

MAX32666FTHR Application Platform

Evaluates: MAX32666

General Description

The MAX32666FTHR board is a rapid development platform to help engineers quickly implement battery optimized Bluetooth® 5 solutions with the MAX32666 Arm® Cortex®-M4 processor with FPU. The board also includes the MAX1555 1-Cell Li+ battery charger for 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. The board also includes a variety of peripherals, such as a micro SD card connector, 6-axis accelerometer/gyro, RGB indicator LED, and pushbutton. This platform provides power-optimized flexible for quick proof-of-concepts and early software development to enhance time to market.

[Ordering Information](#) appears at end of data sheet.

Bluetooth SIG registered trademark.

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1-Wire is a registered trademark of Maxim Integrated Products, Inc.

Features

- MAX32666 Microcontroller
 - Dual Arm Cortex-M4F, 96MHz
 - 1MB Flash Memory
 - 560KB SRAM
 - 3 x 16KB Cache
 - Bluetooth 5 Low Energy Radio
 - High-Speed USB 2.0
 - Three QSPI Master/Slave
 - Three I²C Master/Slave
 - Three UARTS
 - SD/SDIO 3.0
 - 1-Wire® Master
 - 48 GPIO
 - 8 Input, 10-Bit ADC
- MAX1555 1-Cell Li+ Battery Charger
 - Charge from USB
 - On-Chip Thermal Limiting
 - Charge Status Indicator
- Expansion Connections
 - Breadboard Compatible Headers
 - 10-Pin Cortex Debug Header
 - Micro USB Connector
 - Micro SD Card Connector
- Integrated Peripherals
 - RGB Indicator LED
 - User Pushbutton
 - 6-Axis Accelerometer/Gyro
 - Bluetooth Surface Mount Antenna
- SWD/MAXDAP Debug Interface
 - Drag-and-Drop Programming
 - SWD Debugger
 - Virtual UART Console

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Quick Start

Apply power to the MAX32666FTHR using the USB cable. The blue LED (D4) begins to blink indicating that the board is transmitting a BLE beacon. Observe the beacon using

any BLE capable phone or tablet. The beacon appears as MAX32666FTHR Beacon.

The source code for the beacon firmware can be found in the Maxim Low Power Arm Micro Toolchain.

