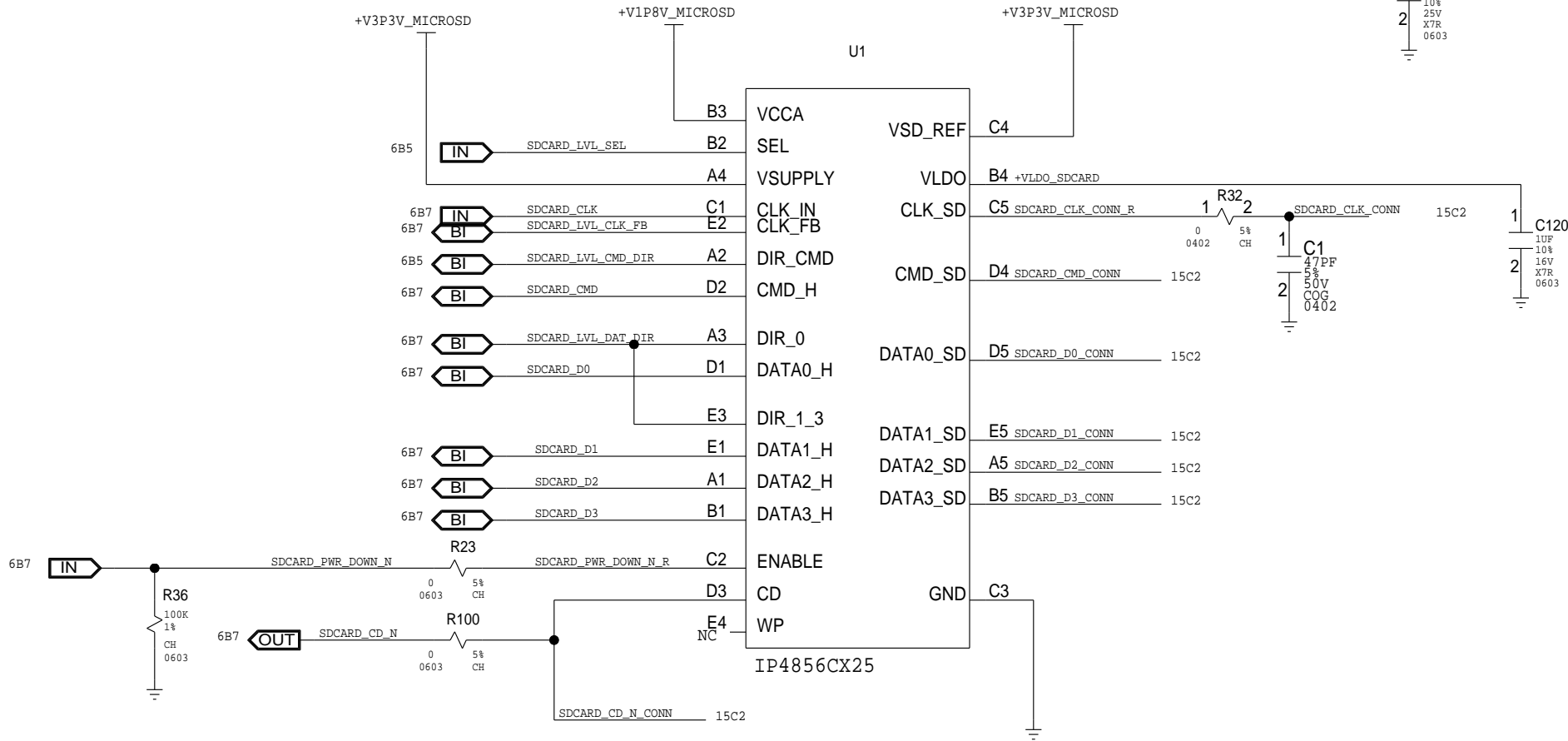
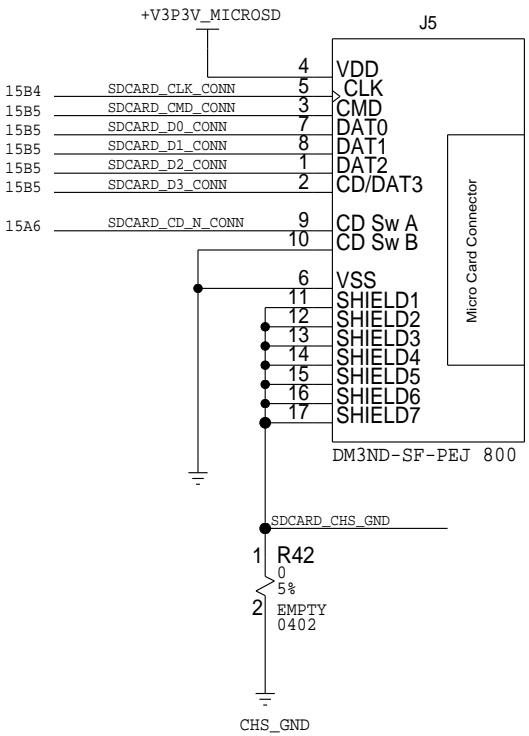
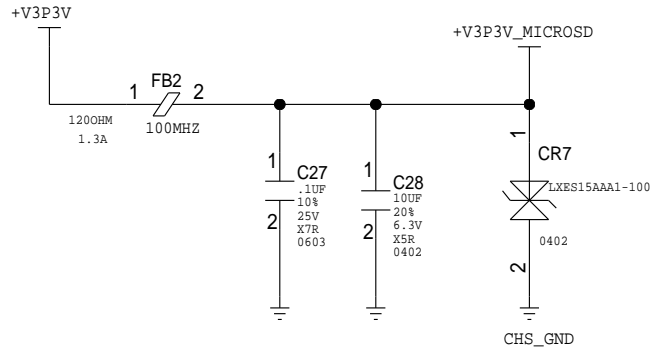
A

D

C

B

A



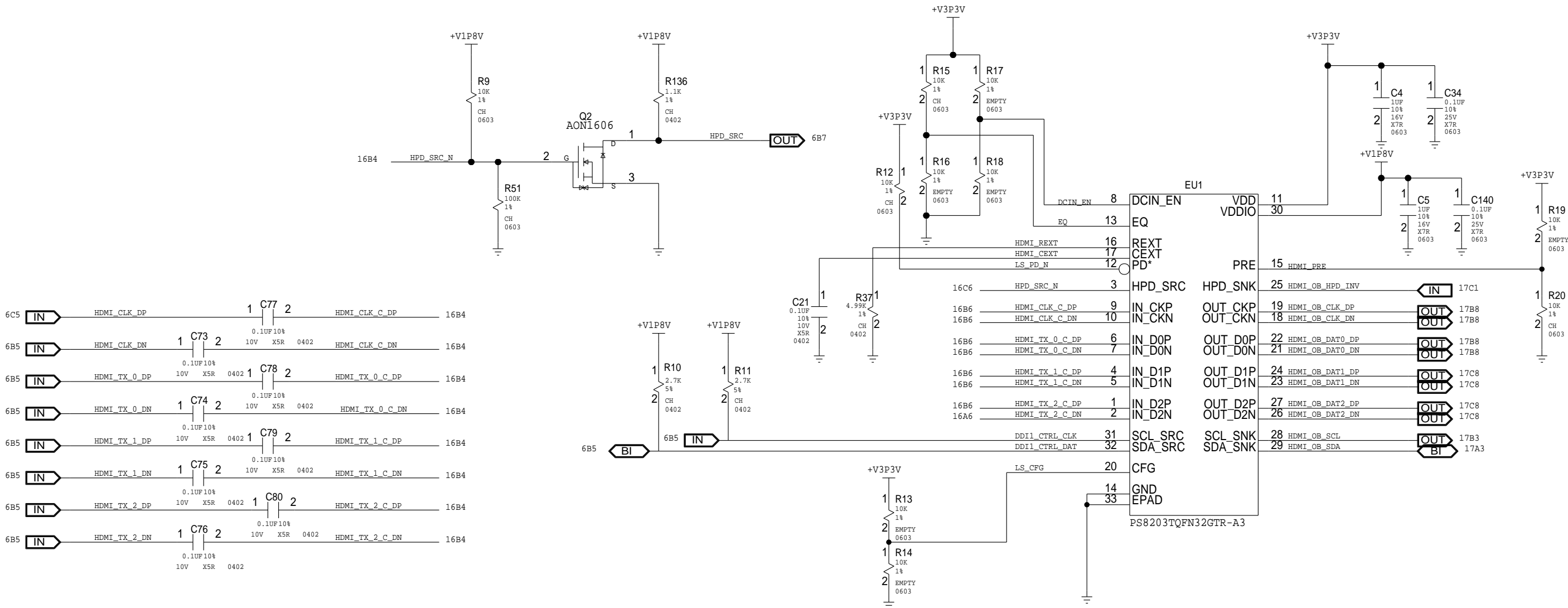
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consumer_fab4.sch_1.15
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MICRO-SD: MICRO SD LEVEL SHIFTER & CONN

