

MAX32650FTHR Evaluation Kit

Evaluates: MAX32650

General Description

The MAX32650FTHR EV kit provides a platform for evaluating the capabilities of the MAX32650 ultra-low-power memory-scalable microcontroller designed specifically for high-performance, battery-powered applications.

EV Kit Contents

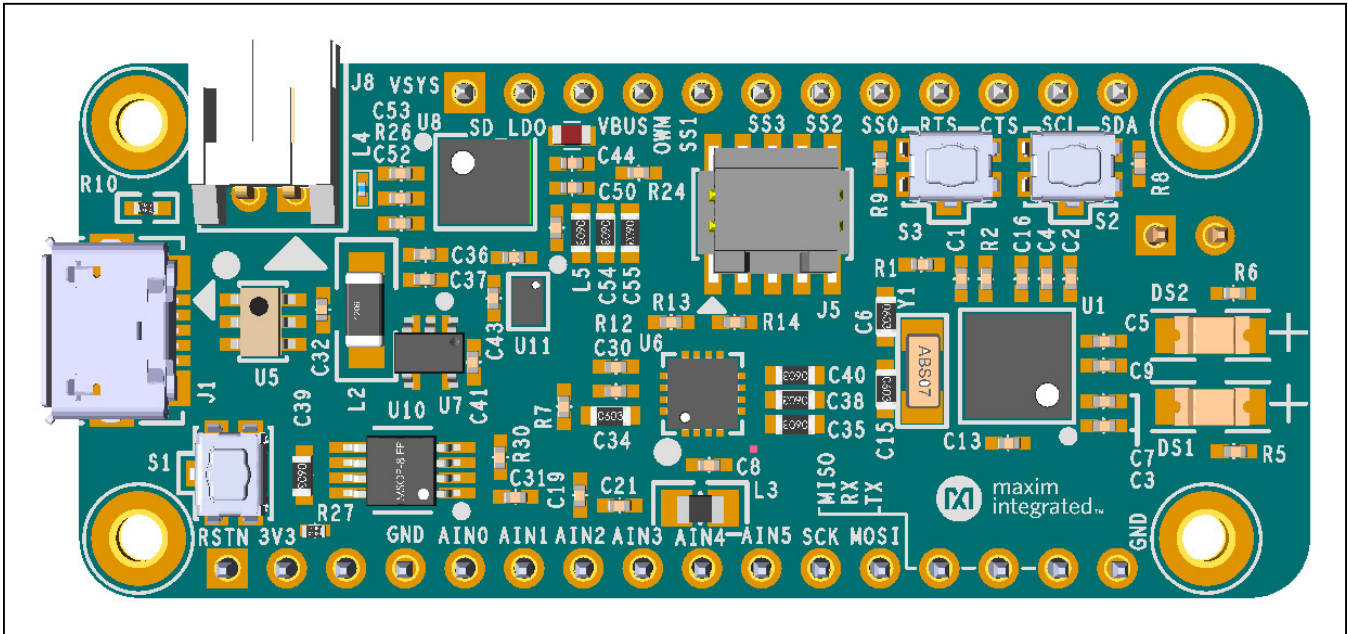
- MAX32650FTHR# circuit board
- MAX326325PICO JTAG debugger/programmer
- Micro USB cables
- SWD cable

Features

- MAX32650 Arm® Cortex®-M4 processor with FPU
 - 120MHz Core Speed
 - 3MB Internal Flash, 1MB Internal SRAM
 - 104µW/MHz Executing from Cache at 1.1V
 - 240Mbps SDHC/eMMC/SDIO/microSD Interface
 - Up to 105 GPIO
 - SmartDMA Provides Background Memory Transfers with Programmable Data Processing
- Battery Connector and Charging Circuit
- Micro-SD Card Interface
- USB 2.0 Full-Speed Device Interface
- MAX11261 6-Channel, 24-Bit, 16ksps, ADC
- Adafruit® Feather Board Compatible

Ordering Information appears at end of data sheet.

MAX32650FTHR TOP



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Quick Start

- 1) Connect the USB cable to the micro-B USB connector to a power source.
- 2) Both LEDs illuminate.
- 3) Push the user buttons to toggle the LEDs.

For firmware development support, download the latest Low Power Arm Micro Toolchain from the MAX32650 web page at www.maximintegrated.com/en/products/microcontrollers/MAX32650

Detailed Description

The MAX32650 MCU connects to a MAX11261 ADC through the I²C bus. The MAX11261 provides 6 ADC inputs on the standard Adafruit Feather board pins, AIN0–AIN5. The MCU is also connected to a Micro SD card connector through a quad-SPI. Finally, a full-speed USB device interface provides connectivity to USB hosts.

