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SEN-SPI-BOX

(46213 Rev C)

Revision History			
Rev	Description	Date	Approved
X1	Original draft	28-MAR-19	Anthony Duhamel
X2	Added LEDs and Beagle connector MCU changed from KL46Z to K64F	05-JUN-19	Anthony Duhamel
X3,X4	K64F MCU IO Pins remapped	06-JUN-19	Anthony Duhamel
X5	0.1uF Caps(Agile PN:150-79363) changed to Agile PN:150-79461 Block diagram updated; A070-Release to start PCB Layout Design	19-JUN-19	Anthony Duhamel
A	Test Points TP12 to TP15 part numbers changed; Reset Switch Part number changed; Boost Converter Part number changed.	29-JUL-19	Anthony Duhamel
AX1	1. changed UART ckt option to DNP 2.added 5V boost ckt 3. removed all LED's & added vertical TH indic LED for VCC & VCCO 4. changed D12,D14,D15,D16,D17 to 5.1V from 3.3V 5. Removed SPI sniffer and Freq divider ckt, 6. added SPI/I2C option for BEGAL ,MDI connectors 7. Added I2C level translator with AND gate EN option 8.added level shifter ckt for BEGAL option 9. R1 changed to mount at JTAG from DNP 10.added mux at BGE&MDI MISO lines 11. removed the NOR gates at BGE sniffer ckt 12.remove resistors at NXP 10 pin option near BEGAL connector 13.added new blocak diagram 14. D20 LED changed to RED/GREEN dual LED	26-MAR-20	Anthony Duhamel
AX2	1. added D18 and R62	02-April-20	Anthony Duhamel
AX3	added silk naming for all test points and added T24 for P5V	15-April-20	Anthony Duhamel
B	Release file	20-April-20	Anthony Duhamel
BX1	R42 populated. R119 &R120 Added as an option for U4	10-Sep-20	Anthony Duhamel
C	Release file	16-Sep-20	Anthony Duhamel



Analog Sensor Product Group
6501 William Cannon Drive West
Austin, TX 78735-6598

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Classification: Company Internal/Proprietary

Designer:
Anthony Duhamel

Drawing Title:
SEN-SPI-BOX

Drawn by:
Vijayalakshmi

Page Title:
TITLE, TOC & REV

Approved:
Anthony Duhamel

Size
C

Document Number
SCH-46213 PDF: SPF-46213

Rev
C

Date: Wednesday, September 16, 2020

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SEN-SPI-BOX Block Diagram



DNP Table

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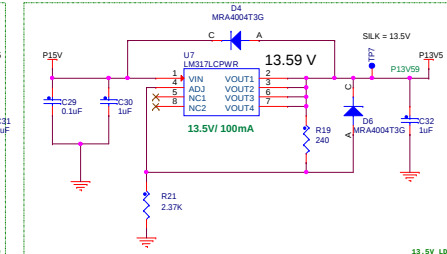
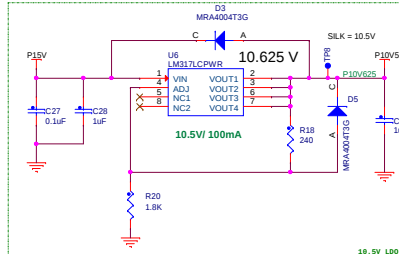
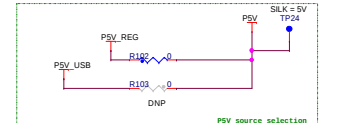
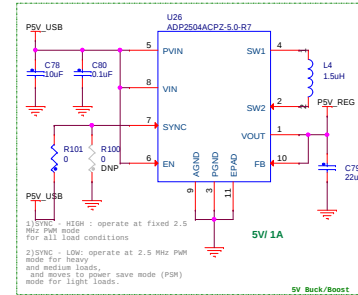
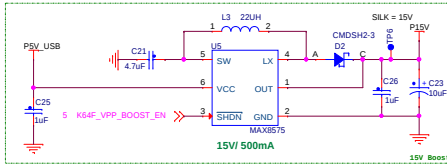
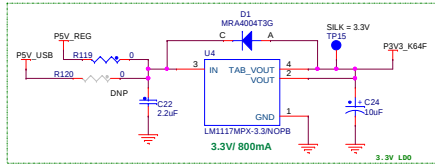
SEN-SPI-BOX

