T20 BGA169 MIPI DEVELOPMENT KIT

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REVISION HISTORY

1A	2/22/19		Initial Creation
2A	5/29/19		Revised the connectors on MIPI interface, signals and adding 2.8V voltage regulator
3A	8/12/19		Revised the MIPI and LVDS signals
4A	3/20/20	KCLEE	Added note for power-up recommendation

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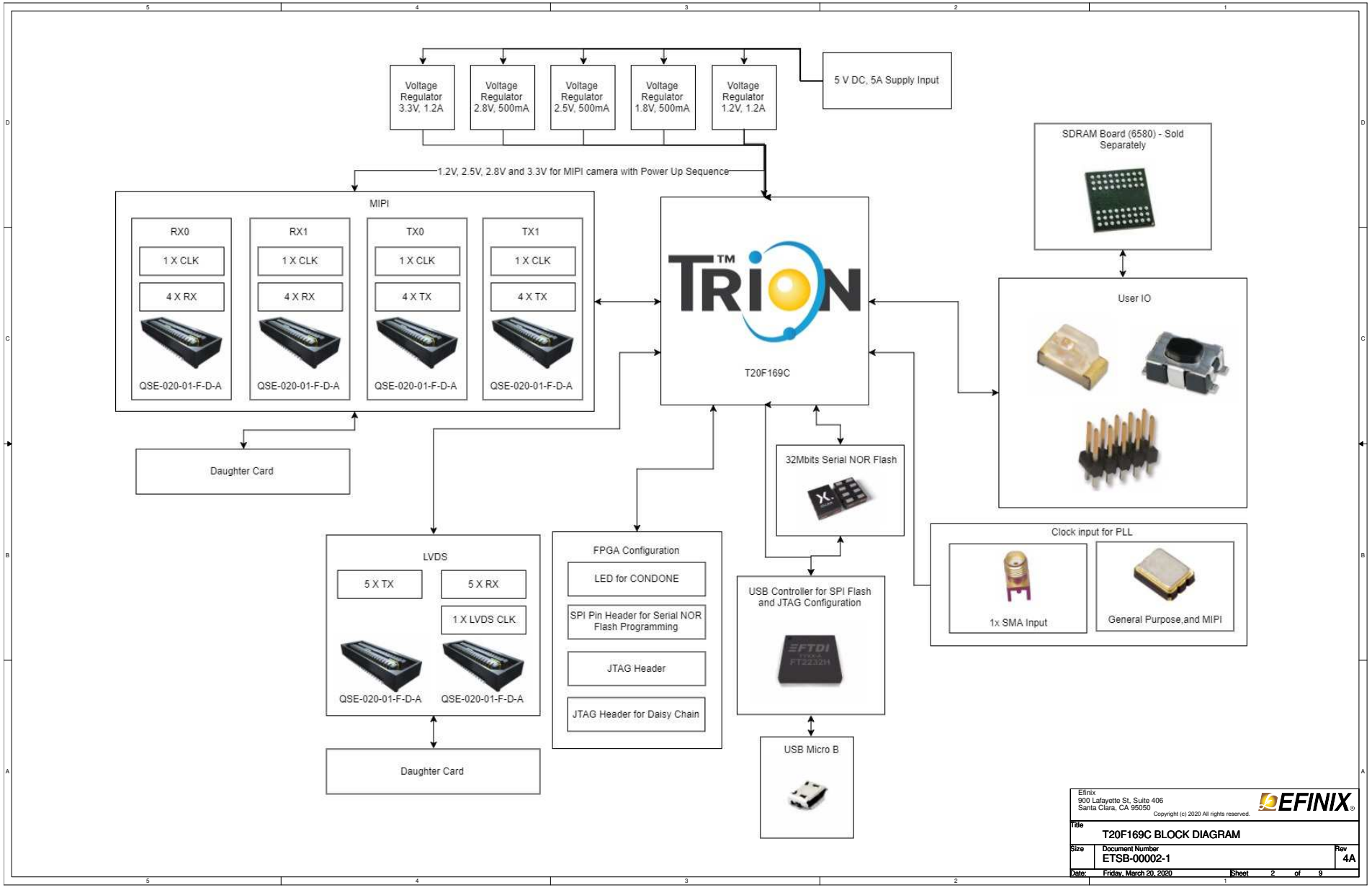
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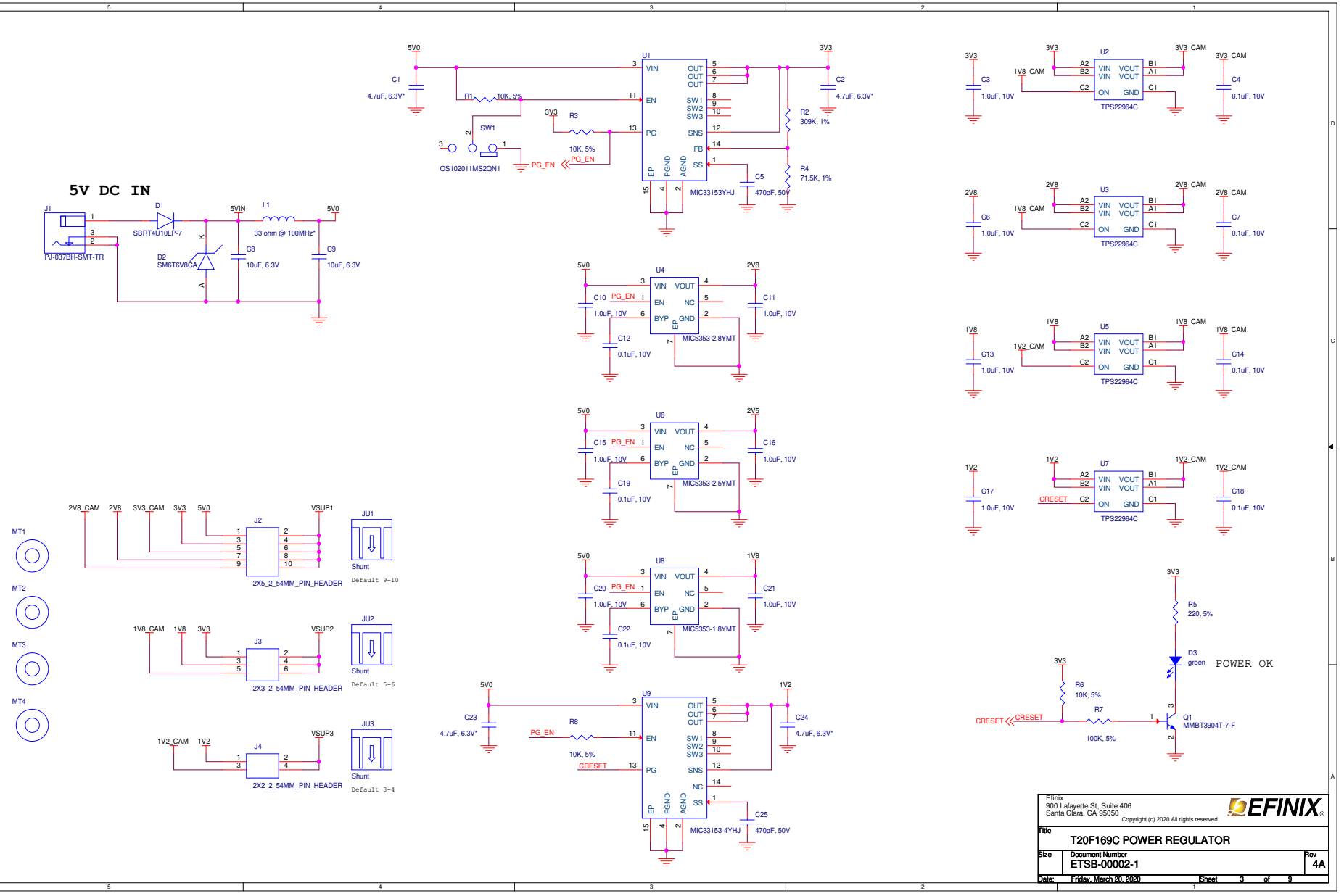
