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Revision History

Rev	Description	Date	Approved/Designer
X	Initial Schematic	07/2021	Jesús Sánchez
X1	A055 Released	07/2021	
X1	A070 Released	07/2021	Jesús Sánchez
X2	0ohm res added, ThruHole TP added on VTRKx nets.	07/2021	Jesús Sánchez
A	A085 Released	08/13/2021	Jesús Sánchez
B	D18 added, R602 deleted	09/2021	Jesús Sánchez

XS32K312EVB-Q172

Customer Evaluation Board

C A U T I O N :

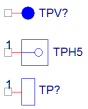
This schematic is provided for reference purposes only. As such, NXP does not make any warranty, implied or otherwise, as to the suitability of circuit design or component selection (type or value) used in these schematics for hardware design using the NXP S32K family of Microprocessors. Customers using any part of these schematics as a basis for hardware design, do so at their own risk and NXP Semiconductors does not assume any liability for such a hardware design.

3 Different test points used in design:

TPVx - Through Hole Pad small

TPHx - Through Hile Pad Large (for standard 0.1" header). Also used on IO Matrix (IOMx)

TPX - Surface Mount Wire Loop



Notes:

- All components and board processes are to be ROHS compliant
- All connectors and headers are denoted Jx/Px and are 2.54mm pitch unless otherwise stated
- All jumpers are denoted Jx. Jumpers are 2mm pitch
- Jumper default positions are shown in the schematics. For 3 way jumpers, default is always posn 1-2.
  2 Pin jumpers generally have the "source" on pin 1.
- All switches are denoted SWx
- All test points (SMT wire loop style) are denoted TPx
- Test point Vias (just through hole pads) are denoted TPVx

Signals (ports) have not been routed via busses as this makes it harder to determine where each signal goes.

User notes are given throughtout the schematics.

Specific PCB LAYOUT notes are detailed in ITALICS

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Classification: <FCP> X

Designer: Jesús Sanchéz	Drawing Title: XS32K312EVB-Q172	
Drawn by: Jesús Sanchéz	Page Title: TITLE PAGE	
Approved: Jesús Sanchéz	Size B / Document Number SCH-50892 PDF: SPF-50892	Rev B
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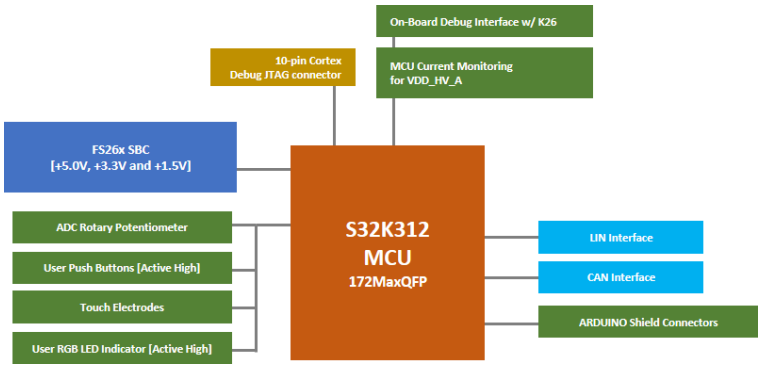
1. DNP Table

REF DES	ASSY_OPT	PAGE NAME
R1940,J14,J10,J413,R1319,J15, J400,R27,R31,R1320,J11,J414, J2	DNP	03. FS26
R88,C113,TP88,C88,C127,J7, C3865,R89,J31,C91,R78,J13, TP114,R94,TP80,R79,R85,C115, TP253,U71,R80,R108,J15,C116, R81,R305,Q6,R72,R82,R1090, TP116,J19,R1973,U6,R1985,R86, R73,C109,R1091,R1971,C87, C268,C84,C94,TP84,R615,C111, R1051,TP85,C95,R1981,R333, C128,R107,C266,C3864,C86,R60, R77,R349,R1983,C267,TP87	DNP	04. MCU PWR
R2082,R1975,R130,R1240,R1108, R2178,R2175,R2081,R1979	DNP	05. MCU PORTS1
R200,R1949,R1950,R146	DNP	06. JTAG/SWD/CORTEX DEBUG+ETM
R260,J3,R1958,R202,R593,R240, J689,R1959,R594,R595,R592, C172,J682,R257,R254,R596	DNP	07. OPENSDA K26
R1331,R1205,R1202,C150,R1885, R2037,C3839,C3876,R1333,C149	DNP	08. CAN/LIN PHY
J411	DNP	09. USER PERIPHERALS
R2150,R1816,R2084,R2088, R1965,R2168,R1814,R2180, R2012,R1963,R1810,R2148, R2152,R2171,R2156,R2078, R2077,R2021,R2161,R1811, R2172,R2158,R2169,R2174, R2164,R2022,R2151,R2162, R2173,R2166,R1967,R2182, R2079,R2167,R2152	DNP	10. ARDUINO HDRS

