

# MAX32625MBED ARM mbed Enabled Development Platform

Evaluates: MAX32625

## General Description

The MAX32625MBED provides a convenient platform for evaluating the capabilities of the MAX32625 microcontroller. The MAX32625MBED also provides a complete, functional system ideal for developing and debugging applications.

The MAX32625MBED includes a MAX32625 ARM® Cortex®-M4 microcontroller with FPU, prototyping area with adjacent access to precision analog front end (AFE) connections, I/O access through Arduino®-compatible connectors, additional I/O access through 100mil x 100mil headers, USB interface, and other general-purpose I/O devices.

Go to <http://developer.mbed.org/platforms/MAX32625MBED> to get started developing with this board.

*Ordering Information appears at end of data sheet.*

## Benefits and Features

- Arduino-Compatible Headers and mbed Support Enable Rapid Prototyping of Low-Power Embedded Systems
- MAX32625 Microcontroller
  - 96MHz ARM Cortex-M4 Microcontroller with FPU
  - 512KB Flash Memory
  - 160KB SRAM
  - 8KB Instruction Cache
  - Full-Speed USB 2.0
  - Three SPI Masters, One Slave
  - Two I<sup>2</sup>C Masters, One Slave
  - Three UARTs
  - 1-Wire Master
  - 40 GPIOs
  - Four Input 10-Bit ADC
- Expansion Connections
  - Arduino Form-Factor Headers
  - MicroSD Card Connector
  - Micro-USB Connectors
  - Prototyping Area
- Integrated Peripherals
  - 4x User Indicator LED
  - 2x User Pushbutton
- Integrated DAPLink Programming Adapter
  - Drag-and-Drop Programming
  - CMSIS-DAP SWD Debugger
  - USB Virtual UART

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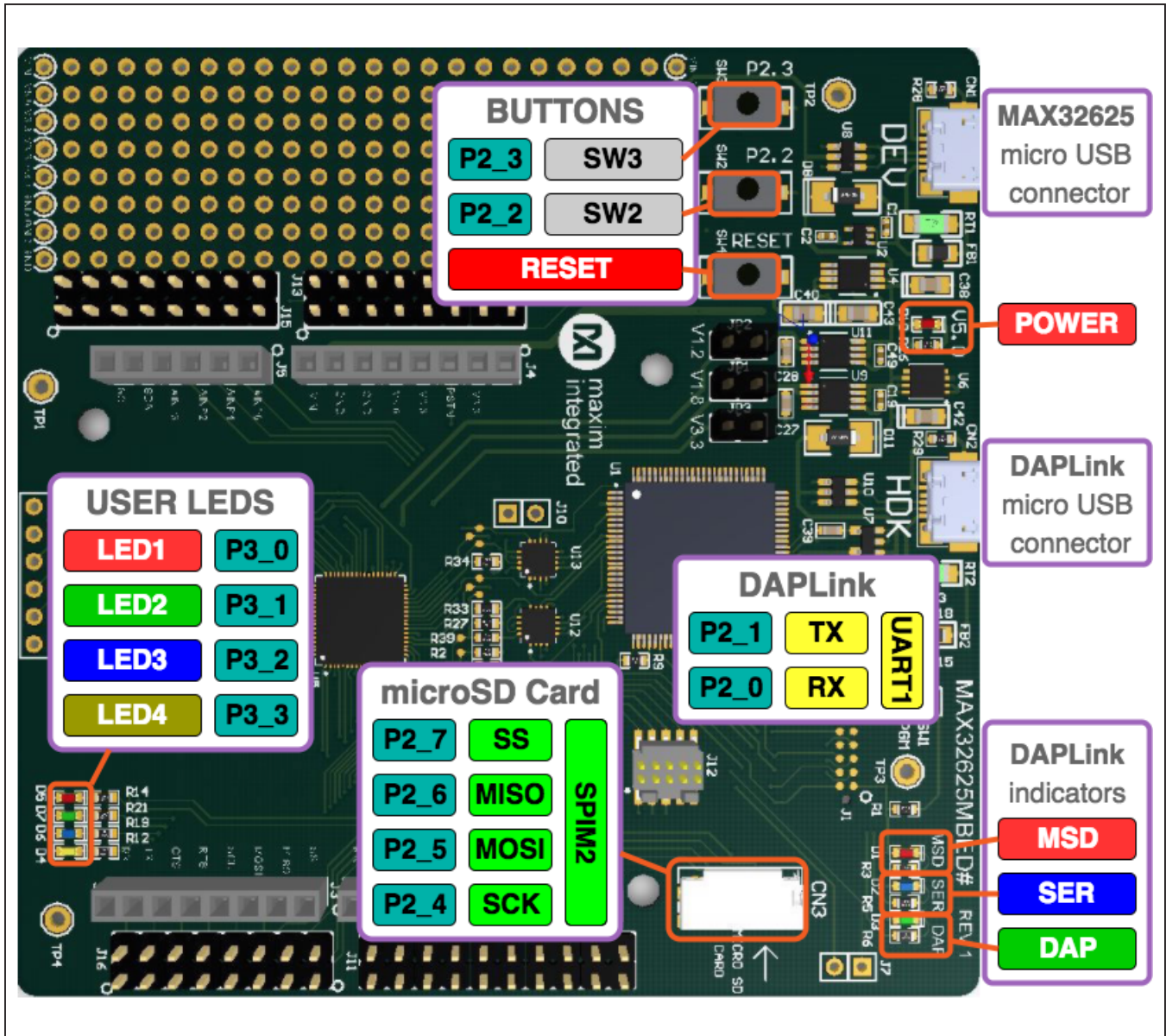


