

TI180J484 Development Board

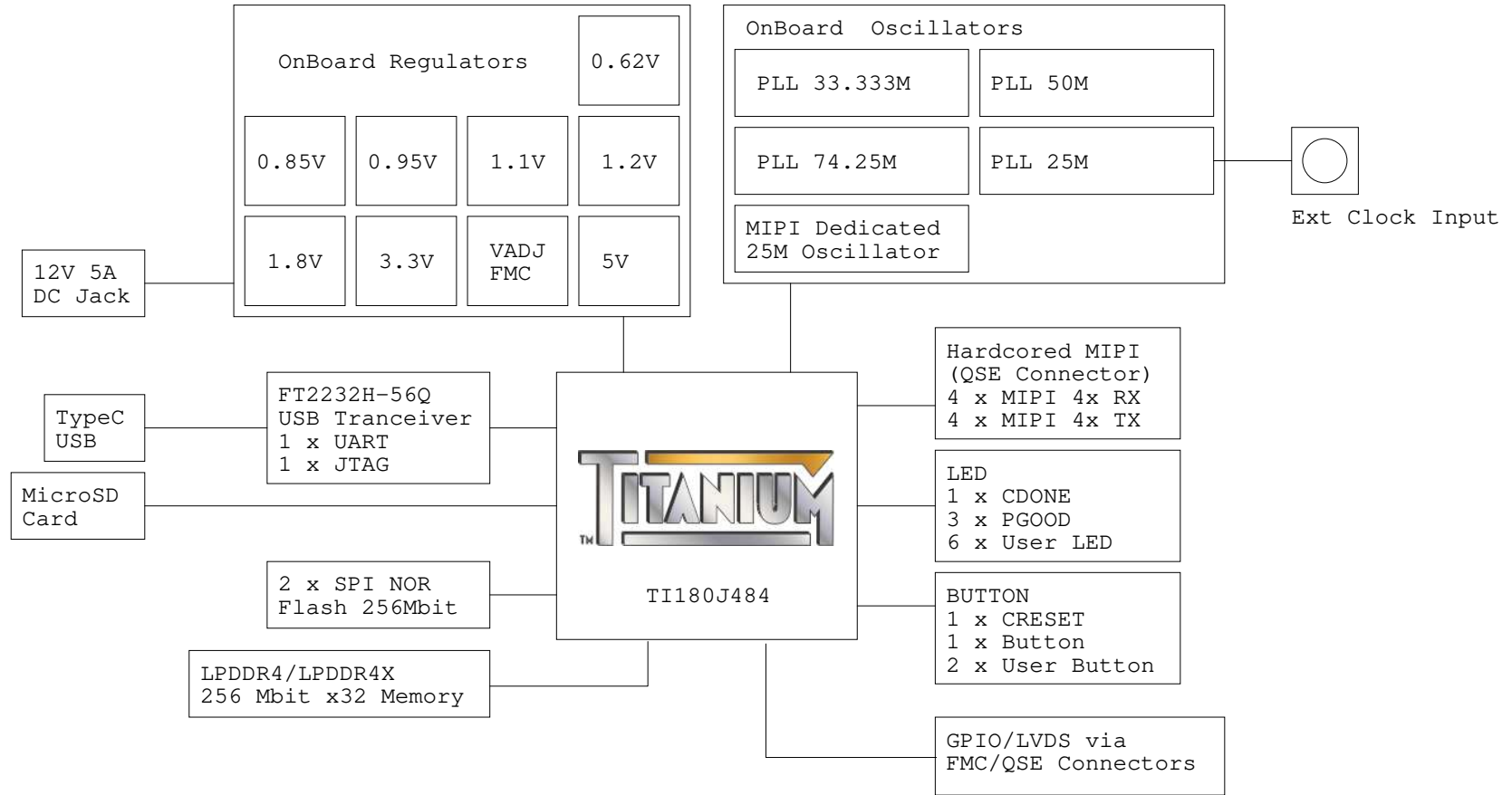
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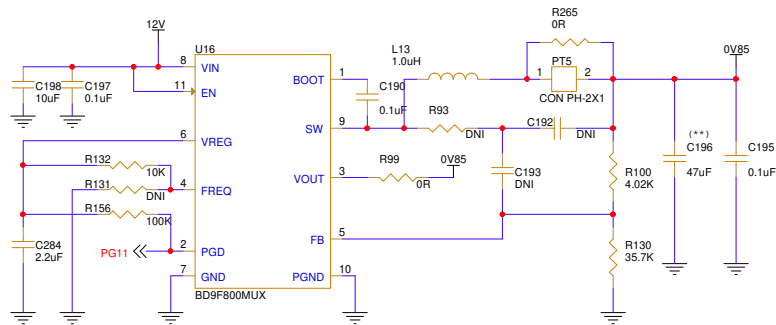
DOCUMENT VERSION HISTORY

