Table of Contents

Revisions

Rev	Description	Date
X1	Initial Release	Dec-17-14
A	Release to A085	Jan-12-15

X-TWR-FPGA-K7

freescale semiconductor

Microcontroller Solutions Group

6501 William Cannon Drive West
Austin, TX 78735-8598

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ICAP Classification: FCP: FIUO: X PUBI:

Designer:	Drawing Title: X-TWR-FPGA-K7	
Drawn by:	Page Title: TITLE PAGE	
Approved:	Size C / Document Number SCH-28614 PDF: SPF-28614	Rev A
	Date: Monday, January 12, 2015	Sheet 1 of 17

1. Unless Otherwise Specified:
   All resistors are in ohms, 5%, 1/16 Watt
   All capacitors are in uF, 10%, 16V
   All voltages are DC
   All polarized capacitors are aluminum electrolytic

2. Interrupted lines coded with the same letter or letter combinations are electrically connected.

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

4. Special signal usage:
   _B Denotes - Active-Low Signal
   <> or [] Denotes - Vectored Signals

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

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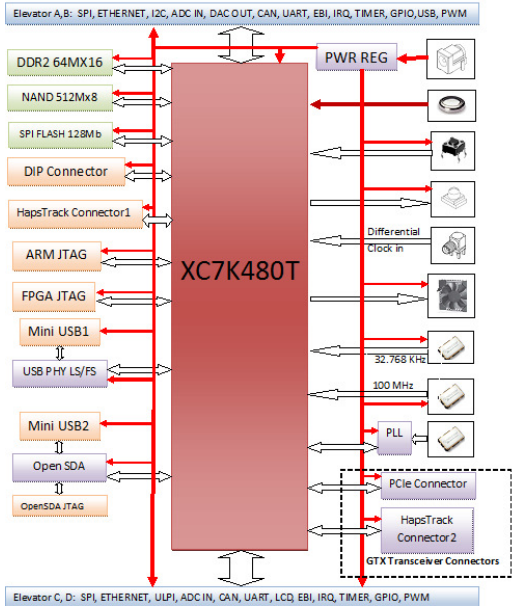
ICAP Classification: FCP: __ FIUO: X PUBI: __

Drawing Title: **X-TWR-FPGA-K7**

Page Title: **NOTES**

Size	Document Number	Rev
C	SCH-28614 PDF: SPF-28614	A

Date: Thursday, January 08, 2015 Sheet 2 of 17



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ICAP Classification: FCP: ___ FIUO: X PUBI: ___

Drawing Title: **X-TWR-FPGA-K7**

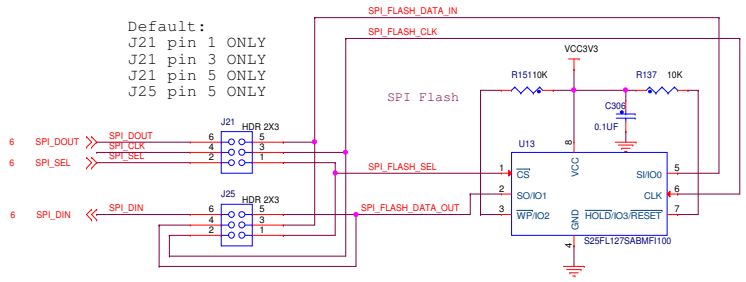
Page Title: **BLOCKS**

Size	Document Number	Rev
C	SCH-28614 PDF: SPF-28614	A

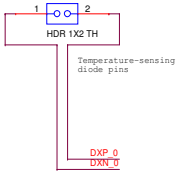
Date: Thursday, January 08, 2015 Sheet 3 of 17

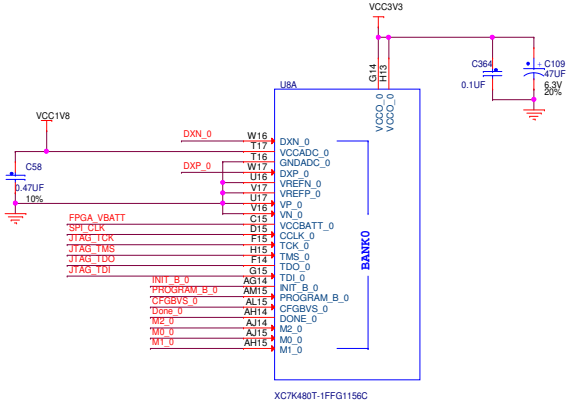
J25.1:CS J25.2:CLK J25.3:MOSI J25.4:MISO
When Not Burn SPI Flash,
Do Shunt J21:1-2;3-4;5-6 J25:5-6

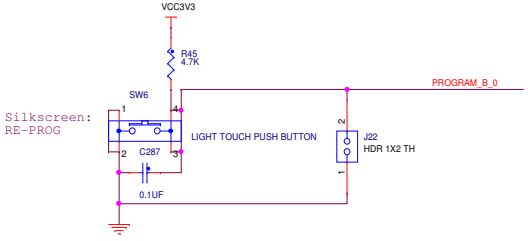
Default:
J21 pin 1 ONLY
J21 pin 3 ONLY
J21 pin 5 ONLY
J25 pin 5 ONLY

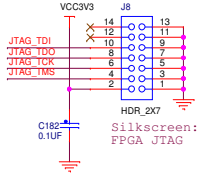


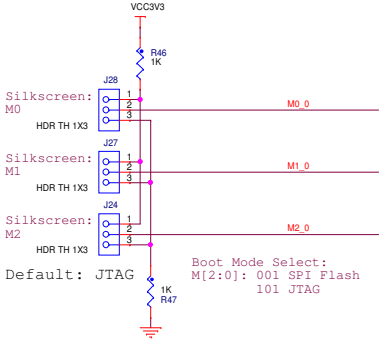
J12 Header for external sensor

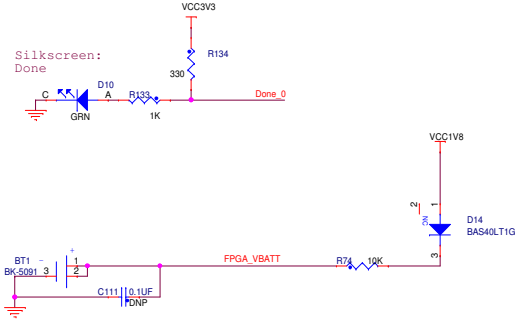












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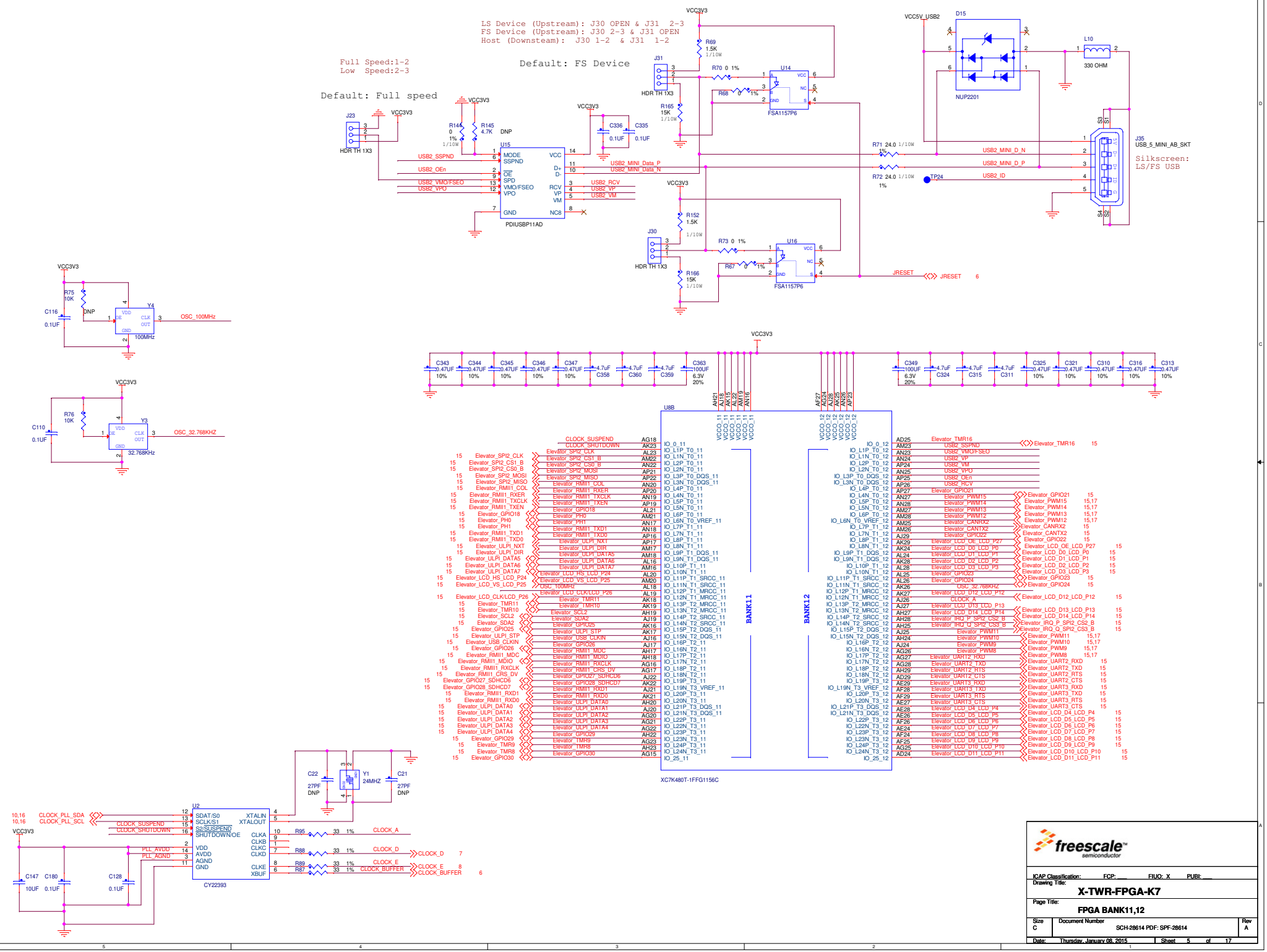
Page Title:	FPGA BANK0 MGT		
Size C	Document Number SCH-28614 PDF: SPF-28614		Rev A
Date: Thursday, January 08, 2015		Sheet 4 of 17	

