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Revisions

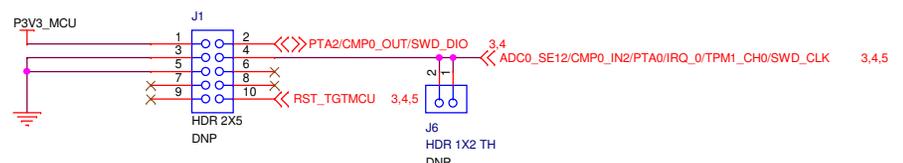| Rev	Description	Date	Approved
X1	Initial	Oct. 19, 2012	
A	Release	Oct. 26, 2012	
A1	1. DNP R2 2. DNP J1, J3, J7, J8, J9 and J10 3. DNP TP20 4. DNP BT1 5. DNP J4, J5 and populate R27, R28 6. Change R29, R30 from 10K(0603, %5) to 510K (0603, 5%)		

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ICAP Classification: FCP: FIUO: X PUBI:

Designer: Wang Peng	Drawing Title: **FRDM-KL02Z**		
Drawn by: Helen Xu	Page Title: **Table of Contents/Revisions**		
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NOTES

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SWD CONNECTOR

P3V3_MCU

J1

1 2 PTA2/CMP0_OUT/SWD_DIO 3,4
3 4
5 6 ADC0_SE12/CMP0_IN2/PTA0/IRQ_0/TPM1_CH0/SWD_CLK 3,4,5
7 8
9 10 RST_TGTMCU 3,4,5

HDR 2X5
DNP

J6
HDR 1X2 TH
DNP

There is a bottom-layer trace
shorting pin 1 to pin 2 of jumper

U1

5 PTB6/IRQ_2/LPTMR0_ALT3/TPM1_CH1/TPM_CLKIN1
P3V3_MCU
5 PTB7/IRQ_3/TPM1_CH0
3 Vrefh
3 Vrefl
3 EXTAL
3 XTAL
5 PTA5/TPM0_CH1/SPI0_SS_b
5 PTA6/TPM0_CH0/SPI0_MISO
5 ADC0_SE11/PTB8
5 ADC0_SE10/PTB9
5 ADC0_SE9/PTB10/TPM0_CH1
5 ADC0_SE8/PTB11/TPM0_CH0
5 ADC0_SE7/PTA7/IRQ_4/SPI0_MISO/SPI0_MOSI

C22 1.0UF   C1 0.1UF

1 PTB6/IRQ_2/LPTMR0_ALT3/TPM1_CH1/TPM_CLKIN1
2 PTB7/IRQ_3/TPM1_CH0
3 VDD
4 VREFH
5 VREFL
6 VSS
7 EXTAL0/PTA3/I2C0_SCL/I2C1_SDA
8 XTAL0/PTA4/I2C0_SDA/I2C1_SCL
9 PTA5/TPM0_CH1/SPI0_SS
10 PTA6/TPM0_CH0/SPI0_MISO
11 ADC0_SE11/PTB8
12 ADC0_SE10/PTB9
13 ADC0_SE9/PTB10/TPM0_CH1
14 ADC0_SE8/PTB11/TPM0_CH0
15 ADC0_SE7/PTA7/IRQ_4/SPI0_MISO/SPI0_MOSI

16 ADC0_SE6/PTB0/IRQ_5/EXTRG_IN/SPI0_SCK
17 ADC0_SE5/CMP0_IN3/PTB1/IRQ_6/UART0_TX/UART0_RX
18 ADC0_SE4/PTB2/IRQ_7/UART0_RX/UART0_TX
19 ADC0_SE3/PTA8/I2C1_SCL
20 ADC0_SE2/PTA9/I2C1_SDA
21 PTA10/IRQ_8
22 PTA11/IRQ_9
23 PTB3/IRQ_10/I2C0_SCL/UART0_TX
24 PTB4/IRQ_11/I2C0_SDA/UART0_RX
25 ADC0_SE1/CMP0_IN1/PTB5/IRQ_12/TPM1_CH1/NMI
26 ADC0_SE0/CMP0_IN0/PTA12/IRQ_13/LPTMR0_ALT2/TPM1_CH0/TPM_CLKIN0
27 PTA13
28 PTB12
29 ADC0_SE13/PTB13/TPM1_CH1
30 ADC0_SE12/CMP0_IN2/PTA0/IRQ_0/TPM1_CH0/SWD_CLK
31 PTA1/IRQ_1/LPTMR0_ALT1/TPM_CLKIN0/RESET
32 PTA2/CMP0_OUT/SWD_DIO
33 EX_PAD

