Table of Contents

Revisions & Change Log

Rev	Description	Date	Approved
X1	Initial Draft	07-11-2016	
A	1st Release	08-18-2016	
B	2nd Release for Production	11-08-2016	
C	3rd Release for Production	12-22-2016	
D	4th Release for Production	06-19-2017	
E	U14 replaced by MK28FN2M0AVMI15	22-May-2018	
E1	Renamed to FRDM-K28FA	03-Aug-2018	
E2	Updated U6 as DNP and Generated DNP table	27-Sept-2021	

FRDM-K28FA

Microcontroller Product Group
6501 William Cannon Drive West
Austin, TX 78735-8598

ICAP Classification: CP: IUO: X PUBI:

Designer:	Drawing Title: FRDM-K28FA		
Drawn by:	Page Title: TITLE PAGE		
Approved:	Size C	Document Number SCH-29346 PDF: SPF-29346	Rev E2
	Date: Thursday, October 14, 2021	Sheet 1 of 6	

REF DES	*ASSY_OPT*	*PAGE NAME*
R78,C156,C157,J7,D10,R84,J21, R87,BT500	DNP	3. K28F MCU
C11,R9,R41,R11,C10,J14,C25, R58,J28	DNP	4. OpenSDA interface
C151,U8,R38,J54,R25,C148, C158,J53,R672,R91,C150	DNP	5. USB, Memory, Sensors, Misc
C70,J18,R63,C68,J26,R695, R693,R317,C71,R651,C69	DNP	6. I/O Headers, Power

Kinetis K-Series

MK28FN2M0AVMI15

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

Drawing Title:

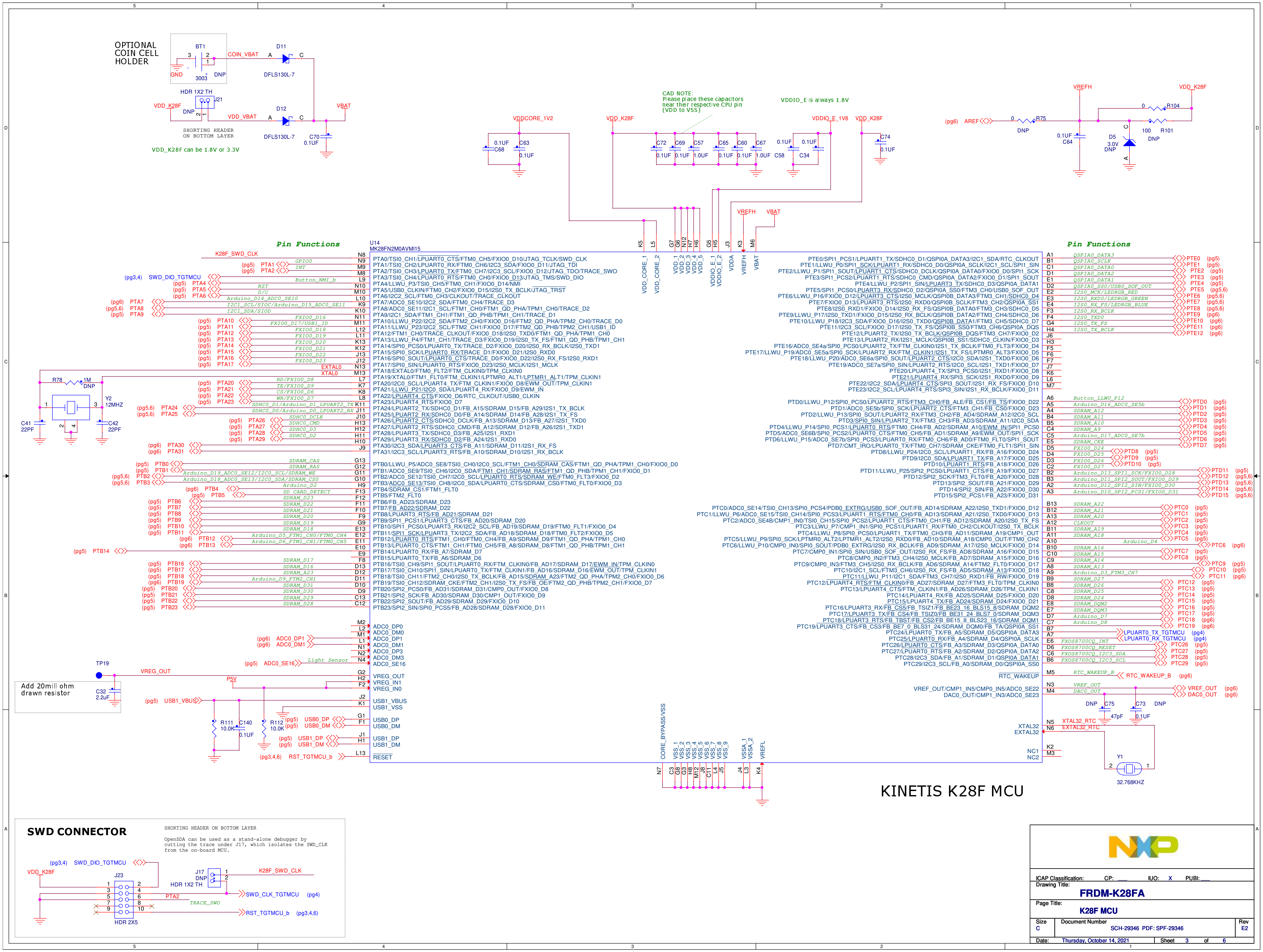
FRDM-K28FA

Page Title:

BLOCK DIAGRAM

Size	Document Number	Rev
C	SCH-29346 PDF: SPF-29346	E2

Date: Thursday, October 14, 2021 Sheet 2 of 6



ICAP Classification: CP: IUO: X PUBI:

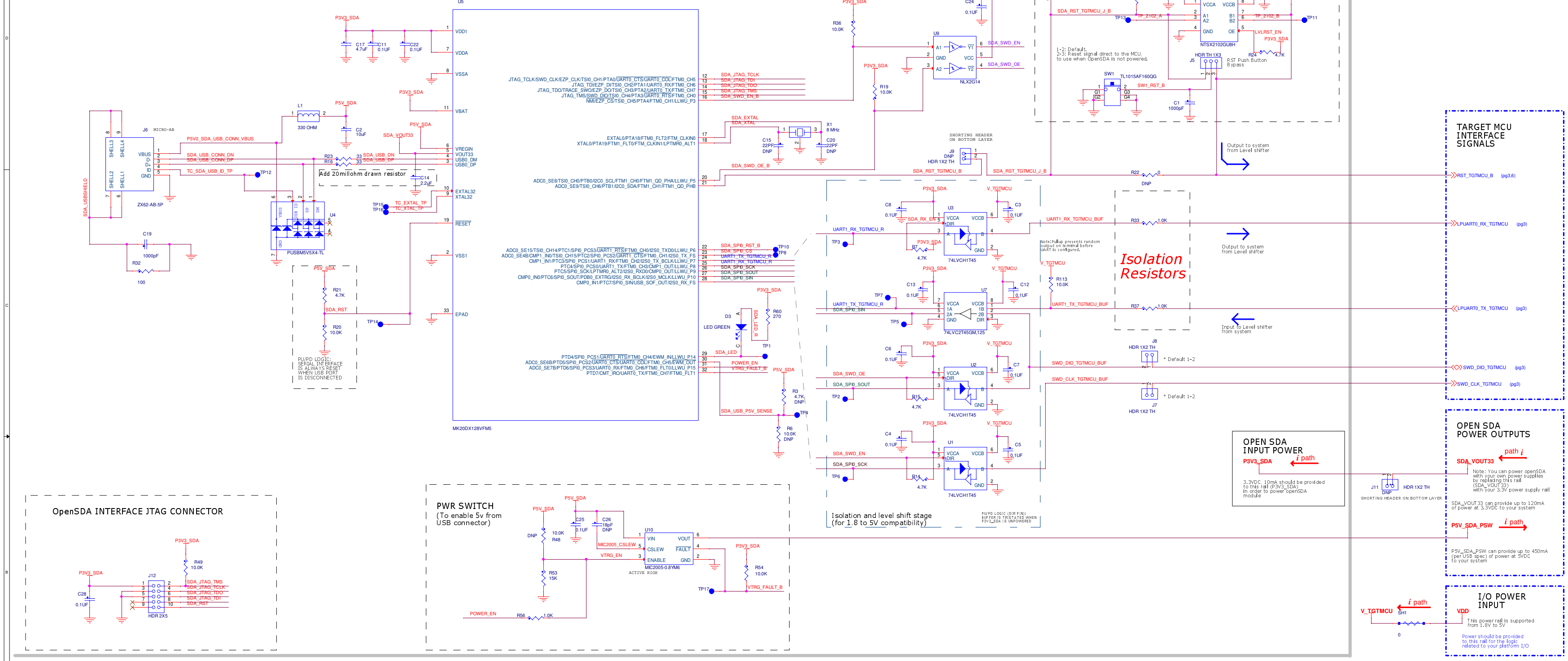
Drawing Title: **FRDM-K28FA**

Page Title: **K28F MCU**

Size	Document Number	Rev
C	SCH-29346 PDF: SPF-29346	E2

Date: Thursday, October 14, 2021 Sheet 3 of 6

OpenSDA Interface



ICAP Classification: CP: IUO: X PUBI:

Drawing Title:

FRDM-K28FA

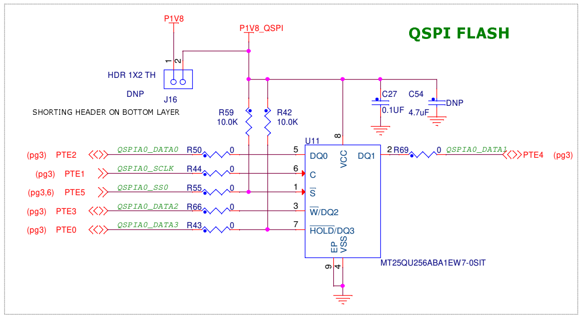
Page Title:

OpenSDA Interface

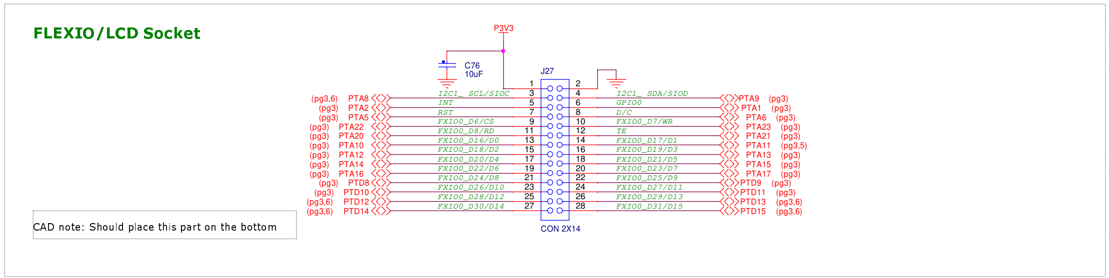
Size	Document Number	Rev
D	SCH-29346 PDF: SPF-29346	E2