Figure 1. MAX32625MBED Features

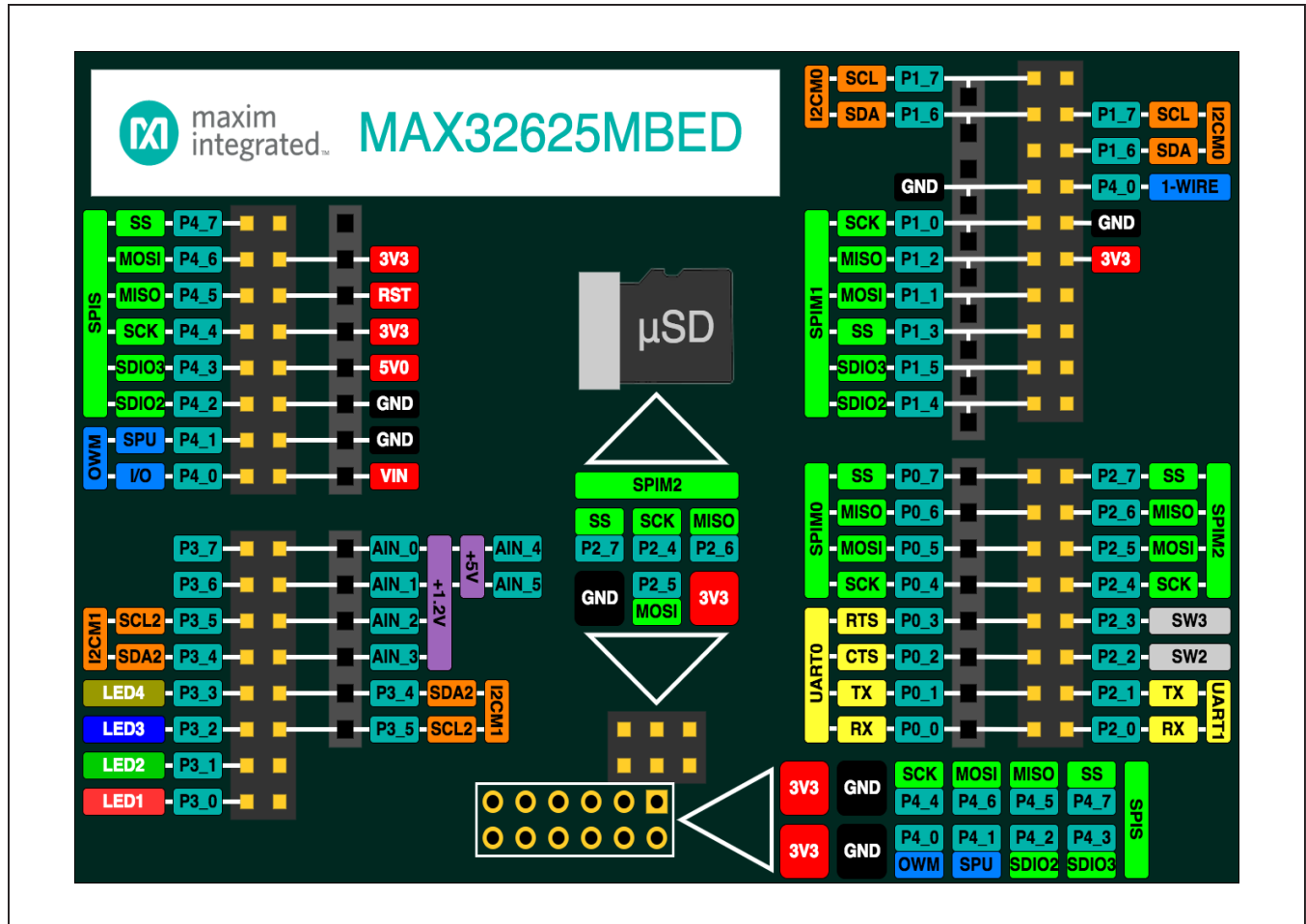


Figure 2. MAX32625MBED Pinout

## Detailed Description

The MAX32625MBED board is general purpose in nature. However, the ability to access the majority of I/O signals allow for easy evaluation of the MAX32625. This section describes each major function or component on the MAX32625MBED.