LS Device (Upstream): J30 OPEN & J31 2-3
FS Device (Upstream): J30 2-3 & J31 OPEN
Host (Downsteam): J30 1-2 & J31 1-2

Full Speed:1-2
Low Speed:2-3

Default: FS Device

Default: Full speed



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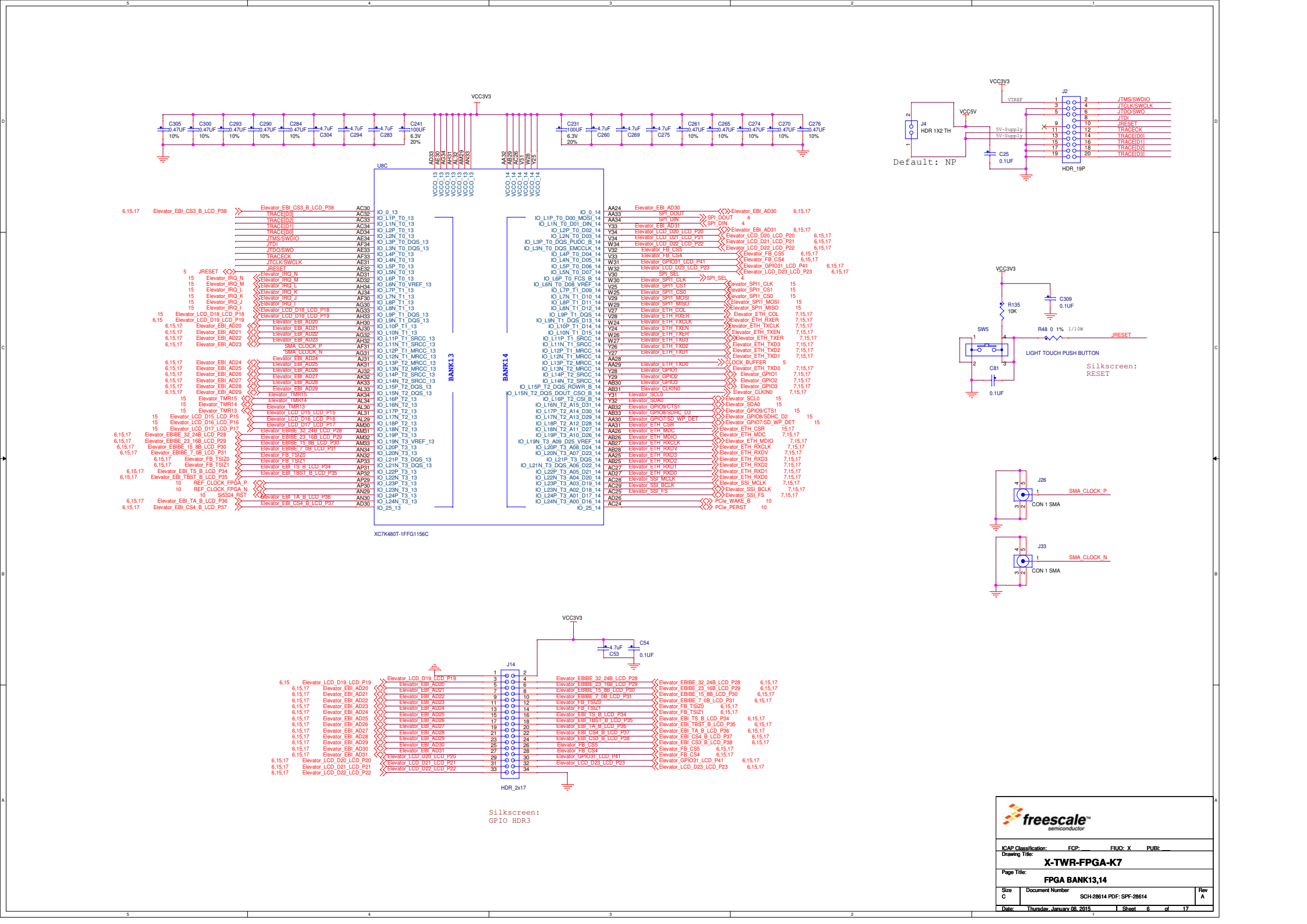
Size: C	Document Number: SCH-28614 PDF: SPF-28614
Rev: A	
Date: Thursday, January 08, 2015	Sheet 5 of 17