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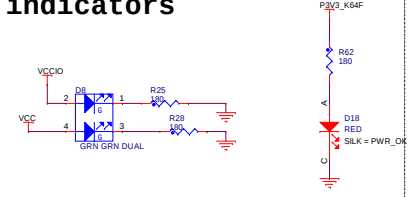
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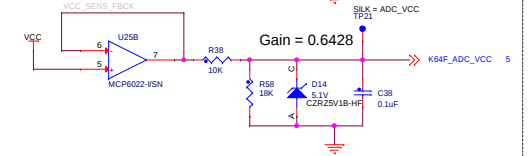
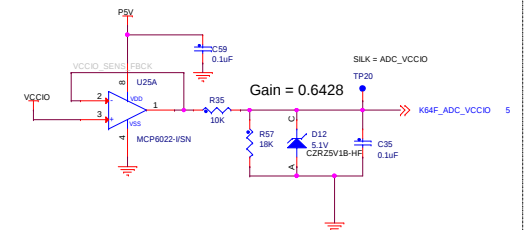
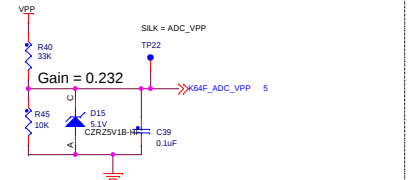
Power supplies (LDO & Buck/Boost)



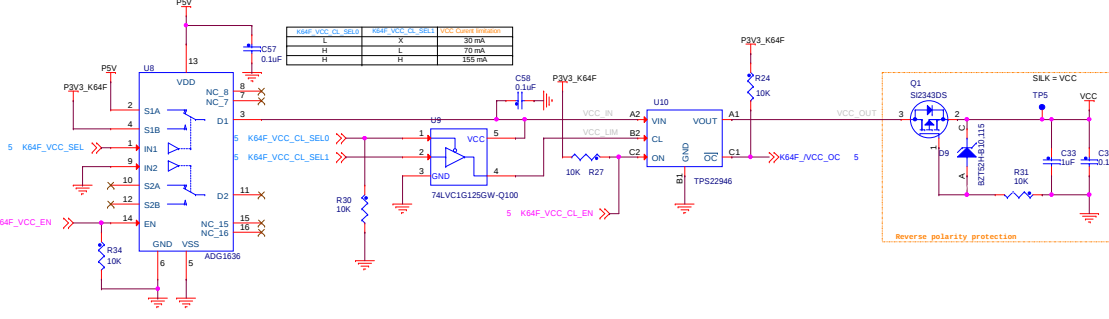
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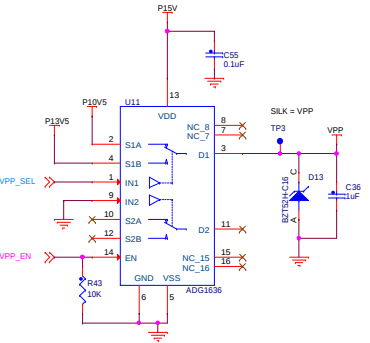
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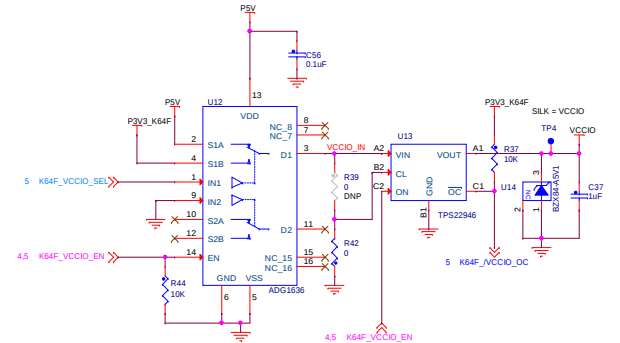
VCC Control & current protection



VPP Control



VCCIO Control



NET	DESCRIPTION
K64F_Vxx_EN	Enables Vxx power supply
K64F_Vxx_SEL	Selects Vxx voltage
K64F_VCC_CL_SEL0	Selects current limitation threshold
K64F_VCC_CL_SEL1	Selects current limitation threshold
K64F_VCC_OC	Overcurrent flag (active low)

SUPPLY	TRUE TABLE			
VCCIO	K64F_VCCIO_EN	K64F_VCCIO_SEL	VCCIO	
	L	X	Open	
	H	L	3.3V	
	H	H	5V	
	K64F_VCC_EN	K64F_VCC_SEL	VCC	
VCC	K64F_VCC_EN	K64F_VCC_SEL	K64F_VCC_SEL	VCC
	L	X	X	Open
	X	L	X	Open
	H	L	L	3.3V
	H	H	H	5V
VPP	K64F_VPP_BOOST_EN	K64F_VPP_SEL	K64F_VPP_SEL	VPP
	L	X	X	Open
	X	L	X	Open
	X	H	L	3.3V
	H	H	H	3.5V

GND Test Points



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Drawing Title: **SEN-SPI-BOX**

