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Revisions

Rev	Description	Date	Approved
X1	Reference Design Release	06-May-19	Dong N

X-SHIELD-DOCK

6501 William Cannon Drive West
Austin, TX 78735-8598

ICAP Classification: CP: IUO: PUBI:

Designer: Dong Nguyen	Drawing Title: X-SHIELD-DOCK	
Drawn by: Aurelian Timu	Page Title: TITLE, TOC & REV HISTORY	
Approved: Dong Nguyen	Size C / Document Number OM1379DOCK:SCH-34743 PDF: SPF-34743	Rev X1
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1. Unless Otherwise Specified:
   All resistors are in ohms
   All voltages are DC

2. Device type number is for reference only. The number varies with the manufacturer.

3. Interpret diagram in accordance with American National Standards Institute specifications, current revision, with the exception of logic block symbology.

User notes are given throughout the schematics

Specific PCB LAYOUT notes are detailed in ITALICS

ICAP Classification: CP: ___ IUO: X PUBI: ___

Drawing Title:

X-SHIELD-DOCK

Page Title:

NOTES

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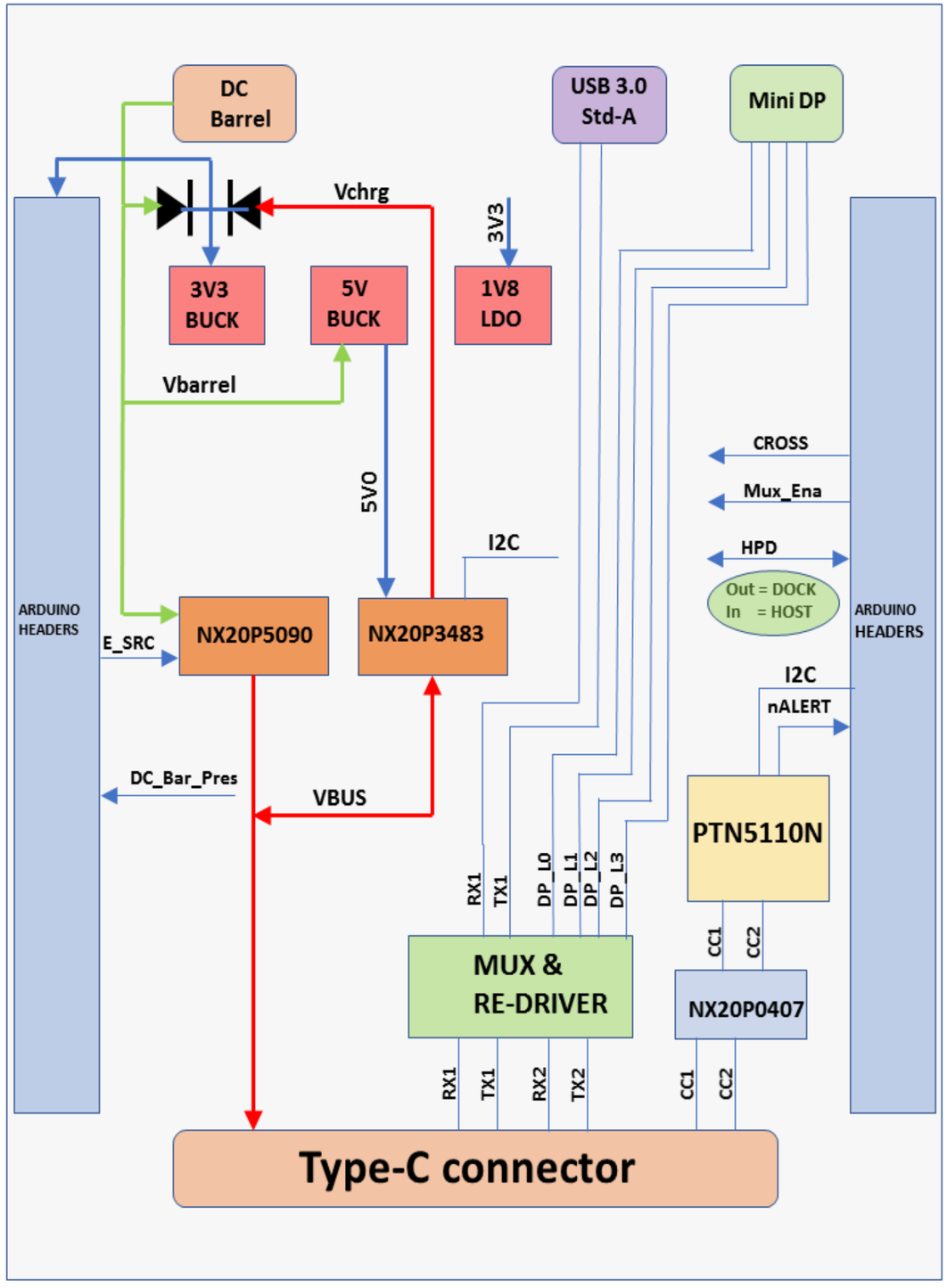

