MAX32660 Evaluation System

Evaluates: MAX32660

General Description

The MAX32660 evaluation system offers a compact development platform that provides access to all the features of the MAX32660 in a tiny, easy to use board. A MAX32625PICO-based debug adapter comes attached to the main board. It can be snapped free when programming is complete. The debug module supports an optional 10-pin Arm® Cortex® debug connector for DAPLink functionality. Combined measurements are 0.65in x 2.2in, while the main board alone measures 0.65in x 0.95in. External connections terminate in a dual-row header footprint compatible with both thru-hole and SMT applications. This board provides a powerful processing subsystem in a very small space that can be easily integrated into a variety of applications.

Kit Contents

- MAX32660 EVSYS board
- USB A to Micro B cable

Ordering Information appears at end of data sheet.

Features

- MAX32660 Microcontroller
  - Arm Cortex-M4F, 96MHz
  - 256KB Flash Memory
  - 96KB SRAM
  - 16KB Instruction Cache
  - Two SPIs
  - Two I^{2}Cs
  - Two UARTs
  - 14 GPIOs
- DIP Breakout Board
  - 100mil Pitch Dual Inline Pin Headers
  - Breadboard Compatible
- Integrated Peripherals
  - Red Indicator LED
  - User Pushbutton
- MAX32625PICO-Based Debug Adapter
  - CMSIS-DAP SWD Debugger
  - Virtual UART Console

MAX32660 EV System Photo
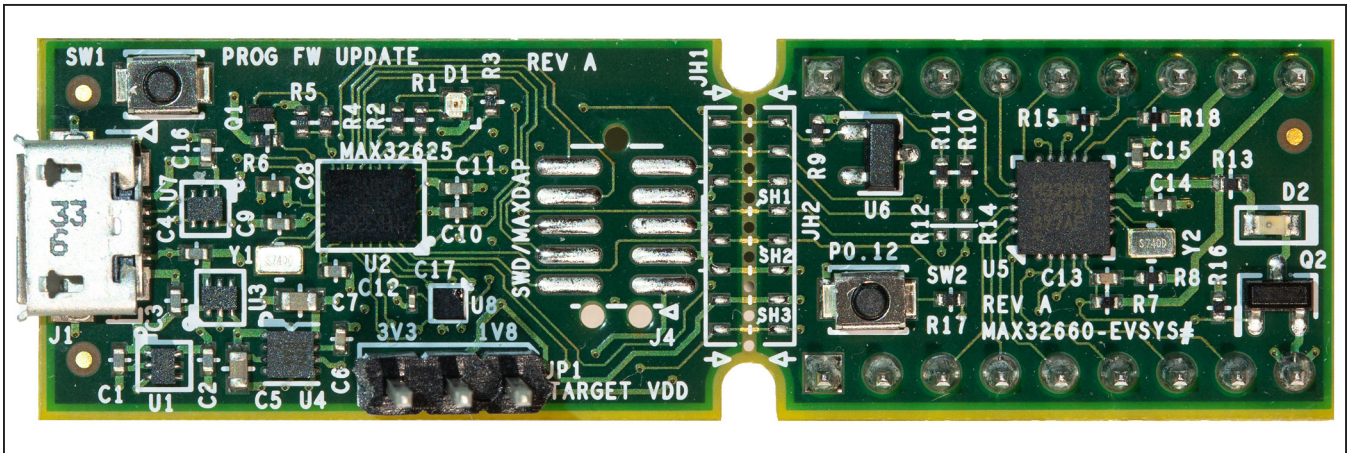
Arm and Cortex are registered trademarks of Arm Limited (or its subsidiaries) in the US and/or elsewhere.

maxim integrated™

3rd	2nd	1st	NAME	NAME	1st	2nd	3rd
	CTS	SCK	P0_12	P0_10	MISO	TX	
	RTS	SSEL	P0_13	P0_11	MOSI	RX	
	TX	MISO	P0_4	P0_5	MOSI	RX	
TMR	SSEL	SDA	P0_3	P0_6	SCK	CTS	TX
32KCAL	SCK	SCL	P0_2	P0_7	SSEL	RTS	RX
RX	MOSI	SWCLK	P0_1	P0_8	SCL	SWDIO	
TX	MISO	SWDIO	P0_0	P0_9	SDA	SWCLK	
			RSTN	VCORE			
			GND	HDR_VIO			

Figure 1. Pinout Diagram

Quick Start

To begin using the MAX32660 EV system, follow these steps:

1) Use jumper JP1 to select desired target VDD.
2) Connect the EVSYS board to the computer using the included micro USB cable.
3) Follow the instructions in the MAX32660 EV system software user's guide.

