NOTE: Sensor Connector Power Bypass Caps

3.3VCC

U1
MKL17Z256VFM4 - 32 Pin VQFN

VDDA
VSSA
VDD
VSS

PTE0 / CLKOUT32K / SPI1_MISO / UART1_TX / RTC_CLKOUT / CMP0_OUT / I2C1_SDA
PTE1 / SPI1_MOSI / UART1_RX / SPI1_MISO / I2C1_SCL
PTE16 / ADC0_DP1/SE1 / SPI0_PCS0 / UART2_TX / TPM_CLKIN0 / FX100_D0
PTE17 / ADC0_DM1/SE5a / SPI0_SCK / UART2_RX / TPM_CLKIN1 / LPTMR0_ALT3 / FXIO0_D1
PTE18 / ADC0_DM2/SE2 / SPI0_MOSI / I2C0_SDA / SPI0_MISO / FXIO0_D2
PTE19 / ADC0_DM2/SE6a / SPI0_MISO / I2C0_SCL / SPI0_MOSI / FXIO0_D3
PTE30 / DAC0_OUT / ADC0_SE23 / CMP0_IN4 / TPM0_CH2 / TPM_CLKIN0
PTA0 / SWD_CLK / TPM0_CH5
PTA1 / UART0_RX / TPM2_CH0
PTA2 / UART0_TX / TPM2_CH1
PTA3 / SWD_DIO / I2C1_SCL / TPM0_CH0
PTA4 / NMI_b / I2C1_SDA / TPM0_CH1
PTA18 / EXTAL0 / UART1_RX / TPM_CLKIN0
PTA19 / XTAL0 / UART1_TX / TPM_CLKIN1 / LPTMR0_ALT1
PTA20 / RESET_b
PTB0 / LLWU_P5 / ADC0_SE8 / I2C0_SDA / TPM1_CH1
PTB1 / ADC0_SE9 / I2C0_SCL / TPM2_CH0
PTC1 / LLWU_P6 / RTC_CLKIN / ADC0_SE15 / I2C1_SCL / TPM0_CH0
PTC2 / ADC0_SE11 / I2C1_SDA / TPM0_CH2
PTC3 / LLWU_P7 / SPI1_SCK / UART1_RX / TPM0_CH2 / CLKOUT
PTC4 / LLWU_P8 / SPI0_PCS0 / UART1_TX / TPM0_CH3
PTC5 / LLWU_P9 / SPI0_SCK / LPTMR0_ALT2 / CMP0_OUT
PTC6 / LLWU_P10 / CMP0_IN0 / SPI0_MOSI / EXTRG_IN / SPI0_MISO
PTC7 / CMP0_IN1 / SPI0_MISO / SPI0_MOSI
PTD4 / LLWU_P14 / SPI1_CS0 / UART2_RX / TPM0_CH4 / FXIO0_D4
PTD5 / ADC0_SE6b / SPI1_SCK / UART2_TX / TPM0_CH5 / FXIO0_D5
PTD6 / LLWU_P15 / ADC0_SE7b / SPI1_MOSI / UART0_RX / SPI1_MISO / FXIO0_D6
PTD7 / SPI1_MISO / UART0_TX / SPI1_MOSI / FXIO0_D7

GND - PAD

SW_S1
LED0
LED1
I2C0_SDA
I2C0_SCL
TCK/SWDCLK
UART0_RX
UART0_TX
TMS/SWDIO
EXTAL0
XTAL0
RESET
EN1
I2C_SCL
I2C_SDA
EN2
EN3
EN4
UART2_RX
UART2_TX
SW_EN
SW_S0

