MAX32630FTHR Application Platform

General Description

The MAX32630FTHR Pegasus board is a rapid development platform designed to help engineers quickly implement battery optimized solutions with the MAX32630 ARM® Cortex®-M4F microcontroller. The board also includes the MAX14690 wearable PMIC to provide optimal power conversion and battery management. The form factor is a small 0.9in by 2.0in dual row header footprint that is compatible with breadboards and off-the shelf peripheral expansion boards. Additionally, on board are a variety of peripherals including a dual-mode Bluetooth® module, micro SD card connector, 6-axis accelerometer/gyro, RGB indicator LED, and pushbutton. This provides a power-optimized flexible platform for quick proof-of-concepts and early software development to enhance time to market.

Go to: **https://developer.mbed.org/platforms/MAX32630FTHR/** to get started developing with this board.

Ordering Information **appears at end of data sheet.**

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Features

- MAX32630 Microcontroller
  - ARM Cortex-M4F, 96MHz
  - 2048KB Flash Memory
  - 512KB SRAM
  - 8KB Instruction Cache
  - Full-Speed USB 2.0
  - Three SPI Masters, One Slave
  - Three I^{2}C Masters, One Slave
  - Four UARTS
  - 1-Wire Master
  - 66 GPIO
  - 4 Input 10-Bit ADC

- MAX14690 Wearable PMIC
  - Battery Charger with Smart Selector
  - Dual Micro I_Q Buck Regulators
  - Three Micro I_Q Linear Regulators
  - Power-On/Off Sequencing Controller
  - Voltage Monitor Multiplexer

- Expansion Connections
  - Breadboard-Compatible Headers
  - Micro SD Card Connector
  - Battery Connector
  - Micro USB Connector

- Integrated Peripherals
  - RGB Indicator LED
  - 6-Axis Accelerometer/Gyro
  - Dual-Mode Bluetooth Module
  - User Pushbutton

- mbed® HDK Debug Interface
  - Drag-and-Drop Programming
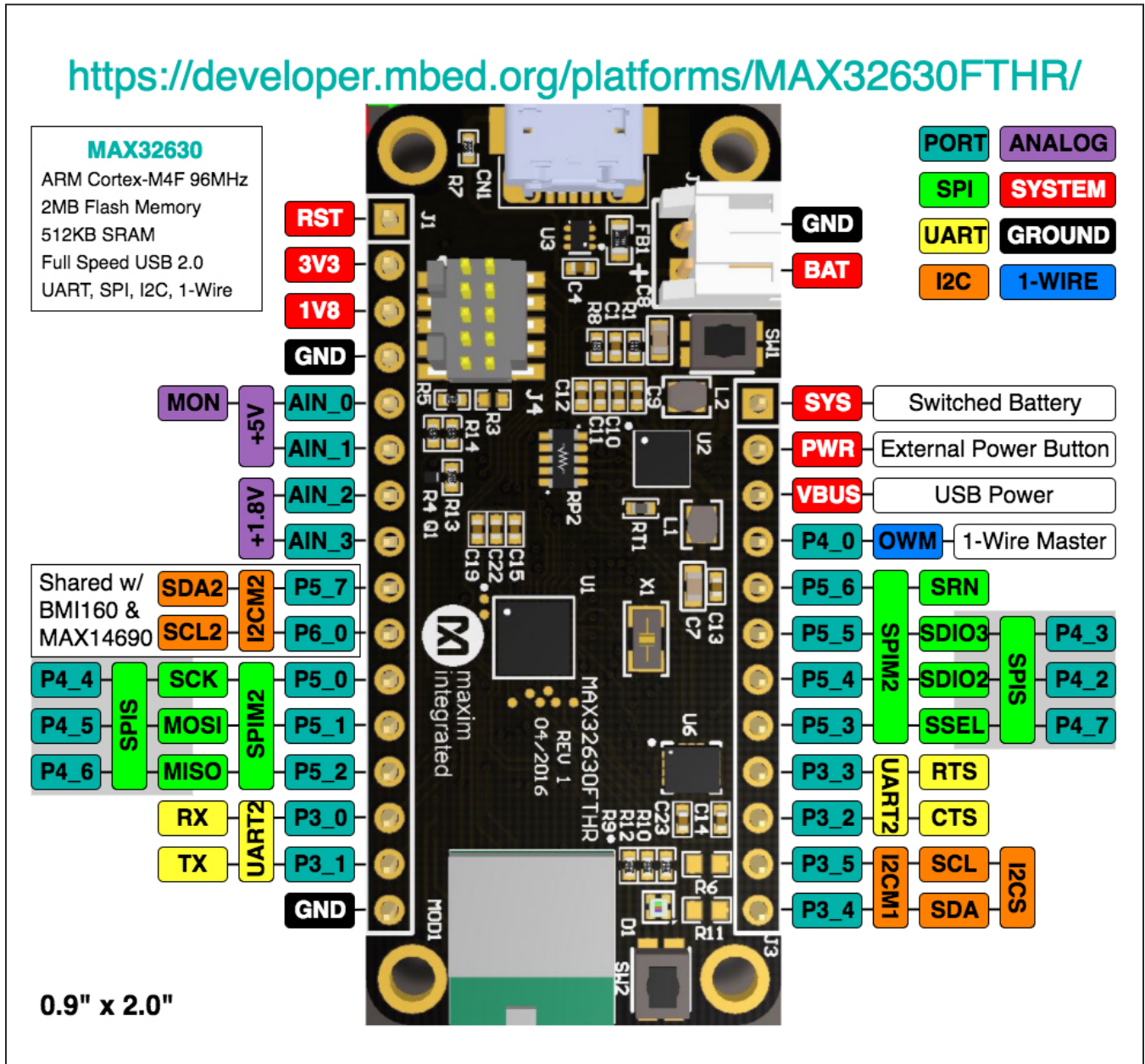 - SWD Debugger
  - Virtual UART Console