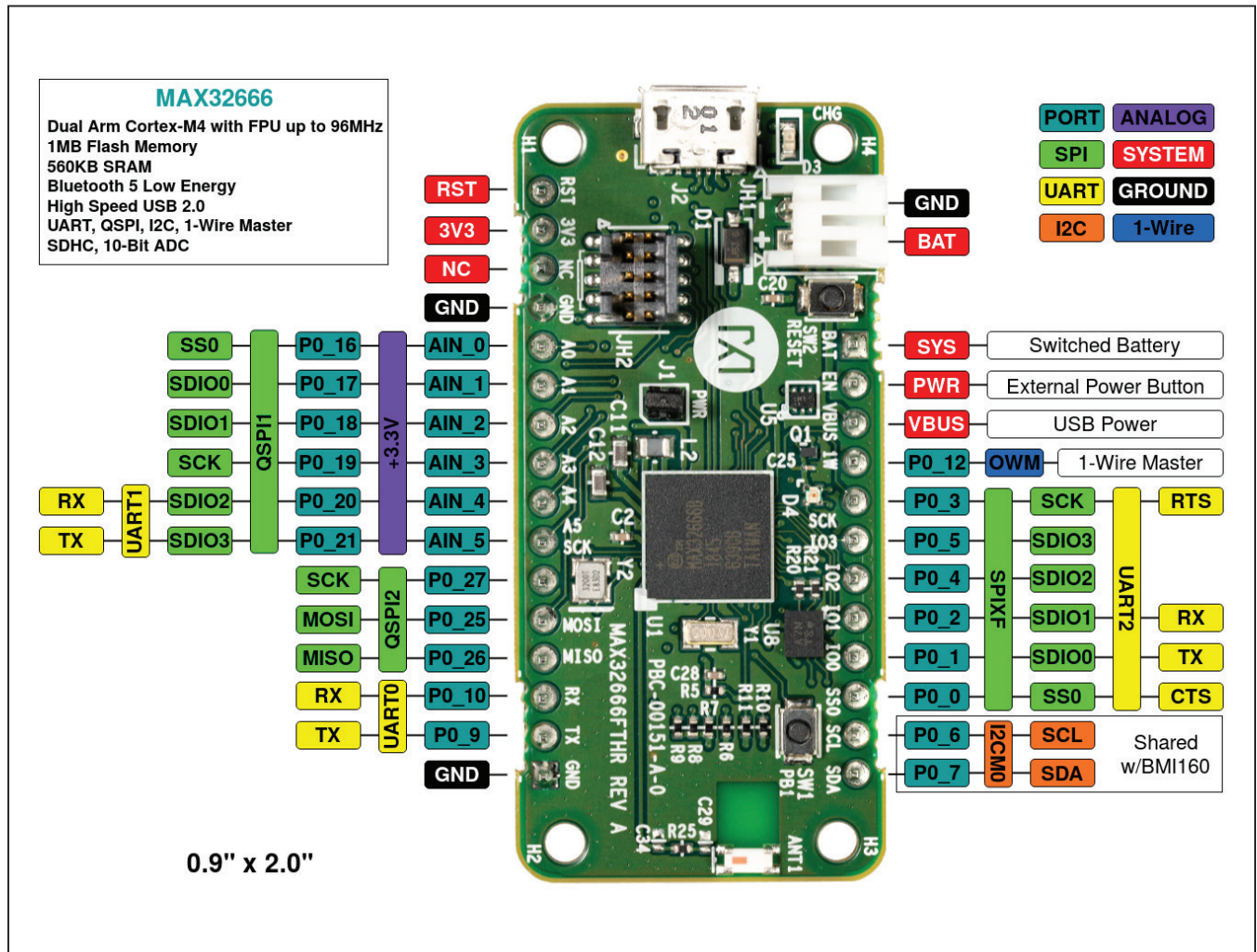


Figure 1. MAX32666FTHR Pinout Diagram

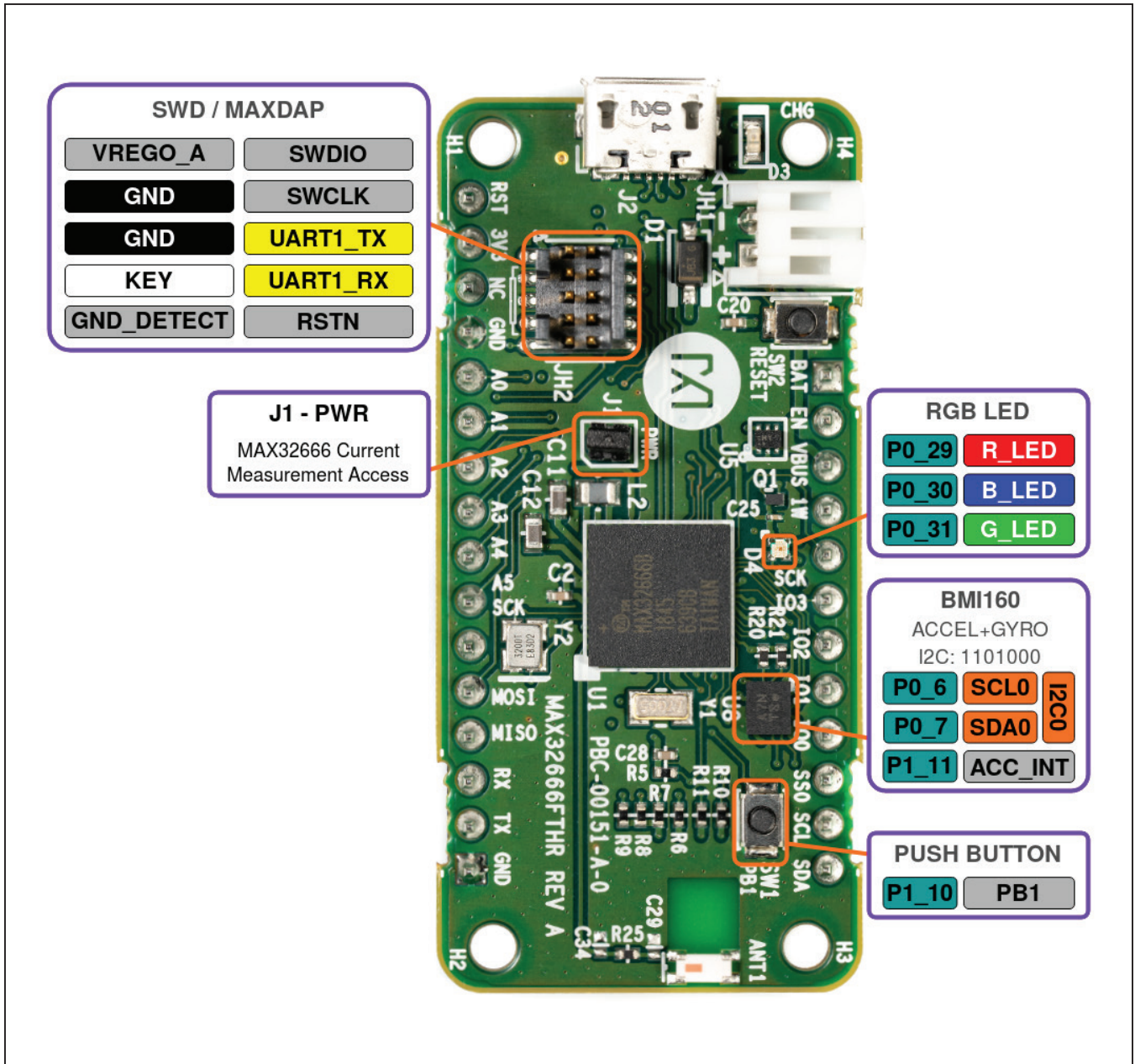


Figure 2. MAX32666FTHR Top Side Components

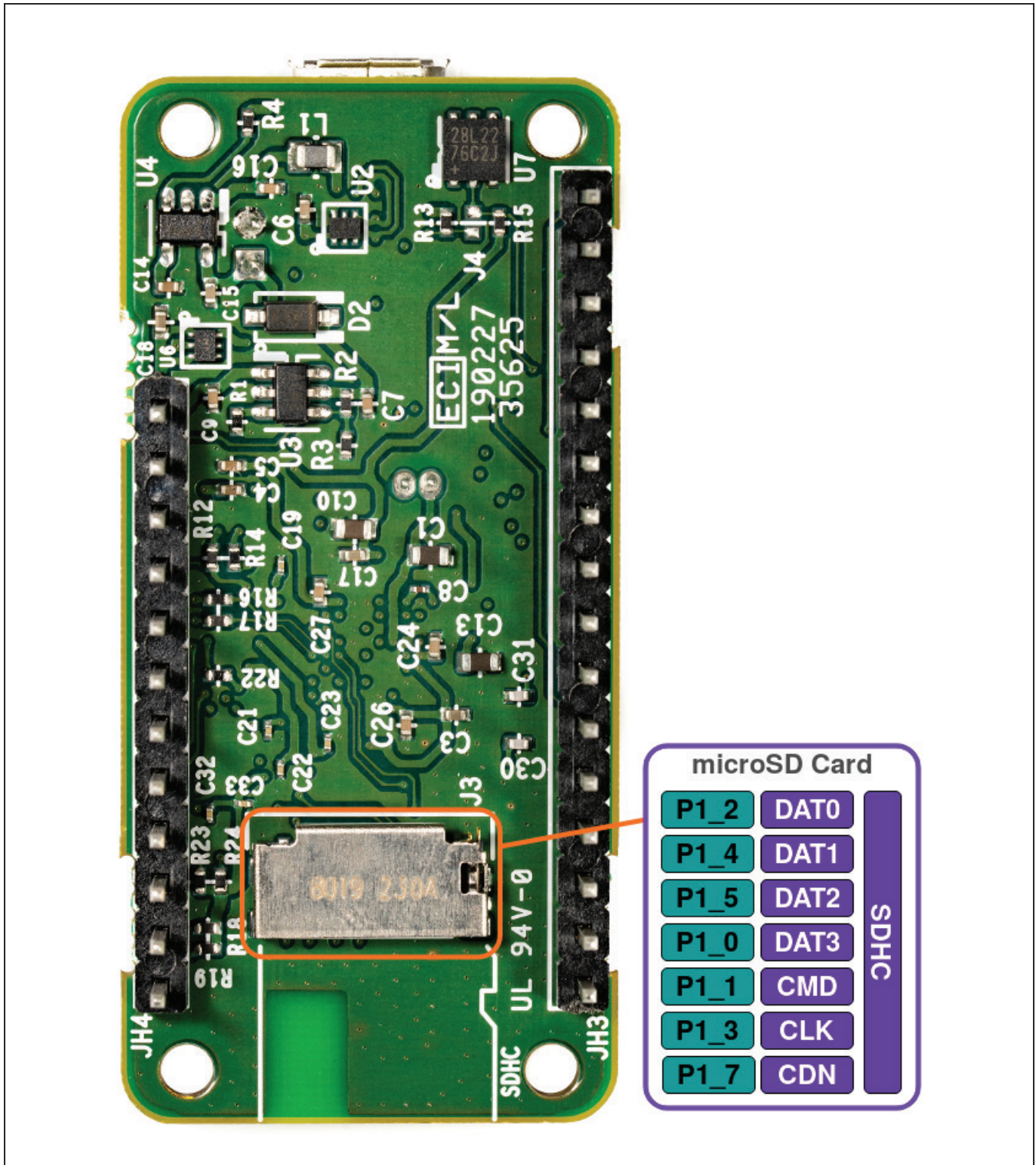


Figure 3. MAX32666FTHR Bottom Side Components

Battery Charger

The MAX1555 charges a single-cell Li+ battery from a USB source. When the MAX1555 thermal limits are reached, the charger does not shut down, but simply reduces charging current by 17mA/°C above a die temperature of +110°C. The USB charge current is set to 100mA (max). This allows charging from both powered

and unpowered USB hubs with no port communication required. Refer to the MAX1551/MAX1555 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 or PWM with timer or pulse train engine.

Table 1. JH3 Pinout

PIN	NAME	DESCRIPTION
1	GND	Ground
2	P0_9	UART0 Tx
3	P0_10	UART0 Rx
4	P0_26	QSPI2 MISO
5	P0_25	QSPI2 MOSI
6	P0_27	QSPI2 SCK
7	AIN_5	ADC Analog Input. Alternatively, AIN2N or P0_21
8	AIN_4	ADC Analog Input. Alternatively, AIN2P or P0_20
9	AIN_3	ADC Analog Input. Alternatively, AIN1N or P0_19
10	AIN_2	ADC Analog Input. Alternatively, AIN1P or P0_18
11	AIN_1	ADC Analog Input. Alternatively, AIN0N or P0_17
12	AIN_0	ADC Analog Input. Alternatively, AIN0P or P0_16
13	GND	Ground
14	NC	No Connection
15	3V3	3.3V Output. Typically used to provide 3.3V to peripherals connected to the expansion headers
16	RSTN	Master Reset Signal