VER	DATE	EDITOR	DESCRIPTION
1.0	14/02/23	CFLEUNG	Initial Release

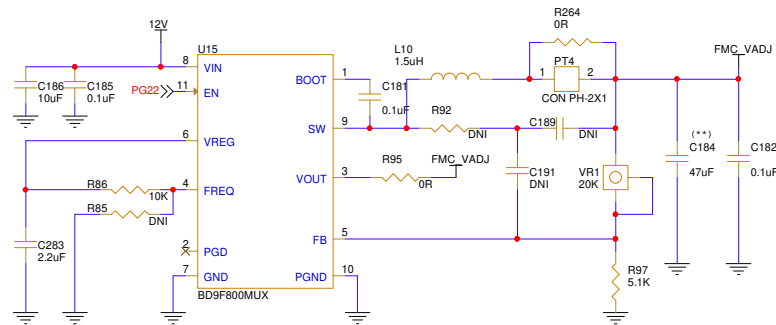
BLOCK DIAGRAM



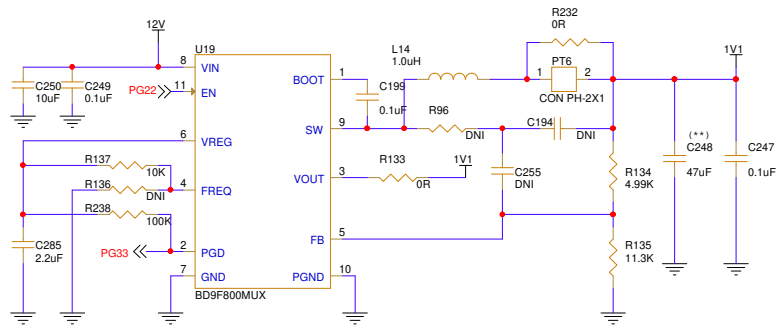
0V85



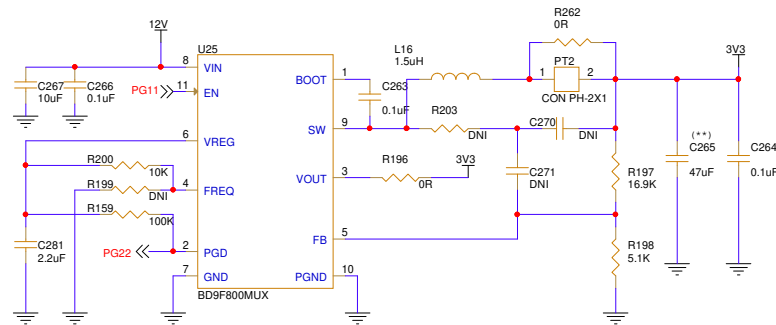
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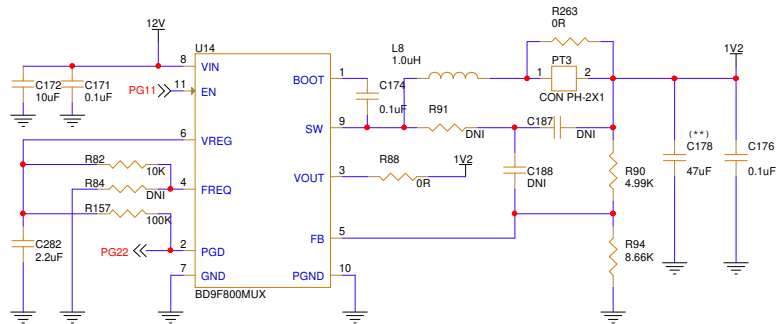
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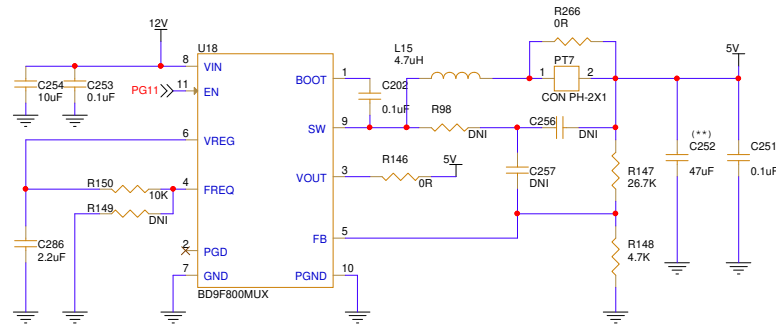
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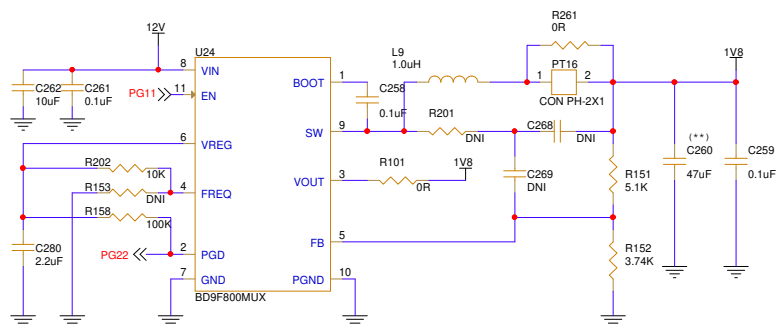
1V2