Page Title: **SEN-SPI-BOX (Supplies)**

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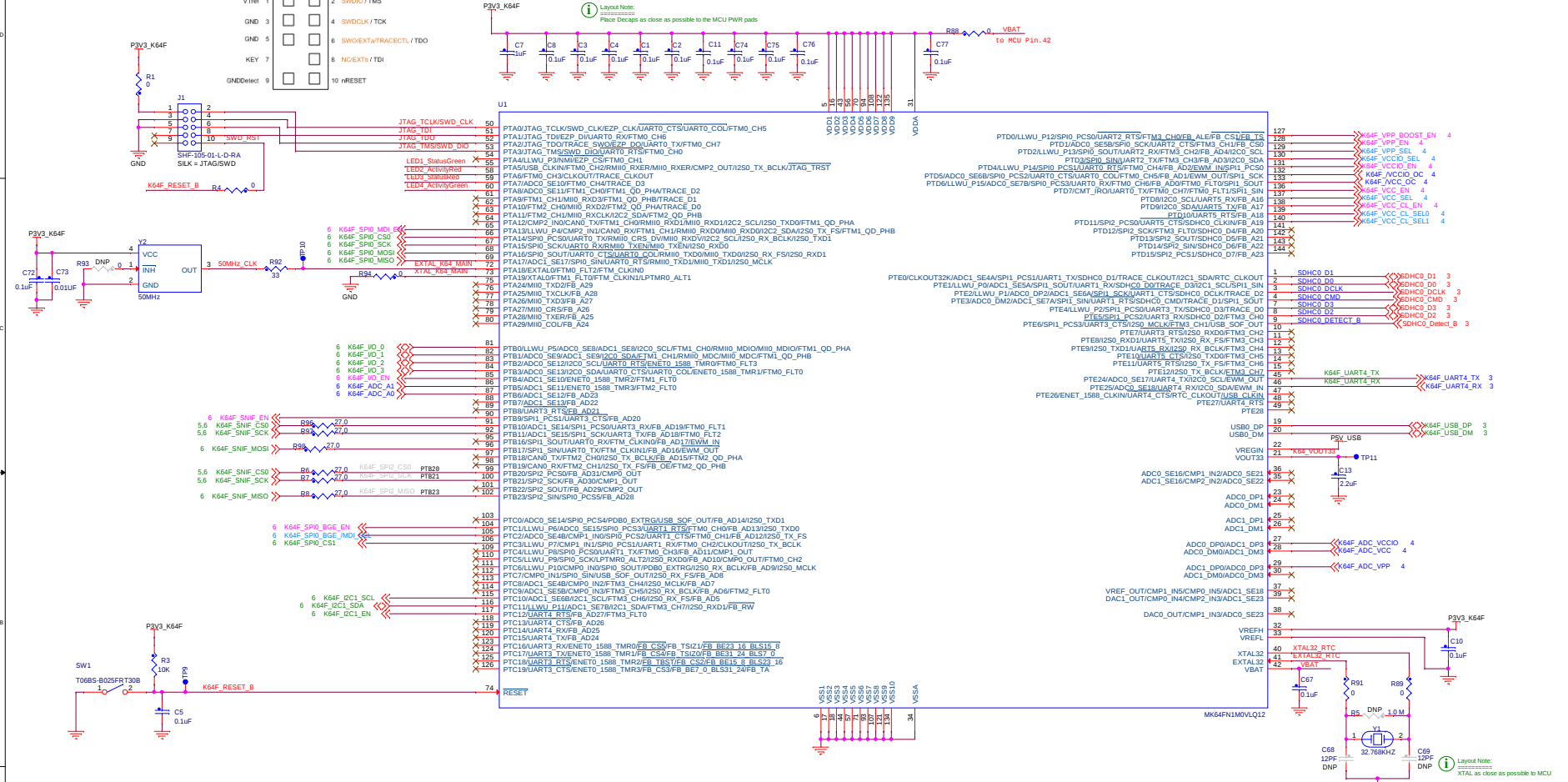
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K64F MCU 144LQFP

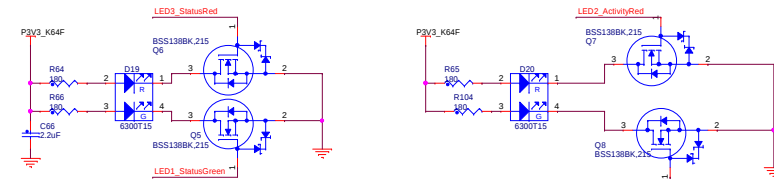
Cortex Debug
10-pin Connector



ⓘ Layout Note:
Place Decaps as close as possible to the MCU PWR pads



External Indicators



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Drawing Title: SEN-SPI-BOX			
Page Title: SEN-SPI-BOX (MCU)			
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NET	DESCRIPTION
K64F_SPI0_XXX_EN	Enables xxx interface (MDI or BGE)
K64F_I2C1_EN	Enables I2C interface
K64F_I/O_EN	Enables I/O interface
K64F_SNIFF_EN	Enables Beagle sniffer interface
K64F_SPI0_BGE_MDI_SEL	Selects MISO signal (/MDI_BGE)