Table 2. JH4 Pinout

PIN	NAME	DESCRIPTION
1	SYS	SYS switched connection to the Battery. This is the primary system power supply and automatically switches between the battery voltage and the USB supply when available.
2	PWREN	Power Enable. This is connected to the ON pin of the MAX4995 LDO. It turns off the LDO if shorted to GND.
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	P0_12	1-Wire master signal
5	P0_3	SPIXF SCK
6	P0_5	SPIXF SDIO3
7	P0_4	SPIXF SDIO2
8	P0_2	SPIXF SDIO1/MISO
9	P0_1	SPIXF SDIO0/MOSI
10	P0_0	SPIXF SS0
11	P0_6	I2CM0 SCL. Pulled to MAX32666 VDDIOH, connected to BMI160.
12	P0_7	I2CM0 SDA. Pulled to MAX32666 VDDIOH, connected to BMI160.

Component List

QTY	SCHEMATIC REFERENCE	DESCRIPTION
1	U1	Arm Cortex-M4F, MAX32666
1	ANT1	Antenna 2.4GHz chip
5	C1, C10, C11, C12, C13	Capacitor 22µF 6.3V 20% X5R 0603
17	C2, C3, C4, C5, C6, C7, C9, C14, C15, C16, C17, C18, C20, C24, C26, C27, C28	Capacitor 1µF 6.3V X5R 0402
1	C8	Capacitor 4700pF 16V 10% X7R 0201
7	C19, C21, C22, C23, C25, C32, C33	Capacitor 0.1µF 6.3V 10% X5R 0201
2	C29, C34	Capacitor 1.5pF 50V ±0.1pF C0G/NP0 0402
2	C30, C31	Capacitor 16pF 50V 5% C0G/NP0 0402
2	D1, D2	Schottky Diode 0V/0.5A SOD-123
1	D3	LED yellow 0603
1	D4	LED RGB Clear 0404
1	J1	Header vertical 2 position 1.27mm
1	J2	Connector micro USB B right angle
1	J3	Connector microSD PUSH-PULL right angle
1	JH1	Header 2 position 2mm right angle
1	JH2	Header 10 position dual 0.05mm
1	JH3	Header 0.100 16 position
1	JH4	Header 0.100 12 position