Detailed Description of Hardware (or Software)

The MAX32660 EV system board is a compact breakout board designed to make developing with the MAX32660 quick and easy. In addition to making all the GPIOs accessible at 100mil pitch headers, it also includes key components such as decoupling capacitors and a crystal for the RTC. A pushbutton, LED, and debug adapter are also included. The two 100mil pitch headers are oriented in parallel so that this board can be inserted into a standard solderless breadboard.

Power Supply

The MAX32660 only needs a single supply between 1.7V and 3.6V to operate. The primary power input for this EV kit is the VDDIO pin at header J2 pin 9. Power can also be applied through the debug adapter (JP1 selects voltage). The MAX32660 includes an internal LDO for the core supply. This LDO can be disabled so that a more efficient external regulator can be used. The EV kit provides access to VCORE at header JH2 pin 8. VDDIO and VCORE are each decoupled with 1µF capacitors.

Programming and Debugging

The MAX32660 EV kit integrates a MAX32625PICO-based debugger. The debugger provides power to the MAX32660 and is designed to be removed from the system when programming is finalized. It can be reattached by restoring the electrical connections between JH1 and JH2.

Console UART

UART1A Tx and Rx signals at port P0.10 and P0.11 are connected to the programming and debug header JH2 pins 2 and 3 through 1kΩ resistors. This provides a convenient way to communicate with a PC though the virtual serial port available in Maxim's CMSIS-DAP debug adapter. The series resistors allow for these signals to be overdriven by other circuits without modifying the board.

Pushbutton

A pushbutton is connected to GPIO P0.12 for general user input. It is connected through a series resistor to protect against contention if this I/O is being used for other purposes.

Indicator LED

A red LED is connected to GPIO P0.13 for general user indication. It is connected with a MOSFET buffer so that it does not provide a significant load when used for other purposes.

Clocking

The IC operates from a system clock that can be selected from one of three on-chip oscillators from 8kHz to 96MHz. The external 32.768kHz crystal, Y2, provides the RTC with an accurate time base and is also used to calibrate the internal clock.

Table 1. JH4 Header Pinout

PIN	NAME	ALTERNATE FUNCTION 1	ALTERNATE FUNCTION 2	ALTERNATE FUNCTION 3
1	P0.12	SPI1A_SCK	UART1A_CTS	—
2	P0.13	SPI1A_SS0	UART1A_RTS	—
3	P0.4	SPI0A_MISO	UART0A_TX	—
4	P0.3	I2C1A_SDA	SPI1B_SS0	TIMER_TMR0
5	P0.2	I2C1A_SCL	SPI1B_SCK	32KCAL
6	P0.1	SWDCLK	SPI1B_MOSI	UART1B_RX
7	P0.0	SWDIO	SPI1B_MISO	UART1B_TX
8	RSTN	—	—	—
9	GND	—	—	—

Table 2. JH3 Header Pinout

PIN	NAME	ALTERNATE FUNCTION 1	ALTERNATE FUNCTION 2	ALTERNATE FUNCTION 3
1	P0.10	SPI1A_MISO	UART1A_TX	—
2	P0.11	SPI1A_MOSI	UART1A_RX	—
3	P0.5	SPI0A_MOSI	UART0A_RX	—
4	P0.6	SPI0A_SCK	UART0A_CTS	UART1C_TX
5	P0.7	SPI0A_SS0	UART0A_RTS	UART1C_RX
6	P0.8	I2C0A_SCL	SWDIO	—
7	P0.9	I2C0A_SDA	SWDCLK	—
8	VCORE	—	—	—
9	VDDIO	—	—	—