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HDMI LEVEL SHIFTER AND REDRIVER



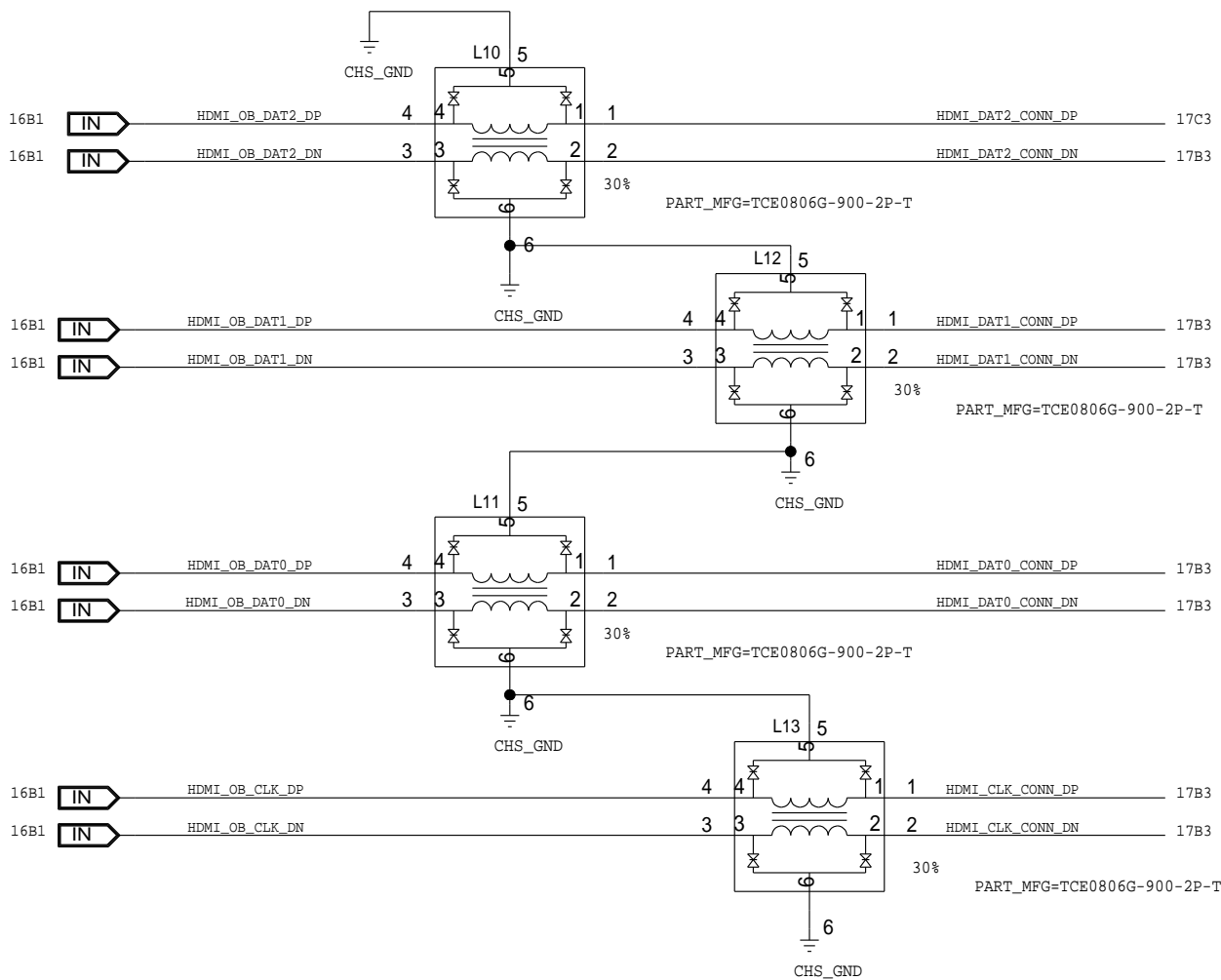
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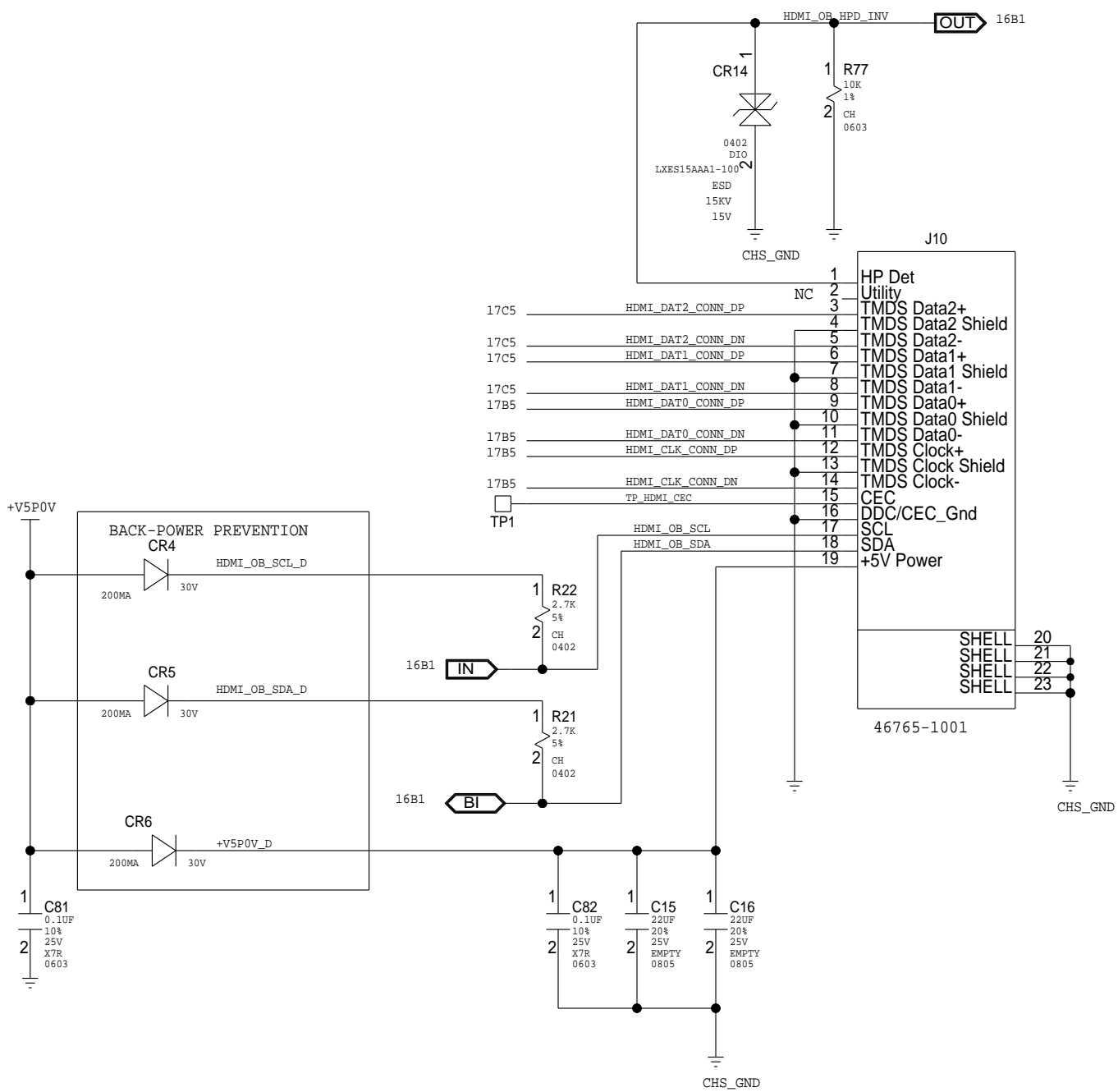
HDMI: HDMI LEVEL SHIFTER