Two user buttons and two LEDs are available for use, as well as a UART interface that is routed to the debug header to support print style debugging through the included MAX32625PICO debugger.

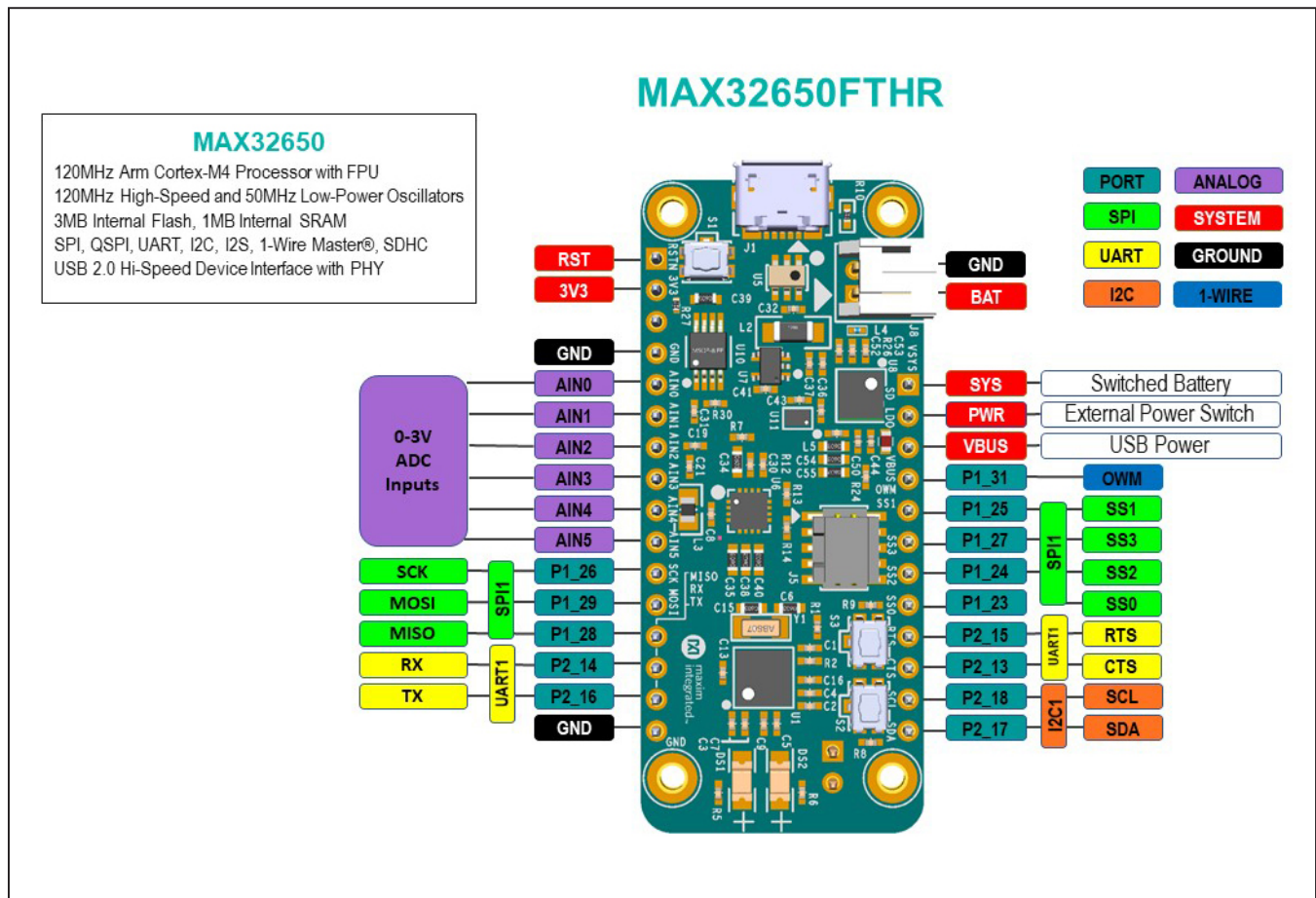


Figure 1. MAX32650FTHR EV Kit Pinout Diagram

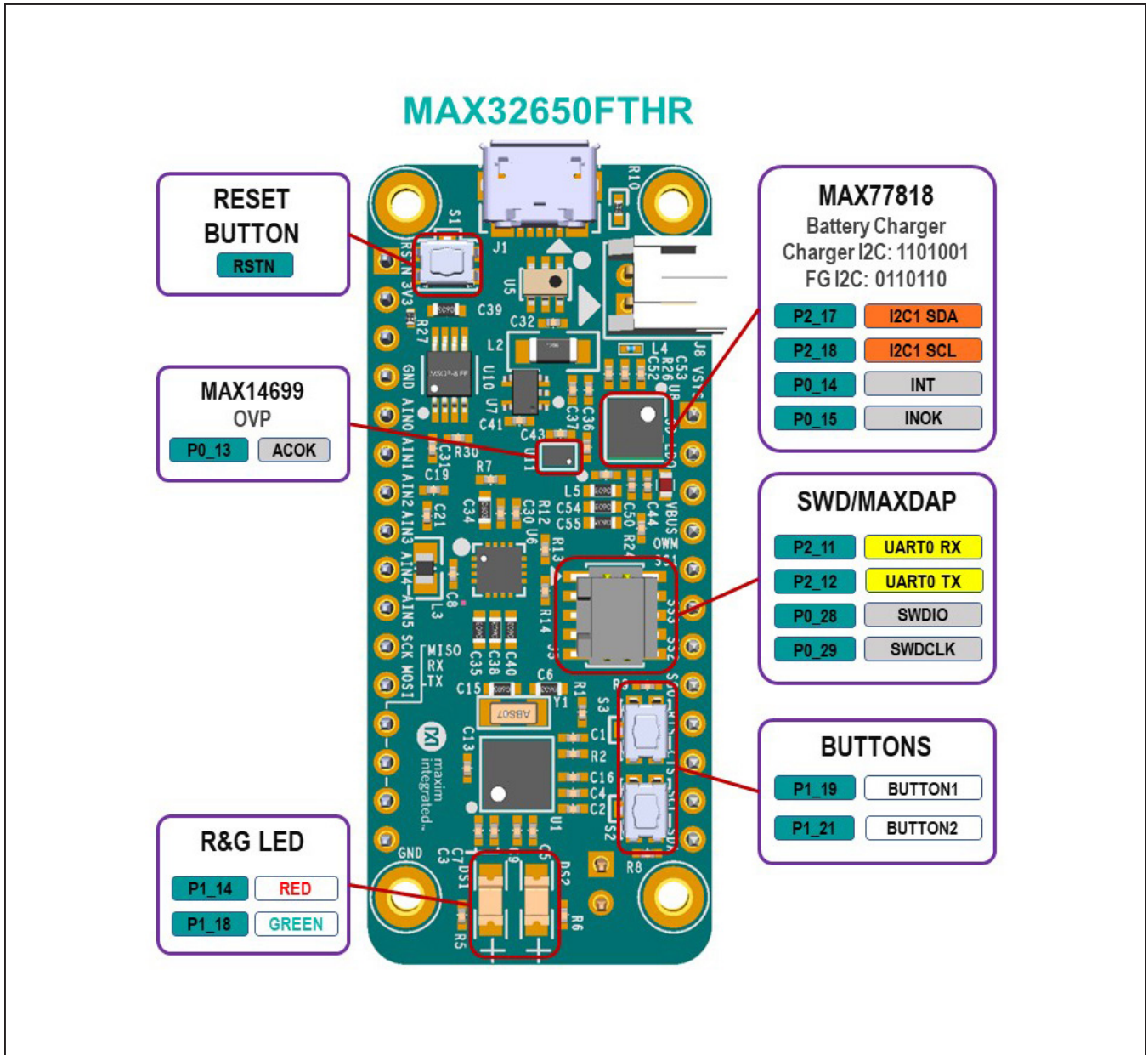


Figure 2. MAX32650FTHR EV Kit Top Side Components