Date: Thursday, October 14, 2021 Sheet 4 of 6

QSPI FLASH

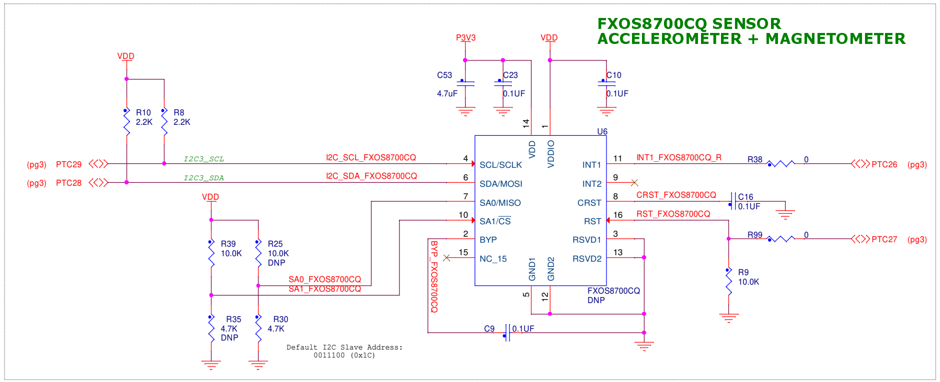


FLEXIO/LCD Socket



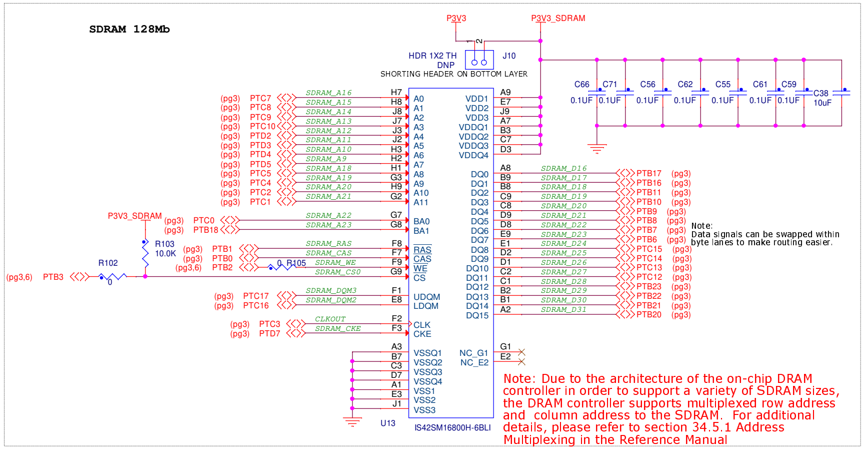
CAD note: Should place this part on the bottom

FXOS8700CQ SENSOR ACCELEROMETER + MAGNETOMETER



Default I2C Slave Address: 0011100 (0x1C)

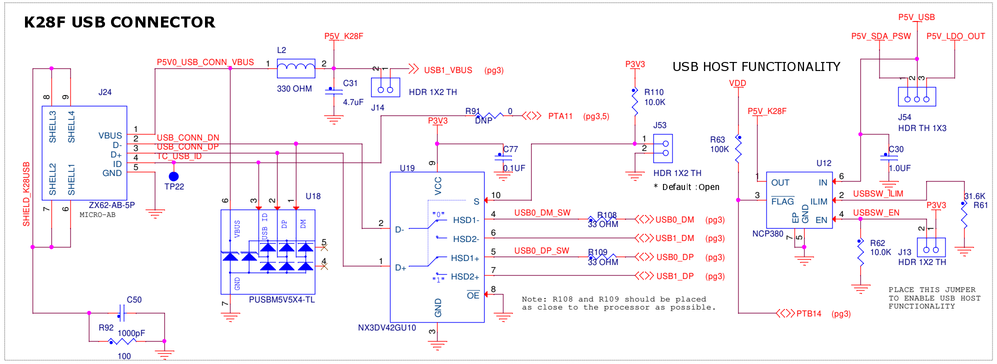
SDRAM 128Mb



Note: Data signals can be swapped within byte lanes to make routing easier.

Note: Due to the architecture of the on-chip DRAM controller in order to support a variety of SDRAM sizes, the DRAM controller supports multiplexed row address and column address to the SDRAM. For additional details, please refer to section 34.5.1 Address Multiplexing in the Reference Manual

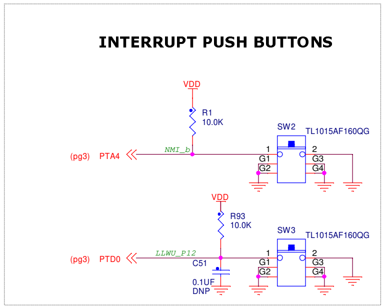
K28F USB CONNECTOR



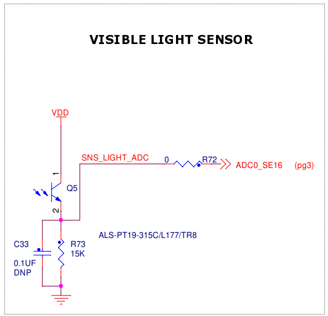
Note: R108 and R109 should be placed as close to the processor as possible.