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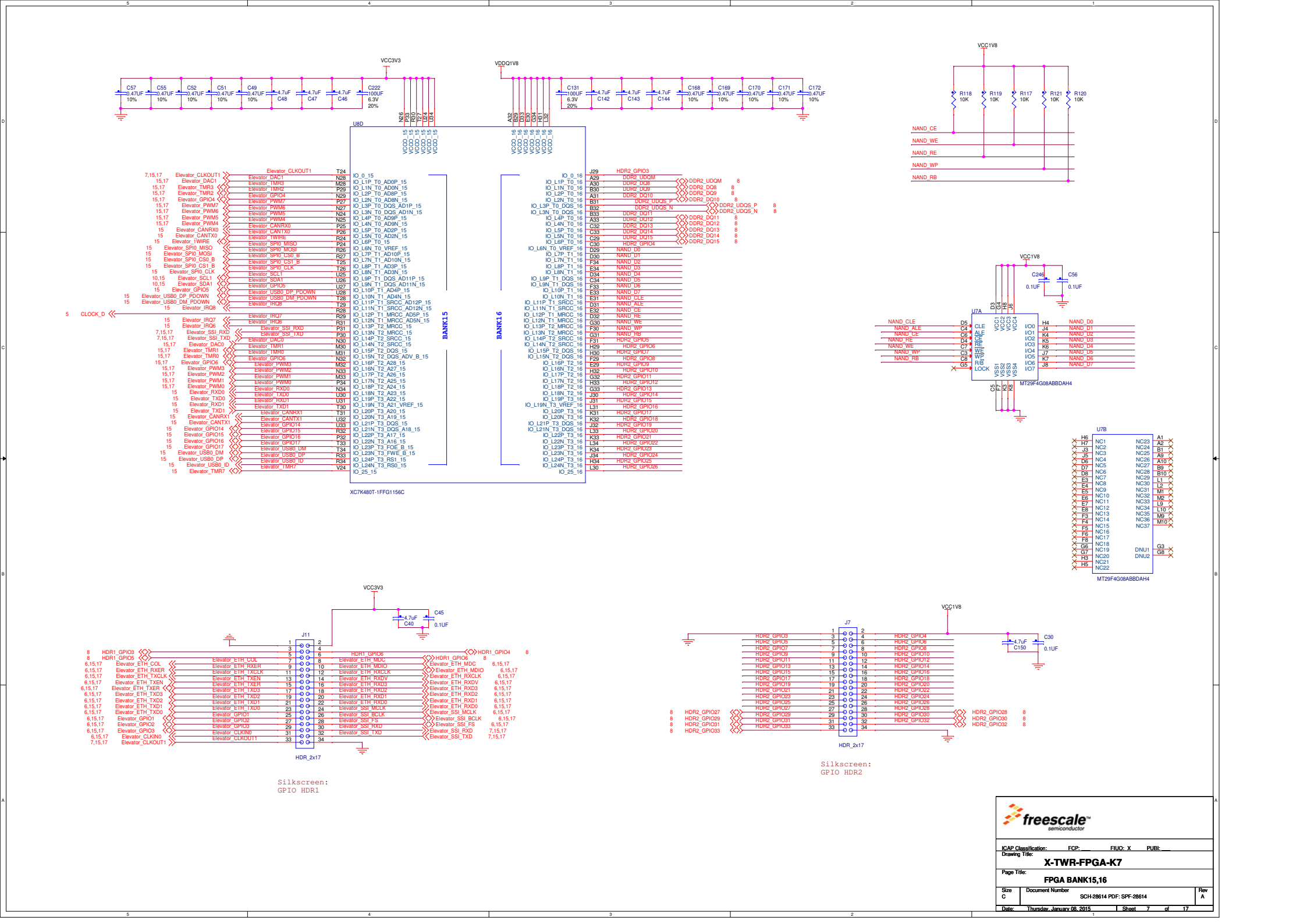
Size: C	Document Number: SCH-28614 PDF: SPF-28614 Rev: A
Date: Thursday, January 08, 2015	Sheet 6 of 17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VDDQ1V8
VCC1V8
U8D
BANK15
BANK16
XC7K480T-1FFG1156C
U7A
U7B
MT29F4G08ABBDAH4
J11
HDR_2x17
J7
HDR_2x17
Silkscreen:
GPIO HDR1
Silkscreen:
GPIO HDR2
NAND_CE
NAND_WE
NAND_RE
NAND_WP
NAND_RB
CLOCK_D
freescale
semiconductor
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FCP:
FIUO: X
PUBI:
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X-TWR-FPGA-K7
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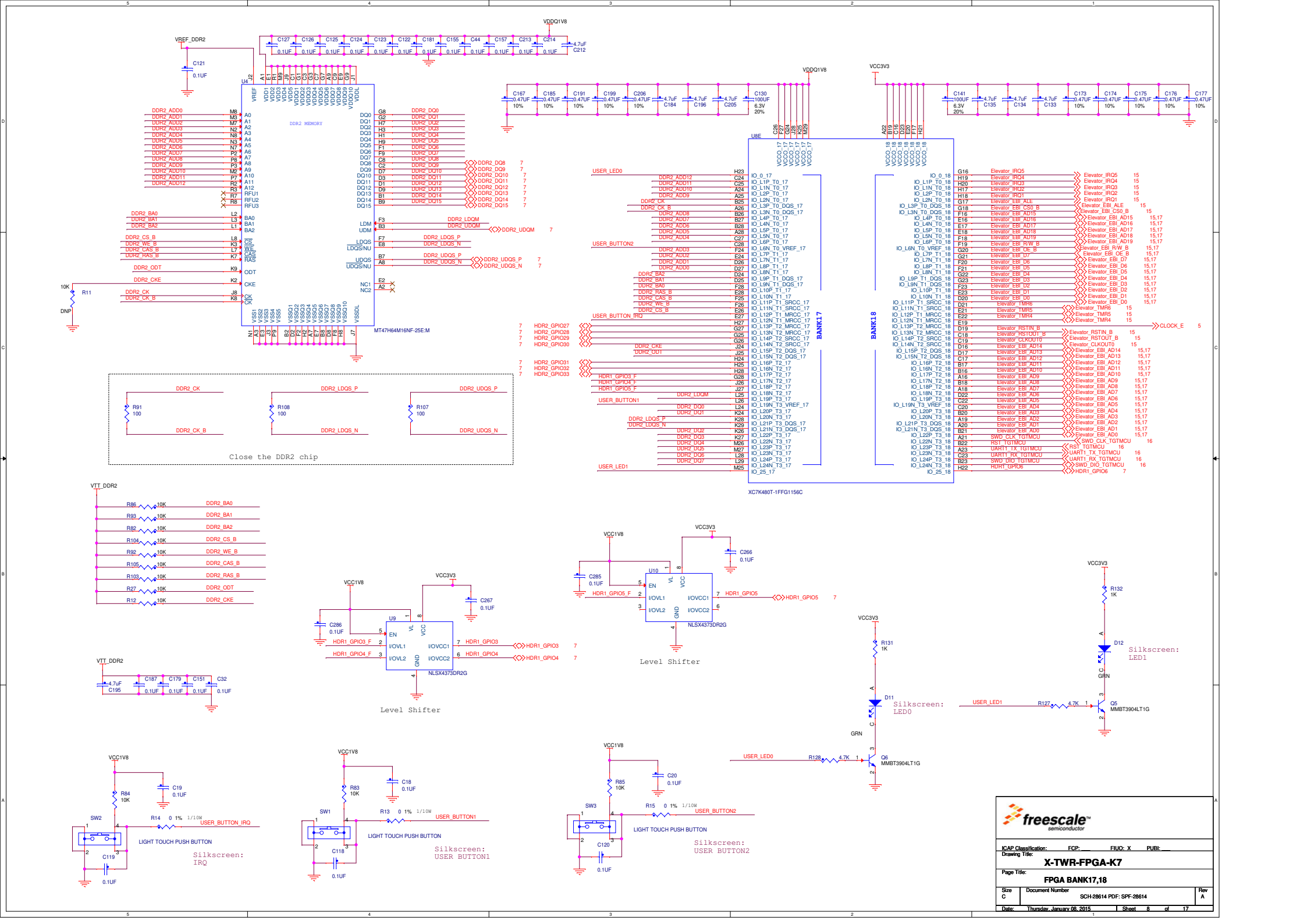
Document Number
SCH-28614 PDF: SPF-28614
Rev
A
Date:
Thursday, January 08, 2015
Sheet
7
of
17


VDDQ1V8
VREF_DDR2
C121
0.1UF
C127 C126 C125 C124 C123 C122 C181 C155 C44 C157 C213 C214
0.1UF
4.7uF
C212
U4
DDR2 MEMORY
DDR2_ADD0
DDR2_ADD1
DDR2_ADD2
DDR2_ADD3
DDR2_ADD4
DDR2_ADD5
DDR2_ADD6
DDR2_ADD7
DDR2_ADD8
DDR2_ADD9
DDR2_ADD10
DDR2_ADD11
DDR2_ADD12
DDR2_BA0
DDR2_BA1
DDR2_BA2
DDR2_CS_B
DDR2_WE_B
DDR2_CAS_B
DDR2_RAS_B
DDR2_ODT
DDR2_CKE
DDR2_CK
DDR2_CK_B
10K
R11
DNP
DDR2_DQ0
DDR2_DQ1
DDR2_DQ2
DDR2_DQ3
DDR2_DQ4
DDR2_DQ5
DDR2_DQ6
DDR2_DQ7
DDR2_DQ8
DDR2_DQ9
DDR2_DQ10
DDR2_DQ11
DDR2_DQ12
DDR2_DQ13
DDR2_DQ14
DDR2_DQ15
DDR2_LDQM
DDR2_UDQM
DDR2_LDQS_P
DDR2_LDQS_N
DDR2_UDQS_P
DDR2_UDQS_N
MT47H64M16NF-25E:M
Close the DDR2 chip
R91 100
R108 100
R107 100
C167 C185 C191 C199 C206 C184 C196 C205 C130
0.47UF 10%
4.7uF
100UF 6.3V 20%
VDDQ1V8
VCC3V3
C141 C135 C134 C133 C173 C174 C175 C176 C177
100UF 6.3V 20%
4.7uF
0.47UF 10%
U8E
XC7K480T-1FFG1156C
BANK17
BANK18
USER_LED0
USER_BUTTON2
USER_BUTTON_IRQ
USER_BUTTON1
USER_LED1
HDR1_GPIO3_F
HDR1_GPIO4_F
HDR1_GPIO5_F
HDR2_GPIO27
HDR2_GPIO28
HDR2_GPIO29
HDR2_GPIO30
HDR2_GPIO31
HDR2_GPIO32
HDR2_GPIO33
Elevator_IRQ5
Elevator_IRQ4
Elevator_IRQ3
Elevator_IRQ2
Elevator_IRQ1
Elevator_EBI_ALE
Elevator_EBI_CS0_B
Elevator_EBI_AD15
Elevator_EBI_AD16
Elevator_EBI_AD17
Elevator_EBI_AD18
Elevator_EBI_AD19
Elevator_EBI_R/W_B
Elevator_EBI_OE_B
Elevator_EBI_D7
Elevator_EBI_D6
Elevator_EBI_D5
Elevator_EBI_D4
Elevator_EBI_D3
Elevator_EBI_D2
Elevator_EBI_D1
Elevator_EBI_D0
Elevator_TMR6
Elevator_TMR5
Elevator_TMR4
CLOCK_E
Elevator_RSTIN_B
Elevator_RSTOUT_B
Elevator_CLKOUT0
Elevator_EBI_AD14
Elevator_EBI_AD13
Elevator_EBI_AD12
Elevator_EBI_AD11
Elevator_EBI_AD10
Elevator_EBI_AD9
Elevator_EBI_AD8
Elevator_EBI_AD7
Elevator_EBI_AD6
Elevator_EBI_AD5
Elevator_EBI_AD4
Elevator_EBI_AD3
Elevator_EBI_AD2
Elevator_EBI_AD1
Elevator_EBI_AD0
SWD_CLK_TGTMCU
RST_TGTMCU
UART1_TX_TGTMCU
UART1_RX_TGTMCU
SWD_DIO_TGTMCU
HDR1_GPIO6
VTT_DDR2
R86 R93 R82 R104 R92 R105 R103 R27 R12
10K
C195 C187 C179 C151 C32
4.7uF
0.1UF
U9
U10
NLSX4373DR2G
Level Shifter
C285 C286 C266 C267
R131 R132 1K
D11 D12
GRN
Silkscreen: LED0
Silkscreen: LED1
R127 R128 4.7K
Q5 Q6 MMBT3904LT1G
R84 R83 R85 10K
R14 R13 R15 0 1% 1/10W
SW2 SW1 SW3
LIGHT TOUCH PUSH BUTTON
C19 C18 C20 C118 C119 C120
Silkscreen: IRQ
Silkscreen: USER BUTTON1
Silkscreen: USER BUTTON2
freescale semiconductor
ICAP Classification:
FCP:
FIUO: X
PUBI:
Drawing Title:
X-TWR-FPGA-K7
Page Title:
FPGA BANK17,18
Size C
Document Number SCH-28614 PDF: SPF-28614
Rev A
Date: Thursday, January 08, 2015
Sheet 8 of 17