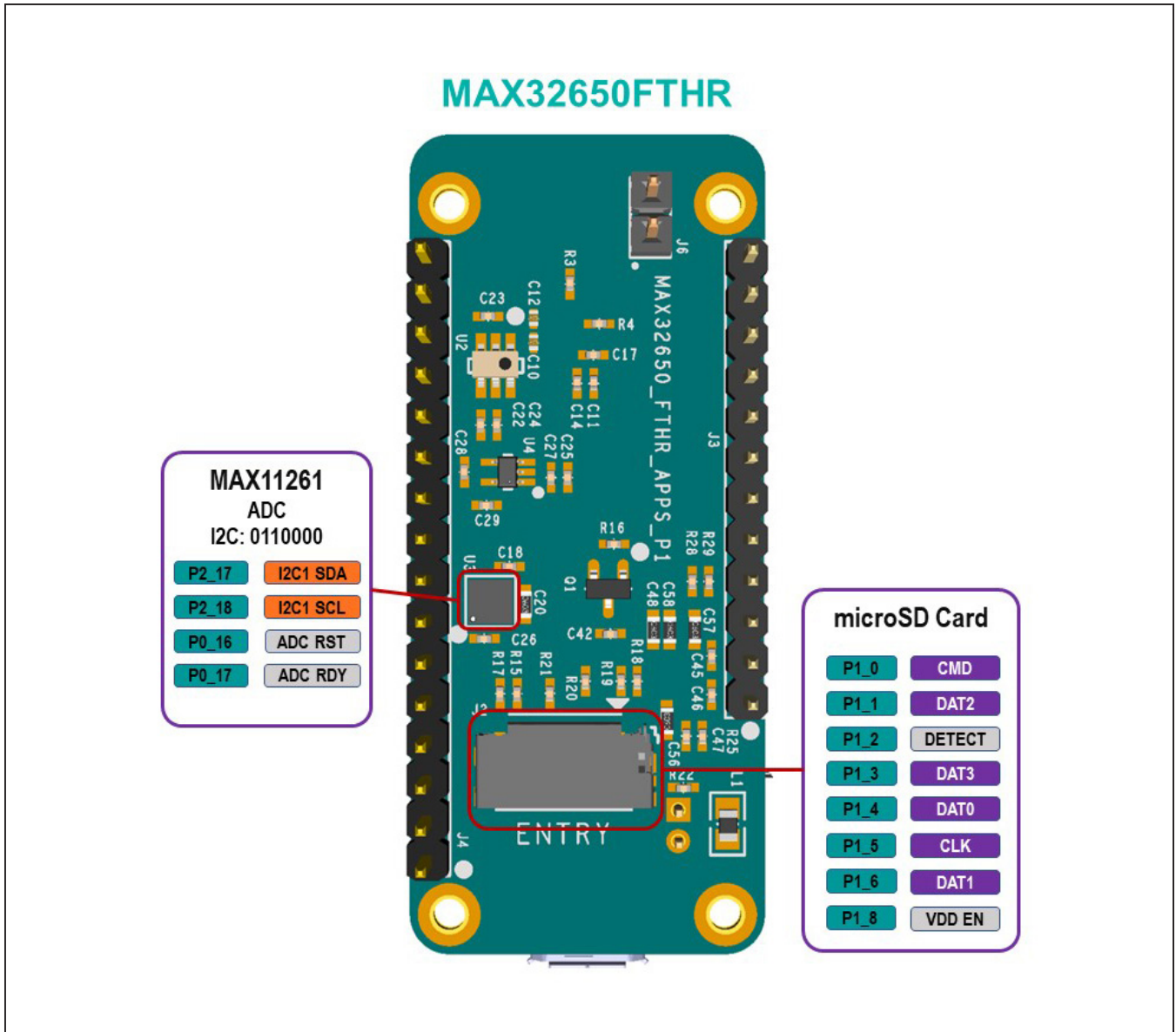


Figure 3. MAX32650FTHR EV Kit Bottom Side Components

Ordering Information

PART	TYPE
MAX32650FTHR#	Evaluation kit

#Denotes RoHS compliance.