2. Jumper Default configuration

REF DES	JUMPER(DEFAULT)	PAGE NAME
J26	1-2 Closed	03. FS26
J22,J1,J5	1-2	03. FS26
J30	OPEN	03. FS26
J18,J10	1-2 Closed	04. MCU PWR
J9,J8	1-2	04. MCU PWR
J7,J31,J13,J15,J19	OPEN	04. MCU PWR
J44	OPEN	07. OPENSDA K26
J20,J24	OPEN	08. CAN/LIN PHY



S32K312 172MaxQFP [DEFAULT CONFIG]

POPULATED

R417, R401, R482, R480
R1978, R1980, R2177

REMOVED

R1975, R1979, R2178, R467, R483, R481, R422
C166, C161, C154,J31, Q6, Q4, R551, TP40, J31 J8, C39, C156, C116, C90, C91, C115, C155, C31,U17 J15, J19,R349

S32K3x4 172MaxQFP

POPULATED

R1975, R1979, R2178, R467, R483, R481, R422
C166, C161, C154,J31, Q6, Q4, R551, TP40, J31 J8, C39, C156, C116, C90, C91, C115, C155, C31,U17 J15, J19,R349

REMOVED

R417, R401, R482, R480
R1978, R1980, R2177

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Classification: <FCP> X

Designer: Jesús Sanchéz	Drawing Title: XS32K312EVB-Q172	
Drawn by: Jesús Sanchéz	Page Title: NOTES & BLOCK DIAGRAM	
Approved: Jesús Sanchéz	Size C / Document Number SCH-50892 PDF: SPF-50892	Rev B
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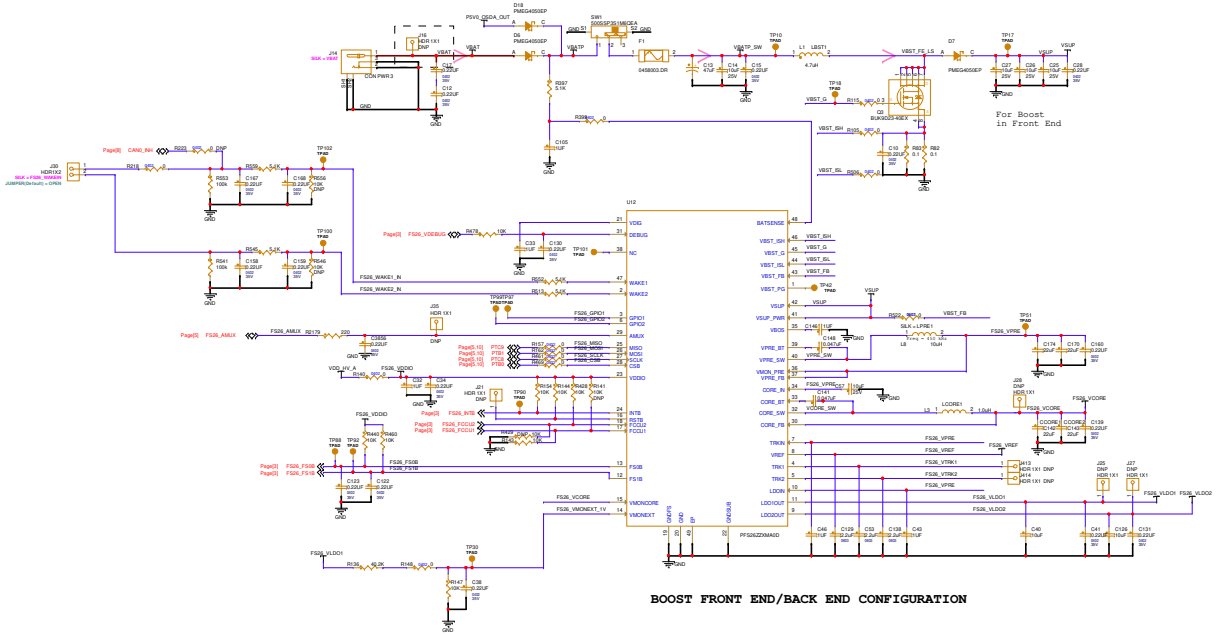
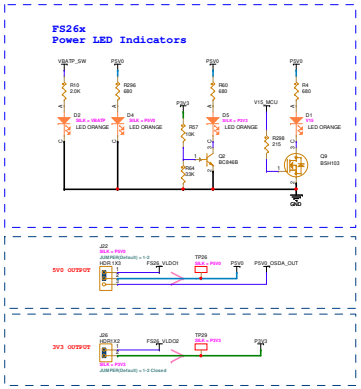
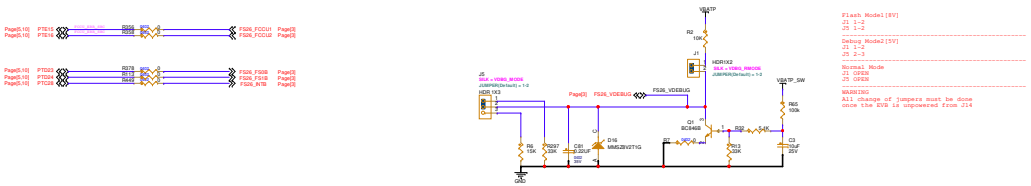
FS26 – Power Supply