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HDMI EMI FILTERING



MICRO-HDMI CONN.



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consumer_fab4.sch_1.17
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HDMI : MICRO-HDMI CONN

VARIANT:	DOCUMENT_NUMBER	REV	PAGE
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D



2



B

A

DSI: MIPI DISPLAY CONN

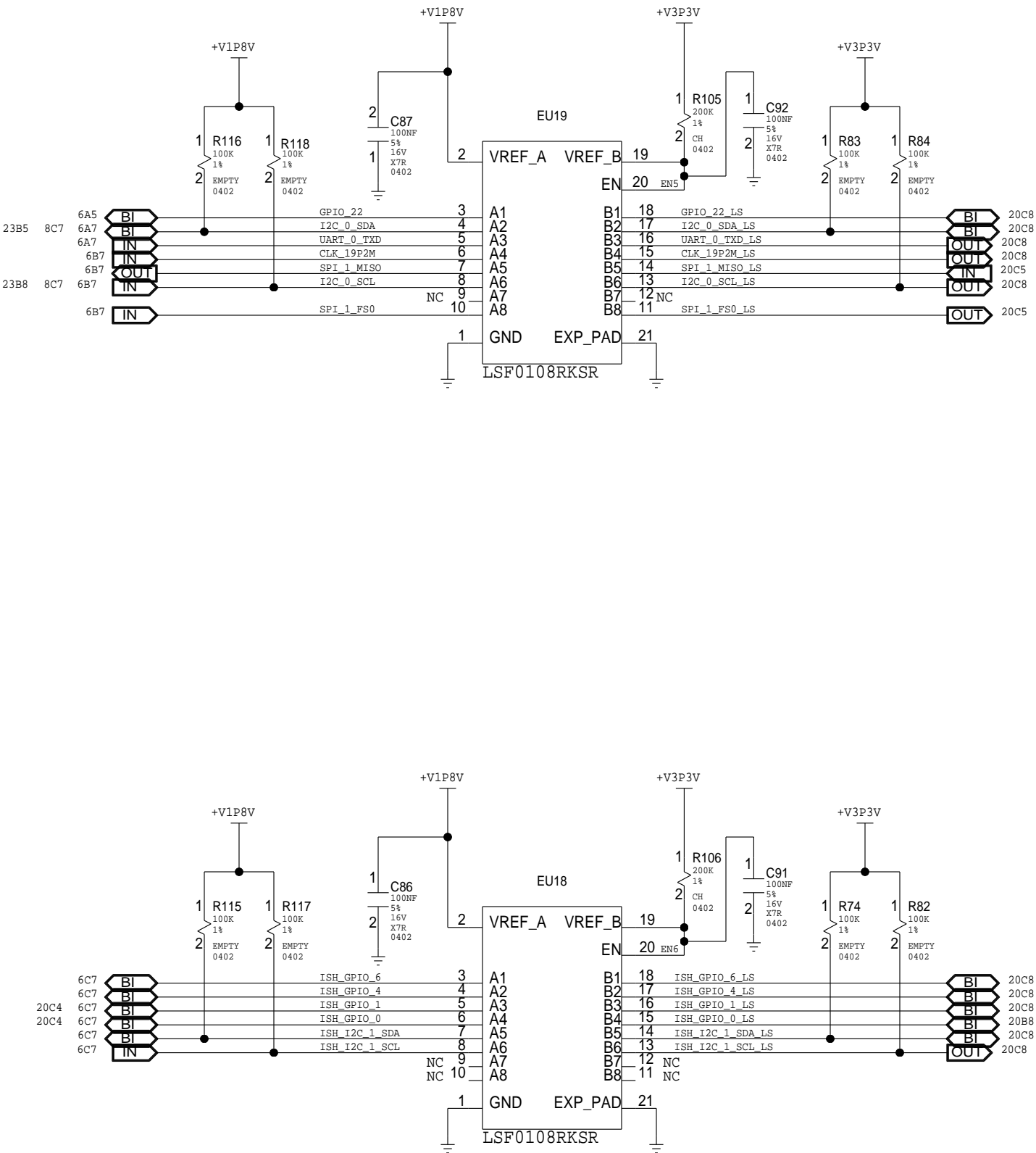
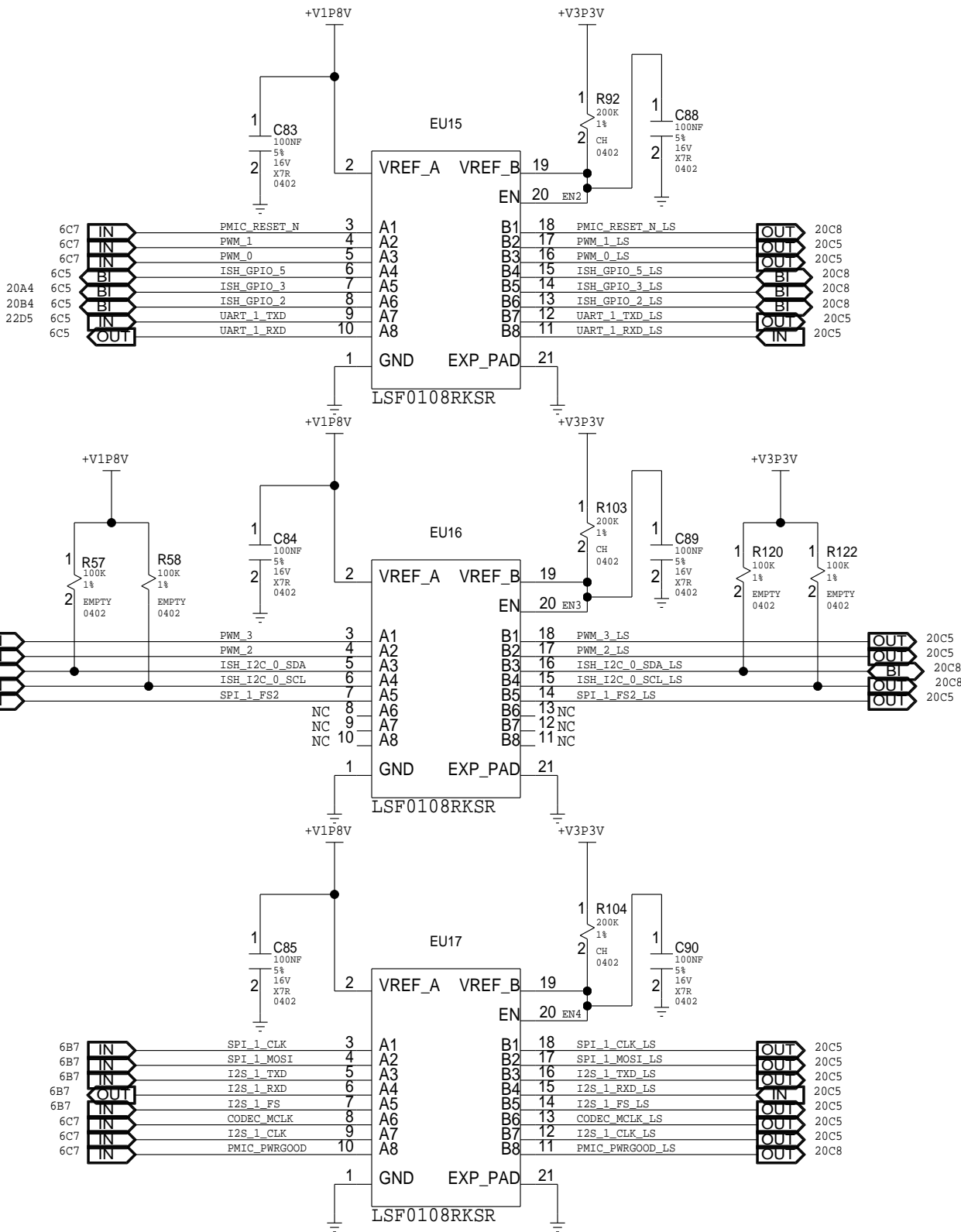
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BREAKOUT #1 LVL SHIFT