maxim integrated™

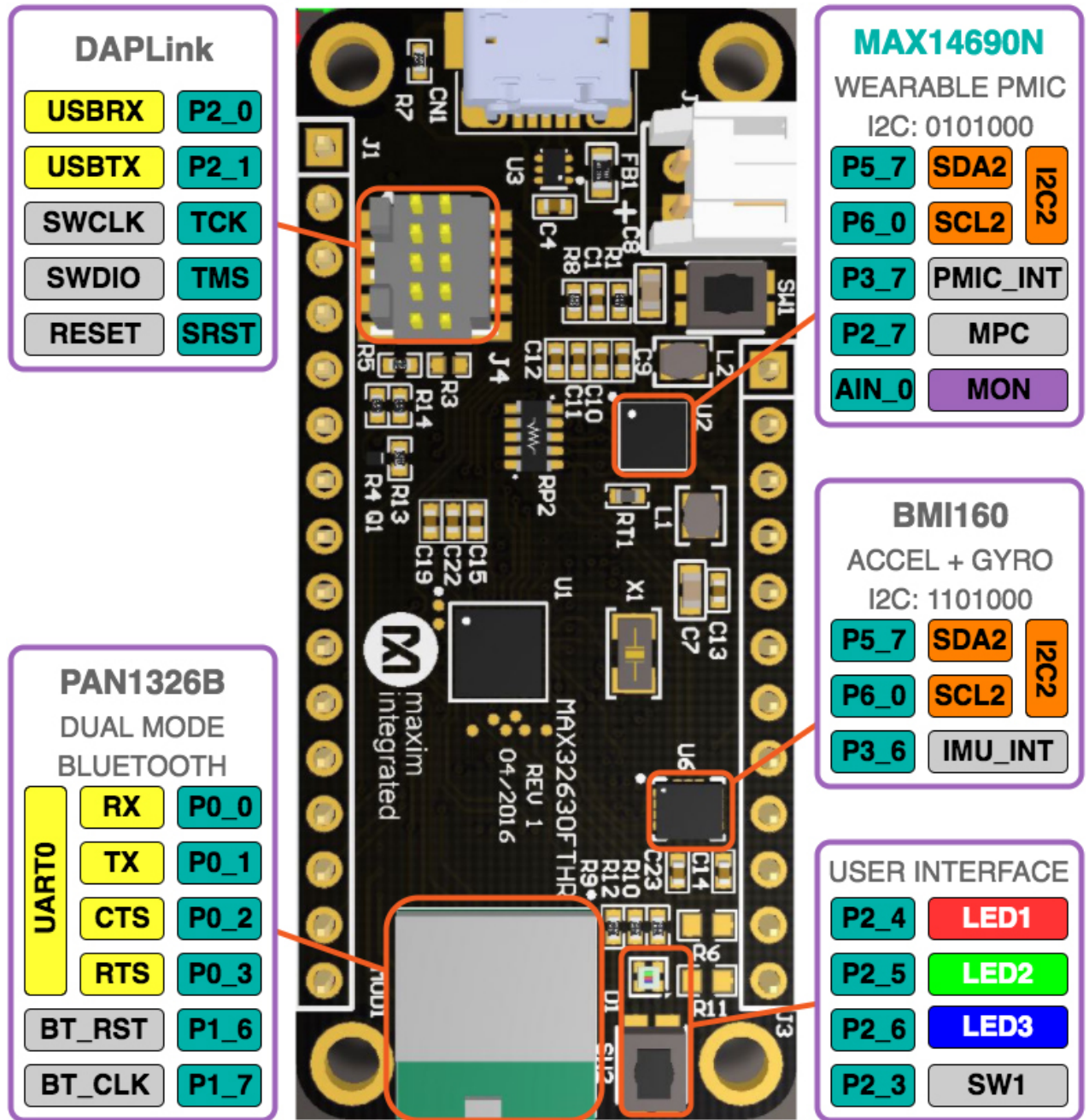Figure 1. MAX32630 FTHR Pinout Diagram

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https://developer.mbed.org/platforms/MAX32630FTHR/