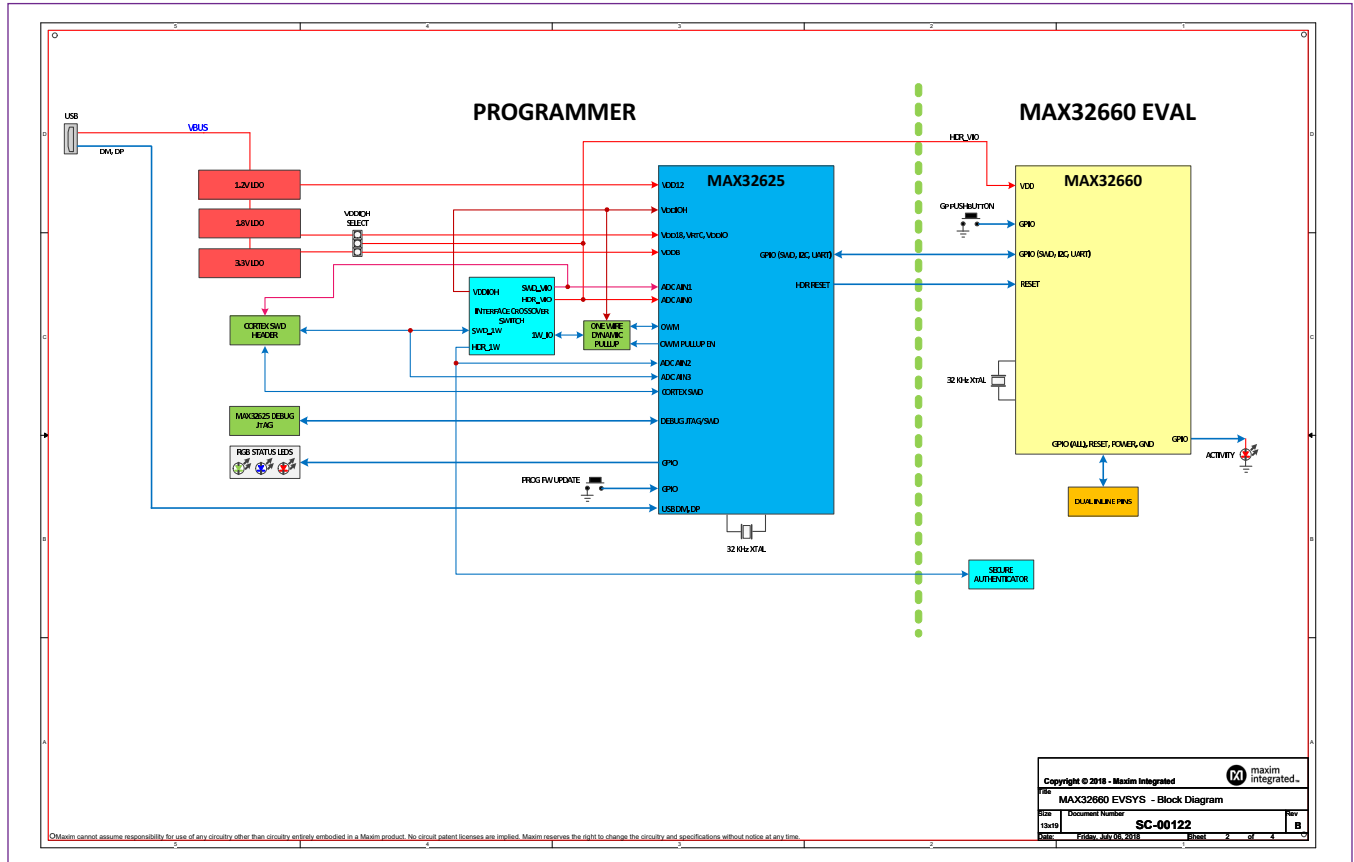## Ordering Information

PART	TYPE
MAX32660-EVSYS#	EV System

#Denotes RoHS compliance.