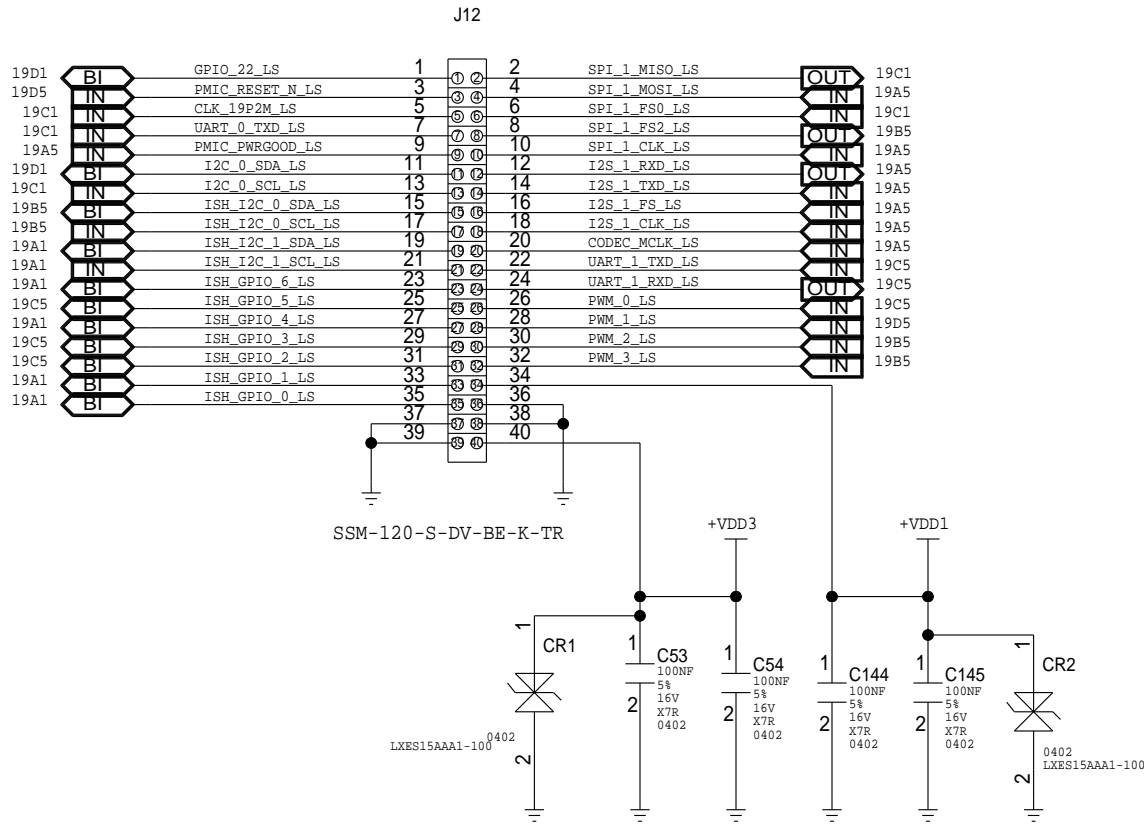
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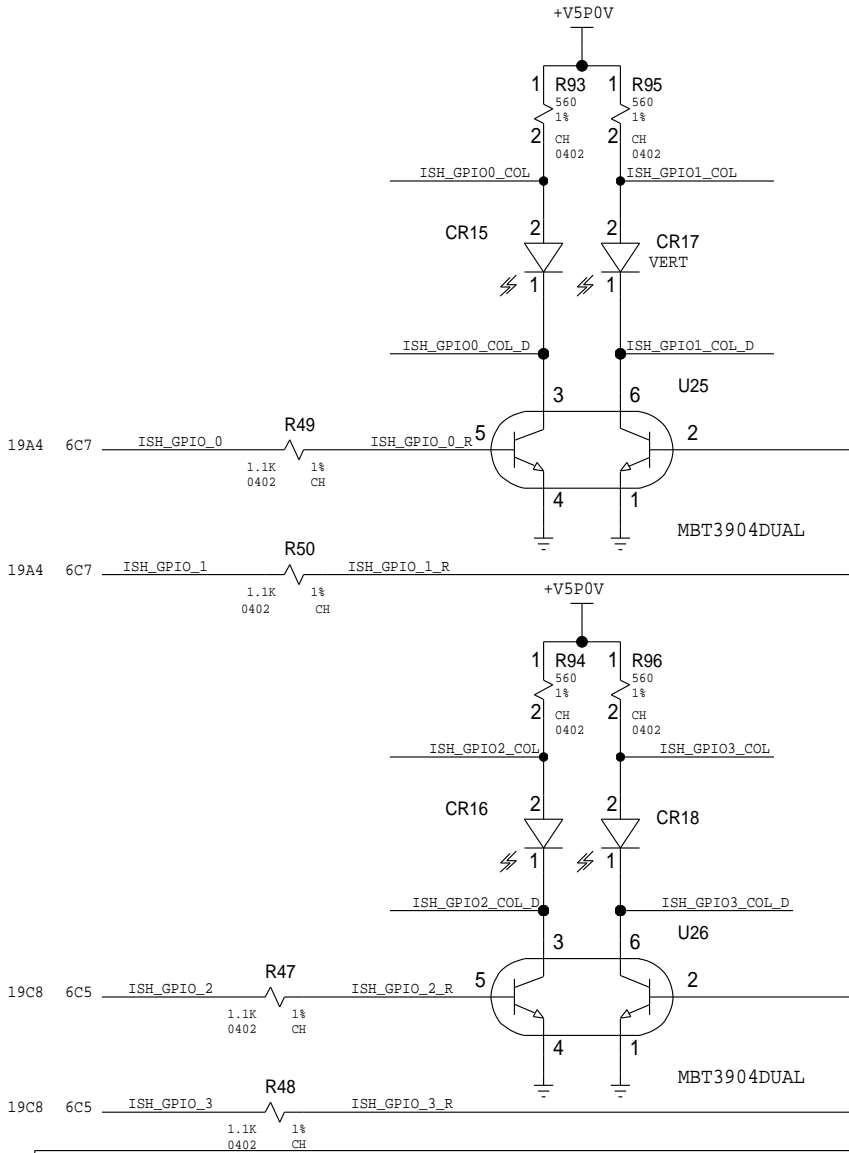
I/O: BREAKOUT #1 LEVEL SHIFTERS

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40P I/O BREAKOUT



GPIO LEDS (1 NIBBLE).