5V

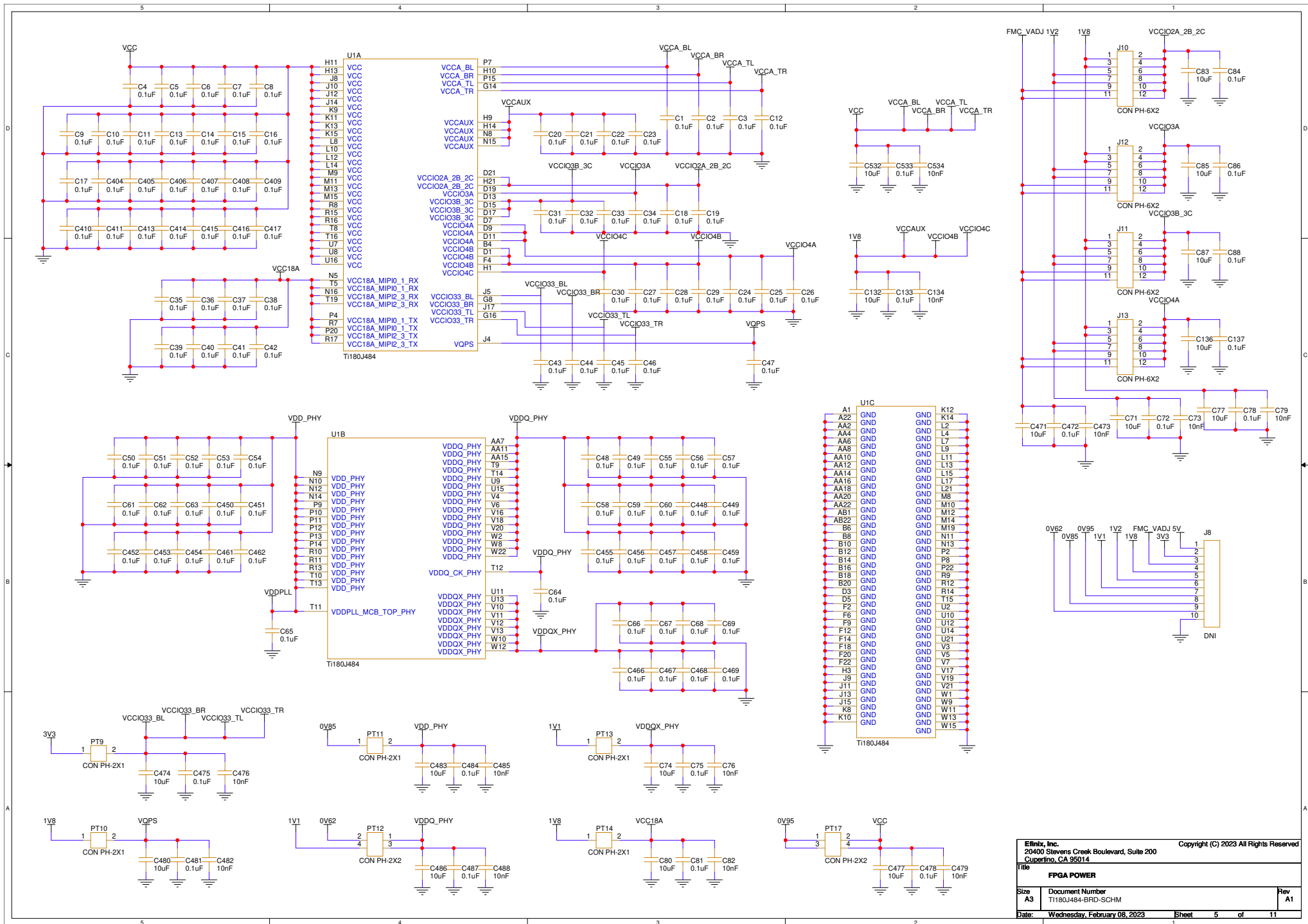


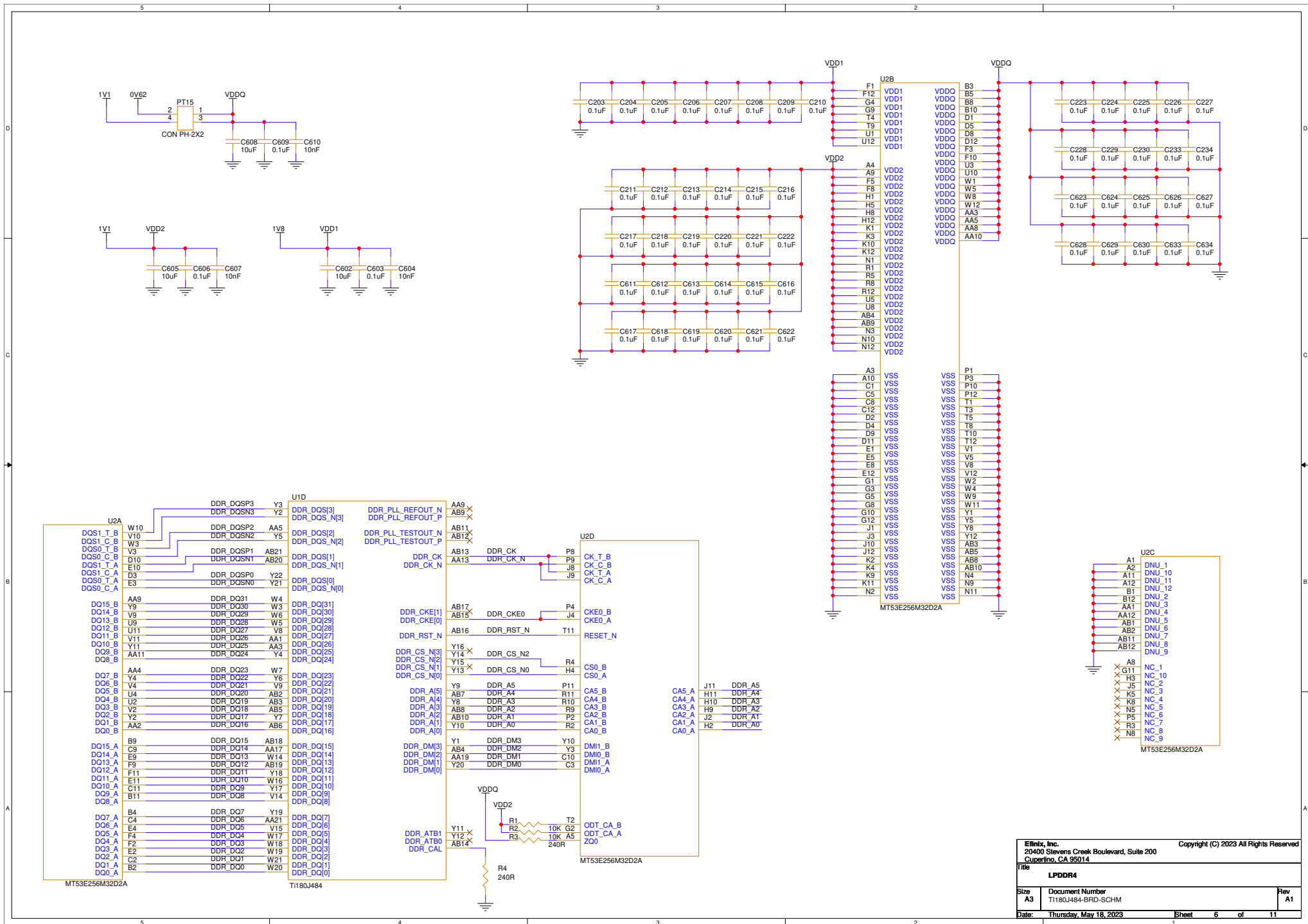
1V8



** Low ESR at operation frequency required

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Title POWER INPUT 2			
Size A3	Document Number T1180J484-BRD-SCHM	Rev A1	
Date: Wednesday, February 08, 2023	Sheet 4	of 11	





U1E		
MIP10_TXDP4	N2	MIP10_TXDP4
MIP10_TXDN4	N1	MIP10_TXDN4
MIP10_TXDP3	N3	MIP10_TXDP3
MIP10_TXDN3	P3	MIP10_TXDN3
MIP10_TXDP2	L1	MIP10_TXDP2
MIP10_TXDN2	M1	MIP10_TXDN2
MIP10_TXDP1	P6	MIP10_TXDP1
MIP10_TXDN1	P5	MIP10_TXDN1
MIP10_RXDP0	M3	MIP10_RXDP0
MIP10_RXDN0	M2	MIP10_RXDN0
MIP10_RXDP4	M4	MIP10_RXDP4
MIP10_RXDN4	N4	MIP10_RXDN4
MIP10_RXDP3	K2	MIP10_RXDP3
MIP10_RXDN3	K1	MIP10_RXDN3
MIP10_RXDP2	K3	MIP10_RXDP2
MIP10_RXDN2	L3	MIP10_RXDN2
MIP10_RXDP1	L5	MIP10_RXDP1
MIP10_RXDN1	M5	MIP10_RXDN1
MIP10_RXDP0	M6	MIP10_RXDP0
MIP10_RXDN0	N6	MIP10_RXDN0

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U1F		
MIP11_TXDP4	R6	MIP11_TXDP4
MIP11_TXDN4	R5	MIP11_TXDN4
MIP11_TXDP3	R2	MIP11_TXDP3
MIP11_TXDN3	R3	MIP11_TXDN3
MIP11_TXDP2	R4	MIP11_TXDP2
MIP11_TXDN2	T4	MIP11_TXDN2
MIP11_TXDP1	T6	MIP11_TXDP1
MIP11_TXDN1	T7	MIP11_TXDN1
MIP11_TXDP0	P1	MIP11_TXDP0
MIP11_TXDN0	R1	MIP11_TXDN0
MIP11_RXDP4	T2	MIP11_RXDP4
MIP11_RXDN4	T3	MIP11_RXDN4
MIP11_RXDP3	U1	MIP11_RXDP3
MIP11_RXDN3	T1	MIP11_RXDN3
MIP11_RXDP2	U5	MIP11_RXDP2
MIP11_RXDN2	U6	MIP11_RXDN2
MIP11_RXDP1	U3	MIP11_RXDP1
MIP11_RXDN1	U4	MIP11_RXDN1
MIP11_RXDP0	V2	MIP11_RXDP0
MIP11_RXDN0	V1	MIP11_RXDN0