USB PD/ Type C Shield Board

ICAP Classification:	CP: ___ IUO: X PUBI: ___
Drawing Title:	X-SHIELD-DOCK
Page Title:	BLOCK DIAGRAM
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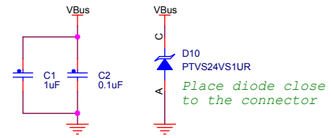
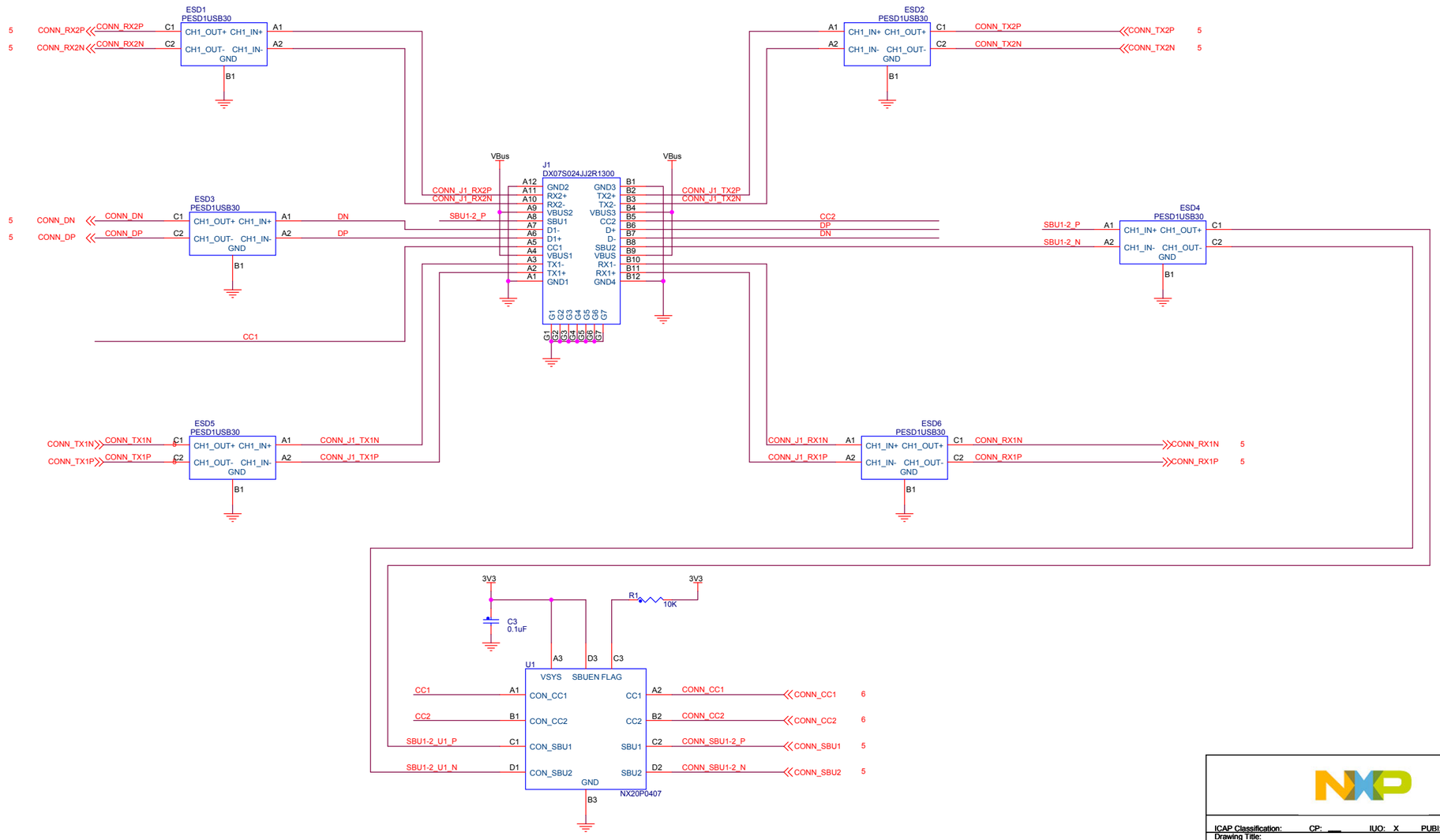