Silkscreen:
HAPS-2
Silkscreen:
HAPS-2
Default: NP
VCC3V3
VCC3V3_HAPSTRAKII
J32
HDR 1X2 TH
U11
ASP-125521-03
J37
ASP-125516-03
U8F
BANK111
BANK112
XC7K480T-1FFG1156C
U8G
BANK113
BANK114
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freescale semiconductor
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FIUO: X
PUBI:
Drawing Title:
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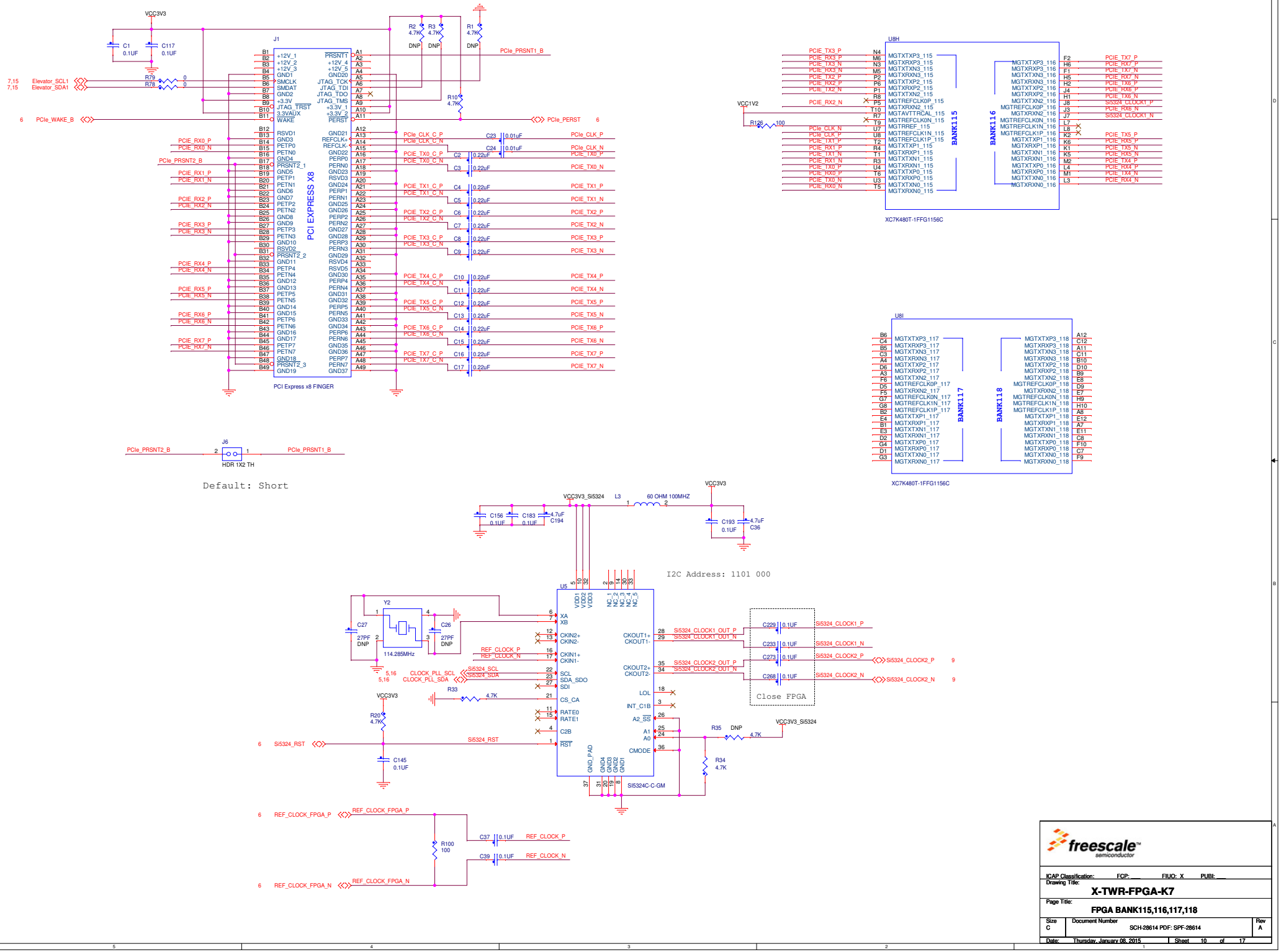
Size
C
Document Number
SCH-28614 PDF: SPF-28614
Rev
A
Date:
Thursday, January 08, 2015
Sheet
9
of
17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PCI EXPRESS X8
PCI Express x8 FINGER
U8H
XC7K480T-1FFG1156C
U8I
XC7K480T-1FFG1156C
J6
HDR 1X2 TH
Default: Short
I2C Address: 1101 000
U5
SI5324C-C-GM
Close FPGA
freescale semiconductor
ICAP Classification:
FCP:
FIUO: X
PUBI:
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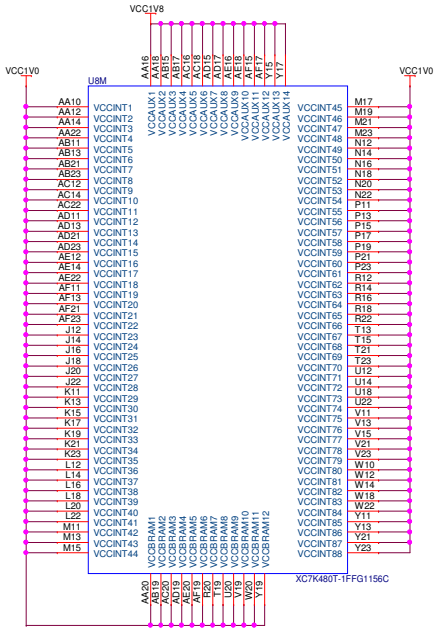
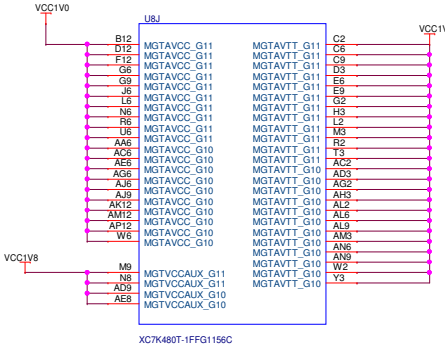
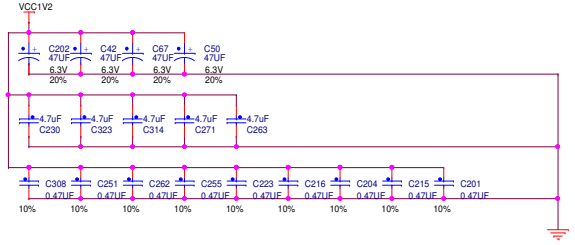
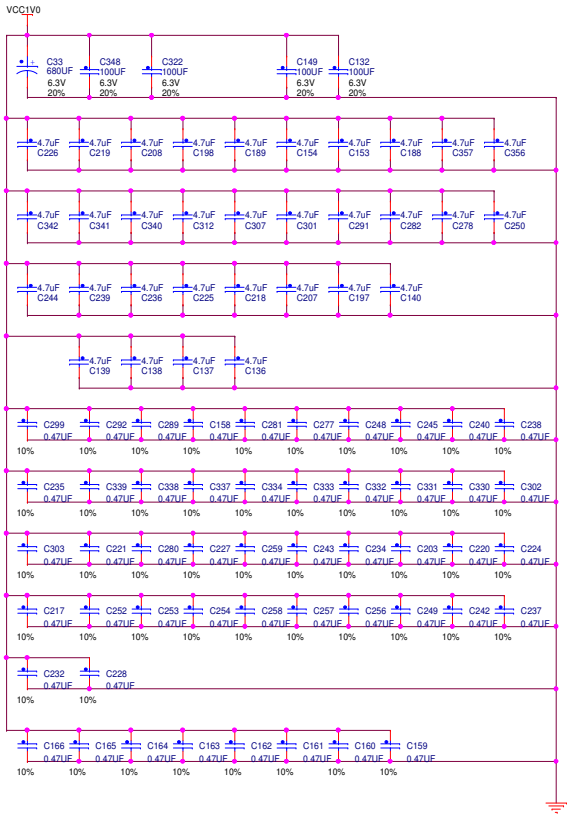
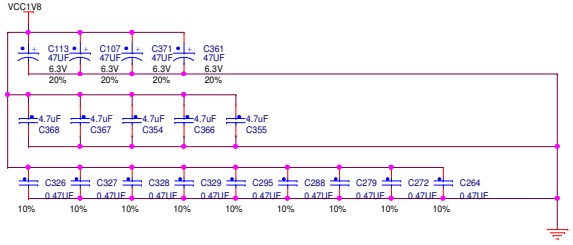
X-TWR-FPGA-K7
Page Title:
FPGA BANK115,116,117,118
Size
C
Document Number
SCH-28614 PDF: SPF-28614
Rev
A
Date:
Thursday, January 08, 2015
Sheet
10
of
17