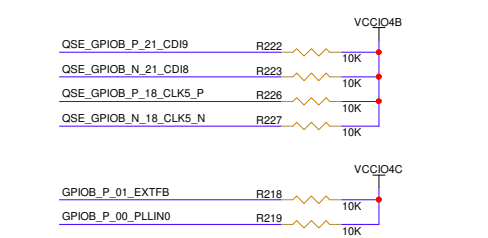
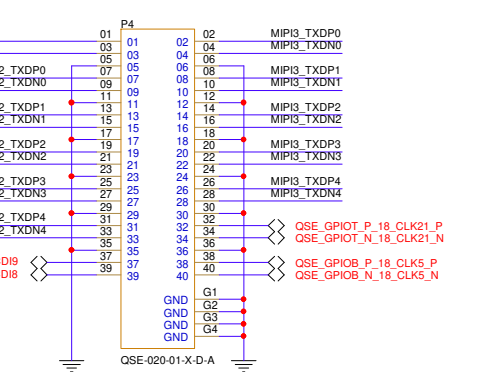
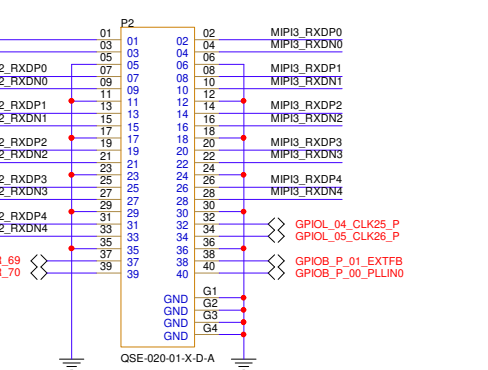
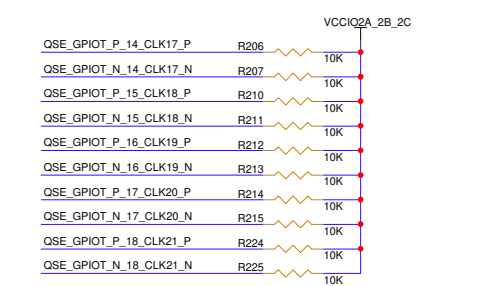
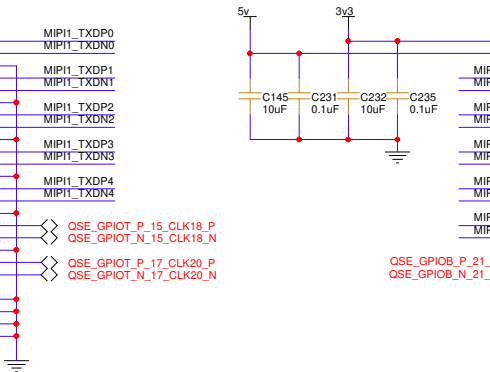
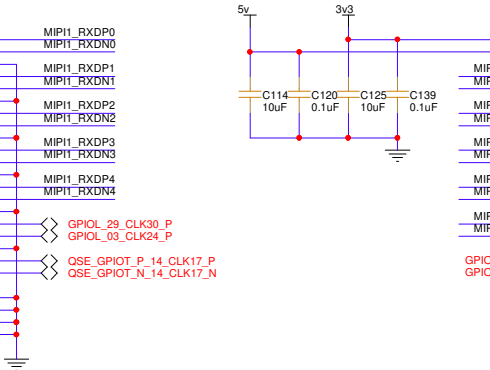
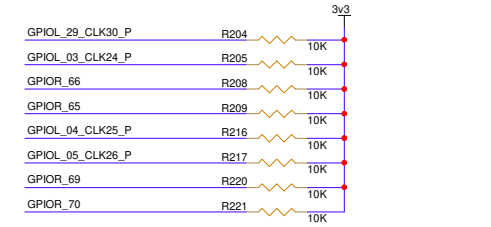
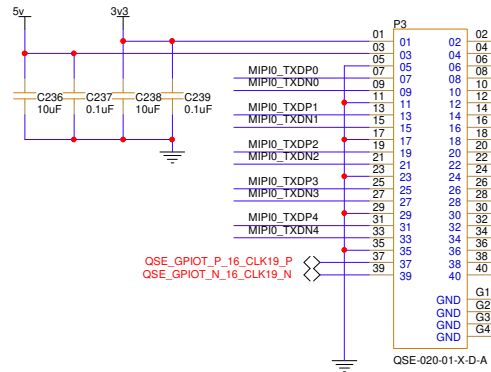
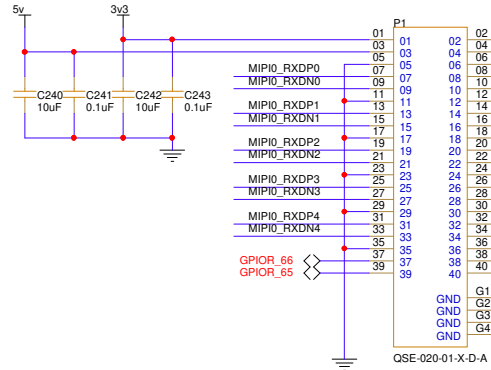
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U1G		
MIP12_TXDP4	P18	MIP12_TXDP4
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MIP12_TXDN3	N20	MIP12_TXDN3
MIP12_TXDP2	M20	MIP12_TXDP2
MIP12_TXDN2	M21	MIP12_TXDN2
MIP12_TXDP1	K22	MIP12_TXDP1
MIP12_TXDN1	L22	MIP12_TXDN1
MIP12_RXDP0	K20	MIP12_RXDP0
MIP12_RXDN0	K21	MIP12_RXDN0
MIP12_RXDP4	P16	MIP12_RXDP4
MIP12_RXDN4	P17	MIP12_RXDN4
MIP12_RXDP3	N17	MIP12_RXDP3
MIP12_RXDN3	N18	MIP12_RXDN3
MIP12_RXDP2	L19	MIP12_RXDP2
MIP12_RXDN2	L20	MIP12_RXDN2
MIP12_RXDP1	L18	MIP12_RXDP1
MIP12_RXDN1	M18	MIP12_RXDN1
MIP12_RXDP0	M16	MIP12_RXDP0
MIP12_RXDN0	M17	MIP12_RXDN0

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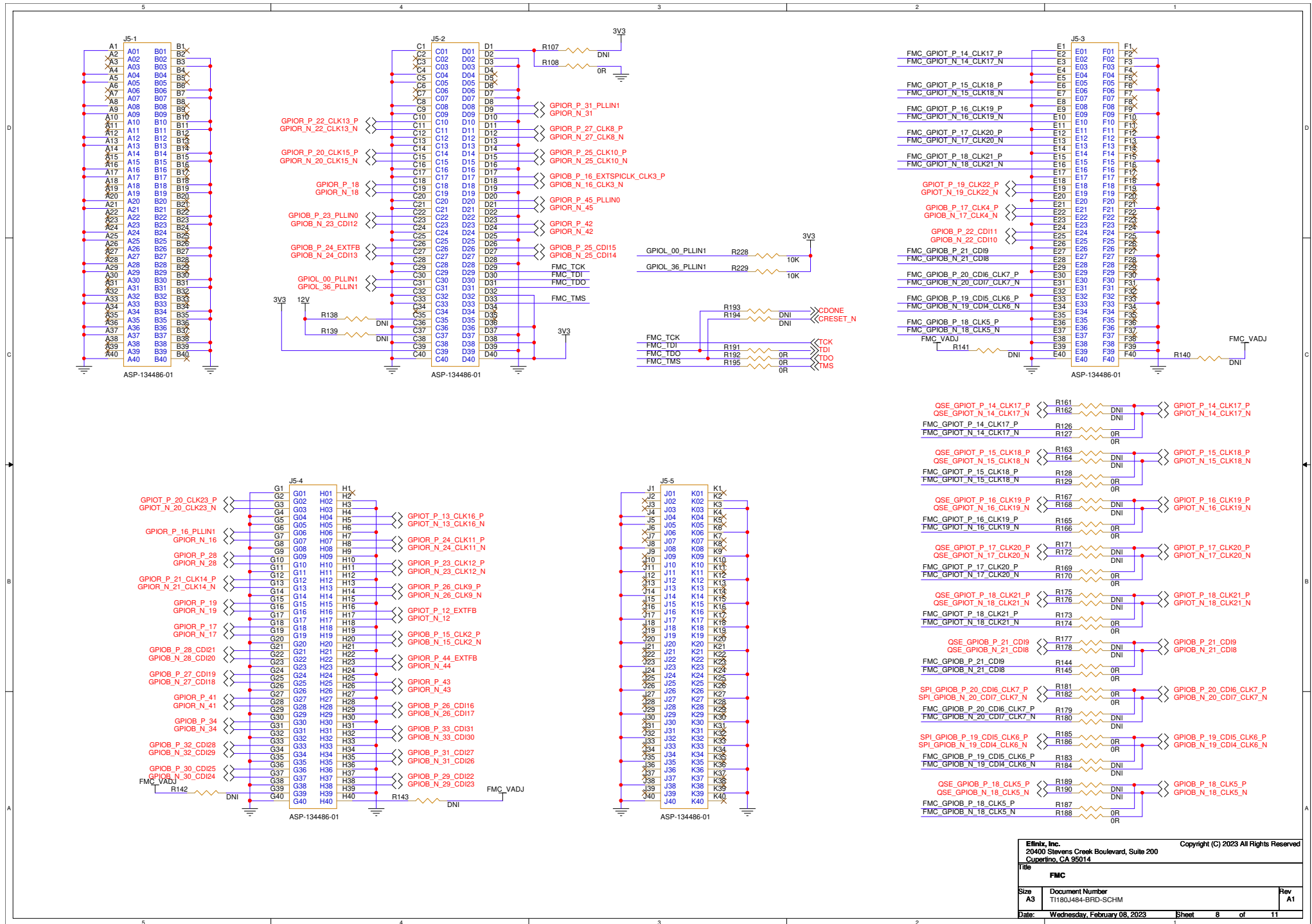
U1H		
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MIP13_TXDN3	M22	MIP13_TXDN3
MIP13_TXDP2	N21	MIP13_TXDP2
MIP13_TXDN2	P21	MIP13_TXDN2
MIP13_TXDP1	R20	MIP13_TXDP1
MIP13_TXDN1	T20	MIP13_TXDN1
MIP13_RXDP0	T18	MIP13_RXDP0
MIP13_RXDN0	T17	MIP13_RXDN0
MIP13_RXDP4	R22	MIP13_RXDP4
MIP13_RXDN4	R21	MIP13_RXDN4
MIP13_RXDP3	T22	MIP13_RXDP3
MIP13_RXDN3	T21	MIP13_RXDN3
MIP13_RXDP2	U20	MIP13_RXDP2
MIP13_RXDN2	U19	MIP13_RXDN2
MIP13_RXDP1	U17	MIP13_RXDP1
MIP13_RXDN1	U18	MIP13_RXDN1
MIP13_RXDP0	V22	MIP13_RXDP0
MIP13_RXDN0	U22	MIP13_RXDN0