USB- Type C Connector



ICAP Classification:	CP: ___	IUO: X	PUBI: ___
Drawing Title:	**X-SHIELD-DOCK**		
Page Title:	**Type-C Connector**		
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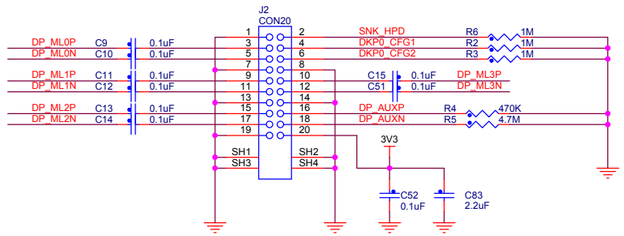
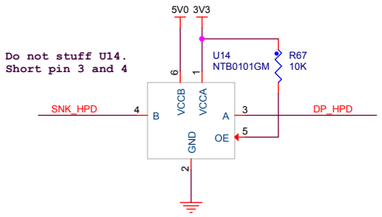
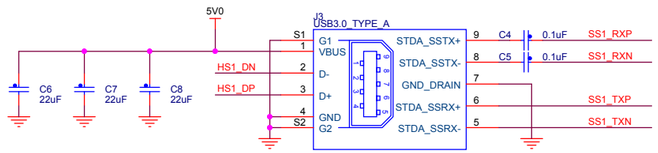
DP Source Connector



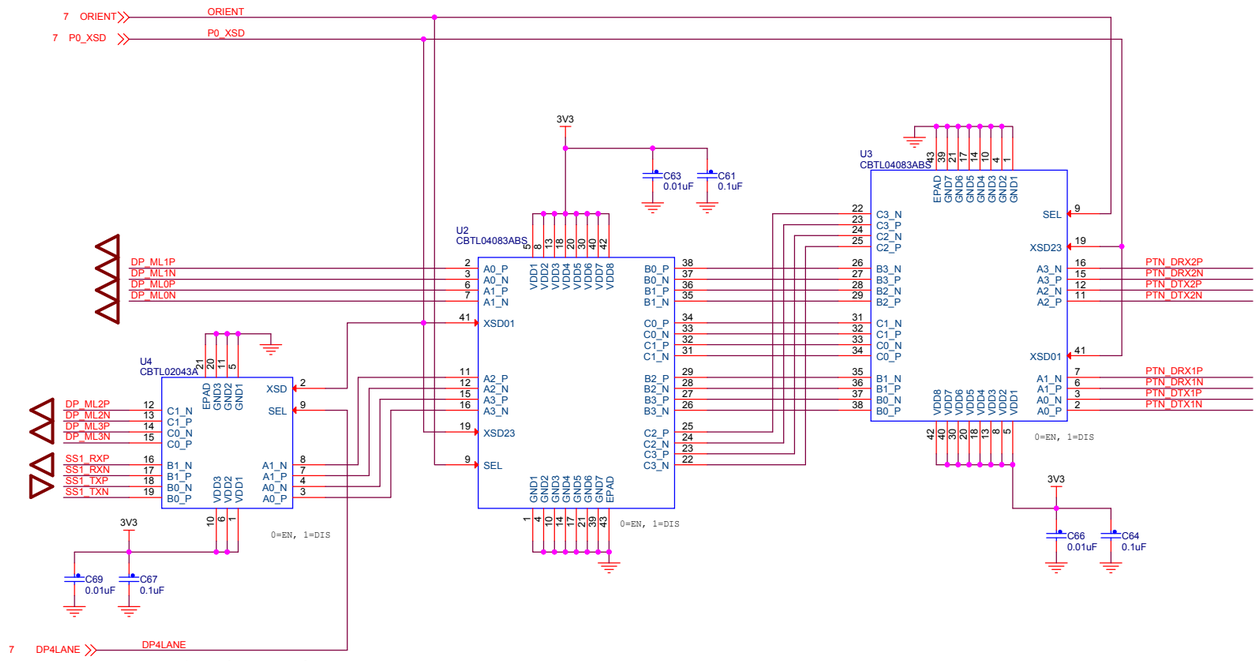
ORIENT = 0 = Normal
ORIENT = 1 = Reversed