ADC0_SE6/PTB0/IRQ_5/EXTRG_IN/SPI0_SCK 5
ADC0_SE5/CMP0_IN3/PTB1/IRQ_6/UART0_TX/UART0_RX 5
ADC0_SE4/PTB2/IRQ_7/UART0_RX/UART0_TX 5
ADC0_SE3/PTA8/I2C1_SCL 4,5
ADC0_SE2/PTA9/I2C1_SDA 5
PTA10/IRQ_8 5
PTA11/IRQ_9 5
PTB3/IRQ_10/I2C0_SCL/UART0_TX 5
PTB4/IRQ_11/I2C0_SDA/UART0_RX 5
ADC0_SE1/CMP0_IN1/PTB5/IRQ_12/TPM1_CH1/NMI_b 5
ADC0_SE0/CMP0_IN0/PTA12/IRQ_13/LPTMR0_ALT2/TPM1_CH0/TPM_CLKIN0 5
PTA13 5
PTB12 5
ADC0_SE13/PTB13/TPM1_CH1 5
ADC0_SE12/CMP0_IN2/PTA0/IRQ_0/TPM1_CH0/SWD_CLK 3,4,5
RST_TGTMCU 3,4,5
PTA2/CMP0_OUT/SWD_DIO 3,4

KL02Z32M

R25
0 DNP AREF 5

P3V3_MCU
SH1
SOLDER SHORT
C4 10UF   C3 0.1UF   SH2
SOLDER SHORT
C21 1.0UF   C6 0.1uF
Vrefh 3
Vrefl 3

3 EXTAL R1 0
DNP R2 10M
3 XTAL R3 0

Y1
1
2
3
4
32.768KHZ

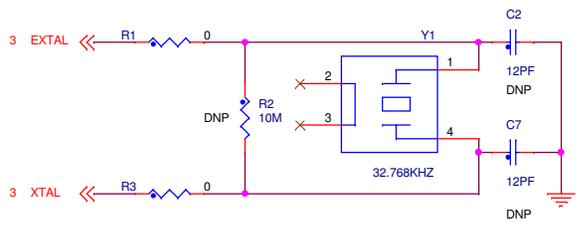C2 12PF DNP
C7 12PF DNP

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

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MCU

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OPEN-SDA INTERFACE

TO LEVERAGE OPENSDA INTERFACE IN YOUR DESIGN
PLEASE PROVIDE +3.3VDC
REGULATION TO
P3V3_USBSER
FROM P5V0_USBSER
VOLTAGE RAIL