MAX32650FTHR EV Kit Bill Of Materials

REFDES	MANUFACTURER	PART NUMBER	DESCRIPTION
C1, C22, C27, C32, C36, C42, C43, C51, C53	MURATA;TDK;TAIYO YUDEN;TDK	GRM155R71E104KE14; C1005X7R1E104K050BB; TMK105B7104KVH; CGJ2B3X7R1E104K050BB	CAP; SMT (0402); 0.1UF; 10%; 25V; X7R; CERAMIC
C2, C3, C5, C10, C11, C17, C18, C23-C26, C29- C31, C37, C41, C44, C45	KEMET;YAGEO	C0402C105K8PAC; CC0402KRX5R6BB105	CAP; SMT (0402); 1UF; 10%; 10V; X5R; CERAMIC
C4, C7, C9, C12- C14, C16, C19, C28	KEMET;MURATA;TDK; SAMSUNG ELECTRONIC; TAIYO YUDEN	C0402C103K5RAC; GRM155R71H103KA88; C1005X7R1H103K050BE; CL05B103KB5NNN; UMK105B7103KV	CAP; SMT (0402); 0.01UF; 10%; 50V; X7R; CERAMIC
C6, C15	AVX;MURATA	06031A8R0CAT2A; GRM- 1885C2A8R0CA01	CAP; SMT (0603); 8PF; 100V; C0G; CE- RAMIC
C8, C52	TDK; AMERICAN TECHNICAL CERAMICS; AVK; VENKEL LTD.; SAMSUNG ELECTRONICS; MURATA;TDK;YAGEO PHICOMP;TAIYO YUDEN; SAMSUNG ELECTRONICS	C1005X7R1C104K050BC; ATC530L104KT16; 0402YC104KAT2A; C0402X7R160-104KNE; CL05B104K05NNNC; GRM155R71C104KA88; C1005X7R1C104K; CC0402KRX7R7BB104; EMK105B7104KV; CL05B104K05	CAP; SMT (0402); 0.1UF; 10%; 16V; X7R; CERAMIC
C20	KEMET;MURATA; MURATA;TDK	C0603C224K3RAC; GMC10X7R224K25; GRM188R71E224KA88; C1608X7R1E224K080AC	CAP; SMT (0603); 0.22UF; 10%; 25V; X7R; CERAMIC
C21	MURATA;TDK	GRM1555C1H102JA01; C1005C0G1H102J050	CAP; SMT (0402); 1000PF; 5%; 50V; C0G; CERAMIC
C34, C35, C38-C40, C48, C54-C58	TDK;SAMSUNG ELECTRONICS;MURATA; MURATA	C1608X5R1E106M080AC; CL10A106MA8NRNC; GRM188R61E106MA73; ZRB18AR61E106ME01; GRT188R61E106ME13	CAP; SMT (0603); 10UF; 20%; 25V; X5R; CERAMIC
C46	SAMSUNG ELECTRONICS;MURATA	CL05B105KQ5NQNC; GRM- 155R70J105KA12	CAP; SMT (0402); 1UF; 10%; 6.3V; X7R; CERAMIC
C47	MURATA;MURATA; SAMSUNG ELECTRONICS	ZRB157R61A225KE11; GRM- 155R61A225KE95; CL05A225KP5NSN	CAP; SMT (0402); 2.2UF; 10%; 10V; X5R; CERAMIC

MAX32650FTHR EV Kit Bill Of Materials (continued)

REFDES	MANUFACTURER	PART NUMBER	DESCRIPTION
C49	KEMET;TAIYO YUDEN; TDK;TDK;SAMSUNG ELECTRONICS;TDK	C0603C475K8PAC; LMK107BJ475KA; CGB3B1X5R1A475K; C1608X5R1A475K080AC; CL10A475KP8NNN; C1608X5R1A475K080AE	CAP; SMT (0603); 4.7UF; 10%; 10V; X5R; CERAMIC
C50	MURATA	GRM155R61C225KE44	CAP; SMT (0402); 2.2UF; 10%; 16V; X5R; CERAMIC
DS1	LUMEX OPTOCOMPO- NENTS INC	SML-LX1206SRC-TR	DIODE; LED; QUASARBRITE LED; RED; SMT (1206); VF=1.7V; IF=0.02A
DS2	LUMEX OPTOCOMPO- NENTS INC	SML-LX1206GC-TR	DIODE; LED; QUASARBRITE LED; GREEN; SMT (1206); VF=2.2V; IF=0.02A
J1	MOLEX	47346-0001	CONNECTOR; FEMALE; SMT; 47346 SERIES; RIGHT ANGLE; 5PINS
J2	MOLEX	4.76E+08	CONNECTOR; FEMALE; SMT; MICRO-SD CARD HEADER WITH DETECT SWITCH; RIGHT ANGLE; 8PINS
J5	SAMTEC	FTSH-105-01-F-DV-K-P	CONNECTOR; MALE; SMT; MICRO HEAD- ER; STRAIGHT; 10PINS
J8	JST MANUFACTURING	S2B-PH-K-S(LF)(SN)	CONNECTOR; MALE; THROUGH HOLE; 2.0MM PITCH; DISCONNECTABLE CRIMP STYLE CONNECTOR; SIDE ENTRY TYPE; RIGHT ANGLE; 2PINS
L1	MURATA	BLM21PG221SN1	INDUCTOR; SMT (0805); FERRITE-BEAD; 220; TOL=+/-25%; 0.2A
L2	LAIRD TECHNOLOGIES	HZ1206C202R-10	INDUCTOR; SMT (1206); FERRITE-BEAD; 2000; TOL=+/-25%; 0.3A
L3	TDK	MLP2012H2R2MT0S1	INDUCTOR; SMT (0805); FERRITE; 2.2UH; 20%; 1A
L4	MURATA	NCP03XH103J05	THERMISTOR; SMT (0201); 10K OHM; TOL=+/-5%
L5	MURATA	LQW18ANR47G00	INDUCTOR; SMT (0603); WIREWOUND CHIP; 470NH; TOL=+/-2%; 0.075A; -55 DEGC TO +125 DEGC
Q1	TOSHIBA	SSM3J327R,LF	TRAN; PCH; FIELD-EFFECT TRANSISTOR SILICON P-CHANNEL MOS TYPE (U-MOS VI); SOT-23F; PD-(-1W); I-(-3.9A); V-(-20V)
R1	VISHAY DALE;YAGEO	CRCW040210R0FK; 9C04021A10R0FL	RES; SMT (0402); 10; 1%; +/-100PPM/ DEGC; 0.0630W
R2, R7-R9, R15-R22, R26	VISHAY DALE;YAGEO PHI- COMP	CRCW040210K0FK; RC0402FR-0710KL	RES; SMT (0402); 10K; 1%; +/-100PPM/ DEGC; 0.0630W
R3, R4	VISHAY DALE	CRCW04023K30FK	RES; SMT (0402); 3.3K; 1%; +/-100PPM/ DEGC; 0.0630W