	DP4LANE	P0_XSD	ORIENT
Safe State	0	1	X
USB3 Only	0	0	X
USB3+DP2LANE	0	0	X
DP4LANE	1	0	X

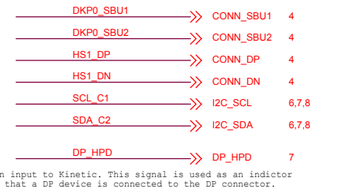




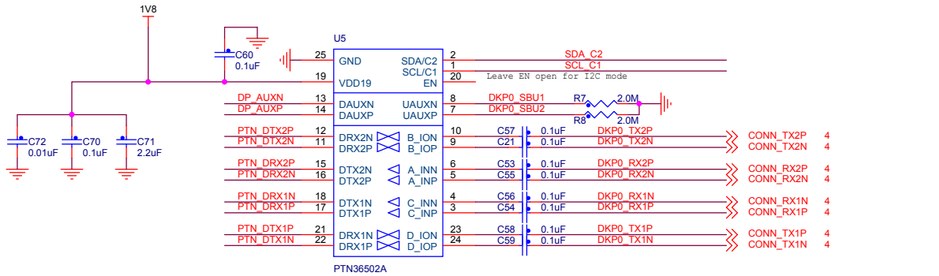
From Connector's POV, TX (out) is the same function as the receving path of a chipset. RX (in) is the same function as the transmitting path of a chipset.



DP4LANE = 0 = ENABLE USB3
DP4LANE = 1 = ENABLE DP4Lane



DP_HPD is an input to Kinetic. This signal is used as an indictor to ALT Mode that a DP device is connected to the DP connector.



ICAP Classification: CP: ___ IUO: X PUBI: ___

Drawing Title: **X-SHIELD-DOCK**

Page Title: **USB3/USB2/DP2/DP4**

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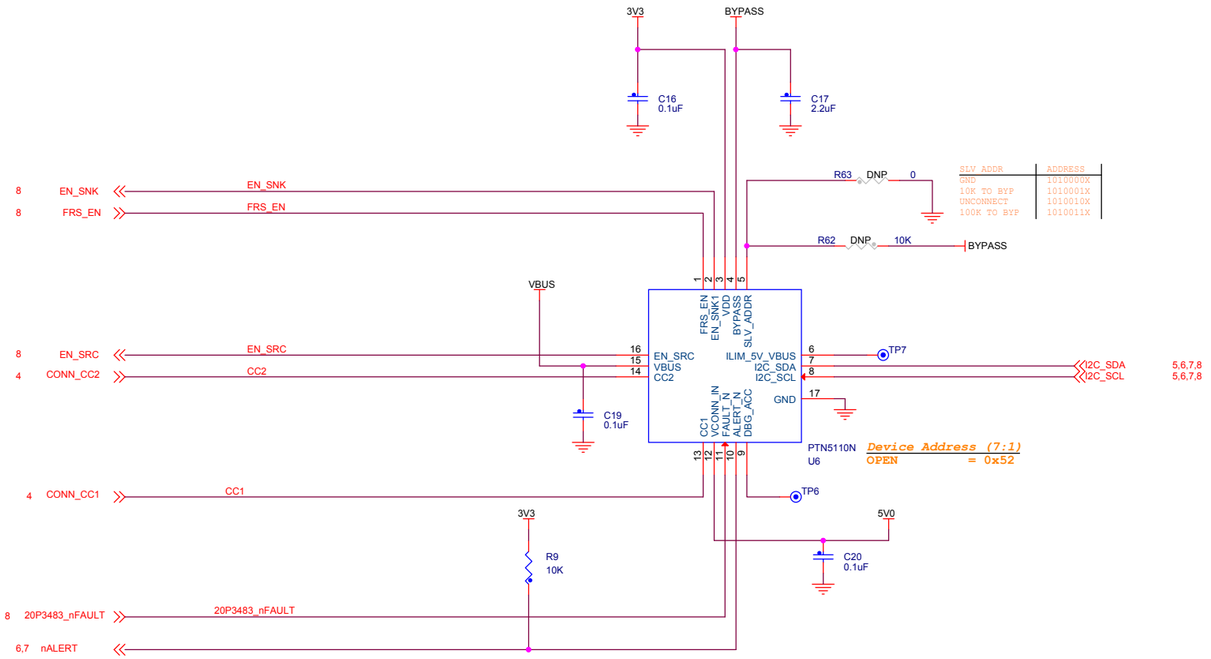
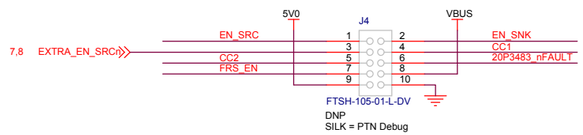
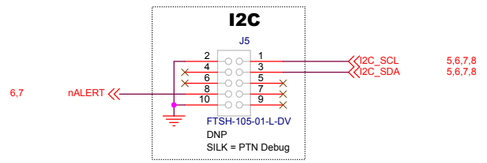