ALSO PROVIDE +3.3VDC
REGULATION
TO P3V3
FROM TARGET MCU
VOLTAGE RAIL

TARGET MCU
INTERFACE
SIGNALS

PU/PD LOGIC:
SERIAL INTERFACE
IS ALWAYS RESET
WHEN USB PORT
IS DISCONNECTED

Target reset and bootloader mode
push button

SPARE 74HC125 buffer

OPEN-SDA INTERFACE JTAG CONNECTOR

OPTIONAL
COIN CELL
HOLDER

BT1
3003

P3V3_BATT

TP15

C14
10uF

D3

P3V3

J4
HDR 1X2 TH

DNP

P3V3_MCU

P5V0_USBSER

D2
BAT54C

TP16

2

P5V0-9V0_VIN

U6

VIN   VOUT
GND   TAB

3   2   P3V3_VREG

4

C15
10uF

C16
10uF

1

NCP1117ST33T3G

BAT54C

20mOhm Resistor in layout

R27   0

J5
HDR 1X2 TH

DNP

P3V3_USBSER

R28   0

RGB LED FEATURE

TP17

D4

TP18

LEDRGB_GREEN

3,5   PTB6/IRQ_2/LPTMR0_ALT3/TPM1_CH1/TPM_CLKIN1

R18
220

LEDRGB_RED   1

P3V3

2

4   LEDRGB_GREEN

3   LEDRGB_BLUE

R19
220

R20
220

PTB7/IRQ_3/TPM1_CH0   3,5

ADC0_SE9/PTB10/TPM0_CH1   3,5

TP19

CLV1A-FKB-CJ1M1F1BB7R4S3

UART0_TX_TGTMCU

R16   1K

UART0_RX_TGTMCU

R17   1K

4

4

3   ADC0_SE4/PTB2/IRQ_7/UART0_RX/UART0_TX
3   ADC0_SE5/CMP0_IN3/PTB1/IRQ_6/UART0_TX/UART0_RX
3   PTA11/IRQ_9
3   ADC0_SE1/CMP0_IN1/PTB5/IRQ_12/TPM1_CH1/NMI_b
3,5   PTA10/IRQ_8
3   ADC0_SE0/CMP0_IN0/PTA12/IRQ_13/LPTMR0_ALT2/TPM1_CH0/TPM_CLKIN0
3,5   PTB6/IRQ_2/LPTMR0_ALT3/TPM1_CH1/TPM_CLKIN1
3,5   PTB7/IRQ_3/TPM1_CH0
3,5   ADC0_SE9/PTB10/TPM0_CH1
3   ADC0_SE8/PTB11/TPM0_CH0
3   PTA5/TPM0_CH1/SPI0_SS_b
3   ADC0_SE7/PTA7/IRQ_4/SPI0_MISO/SPI0_MOSI
3   PTA6/TPM0_CH0/SPI0_MISO
3   ADC0_SE6/PTB0/IRQ_5/EXTRG_IN/SPI0_SCK
3,5   PTB4/IRQ_11/I2C0_SDA/UART0_RX
3,5   PTB3/IRQ_10/I2C0_SCL/UART0_TX

3   AREF

I2C INERTIAL SENSOR

P3V3

C17
0.1UF

P3V3

C18
10uF

P3V3

R21
4.7K

R22
4.7K

U7

3,5   PTB3/IRQ_10/I2C0_SCL/UART0_TX
3,5   PTB4/IRQ_11/I2C0_SDA/UART0_RX

4

6

SCL

SDA

VDDIO   VDD

1   14

INT1
INT2

11

9

R26   0

PTA10/IRQ_8   3,5

P3V3_USBSER

7   SA0

TP24

MMA8451_BYP   2   BYP

NC3
NC8
NC13
NC15
NC16

3
8
13
15
16

R23
10K

TP25

C19
0.1UF

GND1
GND2
GND3

5 10 12

MMA8451Q

R24
10K
DNP

ARDUINO UNO
COMPATIBLE SHIELDS

J7
CON_1X10   DNP

J8
CON_1X8   DNP

DEBUG GROUND HOOK

TP20
DNP

IN CIRCUIT TEST
GND PROBING

TP21

TP22

TP23

TOUCH ELECTRODES

P3V3

R29
510K

3   PTA13

E1

P3V3

R30
510K

Slider_4

3   PTB12

P5V0_USBSER

D5
BAT54C

P3V3

C20
2.2UF

J9
CON_1X8   DNP

J10
CON_1X6   DNP

3,4   RST_TGTMCU

P3V3

P5V_USB_CONNECTORS

P5V0-9V0_VIN

4   SDA_PTD5

3   ADC0_SE11/PTB8
3   ADC0_SE10/PTB9
3   ADC0_SE13/PTB13/TPM1_CH1
3,4   ADC0_SE12/CMP0_IN2/PTA0/IRQ_0/TPM1_CH0/SWD_CLK
3   ADC0_SE2/PTA9/I2C1_SDA
3,4   ADC0_SE3/PTA8/I2C1_SCL

3,4   A5

A0
A1
A2
A3

A5

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ARDUINO SHIELDS & PWR SUPPLY
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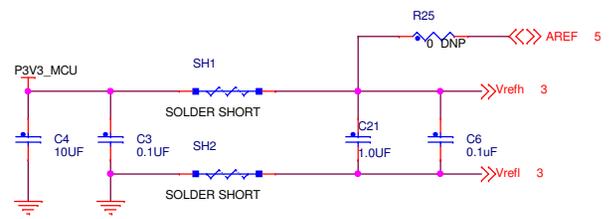Date: Tuesday, December 11, 2012   Sheet   5   of   5