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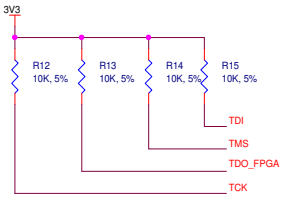
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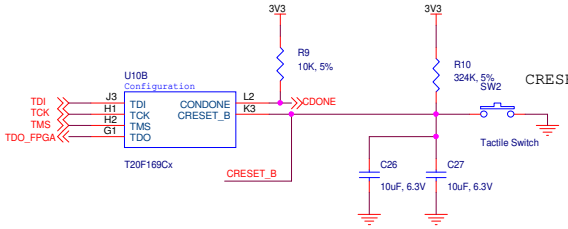
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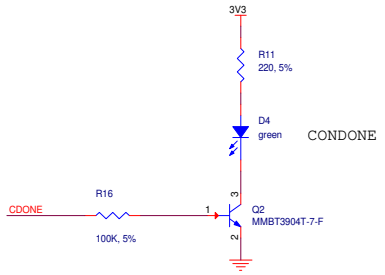
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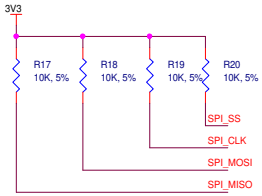
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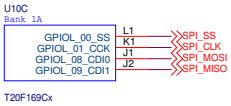