MAX32660 EV System Bill of Materials

| QTY	PART	VALUE	BOM DESCRIPTION	MANUFACTURER PN	MANUFACTURER
12	C1,C2,C3,C4,C8,C9,C10,C11,C12,C14,C15,C16	1uF	CAP CER 1UF 6.3V X5R 0402	GRM155R60J105KE19D	Murata
2	C5,C7	4.7uF	CAP CER 4.7uF 10V 10% X5R 0603	C0603C475K8PACTU	Kemet
1	C6	10nF	CAP CER 10000PF 16V 10% X7R 0402	GRM155R71C103KA01D	Murata Electronics North America
1	C13	100nF	CAP CER 0.1UF 10V 10% X5R 0402	GRM155R61A104KA01D	Murata
1	C17	100nF	CAP CER 0.1UF 6.3V 10% X5R 0201	GRM033R60J104KE19D	Murata
1	D1	SML-LX0404SIUPGUSB	LED RGB CLEAR 0404 SMD	SML-LX0404SIUPGUSB	Lumex Opto/Components Inc.
1	D2	RED	LED RED DIFFUSED 0603 SMD	SML-LX0603SRW-TR	Lumex Opto/Components Inc.
1	J1	MICRO USB B R/A	CONN RCPT 5POS MICRO USB B R/A	47346-0001	Molex
1	J2	MAXDAP	MAXDAP_POGO_PIN CBL PLUG-OF-NAILS 10-PIN	TC2050-IDC-NL	Tag-Connect LLC
1	J3	4P TP	4P USB TP 1.27MM SMT PAD		
1	J4	10P CORTEX DEBUG	CONN HEADER 10POS DUAL .05" SMD	FTSH-105-01-F-DV-K	Samtec
1	JH1	DNI 1	DNI CON 8P LS50MIL SMT 30X15PAD BREAKAWAY 1		
1	JH2	DNI 2	DNI CON 8P LS50MIL SMT 30X15PAD BREAKAWAY 2		
2	JH3,JH4	9P 1x9	CONN HEADER .100 SINGL STR 9POS	PEC09SAAN	Sullins
1	JP1	3P JUMPER	CONN HEADER .100 SINGL STR 3POS	PEC03SAAN	Sullins
1	PCB1	PCB			
1	Q1	DMP210DUFB4-7	MOSFET P-CH 20V 0.2A X2-DFN1006	DMP210DUFB4-7	Diodes Incorporated
1	Q2	BSS806N	MOSFET N-CH 20V 2.3A SOT23	BSS806N H6327	Infineon Technologies
2	R1,R5	2.7K	RES SMD 2.7K OHM 1% 1/10W 0402	ERJ-2RKF2701X	Panasonic
1	R2	1.4K	RES SMD 1.4K OHM 1% 1/10W 0402	ERJ-2RKF1401X	Panasonic Electronic Components
4	R3,R10,R11,R17	1K	RES 1K OHM 1/10W 1% 0402 SMD	ERJ-2RKF1001X	Panasonic
2	R4,R8	10	RES SMD 10 OHM 1% 1/10W 0402	ERJ-2RKF10R0X	Panasonic
1	R6	100K	RES SMD 100K OHM 1% 1/10W 0402	ERJ-2RKF1003X	Panasonic
3	R7,R15,R18	10K	RES SMD 10K OHM 1% 1/16W 0402	RC0402FR-0710KL	Yageo
2	R9,R13	499	RES SMD 499 OHM 1% 1/10W 0402	ERJ-2RKF4990X	Panasonic Electronic Components
2	R12,R14	0	RES 0.0 OHM 1/10W JUMP 0402 SMD	ERJ-2GE0R00X	Panasonic
1	R16	150K	RES SMD 150K OHM 1% 1/10W 0402	ERJ-2RKF1503X	Panasonic
2	R19,R20	0	RES 0.0 OHM 1/20W JUMP 0201 SMD	ERJ-1GN0R00C	Panasonic
3	SH1,SH2,SH3	DNI	DNI 2 NET SHORT 8 MIL LINE		
2	SW1,SW2	B3U-1000P	SWITCH TACTILE SPST-NO 0.05A 12V	B3U-1000P	Omron Electronics
1	U1	MAX8841ELT18+T	IC REG LINEAR 1.8V 150MA 6UDFN	MAX8841ELT18+T	Maxim Integrated
1	U2	MAX32625IWY+T	IC MCU 32BIT 512KB FLASH 63WLP	MAX32625IWY+T	Maxim Integrated
1	U3	MAX8841ELT33+T	IC REG LINEAR 3.3V 150MA 6UDFN	MAX8841ELT33+T	Maxim Integrated
1	U4	MAX38902AATA+	IC REG LDO LINEAR ADJ .5A 8TDFN	MAX38902AATA+	Maxim Integrated
1	U5	MAX32660GTP+	MAX32660GTP+ 20P TQFN	MAX32660GTP+	Maxim Integrated
1	U6	DS28E05R+T	IC EEPROM 896BIT 1WIRE SOT23-3	DS28E05R+T	Maxim Integrated
1	U7	MAX13202EALT+T	ESD PROTECT 2CH 6-UDFN	MAX13202EALT+	Maxim Integrated
1	U8	MAX14689EWL+T	IC SWITCH ANALOG DPDT 9-WLP	MAX14689EWL+T	Maxim Integrated
2	Y1,Y2	32.768KHz	CRYSTAL 32.7680KHZ 6PF SMD	ECS-.327-6-12-TR	ECX-12_200x120