SMPS-based SBC



BOOST FRONT END/BACK END CONFIGURATION





NXP SEMICONDUCTORS	Automotive Product Group 6501 William Cannon Drive West Austin, TX 78735-8598
Designer: Jesús Sánchez	Drawing Title: XS32K312EVB-Q172
Drawn by: Jesús Sánchez	Page Title: FS26x SBC Power Supply
Approved: Jesús Sánchez	Size: D; Document Number: SCH-50892 PDF:SPF-50892; Rev: B
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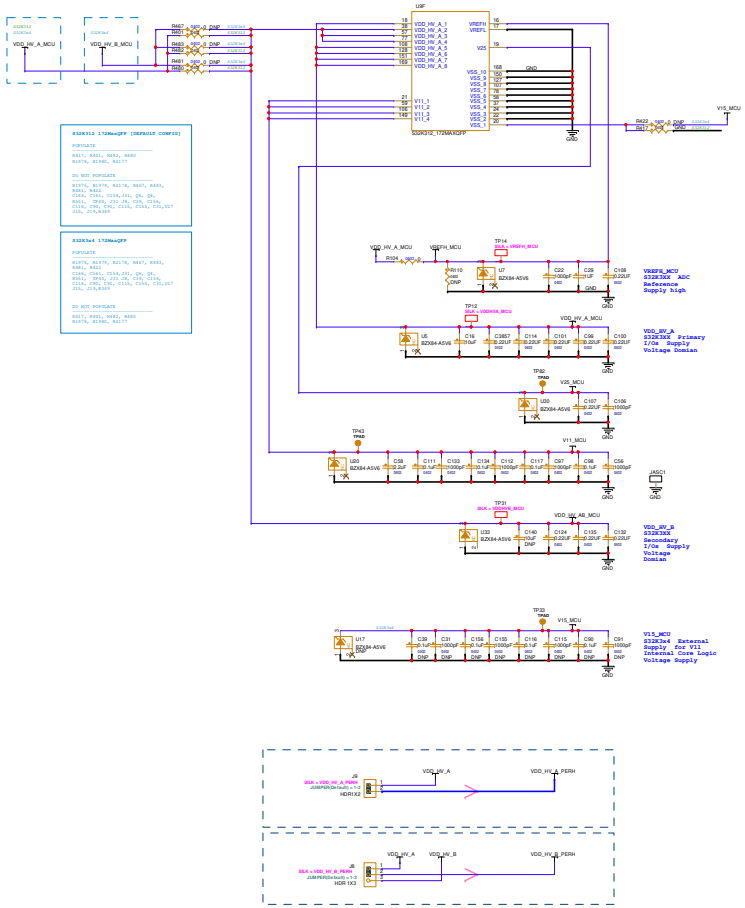
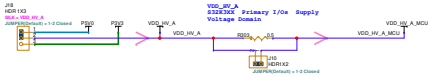
S32K312 Microcontroller – 172MaxQFP