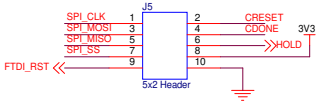




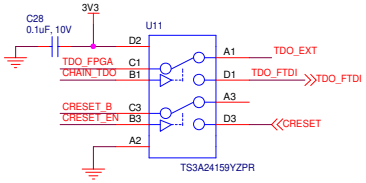
For power-up recomendation, please follow Trion power-up sequence in Trion datasheet and voltage supervisory IC (Reset IC) is recommended at CRESET_N which provide reliable solution

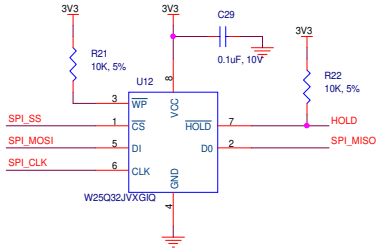


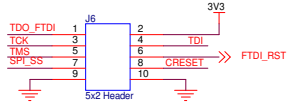




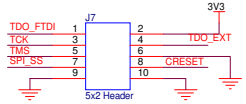
External Serial NOR Flash Header







JTAG Upstream Header

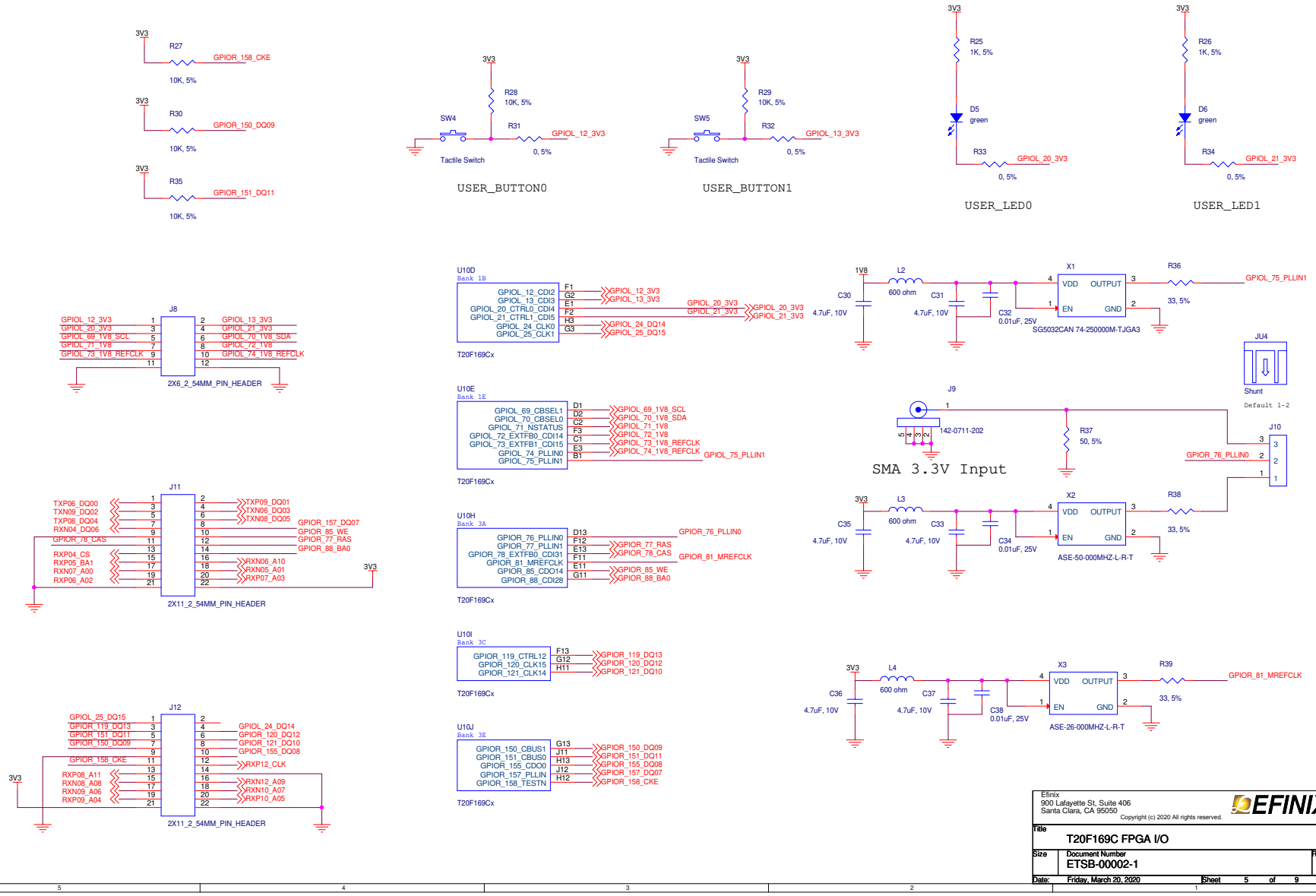


JTAG Downstream Header



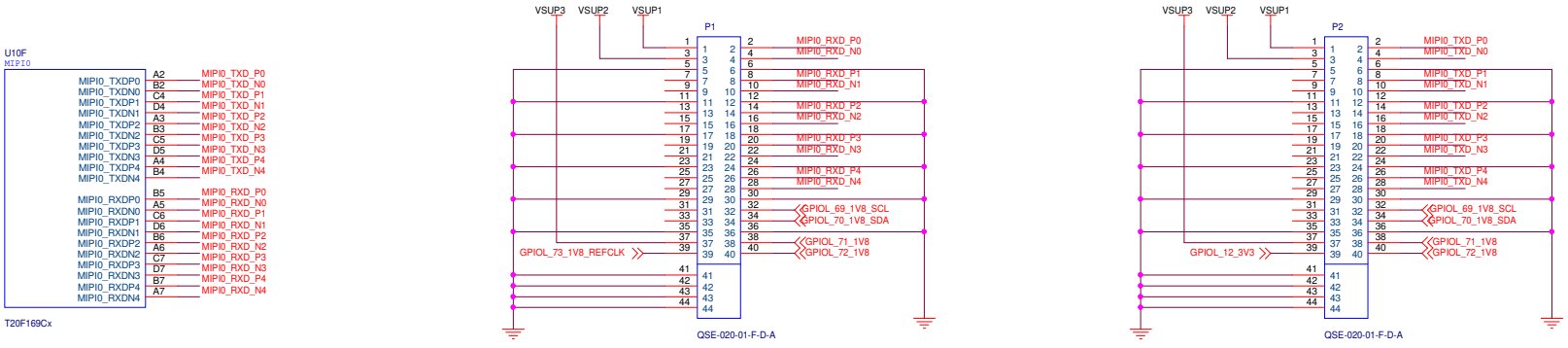
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Title	T20F169C FPGA CONFIGURATION	
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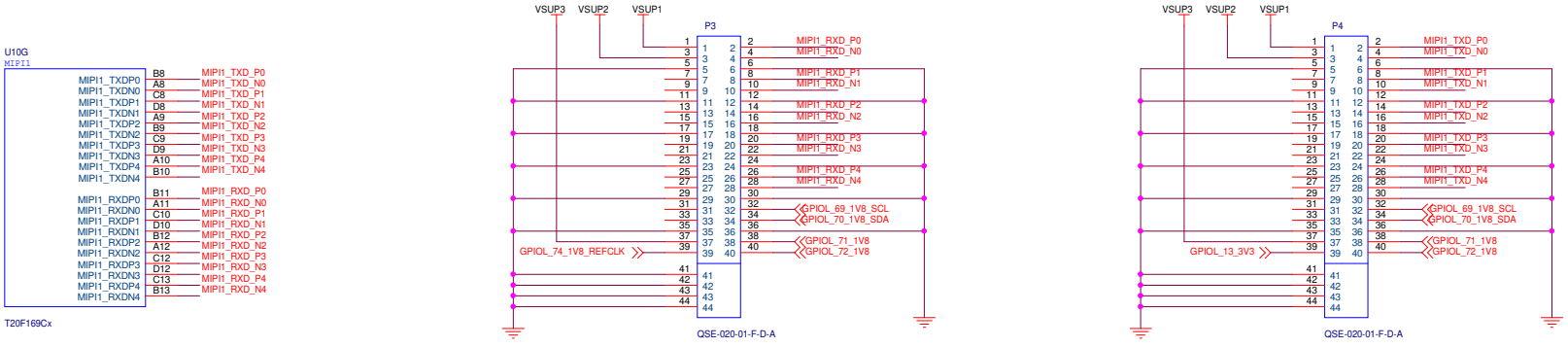


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Title	T20F169C FPGA I/O	
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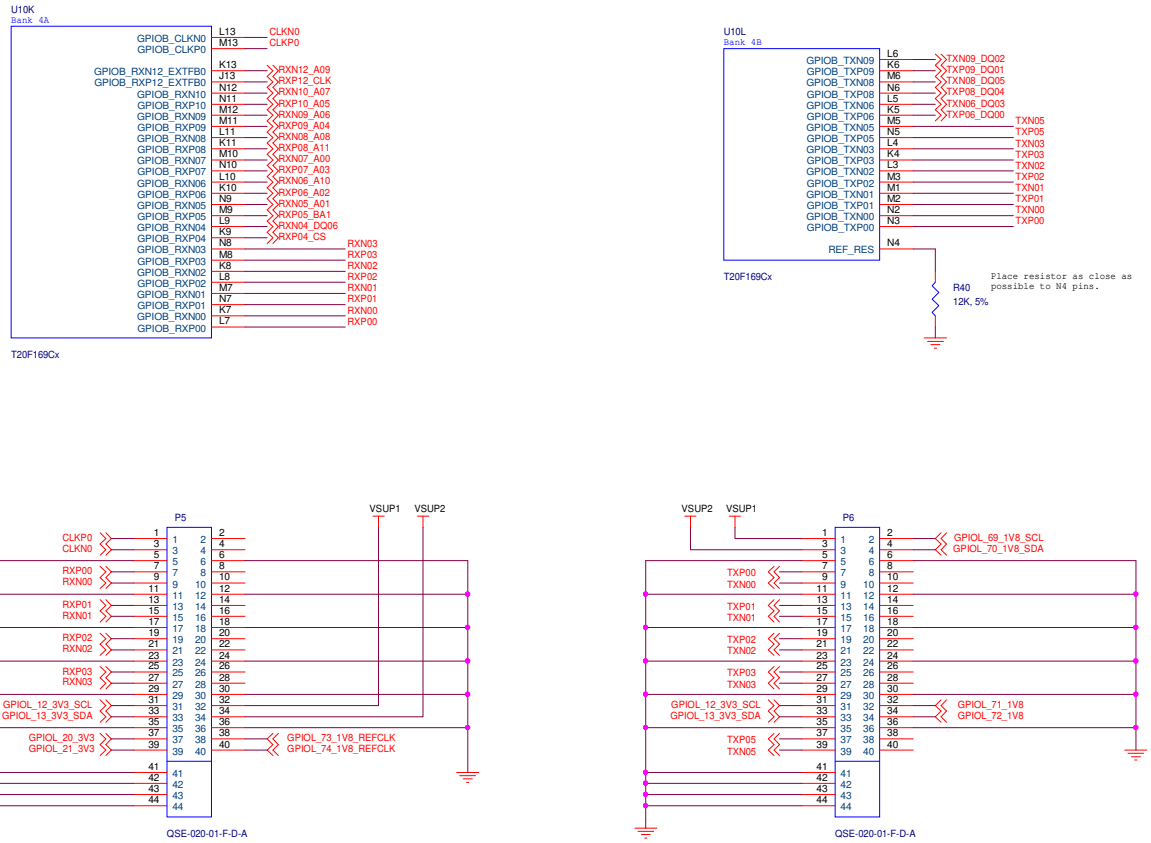
MIPI Channel 0