MAX32660 EV System Schematic

MAX32660 EV System Schematic (continued)
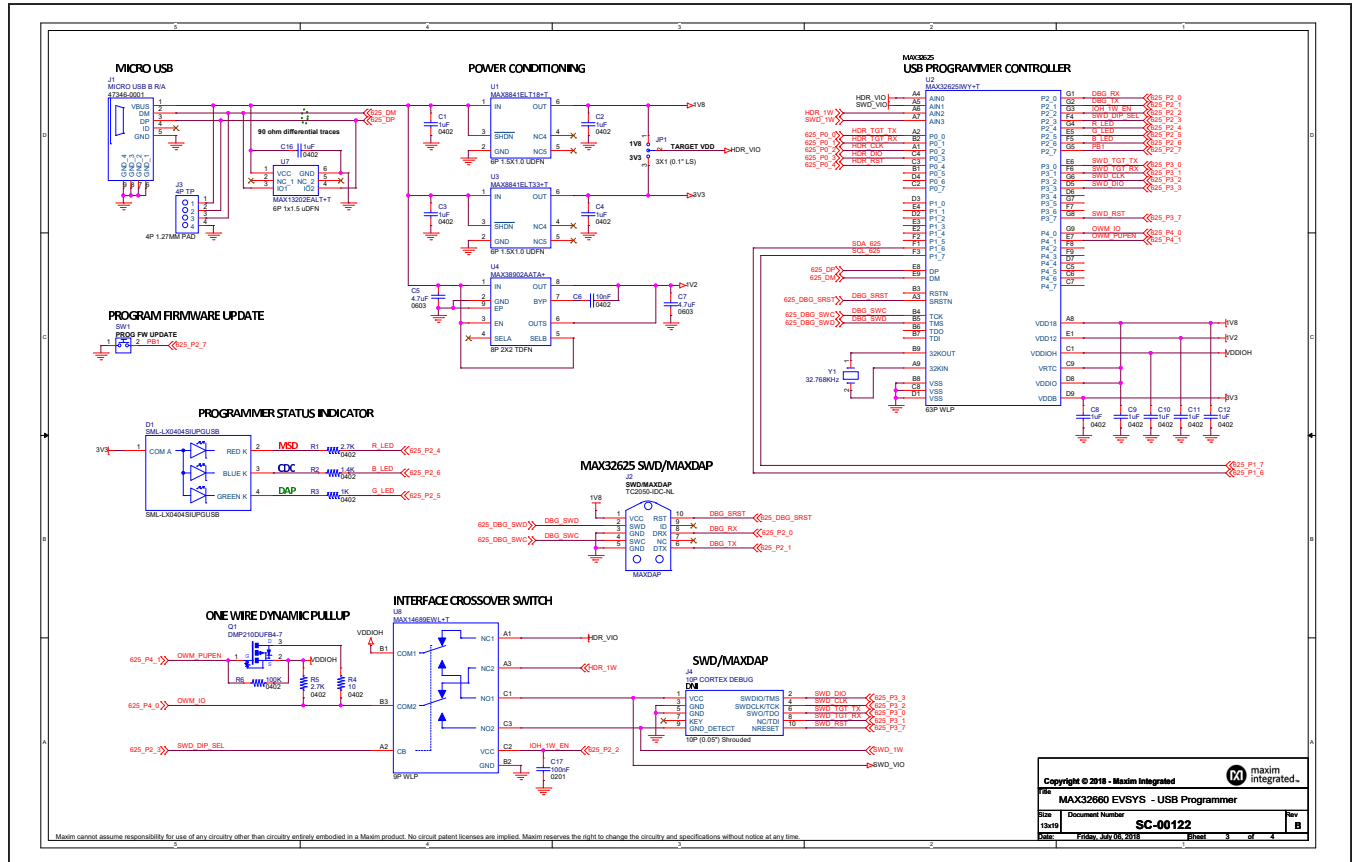
MAX32660 EV System Schematic (continued)