### Board Power

The MAX32625MBED can be powered by either of the USB Micro-B connectors or an external source: VIN, V5.0, or V3.3.

### HDK USB Supply

The HDK USB connector provides access to the DAPLink circuitry. Power supplied from the HDK USB connector, CN2, is limited to 500mA. Only the HDK USB connector, CN2, powers the DAPLink circuitry. This supply is regulated to supply the HDK\_V3.3 rail and is also connected to the V5.0 rail through a forward biased diode. From the V5.0 rail, it is regulated to supply V3.3.

### MAX32625 USB Device Interface Supply

Power supplied from the MAX32625 USB device interface connector, CN1 is limited to 500mA. This supply is connected to the V5.0 rail through a forward biased diode. From the V5.0 rail, it is regulated to supply V3.3.

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## External Supply VIN

Power supplied from the VIN, J4 pin 8, is regulated to supply the V5.0 rail. The voltage input range for this input is 5V to 12V DC.

## External Supplies V5.0 and V3.3

Power supplied by V5.0, J4 pin 5, is connected directly to the V5.0 rail. Likewise, power supplied by V3.3, J4 pin 4, is connected directly to the V3.3 rail.

## Pushbuttons

Two pushbuttons are available for application use: SW2 and SW3 are connected to port pins P2\_2 and P2\_3, respectively. Pushbuttons are normally open; therefore, provide a logic 0 when depressed. Firmware defines the action taken on switch closure. Pushbutton SW4 provides a power-on reset function for the MAX32625 by asserting the RSTN input.

## USB

The MAX32625 provides an integrated USB2.0 Fullspeed interface (12Mbps). This interface is accessed through the USB Micro-B connector, CN1.

## LEDs

Four LEDs are available for application use: D4 (yellow), D5 (red), D6 (blue), and D7 (green) are connected to MAX32620 GPIO pins P3\_3, P3\_0, P3\_2, and P3\_1, respectively. LED GPIOs should be configured as open drain due to 3.3V LED source voltages. An LED illuminates when the appropriate GPIO pin is driven low. One power supply status LED, D10, is connected to supply rail V5.0.

## Prototyping Area

An area for adding customer-specific circuitry is provided. This matrix is on 100mil spacing and is usable for solder or wire-wrap construction. Power and ground rails are conveniently located above and below this area.

**Table 1. Arduino Socket Pinout**

PIN	NAME	DESCRIPTION
J4p1	N.C.	Reserved
J4p2	3.3V	+3.3V Output
J4p3	RST	Active-Low Reset
J4p4	3.3V	+3.3V Output
J4p5	5V	+5V Input/Output
J4p6	GND	Ground
J4p7	GND	Ground
J4p8	VIN	External Supply Input 5V to 12V
J5p1	AIN_0	Analog Input 0 (Up to 5V)
J5p2	AIN_1	Analog Input 1 (Up to 5V)
J5p3	AIN_2	Analog Input 2 (1.2V Full Scale)
J5p4	AIN_3	Analog Input 3 (1.2V Full Scale)
J5p5	P3_4	Port 3 Bit 4, I <sup>2</sup> C Master 1 SDA
J5p6	P3_5	Port 3 Bit 5, I <sup>2</sup> C Master 1 SCL
J6p1	P0_0	Port 0 Bit 0, UART 0 Rx
J6p2	P0_1	Port 0 Bit 1, UART 0 Tx

PIN	NAME	DESCRIPTION
J6p3	P0_2	Port 0 Bit 2, UART 0 CTS
J6p4	P0_3	Port 0 Bit 3, UART 0 RTS
J6p5	P0_4	Port 0 Bit 4, SPI Master 0 MOSI
J6p6	P0_5	Port 0 Bit 5, SPI Master 0 MISO
J6p7	P0_6	Port 0 Bit 6, SPI Master 0 SSEL
J6p8	P0_7	Port 0 Bit 7, SPI Master 0 SCK
J3p1	P1_4	Port 1 Bit 4, SPI Master 1 SDIO2
J3p2	P1_5	Port 1 Bit 5, SPI Master 1 SDIO3
J3p3	P1_3	Port 1 Bit 3, SPI Master 1 SSEL
J3p4	P1_1	Port 1 Bit 1, SPI Master 1 MOSI
J3p5	P1_2	Port 1 Bit 2, SPI Master 1 MISO
J3p6	P1_0	Port 1 Bit 0, SPI Master 1 SCK
J3p7	GND	Ground
J3p8	N.C.	Not Connected
J3p9	P1_6	Port 1 Bit 6, I <sup>2</sup> C Master 0 SDA
J3p10	P1_7	Port 1 Bit 7, I <sup>2</sup> C Master 0 SCL

**Table 2. J8 SPI Header Pinout**

PIN	NAME	DESCRIPTION
1	P2_6	Port 2 Bit 6, SPI Master 2 MISO
2	3.3V	+3.3V Output
3	P2_4	Port 2 Bit 4, SPI Master 2 SCK
4	P2_5	Port 2 Bit 5, SPI Master 2 MOSI
5	P2_7	Port 2 Bit 7, SPI Master 2 SSEL
6	GND	Ground