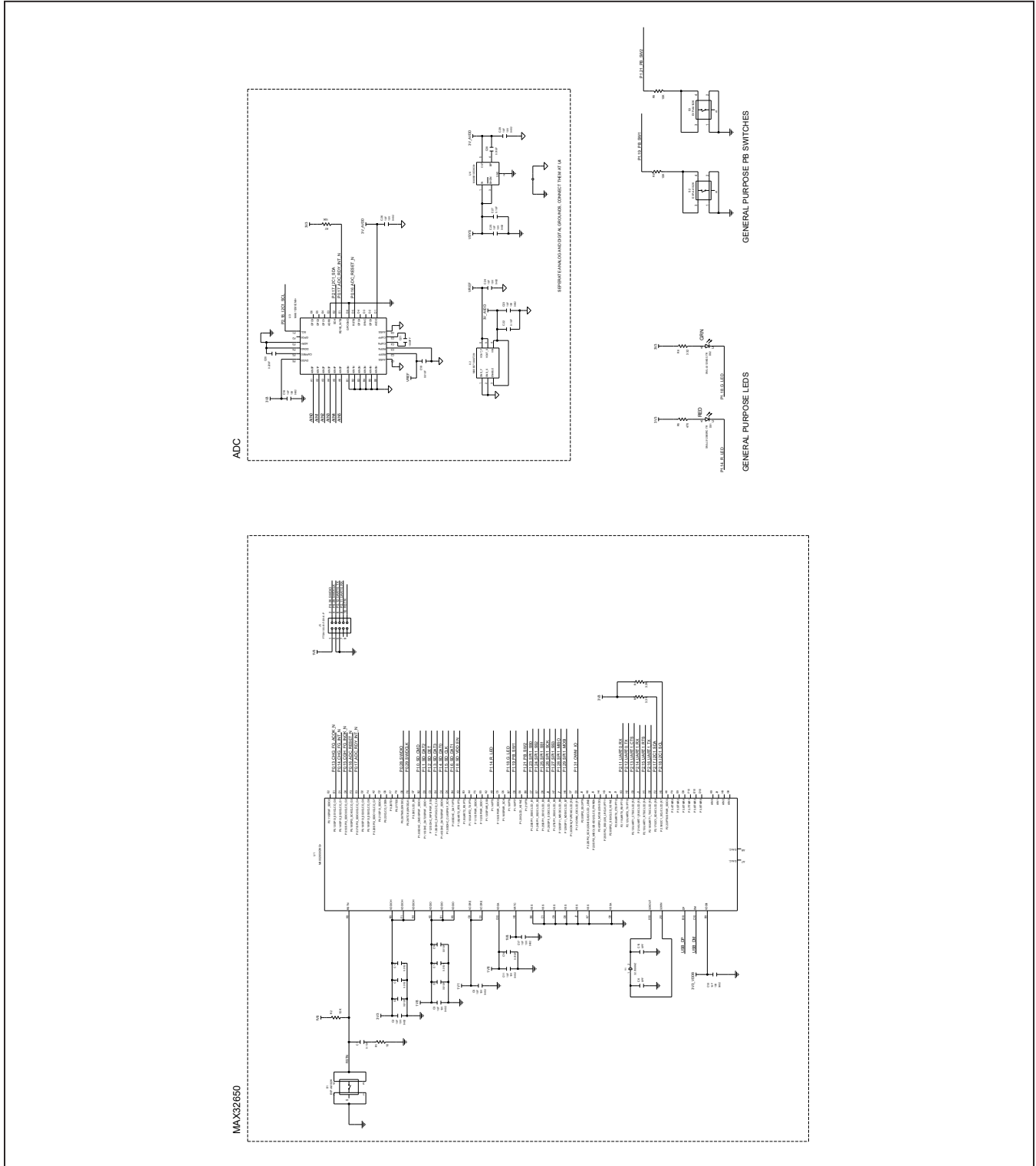
MAX32650FTHR EV Kit Bill Of Materials (continued)