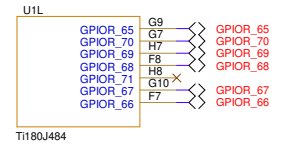
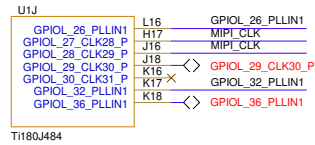
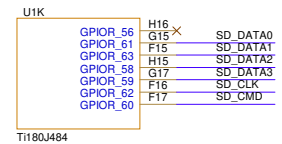
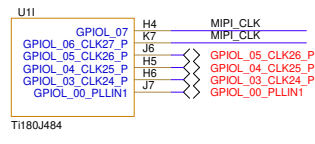
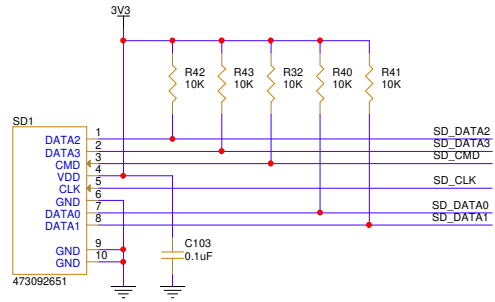
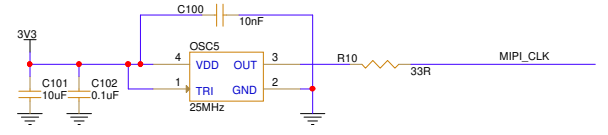
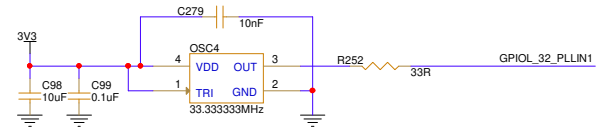
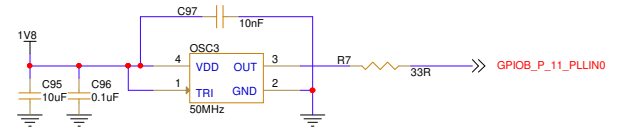
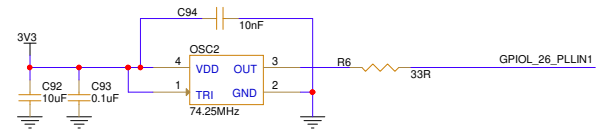
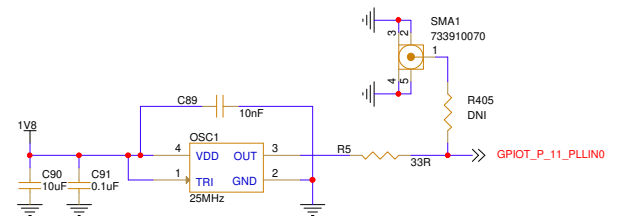
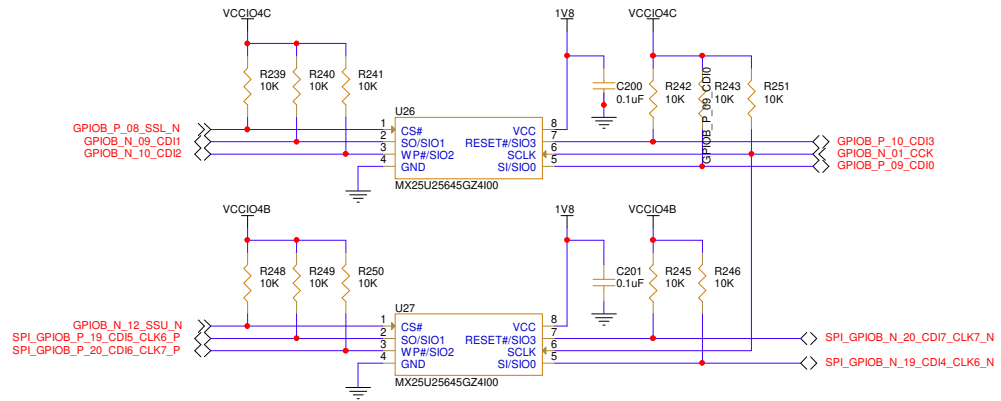
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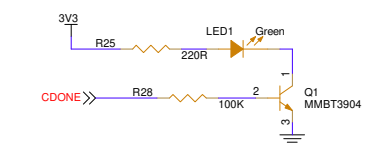
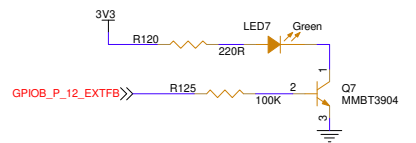
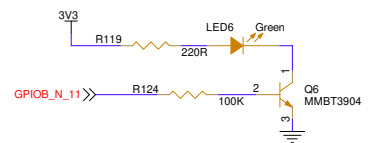
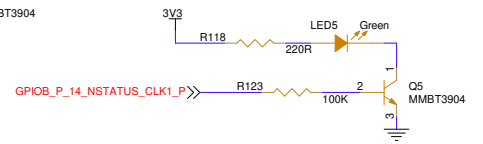
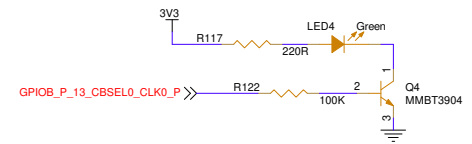
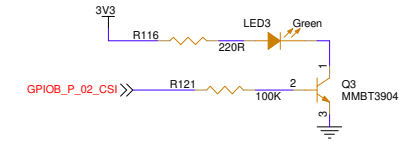
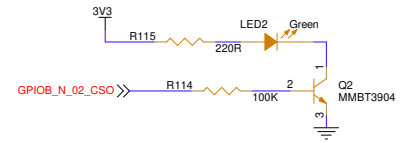
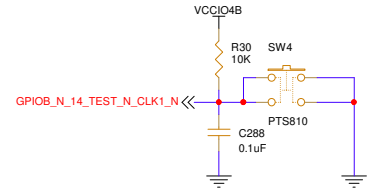
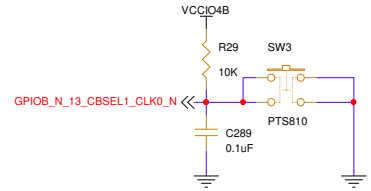
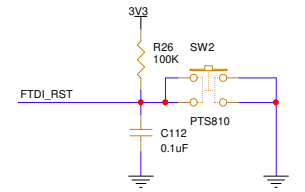
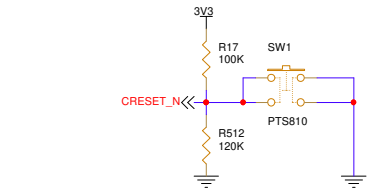
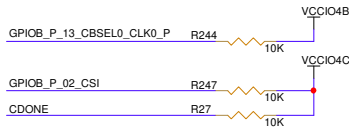
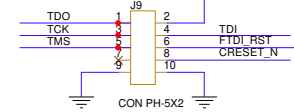
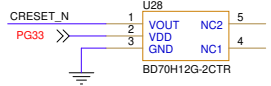
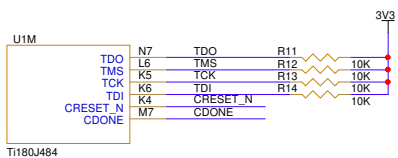
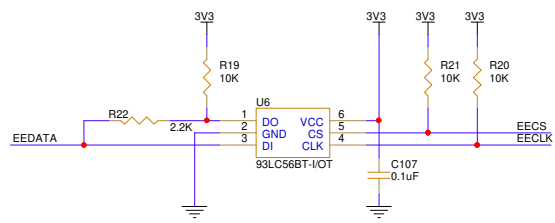
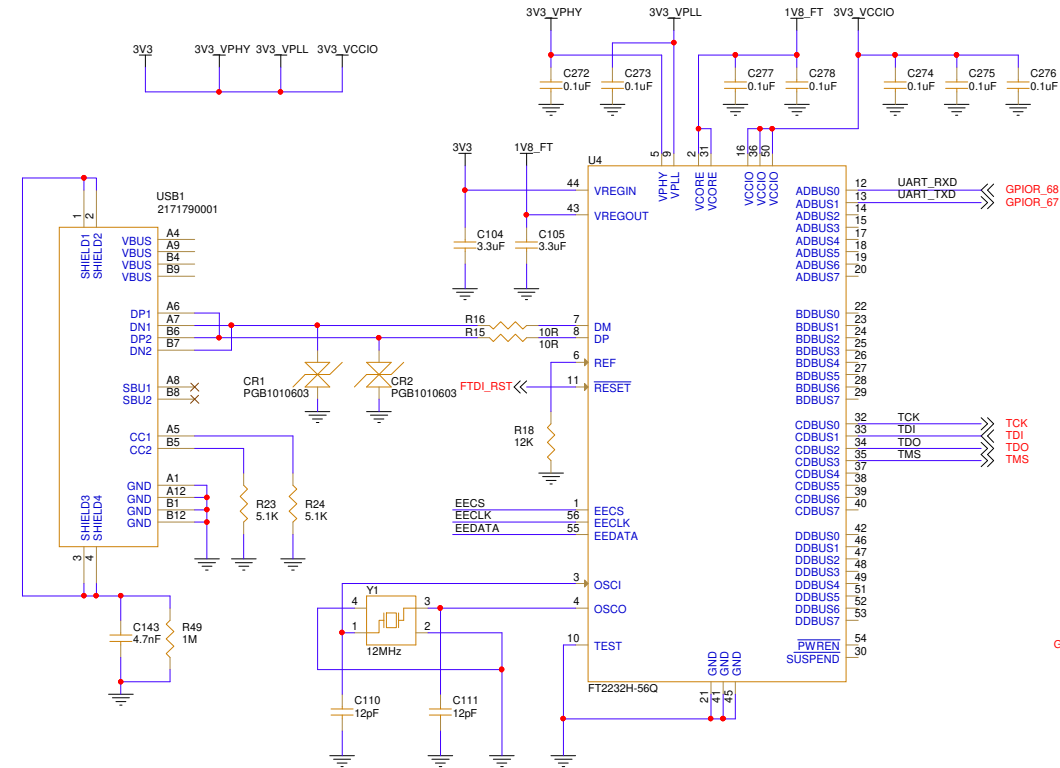