CAD NOTE:

PLACE CR15 NEAR J12.21, PLACE CR16 NEAR J12.25
PLACE CR17 NEAR J12.23, PLACE CR18 NEAR J12.27

CAD NOTE:

'GPIO0', 'GPIO1', 'GPIO2', 'GPIO3' SILKSCREEN NEAR
CR15, CR17, CR16, CR18, RESPECTIVELY

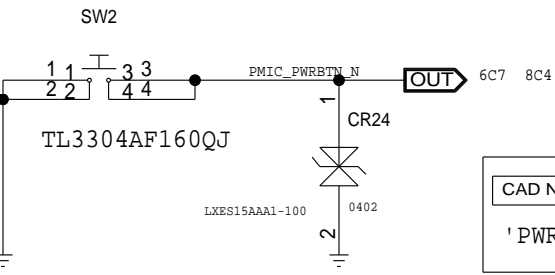
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consumer_fab4.sch_1.20
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I/O: BREAKOUT #1 LEDS

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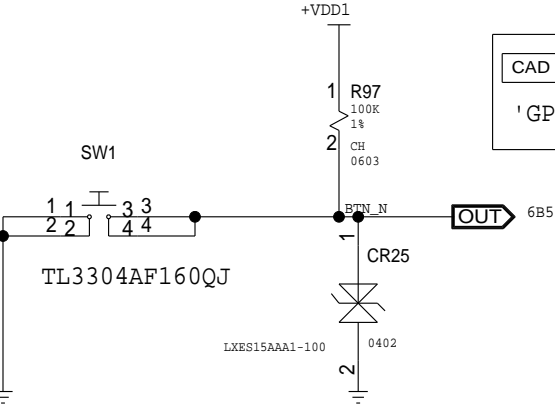
POWER BUTTON



CAD NOTE:

'PWR' SILKSCREEN NEAR SW2

GENERAL PURPOSE BUTTON

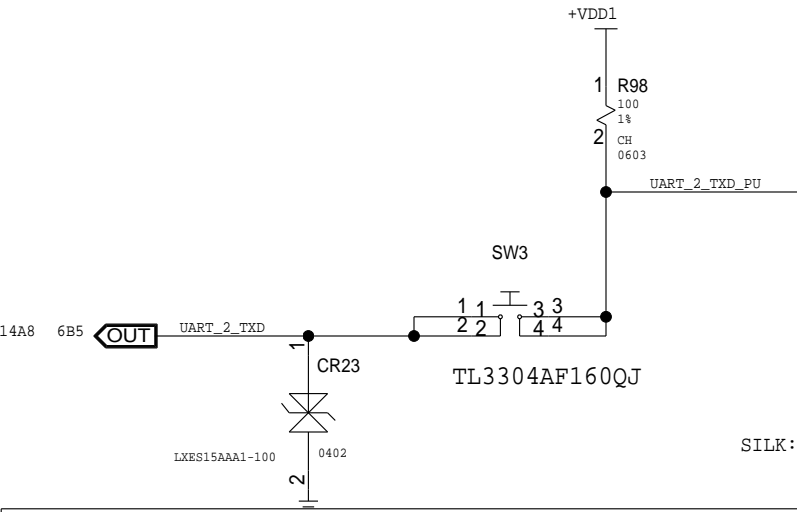


CAD NOTE:

'GP BTN' SILKSCREEN NEAR SW1

SILK: BUTTON

BOOT FROM DNX



SILK: DNX BOOT

DESIGN NOTE:

BOOT FROM DNX (LOAD FW FROM USB MEM. DEVICE)

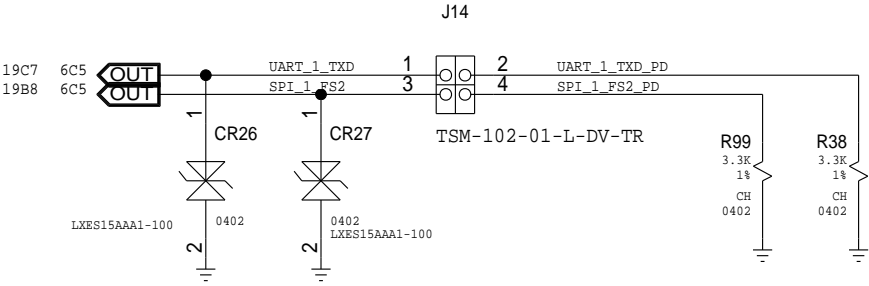
GPIO_47 / LPSS_UART2_TXD

1 = FORCE

0 = DO NOT FORCE (DEFAULT / SELECTED FOR DESIGN)

INTERNAL 20K PD

HW STRAPS (BOOT FROM EMMC, BOOT FROM SDCARD)



BOM NOTE:

DEFAULT: NO JUMPERS STUFFED

DESIGN NOTE:

SOFTWARE SELECTABLE BOOT ORDER: EMMC / USB / SDCARD

CAD NOTE:

'EMMC BOOT' SILKSCREEN NEAR J14.1 AND J14.2

'SDCARD BOOT' SILKSCREEN NEAR J14.3 AND J14.4

DESIGN NOTE:

BOOT FROM EMMC (3 <-> 4)

GPIO_43 / LPSS_UART1_TXD

STUFFED = ENABLE (DEFAULT)

-> UNSTUFFED = DISABLE, (SELECTED FOR DESIGN)

INTERNAL 20K PU

DESIGN NOTE:

SD-CARD BOOT STRAP (5 <-> 6)

GPIO_114 / SPI_1_SS2 (GP_SSP_1_FS2)

-> STUFFED = DO NOT BOOT FROM SD-CARD (DEFAULT / SELECTED FOR DESIGN)