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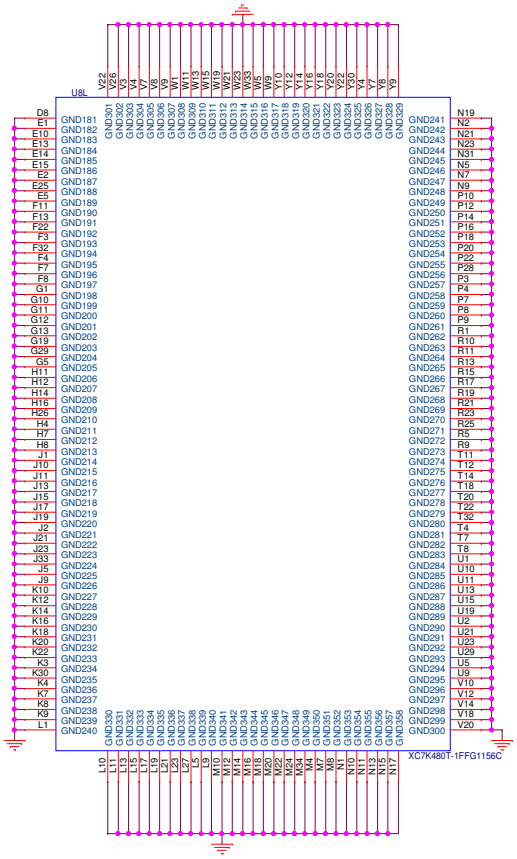
ICAP Classification: FCP: ___ FIUO: X PUBI: ___

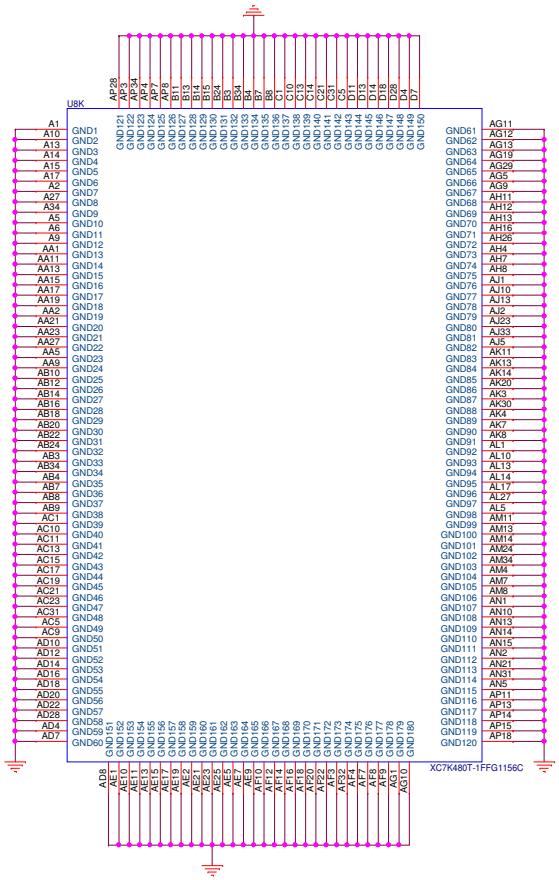
Drawing Title: **X-TWR-FPGA-K7**

Page Title: **FPGA POWER**

Size	Document Number	Rev
C	SCH-28614 PDF: SPF-28614	A

Date: Thursday, January 08, 2015 Sheet 11 of 17





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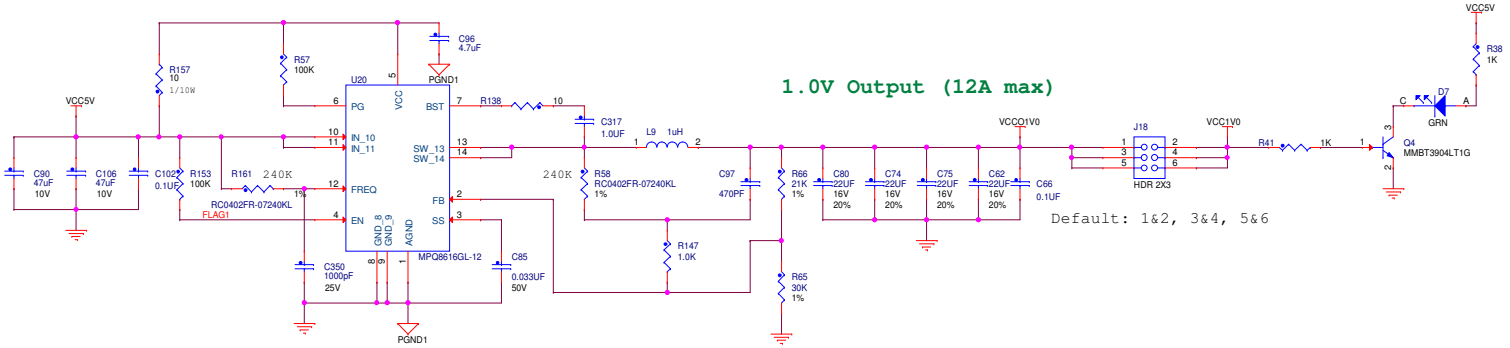
ICAP Classification: FCP: ___ FIUO: X PUBI: ___