MIPI Channel 1

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Title	T20F169C FPGA MIPI	
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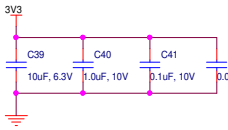


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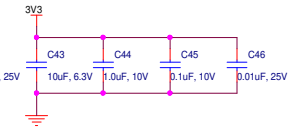
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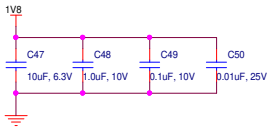
VCC1A bypass capacitor



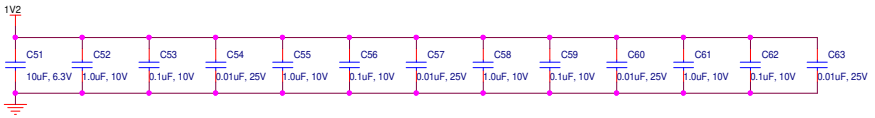
VCC1B_1C_1D bypass capacitor



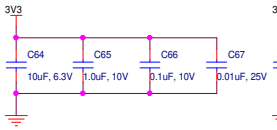
VCC1E bypass capacitor



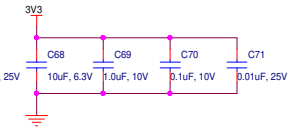
VCC bypass capacitor



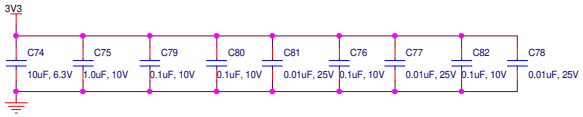
VCC3A_3B bypass capacitor



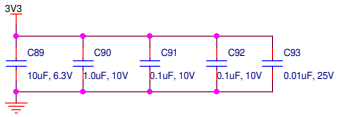
VCC3C_3D_3E bypass capacitor



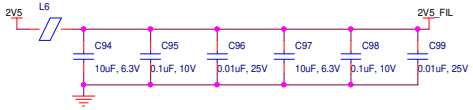
VCC4A bypass capacitor



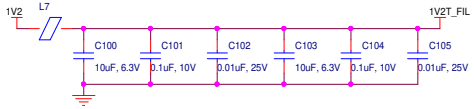
VCC4B bypass capacitor



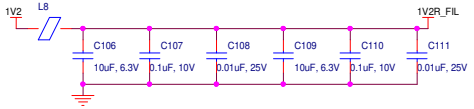
VCC25A_MIPI bypass capacitor

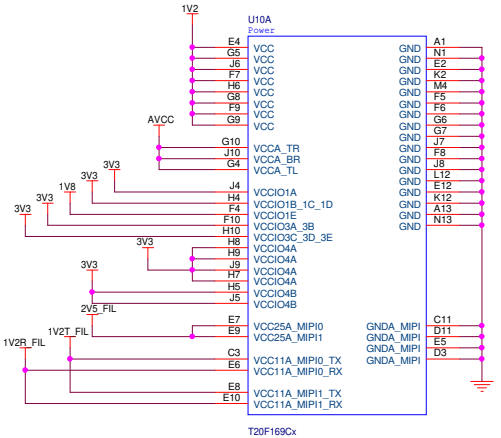


VCC11A_MIPI_TX bypass capacitor

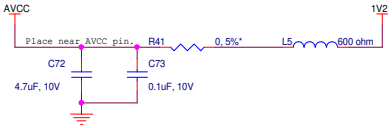


VCC11A_MIPI_RX bypass capacitor