DAPLink

USBRX	P2_0
USBTX	P2_1
SWCLK	TCK
SWDIO	TMS
RESET	SRST

MAX14690N
WEARABLE PMIC
I2C: 0101000

P5_7	SDA2	I2C2
P6_0	SCL2	
P3_7	PMIC_INT	
P2_7	MPC	
AIN_0	MON	

BMI160
ACCEL + GYRO
I2C: 1101000

P5_7	SDA2	I2C2
P6_0	SCL2	
P3_6	IMU_INT	

PAN1326B
DUAL MODE
BLUETOOTH

UART0	RX	P0_0
	TX	P0_1
	CTS	P0_2
	RTS	P0_3
BT_RST	P1_6
BT_CLK	P1_7

USER INTERFACE

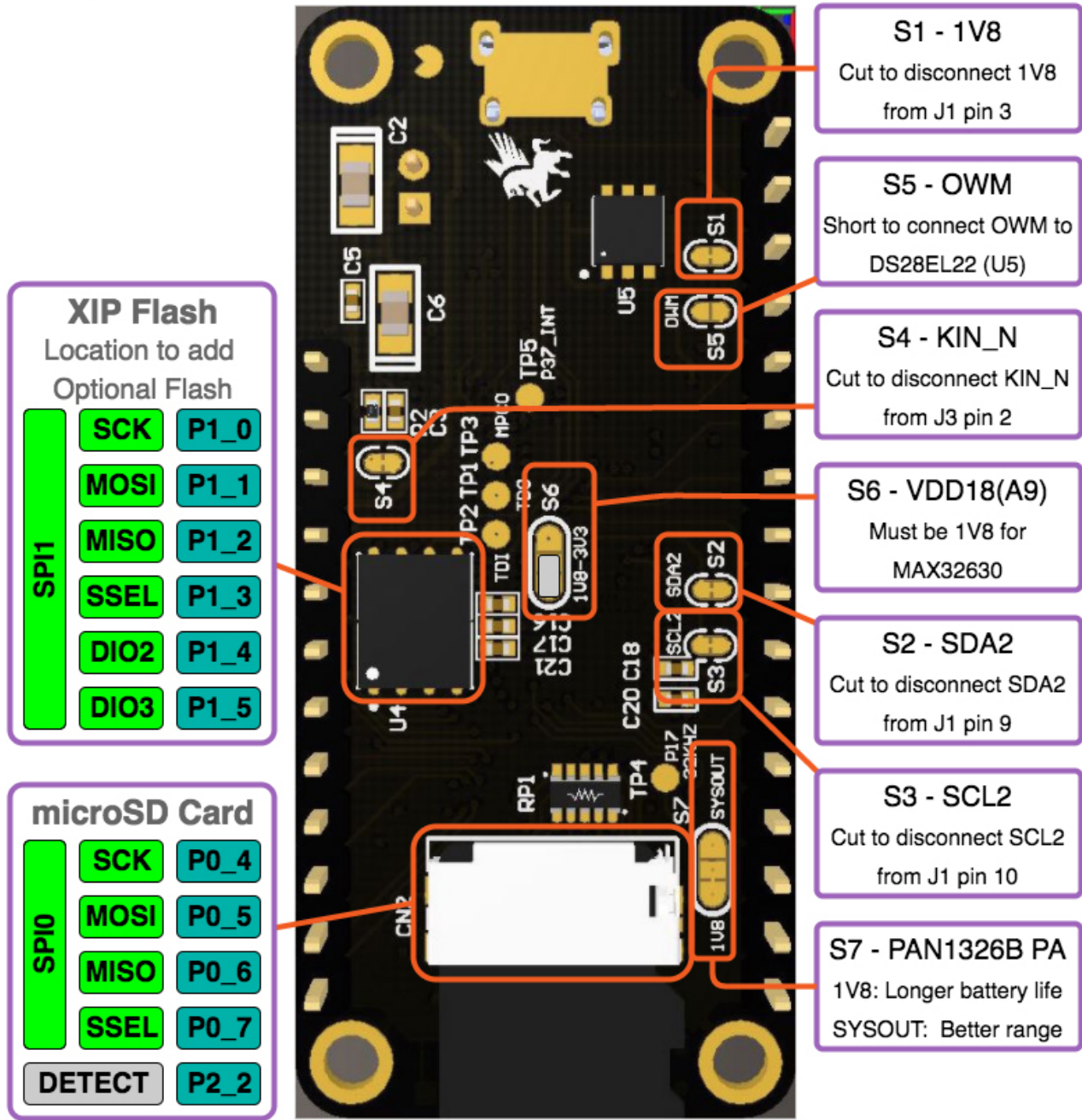| P2_4 | LED1 |
P2_5	LED2
P2_6	LED3
P2_3	SW1

Figure 2. MAX32630 FTHR Top Side Components

Figure 3. MAX32630 FTHR Bottom Side Components

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Battery Charger

The MAX14690 includes a battery charger suitable for lithium-ion (Li+) and lithium polymer (Li-Poly) batteries. The charge current is set by a resistor attached to the SET pin on the MAX14690. The 20kΩ resistor installed by default sets the charge current at 100mA that is tolerable for most typical batteries with a capacity greater than or equal to 100mAhr. The default charge voltage is 4.2V, but this is programmable by I^2C. **Refer to the MAX14690 data sheet and the data sheet for your battery to ensure compatibility.**

Expansion Headers