**Table 3. J11 Header Pinout**

PIN	NAME	DESCRIPTION
1	N.C.	Not Connected
2	P1_4	Port 1 Bit 4, SPI Master 1 SDIO2
3	N.C.	Not Connected
4	P1_5	Port 1 Bit 5, SPI Master 1 SDIO3
5	N.C.	Not Connected
6	P1_3	Port 1 Bit 3, SPI Master 1 SSEL
7	N.C.	Not Connected
8	P1_1	Port 1 Bit 1, SPI Master 1 MOSI
9	3.3V	+3.3V Output
10	P1_2	Port 1 Bit 2, SPI Master 1 MISO
11	GND	Ground
12	P1_0	Port 1 Bit 0, SPI Master 1 SCK
13	P4_0	Port 4 Bit 0, One Wire Master
14	GND	Ground
15	P1_6	Port 1 Bit 6, I <sup>2</sup> C Master 0 SDA
16	N.C.	Not Connected
17	P1_7	Port 1 Bit 7, I <sup>2</sup> C Master 0 SCL
18	P1_6	Port 1 Bit 6, I <sup>2</sup> C Master 0 SDA
19	N.C.	Not Connected
20	P1_7	Port 1 Bit 7, I <sup>2</sup> C Master 0 SCL

**Table 4. J13 Header Pinout**

PIN	NAME	DESCRIPTION
1	VIN	External Supply Input 5V to 12V
2	P4_0	Port 4 Bit 0, One Wire Master
3	GND	Ground
4	P4_1	Port 4 Bit 1, OWM SPU
5	GND	Ground
6	P4_2	Port 4 Bit 2, SPI Slave SDIO2
7	5V	+5V Input/Output
8	P4_3	Port 4 Bit 3, SPI Slave SDIO3
9	3.3V	+3.3V Output
10	P4_4	Port 4 Bit 4, SPI Slave SCK
11	RST	Active-Low Reset
12	P4_6	Port 4 Bit 6, SPI Slave MISO
13	3.3V	+3.3V Output
14	P4_5	Port 4 Bit 5, SPI Slave MOSI
15	NC	Reserved
16	P4_7	Port 4 Bit 7, SPI Slave SSEL

**Table 5. J15 Header Pinout**

PIN	NAME	DESCRIPTION
1	N.C.	Not Connected
2	P3_0	Port 3 Bit 0, Red LED
3	NC	Not Connected
4	P3_1	Port 3 Bit 1, Green LED
5	P3_5	Port 3 Bit 5, I <sup>2</sup> C Master 1 SCL
6	P3_2	Port 3 Bit 2, Blue LED
7	P3_4	Port 3 Bit 4, I <sup>2</sup> C Master 1 SDA
8	P3_3	Port 3 Bit 3, Yellow LED
9	AIN_3	Analog Input 3 (1.2V Full Scale)
10	P3_4	Port 3 bit 4, I <sup>2</sup> C Master 1 SDA
11	AIN_2	Analog Input 2 (1.2V Full Scale)
12	P3_5	Port 3 Bit 5, I <sup>2</sup> C Master 1 SCL
13	AIN_1	Analog Input 1 (Up to 5V)
14	P3_6	Port 3 Bit 6
15	AIN_0	Analog Input 0 (Up to 5V)
16	P3_7	Port 3 Bit 7

**Table 6. J16 Header Pinout**

PIN	NAME	DESCRIPTION
1	P2_0	Port 2 Bit 0, UART 1 Rx (DAPLink)
2	P0_0	Port 0 Bit 0, UART 0 Rx
3	P2_1	Port 2 Bit 1, UART 1 Tx (DAPLink)
4	P0_1	Port 0 Bit 1, UART 0 Tx
5	P2_2	Port 2 Bit 2, SW2
6	P0_2	Port 0 Bit 2, UART 0 CTS
7	P2_3	Port 2 Bit 3, SW3
8	P0_3	Port 0 Bit 3, UART 0 RTS
9	P2_4	Port 2 Bit 4, SPI Master 2 SCK
10	P0_4	Port 0 Bit 4, SPI Master 0 MOSI
11	P2_5	Port 2 Bit 5, SPI Master 2 MOSI
12	P0_5	Port 0 Bit 5, SPI Master 0 MISO
13	P2_6	Port 2 Bit 6, SPI Master 2 MISO
14	P0_6	Port 0 Bit 6, SPI Master 0 SSEL
15	P2_7	Port 2 Bit 7, SPI Master 2 SSEL
16	P0_7	Port 0 Bit 7, SPI Master 0 SCK