UNSTUFFED = BOOT FROM SD-CARD

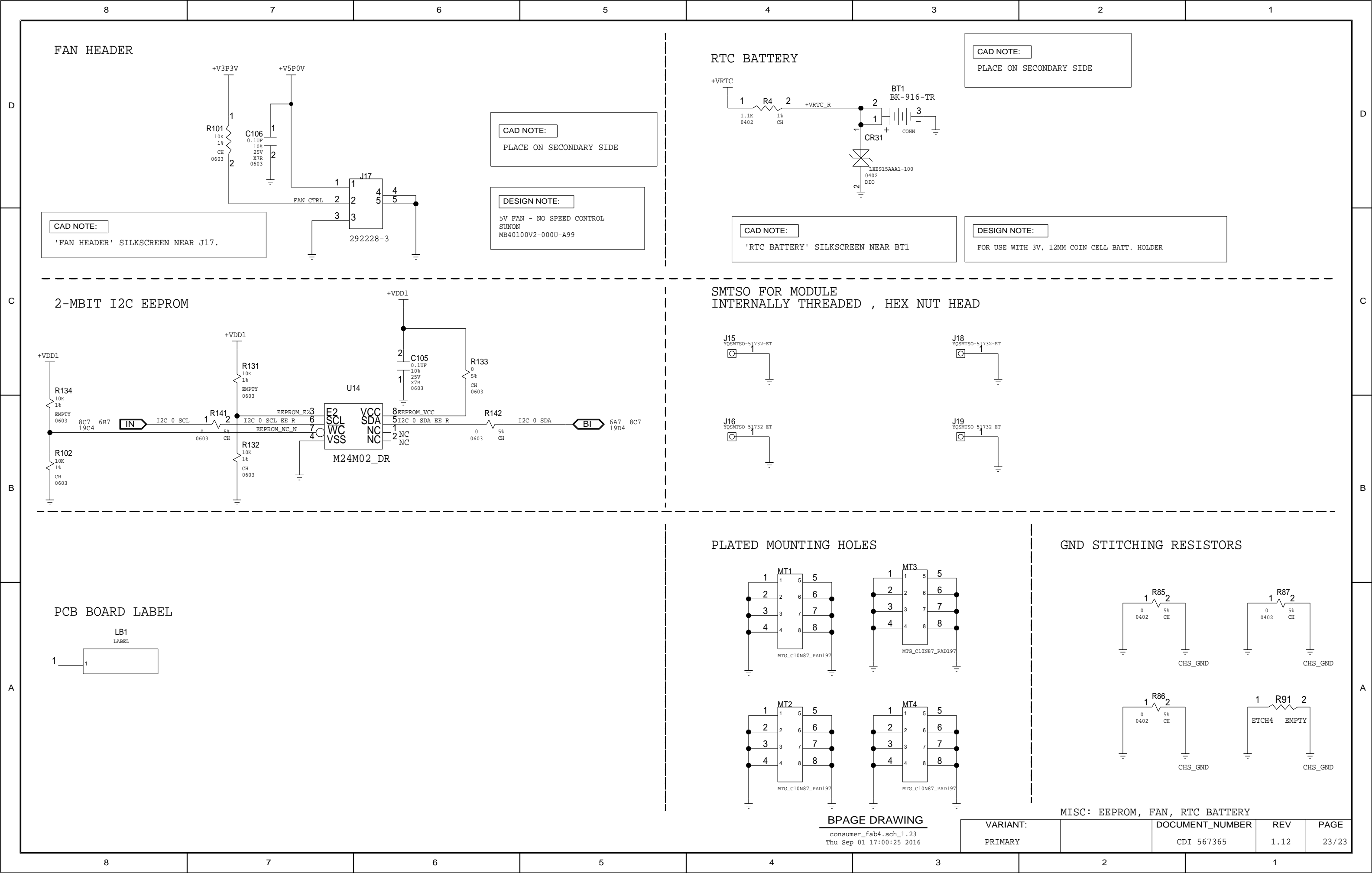
INTERNAL 20K PU

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I/O: BUTTONS, SWITCHES, HW STRAPS

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Intel® Joule™ Expansion Board - Bill of Materials for PWA-004 (Schematic 1.11)

Reference Designator	Engineer Abbrivation	Original Manufacturer	MFG Part Number	Description
BT1	CONN,MISC,2P,BATT HOLDR,SMT BR1225	Memory Protection Devices Inc.*	BK-916-TR	Battery Retainer
C1	CAPC,C0G,0402,47.000PF,50.000V,+/-5%	Eyang*	C0402C0G470J500NTB	
C10, C107, C11, C120, C4, C5, C7	CAPC,X7R,0603,1.000UF,16.000V,+/- 10%	Samsung Electro-Mechanics America, Inc.*	CL10B105K08NNNC	1µF ±10% 16V Ceramic Capacitor X7R 0603 (1608 Metric)
C100, C110, C118, C119, C121, C122, C123, C124, C125, C126, C127, C128, C129, C135, C136, C138, C139, C144, C145, C39, C40, C41, C42, C47, C48, C49, C50, C53, C54, C60, C68, C70, C83, C84, C85, C86, C87, C88, C89, C90, C91, C92, C93, C94, C95, C96, C97, C98, C99	CAP,X7R,0402,100NF,16V,+/- 5%	Kemet*	C0402C104J4RACTU	0.10µF ±5% 16V Ceramic Capacitor X7R 0402 (1005 Metric)
C105, C106, C130, C131, C140, C27, C31, C34, C52, C56, C6, C65, C66, C67, C69, C71, C72, C81, C82	CAPC,X7R,0603,0.100UF,25.000V,+/- 10%	TDK Corporation*	C1608X7R1E104K080AA	0.10µF ±10% 25V Ceramic Capacitor X7R 0603 (1608 Metric)
C108, C109, C134, C137, C17, C26, C29, C43, C44, C45, C46, C55, C57, C58, C59, C63, C8	CAPC,X5R,0603,25V,20%,10UF,	Murata Electronics North America*	GRM188R61E106MA73D	10µF ±20% 25V Ceramic Capacitor X5R 0603 (1608 Metric)
C111	CAPC,X7R,0402,0.1UF,25.00V,+/- 10%	Murata Electronics North America*	GRM155R71E104KE14D	0.10µF ±10% 25V Ceramic Capacitor X7R 0402 (1005 Metric)
C114, C115, C116, C133, C142, C143, C24, C25	CAPC,X5R,0603,22.00UF,10.00V,+/- 20%	Samsung Electro-Mechanics America, Inc.*	CL10A226MP8NUNE	22µF ±20% 10V Ceramic Capacitor X5R 0603 (1608 Metric)
C117	CAPC,X5R,0603,2.200UF,16.000V,+/- 10%	Samsung Electro-Mechanics America, Inc.*	CL10A225K08NNNC	2.2µF ±10% 16V Ceramic Capacitor X5R 0603 (1608 Metric)
C18	CAPC,C0G,0603,100.000PF,50.000V,+/- 5%	Samsung Electro-Mechanics America, Inc.*	CL10C101JB8NNNC	100pF ±5% 50V Ceramic Capacitor C0G, NP0 0603 (1608 Metric)
C19, C20, C62	CAPC,C0G,0402,220.000 PF,50.000V,+/- 5%>	Samsung Electro-Mechanics America, Inc.*	CL05C221JB5NNNC	220pF ±5% 50V Ceramic Capacitor C0G, NP0 0402 (1005 Metric)
C21, C73, C74, C75, C76, C77, C78, C79, C80	CAPC,X5R,0402,0.100UF,10.000V,+/- 10%	Samsung Electro-Mechanics America, Inc.*	CL05A104KP5NNNC	0.10µF ±10% 10V Ceramic Capacitor X5R 0402 (1005 Metric)
C22	CAPC,X7R,0402,0.047 UF,25.000V,+/- 10%	Murata Electronics North America*	GRM155R71E473KA88E	
C23	CAPC,X5R,0402,4.7UF,10.00V,+/- 20%	Samsung Electro-Mechanics America, Inc.*	CL05A475MP5NRNC	4.7µF ±20% 10V Ceramic Capacitor X5R 0402 (1005 Metric)
C28, C32	CAPC,X5R,0402,10.00UF,6.3V,+/- 20%	Samsung Electro-Mechanics America, Inc.*	CL05A106MQ5NUNC	10µF ±20% 6.3V Ceramic Capacitor X5R 0402 (1005 Metric)
C3	CAPC,C0G,0603,47.00PF,100.00V,+/- 5%	Murata Electronics North America*	GRM1885C2A470JA01D	47pF ±5% 100V Ceramic Capacitor C0G, NP0 0603 (1608 Metric)
C30	CAPC,X5R,1210,100.000 uF,10.000V,+/- 20%	Taiyo Yuden*	LMK325BJ107MM-T	100µF ±20% 10V Ceramic Capacitor X5R 1210 (3225 Metric)
C35, C36	CAPC,X5R,0402,2.2UF,10.00V,+/- 10%	Samsung Electro-Mechanics America, Inc.*	CL05A225KP5NSNC	2.2µF ±10% 10V Ceramic Capacitor X5R 0402 (1005 Metric)