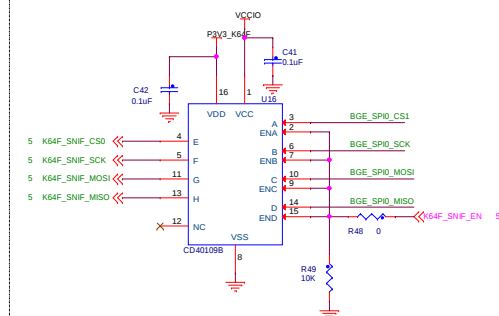
SPI0/I2C1 selection

K64F_SPI0_MDI_EN	K64F_I2C1_EN	Enabled interface
0	X	SPI (MDI)
1	0	None
1	1	I2C
K64F_SPI0_BGE_EN		Enabled interface
0		SPI (Beagle)
1		None

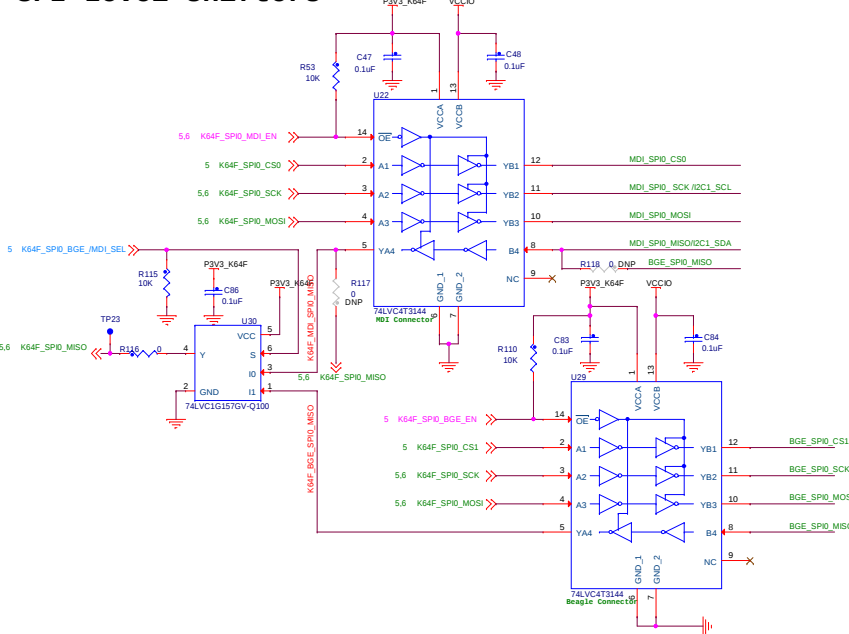
SPI0 MISO selection

K64F_SPI0_BGE_MDI_SEL	Selected MISO
0	MDI
1	Beagle

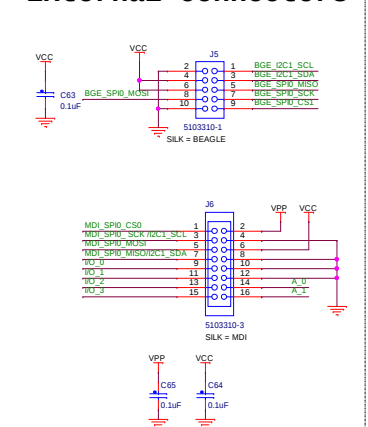
SPI sniffer BEAGLE



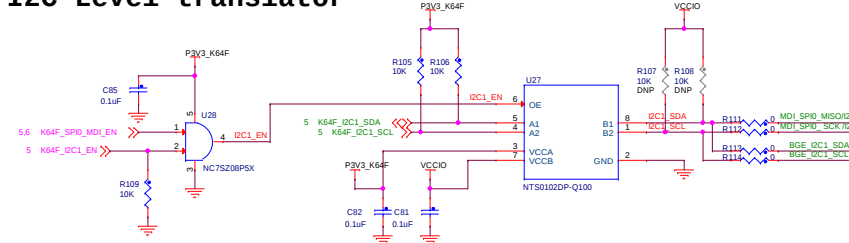
SPI Level shifters



External connectors



I2C Level translator



Analog input