Debug Headers

NOTE:
Debug purpose only



PTN5110 MISC.



ICAP Classification: CP: ___ IUO: X PUBI: ___

Drawing Title: **X-SHIELD-DOCK**

Page Title: **PTN5110 PD TCPC**

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ORIENT - OUTPUT, push-pull. TCPM determines plug oritentation and drives low on normal orientation, else drives high

PD_XSD - OUTPUT, push-pull. TCPM drives this signal high to shut down the high speed mux, safe state etc,.

DP4LANE - OUTPUT, push-pull. TCPM drives this signal high if ALT mode is 4 lane DP. Drives this signal low if ALT mode is 2 lane DP / USB 3.0 (if Multip-function bit is set, drive low, else drives high)

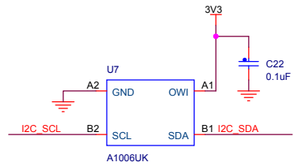
DP_HPD - INPUT, push-pull. This signal comes from the DP sink to indicate that a sink is connected. TCPM will set HPD bit high in Status_Update message.

EXTRA_EN_SRCn - OUTPUT, push-pull. TCPM drives this signal low when sourcing on second PDO (higher than defaut 5V)

DC_BARREL_PRES - INPUT, push-pull. This signal indicates that Shield board is powered by an external ACDC adapter. TCPM will not initiate or accept a power role swap if this signal is low.

nALERT - INPUT, push-pull. TCPC interrupt signal.

Authentication Chip



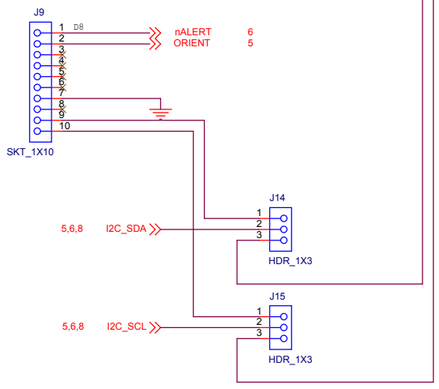
Make sure there are 4 pins/headers on PCB to download certificate for the first time.
* VDD_MCU
* I2C_SCL
* I2C_SDA
* GND