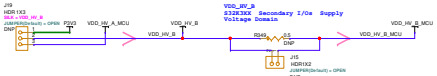
Power Supply Pins



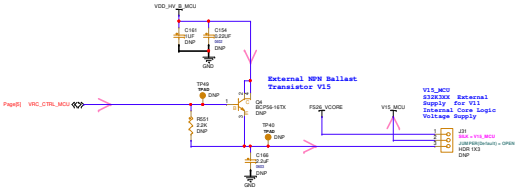
MCU Current/Voltage Monitoring for VDD_HV_A – S32K3x4 172MaxQFP and S32K312 172MaxQFP



MCU Current/Voltage Monitoring for VDD_HV_B – S32K3X4 172MaxQFP [only]



External NPN Ballast transistor for S32K3X4 172MaxQFP [only]



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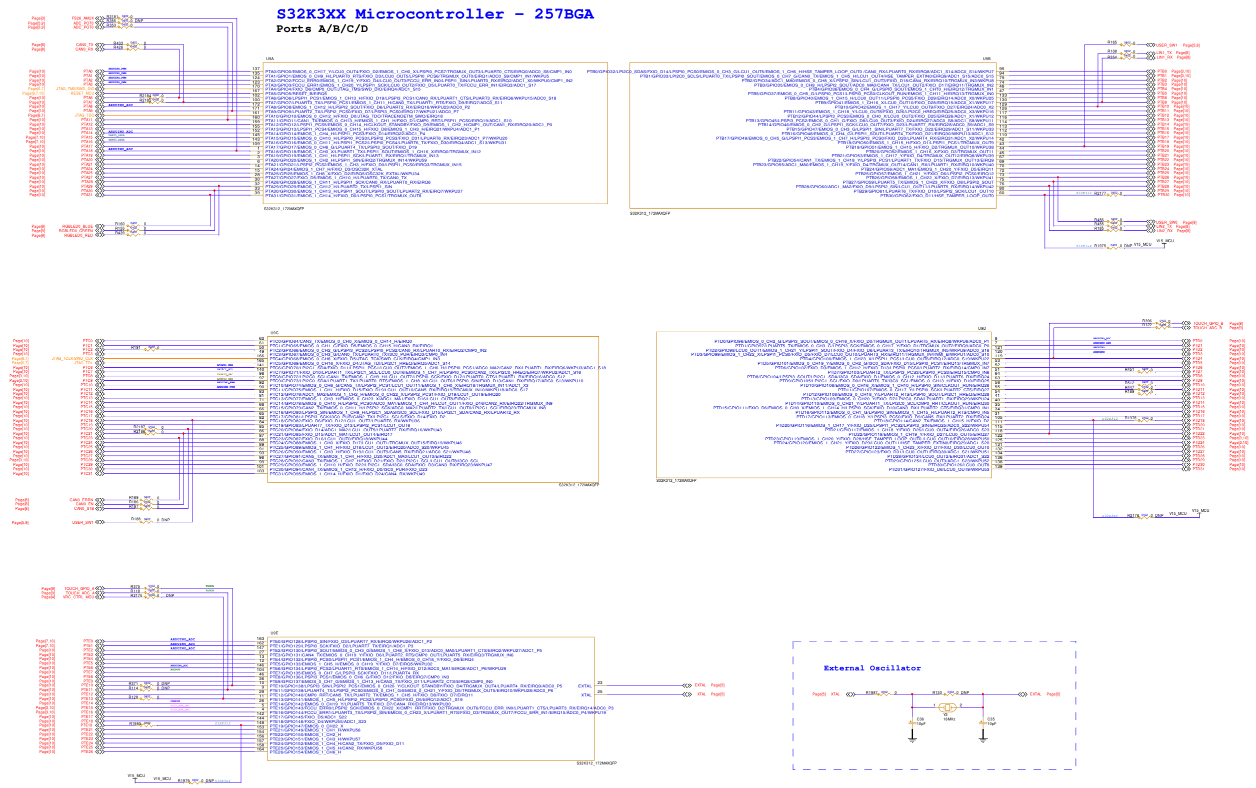
Designer: Jesús Sánchez	Drawing Title: XS32K312EVB-Q172
Drawn by: Jesús Sánchez	Page Title: S32K3XX - MCU POWER Supply Pins
Approved: Jesús Sánchez	Size: D; Document Number: SCH-50892; PDF:SPF-50892; Rev: B
	Date: Tuesday, September 14, 2021; Sheet 4 of 10