Note: All port pins labeled Pn_n are capable of GPIO and PWM.

Table 1. J1 Pinout

PIN	PORT	DESCRIPTION
1	RSTN	Master Reset Signal
2	3V3	LDO3 Adjustable Output. Typically used to provide 3.3V to peripherals connected to the expansion headers. This can be programmed by I^2C writes to the MAX14690 PMIC.
3	1V8	1.8V Supply Voltage (Output)
4	GND	Ground
5	AIN_0	ADC Analog Input (0V–5V). Also connected to MAX14690 MON pin.
6	AIN_1	ADC Analog Input (0V–5V)
7	AIN_2	ADC Analog Input (0V–1.8V)
8	AIN_3	ADC Analog Input (0V–1.8V)
9	P5_7	I2C2 SDA2. Pulled to 1.8V, connected to MAX14690 and BMI160.
10	P6_0	I2C2 SCL2. Pulled to 1.8V, connected to MAX14690 and BMI160.
11	P5_0/P4_4	SPI SCK. This is connected to SPIM2 and SPIS. When using one port, the other port should be configured as a high-impedance input.
12	P5_1/P4_5	SPI MOSI. This is connected to SPIM2 and SPIS. When using one port, the other port should be configured as a high-impedance input.
13	P5_2/P4_6	SPI MISO. This is connected to SPIM2 and SPIS. When using one port, the other port should be configured as a high-impedance input.
14	P3_0	UART2 Rx
15	P3_1	UART2 Tx
16	GND	Ground