**Table 7. J17 Header Pinout**

PIN	NAME	DESCRIPTION
1	P4_7	Port 4 Bit 7, SPI Slave SSEL
2	P4_3	Port 4 Bit 3, SPI Slave SDIO3
3	P4_5	Port 4 Bit 5, SPI Slave MOSI
4	P4_2	Port 4 Bit 2, SPI Slave SDIO2
5	P4_6	Port 4 Bit 6, SPI Slave MISO
6	P4_1	Port 4 Bit 1, OWM SPU
7	P4_4	Port 4 Bit 4, SPI Slave SCK
8	P4_0	Port 4 Bit 0, 1-Wire Master
9	GND	Ground
10	GND	Ground
11	3.3V	+3.3V Output
12	3.3V	+3.3V Output

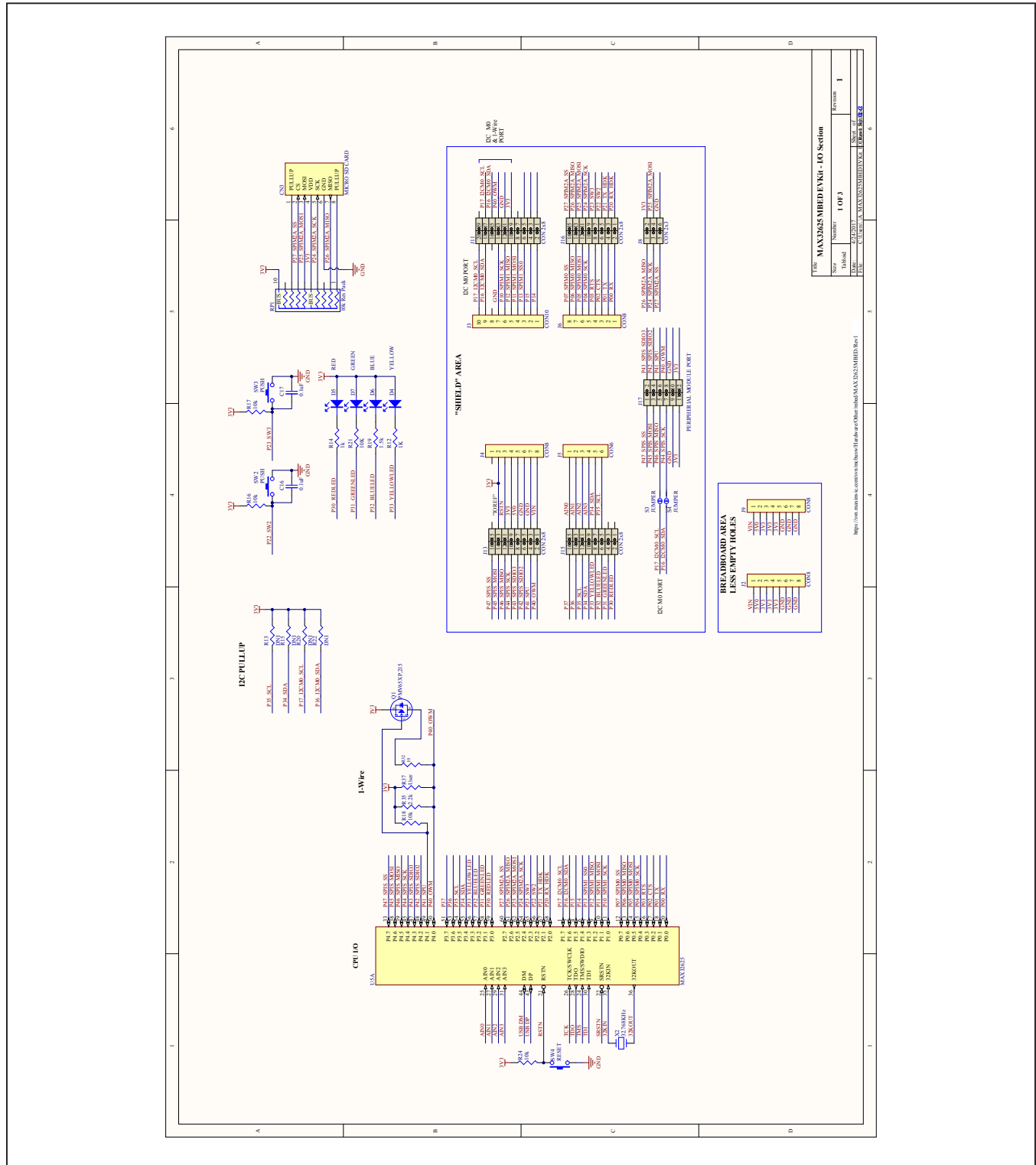
**Table 8. J12 SWD Header Pinout**

PIN	NAME	DESCRIPTION
1	VIO	Target I/O Voltage Input
2	TMS	SWDIO
3	GND	Ground
4	TCK	SWDCLK
5	GND	Ground
6	TXD	DAPLink Tx
7	NC	Key
8	RXD	DAPLink Rx
9	N.C.	Not Connected
10	RST	DAPLink Reset Output