REFDES	MANUFACTURER	PART NUMBER	DESCRIPTION
R5	VISHAY DALE	CRCW0402470RFK	RES; SMT (0402); 470; 1%; +/-100PPM/DEGC; 0.0630W
R6	VISHAY DALE	CRCW0402332RFK	RES; SMT (0402); 332; 1%; +/-100PPM/DEGC; 0.0630W
R10	PANASONIC	ERJ-2RKF1004	RES; SMT (0402); 1M; 1%; +/-100PPM/DEGC; 0.1000W
R12	VISHAY DALE	CRCW0402634KFK	RES; SMT (0402); 634K; 1%; +/-100PPM/DEGC; 0.0630W
R13	VENKEL LTD.; VISHAY DALE	CR0402-16W-3243FT; CRC- W0402324KFK	RES; SMT (0402); 324K; 1%; +/-100PPM/DEGC; 0.0630W
R14	KOA SPEER; VISHAY DALE	RK73H1ETTP1333F; CRC- W0402133KFK	RES; SMT (0402); 133K; 1%; +/-100PPM/DEGC; 0.0630W
R23-R25	VISHAY DALE; KOA SPEER ELECTRONICS	CRCW0402200KFK; RF- 73H1ELTP2003	RES; SMT (0402); 200K; 1%; +/-100PPM/DEGC; 0.0630W
R28	PANASONIC	ERJ-2RKF4703	RES; SMT (0402); 470K; 1%; +/-100PPM/DEGC; 0.0630W
R29	VISHAY DALE	CRCW040247K0FK	RES; SMT (0402); 47K; 1%; +/-100PPM/DEGC; 0.0630W
R30	VISHAY;YAGEO	CRCW0402100KFK; RC0402FR-07100KL	RES; SMT (0402); 100K; 1%; +/-100PPM/DEGC; 0.0630W
S1-S3	PANASONIC	EVP-AA102K	SWITCH; SPST; SMT; 15V; 0.02A; EVPAA SERIES WITH GROUND TERMINAL; LIGHT TOUCH SWITCH; RCONTACT=0.1 OHM; RINSULATION=100M OHM; WITH SPECIAL ASSEMBLY INSTRUCTIONS
U1	MAXIM	MAX32650GWQ+	IC; UCON; ULTRA-LOW-POWER ARM CORTEX-M4 WITH FPU-BASED MICRO-CONTROLLER (MCU) WITH 3MB FLASH AND 1MB SRAM; BGA96; NOTE:SPECIAL ORDER ONLY
U2	MAXIM	MAX6071AAUT25+	IC; VREF; LOW NOISE; HIGH-PRECISION SERIES VOLTAGE REFERENCE; SOT23-6
U3	MAXIM	MAX11261ENX+	EVKIT PART - IC; MAX11261ENX+; 6-CHANNEL; 24-BIT; DELTA-SIGMA ADC; PACKAGE OUTLINE DRAWING: 21-0742; PACKAGE CODE: N362B2+1
U4	MAXIM	MAX8510EXK30+	IC; VREG; ULTRA-LOW-NOISE; HIGH PSRR; LOW-DROPOUT; 0.12A LINEAR REGULATOR; SC70-5
U5	MAXIM	MAX3207EAUT+	IC; PROT; DUAL, QUAD, AND HEX HIGH-SPEED DIFFERENTIAL ESD-PROTECTION IC; SOT23-6