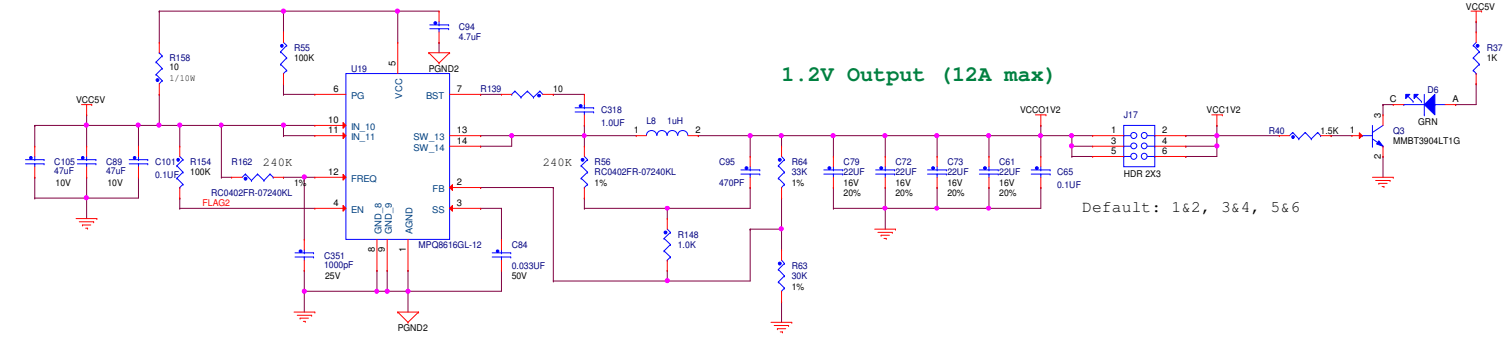
Drawing Title: **X-TWR-FPGA-K7**

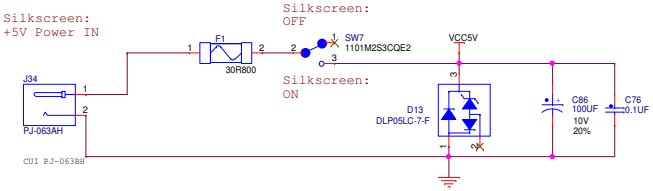
Page Title: **FPGA GND**

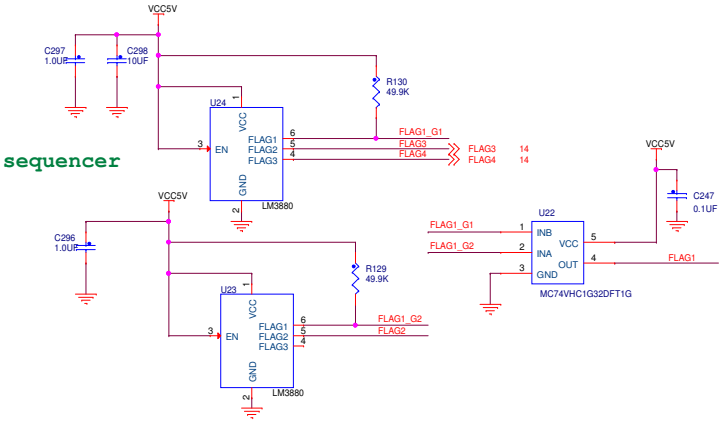
Size	Document Number	Rev
C	SCH-28614 PDF: SPF-28614	A

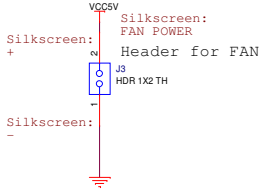
Date: Thursday, January 08, 2015 Sheet 12 of 17











freescale semiconductor

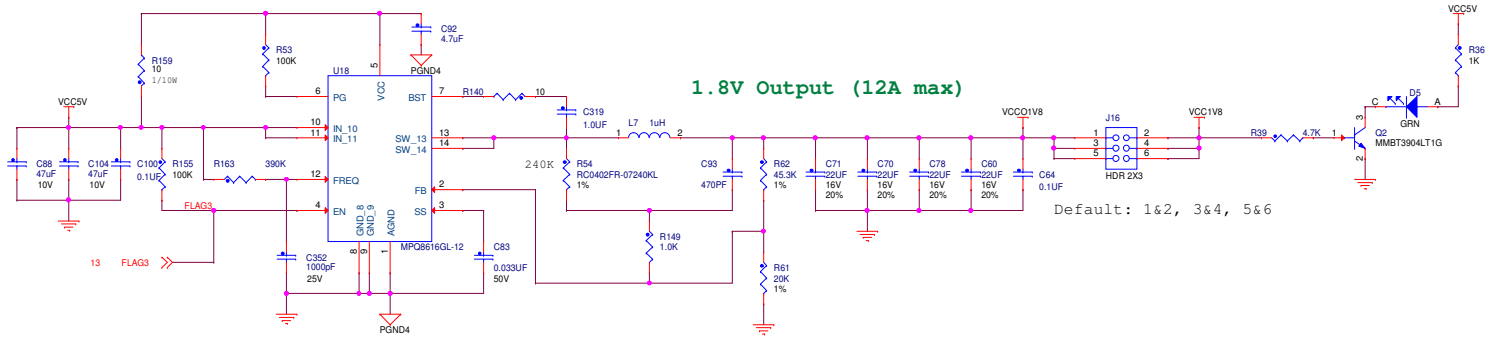
ICAP Classification: FCP: ___ FIUO: X PUBI: ___