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Intel® Joule™ Expansion Board - Bill of Materials for PWA-004 (Schematic 1.11)

Reference Designator	Engineer Abbrivation	Original Manufacturer	MFG Part Number	Description
C51	CAPC,X5R,0805,22.00UF,25.00V,+/- 20%	Murata Electronics North America*	GRM21BR61E226ME44L	22µF ±20% 25V Ceramic Capacitor X5R 0805 (2012 Metric)
C64	CAPC,X7R,0603-3T,0.1UF,25.00V,+/- 20%	Murata Electronics North America*	NFM18PC104R1E3D	
CR1, CR11, CR12, CR13, CR14, CR2, CR23, CR24, CR25, CR26, CR27, CR28, CR29, CR3, CR30, CR31, CR7	ULTRA, LOW CAP, BIDIRECTIONAL, ESD, DIODE, ANTENNA PORT	Murata Electronics North America*	LXES15AAA1-100	TVS DIODE 0402
CR10, CR20, CR8	IC,DS,DIO,SMT,LFTVS18,TVS,	STMicroelectronics*	LFTVS18-1F3	TVS DIODE 12VWM 19VC 4FLIPCHIP
CR15, CR16, CR17, CR18, CR9	LED,1005,SM,GRN,V,1.00,RC,1	Lite-On Inc.*	LTST-C281KGKT-ND	Green 571nm LED Indication - Discrete 2V 0402 (1005 Metric)
CR19	IC,DIO,SCHKY DIODE,5A, 14V,REVERSE VOLTAGE, VF(MAX) 0.55V	Diodes Incorporated*	B520C-13-F	Diode Schottky 20V 5A Surface Mount SMC
CR21, CR22, CR4, CR5, CR6	IC,DS,DIO,MINDIP,DB2S31000L,SHTKY,	Panasonic Electronic Components	DB2S31000L	Diode Schottky 30V 200mA Surface Mount SSMINI2-F5-B
EU1	IC,VLSI,OTHER,HDMI,A3 8203,TQFN,32	Parade*	PS8203TQFN32GTR-A3	
EU110, EU111, EU112, EU113, EU14, EU15, EU16, EU17, EU18, EU19	IC, LOG,TRANSLATOR,VQFN,LSF0108,TTL-MOS,	Texas Instruments*	LSF0108RKSR	Voltage Level Translator Bidirectional 1 Circuit 8 Channel 20-VQFN (4.5x2.5)
EU2	IC,LIN,CONT,24,QFN,BQ25892,BATCGR	Texas Instruments*	BQ25892RTWT	Charger IC Lithium-Ion/Polymer 24-WQFN (4x4)
EU3	IC,LIN,ANALOGSWITCH,SON,TPS2553,	Texas Instruments*	TPS2553DRVT-1	IC PWR DIST SWITCH ADJ 6SON
EU4	MWG,SWITCH,MUX/DEMUX,PI3USB302-A,TQFN	Pericom*	PI3USB302-AZBEX	USB Switch IC 2 Channel 20-TQFN (2.5x4.5)
EU5	IC,LIN,CONT,8,TSON,TLV62084DSG,PSP	Texas Instruments*	TLV62084DSGR	Buck Switching Regulator IC Positive Adjustable 0.5V 1 Output 2A 8-WDFN Exposed Pad
EU6	IC,VLSI,OTHER,FT232,QFN,32	FTDI, Future Technology Devices International Ltd*	FT232RQ-REEL	USB Bridge, USB to UART USB 2.0 UART Interface 32-QFN Exposed Pad (5x5)
F1, F2	FUSE,0402,3.5A,32V,	Littelfuse inc.*	043503.5KRHF	FUSE BOARD MOUNT 3.5A 32VDC 0402
FB1, FB2, FB4, FB5, FB6	FER-BEAD,0402,120.0 OHM,1.3 A,± 25%	Murata Electronics North America*	BLM15PD121SN1D	FERRITE BEAD 120 OHM 0402 1LN
J10	CONN,MISC,19P,HDMI-D,RA, SMT,	Molex, LLC*	467651001	HDMI - Micro Receptacle Connector 19 Position Surface Mount, Right Angle, Horizontal
J11	CONN,MISC,24P,LVDS, HZ,0.5MM, SMT	Hirose Electric Co Ltd*	FH19SC-24S-0.5SH(05)	24 Position FFC, FPC Connector Contacts, Bottom 0.020" (0.50mm) Surface Mount, Right Angle
J12, J13	CONN,HDR,2X20,RCP,COP,0.1,SMT,KP	Samtec Electronic Hardware*	SSM-120-S-DV-BE-K-TR	
J14	CONN,HDR,2 X 2,PLG,VT,0.1,SMT,KP	Samtec Electronic Hardware*	TSM-102-01-L-DV-TR	
J15, J16, J18, J19	SMT STANDOFF, M1.6 THREADED,1.5 MM TALL	Penn Engineering & Hardware*	YQSMTSO-51732-ET	

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Intel® Joule™ Expansion Board - Bill of Materials for PWA-004 (Schematic 1.11)