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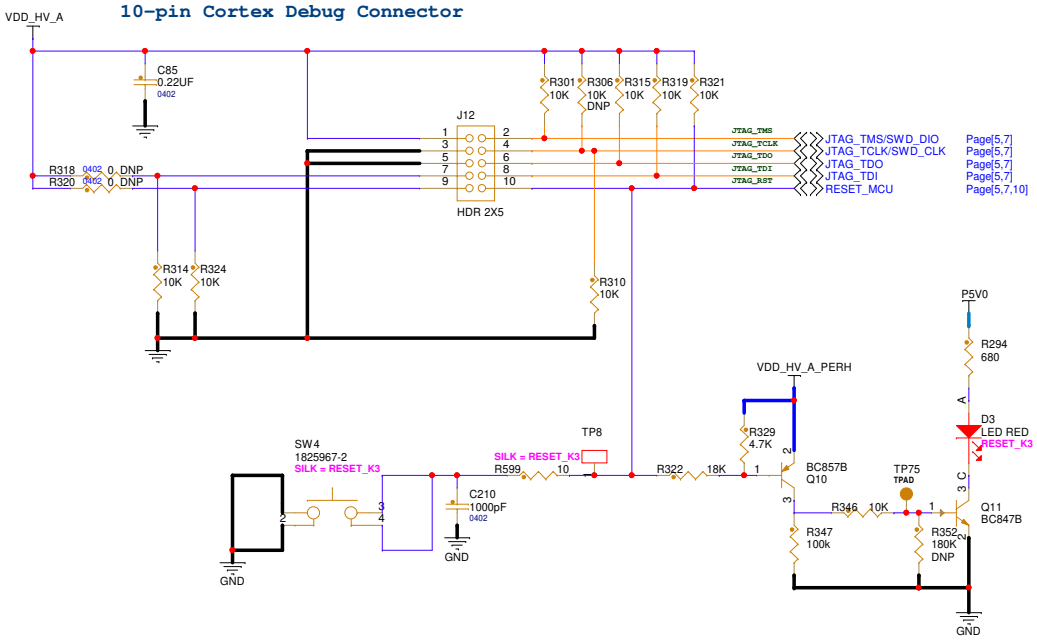
Designer: Jesús Sanchéz	Drawing Title: XS32K312EVB-Q172		
Drawn by: Jesús Sanchéz	Page Title: S32K3XX - Ports A/B/C/D		
Approved: Jesús Sanchéz	Size E	Document Number SCH-50892 PDF: SPF-50892	Rev B
	Date: Tuesday, September 14, 2021	Sheet 5 of 10	