FB1
BLM15HG601SN1D
3.3VCC
C10 100nF
C11 100nF
GND

H1
GND
M3 Hole
H2
GND
M3 Hole

3.3VCC
C12 100nF
GND

EXTAL0 XTAL0
X1
ABS07-32 768KHZ-9-T
C14 0603 9pF
C15 0603 9pF
GND

3.3VCC
R3 1K
SW1
TL3301AF160QG
RESET
C16 100nF
GND

C22 100nF
GND

J6
DX4R005J91R5100
USB HOUSING
SHL2 SHL3
SHL1 SHL4
GND
ID
DP
DM
VBUS

R20 27
R21 27

U6
FT201XQ-R
3V3OUT
VCC
VCCIO
USBDM
USBDP
RESET#
SCL
SDA
CBUS0
CBUS1
CBUS2
CBUS3
CBUS4
CBUS5
GND
GND
GND-PAD

C21 100nF

I2C0_SCL
I2C0_SDA
R18 4.7K
R19 4.7K
3.3VCC

R22 1K
D6
5988140107F
R23 1K
D7
5988140107F
GND

ESP-01 Module reset jumper setup

J12
3.3VCC
FTSH-105-XX-X-DV
TMS/SWDIO
TCK/SWDCLK
RESET
GND

NOTE: Solar Power Input
J8
S2B-PH-K-S(LF)(SN)
C18 0603 1uF
GND

NOTE: 1 Cell LiPo Battery w/Thermistor
J10
S3B-PH-K-S(LF)(SN)
BAT
THERM
GND

U4
BQ24210DQCT
VBUS
BAT
CHG
PG
VTSB
EN
VDPM
ISET
VSS
GND-PAD
TS

R11 2K
D4
5988140107F
R13 2K
D5
5988140107F
R17 100K 100K
THERM
R16 487
GND

BAT
Q1
DMG2307L-7
D3
BAT20JFILM

U5
AZ1117CR-3.3TRG1
VIN
VOUT
GND
C19 0603 1uF
C20 0603 10uF
GND
3.3VCC

R6 1K
D1
R7 1K
5988140107F
LED0
LED1
GND

3.3VCC
C23 0603 0.1uF 50V
C13 100nF
GND
UART0_RX
UART0_TX

IC1
ESP8266 ESP-02
GND
RxD
TxD
VDD
RDT
GPIO2
GPIO0
GPIO15
K_ch_pd

C1 100nF
C2 100nF
C3 100nF
C4 100nF
C5 100nF
C6 100nF
C7 100nF
C8 100nF
C9 100nF
GND

UART2_TX
UART2_RX
SW_EN
SW_S0
SW_S1

U2
74HC4052
VEE
VCC
2Z
2Y0
1Z
1Y0
2Y1
1Y1
2Y2
1Y2
1Y3
2Y3
E
S0
S1
GND

UART_TX_S1
UART_RX_S1
UART_TX_S2
UART_RX_S2
UART_TX_S3
UART_RX_S3
UART_TX_S4
UART_RX_S4
GND

3.3VCC
R1 1K
R2 1K
K_ESP_RST
K_ch_pd
ESP_01_RST
P2
Header 3
GND

3.3VCC
C17 100nF
GND

R4 4.7K
R5 4.7K
R8 4.7K
R9 4.7K
R10 4.7K
R12 4.7K
R14 4.7K
R15 4.7K

U3
PCA9518DWR
EXPSDA1
EXPSDA2
EXPSCL1
EXPSCL2
SDA0
SCL0
EN1
EN2
EN3
EN4
VDD
SDA1
SCL1
SDA2
SCL2
SDA3
SCL3
SDA4
SCL4
VSS

I2C_SCL
I2C_SDA
EN1
EN2
EN3
EN4
GND

J1 B4B-PH-K-S LF SN
J2 B4B-PH-K-S LF SN
J3 B4B-PH-K-S LF SN
J4 B4B-PH-K-S LF SN
J5 B4B-PH-K-S LF SN
J7 B4B-PH-K-S LF SN
J9 B4B-PH-K-S LF SN
J11 B4B-PH-K-S LF SN

Title
Size B
Number
Revision
Date: 3/15/2016
Sheet of
File: C:\Users\..\AD Sensor Module.SchDoc
Drawn By:

Item #	mn Name Error:Manufac	#Column Name Error:Manufacturer No	Quantity	#Column Name Error:Note	Designator	Description	Footprint	Comment	LibRef
1			17		C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C16, C17, C21, C22	CAP CER 0402 100nF 16V 10% X7R	C0402	100nF	GRM155R71C104KA88D
2			6		C14, C15, C18, C19, C20, C23	CAP CER 9PF 50V NP0 0603, CAP CER 9PF 50V NP0 0603, CAP CER 1UF 25V X5R 0402, CAP CER 1UF 25V X5R 0402, CAP CER 10UF 6.3V X5R 0603, CAP CER 0.1UF 50V 10% X7R 0603	C0603	0603	CL10C090CB8NNNC, CL10C090CB8NNNC, CL05A105KA5NQNC, CL05A105KA5NQNC, CL10A106KQ8NNNC, CL10B104KB8SFNC
3			6		D1, D2, D4, D5, D6, D7	LED 0805 Yellow	LED2012120	5988140107F	5988140107F
4			1		D3	DIODE SCHOTTKY 23V 1A SOD323	BAT20JFILM - DIOM1712X11N	BAT20JFILM	BAT20JFILM
5			1		FB1	BLM15HG601SN1D	BLM18PG121SN1D	BLM15HG601SN1D	BLM15HG601SN1D
6			2		H1, H2	3mm Hole	Hole-3mm	M3 Hole	Hole
7			1		IC1	ESP8266 ESP-02	ESP8266 ESP-02	ESP8266 ESP-02	ESP8266 ESP-02
8			8		J1, J2, J3, J4, J5, J7, J9, J11	CONN HEADER PH TOP 4POS 2MM	B4B-PH-K-S(LF)(SN)	B4B-PH-K-S LF SN	B4B-PH-K-S LF SN
9			1		J6	Micro USB Jack B	Micro USB Circular Holes Only	DX4R005J91R5100	Micro USB
10			1		J8	CONN HEADER PH SIDE 2POS 2MM	S2B-PH-K-S(LF)(SN)	S2B-PH-K-S(LF)(SN)	S2B-PH-K-S(LF)(SN)
11			1		J10	CONN HEADER PH SIDE 2POS 2MM	S3B-PH-K-S(LF)(SN)	S3B-PH-K-S(LF)(SN)	S3B-PH-K-S(LF)(SN)
12			1		J12	FTSH-105-XX-X-DV ARM COrtex JTAG	FTSH-105-XX-X-DV	FTSH-105-XX-X-DV	FTSH-105-XX-X-DV
13			1		P2	Header, 3-Pin	HDR1X3	Header 3	Header 3
14			1		Q1	MOSFET P-CH 30V 2.5A SOT-23	DMG2307L-7 - SOT92P240X102-3N	DMG2307L-7	DMG2307L-7
15			7		R1, R2, R3, R6, R7, R22, R23	RES 0603 1K 100mW 1%	R0603	1K	ERJ-3EKF1001V
16			10		R4, R5, R8, R9, R10, R12, R14, R15, R18, R19	RES 0603 4.7K 100mW 1%	R0603	4.7K	ERJ3EKF4701V
17			2		R11, R13	RES SMD 2K OHM 1% 1/8W 0805	R0805	ERJ-6ENF2001V	ERJ-6ENF2001V
18			1		R16	RES SMD 487 OHM 1% 1/16W 0402	R0402	RC1005F4870CS	RC1005F4870CS
19			1		R17	Standin 0402	R0402	100K	Standin 0402
20			2		R20, R21	RES SMD 27 OHM 0.5% 1/16W 0402	R0402	RR0510R-270-D	RR0510R-270-D
21			1		SW1	TL3301AF160QG	TL3301AF160QG	TL3301AF160QG	TL3301AF160QG
22			1		U1	ARM Cortex M0+ Microcontroller for Low Power Applications, MKL1x Series	MKL17Z256VFM4 - QFN50P500X500X65_HS-33N	MKL17Z256VFM4 - 32 Pin VQFN	MKL17Z256VFM4 - 32 Pin VQFN
23			1		U2	Dual 4-channel analog multiplexer/demultiplexer	74HC4052	74HC4052	74HC4052
24			1		U3	IC EXPANDABLE 5CH I2C HUB 20SOIC	PCA9518DWR	PCA9518DWR	PCA9518DWR
25			1		U4	IC BATT CHARGER LI-ION 10WSON (VBUS and Solar Voltaic Cell)	bq24210 - QFN300X200X80-10N	BQ24210DQCT	BQ24210DQCT
26			1		U5	IC REG LDO 3.3V 0.8A SOT89	AZ1117CR-3.3TRG1 - SOT89-150P410X160-3N	AZ1117CR-3.3TRG1	AZ1117CR-3.3TRG1
27			1		U6	IC USB FS I2C 16QFN	FT201XQ-R - QFN65P400X400X80_HS-17N	FT201XQ-R	FT201XQ-R
28			1		X1	32.768kHz ±20ppm Crystal 9pF 70 kOhm -40°C ~ 85°C Surface Mount 2-SMD	ABS07-32.768KHZ-9-T	ABS07-32.768KHZ-9-T	ABS07-32.768KHZ-9-T