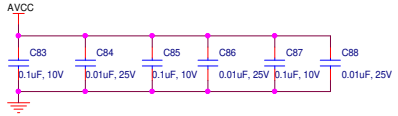




Place all the bypass capacitors near to U10



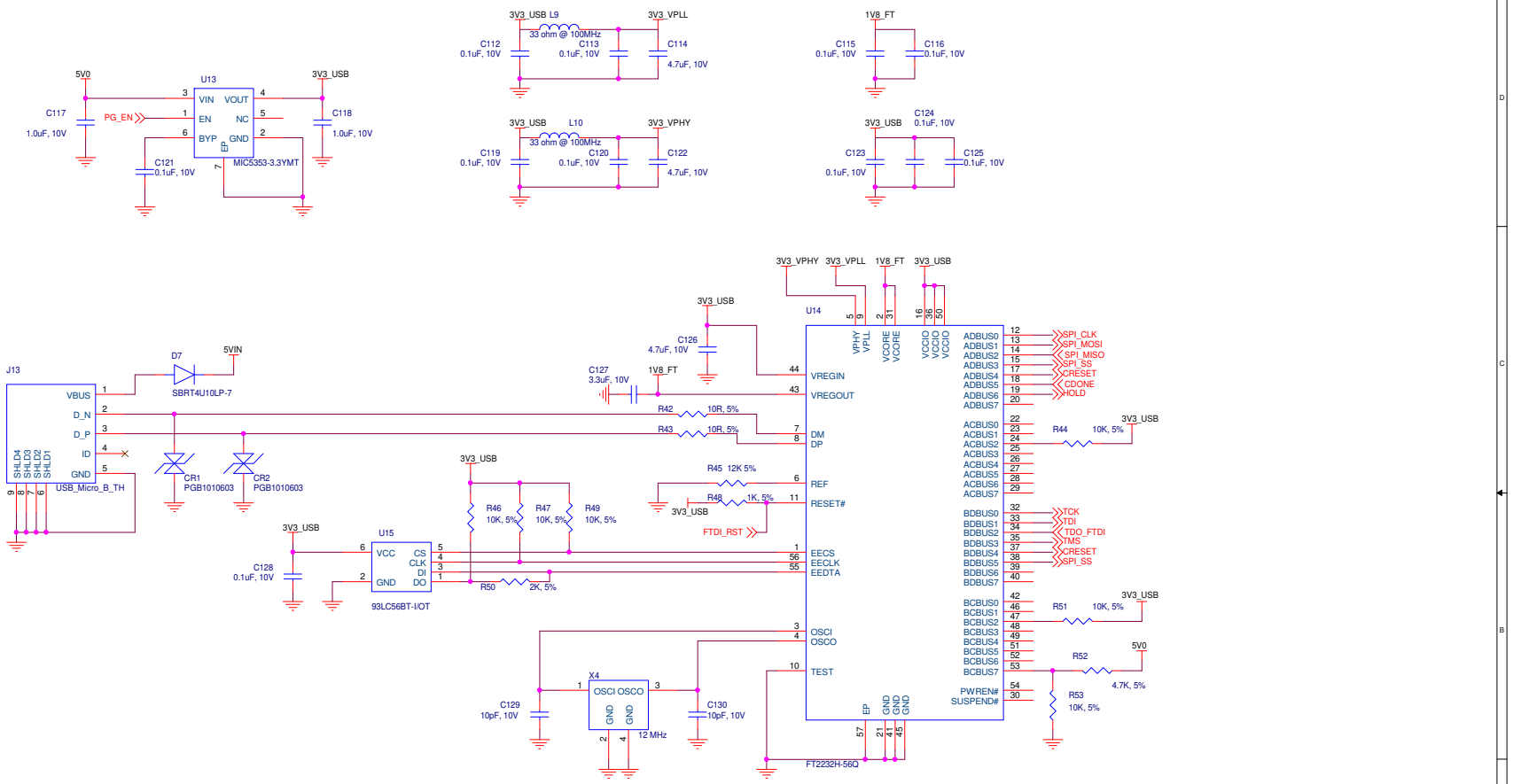
VCCA bypass capacitor



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EFINIX QTE DAUGHTER CARD

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PAGE 03 – QTE to 15 FPC CONVERTER
PAGE 04 – QTE to 2.54MM HEADER CONVERTER

REVISION HISTORY

1A	6/04/2019	Initial Creation
2A	8/08/2019	Removed DF30 and Micro-coax Swapped P<->N for FPC15, Remote J6

All material must comply with:

1. The requirements of the European Union RoHS 2 Directive 2017/2102 (Amendment to 2011/65/EU) with no exceptions unless authorized.

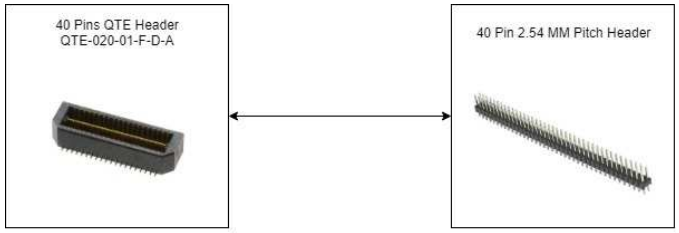
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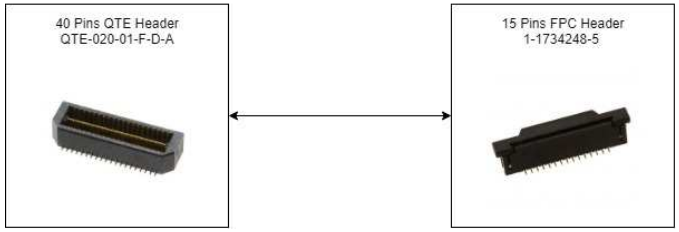
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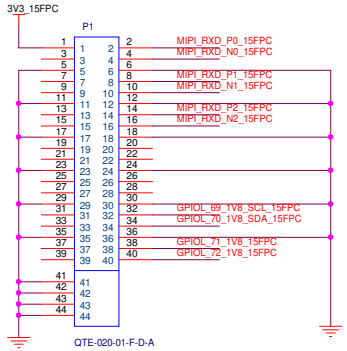


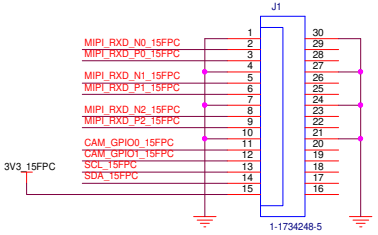
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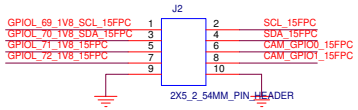
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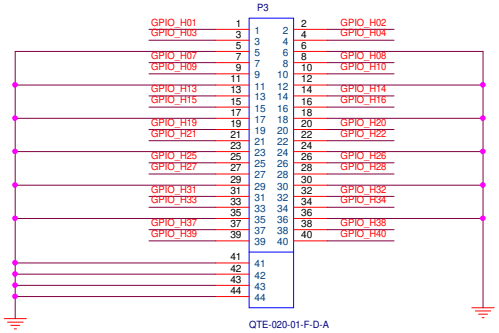