**Table 9. On-Board Resources**

PORT	NAME	DESCRIPTION
P2_0	DAPLink RX	Debug Console Rx
P2_1	DAPLink TX	Debug Console Tx
P2_2	SW2	Pushbutton SW2
P2_3	SW3	Pushbutton SW3
P2_4	SD SCK	Micro SD Clock
P2_5	SD MOSI	Micro SD MOSI
P2_6	SD MISO	Micro SD MISO
P2_7	SD CS	Micro SD Chip Select
P3_0	LED1	Red LED
P3_1	LED2	Green LED
P3_2	LED3	Blue LED
P3_3	LED4	Yellow LED

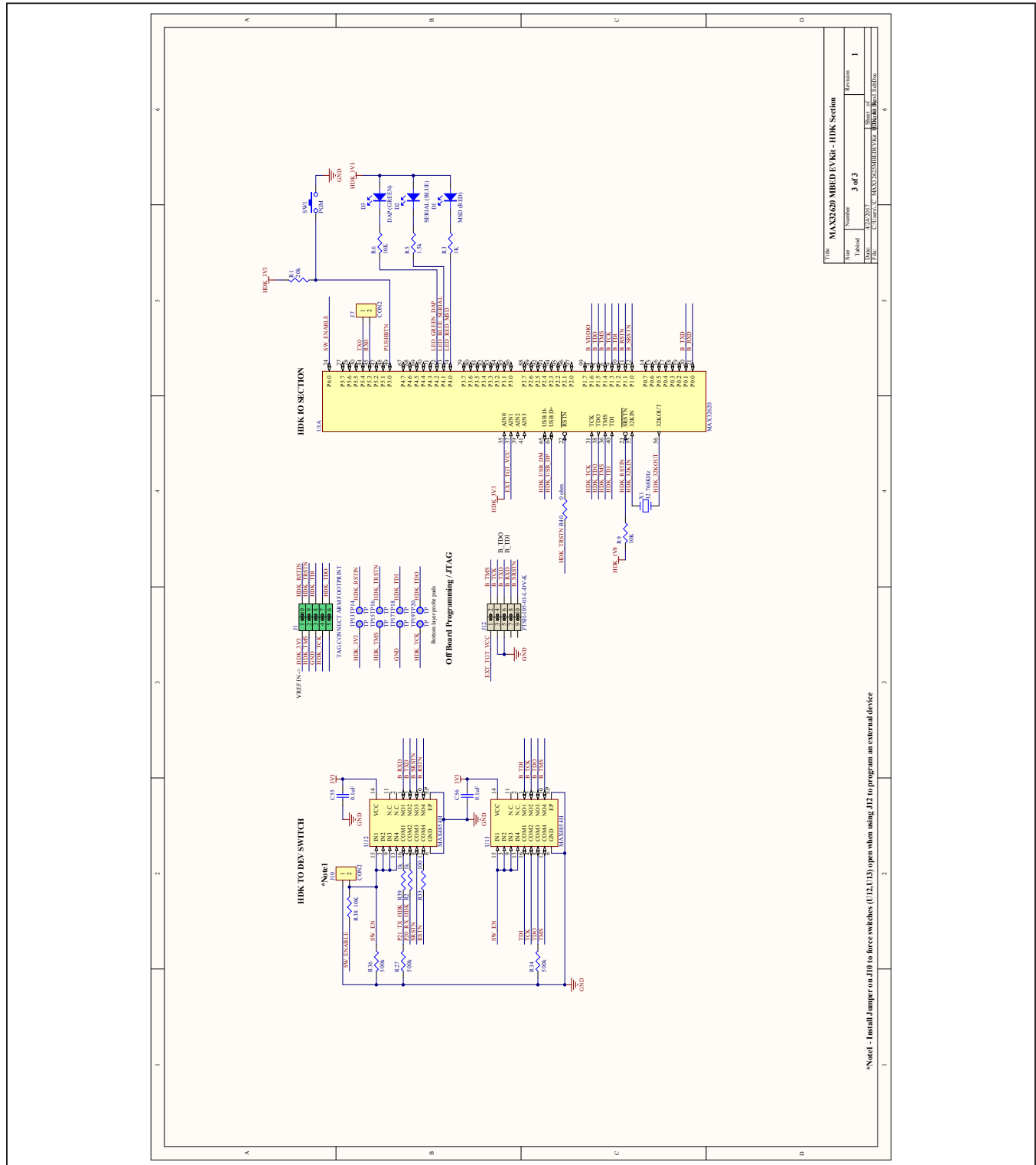
MAX32625MBED EV System Schematic







MAX32625MBED EV System Schematic (continued)