ARDUINO HEADERS

SHIELD BOARD ARDUINO HEADER

Mate to J1/J13 of Kinetis/PTN546xx

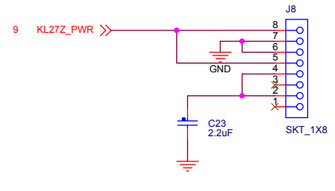
Mate to J2/J9 of Kinetis/PTN546xx

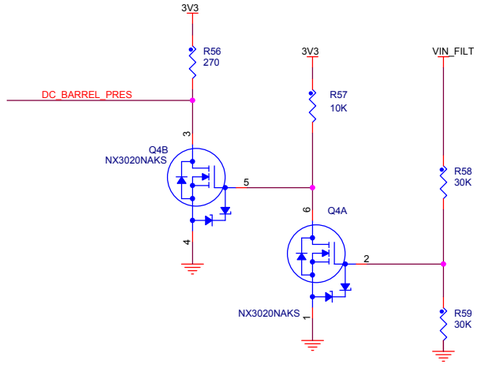


SHIELD BOARD ARDUINO HEADER

Mate to J4/J12 of Kinetis/PTN546xx

Mate to J3/J10 of Kinetis/PTN546xx





ICAP Classification: CP: ___ IUO: X PUBI: ___

Drawing Title: **X-SHIELD-DOCK**

Page Title: **Shield headers**

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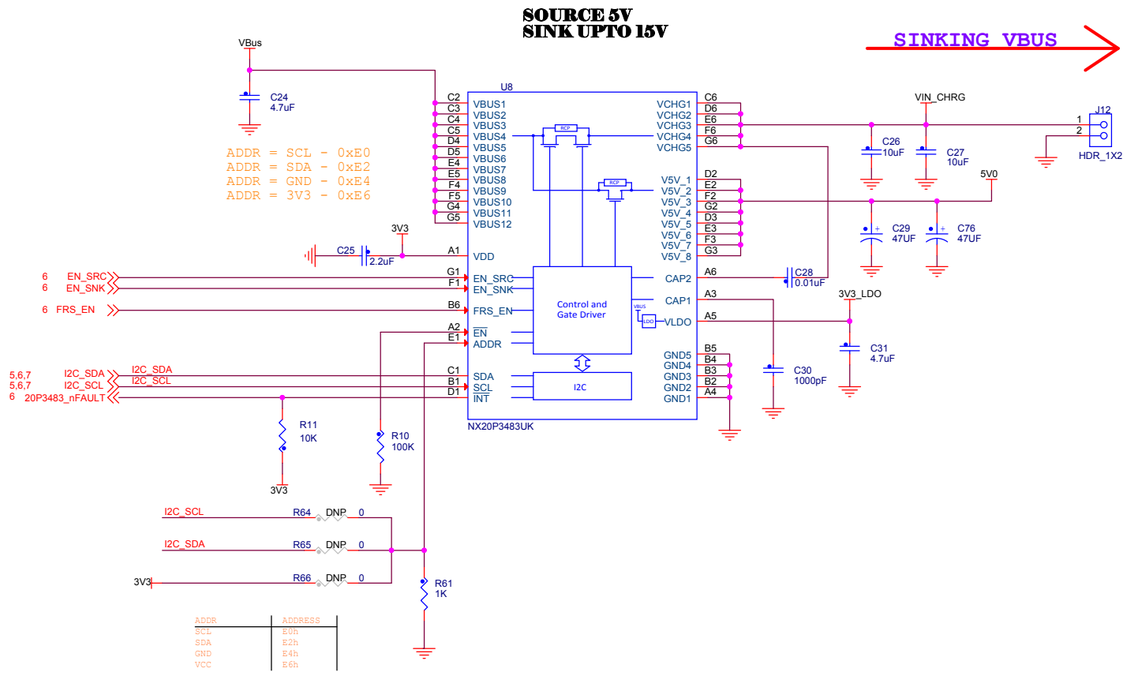
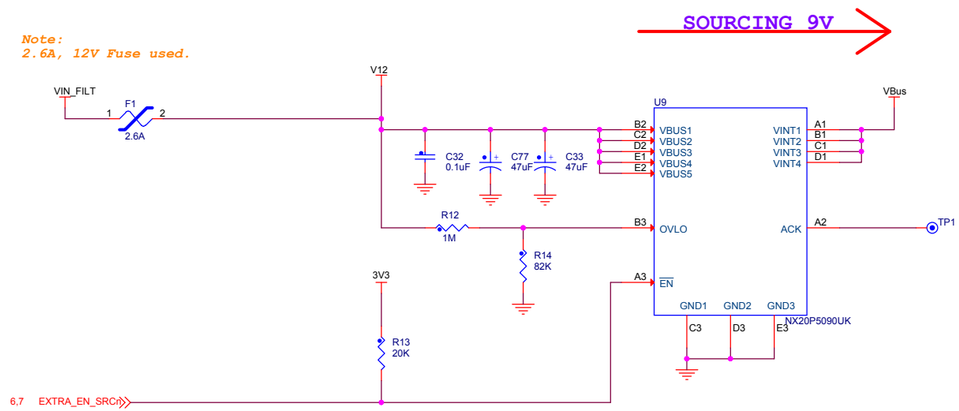