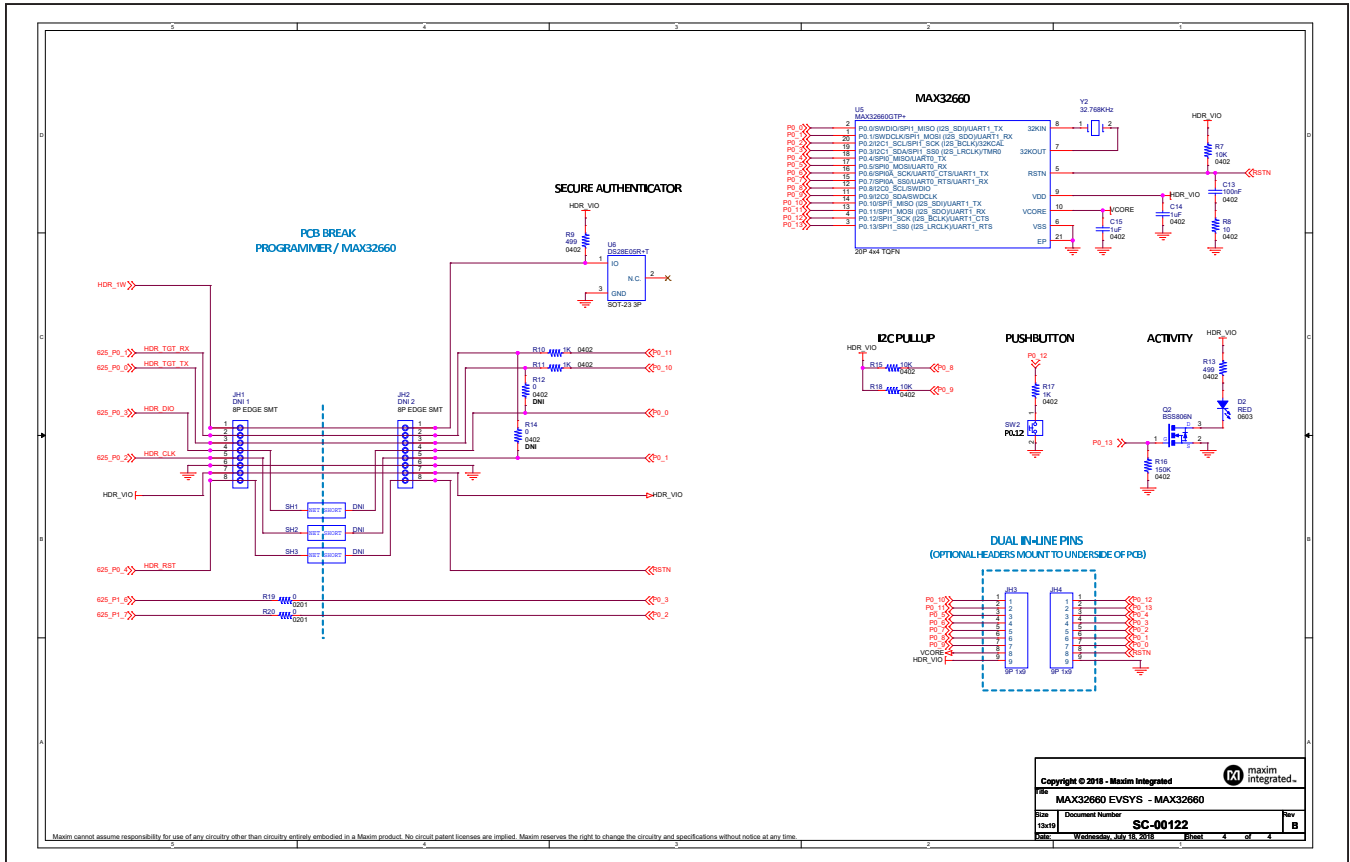
Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	9/18	Initial release	—
1	9/18	Updated *Ordering Information*	3