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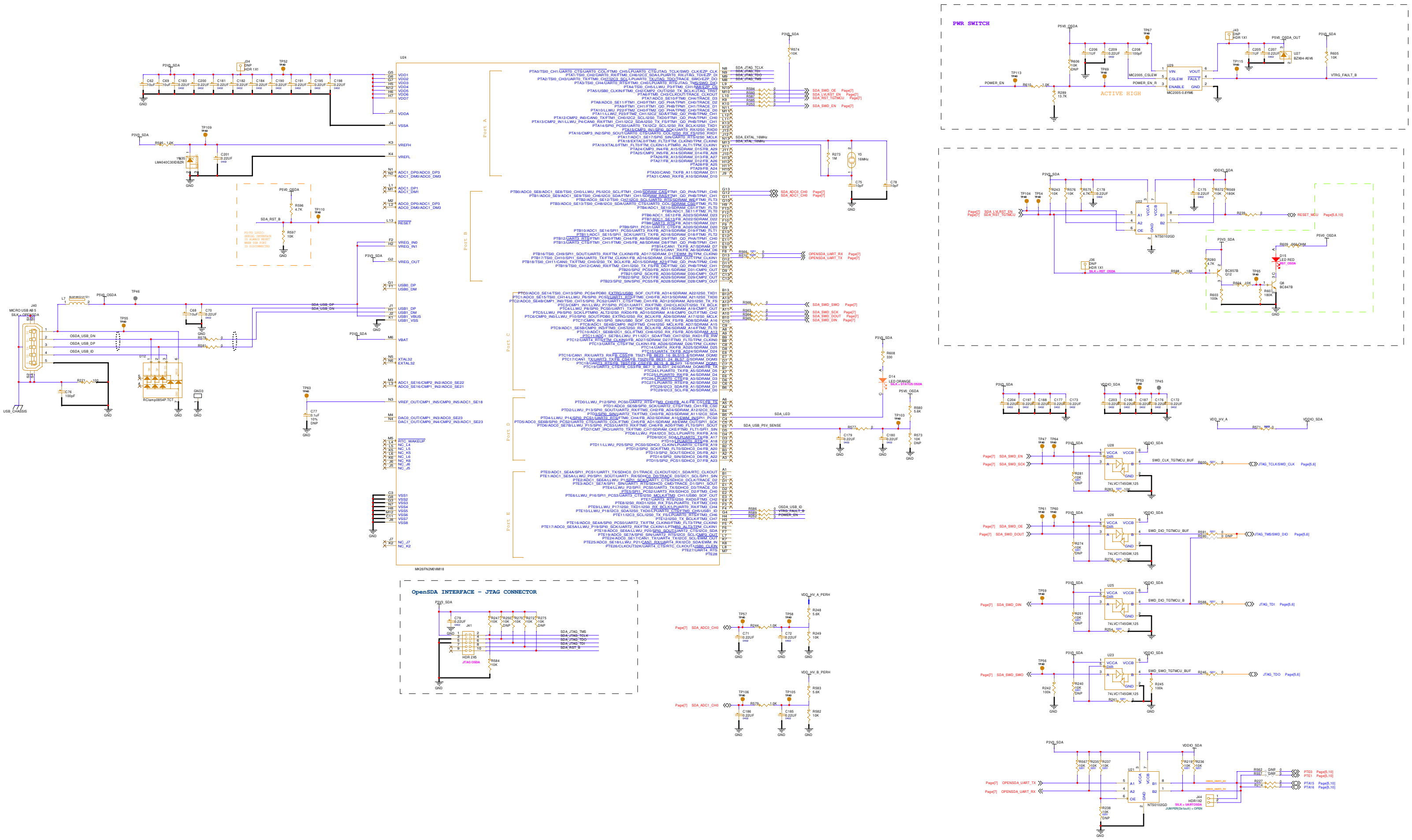
Classification: <FCP> <FIUO> <PUBI>

Designer: Jesús Sanchéz	Drawing Title: **XS32K312EVB-Q172**		
Drawn by: Jesús Sanchéz	Page Title: **JTAG/CORTEX Dedug+ETM**		
Approved: Jesús Sanchéz	Size B	Document Number SCH-50892 PDF: SPF-50892	Rev B
	Date: Tuesday, September 14, 2021	Sheet 6 of 10	



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Designer: Jesús Sanchéz	Drawing Title: **XS32K312EVB-Q172**		
Drawn by: Jesús Sanchéz	Page Title: **OpenSDA Interface**		
Approved: Jesús Sanchéz	Size E	Document Number SCH-50892 PDF: SPF-50892	Rev B
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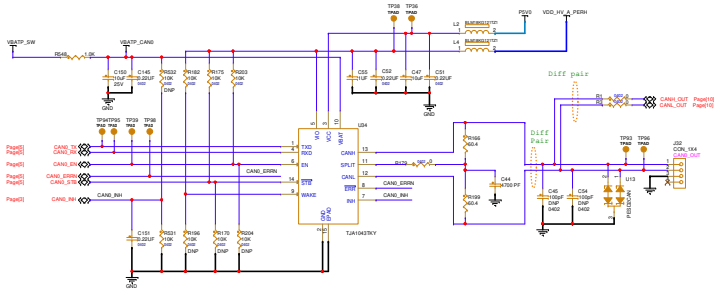
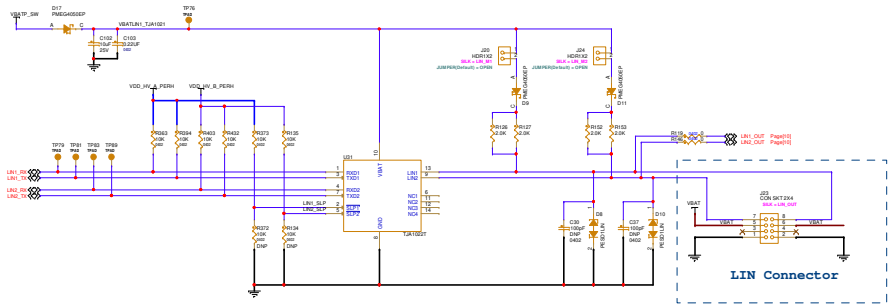
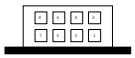
TJA1153 Secure HS-CAN Transceiver