PLACE THIS JUMPER TO ENABLE USB HOST FUNCTIONALITY

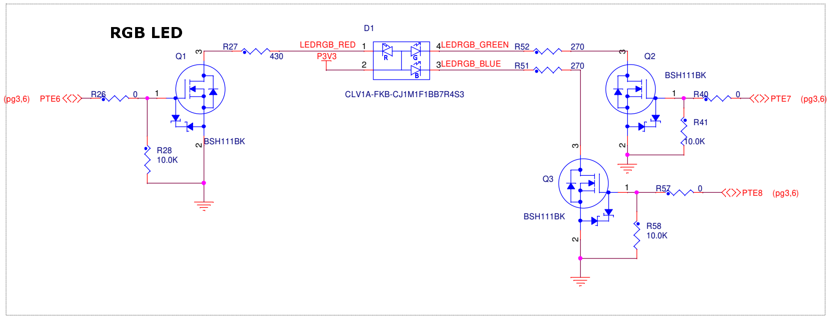
INTERRUPT PUSH BUTTONS



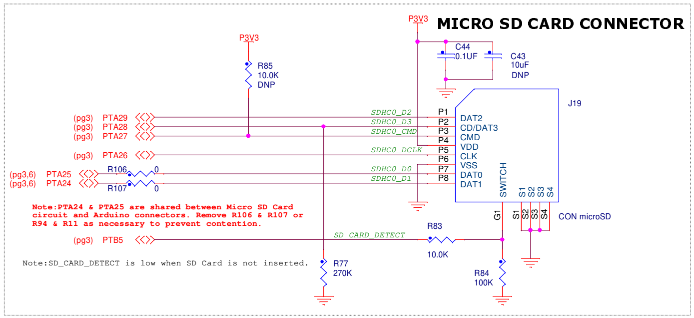
VISIBLE LIGHT SENSOR



RGB LED



MICRO SD CARD CONNECTOR



Note:PTA24 & PTA25 are shared between Micro SD Card circuit and Arduino connectors. Remove R106 & R107 or R94 & R11 as necessary to prevent contention.

Note:SD_CARD_DETECT is low when SD Card is not inserted.

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

Drawing Title: **FRDM-K28FA**

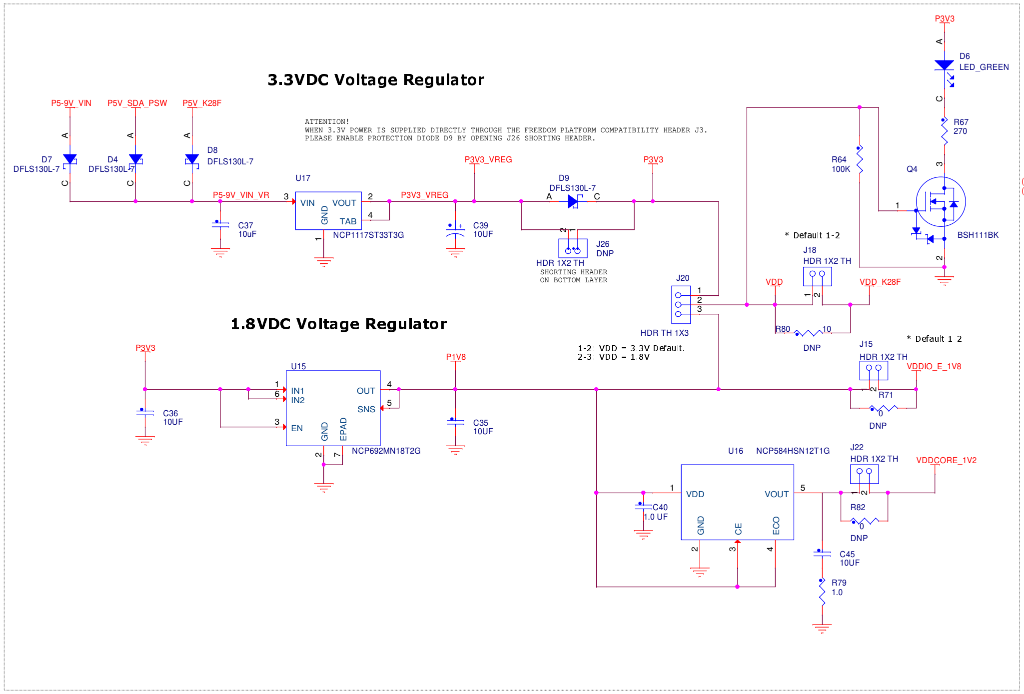
Page Title: **USB, Memory, Sensors, Misc**