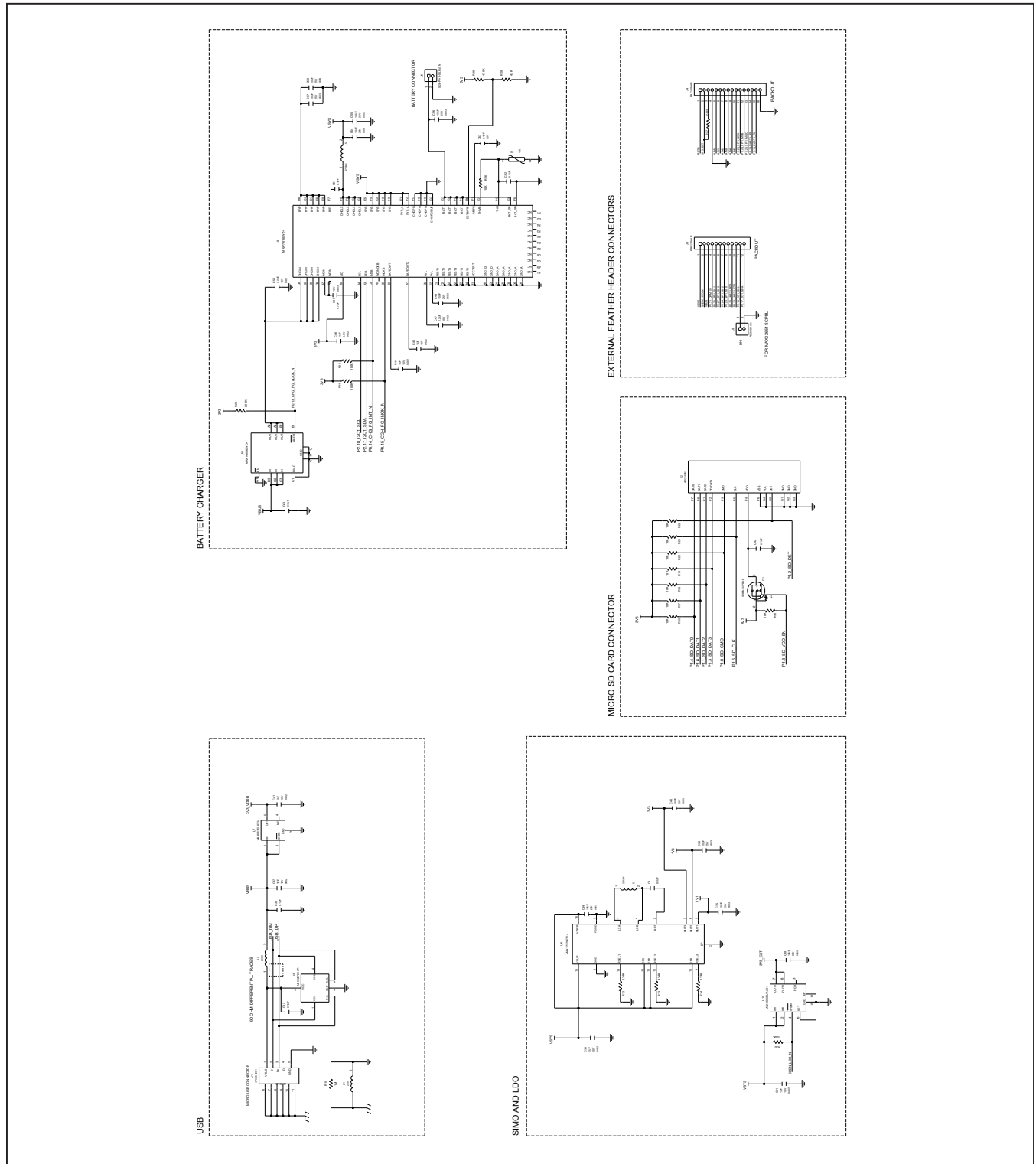
MAX32650FTHR EV Kit Bill Of Materials (continued)

REFDES	MANUFACTURER	PART NUMBER	DESCRIPTION
U6	MAXIM	MAX17270ETE+	EVKIT PART-IC; NANOPower TRIPLE/ DUAL-OUTPUT SINGLE INDUCTOR MULTIPLE-OUTPUT (SIMO) BUCK BOOST REGULATOR; TQFN16-EP; PKG. CODE: T1633+5; PKG. OUTLINE DWG. NO.: 21- 100136; PKG. LAND PATTERN NUMBER: 90-0032
U7	MAXIM	MAX8511EXK33+	IC; VREG; ULTRA-LOW-NOISE, HIGH PSRR, LOW-DROPOUT, LINEAR REGULA- TOR; SC70-5
U8	MAXIM	MAX77818EWZ+	IC; PWRM; DUAL INPUT; POWER PATH; 3A SWITCH MODE CHARGER WITH FG; BGA72
U10	MAXIM	MAX1806EUA33+	IC; VREG; LOW-VOLTAGE LINEAR REGU- LATOR; UMAX8-EP
U11	MAXIM	MAX14699EWC+	EVKIT PART-IC; PROT; HIGH ACCURACY; SURGE-PROTECTED OVERVOLTAGE PROTECTOR; WLP12 1.98X1.28
Y1	ABRACON	ABS07-32.768KHZ-6-T	CRYSTAL; SMT; 6PF; 32.768KHZ; +/- 20PPM; -0.036PPM/T2

MAX32650FTHR EV Kit Schematics



MAX32650FTHR EV Kit Schematics (continued)



Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	4/21	Initial release	—

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