LIN Physical Layer
TJA1021BG: Quad LIN 2.2A/SAE J2602 transceiver





NXP SEMICONDUCTORS	Classification:	<CP>	X
Designer: Jesús Sánchez	Drawing Title:	XS32K312EVB-Q172	
Drawn by: Jesús Sánchez	Page Title:	CAN/LIN PHY	
Approved: Jesús Sánchez	Size: D	Document Number: SCH-50892 PDF:SPF-50892	Rev: B
	Date: Tuesday, September 14, 2021	Sheet 8 of 10	

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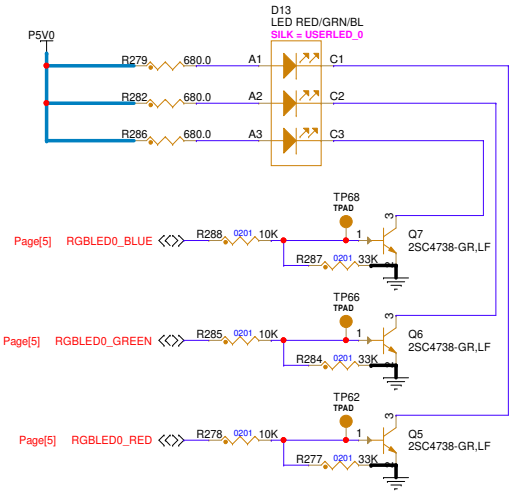