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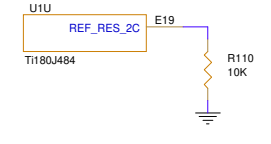
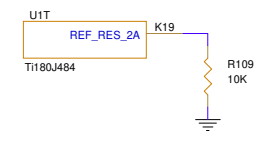
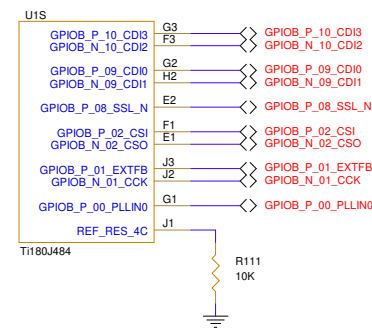
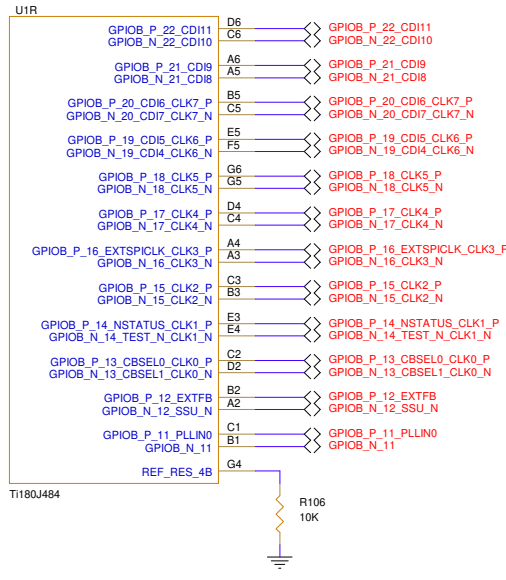
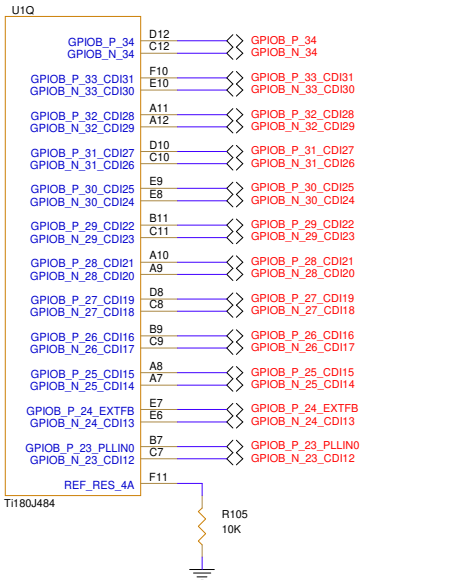
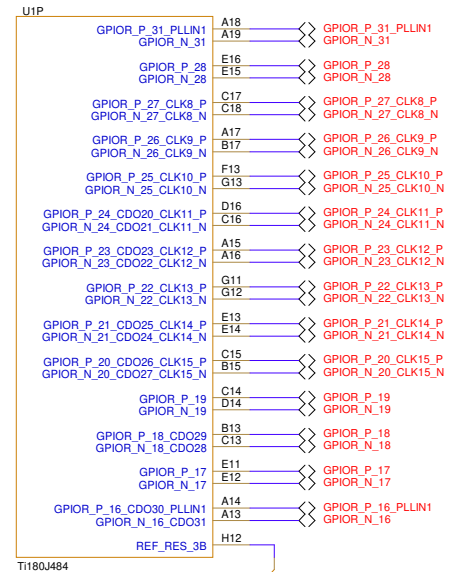
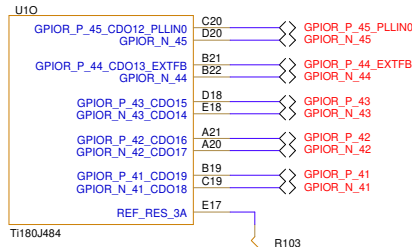
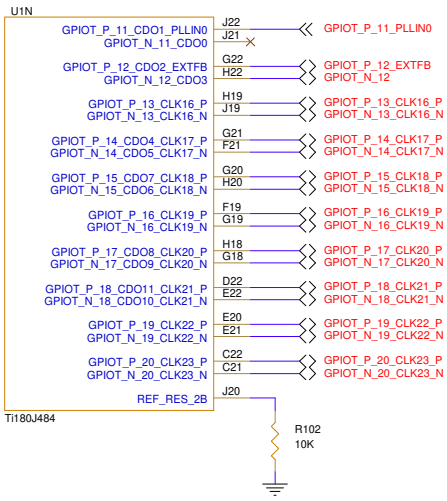
Title		
MIP1		
Size	Document Number	Rev
A3	T1180J484-BRD-SCHM	A1
Date:	Wednesday, February 08, 2023	Sheet 7 of 11