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Table 2. J3 Pinout

PIN	PORT	DESCRIPTION
1	SYS	SYS Switched Connection to the Battery. This is the primary system power supply. It automatically switches between the battery voltage and the USB supply when available. It is disconnected from the battery when the MAX14690 is turned off.
2	PWR	Power/Reset Button. This is connected to the KIN# button monitor pin of the MAX14690 PMIC. It turns on the PMIC if shorted to GND for 400ms when the PMIC is off. If shorted to GND when the part is on, it pulls reset low, and if held low for 12s, it turns off the PMIC. Applying power to the USB connector also turns on the PMIC.
3	VBUS	USB VBUS Signal. This can be used as a 5V supply when connected to USB. This pin can also be used as an input to power the board, but this should only be done when not using the USB connector since there is no circuitry to prevent current from flowing back into the USB connector.
4	P4_0	1-Wire Master Signal
5	P5_6	SPIM2 SRN Signal
6	P5_5/P4_3	SPI SDIO3. This is connected to SPIM2 and SPIS. When using one port, the other port should be configured as a high-impedance input.
7	P5_4/P4_2	SPI SDIO2. This is connected to SPIM2 and SPIS. When using one port, the other port should be configured as a high-impedance input.
8	P5_3/P4_7	SPI SSEL. This is connected to SPIM2 and SPIS. When using one port, the other port should be configured as a high-impedance input.
9	P3_3	UART2 RTS
10	P3_2	UART2 CTS
11	P3_5	I2CM1 SCL
12	P3_4	I2CM1 SDA

Ordering Information

PART	TYPE
MAX32630FTHR#	Application Platform

#Denotes RoHS compliant.

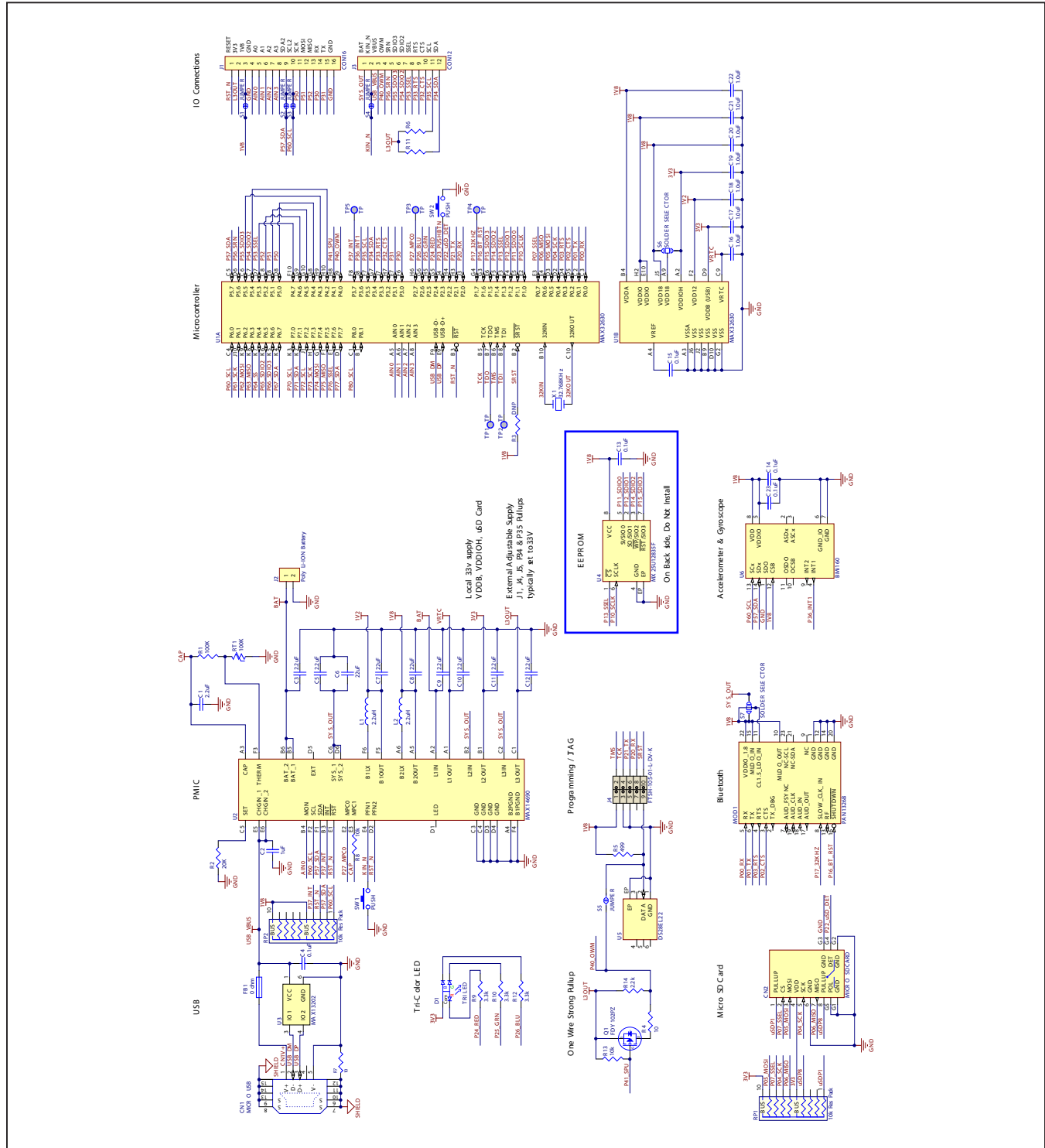## MAX32630FTHR Application Platform Bill of Materials