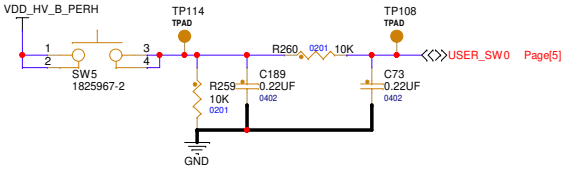

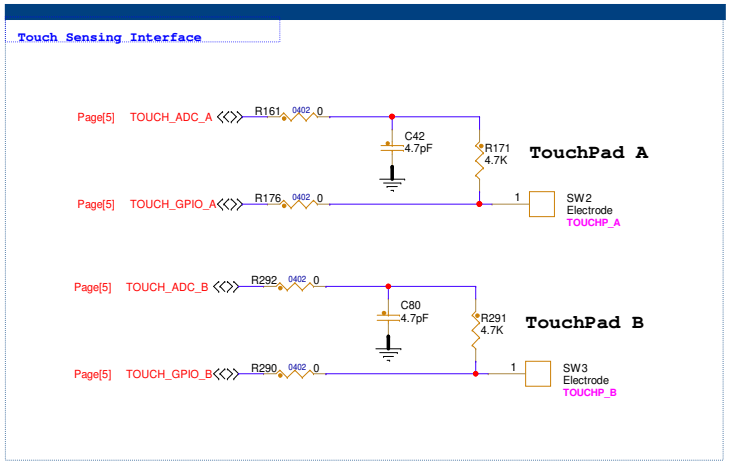

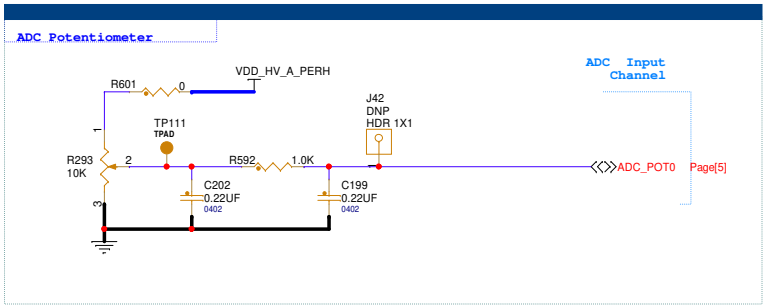

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Classification: <FCP> X

Designer: Jesús Sanchéz	Drawing Title: XS32K312EVB-Q172		
Drawn by: Jesús Sanchéz	Page Title: Use Peripherals		
Approved: Jesús Sanchéz	Size B	Document Number SCH-50892 PDF: SPF-50892	Rev B
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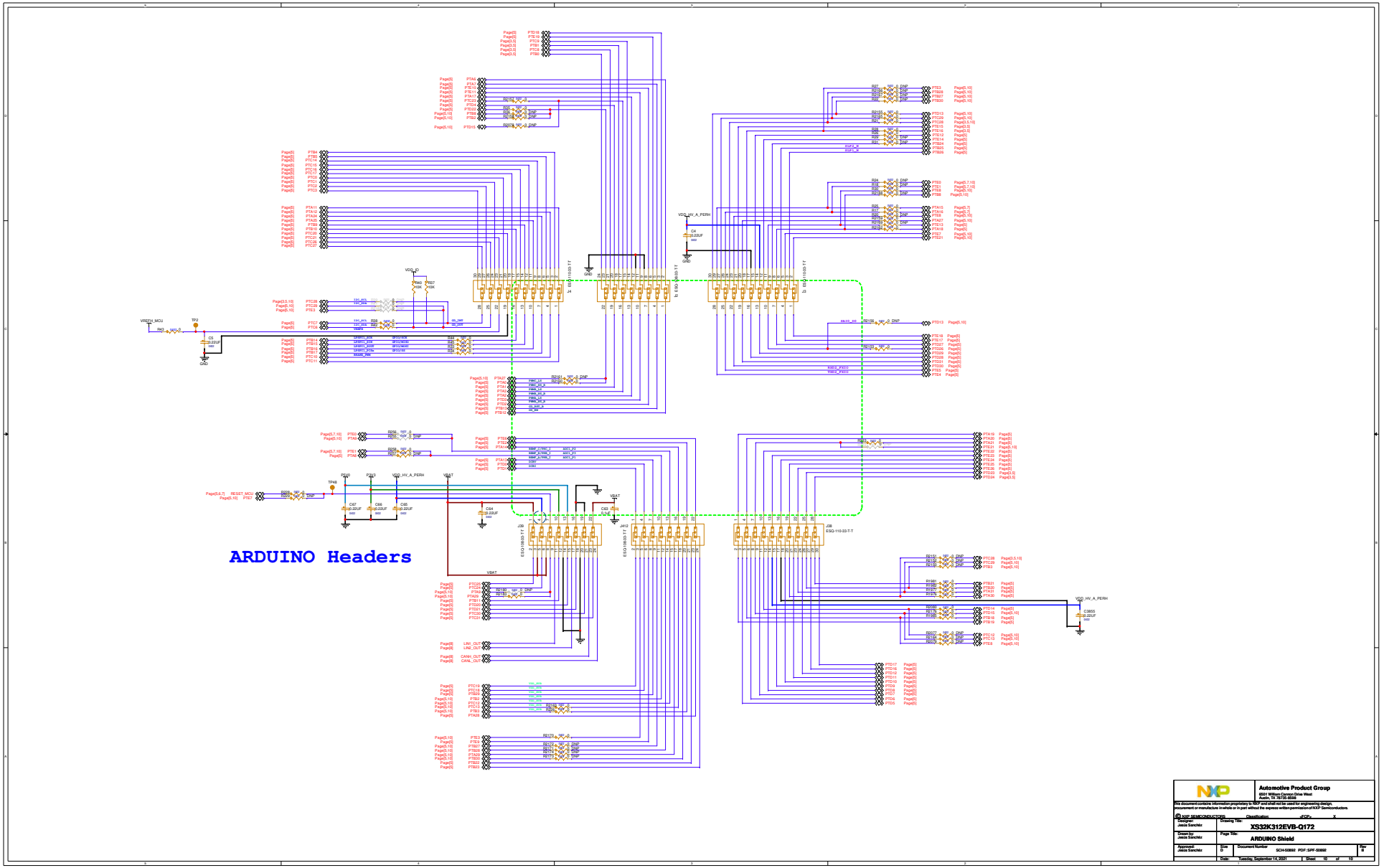

NXP SEMICONDUCTORS	Classification: <CP> X
Designer: Jesús Sánchez	Drawing Title: XS32K312EVB-Q172
Drawn by: Jesús Sánchez	Page Title: ARDUINO Shield
Approved: Jesús Sánchez	Size: D; Document Number: SCH-50892; PDF:SPF-50892; Rev: B
	Date: Tuesday, September 14, 2021; Sheet 10 of 10

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