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Title S.COMM, USER IO		
Size A3	Document Number T1180J484-BRD-SCHM	Rev A1
Date: Tuesday, April 04, 2023	Sheet 10	of 11





Item	Qty	Part Type	Description	Value	Reference	Footprint	Manufacturing PN
1	2	Suppressors	ESD Suppressors	PGB1010603	CR1,CR2	SMD0603	PGB1010603
2	152	CAPACITOR	X7R, 10%, 6.3V	0.1µF	C1,C2,C3,C4,C5,C6,C7,C8,C9,C10,C11,C12,C13,C14,C15,C16,C17,C18,C19,C20,C21,C22,C23,C24,C25,C26,C27,C28,C29,C30,C31,C32,C33,C34,C35,C36,C37,C38,C39,C40,C41,C42,C43,C44,C45,C46,C47,C48,C49,C50,C51,C52,C53,C54,C55,C56,C57,C58,C59,C60,C61,C62,C63,C64,C65,C66,C67,C68,C69,C203,C204,C205,C206,C207,C208,C209,C210,C211,C212,C213,C214,C215,C216,C217,C218,C219,C220,C221,C222,C223,C224,C225,C226,C227,C228,C229,C230,C233,C234,C404,C405,C406,C407,C408,C409,C410,C411,C413,C414,C415,C416,C417,C448,C449,C450,C451,C452,C453,C454,C455,C456,C457,C458,C459,C461,C462,C466,C467,C468,C469,C611,C612,C613,C614,C615,C616,C617,C618,C619,C620,C621,C622,C623,C624,C625,C626,C627,C628,C629,C630,C633,C634	C0201	
3	34	CAPACITOR	X7R, 10%, 10V	10µF	C71,C74,C77,C80,C83,C85,C87,C90,C92,C95,C98,C101,C114,C122,C123,C125,C132,C136,C145,C232,C236,C238,C240,C242,C471,C474,C477,C480,C483,C486,C532,C602,C605,C608	C0603	
4	77	CAPACITOR	X7R, 10%, 50V	0.1µF	C72,C75,C78,C81,C84,C86,C88,C91,C93,C96,C99,C102,C103,C107,C112,C115,C120,C129,C130,C131,C133,C137,C139,C170,C171,C173,C174,C176,C180,C181,C182,C185,C190,C195,C197,C199,C200,C201,C202,C231,C235,C237,C239,C241,C243,C245,C247,C249,C251,C253,C258,C259,C261,C263,C264,C266,C272,C273,C274,C275,C276,C277,C278,C288,C289,C290,C472,C475,C478,C481,C484,C487,C533,C603,C606,C609,C647	C0402	
5	20	CAPACITOR	X7R, 10%, 50V	10nF	C73,C76,C79,C82,C89,C94,C97,C100,C134,C279,C473,C476,C479,C482,C485,C488,C534,C604,C607,C610	C0402	
6	2	CAPACITOR	X7R, 10%, 10V	3.3µF	C104,C105	C0603	
7	2	CAPACITOR	COG	12pF	C110,C111	C0402	
8	11	CAPACITOR	X7R, 10%, 50V	10µF	C116,C169,C172,C186,C198,C244,C246,C250,C254,C262,C26	C1206	
9	16	CAPACITOR		DNI	C117,C183,C187,C188,C189,C191,C192,C193,C194,C255,C256,C257,C268,C269,C270,C271	C0402	
10	1	CAPACITOR	X7R, 10%, 50V	0.47µF	C118	C0402	
11	1	CAPACITOR	X7R, 10%, 50V	4.7nF	C143	C0402	
12	1	CAPACITOR	COG	47pF	C177	C0402	
13	10	CAPACITOR	X5R, 20%, 6.3V, Low ESR	47µF	C178,C179,C184,C196,C248,C252,C260,C265,C292,C293	C0805	GRM219R60J476ME44#
14	8	CAPACITOR	X7R, 10%, 10V	2.2µF	C280,C281,C282,C283,C284,C285,C286,C287	C0603	
15	1	CAPACITOR	X7R, 10%, 50V	1nF	C291	C0402	
16	6	CAPACITOR	X5R, 20%, 10V, Low ESR	100µF	C296,C297,C298,C299,C300,C301	C1210	GRM32ER61A107ME20

Item	Qty	Part Type	Description	Value	Reference	Footprint	Manufacturing PN
17	1	CAPACITOR	Aluminum Electrolytic Capacitors, 16V, Dia 6.3, H 7.7	220µF	C646	CPD63H77	UWT1C221MCL1GS
18	1	SCHOTTKY DIODE	5.0A Surface Mount Schottky Barrier	B520C-13-F	D1	DO-214AB	B520C-13-F
19	1	CONNECTOR	Conn Array RCPT 400 Pos SMD	ASP-134486-01	J5	ASP-134486-01	ASP-134486-01
20	1	CONNECTOR		DNI	J8	PH2M54_10P1R	
21	1	CONNECTOR		CON PH-5X2	J9	PH2M54_5P2R	
22	4	CONNECTOR		CON PH-6X2	J10,J11,J12,J13	PH2M54_6P2R	
23	10	LED	Standard LEDs - SMD Green Clear 571nm	Green	LED1,LED2,LED3,LED4,LED5,LED6,LED7,LED11,LED12,LED13	LED0603	LTST-C191KGKT
24	1	INDUCTOR	Power Inductor, 9.6A, 8.6mR, 20%	680nH	L1	FDSD0630	FDSD0630-H-R68M=P3
25	5	INDUCTOR	Power Inductor, 6.5A, 22mR, 20%	1.0µH	L7,L8,L9,L13,L14	FDSD0420	FDSD0420-H-1R0M=P3
26	2	INDUCTOR	Power Inductor, 6.5A, 22mR, 20%	1.5µH	L10,L16	FDSD0420	FDSD0420-H-1R5M=P3
27	1	INDUCTOR	BLM21, 3A, 0.03R @DC	120R @100MHz	L11	L0805	BLM21PG121SN1D
28	1	INDUCTOR		DNI	L12	L0805	
29	1	INDUCTOR	Power Inductor, 6.5A, 22mR, 20%	4.7µH	L15	FDSD0420	FDSD0420-H-4R7M=P3
30	1	OSCILLATOR	1.8Vdd	25MHz	OSC1	OSC2520	
31	1	OSCILLATOR	3.3Vdd	74.25MHz	OSC2	OSC2520	
32	1	OSCILLATOR	1.8Vdd	50MHz	OSC3	OSC2520	
33	1	OSCILLATOR	3.3Vdd	33.333333MHz	OSC4	OSC2520	
34	1	OSCILLATOR	3.3Vdd	25MHz	OSC5	OSC2520	
35	1	CONNECTOR	2.5 x 6.3 mm, 5.0 A, Horizontal, Surface Mount (SMT), DC Power Jack Connector	12V DC	PJ1	PJ-037BH-SMT-TR	PJ-037BH-SMT-TR
36	1	CONNECTOR		DNI	PJ2	PH2M54_2P2R	
37	1	SWITCH	OS0 Series Miniature Slide Switch	SW SPDT	PSW1	OS1020	OS102011MS2QN1
38	4	CONNECTOR		CON PH-2X2	PT1,PT12,PT15,PT17	PH2M54_2P2R	
39	13	CONNECTOR		CON PH-2X1	PT2,PT3,PT4,PT5,PT6,PT7,PT8,PT9,PT10,PT11,PT13,PT14,PT16	PH2M54_2P1R	
40	4	CONNECTOR	0.80 mm Q Strip® High-Speed Ground Plane Socket Strip	QSE-020-01-X-D-A	P1,P2,P3,P4	QSE-020-01-X-D-A	QSE-020-01-F-D-A
41	10	TRANSISTOR	60V NPN Small Signal Transistor IN SOT523	MMBT3904	Q1,Q2,Q3,Q4,Q5,Q6,Q7,Q8,Q9,Q10	SOT523	MMBT3904T-7-F
42	71	RESISTOR	1%, 0.125W	10K	R1,R2,R11,R12,R13,R14,R19,R20,R21,R27,R29,R30,R32,R40,R41,R42,R43,R82,R86,R102,R103,R104,R105,R106,R109,R110,R111,R132,R137,R150,R200,R202,R204,R205,R206,R207,R208,R209,R210,R211,R212,R213,R214,R215,R216,R217,R218,R219,R220,R221,R222,R223,R224,R225,R226,R227,R228,R229,R239,R240,R241,R242,R243,R244,R245,R246,R247,R248,R249,R250,R251	R0402	
43	2	RESISTOR	1%, 0.125W	240R	R3,R4	R0402	
44	5	RESISTOR	1%, 0.125W	33R	R5,R6,R7,R10,R252	R0402	