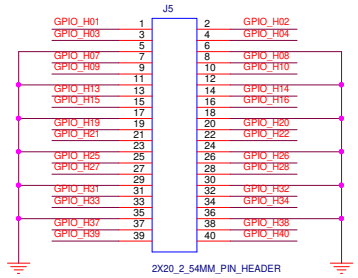
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Title: QTE to 15 FPC

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Title: QTE to 2.54MM Header

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Trion T20 MIPI Development Board Bill of Materials

Item	Quantity	Reference	Description	Brand	Manufacturer Part No
1	2	CR1,CR2	Surface Mount Polymeric Electrostatic Discharge	LITTELFUSE	PGB1010603NR
2	4	C1,C2,C23,C24	CAP CER 4.7UF 6.3V X5R 0603	MURATA	GRM188R60J475ME84D
3	23	C3,C6,C10,C11,C13,C15,C16,C17,C20,C21,C52,C55,C58,C61,C117,C118,C40,C44,C48,C65,C69,C75,C90	CAP CER 1UF 10V X5R 0402	MURATA	GRM155R61A105KE15D
4	45	C4,C7,C12,C14,C18,C19,C22,C28,C29,C41,C45,C49,C53,C56,C59,C62,C66,C70,C73,C76,C79,C80,C82,C83,C85,C87,C91,C92,C95,C98,C101,C104,C107,C110,C112,C113,C115,C116,C119,C120,C121,C123,C124,C125,C128	CAP CER 0.1UF 10V X5R 0402	MURATA	GRM155R61A104KA01J
5	2	C5,C25	CAP CER 470PF 50V C0G/NP0 0603	MURATA	GRM1885C1H471JA01D
6	18	C8,C9,C26,C27,C39,C43,C47,C51,C64,C68,C74,C89,C94,C97,C100,C103,C106,C109	CAP CER 10UF 6.3V X5R 0603	MURATA	GRM188R60J106KE47D
7	10	C30,C31,C33,C35,C36,C37,C72,C114,C122,C126	0603X475K100CT - SMD Multilayer Ceramic Capacitor, 4.7 µF, 10 V, 0603 [1608 Metric], ± 10%, X5R	WALSIN	0603X475K100CT
8	25	C32,C34,C38,C42,C46,C50,C54,C57,C60,C63,C67,C71,C77,C78,C81,C84,C86,C88,C93,C96,C99,C102,C105,C108,C111	CAP CER 10000PF 25V X7R 0402	Yageo	0402B103J250CT
9	1	C127	SMD Multilayer Ceramic Capacitor, 3.3 µF, 10 V, 0805	WALSIN	0805X335K100CT
10	2	C129,C130	CAP CER 10PF 50V C0G/NP0 0402	MURATA	GRM1555C1H100JA01D
11	2	D1,D7	Diode Super Barrier 10V 4A Surface Mount U-DFN2020-2	Diodes Incorporated	SBRT4U10LP-7

12	1	D2	TVS DIODE 5.8V 13.4V SMB	STMicroelectronics	SM6T6V8CA
13	4	D3,D4,D5,D6	LED GREEN CLEAR 0603 SMD	LITEON	LTST-C191KGKT
14	4	JU1,JU2,JU3,JU4	Mini Shunt Jumper, Board-to-Board Header Connectors, 1 Ways, 2.54 mm, 2228 Series	MULTICOMP	MC-2228BG
15	1	J1	DC POWER JACK	CUI	PJ-037BH-SMT-TR
16	4	J2, J5,J6,J7	5 X 2 Header (2.54 MM Pitch)	HARWIN	M20-9980545
17	1	J3	3 x 2 Header (2.54 MM Pitch)	HARWIN	M20-9980345
18	1	J4	2 X 2 Header (2.54 MM Pitch)	HARWIN	M20-9980245
19	1	J8	6 X 2 Header (2.54 MM Pitch)	HARWIN	M20-9980645
20	1	J9	SMA Connector Jack, Female Socket 50 Ohm Surface Mount Solder	Johnson	142-0711-202
21	1	J10	11 X 2 Header (2.54 MM Pitch)	HARWIN	M20-9981145
22	2	J11,J12	3 X 1 Header (2.54 MM Pitch)	HARWIN	M20-9990345
23	1	J13	MICRO USB 2.0 CONNECTORS	Amphenol	10118192-0001LF
24	1	L1	FERRITE BEAD 30 OHM 0805 1LN	muRata	BLM21PG300SN1D
25	4	L2,L3,L4,L5	Ferrite Bead	muRata	BLM15AG601SN1D
26	3	L6,L7,L8	Ferrite Bead	Murata	BLM15AG221SN1D
27	2	L9,L10	Ferrite Bead	muRata	BLM15PX330SN1D
28	6	P1,P2,P3,P4,P5,P6	Board to Board & Mezzanine Connectors	Samtec	QSE-020-01-F-D-A
29	2	Q1,Q2	NPN 40V 0.2A SOT523	DIODES	MMBT3904T-7-F
30	28	R1,R3,R6,R8,R9,R12,R13,R14,R15,R17,R18,R19,R20,R21,R22,R23,R24,R44,R46,R47,R49,R51,R53,R27,R28,R29,R30,R35	10k 5%	YAGEO	RC0402FR-0710KL
31	1	R2	309k Ohm 0402	Panasonic	ERJ2RKF3093X
32	1	R4	71.5k Ohm 0402	YAGEO	RC0402FR-0771K5L
33	2	R5,R11	SMD Chip Resistor, 0402 [1005 Metric], 220 ohm,	YAGEO	RC0402FR-07220RL
34	2	R7,R16	100K OHM 5% 1/16W 0402	YAGEO	RC0402FR-07100KL
35	1	R10	Thick Film Resistors - SMD 0402 324Kohms 1% AEC-	YAGEO	RC0402FR-07324KL
36	3	R25,R26,R48	1K OHM 1/10W 5% 0402	YAGEO	RC0402FR-071KL
37	3	R36,R38,R39	33 ohms, 5%,1/16W,0402	YAGEO	RC0402FR-0733RL
38	1	R37	RES SMD 50 OHM 0.1% 1/16W 0402	Yageo	RT0402BRE0750RL
39	4	R31,R32,R33,R34	SMD Chip Resistor, 0805 [2012 Metric], 0 ohm, RC Series, 50 V, Thick Film, 125 mW	Yageo	RC0805JR-070RL
40	1	R41	SMD Chip Resistor, 0402 [1005 Metric], 0 ohm, RC Series, 50 V, Thick Film, 62.5 mW	YAGEO	RC0402JR-070RL
41	2	R42,R43	10 ohm 1%	YAGEO	RC0402FR-0710RL