PART	QTY	DESCRIPTION
C16–C22	7	CAP CER 1µF 6.3V 10% X5R 0402
C2	1	CAP CER 2.2µF 35V X5R 0805
C4, C13–C15, C23	5	CAP CER 0.1µF 16V X7R 0402
C1, C3, C5, C9–C12	7	CAP CER 2.2µF 35V X5R 0402
C6	1	CAP CER 22µF 6.3V X5R 0805
C7, C8	2	CAP CER 22µF 6.3V X5R 0603
CN1	1	USB MICRO B TOP MOUNT
CN2	1	CONN uSD Card push-pull
D1	1	TRI COLOR LED
FB1	1	FERRITE BEAD 60Ω 0603
J2	1	2-Pin Battery Connector
J4	1	CONN HEADER 10POS DUAL .05" SMD
L1, L2	2	INDUCTOR 2.2µH 1.5A 160 MOHM
MOD1	1	BLUETOOTH PAN1326B CC2564B HCI A
Q1	1	MOSFET P-CH 20V 1.5A 3-DFN
R1	1	RES SMD 100KΩ 1% 1/10W 0402
R14	1	RES SMD 2.2KΩ 1% 1/10W 0402
R2	1	RES SMD 20KΩ 1% 1/10W 0402
R4, R7	2	RES SMD 10Ω 1% 1/10W 0402
R5	1	RES SMD 499Ω 1% 1/10W 0402
R8, R13	2	RES SMD 10KΩ 1% 1/10W 0402
R3, R10, R12	3	RES SMD 3.3KΩ 1% 1/10W 0402
RP1, RP2	2	RESISTOR PACK 8 - BUSSED
RT1	1	THERMISTOR 100KΩ NTC 0402 SMD
SW1, SW2	2	SWITCH TACTILE SPST-NO 0.02A 15V
U1	1	Ultra-Low Power Cortex-M4F Microcontroller
U2	1	PMIC - Wearable Charge-Management Solution
U3	1	2 Channel ±30kv ESD Protection
U5	1	1-Wire SHA-256 secure authenticator + 2k bit EEPROM
U6	1	Inertial Measurement Unit, Low Power 14 pin
X1	1	CRYSTAL 32.768kHz 6.0PF SMD

MAX32630FTHR Application Platform System Schematic

Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	11/16	Initial release	—