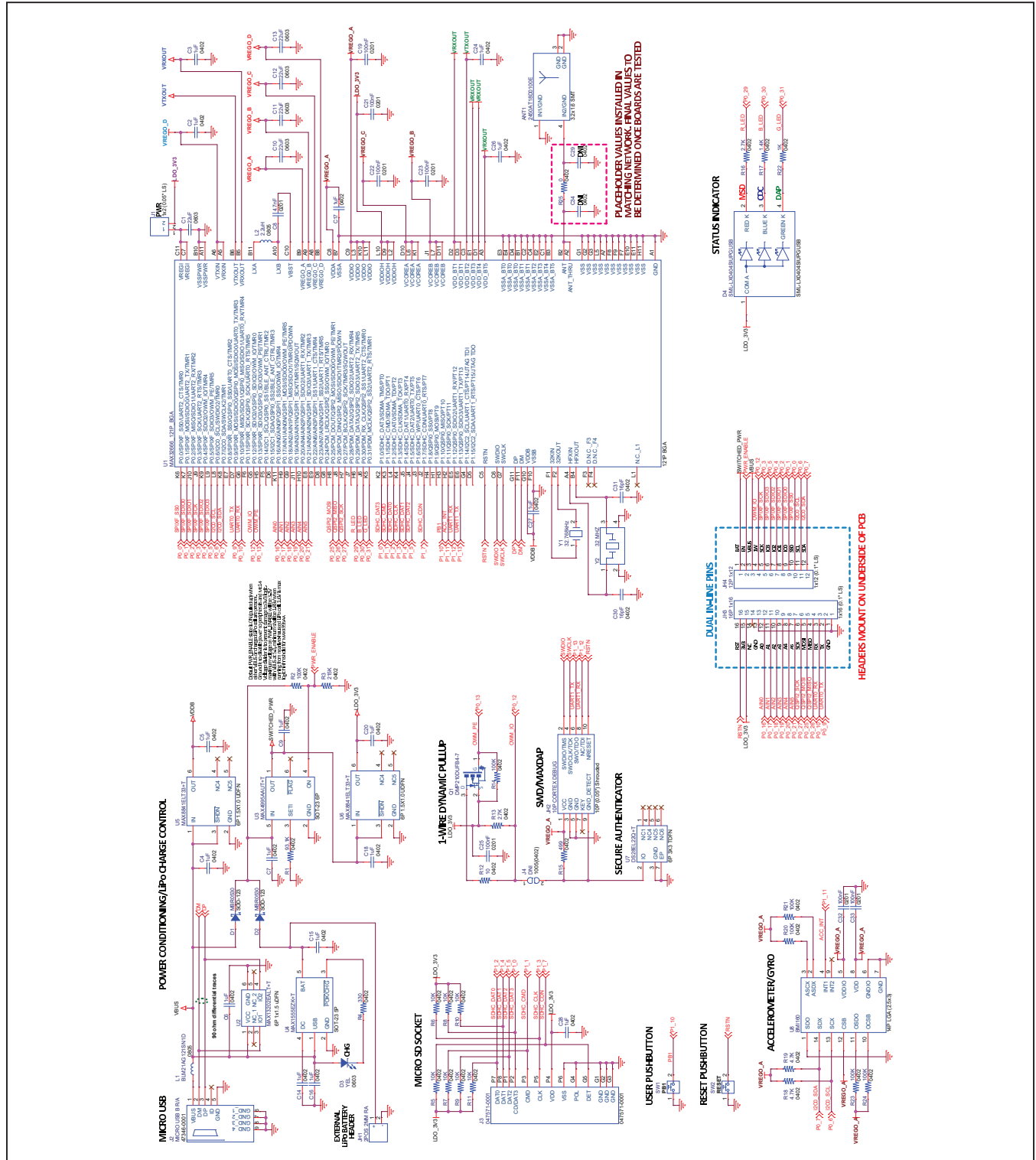
QTY	SCHEMATIC REFERENCE	DESCRIPTION
1	L1	Ferrite bead 120 0805 1LN
1	L2	Inductor 2.2µH 1A 150m 0805
1	Q1	MOSFET P-CH 20V 0.2A
1	R1	Resistor 93.1kΩ 1% 1/10W 0402
6	R2, R14, R20, R21, R23, R24	Resistor 100kΩ 1% 1/10W 0402
1	R3	Resistor 215kΩ 1% 1/10W 0402
1	R4	Resistor 330kΩ 1% 1/10W 0402
7	R5, R6, R7, R8, R9, R10, R11	Resistor 10kΩ 1% 1/16W 0402
1	R12	Resistor 10kΩ 1% 1/10W 0402
2	R13, R16	Resistor 2.7kΩ 1% 1/10W 0402
1	R15	Resistor 499kΩ 1% 1/10W 0402
1	R17	Resistor 1.4kΩ 1% 1/10W 0402
2	R18, R19	Resistor 4.7kΩ 1/10W 1% 0402
1	R22	Resistor 1kΩ 1/10W 1% 0402
1	R25	Resistor 0.0 1/10W 0402
1	U2	2 Channel ESD protection, MAX13202EALT
1	U3	Current limit switch, MAX4995AAUT
1	U4	1-Cell Li+ battery charger, MAX1555EZK
2	U5, U6	Linear regulator 3.3V 150mA, MAX8841ELT33
1	U7	1-Wire EEPROM 2Kib, DS28EL22Q
1	U8	Inertial measurement unit, BMI160
1	Y1	Crystal 32.768kHz 6.0pF
1	Y2	Crystal 32.00 MHz 12pF

Ordering Information

PART	TYPE
MAX32666FTHR#	Application Platform

#Denotes RoHS compliance.

MAX3266FTHR Application Platform Schematic



Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	3/20	Initial release	—

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