Item	Qty	Part Type	Description	Value	Reference	Footprint	Manufacturing PN
45	2	RESISTOR	1%, 0.125W	10R	R15,R16	R0402	
46	20	RESISTOR	1%, 0.125W	100K	R17,R26,R28,R34,R114,R121,R122,R123,R124,R125,R154, R155,R156,R157,R158,R159,R238,R254,R256,R258	R0402	
47	1	RESISTOR	1%, 0.125W	12K	R18	R0402	
48	1	RESISTOR	1%, 0.125W	2.2K	R22	R0402	
49	6	RESISTOR	1%, 0.125W	5.1K	R23,R24,R33,R97,R151,R198	R0402	
50	10	RESISTOR	1%, 0.125W	220R	R25,R115,R116,R117,R118,R119,R120,R253,R255,R257	R0402	
51	1	RESISTOR	1%, 0.125W	402K	R31	R0402	
52	32	RESISTOR	1%, 0.125W	0R	R35,R36,R79,R88,R95,R99,R101,R108,R126,R127,R128,R129, R133,R144,R145,R146,R165,R166,R169,R170,R173,R174, R181, R182,R185,R186,R187,R188,R191,R192,R195,R196	R0402	
53	2	RESISTOR	1%, 0.125W	200K	R37,R38	R0402	
54	2	RESISTOR	1%, 0.125W	1M	R39,R49	R0402	
55	2	RESISTOR	1%, 0.125W	62K	R45,R47	R0402	
56	2	RESISTOR	1%, 0.125W	51K	R46,R48	R0402	
57	45	RESISTOR	1%, 0.125W	DNI	R80,R83,R84,R85,R87,R91,R92,R93,R96,R98,R107,R131, R136,R138,R139,R140,R141,R142,R143,R149,R153,R161, R162,R163,R164,R167,R168,R171,R172,R175,R176,R177, R178,R179,R180,R183,R184,R189,R190,R193,R194,R199, R201,R203,R405	R0402	
58	1	RESISTOR	1%, 0.125W	47K	R81	R0402	
59	1	RESISTOR	1%, 0.125W	1.1M	R89	R0402	
60	2	RESISTOR	1%, 0.125W	4.99K	R90,R134	R0402	
61	1	RESISTOR	1%, 0.125W	8.66K	R94	R0402	
62	1	RESISTOR	1%, 0.125W	4.02K	R100	R0402	
63	1	RESISTOR	1%, 0.125W	35.7K	R130	R0402	
64	1	RESISTOR	1%, 0.125W	11.3K	R135	R0402	
65	1	RESISTOR	1%, 0.125W	26.7K	R147	R0402	
66	1	RESISTOR	1%, 0.125W	4.7K	R148	R0402	
67	1	RESISTOR	1%, 0.125W	3.74K	R152	R0402	
68	1	RESISTOR	1%, 0.125W	16.9K	R197	R0402	
69	9	RESISTOR	HP, 0.25W	0R	R232,R260,R261,R262,R263,R264,R265,R266,R267	R1206	
70	1	RESISTOR	1%, 0.125W	1K	R259	R0402	
71	1	RESISTOR	1%, 0.125W	120K	R512	R0402	
72	1	CONNECTOR	1.10mm Pitch microSD Card Header with Detect Switch, Height 2.65mm, Lead-Free, Gold (Au) Plated 0.762µm	473092651	SD1	473092651	473092651
73	1	CONNECTOR	50 Ohms, SMA PCB Jack Receptacle, Vertical, with Standoffs, 80 Pieces Per Tray	733910070	SMA1	733910070	733910070

Item	Qty	Part Type	Description	Value	Reference	Footprint	Manufacturing PN
74	4	SWITCH	3.9N, 16VDC, 50mA	PTS810	SW1,SW2,SW3,SW4	PTS810	PTS810SJG250SMTRL
75	4	TEST POINT	Color Keyed SMT Test Point -Black P/N 5191TR	5191TR	TP1,TP2,TP3,TP4	5191TR	5191TR
76	1	CONNECTOR	Universal Serial Bus (USB) Shielded I/O Receptacle, Type C, Right-Angle, Surface Mount, Top Mount, Single Row, 16 Circuits, Gold (Au) Plating	2171790001	USB1	2171790001	2171790001
77	1		FPGA, Titanium, 180K LE	Ti180J484	U1	FBGA484 SOCK	Ti180J484C4
78	1	MEMORY	DRAM LPDDR4 8G 256MX32 FBGA DDP	MT53E256M32D2A	U2	VFBGA-200	MT53E256M32D2A
79	1	IC	FT2232H Dual High Speed USB to Multipurpose UART/FIFO IC	FT2232H-56Q	U4	VQFN-56	FT2232H-56Q
80	1	EEPROM	2Kb Microwire (3-wire) Serial EEPROM with 16-Bit Organization	93LC56BT-I/OT	U6	SOT-23-6	93LC56BT-I/OT
81	1	POWER MGMT	5.5V to 28V Input, 2ch Synchronous Buck DC/DC Controller	BD95602MUV	U9	VQFN032V5050	BD95602MUV-LBE2
82	7	POWER MGMT	4.5V to 28V Input, 8.0A Integrated MOSFET Single Synchronous Buck DC/DC Converter	BD9F800MUX	U14,U15,U16,U18,U19,U24,U25	VQFN11X3535A	BD9F800MUX-ZE2
83	1	POWER MGMT	Nano Pulse Control™ 4.5 V to 36 V Input, 5 A Integrated MOSFET Single Synchronous Buck DC/DC Converter	BD9F500QUZ	U17	VMMP16LZ3030	BD9F500QUZ-E2
84	2	MOSFET	MOSFET N-CH 30V 32A/80A 8HSOP	RS1E321GNTB1	U20,U21	8-HSOP	RS1E321GNTB1
85	2	FLASH	FLASH - NOR Memory IC 256Mb (32M x 8) SPI - Quad I/O, QPI, DTR 166 MHz 8-WSON (8x6)	MX25U25645GZ410 0	U26,U27	8-WSON_8x6	MX25U25645GZ4100
86	1	POWER MGMT	Nano Energy™, CMOS Output Type, Supervisory IC for Automotive	BD70H12G-2CTR	U28	SOT-23-5	BD70H12G-2CTR
87	1	RESISTOR	Trimmer Resistors - Through Hole 1/4"SQ 20KOHMS 10% 0.5WATTS	20K	VR1	3362R	3362R-1-203LF
88	1	RESISTOR	Trimmer Resistors - Through Hole 1/4"SQ 2.5KOHMS 10% 0.5WATTS	2.5K	VR2	3362R	3362P-1-252LF
89	1	CRYSTAL	Automotive & Industrial Grade Ceramic Base SMD Crystal	12MHZ	Y1	CRY3225	ABM3BAIG-12.000MHZ



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