MAX32625MBED ARM mbed  
Enabled Development Platform

Evaluates: MAX32625

MAX32625MBED EV System Bill of Materials

Item #	Quantity	Designator	Footprint	Comment	Manufacture Name	Part Number	Description
1	25	C1, C2, C3, C6, C7, C10, C11, C13, C15, C18, C19, C21, C22, C23, C24, C25, C29, C30, C32, C34, C35, C36, C37, C45, C49	CAP0402-3D	1.0uF	Samsung Electro-Mechanics America, Inc	CL05A105KQ5NNNC	CAP CER 1UF 6.3V 10% X5R 0402
2	4	C4, C26, C27, C28	CAP0603-3D	4.7uF	Samsung Electro-Mechanics America, Inc	CL10B475KQ8NQNC	CAP CER 4.7UF 6.3V 10% X7R 0603
3	4	C9, C31, C55, C56	CAP0402-3D	0.1uF	Samsung Electro-Mechanics America, Inc	CL05A104KQ5NNNC	CAP CER 0.1UF 6.3V 10% X5R 0402
4	4	C16, C17, C41, C47	CAP0603-3D	0.1uF	Samsung Electro-Mechanics America, Inc	CL10B104KQ8NNNC	CAP CER 0.1UF 16V 10% X7R 0603
5	1	C38	CAP0805-3D	22uF	TDK Corporation	C2012X5R1C226M085AC	CAP CER 22UF 16V 20% X5R 0805
6	1	C39	CAP0603-3D	0.01uF	Samsung Electro-Mechanics America, Inc	CL10B103KB8NCNC	CAP CER 10000PF 50V 10% X7R 0603
7	1	C40	CAP0805-3D	2.2uF	Murata Electronics North America	GRM21BF51C225ZA01L	CAP CER 2.2UF 16V Y5V 0805
8	1	C42	CAP0805-3D	4.7uF	Samsung Electro-Mechanics America, Inc	CL21A475KPFNNNE	CAP CER 4.7UF 10V 10% X5R 0805
9	1	C43	CAP0805-3D	10uF	TDK Corporation	C2012X5R1A106K125AB	CAP CER 10UF 10V 10% X5R 0805
10	2	CN1, CN2	USBMICROB-3D	Micro USB Port	FCI	10103594-0001LF	USB MICRO B TOP MOUNT
11	1	CN3	MICROSDCARD1	MICRO SD CARD	Molex, LLC	0475710001	Micro XD Card SPI Mode
12	3	D1, D5, D10	0603LED-3DRED	MSD (RED)	Lite-On Inc	LTST-C193KRKT-5A	LED RED RECT CLEAR 0603
13	2	D2, D6	0603LED-3DBLUE	SERIAL (BLUE)	OSRAM Opto Semiconductors Inc	LB Q39G-L2N2-35-1	LED CHIPLED BLUE 470NM 0603 SMD
14	2	D3, D7	0603LED-3DGREEN	DAP (GREEN)	Dialight	598-8081-107F	LED INGAN GREEN CLEAR 0603 SMD
15	1	D4	0603LED-3DYELLOW	YELLOW	Wurth Electronics Inc	150060YS75000	WL-SMCW SMD CHIP LED WATERCLEAR
16	2	D8, D11	DIODE2223-3D	ES1B-E3/5AT	Vishay Semiconductor Diodes Division	ES1B-E3/5AT	DIODE UFAST 100V 1A DO214AC
17	2	FB1, FB2	0805FB-3D	BLM21PG221SN1D	Murata Electronics North America	BLM21PG221SN1D	FERRITE CHIP 220 OHM 0805
18	1	J3	SIP10-FEM-3D	CON10	Sullins Connector Solutions	PPPC101LFBN-RC	CONN HEADER FEMALE 10POS .1" GOLD
19	2	J4, J6	SIP8-FEM-3D	CON8	Sullins Connector Solutions	PPPC081LFBN-RC	CONN HEADER FEMALE 8POS .1" GOLD
20	1	J5	SIP6-FEM-3D	CON6	Sullins Connector Solutions	PPPC061LFBN-RC	CONN HEADER FEMALE 6POS .1" GOLD
21	1	J8	DIH3X2-3D	CON 2x3	FCI	68602-206HLF	CONN HEADER 6POS .100 STR 15AU
22	1	J11	DIH10X2-3D	CON 2x10	FCI	68602-220HLF	CONN HEADER 20POS .100 STR 15AU
23	1	J12	DIH5X2-HEADER-0.05MIL-3D	FTS-105-01-F-DV	Samtec Inc	FTSH-105-01-L-DV-K	CONN HEADER 10POS DUAL .05" SMD
24	3	J13, J15, J16	DIH8X2-3D	CON 2x8	FCI	67997-216HLF	CONN HEADER 16POS .100 STR 15AU
25	1	J17	DIH6X2	NOT POPULATED	Sullins Connector Solutions	PPPC062LJBN-RC	CONN FEMALE 12POS DL .1" R/A GOLD