42	2	R40, R45	SMD Chip Resistor, 0402 [1005 Metric], 12 kohm, RC Series, 50 V, Thick Film, 63 mW	Panasonic	ERJ2GEJ123X
43	1	R50	2k 5%	YAGEO	RC0402FR-072KL
44	1	R52	RES, THICK FILM, 4K7, 5%, 0.0625W, 0402	YAGEO	RC0402JR-074K7L
45	1	SW1	OS SeriesMiniature Slide Switches	C&K	OS102011MS2QN1
46	3	SW2,SW4,SW5	Tactile Switch, B3U Series, Top Actuated, SMD, Round Button, 153 gf, 50mA at 12VDC	Omron	B3U-1000P
47	1	SW3	DIP Switches/SIP Switches END STACK DIP 2P J RAISED TUBE	TE Connectivity / Alcoswitch	EDS02SNNNTU04Q
48	4	U2,U3,U5,U7	Power Switch ICs - Power Distribution Low On-Resistance 3A Load Switch	Texas Instruments	TPS22964CYZPT
49	1	U1	4MHz PWM 1.2A Internal Inductor Buck Regulator	Microchip	MIC33153YHJ
50	1	U4	2.8V, 500mA LDO in 1.6mm × 1.6mm Package	Microchip	MIC5353-2.8YMT
51	1	U6	2.5V, 500mA LDO in 1.6mm × 1.6mm Package	Microchip	MIC5353-2.5YMT
52	1	U8	1.8V, 500mA LDO in 1.6mm × 1.6mm Package	Microchip	MIC5353-1.8YMT
53	1	U9	4MHz PWM 1.2A Internal Inductor Buck Regulator	Microchip	MIC33153-4YHJ
54	1	U10	Trion T20F169 FPGA	Efinix	T20F169Cx
55	1	U11	Analogue Switch ICs 0.3O Dual SPDT Ana Sw 2Ch	Texas Instruments	TS3A24159YZPR
56	1	U12	SPIFLASH, 32M-BIT, 4KB	Winbond	W25Q32JVXGIQ
57	1	U13	3.3V, 500mA LDO in 1.6mm × 1.6mm Package	Microchip	MIC5353-3.3YMT
58	1	U14	FT2232HDual High Speed USB to Multipurpose	FTDI	FT2232H-56Q
59	1	U15	2K Microwire Compatible Serial EEPROM	Microchip	93LC56BT-I/OT
60	1	X1	Standard Clock Oscillators 74.25MHz 50ppm -40C	Epson	SG5032CAN 74-250000M-TJGA3
61	1	X2	Standard Clock Oscillators 50MHz 3.3Volts 25ppm -	ABRACON	ASE-50-000MHZ-L-R-T
62	1	X3	Standard Clock Oscillators 26MHz 3.3Volts 25ppm -	ABRACON	ASE-26-000MHZ-L-R-T
63	1	X4	Crystal Resonator	Multicomp	MCSJK-7U-12.00-12-10-80-B-10

Daughter Cards Bill of Materials

Item	Quantity	Reference	Description	Manufacturer	Manufacturer Part No
1	1	J1	Easy-On FFC/FPC Connector, 1.00mm Pitch, Slider Series, Vertical, 5.75mm Height, 15 Circuits, Gold Plating	MOLEX	526101572
2	1	J2	5 X 2 Header (2.54 MM Pitch)	HARWIN	M20-9980545
3	1	J5	20 X 2 Header (2.54 MM Pitch)	HARWIN	M20-9982045
4	2	P1,P3	40 Ways Board to Board & Mezzanine Connectors 0.80 mm Q Strip High-Speed Ground Plane Terminal Strip	Samtec	QTE-020-01-F-D-A

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