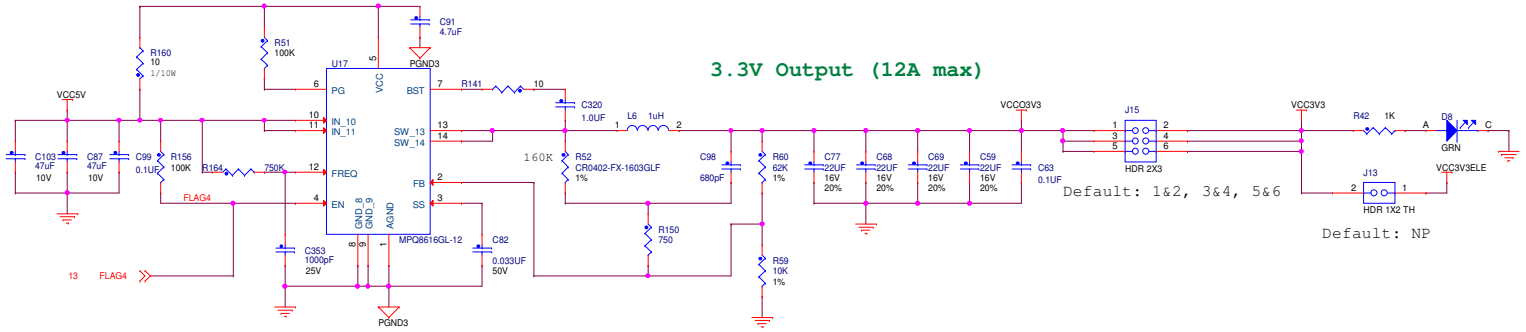
Drawing Title: **X-TWR-FPGA-K7**

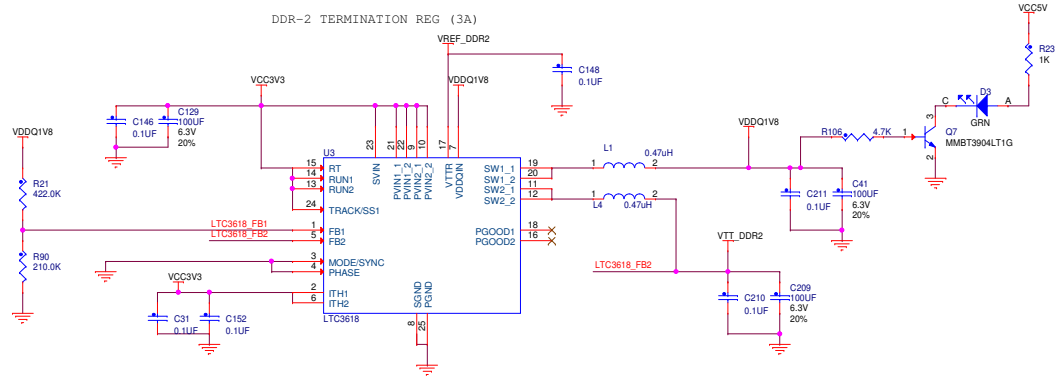
Page Title: **BOARD POWER 1**

Size	Document Number	Rev
C	SCH-28614 PDF: SPF-28614	A

Date: Thursday, January 08, 2015 Sheet 13 of 17







freescale semiconductor

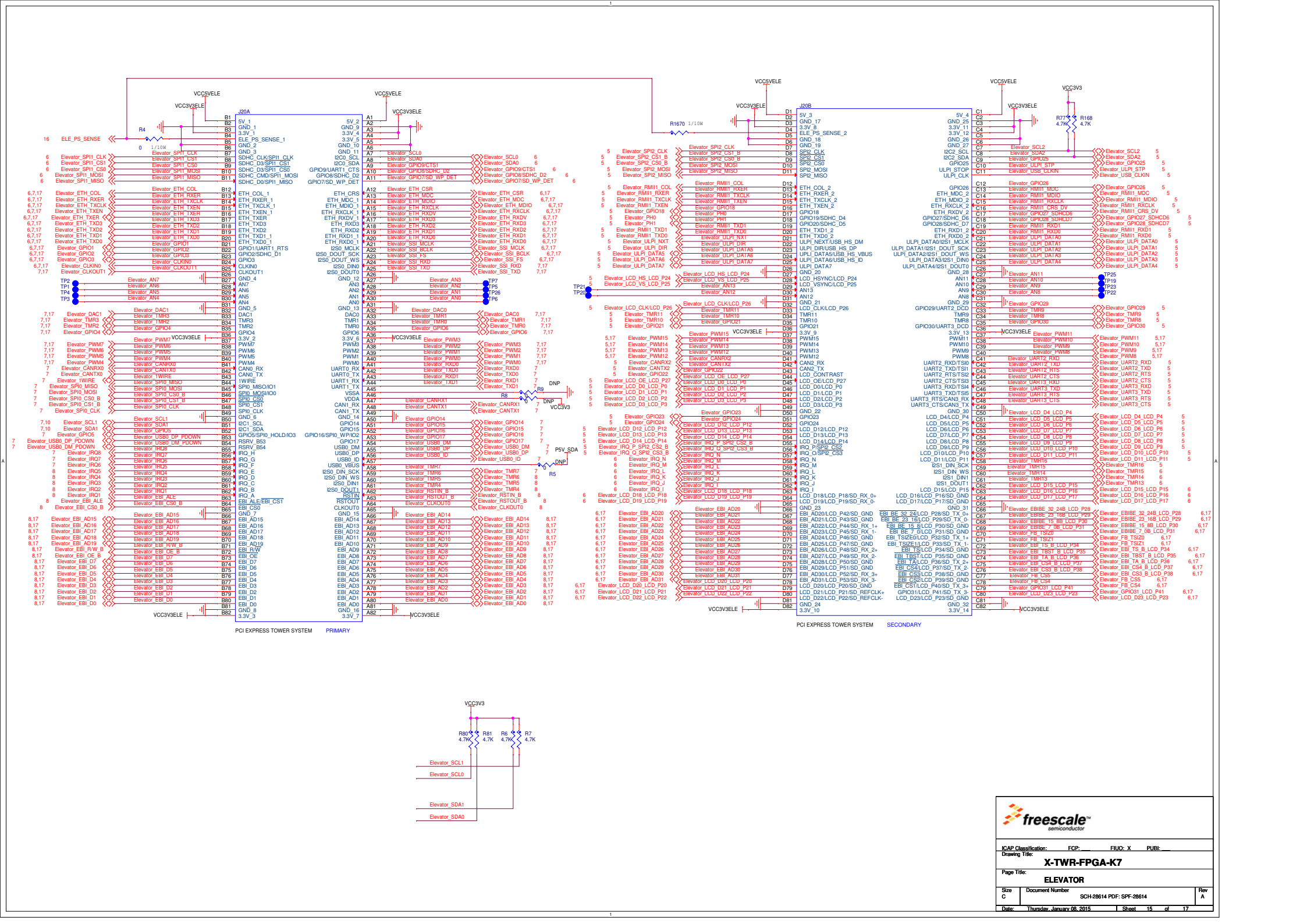
ICAP Classification: FCP: ___ FIUO: X PUBI: ___

Drawing Title: **X-TWR-FPGA-K7**

Page Title: **BOARD POWER 2**

Size	Document Number	Rev
C	SCH-28614 PDF: SPF-28614	A

Date: Thursday, January 08, 2015 Sheet 14 of 17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PCI EXPRESS TOWER SYSTEM PRIMARY
J20B
PCI EXPRESS TOWER SYSTEM SECONDARY
VCC5VELE
VCC3V3ELE
VCC3V3
R4
R1670
R77 4.7K
R168 4.7K
R80 4.7K
R81 4.7K
R6 4.7K
R7 4.7K
R8
R9
R5
DNP
P5V_SDA
Elevator_SCL1
Elevator_SCL0
Elevator_SDA1
Elevator_SDA0
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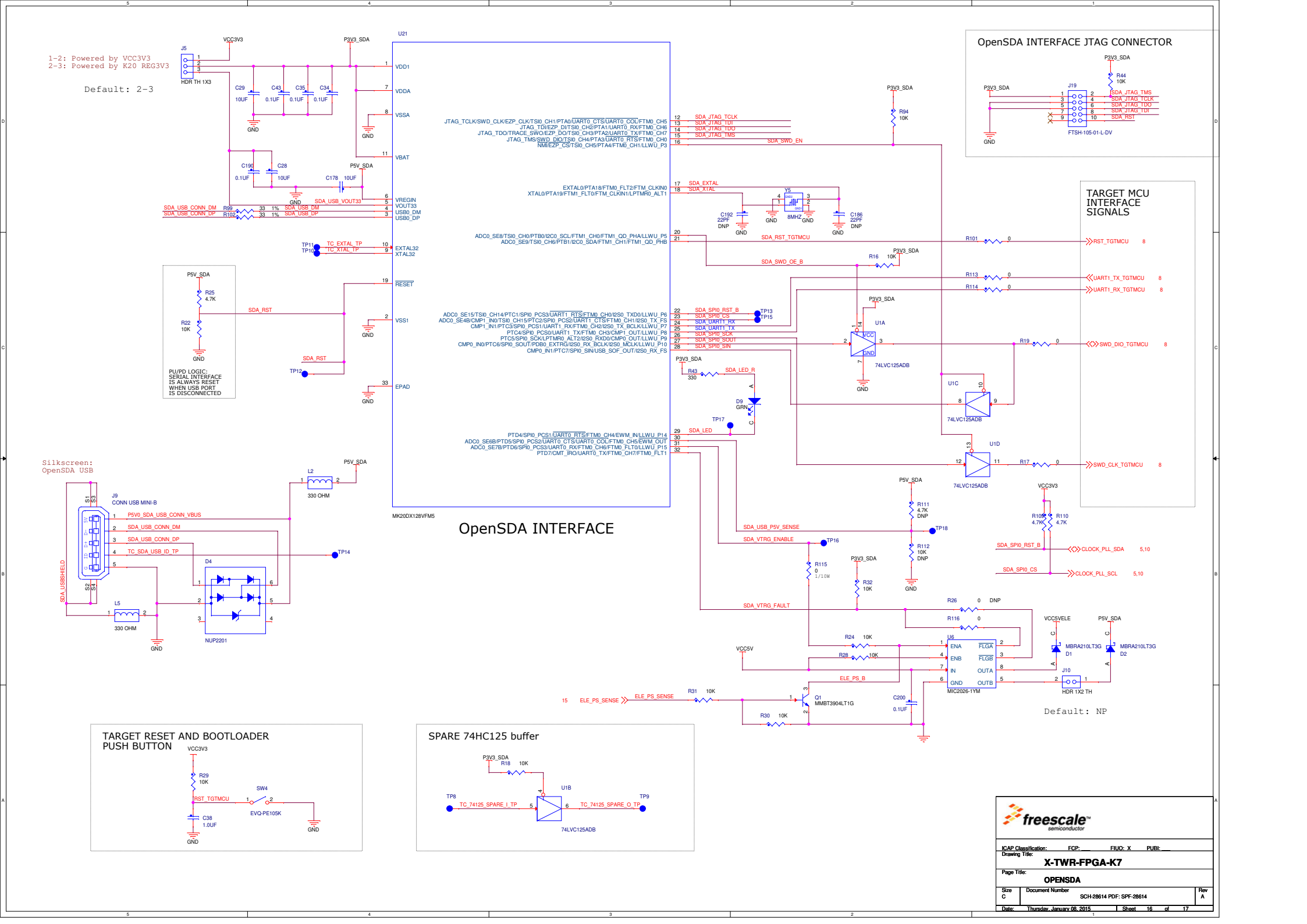
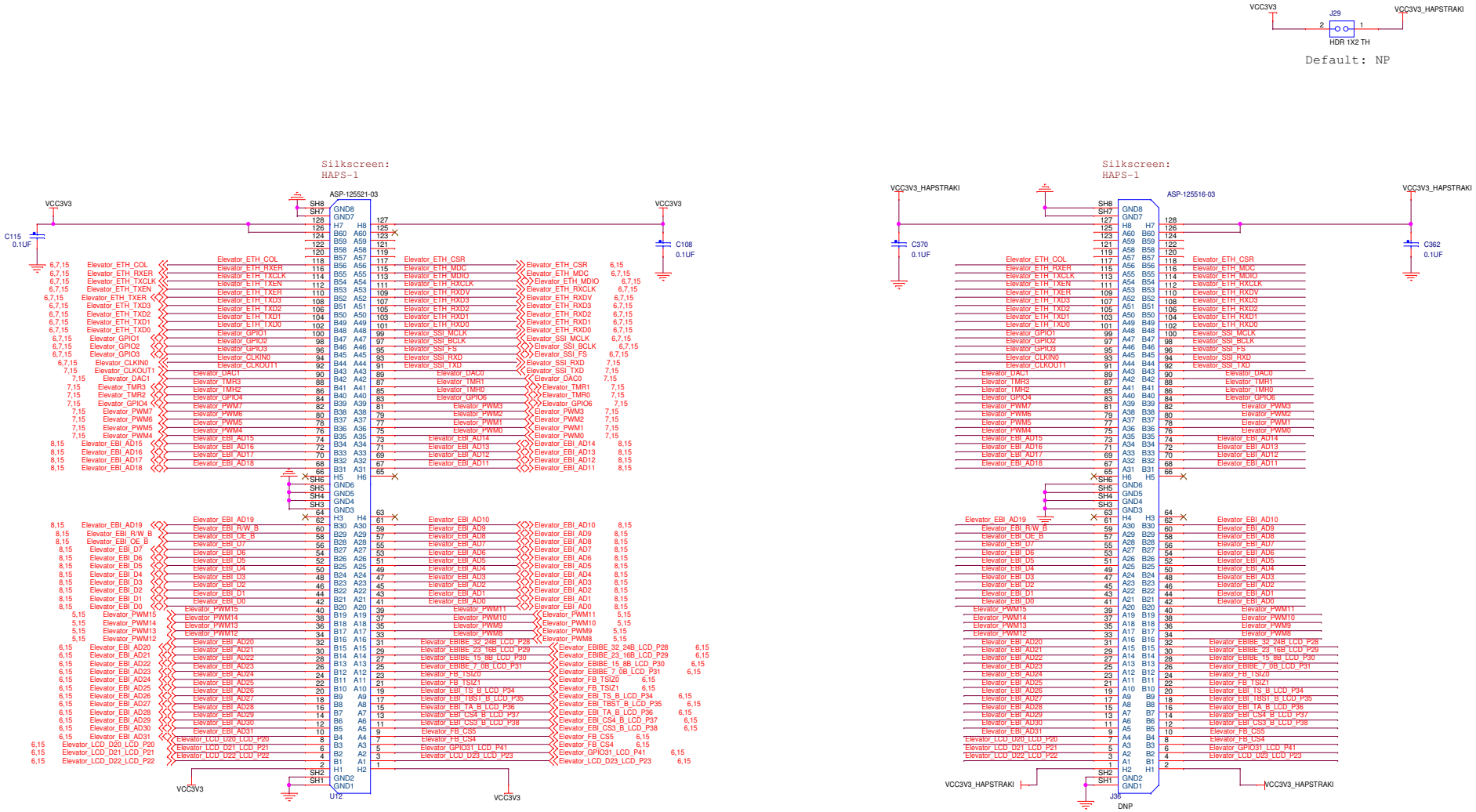
Size C
Document Number SCH-28614 PDF: SPF-28614
Rev A
Date: Thursday, January 08, 2015
Sheet 15 of 17