Source 9V Load switch



ICAP Classification:	CP: ___ IUO: X PUBI: ___
Drawing Title:	X-SHIELD-DOCK
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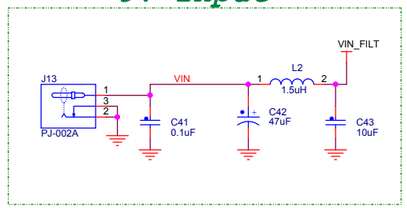
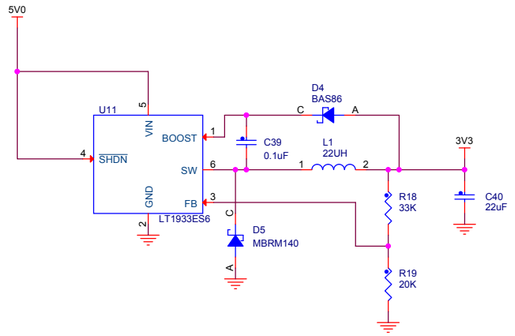
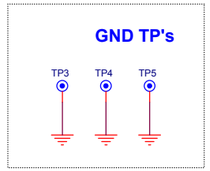
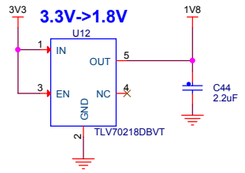
9V Input

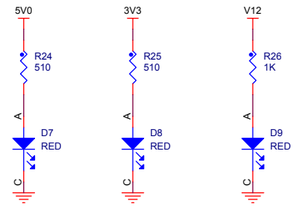


See layout out example on page 16 figure 8 of datasheet

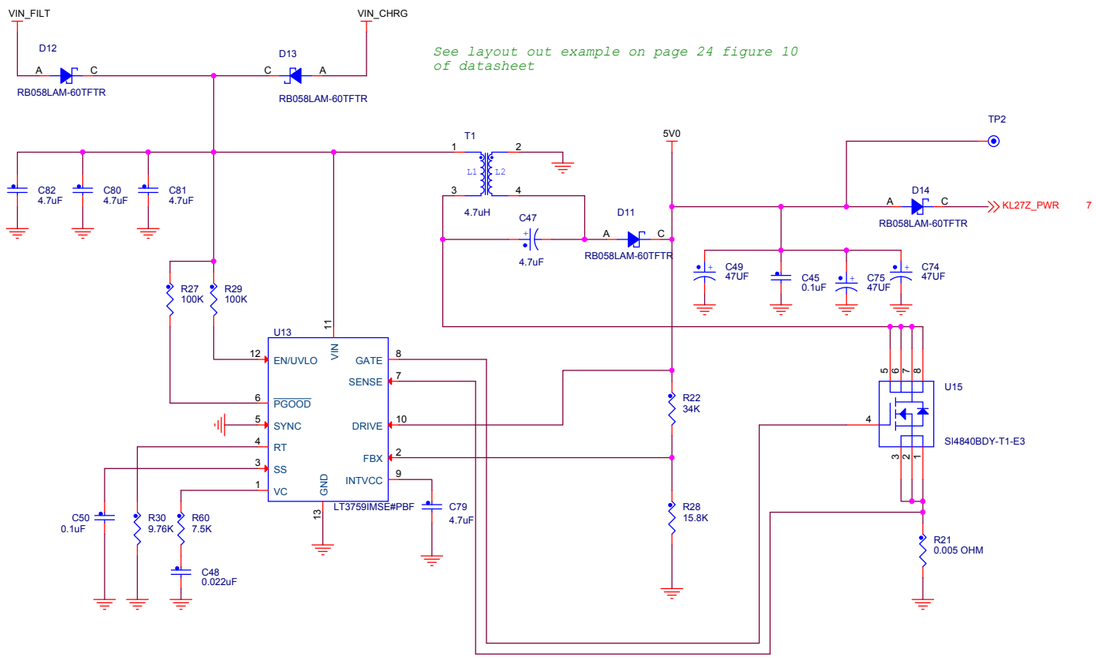


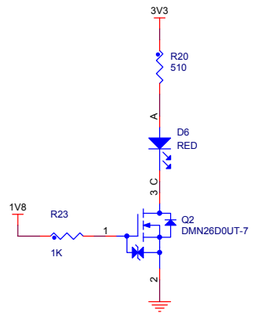






See layout out example on page 24 figure 10 of datasheet





ICAP Classification: CP: ___ IUO: X PUBI: ___

Drawing Title: **X-SHIELD-DOCK**

Page Title: **3V3, 5V0, 1V8 Supplies**

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