Reference Designator	Engineer Abbrivation	Original Manufacturer	MFG Part Number	Description
J17	CONN,MISC,3P,RT HDR,	TE Connectivity AMP Connectors*	292228-3	3 Positions Header, Shrouded Connector 0.059" (1.50mm) Surface Mount, Right Angle Tin
J2, J3	CONN,MISC,100P,BTB RCPT,.4MM SMT	Hirose Electric Co Ltd*	DF40C-100DS-0.4V(51)	100 Position Connector Receptacle, Center Strip Contacts Surface Mount Gold
J4	CONN DC POWER JACK 2.1X5.5MM H,	CUI Inc.*	PJ-002AH-SMT-TR	Power Barrel Connector Jack 2.00mm ID (0.079"), 5.50mm OD (0.217") Surface Mount
J5	CONN,MISC,10P,MICRO SD,PSH-PSH,INDUST_TEMP	Hirose Electric (U.S.A.), Inc.*	DM3ND-SF-PEJ (850)	
J6	CONN,USB 3.0 TYPE A,SURFACE MT,	Würth Electronics Inc.*	692122030100	USB - A USB 3.0, Super Speed Receptacle Connector 9 Position Surface Mount, Right Angle, Horizontal
J7	CONN,MISC,24P,USBC RA,RCPT, TALL	Lotes*	AUSB0269-P004A01	
J9	CONN,I/O,5P,USB-B,RA,MIXED,SMT,	TE Connectivity AMP Connectors*	2173157-3	USB - micro B USB 2.0 Receptacle Connector 5 Position Surface Mount, Right Angle, Horizontal
L1, L17, L2	INDCT,WWOUND,1.00uH,4.1A,NSTD,20.00%,	TDK Corporation*	SPM4012T-1R0M	1µH Shielded Wirewound Inductor 4.3A 45 mOhm Max Nonstandard
L10, L11, L12, L13	CHOKE,90.00HM,100.0MA,0302,2LINE	TDK Corporation*	TCE0806G-900-2P-T200	2 Line Common Mode Choke Surface Mount 90 Ohm @ 100MHz 100mA DCR 3.5 Ohm
L14, L15, L16	CHOKE,90.00HM,100.0MA,0603,4LINE	TDK Corporation*	TCE1608G-900-4P	4 Line Common Mode Choke Surface Mount 90 Ohm @ 100MHz 100mA DCR 1.95 Ohm
L3, L4, L6, L7, L8, L9	CHOKE,35.00HM,0.1A,0302,2LINE	TDK Corporation*	TCE0806S-350-2P-T200	2 Line Common Mode Choke Surface Mount 35 Ohm @ 100MHz 100mA DCR 1.8 Ohm
L5	INDCT,0.47UH,4.5A,23.00MOHM,CUBE,SM	Cyntec*	PIFE25201B-R47MS-70	
PWA	Intel® Joule™ Expansion (Printed Wire) Board	Intel®	J28235-004	
Q1, Q2	IC,DS,FET N,DFN,AON1606,	Alpha & Omega Semiconductor Inc.*	AON1606	MOSFET N-CH 20V 0.7A 3DFN
R1, R101, R102, R12, R132, R135, R15, R20, R52, R77, R9	RES D,0603,10.00 KOHM,1.00%,1/10W,YES	Yageo*	RC0603FR-0710KL	RES SMD 10K OHM 1% 1/10W 0603
R10, R11, R21, R22	RES D,0402,2.70 KOHM,5.00%,1/16W	Vishay Dale*	CRCW04022K70JNED	RES SMD 2.7K OHM 5% 1/16W 0402
R100, R133, R141, R142, R23, R3, R35, R46, R53, R61, R69, R72, R78	RES_D,0603,0.00OHM,5.00%,1/10W,	Vishay Dale*	RCG06030000Z0EA	RES SMD 0.00OHM JUMPER 1/10W 0603
R103, R104, R105, R106, R110, R111, R119, R121, R89, R90, R92	RES D,0402,200.00 KOHM,1.00%,1/16W	Vishay Dale*	CRCW0402200KFKED	RES SMD 200K OHM 1% 1/16W 0402
R113, R25, R27, R29, R36, R5, R51, R60, R8, R81, R97	RES_D,0603,100.00kOHM,1.00%,1/10W,	Vishay Dale*	RCG0603100KFKEA	RES SMD 100K OHM 1% 1/10W 0603
R114, R32, R71, R73, R85, R86, R87	RES_D,0402,0.00OHM,5.00%,1/16W,	Vishay Dale*	RCG04020000Z0ED	RES SMD 0.00OHM JUMPER 1/16W 0402

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Intel® Joule™ Expansion Board - Bill of Materials for PWA-004 (Schematic 1.11)

Reference Designator	Engineer Abbrivation	Original Manufacturer	MFG Part Number	Description
R136, R4, R47, R48, R49, R50	RES D,0402,1.10 kOHM,1.00%,1/16W	Vishay Dale*	CRCW04021K10FKED	RES SMD 1.1K OHM 1% 1/16W 0402
R2, R98	RES D,0603,100.00 OHM,1.00%,1/10W,YES	Yageo*	RC0603FR-07100RL	RES SMD 100 OHM 1% 1/10W 0603
R30	RES_D,0603,120.00kOHM,1.00%,1/10W,	Yageo*	RC0603FR-07120KL	RES SMD 120K OHM 1% 1/10W 0603
R33, R62	RES D,0603,1.00 kOHM,5.00%,1/10W,YES	Yageo*	RC0603JR-071KL	RES SMD 1K OHM 5% 1/10W 0603
R37	RES_D,0402,4.99kOHM,1.00%,1/16W,	Vishay Dale*	RCG04024K99FKED	RES SMD 4.99K OHM 1% 1/16W 0402
R38, R99	RES_D,0402,3.3kOHM,1.0%,1/16W,	Yageo*	RC0402FR-073K3L	RES SMD 3.3K OHM 1% 1/16W 0402
R54	RES D,0402,18.20 kOHM,1.00%,1/16W	Yageo*	RC0402FR-0718K2L	RES SMD 18.2K OHM 1% 1/16W 0402
R55	RES D,0603,1.50 kOHM,1.00%,1/10W,YES	Vishay Dale*	CRCW06031K50FKEB	RES SMD 1.5K OHM 1% 1/10W 0603
R56, R93, R94, R95, R96	RES D,0402,560.00 OHM,1.00%,1/16W,YES	Vishay Dale*	CRCW0402560RFKED	RES SMD 560 OHM 1% 1/16W 0402
R6	RES D,0402,110.00 kOHM,1.00%,1/16W	Yageo*	RC0402FR-07110KL	RES SMD 110K OHM 1% 1/16W 0402
R7	RES D,0402,36.50 kOHM,1.00%,1/16W,YES	Yageo*	RC0402FR-0736K5L	RES SMD 36.5K OHM 1% 1/16W 0402
R84	RES D,0402,0.00 OHM,5.00%,1/16W	Vishay Dale*	CRCW04020000Z0ED	RES SMD 0.0OHM JUMPER 1/16W 0402
R88	RES_D,0402,100.0kOHM,1.00%,1/16W,	Vishay Dale*	RCG0402100KFKED	RES SMD 100K OHM 1% 1/16W 0402
SW1, SW2, SW3	CONN,SWIT,TACTILE,VT,SPST,2,50.0 mA,SMT	E-Switch*	TL3304AF160QJ	Tactile Switch SPST-NO Top Actuated Surface Mount
U1	IC,LIN,INTFC,CSP,IP4856CX,TRANSLAT,	NXP USA Inc.*	IP4856CX25/CZ-ND	Memory Card Interface 25-WLCSP (2.04x2.04)
U14	MWG,EEPROM,SERIAL,2MBIT,M24M02-DR	STMicroelectronics*	M24M02-DRMN6TP	IC EEPROM 2MBIT 1MHZ 8SO
U17, U22	IC,LIN,WLCSP,FPF2495UCX,VREG	Fairchild Semiconductor*	FPF2495UCX	IC LOAD SWITCH 28 9WLCSP
U18	IC,LIN,ANALOGSWITCH,FCBGA,FPF3042,	Fairchild Semiconductor*	FPF3042UCX	OR Controller Source Selector Switch N-Channel 2:1 16-WLCSP
U20, U23, U24	IC,DS,DIO,CSP,ECMF02,TVS,	STMicroelectronics*	ECMF02-2BF3	2 Line Common Mode Choke Surface Mount DCR 4 Ohm
U21	IC,LIN,WLCSP,FAN48623,DC/DC	Fairchild Semiconductor*	FAN48623UC50X	Boost Switching Regulator IC Positive Programmable 5V, 5.29V 1 Output 2.5A 16-UFBGA, WLCSP
U25, U26	IC,DS,NPN XSTR,SOT363,MDT3904,LF	Diodes Incorporated*	MMDT3904-7-F	TRANS 2NPN 40V 0.2A SOT363
U27	IC,LIN,CONT,14,QFN,TPS63021DSJ,PSP	Texas Instruments*	TPS63021DSJR	Buck-Boost Switching Regulator IC Positive Fixed 3.3V 1 Output 3.5A (Switch) 14-VFDFN Exposed Pad

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