1-2: Powered by VCC3V3
2-3: Powered by K20 REG3V3
Default: 2-3
J5
HDR TH 1X3
VCC3V3
P3V3_SDA
U21
VDD1
VDDA
VSSA
VBAT
P5V_SDA
VREGIN
VOUT33
USB0_DM
USB0_DP
EXTAL32
XTAL32
RESET
VSS1
EPAD
MK20DX128VFM5
OpenSDA INTERFACE
JTAG_TCLK/SWD_CLK/EZP_CLK/TSI0_CH1/PTA0/UART0_CTS/UART0_COL/FTM0_CH5
JTAG_TDI/EZP_DI/TSI0_CH2/PTA1/UART0_RX/FTM0_CH6
JTAG_TDO/TRACE_SWO/EZP_DO/TSI0_CH3/PTA2/UART0_TX/FTM0_CH7
JTAG_TMS/SWD_DIO/TSI0_CH4/PTA3/UART0_RTS/FTM0_CH0
NMI/EZP_CS/TSI0_CH5/PTA4/FTM0_CH1/LLWU_P3
SDA_JTAG_TCLK
SDA_JTAG_TDI
SDA_JTAG_TDO
SDA_JTAG_TMS
SDA_SWD_EN
EXTAL0/PTA18/FTM0_FLT2/FTM_CLKIN0
XTAL0/PTA19/FTM1_FLT0/FTM_CLKIN1/LPTMR0_ALT1
SDA_EXTAL
SDA_XTAL
Y5
8MHZ
ADC0_SE8/TSI0_CH0/PTB0/I2C0_SCL/FTM1_CH0/FTM1_QD_PHA/LLWU_P5
ADC0_SE9/TSI0_CH6/PTB1/I2C0_SDA/FTM1_CH1/FTM1_QD_PHB
SDA_RST_TGTMCU
SDA_SWD_OE_B
ADC0_SE15/TSI0_CH14/PTC1/SPI0_PCS3/UART1_RTS/FTM0_CH0/I2S0_TXD0/LLWU_P6
ADC0_SE4B/CMP1_IN0/TSI0_CH15/PTC2/SPI0_PCS2/UART1_CTS/FTM0_CH1/I2S0_TX_FS
CMP1_IN1/PTC3/SPI0_PCS1/UART1_RX/FTM0_CH2/I2S0_TX_BCLK/LLWU_P7
PTC4/SPI0_PCS0/UART1_TX/FTM0_CH3/CMP1_OUT/LLWU_P8
PTC5/SPI0_SCK/LPTMR0_ALT2/I2S0_RXD0/CMP0_OUT/LLWU_P9
CMP0_IN0/PTC6/SPI0_SOUT/PDB0_EXTRG/I2S0_RX_BCLK/I2S0_MCLK/LLWU_P10
CMP0_IN1/PTC7/SPI0_SIN/USB_SOF_OUT/I2S0_RX_FS
SDA_SPI0_RST_B
SDA_SPI0_CS
SDA_UART1_RX
SDA_UART1_TX
SDA_SPI0_SCK
SDA_SPI0_SOUT
SDA_SPI0_SIN
PTD4/SPI0_PCS1/UART0_RTS/FTM0_CH4/EWM_IN/LLWU_P14
ADC0_SE6B/PTD5/SPI0_PCS2/UART0_CTS/UART0_COL/FTM0_CH5/EWM_OUT
ADC0_SE7B/PTD6/SPI0_PCS3/UART0_RX/FTM0_CH6/FTM0_FLT0/LLWU_P15
PTD7/CMT_IRO/UART0_TX/FTM0_CH7/FTM0_FLT1
SDA_LED
SDA_LED_R
SDA_USB_P5V_SENSE
SDA_VTRG_ENABLE
SDA_VTRG_FAULT
ELE_PS_SENSE
ELE_PS_B
SDA_USB_CONN_DM
SDA_USB_CONN_DP
SDA_USB_VOUT33
SDA_USB_DM
SDA_USB_DP
TC_EXTAL_TP
TC_XTAL_TP
SDA_RST
PU/PD LOGIC:
SERIAL INTERFACE
IS ALWAYS RESET
WHEN USB PORT
IS DISCONNECTED
OpenSDA INTERFACE JTAG CONNECTOR
J19
FTSH-105-01-L-DV
TARGET MCU
INTERFACE
SIGNALS
RST_TGTMCU
UART1_TX_TGTMCU
UART1_RX_TGTMCU
SWD_DIO_TGTMCU
SWD_CLK_TGTMCU
CLOCK_PLL_SDA
CLOCK_PLL_SCL
74LVC125ADB
MIC2026-1YM
MMBT3904LT1G
MBRA210LT3G
HDR 1X2 TH
Default: NP
Silkscreen:
OpenSDA USB
J9
CONN USB MINI-B
NUP2201
330 OHM
TARGET RESET AND BOOTLOADER
PUSH BUTTON
SW4
EVQ-PE105K
SPARE 74HC125 buffer
TC_74125_SPARE_I_TP
TC_74125_SPARE_O_TP
freescale semiconductor
ICAP Classification:
FCP:
FIUO: X
PUBI:
Drawing Title:
X-TWR-FPGA-K7
Page Title:
OPENSDA
Size
C
Document Number
SCH-28614 PDF: SPF-28614
Rev
A
Date:
Thursday, January 08, 2015
Sheet
16
of
17



freescale semiconductor

ICAP Classification:	FCP: ___	FIUO: X	PUBI: ___
Drawing Title:	X-TWR-FPGA-K7		
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Date: Thursday, January 08, 2015	Sheet 17 of 17		