**MAX32625MBED EV System Bill of Materials (continued)**

Item #	Quantity	Designator	Footprint	Comment	Manufacture Name	Part Number	Description
26	3	JP1, JP2, JP3	SIP2-3d	SHUNT	Sullins Connector Solutions	PBC365AAN	CONN HEADER .100 SINGL STR 36POS
27	1	Q1	16001-3D	PMV65XP,215	NXP Semiconductors	PMV65XP,215	MOSFET P-CH 20V 2.8A
28	1	R1	0603-3D	20k	Rohm Semiconductor	MCR03ERTF2002	RES SMD 20K OHM 1% 1/10W 0603
29	6	R2, R3, R12, R14, R26, R39	0603-3D	1k	Yageo	RC0603FR-071KL	RES SMD 1K OHM 1% 1/10W 0603
30	2	R5, R19	0603-3D	1.5k	Panasonic Electronic Components	ERJ-3EKF1501V	RES SMD 1.5K OHM 1% 1/10W 0603
31	8	R6, R9, R16, R17, R18, R21, R24, R38	0603-3D	10K	Panasonic Electronic Components	ERJ-3EKF1002V	RES SMD 10K OHM 1% 1/10W 0603
32	3	R27, R34, R36	0603-3D	500k	Vishay Dale	CRCW0603499KFKEA	RES SMD 499K OHM 1% 1/10W 0603
33	3	R28, R29, R32	0603-3D	10	Panasonic Electronic Components	ERJ-3EKF10R0V	RES SMD 10 OHM 1% 1/10W 0603
34	1	R33	0603-3D	100	Samsung Electro-Mechanics America, Inc	RC1608F101CS	RES SMD 100 OHM 1% 1/10W 0603
35	1	R35	0603-3D	2.2k	Panasonic Electronic Components	ERJ-3EKF2201V	RES SMD 2.2K OHM 1% 1/10W 0603
36	1	R40	0402-3D	0 ohm	Samsung Electro-Mechanics America, Inc	RC1005J000CS	RES SMD 0.0 OHM JUMPER 1/16W
37	1	RP1	BUS RESISTOR 8X SMT	10k Res Pack	CTS Resistor Products	746X101103JP	RESISTOR PACK 8 - BUSSED
38	2	RT1, RT2	1206POLYFUSE-3D	MF-NSMF012-2	Bourms Inc.	MF-NSMF012-2	PTC RESETTABLE .12A 30V 1206
39	3	SW2, SW3, SW4	RESET11-3D	PUSH Button	C&K Components	KSR221GLFS	SWITCH TACTILE SPST-NO 0.05A 32V
40	1	U1	TQFP100-14x14mm-0.5p-3D	MAX32620	Maxim Integrated	MAX32620ICQ+	Ultra-Low Power Cortex-M4F Microcontroller for Rechargeable Devices
41	2	U2, U3	SC70-5-3D	MAX8511 3.3V	Maxim Integrated	MAX8511EXK33+T	Ultra-Low-Noise, High PSRR, Low-Dropout, 120mA Linear Regulator
42	1	U4	UMAX8EP-3D	MAX1792	Maxim Integrated	MAX1792EUA33+	500mA Low-Dropout Linear Regulator +2.5v to +5.5v input
43	1	U5	TQFN68 0.4P 8x8mm	MAX32625	Maxim Integrated	MAX32625ITK+	Ultra-Low Power Cortex-M4F Microcontroller for Rechargeable Devices
44	1	U6	TDFN8 3MM .65T	MAX16910CATA8+	Maxim Integrated	MAX16910CATA8/V+	Linear Regulator 3V/5V/ADJ 200mA Ultra-Low Quiescent Current
45	1	U7	SOT23-5-3D	MAX8887EZK33+T	Maxim Integrated	MAX8887EZK33+	LDO 300mA Linear Regulator 1.5, 1.8, 2.85, 3.3v versions
46	2	U8, U10	soT23-6-3d	MAX3207E	Maxim Integrated	MAX3207EAUT+	Dual High-Speed Differential ESD-Protection IC
47	2	U9, U14	UMAX8EP-3D	MAX16999 1.8V	Maxim Integrated	MAX16999AUA18+	Linear Regulator for High-Temperature Applications
48	2	U11, U15	UMAX8EP-3D	MAX16999 1.2V	Maxim Integrated	MAX16999AUA12+	Ultra-Low Output Voltage, Low-Quiescent-Current Linear Regulator for High-Temperature
49	2	U12, U13	TQFN16 3x3mm 0.5p	MAX4854H	Maxim Integrated	MAX4854HETE+	Quad SPST Normally Open Analog Switch
50	2	X1, X2	CRYSTAL-ABS07	32.768KHz	Abracon Corporation	ABS07-32.768KHZ-6-T	CRYSTAL 32.768KHZ 6.0PF SMD
51	3	N/A	N/A	Shunt	Sullins Connector Solutions	SPC02SYAN	1 x 2 Shunt Connector Black Closed Top 0.100" (2.54mm) Gold

**Ordering Information**

PART	TYPE
MAX32625MBED#	mbed Platform

#Denotes RoHS compliant.

## Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	5/17	Initial release	—

For pricing, delivery, and ordering information, please contact Maxim Direct at 1-888-629-4642, or visit Maxim Integrated's website at [www.maximintegrated.com](http://www.maximintegrated.com).

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