Size	Document Number	Rev
C	SCH-29346 PDF: SPF-29346	E2

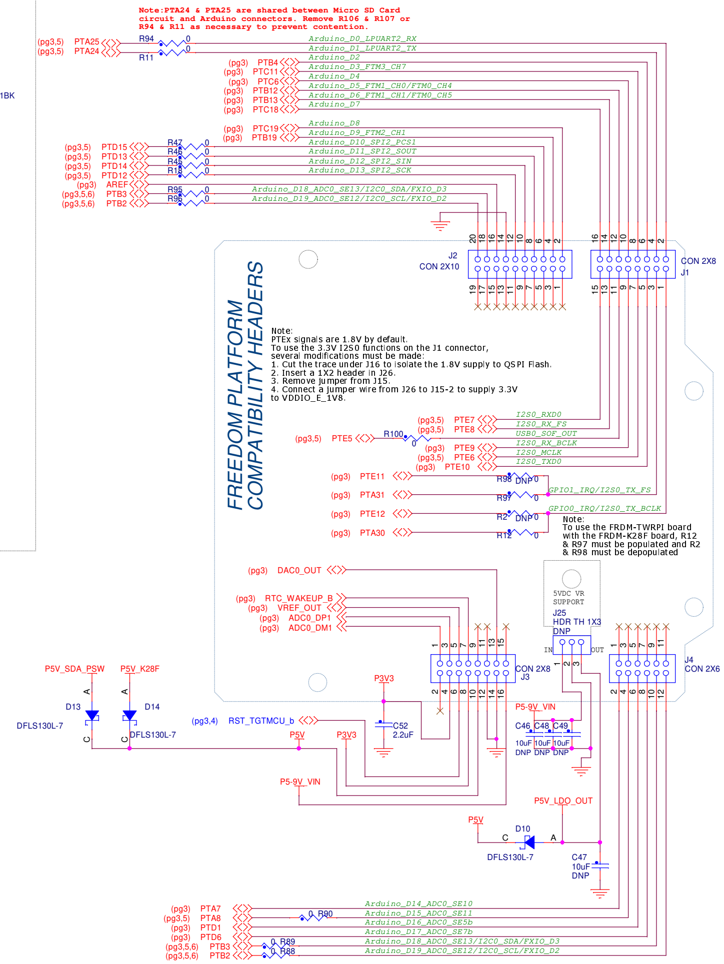
Date: Thursday, October 14, 2021 Sheet 5 of 6

3.3VDC Voltage Regulator

1.8VDC Voltage Regulator


ATTENTION!
WHEN 3.3V POWER IS SUPPLIED DIRECTLY THROUGH THE FREEDOM PLATFORM COMPATIBILITY HEADER J3.
PLEASE ENABLE PROTECTION DIODE D9 BY OPENING J26 SHORTING HEADER.

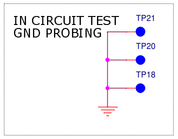
1-2: VDD = 3.3V Default.
2-3: VDD = 1.8V


Note:PTA24 & PTA25 are shared between Micro SD Card circuit and Arduino connectors. Remove R106 & R107 or R94 & R11 as necessary to prevent contention.

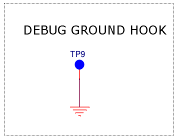
Note:
PTEx signals are 1.8V by default.
To use the 3.3V I2S0 functions on the J1 connector, several modifications must be made:
1. Cut the trace under J16 to isolate the 1.8V supply to QSPI Flash.
2. Insert a 1X2 header in J26.
3. Remove jumper from J15.
4. Connect a jumper wire from J26 to J15-2 to supply 3.3V to VDDIO_E_1V8.

Note:
To use the FRDM-TWRPI board with the FRDM-K28F board, R12 & R97 must be populated and R2 & R98 must be depopulated

IN CIRCUIT TEST GND PROBING



DEBUG GROUND HOOK



ICAP Classification: CP: ___ IUO: X PUBI: ___
Drawing Title:
FRDM-K28FA
Page Title:
I/O Headers & PWR Supply

Size	Document Number	Rev
C	SCH-29346 PDF: SPF-29346	E2

Date: Thursday, October 14, 2021 Sheet 6 of 6